WERMA
SIGNALTECHNIK

Catalogue 2015/2016

WERMA
SIGNALTECHNIK

Catalogue 2015/16

About WERMA

We make sure you are seen and heard

WERMA Signaltechnik is one of the world`s leading companies for optical and audible signal devices. The international company located in South West Germany sets the tone technologically with its many state-of-the-art innovations.

Our signal devices make working environments safe and processes efficient - on machines, in factory halls or in the building services industry. With a broad line of over 3,500 products, WERMA offers solutions for an extremely wide range of signalling applications.

We are there where you need us

With our own subsidiaries in many European countries as well as in China and the USA and a tightly woven network of international sales partners we ensure outstanding worldwide on-site support. Our customers benefit from exemplary service with fast, on-time delivery of all products and accessories. WERMA products can be easily ordered online at www.werma.com.

Our consistently high customer satisfaction ratings show that our customers feel WERMA takes good care of them.

We are constantly developing

Innovation is the driving force for us to further expand our technological advantage. WERMA conducts both systematic core research and specific product development for which the most modern project management methods are employed.

We test all new developments in our own optical and acoustic laboratories. The success of this innovation policy is demonstrated in the many patents, design awards and positive customer evaluations we have received.

Quality „Made in Germany“

We produce our own plastics, electronics and injection-mould tooling to guarantee that our products are truly "Made in Germany".

Our production engineering uses the advantages of lean production processes and intelligent automation to ensure we are consistently fast and flexible.

WERMA is DIN EN ISO 9001: 2008 certified. Our processes and products are the subject of rigorous testing to guarantee consistently high quality levels.

Contents

Where can I find ... ?

Customer satisfaction is our highest priority. Your wishes and requirements come first at all times and with this in mind we are constantly improving our service and product range.

To help find your way through our extensive catalogue we have compiled a navigation guide.

In this way you can find everything you need in no time at all !

Technical data

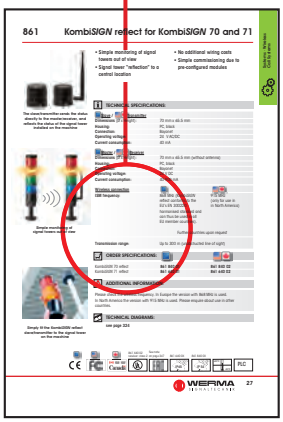
The product specific technical data includes dimensions, fixing options, and connection possibilities.

This information can be found on the relevant product page in our catalogue under the heading "Technical specifications".

Order specifications

The order number of a product is to be found after the technical data on the relevant page.

The order numbers for specific colours and voltages are listed here.



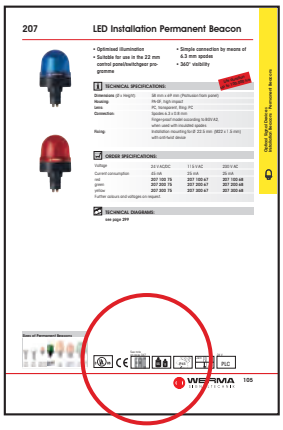
Accessories

Our extensive range of product accessories can be found either immediately on the relevant catalogue page or on the following page.

Weight, protection rating, temperature, sound output, approvals

Important data relating to our products can be found on the relevant catalogue page in form of pictograms.

The key to these icons is to be found on page 346 of this catalogue.



WERMA SIGNALTECHNIK

Technical diagrams

A detailed drawing of each product can be found under the heading "Technical Diagrams" (from page 294 onwards).

The exact page number for the required drawing is given on the product page.

Technical Diagrams

Sales Network

In this section you can find details of our subsidiary companies and German agencies (page 343).

Details of our international sales network can be found on **www.werma.com**.

General information

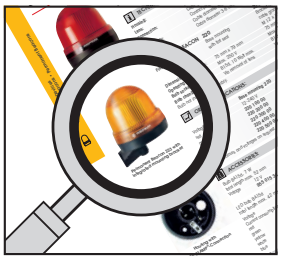
Basic information and explanations about our products and services can be found under the heading "Technical Information" (from page 346 onwards).

- Catalogue data
- Norms and marks of conformity
- Meaning of optical and audible signals
- Sound output
- Protection ratings
- Many other interesting pieces of information

General Information

Looking for a specific product?

If you are looking for a specific product, the quickest way to find it is to look at our "Article Number Index" (page 364) or our "Contents" (page 3).



New Products

Signal Towers · Modular

645/844 Vocal element for Kombi*SIGN* 70 and 71

- 102 dB high output vocal element
- Sound output level can be triggered externally

Page 41 + 56

640/840 Terminal element M12 for Kombi*SIGN* 70 and 71

- With practical M12 connector
- Quick and easy installation

Page 43 + 58

845 Terminal element with CAGE CLAMP® technology for Kombi*SIGN* 50

- Quick and easy wiring with CAGE CLAMP® technology
- Tube and single hole mounting without the need for accessoires

Page 65

845 Terminal element for Kombi*SIGN* 50

- Tube and single hole mounting without the need for accessoires
- Quick and easy wiring

Page 65

Signal Towers · Completely pre-assembled

698/699 LED Signal Tower KOMPAKT 37

- Pre-assembled signal tower with max. 5 tiers
- With or without buzzer

Page 74 + 75

Optical Signal Devices · Installation Beacons

816 LED Permanent Beacon Multicolour with clear and opaque lens

- 7 colours in one beacon
- With clear or opaque lens

Page 111

239 LED permanent light Multicolour with lens raised

- 5 colours in one beacon
- Multiple status warnings can be signalled by one beacon

Page 102

Optical Signal Devices · Free-standing Beacons

280 Low-intensity Obstacle Light Type B

- with optional monitoring function for the 230 V version

Page 145

281 Low-intensity Obstacle Light Type B

- With robust glass/metal housing
- Salt water resistant

Page 146

NEW

Accessory

960 Corner Fixing Bracket

- For fixing on 90° corners
- Signal device is visible from two sides

Page 68

960 Foldaway base

- Signal tower can be folded away
- Positioning in 0° and 90°

Page 69

Further information

The technical information, order specifications and accessories for our new products can be found on the relevant **product page**.

The **technical diagrams** of our new products are in the "Technical diagrams" section from page 294 onwards.

You are welcome to request the technical diagrams in digital form. The relevant **3D models**, **instruction leaflets** and **connection diagrams** can be obtained from us or downloaded from our homepage at any time.

The **sounds** of the audible and optical-audible signal devices can be played from our website www.werma.com.

TIP

Configurator

The Signal Device Site on the internet: **www.werma.com**

You can select quickly and simply the required **Kombi*SIGN* signal tower**, **Kompakt 37** or **traffic light types 890/853/153** using this tool. The tool guides you through the selection process with clear and concise images and questions and enables you to make your required selection in just a few mouse clicks.

Customised products

From your idea to the final product

Not without good reason do we claim to be European market and innovation leaders in signal technology. The customer is the focus of all our activities.

Putting the customer first means that we have to be able to meet special requirements both in terms of design, manufacture, service and availability. Our highly vertical manufacturing allows us to be very flexible and respond to your requests easily and quickly.
It goes without saying that we deliver quality and all of our products meet ISO 9001:2008.

Modular and pre-assembled signal towers

WERMA is well known for its large range of modular signal towers.
We have an appropriate product/accessory for just about any application.
The modular system of signal towers allows you to customise the design of the tower to your specific requirement. On request, products such as the KombiSIGN towers can be supplied fully assembled or provided with a cable or connector. This enables quick and simple installation on site.

Further features of our modular range of towers:

- Products for **all common voltages**
- **Wide variety** of optical and audible signal elements
- **Mix and match** according to your requirements
- **Large selection** of accessories
- **Versatile and flexible** solution possibilities

Customised design

Life in the modern industrial world is characterised by the fast pace of technological development. Guidelines for Corporate Identity and Corporate Design are being implemented and experienced in all walks of business life, including also in the design of machinery and equipment. The individual corporate design of a machine and its accessories conveys the manufacturer's quality statement to the customer. Design, colour and aesthetics are increasingly considered as important purchase criteria and the design of the product is increasingly becoming a strategic competitive factor and is the key to strong innovation.

We are able to offer individual colours, designs and voltages for almost every signal device. Uniform colour and design can enhance the overall appearance of the machine or equipment upon which the signal device is fitted.

Design as a strategic competitive factor

The term design is of course fundamental to the development process of a piece of machinery and has mostly an effect on potential purchasers when it is regarded as unique and special in some way. It is very important that all components fit and work together perfectly, since signal devices are visible and form part of the design of the machine.

Simply specify us the design you want and we will do the rest. Experts will advise you on design options in order to get the best possible result: aesthetics and signal technology merged into your customised signal device.

Award-winning design

Design and function must be right - from the very start

From the outset, we ensure that only select and **high-quality materials** are employed to guarantee that our products operate safely and reliably. WERMA signal devices need **to stand out.** At the same time, they must blend into the background when non-operational. We therefore carefully create **optimum light and perfect sound** in all WERMA products - and dedicate considerable effort to making them look good.

Christian Höhler, WERMA R + D Director explains: **„Aesthetics and quality** are important. Both must enhance the products` **signalling function** in the best way possible! To this end, we frequently work with **external designers**. These designers ensure that WERMA products look attractive. Our engineers are then responsible for creating **the highest level of functionality**.

In this way we create an attractive form for the best possible signalling performance.
We want our customers to benefit from their WERMA signal devices for a long time to come!"

WERMA designer products provide many benefits

WERMA signal devices are attractive in design. In our opinion, good design means that:

- WERMA products are **aesthetically pleasing and innovative**
- **Designs for all tastes** are available to ensure our customers are in line with current trends
- WERMA signal devices are **ergonomic and function reliably**

Customers benefit from a product that:

- is perfectly suited to their application
- either **blends into the background** or **purposely stands out**
- works perfectly and looks fantastic

The end result is a high-quality housing combined with the best of signalling functions for your machine - all designed to **increase the quality and reliability** of your application.

Award-winning design by WERMA

Experts regularly assess the design quality of WERMA products. Products that meet the strict requirements are awarded the most highly-regarded **design prizes** from all over the world:

LED Signal Tower deSIGN 42

reddot design award winner 2005

Rotating Mirror Beacon 885

product design award 2006

424/425 Combination

Focus Safety Silver 2007

444 Combination

reddot design award honourable mention 2008

LED Traffic Light 894

product design award 2009

LED Signal Tower VarioSIGN 690

product design award 2010

434/435 Combination

product design award 2012

TOP 100

TOP 100 2012 Top-Innovator

TOP 100 Top-Innovator 2013


wireless information network
performance
WERMA
SIGNALTECHNIK
840 085 00
LISTED 8021
IND.CONT.EQ

Overview Systems for Process Optimisation in Production, Assembly and Logistics areas

Machine Data Collection Systems (MDC Systems)

WIN - Wireless Information Network

For Kombi*SIGN* 70 and 71 Page 12

Manual Call Systems

Andon*CONTROL*

For Kombi*SIGN* 70 and 71 Page 22

Andon*SWITCH*

For signal towers Page 23

Andon*BOX*

For signal towers Page 24

Connection Set

For Kombi*SIGN* 70 and 71 Page 25

Wireless Call Systems

Kombi*SIGN* reflect

For Kombi*SIGN* 70 and 71 Page 27

Further Information

Further Information about „Kombi*SIGN* signal towers“ can be found in the chapter „Signal Towers“ beginning on page 29.

TIP

You can find more information on these products at www.werma.com.

MDC Systems

Recognise the potential with WIN

Delivery performance, smaller batch sizes, increasing competition and pressure on costs are all common issues for companies nowadays. In order to deal with all of these issues greater attention has to be paid to flexibility, transparency and efficiency.

Without technical support it is virtually impossible to reduce downtime, shorten production times and at the same time install a comprehensive works monitoring system in order to make the best use of the capacity available.

Machine Shop Monitoring quickly and simply with WIN

WERMA offers an easy to install simple low cost wireless monitoring system called **WIN** (**W**ireless **I**nformation **N**etwork) which can be fitted to virtually any piece of equipment or machinery, irrespective of age and specification. WIN combines signal tower technology with wireless technology and an ingenious software package. The common interface point on machines is a WERMA signal tower to which the WIN (MDC - Machine Data Collection) system can be easily fitted and commissioned.

Analyse Productivity at the touch of a button with WIN

An additional element called the "WIN slave/transmitter" is fitted to the Kombi*SIGN* signal tower. This transmitter transfers machine status information wirelessly to the "WIN master/receiver".

The "WIN master/receiver" is connected by USB to a PC and can receive data from up to 50 "WIN slaves/transmitter" each reporting a maximum of 8 different status conditions.

Counter module with WIN slave performance/WIN transmitter performance

The second piece of hardware called "WIN slave performance/transmitter performance" offers a counting module alongside the traditional monitoring functions. This module monitors up to six different status conditions and counts the piece part output signal from a machine.

Excellent transmission range with Wireless Technology

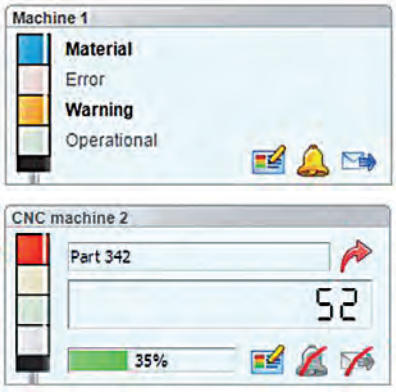
The WIN system has a transmission range (unobstructed line of sight) of 300 m although this will vary according to the construction of the building. In addition, as each "WIN slave/transmitter" acts as a repeater, effective transmission distances in a network of "WIN slaves/transmitter" can be extended to a maximum of 900 m distance between "WIN slave/transmitter" and "WIN master/receiver". The low frequency (EU: 868 MHz/USA: 915 MHz) the system uses provides better transmission characteristics than other systems such as WLAN and Bluetooth.

The intuitive WIN software

The software supplied with the system is licence-free and easy to install. There is no restriction on the number of users who may wish to install and run the program.

The software displays the status condition of signal lights installed in the system and the user can select from three languages, German, English or French. The software enables the user to analyse runtimes, identify causes of disruption in operations and therefore improve efficiency.

WIN - Software information and functions at a glance

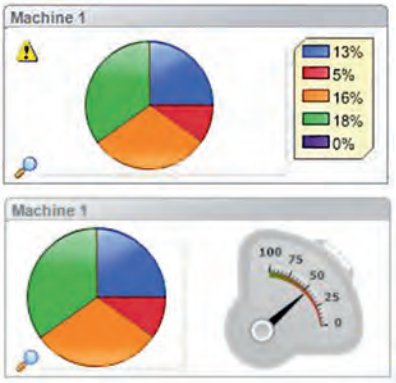


React quickly with the Control Station

You can quickly see if a machine is in an error condition or running normally. This module helps you to quickly take action to reduce downtime.

The messaging function keeps you in touch all the time

It is no problem for WIN to keep you informed anytime anywhere about condition changes. For example a condition change can trigger an email to be sent automatically to a PC or smart phone. You can select for which machines and which condition changes an email is generated and also set a time delay before the email is sent.



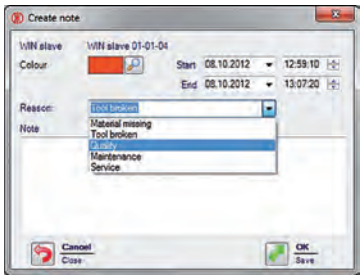
Increase efficiency with the Productivity Module

Using the Productivity Module you can check the productivity of your machines and workstations over any time period. You can look for example at the last working day, or define specific time periods such as shift patterns. Using this module it is possible to retrospectively analyse downtime and fault conditions and thus help improve efficiency in the future.

Production transparency in the Runtime module

The Runtime Module allows you to check the operation and downtimes of your machines or workstations. Using this module you will quickly establish if there are patterns of downtime or fault conditions thus giving you a better transparency of production. This will then form the basis for improving the efficiency of your production processes.

WIN - Software information and functions at a glance



Document problems with the error analysis

Identify, comment and analyse the fault conditions. First of all define the most common reasons for fault status occurring, for example material shortage. Should this condition, or any other defined condition arise, once you have identified the reason for the fault condition this can be entered as a "note" in the Runtime Module.
The number of fault conditions will also be shown and thus will assist in resolving the reasons for the frequency of particular fault conditions.

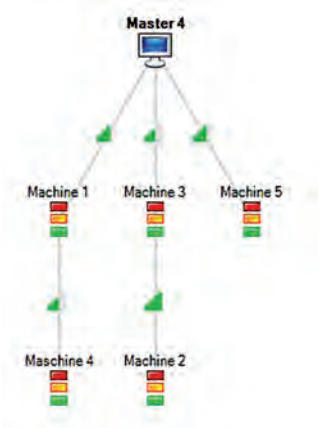
Include a range of users with the Multiple Operator Access

The software uses a structure based on a database and can be used by any number of users. The database needs to be copied over to a shared drive on your network to allow multiple users access to the system. There is no restriction on the number of users who can install the licence-free software and work with it. All users who have the software installed on their PC and have access to the shared drive database can see the performance of machines or workstations in real time and edit the views to their personal requirements.

Description	Status	Fulfilment level
Part 21	Completed	100%
Part 78	Completed	100%
Part 43	Completed	100%
Part 500	Completed	108%
Moulding part P20123	Completed	100%
Tool 556	Running	39%
Tool 25	Running	49%
Part 677	Waiting	0%
Part 322	Waiting	0%
Part 456	Waiting	0%

Overview of jobs being run

The module gives you a comprehensive overview of which job is running on which machine and how the job is progressing. Future planned jobs are shown as "waiting" and can be initiated as soon as the machine required is available.



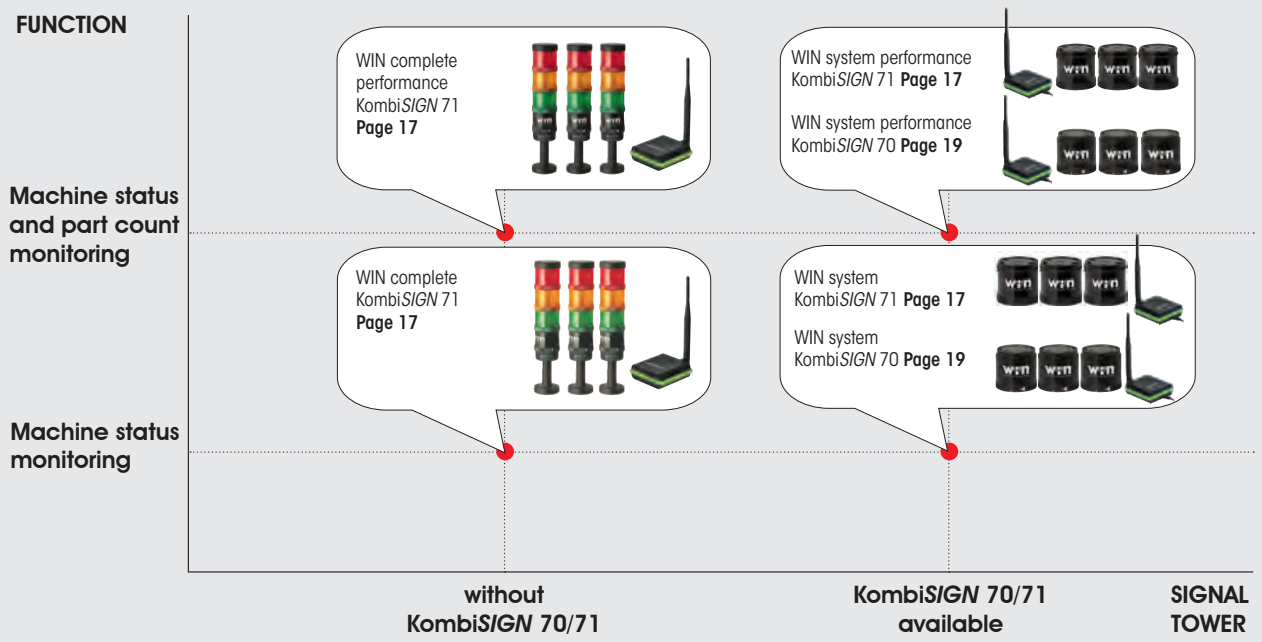
Stability of the Network with the Routing Module

The Routing Module assists in setting up or adjusting the best network for WIN.
The route network graphic shows the current set up of the WIN network and the signal strength of each "WIN slave/transmitter" or WIN slave performance/transmitter performance". Each "WIN slave/transmitter" will automatically select the best route back to the "WIN master/receiver" either directly, or indirectly.

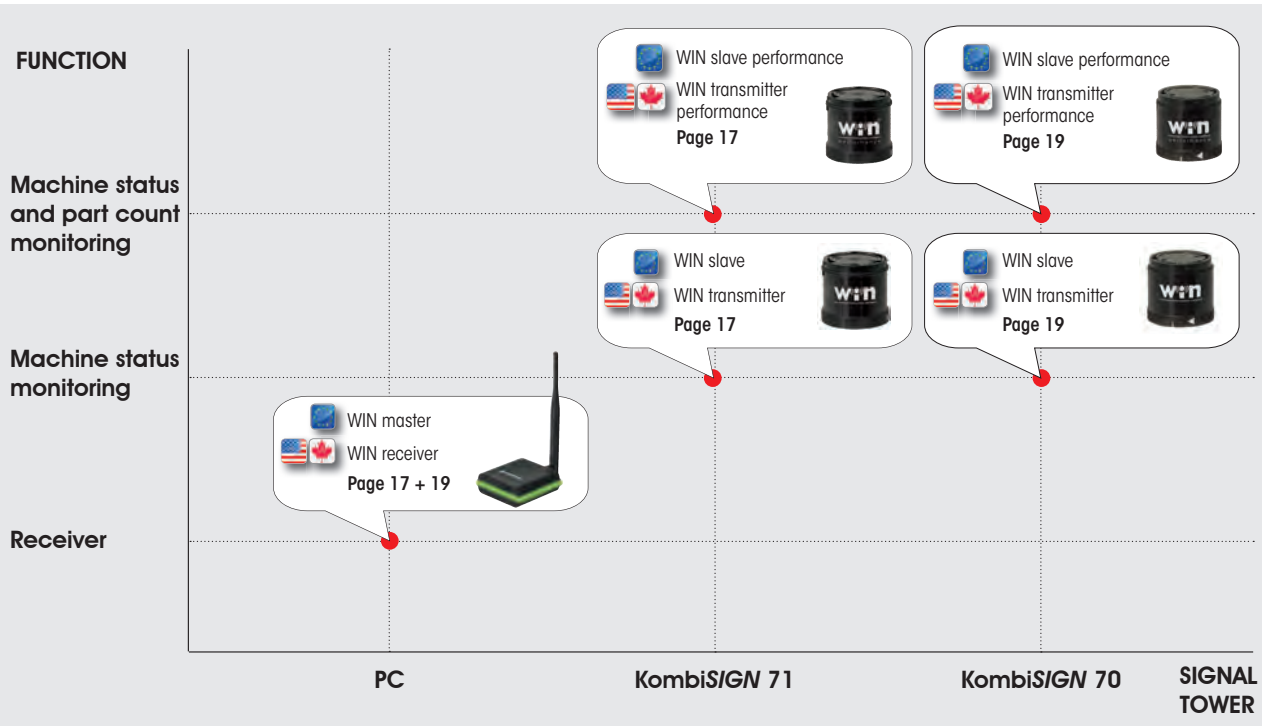
WERMA SIGNALTECHNIK

Quick Finder - MDC Systems

Starter Kits



Additional Items



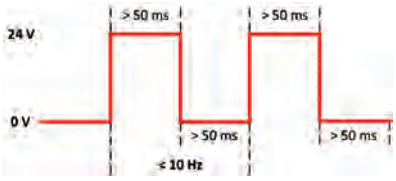
Please check the wireless frequency. In Europe the version with 868 MHz is used. In North America the version with 915 MHz is used. Please enquire about use in other countries.

860 WIN for Kombi*SIGN* 71

- Economical wireless-based Machine Data Collection system (MDC system)
- Analyse and improve production processes
- Monitor the status of machines
- Easy to install, intuitive software

WIN slave/transmitter and WIN slave performance/ transmitter performance

The software package allows you to monitor a production area or individual workstations from the comfort of the PC



The counter impulse of the WIN slave/ transmitter performance is max. 10 Hz

Expandable at any time: With additional "WIN slaves/transmitter" up to 50 machines can be integrated into the network

TECHNICAL SPECIFICATIONS:

Patent approved

WIN slave / WIN transmitter	
Dimensions (Ø x Height):	70 mm x 65.5 mm
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V AC/DC
Current consumption:	40 mA, max. 430 mA

WIN slave performance / WIN transmitter performance	
Dimensions (Ø x Height):	70 mm x 65.5 mm
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V AC/DC
Current consumption:	40 mA, max. 430 mA
Counter input:	Max. 10 Hz

WIN master / WIN receiver	
Dimensions (L x H x W):	76 mm x 30 mm x 80 mm (without antenna)
Housing:	ABS, black
Connection:	Via USB
Operating voltage:	Via USB (5 V DC)
Current consumption:	< 100 mA
Counter input:	Windows XP SP 3, Windows Vista SP 2, Windows 7, Windows 8, Windows Server 2003 SP 2, Windows Server 2008

Wireless connection		
ISM frequency:	868 MHz (WIN conforms to the EU's EN 300220 harmonised standard and can thus be used in all EU member countries.)	915 MHz (only for use in North America)
	Further countries upon request	
Transmission range:	Up to 300 m (unobstructed line of sight) Every WIN slave (performance) / WIN transmitter (performance) simultaneously functions as a "repeater", enabling the transmission range to be significantly increased.	

"WIN complete" is immediately ready for use and consists of three signal towers, three WIN slaves/ transmitters (performance) and the WIN master/receiver

Fit WIN slaves/transmitters to an existing WERMA signal tower and connect the WIN master/receiver to the PC

Machine status and part count monitoring in one element: WIN slave performance/ WIN transmitter performance

ORDER SPECIFICATIONS:

STARTER KITS		
WIN complete for Kombi*SIGN* 71 Assembly: WIN master/receiver, 3 WIN slaves/transmitters Kombi*SIGN* 71 (pre-configured), 3 signal towers Kombi*SIGN* 71 (LED permanent light elements in red, yellow and green, terminal element, base with integrated tube), software, USB cable	**860 640 03**	**860 640 06**
WIN complete performance Kombi*SIGN* 71 Assembly: WIN master/receiver, 3 WIN slaves/transmitters performance Kombi*SIGN* 71 (pre-configured), 3 signal towers Kombi*SIGN* 71 (LED permanent light elements in red, yellow and green, terminal element, base with integrated tube), software, USB cable	**860 640 13**	**860 640 16**
WIN system for Kombi*SIGN* 71 Assembly: WIN master/receiver, 3 WIN slaves/transmitters Kombi*SIGN* 71 (pre-configured), software, USB cable	**860 640 01**	**860 640 04**
WIN system performance for Kombi*SIGN* 71 Assembly: WIN master/receiver 3 WIN slaves/transmitters performance Kombi*SIGN* 71 (pre-configured), software, USB cable	**860 640 11**	**860 640 14**
ADDITIONAL ITEMS		
WIN slave for Kombi*SIGN* 71 Assembly: WIN slave (not pre-configured) Both networks can be fitted with up to 50 WIN slaves.	**860 640 02**	-
WIN transmitter for Kombi*SIGN* 71 Assembly: WIN transmitter (not pre-configured) Both networks can be fitted with up to 50 WIN transmitters.	-	**860 640 05**
WIN slave performance for Kombi*SIGN* 71 Assembly: WIN slave performance (not pre-configured) The network can be expanded to up to 50 WIN slaves performance per network as required.	**860 640 12**	-
WIN transmitter performance for Kombi*SIGN* 71 Assembly: WIN transmitter performance (not pre-configured) The network can be expanded to up to 50 WIN transmitter performance per network as required.	-	**860 640 15**
WIN master Assembly: WIN master with USB cable, software	**860 000 00**	-
WIN receiver Assembly: WIN receiver with USB cable, software	-	**860 000 01**

ADDITIONAL INFORMATION:

Please check the wireless frequency. In Europe the version with 868 MHz is used.
In North America the version with 915 MHz is used. Please enquire about use in other countries.

TECHNICAL DIAGRAMS:

see page 322

860 640 05
860 640 15

See note on page 347

860 640 X2
860 640 X5

860 000 0X

PLC

860 WIN for Kombi*SIGN* 70

- Economical wireless-based Machine Data Collection system (MDC system)
- Analyse and improve production processes
- Monitor the status of machines
- Easy to install, intuitive software

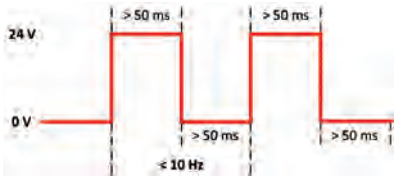
WIN slave/transmitter and WIN slave performance/ transmitter performance

TECHNICAL SPECIFICATIONS:

Patent approved

WIN slave / WIN transmitter

Dimensions (Ø x Height):	70 mm x 65.5 mm
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V AC/DC
Current consumption:	40 mA, max. 430 mA



The counter impulse of the WIN slave/ transmitter performance is max. 10Hz

WIN slave performance / WIN transmitter performance

Dimensions (Ø x Height):	70 mm x 65.5 mm
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V AC/DC
Current consumption:	40 mA, max. 430 mA
Counter input:	Max. 10 Hz

WIN master / WIN receiver

Dimensions (L x H x W):	76 mm x 30 mm x 80 mm (without antenna)
Housing:	ABS, black
Connection:	Via USB
Operating voltage:	Via USB (5 V DC)
Current consumption:	< 100 mA
Counter input:	Windows XP SP 3, Windows Vista SP 2, Windows 7, Windows 8, Windows Server 2003 SP 2, Windows Server 2008

The WIN system has a transmission range (unobstructed line of sight) of 300 m

Wireless connection		
ISM frequency:	868 MHz (WIN conforms to the EU's EN 300220 harmonised standard and can thus be used in all EU member countries.)	915 MHz (only for use in North America)
	Further countries upon request	
Transmission range:	Up to 300 m (unobstructed line of sight) Every WIN slave (performance) / WIN transmitter (performance) simultaneously functions as a "repeater", enabling the transmission range to be significantly increased.	

Plug and play with WIN system:
Fit WIN slaves to an existing WERMA signal tower and connect the WIN master/receiver to the PC

The software shows the status of signal towers connected to the system

Expand the network at any time.
You can monitor up to 50 machines within the WIN system

ORDER SPECIFICATIONS:

STARTER KITS		
WIN system for Kombi*SIGN* 70 Assembly: WIN master/receiver, 3 WIN slaves/transmitters Kombi*SIGN* 70 (pre-configured), software, USB cable	**860 840 01**	**860 840 04**
WIN system performance for Kombi*SIGN* 70 Assembly: WIN master/receiver 3 WIN slaves/transmitters performance Kombi*SIGN* 70 (pre-configured), software, USB cable	**860 840 11**	**860 840 14**
ADDITIONAL ITEMS		
WIN slave for Kombi*SIGN* 70 Assembly: WIN slave (not pre-configured) Both networks can be fitted with up to 50 WIN slaves.	**860 840 02**	-
WIN transmitter for Kombi*SIGN* 70 Assembly: WIN transmitter (not pre-configured) Both networks can be fitted with up to 50 WIN transmitters.	-	**860 840 05**
WIN slave performance for Kombi*SIGN* 70 Assembly: WIN slave performance (not pre-configured) The network can be expanded to up to 50 WIN slaves performance per network as required.	**860 840 12**	-
WIN transmitter performance for Kombi*SIGN* 70 Assembly: WIN transmitter performance (not pre-configured) The network can be expanded to up to 50 WIN transmitter performance per network as required.	-	**860 840 15**
WIN master Assembly: WIN master with USB cable, software	**860 000 00**	-
WIN receiver Assembly: WIN receiver with USB cable, software	-	**860 000 01**

ADDITIONAL INFORMATION:

Please check the wireless frequency. In Europe the version with 868 MHz is used.
In North America the version with 915 MHz is used. Please enquire about use in other countries.

TECHNICAL DIAGRAMS:

see page 323

860 840 05
860 840 15

See note on page 347

860 840 X2
860 840 X5

860 000 0X

PLC

Manual Call Systems

Andon products for process optimisation

Production and logistics experts are increasingly focussing on the implementation of lean management methods. The aim of a holistic approach to lean management is to optimally coordinate every activity within the value creation chain and thus eliminate all types of waste.

WERMA now offers an optimal solution for lean production implementation:
The Andon Products for Signal Towers.

What does "Andon" stand for?

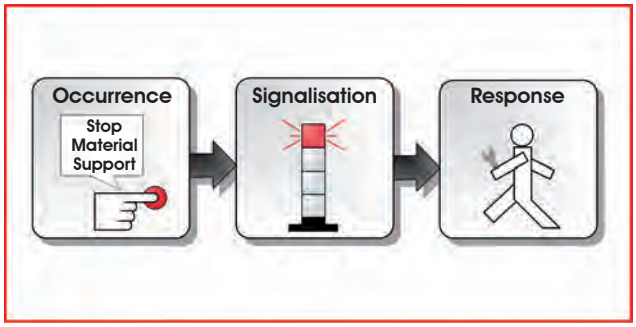
The term "Andon" originates from Japan. A signal tower or beacon mounted in a prominent position signals that a problem has arisen and requests an immediate response.

WERMA'S manual call systems function according to the same principle: when an optical or audible signal is activated the supervisor or logistics employee is made aware of the fact that an immediate response is required. Each workstation that is equipped with these products enables the employee to precisely and instantaneously signal which type of issue has occurred at the touch of a button. With the aid of optical and/or audible signals the system then displays the corresponding information.

Flexible call system

The use of call systems not only improves the efficiency of production processes but decisively contributes to the effective use of resources, creates cost savings and increases the ability to flexibly respond to market changes.

WERMA'S manual call systems can be used in a wide range of applications: from optimising kanban processes to production workstations or packaging areas in shipping departments.



Andon*CONTROL* streamlines the delivery of material to manual workstations

1

If an employee at a manual workstation sees that a specific material is no longer available, then she presses the corresponding Andon*CONTROL* button.

2

As soon as the button is pressed an optical signal immediately displays that material is needed.

3

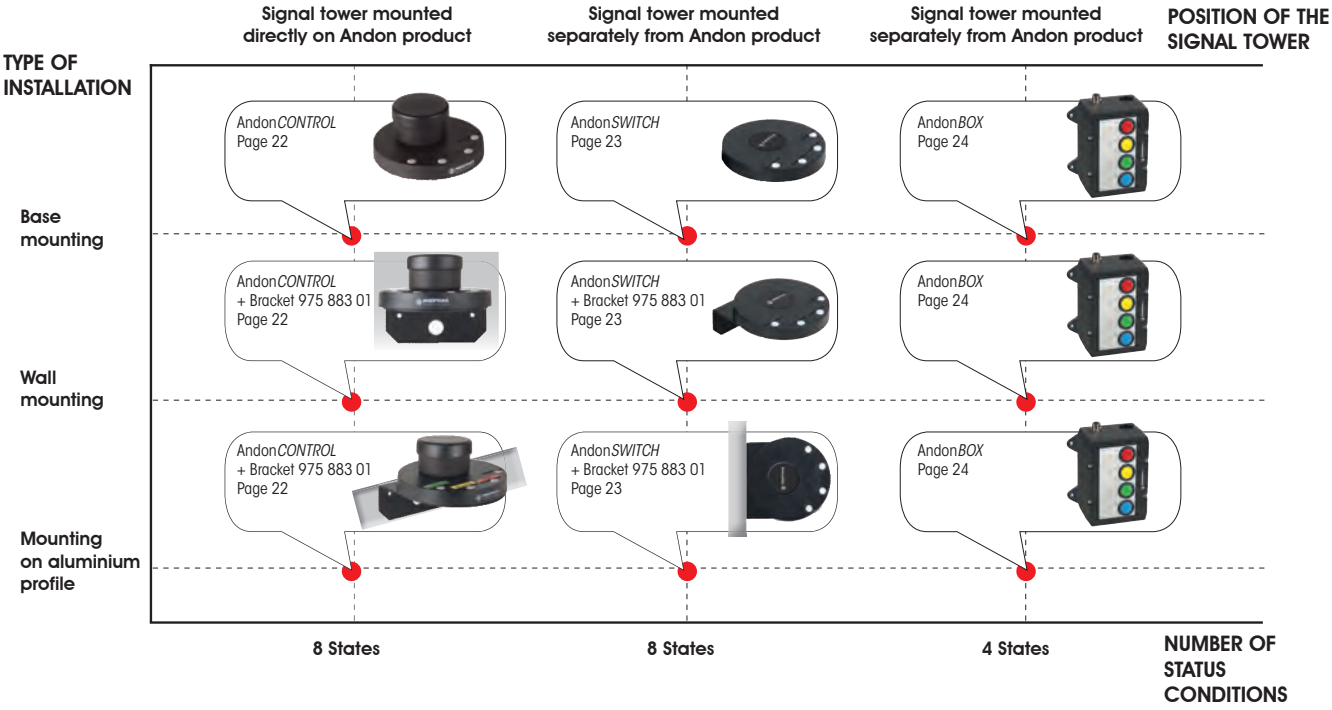
The logistics employee receives the optical signal and can respond at once. He collects the requested material from the storage area.

4

Without delay, the required material is delivered directly to the workstation.

Quick Finder - Manual Call Systems

Quick Finder: Installation type, position of signal tower and number of status conditions that can be activated



Wireless technology provides a complete overview

In larger production areas several workstations are often outside of the supervisor's line of sight. For situations such as these WERMA offers an optimal solution: a combination of manual call systems and MDC systems creates a central overview of the current status of up to 50 workstations at the same time.

Simple integration of the "WIN slave/transmitter" into the signal tower enables this supplementary function to be used. The WIN slave/transmitter transmits data via wireless technology to the WIN master/receiver, which is connected to a central PC.

Process optimisation and greater efficiency

With the help of the user-friendly WIN software, various productivity analysis tools can also be implemented. The concise software display interface enables intuitive operation and helps to gain a good overview of the integrated workstations.

The WIN system is also equipped with a messaging functionality. WIN sends occurrence-specific e-mails so that information is reliably and punctually transmitted to the correct person, independent of their location. The main aim is to achieve shortened response times and greater efficiency for specifically defined processes whilst ensuring clearly defined areas of responsibility amongst production staff. In large production departments, the reduction in workload and inestimable time and cost benefits are particularly valuable.

860

Andon*CONTROL* for Kombi*SIGN* 70 and 71

Andon*CONTROL* is a simple call system for a wide variety of applications

- Instant status display at the touch of a button to aid process optimisation
- Smart electronics enable the activation of up to eight different states
- For use with an integral signal tower
- Universal power supply and interchangeable adaptors enable worldwide use

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	Kombi*SIGN* 70: 136 mm x 49.5 mm Kombi*SIGN* 71: 136 mm x 45.5 mm
Housing:	Base: PC/ABS Terminal element: PA-GF, shock resistant
Fixing:	Base mounting, Bracket mounting (accessory)
Number of signal elements:	Max. 4 additional signal elements possible
Assembly:	Andon*CONTROL*, power supply unit with connection cable (length 1.8 m), interchangeable adoptors for EU, UK, North America, rubber feet, cable connection

Instant status activated by push button

ORDER SPECIFICATIONS:

Voltage power supply unit	100-240 V AC
Voltage signal elements	24 V DC
Current consumption	Max. 1 A
Andon*CONTROL* for Kombi*SIGN* 70	**860 840 07**
Andon*CONTROL* for Kombi*SIGN* 71	**860 640 07**

ACCESSORIES:

Mounting bracket, metal	**975 883 01**

ADDITIONAL INFORMATION:

The smart electronics in Andon*CONTROL* can activate up to eight different status conditions (permanent or blinking light). A signal tower mounted directly on the Andon*CONTROL* product can signal the different states.

Suitable for all Kombi*SIGN* 70 and 71 signal towers.

Further information and order details for Kombi*SIGN* 70 and 71 can be found in the chapter "modular signal towers" on page 29.

The four push buttons can be individually labelled

TECHNICAL DIAGRAMS:

see page 324

See note on page 347

860 Andon*SWITCH* for signal towers

Andon*SWITCH* helps visualise the active state via illuminated switches

The mounting bracket can be used to fix Andon*SWITCH* to an aluminium profile and activate a remote signal tower

Interchangeable adaptors (included in assembly) and wide input voltage range make the Connection Set suitable for worldwide use

- A simple call system for various applications such as manual workstations
- Smart electronics with illuminated switches enable the activation of up to eight different states
- For use with a signal tower installed away from the Andon product
- Universal power supply and interchangeable adaptors enable worldwide use

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	136 mm x 19 mm
Housing:	Base: PC/ABS Terminal element: PA-GF, shock resistant
Fixing:	Base mounting, Bracket mounting (accessory)
Connection:	Via M12 plug (8 pole)
Number of signal elements:	Max. 4 additional signal elements possible
Assembly:	Andon*SWITCH,* power supply unit with connection cable (length 1.8 m), interchangeable adoptors for EU, UK, North America, rubber feet, cable connection

ORDER SPECIFICATIONS:

Voltage power supply unit	100-240 V AC
Voltage signal elements	24 V DC
Current consumption	Max. 1 A
Andon*SWITCH*	**860 000 04**

ACCESSORIES:

Mounting bracket, metal	**975 883 01**
Cable 5 m with M12 plug (8 pole)	**960 860 01**
Cable 5 m with M12 connector and plug (8 pole)	**960 000 46**

ADDITIONAL INFORMATION:

The smart electronics and illuminated switches of Andon*SWITCH* can activate up to eight different status conditions (permanent or blinking light). A signal tower installed away from the Andon product using a connection cable can signal the different states.

Suitable for all Kombi*SIGN* signal towers.

Further information and order details for the modular Kombi*SIGN* 70 and 71 can be found in the chapter "modular signal towers" on page 29 and for the "pre-assembles" signal towers on page 71.

TECHNICAL DIAGRAMS:

see page 321

See note on page 347

860 AndonBOX for Signal Towers

AndonBOX for use in industrial applications

- Instant status display at the touch of a button to aid process optimisation
- The robust AndonBOX is ideally suited to meet the demands of industrial applications
- For use with a signal tower installed away from the Andon product
- Universal power supply and interchangeable adaptors enable worldwide use

TECHNICAL SPECIFICATIONS:

Dimensions (B x H x T):	161 mm x 79 x 138 mm
Housing:	PA
Fixing:	Base mounting, Wall mounting
Connection:	Via M12 plug (8 pole)
Number of signal elements:	Max. 4 additional signal elements possible
Assembly:	AndonBOX, power supply unit with connection cable (length 1.8 m), interchangeable adoptors for EU, UK, North America, coloured switch caps (red, yellow, green, white, blue)

The switch caps can be easily clicked into place; space is also available for additional labelling

ORDER SPECIFICATIONS:

Voltage: power supply unit	100-240 V AC
Voltage: signal elements	24 V DC
Current consumption	Max. 1 A
AndonBOX	**860 000 03**

ACCESSORIES:

Cable 5 m with M12 plug (8 pole)	**960 860 01**
Cable 5 m with M12 connector and plug (8 pole)	**960 000 46**

ADDITIONAL INFORMATION:

Up to four different status changes can be activated using the four push button switches on the robust AndonBOX. A signal tower installed away from the box using a connection cable can signal the different states.

Suitable for all KombiSIGN signal towers.

Further information and order details for the modular KombiSIGN 70 and 71 can be found in the chapter "modular signal towers" on page 29 and for the "pre-assembles" signal towers on page 71.

Coloured coded switch caps in five different colours: yellow, red, green, blue, white

TECHNICAL DIAGRAMS:

see page 321

See note on page 347

860 Connection Set for Kombi*SIGN* 70 and 71

The Connection Set is available for Kombi*SIGN* 70 and 71 signal towers

- Ideal supplement to "WIN" (Wireless Information Network) to expand the transmission range
- Signal Tower "reflection" to any location with the aid of Kombi*SIGN* reflect
- Simple installation as no additional cable is required
- Universal power supply and interchangeable adaptors enable worldwide use

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	Kombi*SIGN* 70: 136 mm x 49.5 mm Kombi*SIGN* 71: 136 mm x 45.5 mm
Housing:	Base: PC/ABS Terminal element: PA-GF, shock resistant
Fixing:	Base mounting, Bracket mounting (accessory)
Number of signal elements:	Max. 4 additional signal elements possible
Assembly:	Connection Set, power supply unit with connection cable (length 1.8 m), interchangeable adoptors for EU, UK, North America, rubber feet, cable connection

With the aid of the connection set, the master/receiver from Kombi*SIGN* reflect can be used wherever an electrical socket is available

ORDER SPECIFICATIONS:

Voltage power supply unit	100-240 V AC
Voltage signal elements	24 V DC
Current consumption	Max. 1 A
Connection Set for Kombi*SIGN* 70	**860 840 08**
Connection Set for Kombi*SIGN* 71	**860 640 08**

ACCESSORIES:

Mounting bracket, metal	**960 860 01**

ADDITIONAL INFORMATION:

• **Use with Kombi*SIGN* reflect:** The Kombi*SIGN* reflect master/receiver in conjunction with the Connection Set can be used anywhere an electrical socket is available. In this way, the status warning displayed by a remote signal tower can be "reflected" for example to an office location.

Information and order details for Kombi*SIGN* reflect can be found on pages 26 and 27.

• **Use with WIN:** Together with the Connection Set each WIN slave/transmitter can be installed as a "repeater" anywhere an electrical socket is available, thus expanding the transmission range.

Further information on WIN can be found on page 12.

Interchangeable adaptors (included in assembly) and wide input voltage range make the Connection Set suitable for worldwide use

TECHNICAL DIAGRAMS:

see page 323

See note on page 347

CE EAC 335 g IP20 +40°C 0°C

Wireless Call Systems

Get your machines in view - with Kombi*SIGN* reflect

Do you want

- to monitor machines that are out of view?
- to improve the productivity and efficiency of your machines?
- to react quickly and safely in the event of malfunctions?
- to save costs?

Then WERMA has the solution for you!

Signal tower „reflection“

WERMA Signaltechnik provides a simple solution for the remote wireless monitoring of machinery.

Kombi*SIGN* reflect **“reflects” the status of the machine** to a signal tower within your line of sight. This enables you to wirelessly monitor machines situated at a greater distance and respond quickly to malfunctions. With Kombi*SIGN* reflect, even machines which were not previously network-capable can now be remotely monitored.

Kombi*SIGN* reflect is available for the WERMA Kombi*SIGN* 70 and 71 signal tower ranges. The kit consists of two elements that transmit and receive the data via wireless signal **(slave/transmitter and master/receiver)**.

* slave and master transmitter and receiver

Kombi*SIGN* reflect consists of a slave/transmitter and a master/receiver

Kombi*SIGN* reflect: Simple „plug & play“ integration

The two Kombi*SIGN* reflect elements are synchronised and **ready for immediate operation**. The signal towers located on the machines can simply be fitted with the Kombi*SIGN* reflect slave/transmitter. A second identical signal tower, which you have previously selected from WERMA’s Kombi*SIGN* product range, is fitted with the Kombi*SIGN* reflect master/receiver and placed within view.

The status of the first tower is then **immediately transmitted** to the second tower, where it is reflected one-to-one.

The system uses the **868 MHz (EU) or 915 MHz (North America)** frequency band and has a transmission range of up to 300 m (unobstructed line of sight). The indoor range may be less depending on the characteristics of the building.

861 KombiSIGN reflect for KombiSIGN 70 and 71

The slave/transmitter sends the status directly to the master/receiver, and reflects the status of the signal tower installed on the machine

Simple monitoring of signal towers out of view

Simply fit the KombiSIGN reflect slave/transmitter to the signal tower on the machine

- Simple monitoring of signal towers out of view
- Signal tower "reflection" to a central location
- No additional wiring costs
- Simple commissioning due to pre-configured modules

TECHNICAL SPECIFICATIONS:

Slave / Transmitter	
Dimensions (Ø x Height):	70 mm x 65.5 mm
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V AC/DC
Current consumption:	40 mA

Master / Receiver	
Dimensions (Ø x Height):	70 mm x 65.5 mm (without antenna)
Housing:	PC, black
Connection:	Bayonet
Operating voltage:	24 V DC
Current consumption:	40-900 mA

Wireless connection		
ISM frequency:	868 MHz (KombiSIGN reflect conforms to the EU's EN 300220 harmonised standard and can thus be used in all EU member countries).	915 MHz (only for use in in North America)
	Further countries upon request	
Transmission range:	Up to 300 m (unobstructed line of sight)	

ORDER SPECIFICATIONS:

KombiSIGN 70 reflect	**861 840 01**	**861 840 02**
KombiSIGN 71 reflect	**861 640 01**	**861 640 02**

ADDITIONAL INFORMATION:

Please check the wireless frequency. In Europe the version with 868 MHz is used.
In North America the version with 915 MHz is used. Please enquire about use in other countries.

TECHNICAL DIAGRAMS:

see page 324

861 X40 02 receiver: class 2 — See note on page 347 — 861 640 0X — 861 840 0X

Overview Signal Towers • modular

Modular Signal Towers

Kombi*SIGN* 71

IP 65 • Ø 70 mm
Page 31

Kombi*SIGN* 70

IP 54 • Ø 70 mm
Page 47

Kombi*SIGN* 50

IP 54 • Ø 50 mm
Page 61

Accessories for Kombi*SIGN* 50, 70 and 71

Accessories Kombi*SIGN* 50,70 and 71

Page 67 onwards

Size comparison · Signal Towers

Sound

Play Sound www.werma.com

The sounds can be played from our website www.werma.com under the heading „Signal Towers“.

Further Information

Further Information and applications for "Signal Towers" can be found in the chapter "Systems" beginning on page 11.

TIP

The Signal Devices Site on the internet: www.werma.com
With our "Configurator“ you can put together a signal tower quickly and easily according to your requirements. The configurator interactively guides the user through a series of pictures and questions to create an individual signal tower solution in just a few clicks.

KombiSIGN 70 and 71 Signal Towers

Simple operation thanks to bayonet mechanism

WERMA was the first signal beacon manufacturer to offer a bayonet mechanism allowing elements to be mechanically and electrically connected within seconds.

- Simple mounting and removal of the elements
- New combinations at the twist of a hand
- Tool-free bulb change

The advantages at a glance

- Signal elements in every common voltage
- Modular system allows combination as required
- High protection rating IP 54 or IP 65
- Wide range of optical and audible elements
- LED technology ensures even better visibility
- Attention-grabbing light effects (e.g. EVS)
- Wide range of terminal elements

Kombi*SIGN* 71 Signal Tower

The Highlights for Kombi*SIGN* 71

644 LED Permanent light element ultrabright

- Up to 20 times brighter than conventional LED elements
- Maximum brightness via intelligent LED control

See page 35

644 LED EVS element

- Attention-grabbing flickering light
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect

See page 36

644 LED Permanent light element multicolour

- 7 colours in one beacon
- Multiple status warnings can be signalled by one beacon
- High light intensity

See page 37

NEW

645 Vocal element

- 102 dB loud vocal element with excellent tone and sound quality
- Sound output level can be triggered externally

See page 40 + 41

645 Siren element with self-adjusting sound output

- Sound output is automatically adjusted to the background noise level
- Warning tone can be heard without being irritatingly loud

See page 42

NEW

640 Terminal element M12

- Quick and easy installation
- With practical M12 connector

See page 43

640 Terminal element with USB Interface

- Direct triggering of signal tower elements via USB Interface
- Easy activation

See page 43

646 AS-Interface element

- LEDs indicate current status
- 31 or 62 addresses
- Available with standard or A/B technology

See page 45

Machine Data Collection Systems (MDC Systems)

- Wireless based machine data collection
- Monitoring and counting system for multiple machines

See page 12

Manual Call Systems

- Improve the efficiency of production processes your operation.
- Indicate status conditions and problems at the touch of a button.

See page 20

Further infomation

Further Information and applications for "Kombi*SIGN* Signal Towers" can be found in the chapter "Systems" beginning on page 11.

Signal Towers Kombi*SIGN* 71

This is how you can assemble your Kombi*SIGN* 71 signal tower

▸ STEP 1
Select the required optical or audible elements in the correct voltage (for details see page 33).

Many Kombi*SIGN* highlights are also available (for details see page 31).

Audible Signal Elements
- Buzzer element
- Siren element
- Vocal element

Optical Signal Elements
- (LED) Permanent light
- LED Permanent light ultrabright
- (LED) Flashing light
- LED EVS element
- LED Blinking light
- LED Rotating light
- LED Permanent light element multicolour

▸ STEP 2
Select the appropriate mounting option for your application.

▸ STEP 3
Select the correct terminal element for your mounting option
(for details see page 43).

Base Mounting


Terminal element with CAGE CLAMP® technology
Order no. **640 800 00**


Screw terminal
Order no. **640 820 00**

NEW

Terminal element M12
Order no. **640 850 55**

Tube Mounting


Terminal element with CAGE CLAMP® technology
Order no. **640 810 00**


Screw terminal
Order no. **640 830 00**

NEW

Terminal element M12
Order no. **640 860 55**

▸ STEP 4
Where appropriate, select a base and the desired tube length (only for tube mounting) (For details see page 67).


Tube with clamp
Order no.
960 000 18


Adaptor for single hole mounting
Order no.
960 000 25


Base with integrated tube
Order no.
975 840 10

Tube Ø 25 mm, all anodized

	Order no.
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

Base for Tube, plastic
Order no. **975 840 90**

Base for Tube, metal
Order no. **975 840 91**

Foldaway Base
Order no. **960 000 30**

Foldaway Base
Order no. **960 009 12**

NEW


Tube Ø 25 mm, plastic, only for Foldaway Base, 45 mm long
Order no. **960 000 31**

▸ STEP 5
Where appropriate, select the bracket and the contact box (for details see page 67).


Contact box for cable exit at side
Order no. **975 840 01**


Bracket for base mounting
Order no. **960 000 02**


Bracket for 1-sided mounting
Order no. **975 840 85**


Bracket for 2-sided mounting
Order no. **975 840 86**

NEW

Corner fixing bracket
Order no. **960 000 41**


Contact box for cable exit at side
Order no. **975 840 01**


Contact box with magnetic base and cable exit at side
Order no. **975 840 04**


Bracket for base mounting with concealed cable entry
Order no. **960 000 14**


Bracket for tube mounting
Order no. **960 000 01**

NEW

Corner fixing bracket
Order no. **960 000 41**

TIP

The Signal Devices Site on the Internet: **www.werma.com**

With new **signal tower configurator** you can put together your own individual signal tower.

WERMA SIGNALTECHNIK

Optical Signal Elements Kombi*SIGN* 71

Kombi*SIGN* signal tower with bracket (accessory)

Base with tube (accessory)

- Signal tower system 70 mm Ø with modular construction
- Improved illumination

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 65.5 mm		
Lens:	PC, transparent		
Socket:	Bayonet, BA15d, for bulbs max. 5 W		
Element seal:	Pre-mounted with each module		
Protection rating:	IP 65		
Permanent light element	12-240 V AC/DC Bulb not included in assembly.		
Life duration:	Dependent upon the bulbs used		
LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	< 30 mA	< 20 mA	< 20 mA
Life duration:	50,000 hrs		
LED Permanent light element ultrabright	24 V DC		
Current consumption:	Max. 195 mA		
Life duration:	Up to 50,000 hrs		
Technical specifications see page 35.			
Flashing light element (Xenon)	24 V DC	115 V AC	230 V AC
Current consumption:	125 mA	22 mA	15 mA
Life duration:	4 x 10^6 flashes		
Reduced for AS-Interface:	80 mA		
Flash frequency:	C. 1 Hz		
LED Flashing light element	24 V DC		
Current consumption:	< 35 mA		
Life duration:	50,000 hrs		
Flash frequency:	C. 1 Hz (Double Flash)		
LED EVS* element	24 V AC/DC		
Current consumption:	350 mA (red/yellow)	250 mA (green/clear/blue)	
Life duration:	50,000 hrs		
* EVS = Enhanced Visibility System			
Technical specifications see page 36.			
LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	25 mA	25 mA	25 mA
Life duration:	50,000 hrs		
Blink frequency:	C. 1 Hz		
LED Rotating light element	24 V AC/DC		
Current consumption:	40 mA		
Life duration:	50,000 hrs		
Rotation frequency:	C. 120 r.p.m.		
LED Permanent light element multicolour	24 V DC		
Life duration:	50.000 h		
Current consumption:	< 120 mA		
Possible colours:	Red, yellow, green, white, blue, violet, turquoise		
Technical specifications see page 37.			

643 X10 55
Class 2

See note on page 347

24 V

PLC

641/644 Optical Signal Elements KombiSIGN 71

(LED) Permanent/Flashing element

Permanent light element, clear with info

LED EVS element

LED element

LED element (multicolour)

ORDER SPECIFICATIONS OPTICAL ELEMENTS:

Permanent light element	12-240 V AC/DC
red	**641 100 00**
green	**641 200 00**
yellow	**641 300 00**
clear	**641 400 00**
blue	**641 500 00**

Bulb not included in assembly. Accessories see page 67.

LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
red	**644 100 75**	**644 100 67**	**644 100 68**
green	**644 200 75**	**644 200 67**	**644 200 68**
yellow	**644 300 75**	**644 300 67**	**644 300 68**
clear	**644 400 75**	**644 400 67**	**644 400 68**
blue	**644 500 75**	**644 500 67**	**644 500 68**

LED Permanent light element ultrabright	24 V DC
red	**644 180 55**
green	**644 280 55**
yellow	**644 380 55**
clear	**644 480 55**
blue	**644 580 55**

Flashing light (Xenon)	24 V DC (ASI)	24 V DC	115 V AC	230 V AC
red	**643 110 55**	**643 100 55**	**643 100 67**	**643 100 68**
green	**643 210 55**	**643 200 55**	**643 200 67**	**643 200 68**
yellow	**643 310 55**	**643 300 55**	**643 300 67**	**643 300 68**
clear	**643 410 55**	**643 400 55**	**643 400 67**	**643 400 68**
blue	**643 510 55**	**643 500 55**	**643 500 67**	**643 500 68**

Compare the prices and advantages of an LED Flashing light

LED Flashing light element	24 V DC
red	**644 120 55**
green	**644 220 55**
yellow	**644 320 55**
clear	**644 420 55**
blue	**644 520 55**

LED EVS element	24 V DC
red	**644 140 55**
green	**644 240 55**
yellow	**644 340 55**
clear	**644 440 55**
blue	**644 540 55**

LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
red	**644 110 75**	**644 110 67**	**644 110 68**
green	**644 210 75**	**644 210 67**	**644 210 68**
yellow	**644 310 75**	**644 310 67**	**644 310 68**
clear	**644 410 75**	**644 410 67**	**644 410 68**
blue	**644 510 75**	**644 510 67**	**644 510 68**

LED Rotating light element	24 V AC/DC
red	**644 130 75**
green	**644 230 75**
yellow	**644 330 75**
clear	**644 430 75**
blue	**644 530 75**

LED Permanent light element multicolour	24 V DC
multicolour	**644 450 55**

Further voltages on request.

TECHNICAL DIAGRAMS: see page 309

WERMA SIGNALTECHNIK

644 LED Permanent Light Element ultrabright for KombiSIGN 71

- Up to 20 times brighter than conventional LED elements
- Extremely good visibility - even in direct sunlight
- Maximum brightness via intelligent LED control

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 65.5 mm
Lens:	PC, transparent
Seal:	Pre-mounted with each element
Number of modules possible:	5, with 2-sided bracket max. 10

Maximum brightness via intelligent LED control

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	Max. 195 mA
red	**644 180 55**
green	**644 280 55**
yellow	**644 380 55**
clear	**644 480 55**
blue	**644 580 55**

ADDITIONAL INFORMATION:

Sophisticated triggering
Thanks to its sophisticated triggering, the innovative LED element "ultrabright" is up to 20 times brighter than conventional LED elements - making it almost certainly the brightest permanent light that the world of signalling technology currently has to offer.

Further information can be found in the chapter "General Information" beginning on page 366.

TECHNICAL DIAGRAMS:

see page 309

The high level of brightness guarantees good visibility - even in direct sunlight

See note on page 347

c UL us · CE · EAC · IP65 · +50°C / -20°C · PLC

644 LED EVS* Element for Kombi*SIGN* 71

- Attention-grabbing flickering light
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect
- For signalling extremely hazardous situations and the need for immediate action

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	70 mm x 65 mm
Lens:	PC, transparent
Seal:	Pre-mounted with each element
Number of modules possible:	5, with 2-sided bracket max. 10

Integrated into the Kombi*SIGN* Signal Towers, the LED EVS* Element generates a highly attention-grabbing signal

ORDER SPECIFICATIONS:

Voltage	24 V DC	24 V DC
Current consumption	350 mA	250 mA
red	**644 140 55**	-
green	-	**644 240 55**
yellow	**644 340 55**	-
clear	-	**644 440 55**
blue	-	**644 540 55**

ADDITIONAL INFORMATION:

evs® enhanced visibility system

*** EVS** = Enhanced Visibility System
Further Information can be found in the chapter "General Information" on page 352.

Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 309

See note on page 347

c UL us | CE | EAC | IP65 | +50°C -20°C | PLC

WERMA SIGNALTECHNIK

LED Permanent Light Element multicolour for Kombi*SIGN* 71

The LED permanent light element multicolour offers a life duration of up to 50,000 hrs

- Seven colours in one beacon
- Multiple status warnings can be signalled by one beacon
- Different colours can be triggered via the pins in the terminal element
- Positive and negative control logic
- The three basic colours (red/yellow/green) can be triggered using only two PLC outputs
- High light intensity

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions Terminal Elements (Ø x Height):	70 mm x 65.5 mm
Lens:	PC, transparent
Light effect:	LED permanent
Possible Colours:	Red, yellow, green, white, blue, violet, turquoise
Seal:	Pre-mounted with each element
Number of modules possible:	Max. 3 (including multicolour element)

7 colours in one beacon: red, yellow, green, white, blue, violet and turquoise

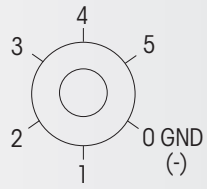
ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	< 120 mA
LED permanent light multicolour	**644 450 55**

ADDITIONAL INFORMATION:

Simple external activation via the pins in the terminal element.

Pin 1	Pin 2	Pin 3	Function
24 V	-	-	Red
-	24 V	-	Green
24 V	24 V	-	Yellow
-	-	24 V	Blue
24 V	24 V	24 V	White
24 V	-	24 V	Violet
-	24 V	24 V	Turquoise



TECHNICAL DIAGRAMS:

see page 309

The Multicolour Element can be combined with up to 2 additional signal elements

See note on page 347

645 Audible Elements KombiSIGN 71

Bracket (accessory)

Three tier signal tower with vocal element and tube with integrated base (accessory)

- Audible element sound output up to 105 dB
- Plays back pre-recorded music files or customised audio files

Life duration up to 5,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	See below		
Lens:	PC		
Element seal:	Pre-mounted with each module		
Protection rating:	IP 65 (Order no. 645 830 55 = IP 40)		
Buzzer element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	25 mA		
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	85 dB		
Number/Tone type:	Continuous or pulse tone		
Siren element	24 V DC		
Current consumption:	150 mA		
Dimensions (Ø x Height):	70 mm x 79 mm		
Sound output:	105 dB		
Number/Tone type:	Continuous tone alternating		
Further Information:	No UL approval		
Multi-functional Siren	24 V AC/DC	115 V AC	230 V AC
Current consumption:	80 mA	40 mA	40 mA
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	100 dB, adjustable sound output		
Number/Tone type:	8 tones adjustable		
Multi-functional Siren, with external control	24 V DC		
Current consumption:	80 mA		
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	100 dB, adjustable sound output		
Number/Tone type:	Number of tones dependent on the number of optical elements		
Further Information:	No UL approval		
Tone triggering:	7 diff. tones can be triggered externally		
Siren element with self-adjusting sound output	24 V DC		
Technical specifications see page 42.			
Vocal element	24 V DC		
Technical specifications see page 40.			
NEW **High output vocal element**	24 V DC		
Further Information:	No UL approval		
Technical specifications see page 41.			

ORDER SPECIFICATIONS AUDIBLE ELEMENTS: see next page

See note on page 347

24 V

WERMA SIGNALTECHNIK

Audible element

Siren element with
self-adjusting sound output

Vocal element
with up to 88 dB

High output vocal element
with up to 102 dB

ORDER SPECIFICATIONS AUDIBLE ELEMENTS:

Buzzer element	24 V AC/DC **645 800 75**	115 V AC **645 800 77**	230 V AC **645 800 68**
Siren element	24 V DC **645 830 55**		
Multi-functional Siren	24 V AC/DC **645 820 75**	115 V AC **645 820 67**	230 V AC **645 820 68**
Multi-functional Siren, with external control	24 V DC **645 850 55**		
Siren element with self-adjusting sound output	24 V DC **645 810 55**		
Vocal element	24 V DC (max. 88 dB) **645 840 55**		
NEW High output vocal element	24 V DC (max. 102 dB) **645 860 55**		

TECHNICAL DIAGRAMS:

see page 309 onwards

645 Vocal Element for Kombi*SIGN* 71

German utility model approved

The vocal element can be combined with up to 4 signal elements

- Plays customer-specific audio files in mp3 format (signal tones, music or spoken text)
- Enables clear instructions to be given in a range of foreign languages
- Outstanding tonal and sound quality
- Easy transfer of audio files and simple operation
- Setting of individual playlists and playback modi possible

Life duration up to 5,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 111 mm
Housing:	PC
Number of signal elements:	Max. 4 additional signal elements possible
Sound output:	Adjustable, up to 88 dB
File Transfer:	Via USB connection and provided software
Possible data format:	Mp3 and wav files
Number of sequences:	15 files can be remotely triggered depending on the number of signal elements used or one sequence with max. 50 files
Suitable for:	Windows 2000 SP 4, Windows XP, Windows Vista, Windows 7
Assembly:	Vocal element, USB connection cable and software

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	< 500 mA
Vocal element	**645 840 55**

TECHNICAL DIAGRAMS:

see page 310

See note on page 347

WERMA SIGNALTECHNIK

Vocal Element for Kombi*SIGN* 71

- 102 dB high output vocal element with excellent tone and sound quality
- Plays customer-specific audio files (signal tones, music and spoken text)
- Easy transfer of audio files and simple operation
- Sound output level can be triggered externally
- Creation of individual playlists and playback modes possible

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (Ø x Height):	125 mm x 118 mm
Housing:	PC/ABS Blend
Lens:	PC
Number of signal elements:	Max. 4 additional signal elements possible
Sound output:	Adjustable, up to 102 dB
File Transfer:	Via USB connection and provided software
Possible data format:	Mp3 and wav files
Number of sequences:	15 files can be remotely triggered depending on the number of signal elements used or one sequence with max. 50 files
Suitable for:	Windows 2000 service pack 4, Windows XP, Windows Vista, Windows 7, Windows 8
Assembly:	Vocal element, USB connection cable and software

The vocal element can be combined with up to 4 signal elements

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	≤ 400 mA
Vocal element	**645 860 55**

ADDITIONAL INFORMATION:

Further installation examples:

To ensure IP protection it is recommended that the vocal element is fitted with the sound outlet facing downwards.

Optimum distribution of sound is thus ensured.

User-friendly software ensures easy transfer of audio files and simple operation

TECHNICAL DIAGRAMS:

see page 310

See note on page 347

645 Siren Element with self-adjusting sound output for Kombi*SIGN* 71

- Automatic sound output adjustment between 80 and 100 dB
- Continual measurement of the ambient noise level
- Sound output is c. 5 dB louder than the background noise level
- Ideal for applications with changing ambient sound levels

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (Ø x Height):	70 mm x 110 mm
Housing:	PC
Tone type:	Pulse tone
Tone frequency:	2.5 KHz
Sound output:	80 dB - max. 100 dB

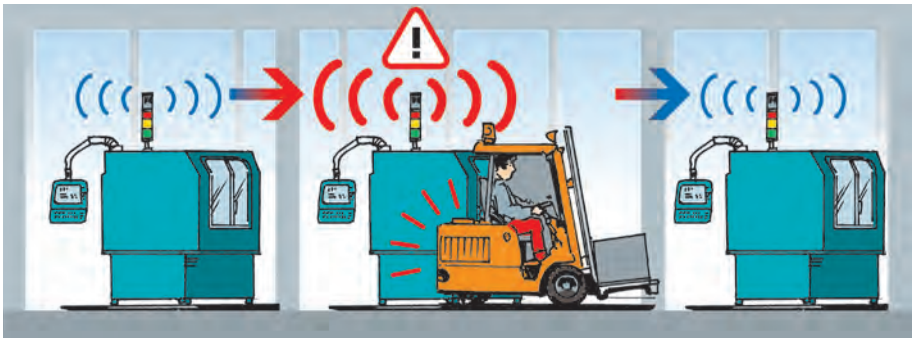
Loud enough yet not disturbing!

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	< 150 mA
Siren element	**645 810 55**

ADDITIONAL INFORMATION:

The siren element adjusts its sound output through continual measurement of the ambient noise level. The emitted tone is c. 5 dB louder than the background noise level. The warning signal can always be heard without being irritatingly loud for people in the sounder's vicinity.



The siren element can be combined with up to 4 signal elements

TECHNICAL DIAGRAMS:

see page 310

See note on page 347

c UL us · CE · EAC · 125 g · IP65 · +50°C -20°C · max100 dB · PLC

WERMA SIGNALTECHNIK

Screw terminal with cap

Terminal element with practical M12 connection socket in base

Direct triggering of the signal tower elements via USB Interface

- **Bayonet locking mechanism enables quick and easy assembly of the signal tower**
- **The ideal solution for every installation**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	See below	
Housing:	Terminal element: PA fibreglass, high-impact Cap: PC	
Fixing:	Base mounting Tube mounting, for tube Ø 25 mm Bracket mounting (accessory)	
Cable entry:	Cable diameter max. 14 mm	
Element seal:	Pre-mounted with each module	
Protection rating:	IP 65	
Number of modules possible:	Max. 5	
	Tube mounting	**Base mounting**
Screw terminal		
Dimensions (Ø x Height):	70 mm x 42,5 mm	70 mm x 42,5 mm
Connection:	Screw terminal max. 2.5 mm²	
Voltage:	12-240 V AC/DC Incl. cap	12-240 V AC/DC Incl. cap and seal
CAGE CLAMP® technology (see picture page 44)		
Dimensions (Ø x Height):	70 mm x 42,5 mm	70 mm x 42,5 mm
Connection:	CAGE CLAMP® technology max. 2.5 mm²	
Voltage:	12-240 V AC/DC Incl. cap	12-240 V AC/DC Incl. cap and seal
NEW **Terminal element M12**		
Dimensions (Ø x Height):	70 mm x 56 mm	70 mm x 50 mm
Connection:	M12 connector (8 pole)	
Voltage:	12-24 V DC	12-24 V DC
Current carrying capacity:	≤ 2 A Incl. cap No UL approval	≤ 2 A Incl. cap and seal No UL approval
Terminal element with USB Interface	No UL approval	-
Dimensions (Ø x Height):	70 mm x 36 mm	
Fixing:	Tube mounting (accessory)	
Connection:	Via USB	
Voltage:	Terminal element: Via USB (5 V DC)	
Voltage:	24 V DC	
Current carrying cap. ∑ Imax:	90 mA at 24 V	
Assembly:	Assembly includes installation software, drivers, handbook and USB connection cable (length 1.8 m)	
Suitable for:	Windows 2000 service pack 4, Windows XP, Windows Vista or Windows 7. Also for Windows Server und Windows CE operating systems	

- Direct triggering of signal tower elements via USB Interface
- Actuation via DLL (Dynamic Link Library) or VCP (Virtual-COM-Port)
- Simple integration into any customer-specific software
- No additional power supply or Hardware necessary
- Up to five signal towers with a maximum of five elements each can be connected

ORDER SPECIFICATIONS: see next page

640 8X0 00
x = 0,1,2,3

See note on page 347

ORDER SPECIFICATIONS:

	Tube mounting	Base mounting
Screw terminal	640 830 00	640 820 00
CAGE CLAMP®	640 810 00	640 800 00
NEW Terminal element M12	640 860 55	640 850 55
Terminal element with USB interface	640 840 00	-

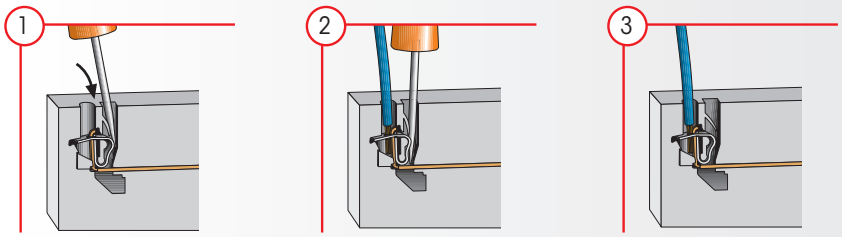
ACCESSORIES:

Base with integrated tube	975 840 10
Base for tube (metal)	975 840 91
Tube Ø 25 mm, Aluminium eloxiert	
100 mm long	975 845 10
250 mm long	975 840 25
400 mm long	975 840 40
600 mm long	975 840 60
800 mm long	975 840 80
1000 mm long	975 840 03

Suitable accessories can be found on page 67.

ADDITIONAL INFORMATION:

Terminal elements with CAGE CLAMP® technology enable leads to be quickly and easily wired, guaranteeing a secure and reliable contact.



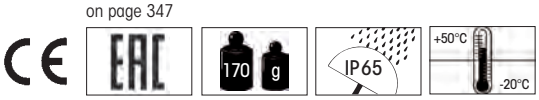
1. Insert screwdriver at a slight angle into opening as far as possible.
2. Open spring-loaded clamp with the help of the screwdriver and insert wire as far as possible
3. Remove screwdriver - the wire is firmly clamped.

CAGE CLAMP® is a registered trademark of WAGO Kontakttechnik GmbH.

TECHNICAL DIAGRAMS:

see page 308

See note
on page 347



AS-Interface Element for Kombi*SIGN* 71

Cable not included in assembly

LEDs display the current status

- LEDs indicate current status
- 31 or 62 addresses
- Available with standard or A/B technology
- Voltage supply switchable from internal bus supply to additional external voltage supply
- With addressing socket

TECHNICAL SPECIFICATIONS:

	Standard Slave	A/B-Slave
Number of addresses:	Max. 31	Max. 62
Number of signal elements:	Max. 4	Max. 3
IO-Code:	8_{HEX}	8_{HEX}
ID-Code:	F_{HEX}	A_{HEX}
ID2-Code:	N/A	E_{HEX}
Outputs:	4 semiconductor relays	3 semiconductor relays
Approved in accordance with:	Spec. V 3.0	Spec. V 3.0

Specif. Power supply	
AS-Interface Element:	Via bus conduction
Operating voltage:	18.5 V … 31.6 V according to the AS-Interface specification
Reverse battery protection:	Integrated
Watchdog:	Integrated
Additional external voltage:	24 V DC

	With internal add. voltage	With external add. voltage
Current carrying cap. Σ Imax:	200 mA	200 mA per signal element
Current consumption max:	210 mA	≤ 50 mA
Voltage at signal element:	20 V … 30 V DC	24 V +/- 10%
Short circuit/overload protection:	Integrated	Pre-fuse M 1.6 A

ORDER SPECIFICATIONS:

AS-Interface Element	Standard Slave	A/B-Slave
	646 830 55	**646 810 55**

ADDITIONAL INFORMATION:

The Kombi*SIGN* Signal Tower 71 with AS-Interface Element are capable of total communication: Through simple integration of an AS-Interface Element the actuators are connected to the networking system Actuator-Sensor-Interface - this considerably reduces complex wiring. The necessary power supply (supply via bus or external) can be selected with a switch. This element is mounted as the first tier of the individual signal tower directly on top of the terminal element. (Further Information see page 351).

TECHNICAL DIAGRAMS:

see page 311

Class 2 | See note on page 347 | Standard Slave | A/B-Slave

Approval No. 66301 | Approval No. 66202 | 77 g | IP65 | +50°C / -20°C

Kombi*SIGN* 70 Signal Tower

The Highlights for Kombi*SIGN* 70

843 LED Permanent light element ultrabright

- Up to 20 times brighter than conventional LED elements
- Maximum brightness via intelligent LED control

See page 50

843 LED EVS element

- Attention-grabbing flickering light
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect

See page 51

843 LED Permanent light element multicolour

- 7 colours in one beacon
- Multiple status warnings can be signalled by one beacon
- High light intensity

See page 52

NEW

844 Vocal element

- 102 dB loud vocal element with excellent tone and sound quality
- Sound output level can be triggered externally

See page 55 + 56

844 Siren element with self-adjusting sound output

- Sound output is automatically adjusted to the background noise level
- Warning tone can be heard without being irritatingly loud

See page 57

NEW

840 Terminal element M12

- Quick and easy installation
- With practical M12 connector

See Seite 58

840 AS-Interface element

- LEDs indicate current status
- 31 or 62 addresses
- Available with standard or A/B technology

See page 59

Machine Data Collection Systems (MDC Systems)

- Wireless based machine data collection
- Monitoring and counting system for multiple machines

See Page 12

Manual Call Systems

- Improve the efficiency of production processes your operation
- Indicate status conditions and problems at the touch of a button

See Page 20

Further Information

Further Information and applications for "Kombi*SIGN* Signal Towers" can be found in the chapter "Systems" beginning on page 11.

WERMA SIGNALTECHNIK

This is how you can assemble your Kombi*SIGN* 70 signal tower

▸ STEP 1
Select the required optical or audible elements in the correct voltage.

Many Kombi*SIGN* highlights are also available (for details see page 46).

Audible Signal Elements
- Buzzer element
- Siren element
- Vocal element

Optical Signal Elements
- (LED) Permanent light
- LED Permanent light ultrabright
- (LED) Flashing light
- LED EVS element
- LED Blinking light
- LED Rotating light
- LED Permanent light element multicolour

▸ STEP 2
Select the appropriate mounting option for your application.

▸ STEP 3
Select the correct terminal element for your mounting option.

Base Mounting

Terminal element
for base mounting
Order no. **840 085 00**

Terminal element M12
Order no. **840 850 55**

Tube Mounting

Terminal element
for tube mounting
Order no. **840 080 00**

Terminal element M12
Order no. **840 860 55**

▸ STEP 4
Where appropriate, select a base and the desired length (only for tube mounting).

Tube with
clamp
Order no.
960 000 18

Adaptor for
single hole
mounting
Order no.
960 000 25

Base with
integrated
tube
Order no.
975 840 10

Tube Ø 25 mm, all anodized

	Order no.
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

Base for Tube, plastic
Order no. **975 840 90**

Base for Tube, metal
Order no. **975 840 91**

Foldaway Base
Order no. **960 000 30**

Foldaway Base
Order no. **960 009 12**

NEW

Tube Ø 25 mm, plastic, only for
Foldaway Base, 45 mm long
Order no. **960 000 31**

▸ STEP 5
Where appropriate, select the bracket and the contact box.

Contact box for cable exit at side
Order no. **975 840 01**

Bracket for base mounting
Order no. **960 000 02**

Bracket for 1-sided mounting
Order no. **975 840 85**

Bracket for 2-sided mounting
Order no. **975 840 86**

NEW

Corner fixing bracket
Order no. **960 000 41**

Contact box for cable exit at side
Order no. **975 840 01**

Contact box with magnetic base and
cable exit at side
Order no. **975 840 04**

Bracket for base mounting
with concealed cable entry
Order no. **960 000 14**

Bracket for tube mounting
Order no. **960 000 01**

NEW

Corner fixing bracket
Order no. **960 000 41**

TIP

The Signal Devices Site on the Internet: **www.werma.com**

With our new **signal tower configurator** you can put together your own individual signal tower.

840/843 Optical Signal Elements for KombiSIGN 70

Bracket (accessory)

Tube mounting (accessory)

- **Clear signalling, even in unfavourable light conditions**
- **LED light elements have an extremely long life and low current consumption**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 65.5 mm		
Lens:	PC, transparent		
Socket:	Bayonet, BA15d, for bulb max. 5 W		
Element seal:	Pre-mounted with each module		
Protection rating:	IP 54		
Permanent light element	12-240 V AC/DC		
	Bulb not included in assembly		
Life duration:	Dependent upon the bulbs used		
LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	< 30 mA	< 20 mA	< 20 mA
Life duration:	50,000 hrs		
LED Permanent light element ultrabright	24 V DC		
Current consumption:	Max. 195 mA		
Life duration:	Up to 50,000 hrs		
Technical specifications see page 51.			
Flashing light element (Xenon)	24 V DC	115 V AC	230 V AC
Current consumption:	125 mA	22 mA	15 mA
Life duration:	4 x 10^6 flashes		
Reduced for AS-Interface:	80 mA		
Flash frequency:	C. 1 Hz		
LED Flashing light element	24 V DC		
Current consumption:	< 35 mA		
Life duration:	50,000 hrs		
Flash frequency:	C. 1 Hz (Double Flash)		
LED EVS* element	24 V DC		
Current consumption:	350 mA (red/yellow)	250 mA (green/clear/blue)	
Life duration:	50,000 hrs		
* EVS = Enhanced Visibility System			
Technical specifications see page 51.			
LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	25 mA	25 mA	25 mA
Life duration:	50,000 hrs		
Blink frequency:	C. 1 Hz		
LED Rotating light element	24 V AC/DC		
Current consumption:	40 mA		
Life duration:	50,000 hrs		
Rotation frequency:	C. 120 r.p.m.		
LED Permanent Light Element multicolour	24 V DC		
Life duration:	50,000 hrs		
Current consumption:	< 120 mA		
Possible colours:	Red, yellow, green, white, blue, violet, turquoise		
Technical specifications see page 52.			

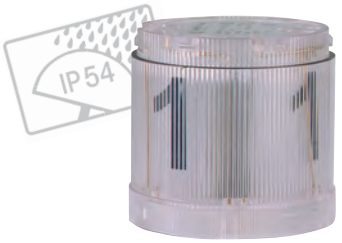
842 X10 55
Class 2

See note on page 347

24 V

WERMA SIGNALTECHNIK

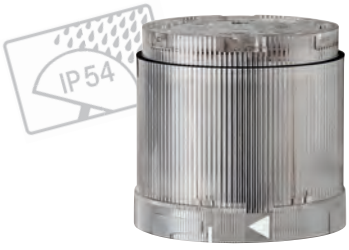
(LED) Permanent/ Flashing light element



Permanent light element, clear with info

LED EVS element

LED element



LED element multicolour

ORDER SPECIFICATIONS OPTICAL ELEMENTS:

Permanent light element	12-240 V AC/DC
red	**840 100 00**
green	**840 200 00**
yellow	**840 300 00**
clear	**840 400 00**
blue	**840 500 00**

Bulb not included in assembly. Accessories see page 67.

LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
red	**843 100 55**	**843 100 67**	**843 100 68**
green	**843 200 55**	**843 200 67**	**843 200 68**
yellow	**843 300 55**	**843 300 67**	**843 300 68**
clear	**843 400 55**	**843 400 67**	**843 400 68**
blue	**843 500 55**	**843 500 67**	**843 500 68**

LED Permanent light element ultrabright	24 V DC
red	**843 180 55**
green	**843 280 55**
yellow	**843 380 55**
clear	**843 480 55**
blue	**843 580 55**

Flashing light (Xenon)	24 V DC (ASI)	24 V DC	115 V AC	230 V AC
red	**842 110 55**	**842 100 55**	**842 100 67**	**842 100 68**
green	**842 210 55**	**842 200 55**	**842 200 67**	**842 200 68**
yellow	**842 310 55**	**842 300 55**	**842 300 67**	**842 300 68**
clear	**842 410 55**	**842 400 55**	**842 400 67**	**842 400 68**
blue	**842 510 55**	**842 500 55**	**842 500 67**	**842 500 68**

Compare the prices and advantages of an LED Flashing light

LED Flashing light element	24 V DC
red	**843 120 55**
green	**843 220 55**
yellow	**843 320 55**
clear	**843 420 55**
blue	**843 520 55**

LED EVS element	24 V DC
red	**843 140 55**
green	**843 240 55**
yellow	**843 340 55**
clear	**843 440 55**
blue	**843 540 55**

LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
red	**843 110 55**	**843 110 67**	**843 110 68**
green	**843 210 55**	**843 210 67**	**843 210 68**
yellow	**843 310 55**	**843 310 67**	**843 310 68**
clear	**843 410 55**	**843 410 67**	**843 410 68**
blue	**843 510 55**	**843 510 67**	**843 510 68**

LED Rotating light element	24 V AC/DC
red	**843 130 55**
green	**843 230 55**
yellow	**843 330 55**
clear	**843 430 55**
blue	**843 530 55**

LED Permanent light element multicolour	24 V DC
multicolour	**843 450 55**

Further voltages on request.

TECHNICAL DIAGRAMS:

see page 318 onwards

843

LED Permanent Light Element ultrabright for KombiSIGN 70

- Up to 20 times brighter than conventional LED elements
- Extremely good visibility - even in direct sunlight
- Shock-proof and vibration-resistant
- Maximum brightness via intelligent LED control
- Low current consumption and maintenance-free

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 65.5 mm
Lens:	PC, transparent
Seal:	Pre-mounted with each element

Maximum brightness via intelligent LED control

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	Max. 195 mA
red	**843 180 55**
green	**843 280 55**
yellow	**843 380 55**
clear	**843 480 55**
blue	**843 580 55**

ADDITIONAL INFORMATION:

Sophisticated triggering
Thanks to its sophisticated triggering, the innovative LED element "ultrabright" is up to 20 times brighter than conventional LED elements - making it almost certainly the brightest permanent light that the world of signalling technology currently has to offer.

Further Information can be found in the chapter "General Information" beginning on page 354.

TECHNICAL DIAGRAMS:

see page 319

The high level of brightness guarantees good visibility - even in direct sunlight

Class 2

See note on page 347

IP54 +50°C -20°C PLC

WERMA SIGNALTECHNIK

843 LED EVS* Element for Kombi*SIGN* 70

Patent approved

- Attention-grabbing flickering light
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect
- For signalling extremely hazardous situations and the need for immediate action

Integrated into the Kombi*SIGN* Signal Towers, the EVS* LED Element generates a highly attention-grabbing signal

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	70 mm x 65.5 mm
Lens:	PC, transparent
Seal:	Pre-mounted with each element
Number of modules possible:	5, with 2-sided bracket max. 10

ORDER SPECIFICATIONS:

Voltage	24 V DC	24 V DC
Current consumption	350 mA	250 mA
red	**843 140 55**	-
green	-	**843 240 55**
yellow	**843 340 55**	-
clear	-	**843 440 55**
blue	-	**843 540 55**

ADDITIONAL INFORMATION:

evs® enhanced visibility system

* **EVS** = Enhanced Visibility System or Enhanced Visibility System
Further Information can be found in the chapter "General Information" on page 352.

Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 319

Class 2

See note on page 347

c UL us CE EAC IP54 +50°C -20°C PLC

843

LED Permanent Light Element multicolour for Kombi*SIGN* 70

The LED permanent light element multicolour offers a life duration of up to 50,000 hrs

- Seven colours in one beacon
- Multiple status warnings can be signalled by one beacon
- Different colours can be triggered via the pins in the terminal element
- Positive and negative control logic
- The three basic colours (red/ yellow/green) can be triggered using only two PLC outputs
- High light intensity

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 65.5 mm
Lens:	PC, transparent
Colours:	LED permanent
Possible Colours:	Red, yellow, green, white, blue, violet, turquoise
Seal:	Pre-mounted with each element
Number of modules possible:	Max. 3 (including Multicolour element)

ORDER SPECIFICATIONS:

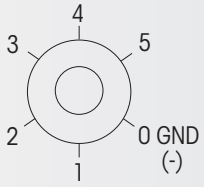
Voltage	24 V DC
Current consumption	< 120 mA
LED permanent light multicolour	**843 450 55**

7 colours in one beacon: red, yellow, green, white, blue, violet and turquoise

ADDITIONAL INFORMATION:

Simple external activation via the pins in the terminal element.

Pin 1	Pin 2	Pin 3	Function
24 V	-	-	Red
-	24 V	-	Green
24 V	24 V	-	Yellow
-	-	24 V	Blue
24 V	24 V	24 V	White
24 V	-	24 V	Violet
-	24 V	24 V	Turquoise



TECHNICAL DIAGRAMS:

see page 319

The Multicolour Element can be combined with up to 2 additional signal elements

See note on page 347

WERMA SIGNALTECHNIK

Audible Elements for Kombi*SIGN* 70

Bracket (accessory)

Tube mounting (accessory)

- **Audible element sound output up to 105 dB**

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (Ø x Height):	see below		
Lens:	PC/ABS		
Element seal:	Pre-mounted with each module		
Protection rating:	IP 54 (Order no. 844 123 55 = IP 40)		
Buzzer element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	25 mA		
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	85 dB		
Number/Tone type:	Continuous or pulse tone		
Siren element	24 V DC		
Current consumption:	150 mA		
Dimensions (Ø x Height):	70 mm x 79 mm		
Sound output:	105 dB		
Number/Tone type:	Continuous tone alternating		
Further Information:	No UL approval		
Multi-functional Siren	24 V AC/DC	115 V AC	230 V AC
Current consumption:	80 mA	40 mA	40 mA
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	100 dB, adjustable sound output		
Number/Tone type:	8 different tones		
Multi-functional Siren, with external control	24 V DC		
Current consumption:	80 mA		
Dimensions (Ø x Height):	70 mm x 72 mm		
Sound output:	100 dB, adjustable sound output		
Number/Tone type:	Number of tones dependent on the number of optical elements		
Tone triggering:	7 diff. tones can be triggered externally		
Siren element with self-adjusting sound output	24 V DC		
Technical specifications see page 57.			
Vocal element	24 V DC (max. 88 dB)		
Technical specifications see page 55.			
NEW **High output vocal element**	24 V DC (max. 102 dB)		
Further Information:	No UL approval		
Technical specifications see page 56.			

ORDER SPECIFICATIONS AUDIBLE ELEMENTS:

see next page

See note on page 347

24 V

844 Audible Elements KombiSIGN 70

Siren element
844 123 55

Vocal element
with up to 88 dB

High output vocal element
with up to 102 dB

ORDER SPECIFICATIONS AUDIBLE ELEMENTS:

Buzzer element	24 V AC/DC **844 118 55**	115 V AC **844 118 67**	230 V AC **844 118 68**
Siren element	24 V DC **844 123 55**		
Multi-functional Siren	24 V AC/DC **844 126 55**	115 V AC **844 126 67**	230 V AC **844 126 68**
Multi-functional Siren, with external control	24 V DC **844 126 95**		
Siren element with self-adjusting sound output	24 V DC **844 810 55**		
Vocal element	24 V DC (max. 88 dB) **844 840 55**		
NEW High output vocal element	24 V DC (max. 102 dB) **844 860 55**		

TECHNICAL DIAGRAMS:

see page 319 onwards

WERMA SIGNALTECHNIK

Vocal Element for Kombi*SIGN* 70

German utility model approved

The vocal element can be combined with up to 4 signal elements

- Plays customer-specific audio files in mp3 format (signal tones, music or spoken text)
- Enables clear instructions to be given in a range of foreign languages
- Outstanding tonal and sound quality
- Easy transfer of audio files and simple operation
- Setting of individual playlists and playback modi possible

Life duration up to 5,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 110 mm
Material:	PC
Number of signal elements:	Max. 4 additional signal elements possible
Sound output:	Adjustable, up to 88 dB
File Transfer:	Via USB connection and provided software
Possible data format:	Mp3 and wav files
Number of sequences:	15 files can be remotely triggered depending on the number of signal elements used or one sequence with max. 50 files
Suitable for:	Windows 2000 service pack 4, Windows XP, Windows Vista, Windows 7
Assembly:	Vocal Element, USB connection cable and software

ORDER SPECIFICATIONS:

Vocal element	24 V DC
Current consumption	< 500 mA
Vocal element	**844 840 55**

TECHNICAL DIAGRAMS:

see page 319

See note on page 347

844 Vocal Element for KombiSIGN 70

- 102 dB high output vocal element with excellent tone and sound quality
- Plays customer-specific audio files (signal tones, music and spoken text)
- Easy transfer of audio files and simple operation
- Sound output level can be triggered externally
- Creation of individual playlists and playback modes possible

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (Ø x Height):	125 mm x 118 mm
Housing:	PC/ABS Blend
Lens:	PC
Number of signal elements:	Max. 4 additional signal elements possible
Sound output:	Adjustable, up to 102 dB
File Transfer:	Via USB connection and provided software
Possible data format:	Mp3 and wav files
Number of sequences:	15 files can be remotely triggered depending on the number of signal elements used or one sequence with max. 50 files.
Suitable for:	Windows 2000 service pack 4, Windows XP, Windows Vista, Windows 7, Windows 8
Assembly:	Vocal element, USB connection cable and software

The vocal element can be combined with up to 4 signal elements

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	≤ 400 mA
Vocal element	**844 860 55**

ADDITIONAL INFORMATION:

Further installation examples:

To ensure IP protection it is recommended that the vocal element is fitted with the sound outlet facing downwards.

Optimum distribution of sound is thus ensured.

User-friendly software ensures easy transfer of audio files and simple operation

TECHNICAL DIAGRAMS:

see page 320

See note on page 347

WERMA SIGNALTECHNIK

844 Siren Element with self-adjusting sound output for Kombi*SIGN* 70

- Automatic sound output adjustment between 80 and 100 dB
- Sound output is c. 5 dB louder than the background noise level
- Continual measurement of the ambient noise level
- Ideal for applications with changing ambient sound levels

Life duration up to 5,000 hrs

Loud enough yet not disturbing!

TECHNICAL SPECIFICATIONS:

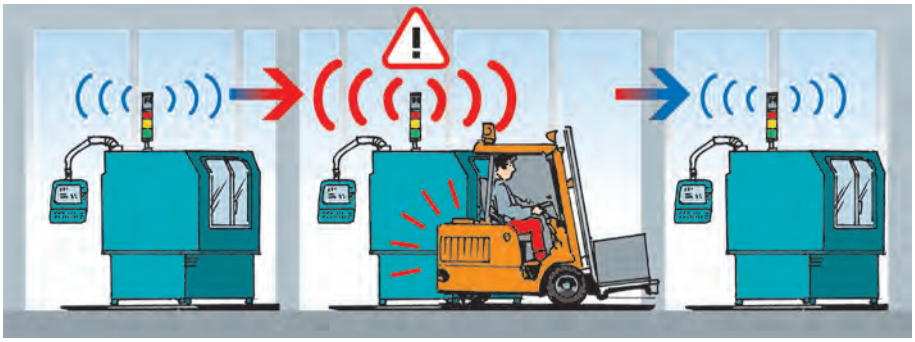
Dimensions (Ø x Height):	70 mm x 110 mm
Housing:	PC
Tone type:	Pulse tone
Tone frequency:	2.5 KHz
Sound output:	80 dB - max. 100 dB

ORDER SPECIFICATIONS:

Voltage:	24 V DC
Current consumption:	< 150 mA
	844 810 55

ADDITIONAL INFORMATION:

The siren element adjusts its sound output through continual measurement of the ambient noise level. The emitted tone is c. 5 dB louder than the background noise level. The warning signal can always be heard without being irritatingly loud for people in the sounder's vicinity.



TECHNICAL DIAGRAMS:

see page 319

See note on page 347

CE EAC 125 g IP54 +50°C -20°C max100 dB PLC

840 Terminal Elements for KombiSIGN 70

Terminal element with cap

- Bayonet locking mechanism enables quick and easy assembly of the signal tower
- The ideal solution for every installation

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	See below
Lens:	Terminal element: PA-GF, high-impact Cap: PC
Fixing:	Base mounting Tube mounting, for tube Ø 25 mm Bracket mounting (accessory)
Cable entry:	Cable diameter max. 14 mm
Element seal:	Pre-mounted with each module
Protection rating:	IP 54 (with cap)
Number of modules possible:	Max. 5

	Tube mounting	Base mounting
Screw terminal		
Dimensions (Ø x Height):	70 mm x 42,5 mm	70 mm x 42,5 mm
Connection:	Screw terminal max. 2.5 mm²	
Voltage:	12-240 V AC/DC Incl. cap	12-240 V AC/DC Incl. cap and seal

NEW **Terminal element M12**		
Dimensions (Ø x Height):	70 mm x 56 mm	70 mm x 50 mm
Connection:	M12 connector (8 pole)	M12 connector (8 pole)
Voltage:	12-24 V DC	12-24 V DC
Current carrying capacity:	≤ 2 A Incl. cap No UL approval	≤ 2 A Incl. cap and seal No UL approval

Terminal element with practical M12 connection socket in base

ORDER SPECIFICATIONS TERMINAL ELEMENTS:

	Tube mounting	Base mounting
Screw terminal	**840 080 00**	**840 085 00**
NEW Terminal element M12	**840 860 55**	**840 850 55**

ACCESSORIES:

Suitable accessories can be found on page 67.

TECHNICAL DIAGRAMS:

see page 318

840 08X 00

See note on page 347

WERMA SIGNALTECHNIK

AS-Interface Element for Kombi*SIGN* 70

Cable not included in assembly

LEDs display the current status

- LEDs indicate current status
- 31 or 62 addresses
- Available with standard or A/B technology
- Voltage supply switchable from internal bus supply to additional external voltage supply
- With addressing socket

TECHNICAL SPECIFICATIONS:

	Standard Slave	A/B-Slave
Number of addresses:	Max. 31	Max. 62
Number of signal elements:	Max. 4	Max. 3
IO-Code:	8_{Hex}	8_{Hex}
ID-Code:	F_{Hex}	A_{Hex}
ID2-Code:	N/A	E_{Hex}
Outputs:	4 semiconductor relays	3 semiconductor relays
Approved in accordance with:	Spec. V 3.0	Spec. V 3.0

Specif. Power supply		
AS-Interface Element:	Via bus conduction	
Operating voltage:	18.5 V … 31.6 V according to the AS-Interface specification	
Reverse battery protection:	Integrated	
Watchdog:	Integrated	
Additional external voltage:	24 V DC	

	With internal add. voltage	**With external add. voltage**
Current carrying cap. Σ Imax:	200 mA	200 mA per signal element
Current consumption max:	210 mA	50 mA
Voltage at signal element:	20 V ... 30 V DC	24 V +/- 10%
Short circuit/overload protection:	Integrated	Pre-fuse M 1.6 A

ORDER SPECIFICATIONS:

AS-Interface Element	Standard Slave	A/B-Slave
	840 830 55	**840 810 55**

ADDITIONAL INFORMATION:

The Kombi*SIGN* Signal Tower 70 with AS-Interface Element are capable of total communication: Through simple integration of an AS-Interface Element the actuators are connected to the networking system Actuator-Sensor-Interface - this considerably reduces complex wiring.

The necessary power supply (supply via bus or external) can be selected with a switch. This element is mounted as the first tier of the individual signal tower directly on top of the terminal element. (Further Information see page 351).

TECHNICAL DIAGRAMS:

see page 318

Class 2 · See note on page 347 · Standard Slave · A/B-Slave

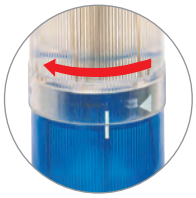
Approval No. 66301 · Approval No. 66202 · 77 g · IP54 · +50°C · -20°C

Signal Tower KombiSIGN 50

Simple operation thanks to bayonet mechanism

WERMA was the first signal beacon manufacturer to offer a bayonet mechanism allowing elements to be mechanically and electrically connected within seconds.

- Simple mounting and removal of the elements
- New combinations at the twist of a hand
- Tool-free bulb change



Signals to combine - At the twist of a hand

- Signal elements in every common voltage
- Modular system allows combination as required
- Protection rating IP 54
- LED technology ensures even better visibility

WERMA SIGNALTECHNIK

This is how you can assemble your Kombi*SIGN* 50 signal tower

▸ STEP 1
Select the required optical or audible elements in the correct voltage.

Audible Signal Elements
- Buzzer element

Optical Signal Elements
- Permanent light
- LED Permanent light
- LED Flashing light
- LED Blinking light

▸ STEP 2
Select the terminal element.

Single hole Mounting

NEW

Terminal element

Order no.
845 000 00

NEW

Terminal element with CAGE CLAMP® technology for single hole mounting

Order no.
845 010 00

▸ STEP 3
Select the appropriate mounting option for your application.

▸ STEP 4
Select the appropriate accessory for your mounting option.

Base/Wall Mounting

Bracket for wall mounting

Order no.
975 845 02

Base for surface mounting, incl. rubber seal

Order no.
975 845 01

Tube Mounting

Tube Ø 25 mm, Aluminium

	Order no.
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

Base for tube, plastic
Order no. **975 840 90**

Base for tube, metal
Order no. **975 840 91**

Foldaway base
Order no. **960 000 30**

Foldaway base
Order no. **960 009 12**

NEW

▸ STEP 5
Where appropriate, select the bracket and the contact box.

TIP

The Signal Devices Site on the Internet: **www.werma.com**

With our new **signal tower configurator** you can put together your own individual signal tower.

Contact box for cable exit at side

Order no.
975 840 01

Contact box with magnetic base and cable exit at side

Order no.
975 840 04

Bracket for base mounting with concealed cable entry

Order no.
960 000 14

Bracket for base mounting

Order no.
960 000 01

NEW

Corner fixing bracket

Order no.
960 000 41

846/848 Optical Signal Elements KombiSIGN 50

Tube mounting (accessory)

Bracket (accessory)

Base mounting (accessory)

- **Clear signalling, even in unfavourable light conditions**
- **LED light elements have an extremely long life and low current consumption**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	52 mm x 67 mm		
Lens:	PC, transparent		
Protection rating:	IP 54		
Number of modules possible:	Max. 4		
Permanent light element	12-240 V AC/DC		
	Bulb not included in assembly		
Socket:	Bayonet, BA15d, for bulb max. 5 W		
Life duration:	Dependent upon the bulbs used		
LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	45 mA	25 mA	25 mA
Life duration:	< 50,000 hrs		
LED Flashing light element			
Current consumption:	Red, yellow	Green, clear, blue	
	45 mA	40 mA	
Life duration:	< 50,000 hrs		
Blink frequency:	C. 1 Hz		
LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
Current consumption:	25 mA	25 mA	25 mA
Life duration:	< 50,000 hrs		
Blink frequency:	C. 1 Hz		

ORDER SPECIFICATIONS OPTICAL ELEMENTS:

see next page

See note on page 347

24 V

IP54 +50°C -20°C PLC

WERMA SIGNALTECHNIK

Permanent light element

LED element

ORDER SPECIFICATIONS OPTICAL ELEMENTS:

Permanent light element	12-240 V AC/DC
red	**846 100 00**
green	**846 200 00**
yellow	**846 300 00**
clear	**846 400 00**
blue	**846 500 00**

Bulb not included in assembly. Accessories see page 67.

LED Permanent light element	24 V AC/DC	115 V AC	230 V AC
red	**848 100 55**	**848 100 67**	**848 100 68**
green	**848 200 55**	**848 200 67**	**848 200 68**
yellow	**848 300 55**	**848 300 67**	**848 300 68**
clear	**848 400 55**	**848 400 67**	**848 400 68**
blue	**848 500 55**	**848 500 67**	**848 500 68**

LED Flashing light element	24 V DC
red	**848 120 55**
green	**848 220 55**
yellow	**848 320 55**
clear	**848 420 55**
blue	**848 520 55**

Life duration
up to 50,000 hrs

LED Blinking light element	24 V AC/DC	115 V AC	230 V AC
red	**848 110 75**	**848 110 67**	**848 110 68**
green	**848 210 75**	**848 210 67**	**848 210 68**
yellow	**848 310 75**	**848 310 67**	**848 310 68**
clear	**848 410 75**	**848 410 67**	**848 410 68**
blue	**848 510 75**	**848 510 67**	**848 510 68**

TECHNICAL DIAGRAMS:

see page 320 onwards

Audible Elements for Kombi*SIGN* 50

- Buzzer with up to 80 dB
- Optional continuous or pulse tone

Buzzer element

Tube mounting (accessory)

Base mounting (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	52 mm x 72 mm
Lens:	PC/ABS-Blend
Protection rating:	IP 54
Number of modules possible:	Max. 4
Sound output:	80 dB
Number/Tone type:	Continuous or pulse tone, adjustable

ORDER SPECIFICATIONS AUDIBLE ELEMENT:

Voltage	24 V AC/DC	115 V AC/DC	230 V AC
Current consumption	Max. 25 mA	Max. 25 mA	Max. 25 mA
Buzzer element	**849 000 75**	**849 000 77**	**849 000 68**

TECHNICAL DIAGRAMS:

see page 320 onwards

See note on page 347

24 V

WERMA SIGNALTECHNIK

Screw terminal with cap

- Bayonet locking mechanism enables quick and easy assembly of the signal tower
- The ideal solution for every installation

TECHNICAL SPECIFICATIONS:

Terminal element	
Dimensions (Ø x Height):	52 mm x 65 mm
Material:	Terminal element: PA + PC/ABS Cap: PC
Fixing:	Tube mounting, for tube Ø 25 mm Single hole mounting, Base and bracket mounting (accessory)
Connection:	Screw terminal max. 1.5 mm²
Cable entry:	Cable diameter max. 9.5 mm
Terminal element with CAGE CLAMP® technology	
Dimensions (Ø x Height):	52 mm x 65 mm
Material:	Terminal element: PA + PC/ABS Cap: PC
Fixing:	Tube mounting, for tube Ø 25 mm Base mounting, Single hole mounting and bracket mounting (accessory)
Connection:	CAGE CLAMP® technology max. 1.5 mm²
Cable entry:	Cable diameter max. 9.5 mm

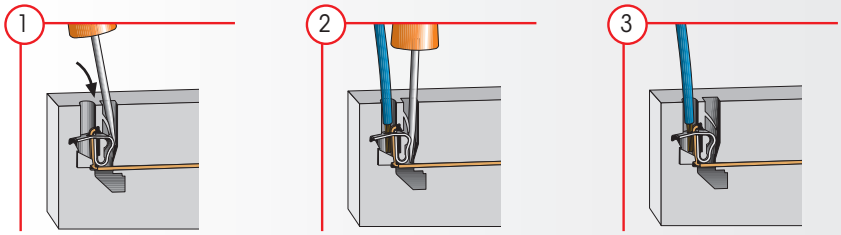
ORDER SPECIFICATIONS TERMINAL ELEMENTS:

Terminal element incl. cap, rubber seal and nut	**845 000 00**
Terminal element with CAGE CLAMP® incl. cap, rubber seal and nut	**845 010 00**

Terminal element CAGE CLAMP® Technologie with cap

ADDITIONAL INFORMATION:

Terminal elements with CAGE CLAMP® technology enable leads to be quickly and easily wired, guaranteeing a secure and reliable contact.



1 Insert screwdriver at a slight angle into opening as far as possible.

2 Open spring-loaded clamp with the help of the screwdriver and insert wire as far as possible.

3 Remove screwdriver - the wire is firmly clamped.

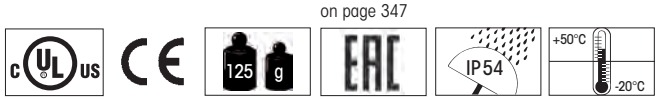
CAGE CLAMP® is a registered trademark of WAGO Kontakttechnik GmbH.

ACCESSORIES:

Suitable accessories can be found on page 67.

TECHNICAL DIAGRAMS: see page 320

See note on page 347



845 AS-Interface Element for Kombi*SIGN* 50

Cable not included in assembly

- Available with standard technology for 31 adresses

TECHNICAL SPECIFICATIONS:

	AS-Interface Element with additional external voltage
Number of adresses:	Max. 32
Number of signal elements:	Max. 4
IO-Code:	8_{Hex}
ID-Code:	F_{Hex}
ID2-Code:	N/A
Power supply:	Via bus conduction
Operating voltage:	18.5 V ... 31.6 V
Current consumption Imax:	50 mA
Polarity reversal protection:	Integrated
Watchdog:	Integrated
Outputs:	4, relays
On-load voltage:	Additional external voltage:
	10 V...30 V DC
	10 V...230 V AC
Current carrying cap. Σ Imax:	1.5 A
Short circuit/overload pro.:	Fuse M 1.6 A

ADDITIONAL INFORMATION:

The Kombi*SIGN* 50 Signal Tower with AS-Interface Element is capable of total communication: Through simple integration of an AS-Interface Element the actuators are connected to the networking system Actuator-Sensor-Interface - this considerably reduces complex wiring.
This element is mounted as the first tier of the individual signal tower directly on top of the terminal element. (Further Information see page 351).

ORDER SPECIFICATIONS:

AS-Interface-Element with add. external voltage	**845 800 68**

TECHNICAL DIAGRAMS:

see page 320

See note on page 347

Approval No. 2001 IP54 +50°C -20°C

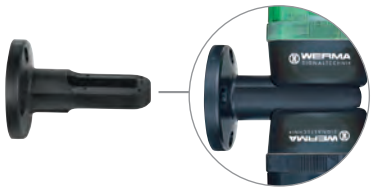
WERMA SIGNALTECHNIK

Overview Accessories for Kombi*SIGN*

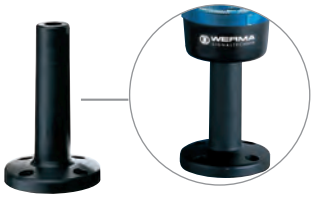
Kombi*SIGN* 70 and 71

Bracket for 1-sided mounting,
incl. rubber seals
Order no. 975 840 85

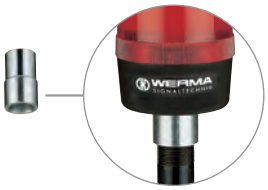
Bracket for 2-sided mounting,
incl. rubber seals
Order no. 975 840 86



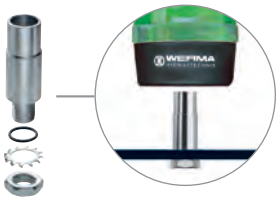
Base with integrated tube,
Ø 25 mm, 110 mm long,
plastic, incl. rubber seal
Order no. 975 840 10



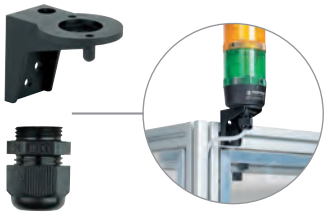
Adaptor for tube mounting
Ø 25 mm / 1/2" NPT thread
Order no. 975 840 02



Adaptor for single hole mounting
Ø 25 mm, M18
Order no. 960 000 25



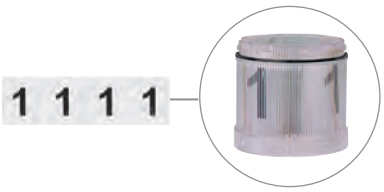
Bracket for surface mounting
incl. cable gland
M16 x 1.5
Order no. 960 000 02



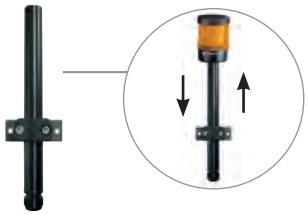
Cable gland for surface
mounting, M16 x 1.5
Order no. 960 000 04

Info transparencies

	Order no.
Number "0" - "9"	**975 840 50 - 59**
Number "10"	**975 840 92**
Neutral	**975 840 49**
Arrow	**975 840 62**



Tube with clamp, Ø 25 mm,
250 mm long, incl. cable gland
Order no. 960 000 18



Cable 5 m with M12 connector and plug
Order no. 960 000 46
Cable 5 m with M12 plug
Order no. 960 000 47
Cable 5 m with M12 connector
Order no. 960 860 01

Interface box and terminal element for Kombi*SIGN* 71
(only for the permanent light element 641 X00 00 and corresponding light bulb (24V))

Interface box and terminal element
with 2 cable glands M16
Order no. 960 000 16

Interface box and terminal element
with 1 cable glands M16 and assembly
Order no. 960 000 17

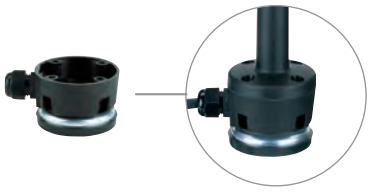
Drive:	24 V DC
Interfaces:	RS 232, RS 485
Assembly:	Network appliance with cable, connecting cable RS 232, 2 m long with Sub-D 9-pin and socket for power supply, CD with demonstration programme, programming handbook

Overview Accessories Kombi*SIGN*

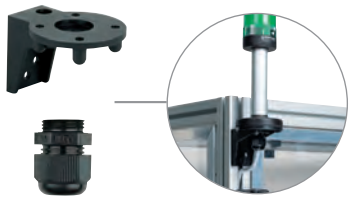
Kombi*SIGN* 50, 70 and 71

Contact box for cable exit
at side, with mounting material
and seal, cable gland M16 x 1.5
Order no. 975 840 01

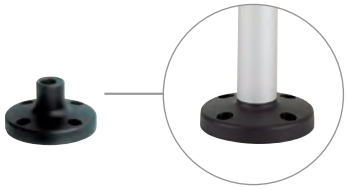
Contact box with magnetic
base and cable exit at side
cable gland M16 x 1.5
Order no. 975 840 04



Bracket for tube mounting,
incl. cable gland M16 x 1.5
Order no. 960 000 01



Base for tube mounting, Ø 25 mm,
plastic, incl. rubber seal
Order no. 975 840 90

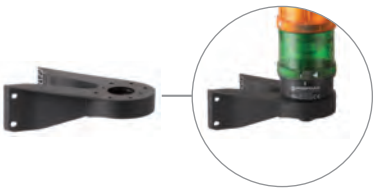


Base for tube Ø 25 mm, metal,
incl. rubber seal, recommended for tube
lengths of 400 mm and longer
Order no. 975 840 91

Bracket for base mounting,
with concealed cable entry,
incl. rubber seals
Order no. 960 000 14

NEW

Corner fixing bracket
Order no. 960 000 41



Tube Ø 25 mm, all anodized aluminium

100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

Indication board
(for tube mounting)
Order no. 960 000 05

- For one to five modules
- Simple mounting onto signal tower tube
- Ample space for written information
- Simply break off unwanted segments

Dimensions of indication board (W x H):
153 x 345 mm

Surface area per section (W x H):
c. 144 x 54 mm, e.g.
Zweckform 3424 (105 x 48 mm),
Herma 4281 (105 x 50.8 mm)
(not included in assembly)

Material: PMMA

LED bulb BA15d
total length max. 42 mm
Colours: red, yellow, green, clear, blue
Voltage 24 V, 115 V, 230 V
Order specifications see page 185

Bulb BA15d,
total length max. 42 mm

12 V, 5 Watt	**955 840 34**
24 V, 5 Watt	**955 840 35**
30 V, 5 Watt	**955 840 32**
115 V, 5 Watt	**955 840 57**
230 V, 5 Watt	**955 840 38**

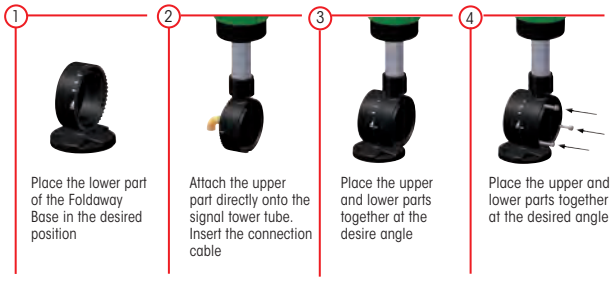
WERMA SIGNALTECHNIK

Kombi*SIGN* 50, 70 and 71

Foldaway Base - Signal Tower can be folded away, including rubber seal, for tube (all anodized aluminium) Ø 25 mm (not included in assembly)
Order no. 960 000 30

Dimensions (Ø x Height):	70 mm x 117 mm
Material:	PA-GF
Cable diameter:	Max. 14 mm
Fixing:	Vertical, horizontal, Positioning in 7,5° steps

QUICK AND SIMPLE MOUNTING:



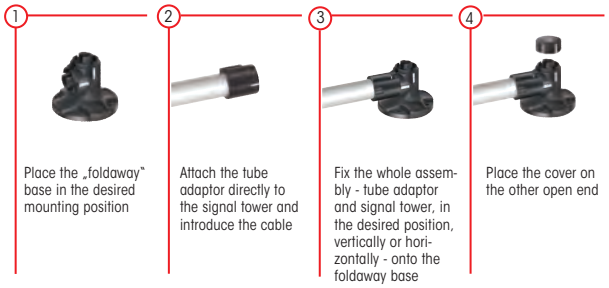
Tube Ø 25 mm, plastic, 45 mm long, for direct mounting of the Terminal Element onto the Foldaway Base (only for Kombi*SIGN* 70 and 71)
Order no. 960 000 31

NEW

Foldaway Base - Signal Tower can be folded away, including rubber seal, for tube (all anodized aluminium) Ø 25 mm (not included in assembly)
Order no. 960 009 12

Dimensions (Ø x Height):	70 mm x 85 mm
Material:	PA-GF
Cable diameter:	Max. 8 mm
Fixing:	Vertical, horizontal, Positioning in 0° and 90°

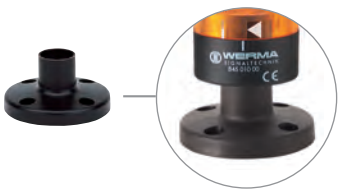
QUICK AND SIMPLE MOUNTING:



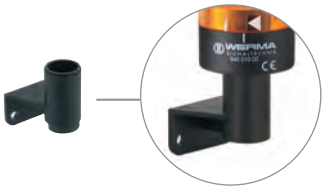
Tube Ø 25 mm, plastic, 45 mm long, for direct mounting of the Terminal Element onto the Foldaway Base (only for Kombi*SIGN* 70 and 71)
Order no. 960 000 31

Kombi*SIGN* 50

Base for surface mounting, incl. rubber seal
Order no. 975 845 01

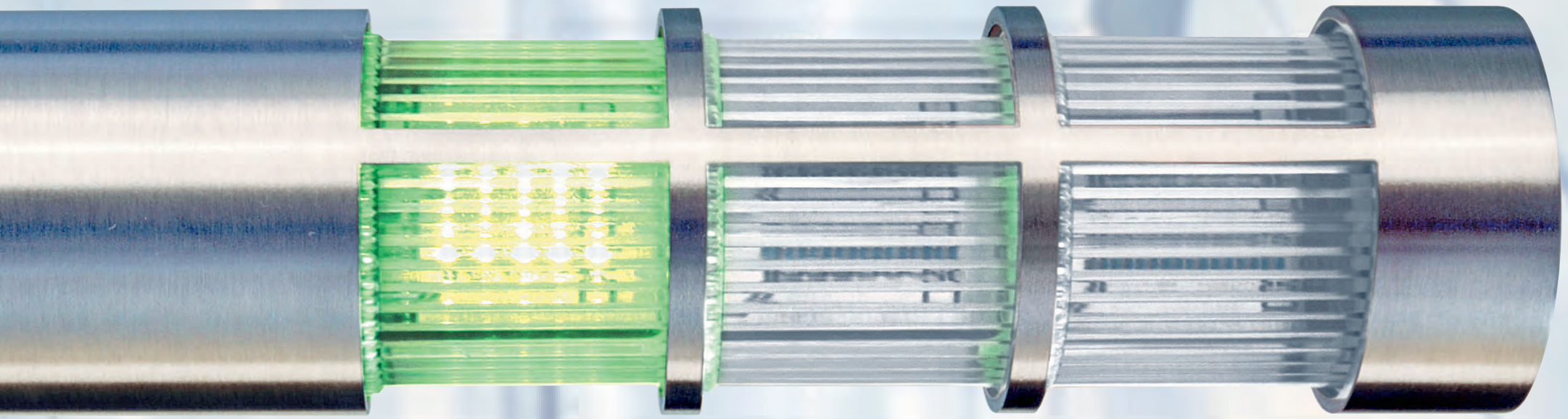


Bracket for wall mounting
Order no. 975 845 02



TECHNICAL DIAGRAMS:

see page 327 onwards



Overview Signal Towers • pre-assembled

Pre-assembled Signal Towers

NEW

698/699 KOMPAKT 37

- Ø 37.5 mm
- Protection rating IP 65
- 2-5 tiers
- With or without buzzer

Page 73

697 KOMPAKT 71

- Ø 70 mm
- Protection rating IP 65
- 2 or 3 tiers

Page 77

694 de*SIGN* 42

- Ø 42 mm
- Protection rating IP 65
- 2 or 3 tiers
- High quality stainless steel housing

Page 82

691 Flat*SIGN*

- 195 x 105 x 45 mm
- Protection rating IP 65
- With curved front
- 160° signal visibility

Page 84

690 Vario*SIGN*

- 62 x 220 x 90 mm
- Protection rating IP 65
- Electronic modularity
- Unique Design

Page 86

695 Clean*SIGN*

- IP 67/69 k
- For base and bracket mounting

Page 90

Size comparison · Signal Towers

Sound

The sounds can be played from our website www.werma.com under the heading "Signal Towers"

TIP

The Signal Devices Site on the internet: www.werma.com
On the signal tower pages of www.werma.com use the selection tool „Configurator“ to select the Kompakt 37 signal tower according to your requirements. With the help of intuitive questions and pictures you will be able to make your choice with just a few mouse clicks.

NEW

KOMPAKT 37

The complete Signal Tower Solution

The slim-line LED signal tower is available with black housing and coloured lens or in a metallic colour with clear lens.

In the version with coloured lens, the the LEDs light up within the tower in the colour of the lens giving an intensive colour effect whilst the clear lens give clear colour signal even in bright sunlight.

The clear lenses ensure an unequivocal signal even in bright light conditions thus ruling out errors even in bad light conditions.
The aesthetically pleasing and innovative plastic housing with metallic coating also makes the signal towers an excellent choice in areas where the optical effect is of importance.

Additional warning can be given with the optional siren built into the top of the signal tower. With an output of 85 dB the siren gives an immediate and clear warning of potential danger, and the tower carries a protection rating of IP 65.

The advantages at a glance

- Completely pre-assembled LED Signal Tower
- Simplified ordering - the complete tower can be ordered with just one number
- Life duration of up to 50,000 hours
- High protection rating IP 65
- Up to 5 optical and one audible element
- Available with M12 plug or cable connection

WERMA SIGNALTECHNIK

This is how to select your signal tower

▸ STEP 1
Select the signal tower of your choice with or without buzzer, with the appropriate connection, housing colour, voltage and number of tiers.

Part numbers can be found on pages 74 and 75.

- 2-5 tiers
- With or without buzzer
- M12 plug or cable
- Black or silver finish

▸ STEP 2
Select up to two extension tubes.

optional:

Extension tube, black
Order no. **960 698 02**

Extension tube, silver finish
Order no. **960 698 04**

▸ STEP 3
Select the appropriate fixing accessories for your application, using for example a tube and base or a bracket mount.

Single Hole Mounting | **Bracket Mounting** | **Base Mounting**

Bracket for base mounting
Order no. **960 698 05**

Base with integrated tube, black
Order no. **960 698 01**

Base with integrated tube, silver finish
Order no. **960 698 03**

▸ STEP 4
Where appropriate, select the bracket and the contact box.

Bracket for base mounting with concealed cable entry
Order no. **960 000 14**

Contact box for cable exit at side
Order no. **975 840 01**

Bracket for tube mounting
Order no. **960 000 01**

Contact box with magnetic base and cable exit at side
Order no. **975 840 04**

NEW

Corner fixing bracket
Order no. **960 000 41**

TIP

The Signal Devices Site on the internet: www.werma.com
On the signal tower pages of www.werma.com use the selection tool „Configurator" to select the Kompakt 37 signal tower according to your requirements. With the help of intuitive questions and pictures you will be able to make your choice with just a few mouse clicks.

698/699 LED Signal Tower KOMPAKT 37

- Pre-assembled signal tower with max. 5 tiers
- With or without buzzer
- LED permanent light
- Available with M12 plug or cable connection
- Also available in metal finish and clear lens

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	2 tier: 37.5 mm x 127.5 mm 3 tier: 37.5 mm x 161.5 mm 4 tier: 37.5 mm x 195.5 mm 5 tier: 37.5 mm x 229.5 mm (Protrusion from panel)
Housing:	PC
Fixing:	Single hole mounting for Ø 22.5 mm (M22 x 1.5 mm) Base or bracket mounting (accessory)
Connection:	Cable connection: Cable, 2 m long, Plug connection: M12 Plug (2/3 tier: 5 pole; 4/5 tier: 8 pole)
Current consumption:	50 mA per tier / buzzer 24 V 125 mA per tier / buzzer 12 V

Nut and seal included in assembly.

Two tier Kompakt 37 with integral tube and base (accessory)

ORDER SPECIFICATIONS:

KOMPAKT 37 with coloured lens and buzzer

		Connection	24 V AC/DC	12 V AC/DC
2 tier	green/red	Cable	**699 120 75**	**699 120 74**
	yellow/red	Cable	**699 130 75**	**699 130 74**
	green/red	Plug	**699 220 75**	**699 220 74**
	yellow/red	Plug	**699 230 75**	**699 230 74**
3 tier	green/yellow/red	Cable	**699 110 75**	**699 110 74**
	green/yellow/red	Plug	**699 210 75**	**699 210 74**
4 tier	clear/green/yellow/red	Cable	**699 140 75**	
	blue/green/yellow/red	Cable	**699 150 75**	
	clear/green/yellow/red	Plug	**699 240 75**	
	blue/green/yellow/red	Plug	**699 250 75**	
5 tier	blue/clear/green/yellow/red	Cable	**699 160 75**	
	blue/clear/green/yellow/red	Plug	**699 260 75**	

KOMPAKT 37 with coloured lens and without buzzer

		Connection	24 V AC/DC	12 V AC/DC
2 tier	green/red	Cable	**698 120 75**	**698 120 74**
	yellow/red	Cable	**698 130 75**	**698 130 74**
	green/red	Plug	**698 220 75**	**698 220 74**
	yellow/red	Plug	**698 230 75**	**698 230 74**
3 tier	green/yellow/red	Cable	**698 110 75**	**698 110 74**
	green/yellow/red	Plug	**698 210 75**	**698 210 74**
4 tier	clear/green/yellow/red	Cable	**698 140 75**	
	blue/green/yellow/red	Cable	**698 150 75**	
	clear/green/yellow/red	Plug	**698 240 75**	
	blue/green/yellow/red	Plug	**698 250 75**	
5 tier	blue/clear/green/yellow/red	Cable	**698 160 75**	
	blue/clear/green/yellow/red	Plug	**698 260 75**	

Three tier Kompakt 37 with bracket (accessory)

WERMA SIGNALTECHNIK

The height of the KOMPAKT 37 can be increased by max. 160 mm with the use of extension tubes, ensuring optimum visibility

ORDER SPECIFICATIONS:

KOMPAKT 37 in silver finish with clear lens and buzzer

		Connection	24 V AC/DC	12 V AC/DC
2 tier	green/red	Cable	**699 320 75**	**699 320 74**
	yellow/red	Cable	**699 330 75**	**699 330 74**
	green/red	Plug	**699 420 75**	**699 420 74**
	yellow/red	Plug	**699 430 75**	**699 430 74**
3 tier	green/yellow/red	Cable	**699 310 75**	**699 310 74**
	green/yellow/red	Plug	**699 410 75**	**699 410 74**
4 tier	clear/green/yellow/red	Cable	**699 340 75**	
	blue/green/yellow/red	Cable	**699 350 75**	
	clear/green/yellow/red	Plug	**699 440 75**	
	blue/green/yellow/red	Plug	**699 450 75**	
5 tier	blue/clear/green/yellow/red	Cable	**699 360 75**	
	blue/clear/green/yellow/red	Plug	**699 460 75**	

KOMPAKT 37 in silver finish with clear lens and without buzzer

		Connection	24 V AC/DC	12 V AC/DC
2 tier	green/red	Cable	**698 320 75**	**698 320 74**
	yellow/red	Cable	**698 330 75**	**698 330 74**
	green/red	Plug	**698 420 75**	**698 420 74**
	yellow/red	Plug	**698 430 75**	**698 430 74**
3 tier	green/yellow/red	Cable	**698 310 75**	**698 310 74**
	green/yellow/red	Plug	**698 410 75**	**698 410 74**
4 tier	clear/green/yellow/red	Cable	**698 340 75**	
	blue/green/yellow/red	Cable	**698 350 75**	
	clear/green/yellow/red	Plug	**698 440 75**	
	blue/green/yellow/red	Plug	**698 450 75**	
5 tier	blue/clear/green/yellow/red	Cable	**698 360 75**	
	blue/clear/green/yellow/red	Plug	**698 460 75**	

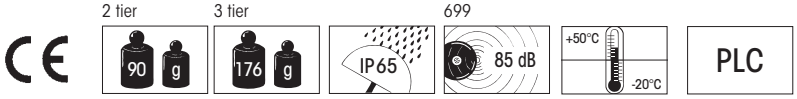
ACCESSORIES:

Base with integrated tube, black	**960 698 01**
Extension tube, black	**960 698 02**
Base with integrated tube, silver finish	**960 698 03**
Extension tube, silver finish	**960 698 04**
Fixing bracket	**960 698 05**
Cable 5 m with M12 plug (5 pole)	**960 693 05**
Cable 5 m with M12 plug (8 pole)	**960 000 47**
Cable 5 m with M12 connector and plug (8 pole)	**960 000 46**

Further accessories can be found on page 79.

TECHNICAL DIAGRAMS:

see page 312



KOMPAKT

The complete Signal Tower Solution

KOMPAKT 71

With the help of these compact LED signal towers two or three defined status warnings can be displayed with only one signal device. The tower is very economical due to the long life duration of up to 50,000 hours and low current consumption.

Also available with USB Interface

The advantages at a glance

- Completely pre-assembled LED Signal Tower
- Simplified ordering - the complete tower can be ordered with just one number
- Life duration of up to 50,000 hours
- High protection rating IP 65

WERMA SIGNALTECHNIK

LED Signal Tower KOMPAKT 71

- Completely pre-assembled
- Three colour combinations
- 70 mm diameter

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	2 tier: 70 x 140 mm 3 tier: 70 x 175 mm
Housing:	Housing parts: PC Terminal element: PA fibreglass, high-impact
Fixing:	Base/Bracket mounting Tube mounting (accessory)
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter max. 14 mm
Current consumption:	40 mA per tier

ORDER SPECIFICATIONS:

KOMPAKT 71

		Mounting	24 V DC
2 tier	red/green	Base/bracket mounting	**697 010 55**
	red/green	Tube mounting	**697 410 55**
3 tier	red/yellow/green	Base/bracket mounting	**697 000 55**
	red/yellow/green	Tube mounting	**697 400 55**

KOMPAKT 71 with negative logic (common +)

		Mounting	24 V DC
3 tier	red/yellow/green	Base/bracket mouting	**697 100 55**
	red/yellow/green	Tube mounting	**697 500 55**

Base with tube (accessory)

ACCESSORIES:

see page 79

TECHNICAL DIAGRAMS:

see page 312

See note on page 347

2 tier 3 tier

697 LED Signal Tower KOMPAKT 71 with USB Interface

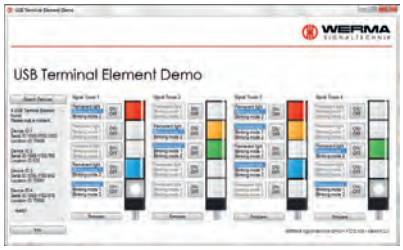
Completely pre-assembled signal tower with integrated USB terminal element

- Completely pre-assembled signal tower with integrated USB terminal element
- No additional voltage supply or hardware is required
- Actuation via a DLL (Dynamic Link Library) or VCP (Virtual-COM-Port)
- No additional power supply or hardware necessary
- Direct triggering of signal tower via USB Interface

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	70 mm x 175 mm
Housing:	Housing parts: PC Terminal element: PA-GF, high-impact
Fixing:	Tube mounting (accessory)
Connection:	Via USB
Power supply:	Via USB (5 V DC)
Assembly:	Assembly includes installation software, drivers, handbook and USB connection cable (length 1.8 m)
Suitable for:	Windows 2000 service pack 4, Windows XP, Windows Vista or Windows 7. Also for Windows Server and Windows CE operating systems.



The user-friendly demonstration software is included in the assembly

ORDER SPECIFICATIONS:

3 tier	red/yellow/green	**697 430 53**

ACCESSORIES:

Base with integrated tube	**975 840 10**
Base with tube, metal	**975 840 91**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

TECHNICAL DIAGRAMS:

see page 312

Direct triggering via USB interface (assembly without laptop and accessories)

See note on page 347

Accessories for KOMPAKT 71

ORDER SPECIFICATIONS ACCESSORIES KOMPAKT 71:

	Contact box for Câble exit at side, with mounting material	**975 840 01**
	Contact box with magnetic base and Câble exit at side	**975 840 04**
	Bracket for tube mounting with Câble gland	**960 000 01**
	Bracket for surface mounting with Câble gland	**960 698 05**
	Bracket for base mounting with concealed Câble entry, incl. rubber seals	**960 000 14**
	Bracket for 1-sided mounting, incl. rubber seals	**975 840 85**
	Bracket for 2-sided mounting, incl. rubber seals	**975 840 86**
	NEW Corner fixing bracket	**960 000 41**

TECHNICAL DIAGRAMS:

see page 327 onwards

Accessories for KOMPAKT 71

ORDER SPECIFICATIONS ACCESSORIES KOMPAKT 71:

Tube with clamp, Ø 25 mm 250 mm long, with Câble gland	**960 000 18**

Tube Ø 25 mm, all anodized aluminium

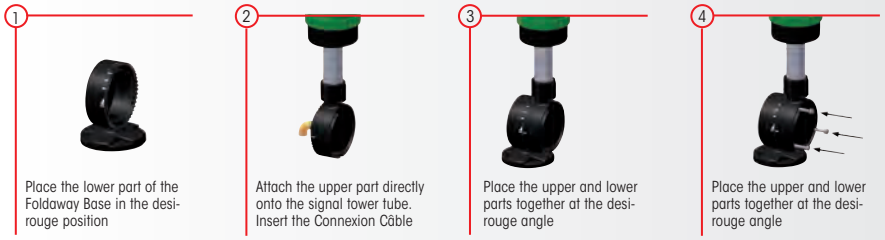
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
600 mm long	**975 840 60**
800 mm long	**975 840 80**
1000 mm long	**975 840 03**

Utility model approved

Foldaway Base incl. rubber seals, suitable for tube, Ø 25 mm, all anodized aluminium (not included in assembly) — **960 000 30**

Dimensions (Ø x Height):	70 mm x 117 mm
Material:	PA-GF
Câble diameter:	max. 14 mm
Assembly:	incl. rubber seals
Fixing:	Vertical, horizontal, Positioning in 7.5° steps

QUICK AND SIMPLE MOUNTING:

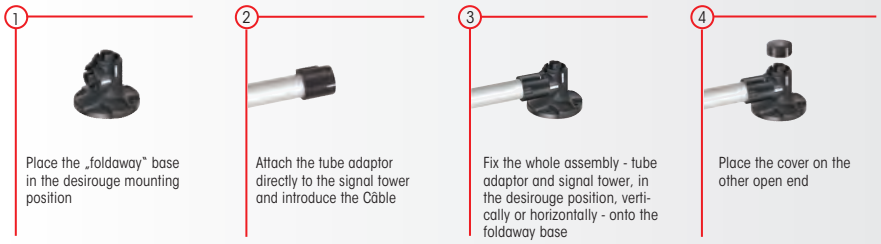


NEW

Foldaway Base incl. rubber seals, suitable for tube, Ø 25 mm, all anodized aluminium (not included in assembly) — **960 009 12**

Dimensions (Ø x Height):	70 mm x 85 mm
Material:	PA-GF
Câble diameter:	max. 8 mm
Assembly:	incl. rubber seals
Fixing:	Vertical, horizontal, Positioning in 0° and 90°

QUICK AND SIMPLE MOUNTING:



WERMA SIGNALTECHNIK

ORDER SPECIFICATIONS ACCESSORIES KOMPAKT 71:

Tube Ø 25 mm, plastic
for mounting the Terminal Element directly
on the Foldaway Base

960 000 31

Base for tube mounting Ø 25 mm,
plastic, incl. rubber seal

975 840 90

Base for tube mounting Ø 25 mm, metal, incl. rubber seal,
recommended for tube lengths of 400 mm and longer

975 840 91

Base with integrated tube, Ø 25 mm,
110 mm long, plastic, incl. rubber seal

975 840 10

Adaptor for tube mounting,
Ø 25 mm / 1/2" NPT thread

975 840 02

Adaptor for single hole mounting
Ø 25 mm, M18

960 000 25

Câble gland for
surface mounting M16 x 1.5 mm

960 000 04

TECHNICAL DIAGRAMS:

see page 327 onwards

deSIGN 42

deSIGN 42 - LED Signal Tower with high-quality stainless steel housing

In the machine building sector a trend towards a greater emphasis on design has become apparent. The design of a machine and its accessories convey the manufacturer's quality statement to the customer. Form, colour and aesthetics are increasingly being borne in mind as purchasing criteria.

The LED signal tower deSIGN 42, with its high quality stainless steel housing is an ideal accompaniment to modern design-oriented machines, uniquely combining cool elegance with optimal functionality. With its innovative form, the stainless steel housing underscores the design of the customer product, stylishly harmonising with its overall appearance.

The advantages at a glance

- LED Signal Tower in award-winning metal design
- Clear lenses ensure signalling effect even in direct sunlight
- LED Permanent light elements have a life duration of up to 50,000 hrs
- Can be operated with a PLC control system

reddot design award
winner 2005

WERMA SIGNALTECHNIK

LED Signal Tower de*SIGN* 42

reddot design award
winner 2005

- High-quality stainless steel housing
- Award-winning design
- Transparent lenses ensure signalling effect even in direct sunlight

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	2 tier: 42 x 220 mm 3 tier: 42 x 254 mm
Housing:	Stainless steel, brushed
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm)
Connection:	Cable, 2 m long, included in assembly
Current consumption:	40 mA per tier

ORDER SPECIFICATIONS:

de*SIGN*		24 V DC
2 tier	red/green	**694 010 55**
	red/yellow	**694 020 55**
3 tier	red/yellow/green	**694 000 55**

ACCESSORIES:

Surface housing single	**975 109 02**
Bracket, stainless steel (Protection rating IP 33)	**960 694 01**

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

2 tier 600 g

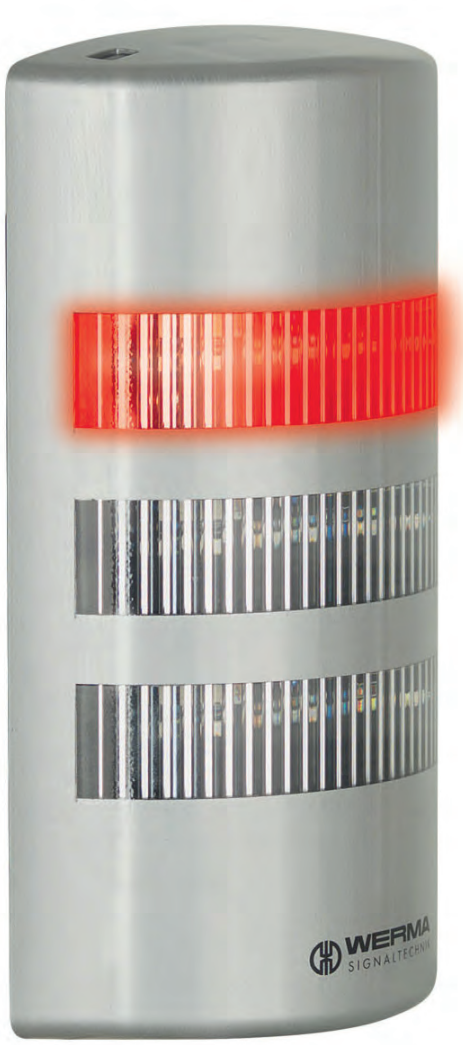
3 tier 650 g

IP65

+50°C -20°C

PLC

Flat*SIGN*



Innovative LED Signal Tower with curved front

The LED signal tower Flat*SIGN* stands out from the competition with its range of innovative functions and unique advantages: in particular its aesthetically pleasing, curved design which facilitates a 160° viewing angle. This guarantees exceptional signal visibility, even from the side.

If no signal is active, the flat LED signal tower blends into the background - without distracting from the design of the machine or its environment.

Wide range of applications

The Flat*SIGN* can be deployed in a wide range of applications: from logistics, warehousing and materials handling to machine and plant engineering. Thanks to its high build quality and appearance it is also ideally suited for building services applications. The high protection rating IP 65 ensures it can also be used outside.

The advantages at a glance

- Permanent or blinking light selectable
- High build quality and appearance
- 160° viewing angle - the signal is clearly visible from the side
- Also available with integrated loud audible signal (depending on the variant, either a buzzer or multi-tone sounder)
- Multi-Tone Sounder with 8 adjustable tones
- Flexible, user-friendly mounting options and simple connection
- Comprehensive fixing kit available as accessory

In its inactive state, the signal tower blends into the background thanks to its colourless, translucent housing

FlatSIGN in metallic finish

The fixing kit consists of two tube clamps and an adaptor (accessory)

- Innovative LED signal tower with curved front
- 160° signal visibility - the signal is transparently visible from the side
- Permanent or blinking light selectable
- With optional integrated, high-output buzzer
- Simple, user-friendly mounting
- Comprehensive fixing kit for a wide range of mounting options (accessory)

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	195 mm x 105 mm x 48.2 mm
Lower part:	PC-ABS, black
Upper part:	PC, transparent or silver
Lens:	PC, transparent
Fixing:	Wall mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical signal: 30 mA per tier Audible signal: 30 mA
Light effects:	Permanent or blinking light selectable
Audible signal:	Buzzer or multi-tone sounder (8 tones)

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	115-230 V AC
Audibel Signal	Multi-tone Sounder	Buzzer
FlatSIGN with transparent housing		
FlatSIGN without audible signal, red/yellow/green	**691 100 55**	**691 100 68**
FlatSIGN with audible signal, red/yellow/green	**691 200 55**	**691 200 68**
FlatSIGN in Metal Design		
FlatSIGN without audible signal, red/yellow/green	**691 300 55**	**691 300 68**
FlatSIGN with audible signal, red/yellow/green	**691 400 55**	**691 400 68**

ACCESSORIES:

Fixing kit **975 691 01**
Contents: 2 tube clamps for tube (Ø 24-25 mm) and adaptor

No special accessories needed for mounting on a flat surface.

FlatSIGN is ideal for mounting on flat surfaces such as walls or enclosures.
The comprehensive fixing kit, available as an accessory, permits more mounting options.

- If the signal tower is to be connected via surface wiring, then it can be simply attached using the adaptor.
- The adaptor also enables the tower to be quickly and simply mounted onto electrical installation back-boxes.
- In addition, the adaptor enables simple mounting onto aluminium profiles.
- For tube mounting (Ø 24-25 mm) the adaptor and the two tube clamps are employed.

TECHNICAL DIAGRAMS: see page 311

See note on page 347

691 X00 55

Vario*SIGN*

Vario*SIGN* - Innovative signal towers with unique functions and a range of advantages

The LED signal tower Vario*SIGN* stands out from the competition with its range of unique features and advantages as well as its revolutionary, innovative form.

If no signal is active, the LED tower blends into the background with its colourless, translucent housing - without distracting from the design of the machine. Only in the event of an active signal is the tower filled with colour, making its presence known with its large, attention-grabbing illuminated surface.

Thus the signal tower combines a maximum optical effect with modern machine forms and designs.

product design award 2010

The advantages at a glance

- Mechanical modularity of the three tiers replaced by electronic modularity
- Colours and light effects, depending on the variant, can be individually set via DIP switch and changed at any time
- High build quality and appearance
- Award-winning design
- Light effect visible from one or two sides as required
- With optional integrated, high output buzzer
- Variants available with adjustable, attention-grabbing lighting effects

Vario*SIGN* - red/yellow/green

Fixed, three-tier colour distribution in red, yellow and green

In its inactive state, the signal tower blends into the background thanks to its colourless, translucent housing

- LED signal tower with permanent lights in red, yellow and green
- Preset, three-tier colour distribution
- 1 or 2 sided illumination
- With optional integrated, high output buzzer

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	62 mm x 220 mm x 90 mm
Housing:	PC/ABS-Blend, black
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical: 55 mA per tier
	Buzzer: 20 mA

ORDER SPECIFICATIONS:

Voltage	24 V DC
Vario*SIGN* without Buzzer	
1-sided	**690 330 55**
2-sided	**690 320 55**
Vario*SIGN* with Buzzer	
1-sided	**690 310 55**
2-sided	**690 300 55**

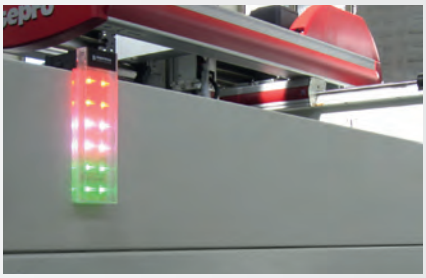
Play Sound www.werma.com

ADDITIONAL INFORMATION:

Mounting positions

Depending on the application, the lighting body of the Vario*SIGN* signal tower can be positioned to point upwards, downwards or horizontally.

Lighting body positioned upwards



Lighting body positioned downwards

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

CE EAC 240 g IP65 +50°C -30°C 85 dB

690 VarioSIGN - RGY

The colours red, yellow and green can adjusted via DIP switch for any required order or distribution

- LED signal tower with permanent lights in red, yellow and green
- Complete illumination in one colour possible (can be triggered externally)
- Colour distribution can be set and adjusted as required via DIP switch
- With optional integrated, high output buzzer

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	62 mm x 220 mm x 90 mm
Housing:	PC/ABS blend, black
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical: depending on the colour combination, up to 120 mA Buzzer: 20 mA

ORDER SPECIFICATIONS:

Voltage	24 V DC
VarioSIGN without Buzzer	
1-sided	**690 230 55**
2-sided	**690 220 55**
VarioSIGN with Buzzer	
1-sided	**690 210 55**
2-sided	**690 200 55**

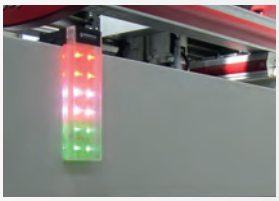
Play Sound www.werma.com

Attention-grabbing illumination of the entire lighting body in one colour (can be triggered externally)

ADDITIONAL INFORMATION:

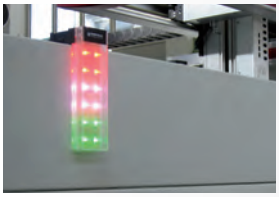
Adjustable lighting configuration and mounting positions

Lighting body positioned upwards



Lighting body positioned downwards

Depending on the application, the lighting body of the VarioSIGN signal tower can be positioned to point upwards, downwards or horizontally.



Tier-by-tier illumination of the lighting body

Colour intensive, complete illumination

Depending on the variant, a tier-by-tier or complete illumination of the lighting body is possible.

TECHNICAL DIAGRAMS: see page 311

See note on page 347

CE EAC 260 g IP65 +50°C -30°C 85 dB

WERMA SIGNALTECHNIK

Attention-grabbing illumination of the entire lighting body in one colour (a choice of 7 colours, can be triggered externally)

- LED signal tower with permanent light and additional light effects
- 7 colours
- Complete illumination in one colour possible (can be triggered externally)
- Colour distribution can be set and adjusted as required via DIP switch
- With integrated, high output buzzer

TECHNICAL SPECIFICATIONS:

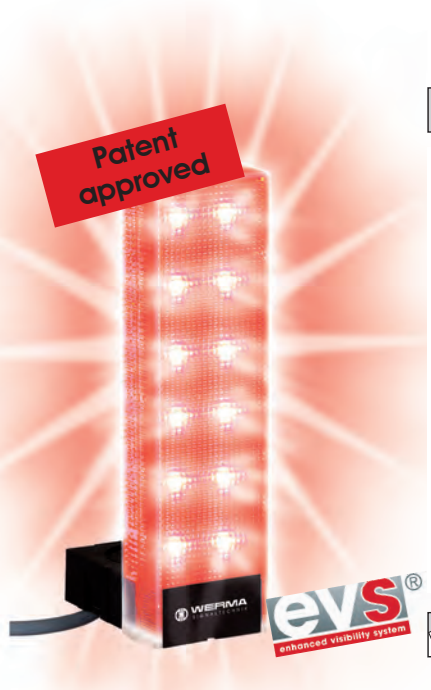
Life duration up to 50,000 hrs

Dimensions (L x H x W):	62 mm x 220 mm x 90 mm
Housing:	PC/ABS blend, black
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical: depending on the colour, up to 300 mA max. Buzzer: 20 mA
Possible colours:	Red, yellow, green, white, blue, violet, turquoise
Lighting effects:	Tier-by-tier illumination: Flashing light Complete illumination: EVS*

ORDER SPECIFICATIONS:

Voltage	24 V DC
VarioSIGN with light effects and Buzzer	
1-sided	**690 010 55**
2-sided	**690 000 55**

Play Sound www.werma.com



The "EVS"* light effect ensures a maximum attention-grabbing effect (can be set with complete illumination)

ADDITIONAL INFORMATION:

evs enhanced visibility system

* **EVS** = Enhanced Visibility System
Further Information can be found in the chapter "General Information" on page 352.

Please note the photosensitive epilepsy warning on page 352.

Adjustable lighting configuration and mounting positions
Depending on the application, the lighting body of the VarioSIGN signal tower can be positioned to point upwards, downwards or horizontally (see page 88).

Depending on the variant, a tier-by-tier or complete illumination of the lighting body is possible (see page 88)

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

CE EAC 260 g IP65 +50°C -30°C 85 dB

Clean*SIGN*

Clean*SIGN* - The LED Signal Tower in Hygienic Design

WERMA already has the appropriate solution to the challenges engineers and food manufacturers will have to face in the future: **The LED signal tower Clean*SIGN*** has been specially developed and constructed for use in **food and hygiene areas** as well as **cleanroom applications**. Right from the start, existing standards and guidelines were given careful consideration (e.g. EHEDG* Documents 8 and 13, Machine Directive 2006/42/EG), and experts in the field of Hygienic Design were called upon for advice.

The Clean*SIGN* is equipped with a series of sophisticated technical, constructional and design features which make a significant contribution to the safety of your products.

What is Hygienic Design?

The term, "Hygienic Design", stands for the hygienic and cleaning-friendly design of all machinery and components deployed in hygiene-relevant areas. The aim is the prevention of constructional weakspots that could increase hygiene-related dangers and the risk of infection.

What are the main applications?

In addition to use in food production, manufacturing processes in clean rooms are also potential application areas. The production and assembly of small and very sensitive parts such as electronic chips places the highest demands on air purity.

As the Clean*SIGN* LED Signal Tower fulfils the high **Air Cleanliness Class 1 or 2** (depending on version), it can be used in the semiconductor industry, microelectronics, medical research, pharmaceutical, optical and laser technology, aerospace engineering and nanotechnology.

The key advantages

- Food safety due to the absence of uneven surfaces, elevated or countersunk elements where contamination could collect
- Cleaning-friendly and hygienic design for optimal cleaning and disinfection
- Use of food safe materials (FDA approval) and resistant to cleaning agents
- **EHEDG* and Fraunhofer approvals**
- **Bracket mounting fulfills Air Cleanliness Class 2 for Cleanroom applications in accordance with DIN EN ISO 14644-1**
- **Base or Ceiling mounting fulfills Air Cleanliness Class 1**
- Bracket mounting with Pine Tree Clip® for quick and simple fixing
- Electronic modularity of the individual tiers
- Maintenance-free thanks to LED technology with a long life duration of up to 50,000 hrs

Clean*SIGN* - red/yellow/green

Fixed, three tier colour distribution in red, yellow and green

- LED Signal Tower for use in clean-room applications (Fraunhofer IPA approval) and the food industry (EHEDG* approval)
- Permanent lights in red, yellow and green
- Integrated, high output buzzer (85 dB)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	Bracket mounting: 112 mm x 485 mm x 125 mm Base mounting: 112 mm x 391 mm x 125 mm
Housing:	PA, black
Lens:	PA, transparent
Fixing:	Wall mounting, integrated mounting bracket Base mounting, Ceiling mounting
Connection:	Cable, 2 m long, included in the assembly
Current consumption:	Optical: up to 120 mA per tier Buzzer: 20 mA

ORDER SPECIFICATIONS:

Play Sound www.werma.com

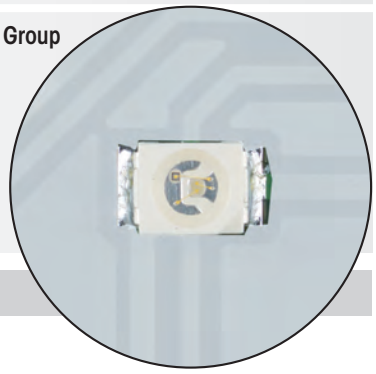
Voltage	24 V DC
Clean*SIGN* with Buzzer	
Bracket mounting	**695 300 55**
Base or Ceiling mounting	**695 310 55**

ADDITIONAL INFORMATION:

• **Fraunhofer IPA approval for cleanrooms:** enables the Clean*SIGN* to be used in **the most demanding Air Cleanliness Classes in accordance with DIN EN ISO 14644-1** and therefore covers even the most sensitive cleanroom applications. This approval also confirms the chemical resistance of the signal tower housing against common cleaning agents.

• **EHEDG* approval for the food industry:** this approval confirms that strict design criteria have been met to avoid constructional weaknesses and to minimise the risk of contamination.

*** EHEDG = European Hygienic Engineering and Design Group**
The goal of this consortium, made up of equipment manufacturers, food processing industries, research institutes and public health authorities, is the development and publishing of directives on hygiene technology for the processing and packaging of food products.



Fixed colour distribution with SMD technology

In its inactive state, the signal tower blends into the background thanks to its translucent housing

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

695 300 55 695 310 55

695 Clean*SIGN* - RGY

The colours red, yellow and green can be set via DIP switch for any equired order or distribution

- LED Signal Tower for use in clean-room applications (Fraunhofer IPA approval) and the food industry (EHEDG approval)
- Permanent light in red, yellow and green (RGY LEDs)
- Colour distribution can be set and adjusted via switch as required
- Complete illumination in one colour possible (can be triggered externally)
- Integrated, high output buzzer (85 dB)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	Bracket mounting: 112 mm x 485 mm x 125 mm Base mounting: 112 mm x 391 mm x 125 mm
Housing:	PA, black
Lens:	PA, transparent
Fixing:	Wall mounting, integrated mounting bracket Base mounting, Ceiling mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical: depending on the colour combination, 240 mA max. Buzzer: 20 mA

ORDER SPECIFICATIONS:

Voltage	24 V DC
Clean*SIGN* with Buzzer	
Bracket mounting	**695 200 55**
Base or Ceiling mounting	**695 210 55**

Play Sound www.werma.com

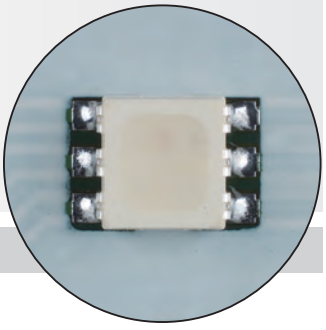
Attention-grabbing illumination in one colour (can be triggerouge externally)

ADDITIONAL INFORMATION:

Clever solution for wall mounting
A "Pine Tree Clip®" enables quick and simple mounting. The attachment and connection of the tower is carried out from the rear. As a consequence, the housing is completely closed and holes are avoided.

Wide range of sophisticated design features
The Clean*SIGN* from WERMA is equipped with a series of sophisticated technical, constructional and design features which make a significant contribution to the safety of your products.

For example, the Clean*SIGN* has no grooves or joints where dirt could collect, facilitating quick and easy cleaning.



Completely flexible colour distribution thanks to RGY LEDs

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

695 200 55 695 210 55

WERMA SIGNALTECHNIK

695 CleanSIGN - RGB

Complete illumination in one colour

The "EVS"* light effect ensures a maximum attention-grabbing effect (can be set with complete illumination)

- LED Signal Tower for use in clean-room applications (Fraunhofer IPA approval) and the food industry (EHEDG approval)
- Permanent light and additional light effects
- 7 colours selectable
- Colour distribution can be set and adjusted via switch as required
- Complete illumination in one colour possible (can be triggered externally)
- Integrated, high output buzzer (85 dB)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	Bracket mounting: 112 mm x 485 mm x 125 mm Base mounting: 112 mm x 391 mm x 125 mm
Housing:	PA, black
Lens:	PA, transparent
Fixing:	Wall mounting, integrated mounting bracket Base mounting, Ceiling mounting
Connection:	Screw terminal max. 1.5 mm²
Current consumption:	Optical: depending on the colour combination, 250 mA max. Buzzer: 20 mA
Possible colours:	Red, yellow, green, white, blue, violet, turquoise
Light effects:	Tier-by-tier illumination: Blinking light Complete illumination: EVS*

Play Sound www.werma.com

ORDER SPECIFICATIONS:

Voltage	24 V DC
CleanSIGN with Buzzer	
Bracket mounting	**695 000 55**
Base or Ceiling mounting	**695 010 55**

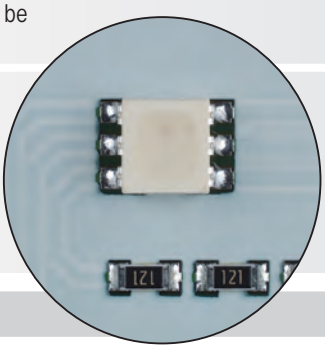
ADDITIONAL INFORMATION:

Additional light effects and 7 colours

The use of RGB LEDs guarantees complete flexibility: In addition to the permanent light, additional light effects (EVS* LED or blinking light) can also be set. Furthermore, the entire tower or the 3 individual tiers can be illuminated in seven different colours (red, yellow, green, blue, clear, violet, turquoise).

With complete illumination any one of the seven colours can be triggered externally.

*** EVS** = Enhanced Visibility System or Enhanced Visibility System. Further Information can be found in the chapter „General Information" beginning on page 352.
Please note the photosensitive epilepsy warning on page 352.



7 different colour settings from RGB LEDs

TECHNICAL DIAGRAMS:

see page 311

See note on page 347

695 000 55 695 010 55


IEC
60947-5-1
WERMA
230 X00 68
230V ~
ta50°C IP65

Overview Installation Beacons

LED Permanent Beacons

230 and
230 Economy

M20 x 1.5 mm
Page 98

231 and
231 Economy

M22 x 1.5 mm
Page 100

207

M22 x 1.5 mm
Page 105

801

for Ø 37 mm (PG29)
Page 108

816

for Ø 37 mm (PG29)
Page 117

LED Permanent Beacons (Multicolour)

239 Multicolour

M22 x 1.5 mm
5 colours
Page 102

239 for
AS-Interface

M22 x 1.5 mm
5 colours
Page 103

NEW

816 Multicolour
with M12 plug

for Ø 37 mm (PG29)
7 colours
Page 111

816 multicolour
with USB Interface

for Ø 37 mm (PG29)
200,000 colours
Page 112

Permanent Beacons

206

M22 x 1.5 mm
Page 104

216

M22 x 1.5 mm
Page 106

800

for Ø 37 mm (PG29)
Page 107

815

for Ø 37 mm (PG29)
Page 109

Flashing Beacons

232

M22 x 1.5 mm
Page 113

208

M22 x 1.5 mm
Page 114

802

for Ø 37 mm (PG29)
Page 115

817

for Ø 37 mm (PG29)
Page 116

LED Blinking Light

816

for Ø 37 mm (PG29)
Page 117

Bulbs

Further information

Further information about “Optical Signal Devices” can be found in the chapter “General Information” beginning on page 356.

Optical Signal Devices

Variety of light signals

Installation beacons from WERMA assist in indicating process conditions, risks and imminent dangers in modern production areas clearly and in good time.

The urgency of the required course of action can be indicated by the colour as well as the type and duration of the signal. As a basic principle, the colours red, yellow, green, blue and clear are employed. The available light effects in WERMA installation beacons range from a permanent light and a long life LED permanent light to an attention-grabbing flashing light.

Permanent light and LED Permanent light

With the assistance of a permanent light or an LED permanent light the operator is made aware of a specific condition or is instructed to carry out a certain course of action.

For safety reasons signal beacons are increasingly equipped with light emitting diodes. The failure of optical signal devices is significantly reduced as a result of the longer life duration of LEDs. Furthermore, LEDs offer a range of advantages compared to conventional light bulbs for example lower current consumption, greater resistance to shocks, vibrations and other mechanical stress.

LED Beacons (Multicolour)

As well as offering traditional single coloured beacons, Werma has several multicolour LED products which give the user multiple colour choices in just one beacon.
The 816 LED beacon with USB connection uses RGB LED technology from which you can select up to 200,000 colour variants also in different light effects, such as permanent, blink or special flash.

The LED multicolour beacons 239 and 816 with M12 connectors offer up to 7 colours and enable you to signal several different status conditions with just one beacon.

Flashing Light

The deployment of a flashing signal can generate even more attention than a permanent light. The reason for this is to be found in the very short flash duration.

Inside each Xenon flashing beacon there is a capacitor which stores electrical energy. Within the space of a few milliseconds this energy is discharged within the flash tube, generating a very intense light impulse.

The life duration of a flash tube is heavily dependent on the respective load.
The average life duration in permanent operation is 4 x 10^6 flashes.

WERMA Installation Beacons

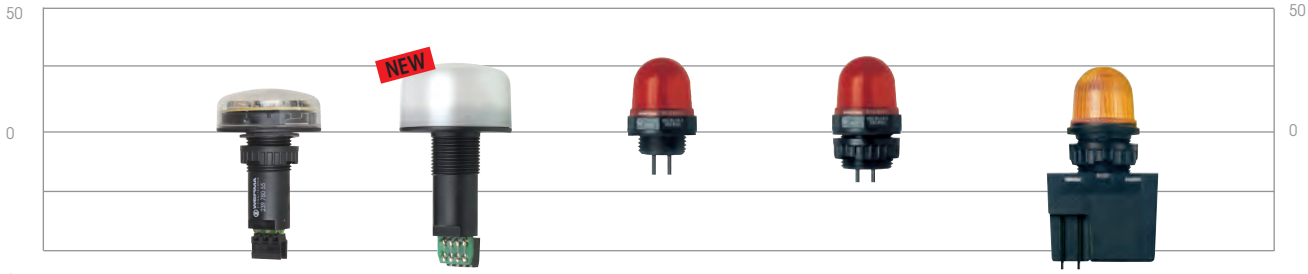
Installation beacons are designed for mounting in drill holes. A characteristic of this type of beacon is the rear fixture using a central nut.

Advantages

- Large variety of versions: Available as permanent, blinking, flashing or LED beacons
- IP 65 for indoor and outdoor applications
- Modern design
- Beacons available in five colours
- LED Multicolour Beacons with 5 or up to 200,000 colours in one beacon
- Beacon diameter between 25 and 75 mm
- Available in three thread diameters

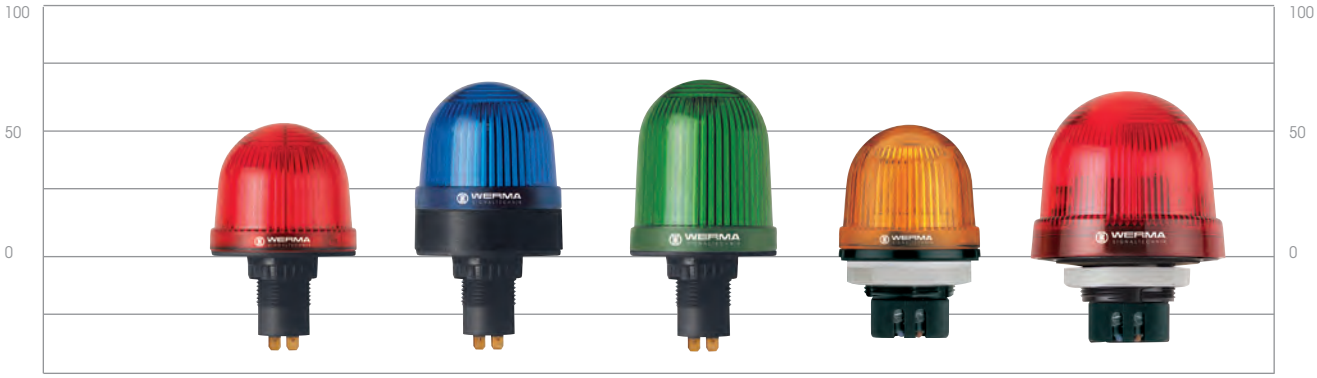
Sizes

COMPARISON OF WERMA INSTALLATION BEACONS



Series	239	239	230	231	232
Thread	M22	M22	M20	M22	M22
Ø	50 mm	50 mm	29 mm	29 mm	29 mm
Height (Protrusion from panel)	22 mm	31 mm	32 mm	32 mm	32 mm
Page	103	102	98	100	113

COMPARISON OF WERMA INSTALLATION BEACONS



Series	206	207/208	216	800/801/802	815/816/817
Thread	M22	M22	M22	PG29	PG29
Ø	57 mm	58 mm	57 mm	57 mm	75 mm
Height (Protrusion from panel)	53 mm	69 mm	69 mm	54 mm	66 mm
Page	104	105/114	106	107/108/115	109/116/117/111/112

230 LED Installation Beacon

- LED Permanent beacon with M20 thread for applications such as limit and cable-operated switches
- Extremely high light intensity
- Ideal for installation in limited space due to short thread

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	29 mm x 32 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	2 wires, c. 115 mm long
Fixing:	Installation mounting for Ø 20.5 mm (M20 x 1.5 mm)

Seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	115 V AC	230 V AC
Current consumption	80 mA	45 mA	15 mA	20 mA
red	**230 100 54**	**230 100 55**	**230 100 67**	**230 100 68**
yellow	**230 300 54**	**230 300 55**	**230 300 67**	**230 300 68**
clear	-	**230 400 55**	-	-

Further colours on request.

TECHNICAL DIAGRAMS:

see page 302

Mainly sidewards illumination

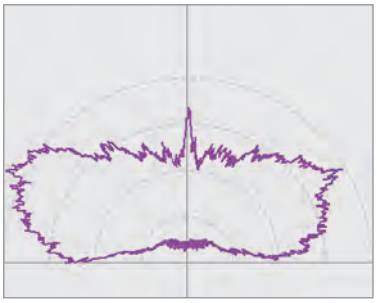


Illustration of the light distribution for the LED Installation Beacon 230

The LED Installation Beacon 230 can for example be used in applications with cable-operated switches or limit switch devices

Sizes of Permanent Beacons

See note on page 347

24 V

PLC

WERMA SIGNALTECHNIK

230 Economy LED Installation Beacon

- Innovative LED technology with upward illumination
- Ideal for installation in limited space due to short thread
- LED Permanent Beacon with M20 thread for the limit and cable-operated switches

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	29 mm x 32 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	2 wires, c. 115 mm long
Fixing:	Installation mounting for Ø 20.5 mm (M20 x 1.5 mm)

Seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	30 mA
red	**230 104 55**
yellow	**230 304 55**
clear	**230 404 55**

Upward illumination

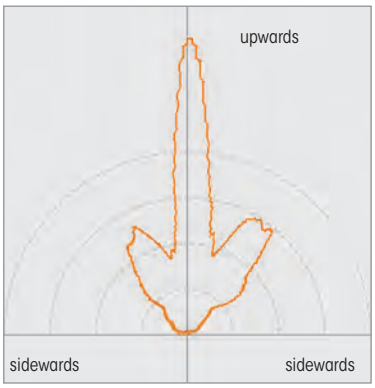


Illustration of the light distribution for the Economy LED Installation Beacon 230

ADDITIONAL INFORMATION:

LED Installation Beacon 230 Economy attains an extremely high level of visibility thanks to completely new LED technology with upward illumination.

This innovative solution draws upon the most advanced technology and is furthermore resistant to vibration and other mechanical stress.

The LED Beacon 230 has a short M20 thread and is especially suitable for installation in small spaces such as cable-operated switches or limit switches.

TECHNICAL DIAGRAMS:

see page 302

Sizes of Permanent Beacons

PLC

231 LED Installation Beacon

Mainly sidewards illumination

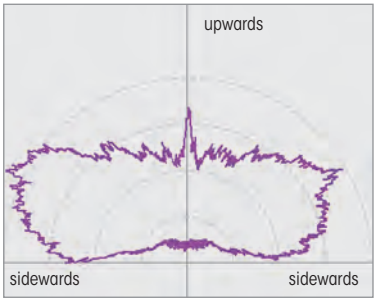


Illustration of the light distribution for the LED Installation Beacon 231

- LED Permanent Beacon with M22 thread for the control panel/switchgear programme
- Extremely high light intensity

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	29 mm x 32 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	2 wires, c. 105 mm long
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm)

Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	115 V AC	230 V AC
Current consumption	80 mA	45 mA	15 mA	20 mA
red	**231 100 54**	**231 100 55**	**231 100 67**	**231 100 68**
green	**231 200 54**	**231 200 55**	**231 200 67**	**231 200 68**
yellow	**231 300 54**	**231 300 55**	**231 300 67**	**231 300 68**
clear	**231 400 54**	**231 400 55**	**231 400 67**	**231 400 68**
blue	**231 500 54**	**231 500 55**	**231 500 67**	**231 500 68**

TECHNICAL DIAGRAMS:

see page 302

Sizes of Permanent Beacons

See note on page 347

24 V

Economy LED Installation Beacon

- Innovative LED technology with upward illumination
- LED Permanent Beacon with M22 thread for the control panel/ switchgear programme

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	29 mm x 32 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	2 wires, c. 105 mm long
Fixing:	Installation mounting for Ø 2.5 mm (M22 x 1.5 mm)

Nut and seal included in assembly.

Upward illumination

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	30 mA
red	**231 104 55**
green	**231 204 55**
yellow	**231 304 55**
clear	**231 404 55**
blue	**231 504 55**

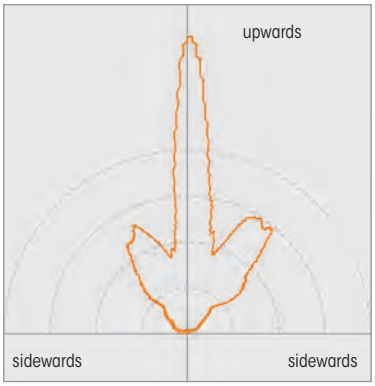


Illustration of the light distribution for the Economy LED Installation Beacon 231

ADDITIONAL INFORMATION:

LED Installation Beacon 231 Economy attains an extremely high level of visibility thanks to completely new LED technology with upward illumination.

This innovative solution draws upon the most advanced technology and is furthermore resistant to vibration and other mechanical stress.

The LED Beacon 231 has an M22 thread and is especially suitable for use in control panel/switch gear applications.

TECHNICAL DIAGRAMS:

see page 302

Sizes of Permanent Beacons

See note on page 347

c UL us CE EAC 16 g IP65 +50°C -20°C PLC

239 LED Installation Beacon (Multicolour)

LED Installation Beacon (Multicolour)

- 5 colours in one beacon
- Multiple status warnings can signalled by one beacon
- Colours can be triggered via the terminals
- Positive and negative control logic
- The three basic colours (red/yellow/green) can be triggered using only two PLC outputs

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	50 mm x 22 mm (Protrusion from panel) 50 mm x 31 mm (Protrusion from panel)
Housing:	PC/ABS-Blend, black
Lens:	PC, transparent
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm)
Connection:	Screw terminal max. 0.5 mm² (239 480 55) Push In max. 1.5 mm² (239 482 55)
Colour options: Nut and seal included in assembly.	Red, yellow, green, white, blue (multicolour)

LED Installation Beacon (Multicolour) with raised lens

NEW

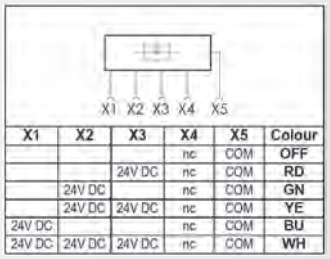
ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	Max. 75 mA
Low lens, clear	**239 480 55**
Raised lens, opaque	**239 482 55**

ADDITIONAL INFORMATION:

The LED beacon 239 is suitable for applications on machines or in control panels.

The LED installation beacon (multicolour) can be single-hole mounted with ease thanks to its M22 installation dimensions.



X1	X2	X3	X4	X5	Colour
			nc	COM	OFF
		24V DC	nc	COM	RD
	24V DC		nc	COM	GN
	24V DC	24V DC	nc	COM	YE
24V DC			nc	COM	BU
24V DC	24V DC	24V DC	nc	COM	WH

Five colours in one beacon: red, yellow, green, white and blue

TECHNICAL DIAGRAMS:

see page 302

Sizes of Permanent Beacons

See note on page 347

CE EAC 31 g IP65 +50°C -20°C PLC

WERMA SIGNALTECHNIK

LED Installation Beacon (Multicolour) for AS-Interface

- 5 colours possible in one beacon
- Colours can be triggered and changed via AS-Interface
- 2 pin terminal for easy AS-Interface connection

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	50 mm x 22 mm (Protrusion from panel)
Housing:	PC/ABS-Blend, black
Lens:	PC, transparent
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device
Connection:	Screw terminal with wire protection max. 1.5 mm^2
Power supply AS-Interface:	Via bus conduction
Operating voltage:	25 V ... 31.6 V according to the AS-Interface specification
Current consumption:	≤ 100 mA
Specification:	V 3.0
IO-Code:	8_{HEX}
ID-Code:	A_{HEX}
ID2-Code:	E_{HEX}
Colour options:	Red, yellow, green, white, blue

Nut and seal included in assembly.

Five colours in one beacon: red, yellow, green, white and blue

ORDER SPECIFICATIONS:

LED Installation Beacon (multicolour) for AS-Interface	**239 780 55**

ADDITIONAL INFORMATION:

Extended addressing in accordance with V3.0
The LED Installation Beacon (Multicolour) for AS-Interface is suitable for the extended addressing (A/B technology) of up to 62 modules. The beacon is supplied with power via the bus.

TECHNICAL DIAGRAMS:

see page 303

Thanks to its compact dimensions and the AS-Interface technology, the LED beacon 239 is especially suited to automation applications

Sizes of Permanent Beacons

See note on page 347

Approval No. 2001

42 g

IP65

+50°C -20°C

PLC

206 Installation Permanent Beacon

- Optimised illumination
- Suitable for use in the 22 mm control panel/switchgear programme
- Simple connection by means of 6.3 mm spades
- 360° visibility
- Bulb change via removal of lens

Bulb change via removal of lens
(LED bulb as accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 53 mm (Protrusion from panel)
Housing:	PA-GF, high impact
Lens:	PC, transparent
Connection:	Spades 6.3 x 0.8 mm Finger-proof model according to BGV A2, when used with insulated spades
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device
Operating voltage:	Max. 48 V
Bulb socket:	BA15d 5 Watt max.
Bulb change:	Via removal of lens

Nut and seal included in assembly. Bulb not included in assembly.

ORDER SPECIFICATIONS:

Voltage	12-48 V		
red	**206 100 00**		
green	**206 200 00**		
yellow	**206 300 00**		
clear	**206 400 00**		
blue	**206 500 00**		

Further colours and voltages on request.

ACCESSORIES:

Accessories

Bulb BA15d total length 42 mm			
Voltage	12 V **955 840 34**	24 V **955 840 35**	30 V **955 840 32**

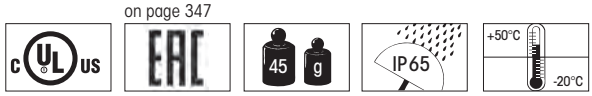
LED bulb BA15d total length 42 mm	
Voltage	24 V AC/DC
Current consumption	< 45 mA
red	**956 100 75**
green	**956 200 75**
yellow	**956 300 75**
white	**956 400 75**
blue	**956 500 75**

TECHNICAL DIAGRAMS:

see page 299

Sizes of Permanent Beacons

See note on page 347



WERMA SIGNALTECHNIK

207 LED Installation Permanent Beacon

- Optimised illumination
- Suitable for use in the 22 mm control panel/switchgear programme
- Simple connection by means of 6.3 mm spades
- 360° visibility

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	58 mm x 69 mm (Protrusion from panel)
Housing:	PA-GF, high impact
Lens:	PC, transparent, Ring: PC
Connection:	Spades 6.3 x 0.8 mm Finger-proof model according to BGV A2, when used with insulated spades
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**207 100 75**	**207 100 67**	**207 100 68**
green	**207 200 75**	**207 200 67**	**207 200 68**
yellow	**207 300 75**	**207 300 67**	**207 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 299

Sizes of Permanent Beacons

See note on page 347

55 g | IP65 | +50°C -20°C | 24 V PLC

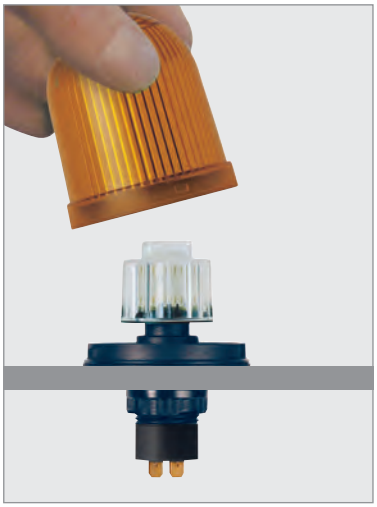
216 Installation Permanent Beacon

- Optimised illumination
- 360° visibility
- Suitable for use in the 22 mm control panel/switchgear programme
- Simple connection by means of 6.3 mm spades
- Bulb change via removal of lens

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 69 mm (Protrusion from panel)
Housing:	PA-GF, high impact
Lens:	PC, transparent
Connection:	Spades 6.3 mm x 0.8 mm Finger-proof model according to BGV A2, when used with insulated spades
Fixing:	Installation mounting for Ø22.5 mm (M22 x 1.5 mm) with anti-twist device
Operating voltage:	Max. 48 V
Bulb socket:	BA15d, 7 Watt max.
Bulb change:	Via removal of lens

Nut and seal included in assembly. Bulb not included in assembly.



Bulb change via removal of lens (LED bulb as accessory)

ORDER SPECIFICATIONS:

Voltage	12-48 V
red	**216 100 00**
green	**216 200 00**
yellow	**216 300 00**
clear	**216 400 00**
blue	**216 500 00**

ACCESSORIES:

Bulb BA15d, total length 54 mm

Voltage	12 V (7 W)	24 V (7 W)	30 V (5 W)
	955 015 34	**955 015 35**	**955 840 32**

LED bulb BA15d, total length 42 mm

Voltage	24 V AC/DC
Current consumption	< 45 mA
red	**956 100 75**
green	**956 200 75**
yellow	**956 300 75**
white	**956 400 75**
blue	**956 500 75**

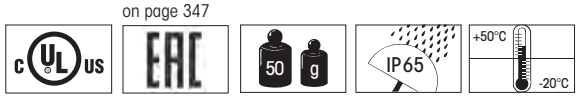
Accessories

TECHNICAL DIAGRAMS:

see page 301

Sizes of Permanent Beacons

See note on page 347



WERMA SIGNALTECHNIK

Installation Permanent Beacon

- Tamper-proof - bulb change via rear access with bayonet mechanism
- With anti-twist device (as accessory)
- Available with tube adaptor as free-standing beacon

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 54 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA-GF, high impact
Lens:	PC, transparent
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 1.5 mm² flex radial or axial laid
Operating voltage:	Max. 250 V
Bulb socket:	BA15d, 7 Watt max.
Bulb change:	Via rear access with bayonet mechanism

Bulb not included in assembly.

Bulb change via rear access with bayonet mechanism

ORDER SPECIFICATIONS:

Voltage	12-240 V
red	**800 100 00**
green	**800 200 00**
yellow	**800 300 00**
clear	**800 400 00**
blue	**800 500 00**

ACCESSORIES:

Bulb BA15d, 5 W, total length 42 mm

Voltage	12 V	24 V	30 V	115 V	230 V
	955 840 34	**955 840 35**	**955 840 32**	**955 840 57**	**955 840 38**

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

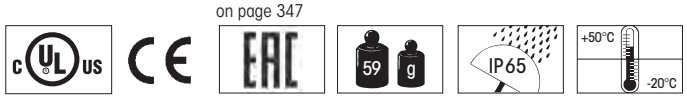
Accessories

TECHNICAL DIAGRAMS:

see page 315

Sizes of Permanent Beacons

See note on page 347



801 LED Installation Permanent Beacon

Tube adaptor as accessory

Accessories

- Long-life LED Permanent Beacon
- With anti-twist device (as accessory)
- Available with tube adaptor as free-standing beacon

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 54 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA-GF, high impact
Lens:	PC, transparent
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**801 100 75**	**801 100 67**	**801 100 68**
green	**801 200 75**	**801 200 67**	**801 200 68**
yellow	**801 300 75**	**801 300 67**	**801 300 68**

Further colours and voltages on request.

ACCESSORIES:

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

TECHNICAL DIAGRAMS:

see page 315

Sizes of Permanent Beacons

See note on page 347

24 V

WERMA SIGNALTECHNIK

815 Installation Permanent Beacon

- Vandal-proof construction withstands every mechanical and natural challenge
- High impact polycarbonate lens (up to 20 Joules)
- Tamper-proof - bulb change via rear access with bayonet mechanism

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	PC/ABS-Blend, Socket: PA-GF, high impact
Lens:	PC transparent Shock resistance 20 Joules according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid
Operating voltage:	Max. 250 V
Bulb socket:	BA15d, 5 Watt max.
Bulb change:	Via rear access with bayonet mechanism
Bulb not included in assembly.	

Vandal-proof construction

ORDER SPECIFICATIONS:

Voltage	12-240 V
red	**815 100 00**
green	**815 200 00**
yellow	**815 300 00**
clear	**815 400 00**
blue	**815 500 00**

ACCESSORIES:

Bulb BA15d, 5 W, total length 42 mm

Voltage	12 V	24 V	30 V	115 V	230 V
	955 840 34	**955 840 35**	**955 840 32**	**955 840 57**	**955 840 38**

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

Accessories

TECHNICAL DIAGRAMS:

see page 315

Sizes of Permanent Beacons

See note on page 347

816 LED Installation Permanent Beacon

Tube adaptor as accessory

Surface housing as accessory

- Long-life LED Permanent Beacon
- Vandal-proof construction withstands every mechanical and natural challenge
- High impact polycarbonate lens (up to 20 Joules)

Life duration up to 100,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA-GF, high impact
Lens:	PC transparent Shock resistance 20 Joules according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**816 100 55**	**816 100 67**	**816 100 68**
green	**816 200 55**	**816 200 67**	**816 200 68**
yellow	**816 300 55**	**816 300 67**	**816 300 68**
clear	**816 400 55**	**816 400 67**	**816 400 68**

ACCESSORIES:

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

Accessories see page 109

TECHNICAL DIAGRAMS:

see page 315

Sizes of Permanent Beacons

See note on page 347

WERMA SIGNALTECHNIK

816 LED Permanent Beacon Multicolour

NEW

816 Multicolour
with clear lens

816 Multicolour
with opaque lens

7 colours in one beacon:
red, yellow, green, white, blue,
violet and turquoise

- 7 colours in one beacon
- Multiple status warnings can be signalled by one beacon
- Positive and negative logic
- The three basic colours (red/yellow/green) can be triggered using only two PLC outputs

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	ABS/PC-Blend, black
Lens:	PC, transparent Shock resistance 20 Joules according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	M12 plug (4 pole)
Colour options:	Red, yellow, green, white, blue, violet, turquoise (multicolour)

ORDER SPECIFICATIONS:

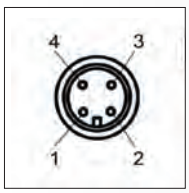
Voltage	24 V DC
Current consumption	max. 120 mA
clear lens	**816 480 55**
opaque lens	**816 780 55**

ACCESSORIES:

Cable 5m with M12 plug	**960 693 05**
Base for base mounting	**975 812 02**
Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Base for tube mounting	**975 840 91**
Anti-twist device	**975 815 22**

ADDITIONAL INFORMATION:

Easy triggering



PIN				Colour
1	2	3	4	
24 V	-	GND	-	rd
-	24 V	GND	-	gn
24 V	24 V	GND	-	ye
-	-	GND	24 V	bu
24 V	24 V	GND	24 V	wh
24 V	-	GND	24 V	vt
-	24 V	GND	24 V	tg

TECHNICAL DIAGRAMS: see page 316

Sizes of Permanent Beacons

See note on page 347

c UL us · CE · EAC · 100 g · IP65 · +50°C -20°C · 20J · PLC

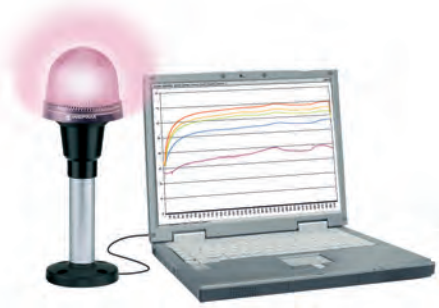
816 LED Beacon (Multicolour) with USB Interface

- More than 200,000 colours possible in one beacon (Multicolour)
- Direct triggering of the beacon via USB Interface
- No additional power supply or hardware necessary
- Compatible with USB 2.0 and 1.1

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	ABS/PC-Blend, black
Lens:	PC, transparent Shock resistance 20 J according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29) Base and wall mounting possible (accessories)
Connection:	Mini USB 2.0 downward cable outlet
Power supply:	Via USB
Colour options:	More than 200,000 colours (RGB LED)
Suitable for:	Windows 2000, Windows XP, Windows Vista, Windows 7
Assembly:	LED beacon, demo software, driver and USB connection cable included, 1.8 m long



Simple triggering as no special software is required

ORDER SPECIFICATIONS:

Voltage	5 V (USB-Connection)
Current consumption	≤ 500 mA
clear lens	**816 480 53**
opaque lens	**816 780 53**

ACCESSORIES:

You will find the appropriate accessories for base or tube mounting on page 109 or under wwww.werma.com

ADDITIONAL INFORMATION:

The installation LED Beacon with USB interface is compatible with USB 2.0 and 1.1.

A wide range of colours and light effects can be quickly and simply programmed by the customer and altered at any time.

With RGB LEDs more than 200.000 colours can be selected

TECHNICAL DIAGRAMS:

see page 316

Sizes of Permanent Beacons

See note on page 347

WERMA SIGNALTECHNIK

232 Installation Flashing Beacon

- Extremely bright Xenon Flash
- Multivoltage Flashing Beacon
- Simple installation by clicking the beacon onto the housing
- 22 mm installation diameter for the control panel/switchgear programme

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	29 mm x 32 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	2 wires, c. 600 mm long
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device
Flash frequency:	1.5 Hz
Flash energy:	1 Ws
Life duration:	4 x 10^6 flashes

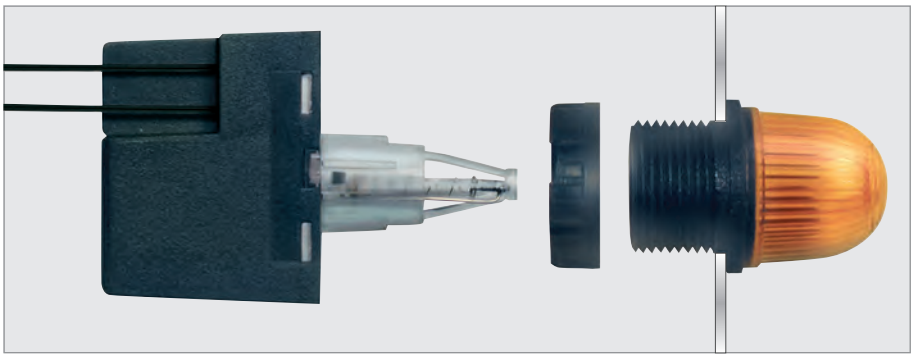
Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC (10-100 V DC) (20-72 V AC)	115 V AC	230 V AC
Current consumption	140 mA	30 mA	20 mA
red	**232 100 55**	**232 100 67**	**232 100 68**
yellow	**232 300 55**	**232 300 67**	**232 300 68**

TECHNICAL DIAGRAMS:

see page 302



Simple mounting with click-on electronics module

Sizes of Flashing Beacons

See note on page 347

24 V

PLC

208 Installation Flashing Beacon

- Optimised illumination
- 360° visibility
- Simple connection by means of 6.3 mm spades
- Suitable for use in the 22 mm control panel/switchgear programme

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	58 mm x 69 mm (Protrusion from panel)
Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC
Connection:	Spades 6.3 x 0.8 mm Finger-proof model according to BGV A2, when used with insulated spades
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device
Flash frequency:	C. 0.75 Hz
Flash energy:	1 Ws
Life duration:	4 x 10^6 flashes

Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	25 mA	30 mA
red	**208 100 55**	**208 100 67**	**208 100 68**
yellow	**208 300 55**	**208 300 67**	**208 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 299

Sizes of Flashing Beacons

See note on page 347

802 Installation Flashing Beacon

Tube adaptor as accessory

Accessories

- Light intense Xenon flash
- With anti-twist device (as accessory)
- Available with tube adaptor as free-standing beacon

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 54 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA-GF, high impact
Lens:	PC, transparent
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid
Flash frequency:	0.75 Hz
Flash energy:	1 Ws
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**802 100 55**	**802 100 67**	**802 100 68**
yellow	**802 300 55**	**802 300 67**	**802 300 68**

Further colours and voltages on request.

ACCESSORIES:

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

TECHNICAL DIAGRAMS:

see page 315

Sizes of Flashing Beacons

See note on page 347

817 Installation Flashing Beacon

Tube adaptor as accessory

Accessories

- Light intensive xenon flash
- Vandal-proof construction withstands every mechanical and natural challenge
- High impact polycarbonate lens (up to 20 Joules)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA fibreglass, high-impact
Lens:	PC transparent Shock resistance 20 Joules according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid
Flash frequency:	C. 1 Hz
Flash energy:	2 Ws
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	115 V AC	230 V AC
Current consumpt.	< 195 mA	125 mA	20 mA	35 mA
red	**817 100 54**	**817 100 55**	**817 100 67**	**817 100 68**
yellow	**817 300 54**	**817 300 55**	**817 300 67**	**817 300 68**

Further colours and voltages on request.

ACCESSORIES:

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

TECHNICAL DIAGRAMS:

see page 316

Sizes of Flashing Beacons

See note on page 347

WERMA SIGNALTECHNIK

816 LED Installation Blinking Beacon

Tube adaptor as accessory

Surface housing (accessory)

- Vandal-proof construction withstands every mechanical and natural challenge
- High impact polycarbonate lens (up to 20 Joules)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	75 mm x 66 mm (Protrusion from panel)
Housing:	PC/ABS-Blend Socket: PA-GF, high impact
Lens:	PC transparent Shock resistance 20 Joules according to EN 60079-0
Fixing:	Installation mounting for Ø 37 mm (PG29)
Connection:	Screw terminal max. 2.5 mm² flex radial or axial laid
Blink frequency:	C. 1 Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC
Current consumption	25 mA
red	**816 110 55**
yellow	**816 310 55**

Further colours and voltages on request.

ACCESSORIES:

Tube adaptor	**975 812 01**
Base with integrated tube, Ø 25 mm, 110 mm long, plastic	**975 840 10**
Base for tube mounting	**975 840 90**
Base for base mounting	**975 812 02**
Tube Ø 25 mm, all anodized aluminium	
100 mm long	**975 845 10**
250 mm long	**975 840 25**
400 mm long	**975 840 40**
Anti-twist device	**975 815 22**
Surface housing IP 65	
for 1 Installation Beacon	**975 815 03**
for 2 Installation Beacons	**975 815 07**
for 3 Installation Beacons	**975 815 08**
for 4 Installation Beacons	**975 109 05**

Accessories see page 116

TECHNICAL DIAGRAMS:

see page 315

Sizes of Flashing Beacons

See note on page 347


WERMA
SIGNALTECHNIK

Overview Free-standing

Permanent Beacons

200/203 201/204 (LED)

Height: 65.5/91 mm
Page 122 + 123

209 209 (LED)

Height: 87/103 mm
Page 124 + 125

210/213 211/214 (LED)

Height: 81/107 mm
Page 126 + 127

219 219 (LED)

Height: 103/119 mm
Page 128 + 129

850/851/852

Height: 88/108/101 mm
Page 130

220/223 221/224 (LED)

Height: 79/105 mm
Page 132 + 133

806 Monitorable LED Permanent Beacon

Height: 97 mm
Page 134

853 (LED)

Height: 85 mm
Page 135

826

Height: 137 mm
Page 136

826 Monitored Permanent Beacon

Height: 137 mm
Page 137

829 LED Permanent/ Blinking Beacon

Height: 137 mm
Page 138

829 LED Permanent/Blinking/ Rotating Beacon

Height: 137 mm
Page 139

829 Monitored LED Permanent Beacon

Height: 137 mm
Page 140

895

Height: 148 mm
Page 141

839 (LED)

Height: 189 mm
Page 142

280 (LED)

Height: 218 mm
Page 143

NEW **280 LED Obstruction Light**

Height: 218 mm
Page 145

NEW **281 LED Obstruction Light**

Height: 205 mm
Page 146

Flashing Beacons

202 Flashing 205 Flashing

Height: 81/107 mm
Page 147

209 Flashing Beacon

Height: 103 mm
Page 148

212 Flashing 215 Flashing

Height: 97/123 mm
Page 149

219 Flashing Beacon

Height: 119 mm
Page 150

222 Flashing 225 Flashing

Height: 79/105 mm
Page 151

853 LED Double Flash

Height: 85 mm
Page 152

853 LED EVS

Height: 85 mm
Page 153

897 Double Flash

Height: 148 mm
Page 154

830 Flashing 835 Flashing

Height: 133/172 mm
Page 155

827 Blinking Beacon

Height: 137 mm
Page 156

828 Flashing Beacon

Height: 137 mm
Page 157

829 LED Double Flash

Height: 137 mm
Page 159

829 LED EVS

Height: 137 mm
Page 160

839 Double Flash Beacon

Height: 189 mm
Page 161

838 Double Flash Beacon

Height: 218 mm
Page 162

280 LED Double Flash

Height: 218 mm
Page 163

280 LED EVS

Height: 218 mm
Page 164

828 Flashing Beacon for road tunnels

Height: 137 mm
Page 158

Rotating Beacons

885 Rotating Mirror Beacon

Height: 151 mm
Page 165

839 Rotating Mirror 839 LED Rotating

Height: 189 mm
Page 167 + 168

829 LED Rotating Beacon

Height:137 mm
Page 169

280 LED Rotating Beacon

Height: 218 mm
Page 170

884 Rotating Beacon

Height: 218 mm
Page 171

883 Rotating Mirror Beacon

Height: 218 mm
Page 172

880 Rotating Mirror Beacon

Height: 215 mm
Page 173

881 Rotating Mirror Beacon

Height: 204 mm
Page 174

Traffic Lights

853 LED Traffic Light

Height: 85 mm
Page 179

890 (LED) Traffic Light

Height: 154 mm
Page 175 + 176

894 LED Traffic Light

2 or 3 tier
Page 180

894 LED Traffic Light

1, 2 or 3 tier
Page 181

Bulbs and Further Information

Further information about "Optical Signal Devices" can be found in the chapter "General Information" beginning on page 356.

Optical Signal Devices

Variety of light effects

Free-standing beacons from WERMA assist in indicating process conditions, risks and imminent dangers in modern production areas clearly and in good time. The urgency of the required course of action can be indicated by the colour as well as the type and duration of the signal. As a basic principle, the colours red, yellow, green, blue and clear are employed in the following variety of signals.

Permanent Light and LED Permanent Light

With the assistance of a permanent light or an LED permanent light the operator is made aware of a specific condition or is instructed to carry out a certain course of action.

WERMA provides free standing beacons with conventional bulbs as well as with long-life LED technology.

(LED) Flashing or Blinking Light and LED EVS Signal Beacon

The deployment of a flashing or blinking signal can generate even more attention than a permanent light. WERMA also provides an alternative long life LED Flash which has a significantly longer life duration of up to 50,000 hours with a considerably reduced power consumption.

The stochastic, random flickering light EVS (Enhanced Visibility System) has been developed by WERMA on a neurobiological basis. As deployed in LED Beacons, this technology succeeds in generating an optimal attention level never previously reached by existing signal devices.

WERMA employs LEDs for its EVS system. A microprocessor triggers random light signals, which make the light appear extremely "agitated", thus generating a continuously high attention level amongst those in the vicinity - even when viewed out the corner of the eye.

Please note the photosensitive epilepsy warning on page 352.

Rotating Mirror Beacon and LED Rotating Signal Beacon

Inside each rotating mirror beacon is a halogen bulb, and a mirror to deflect the light in one direction. This generates a rotating light beam.

In contrast to conventional Rotating Mirror Beacons, the LED version generates the rotating signal by means of a set of LEDs which are triggered in sequence. As no mechanical components have been used at all, the beacon is completely maintenance-free.

WERMA SIGNALTECHNIK

WERMA Free-standing Beacons

Free-standing beacons are designed for direct fixing to the respective object. The basic types of available fixings are base, bracket and tube mounting.

Advantages

- Base, bracket or tube mounting
- Increasing use of LEDs as light source
- High protection rating IP 65
- Beacons with the exceptional protection ratings IP 66 and IP 69k
- Large variety of versions: Available as permanent, blinking, flashing, LED EVS or LED light beacons
- Beacon diameter between 57 and 153 mm
- Modern design

Sizes

COMPARISON OF WERMA FREE-STANDING BEACONS

Series	200	220	210	209	219	853
Ø	57 mm	75 mm	57 mm	57 mm	57 mm	85 mm
Height	65.5 mm	79 mm	81 mm	87 mm	103 mm	85 mm
Page	122	132	126	148	150	135

COMPARISON OF WERMA FREE-STANDING BEACONS

Series	826	885	839	280/883	884
Ø	98 mm	98 mm	153 mm	142 mm	142 mm
Height	137 mm	151 mm	189 mm	218 mm	218 mm
Page	136	165	142	143/172	171

200/203 Permanent Beacon

Permanent Beacon 200
(base mounting)

Permanent Beacon 203 with
integrated mounting bracket

Accessories

- Safe CAGE CLAMP® technology
- BA15d socket integrated in the base
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (200) Cable diameter 3-6 mm (203)

PERMANENT BEACON	**200**	**203**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M 12 x 1.5 mm
Dimensions (Ø x Height):	57 mm x 65.5 mm	57 mm x 91 mm
Operating voltage:	Max. 250 V	Max. 250 V
Bulb socket:	BA15d, 7 Watt max.	BA15d, 7 Watt max.
Bulb change:	Via removal of lens	Via removal of lens

Bulb not included in assembly.

ORDER SPECIFICATIONS:

	Base mounting 200	**Bracket mounting 203**
Voltage	12-240 V	12-240 V
red	**200 100 00**	**203 100 00**
green	**200 200 00**	**203 200 00**
yellow	**200 300 00**	**203 300 00**
clear	**200 400 00**	**203 400 00**
blue	**200 500 00**	**203 500 00**

ACCESSORIES:

Bulb BA15d, 5 W
total length 42 mm

Voltage	12 V	24 V	30 V	115 V	230 V
	955 840 34	**955 840 35**	**955 840 32**	**955 840 57**	**955 840 38**

LED bulb BA15d
total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

TECHNICAL DIAGRAMS: see page 298

Sizes of Permanent Beacons

See note on page 347

Base mounting

Bracket mounting

201/204 LED Permanent Beacon

LED Permanent Beacon 201 (base mounting)

LED Permanent Beacon 204 with integrated mounting bracket

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (201) Cable diameter 3-6 mm (204)

LED PERMANENT BEACON	**201**	**204**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M 12 x 1.5 mm
Dimensions (Ø x Height):	58 mm x 81 mm	58 mm x 107 mm

ORDER SPECIFICATIONS:

Base mounting 201			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**201 100 75**	**201 100 67**	**201 100 68**
green	**201 200 75**	**201 200 67**	**201 200 68**
yellow	**201 300 75**	**201 300 67**	**201 300 68**

Bracket mounting 204			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**204 100 75**	**204 100 67**	**204 100 68**
green	**204 200 75**	**204 200 67**	**204 200 68**
yellow	**204 300 75**	**204 300 67**	**204 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 298 + 299

Sizes of Permanent Beacons

See note on page 347

Base mounting

Bracket mounting

24 V

209 Permanent Beacon

- Safe CAGE CLAMP® technology
- BA15d socket integrated in the base
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 87 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting M25 x 1.5 mm
Operating voltage:	Max. 250 V
Bulb socket:	BA15d, 7 Watt max.
Bulb change:	Via removal of lens

Bulb not included in assembly.

ORDER SPECIFICATIONS:

Voltage	12-240 V
red	**209 100 00**
green	**209 200 00**
yellow	**209 300 00**
clear	**209 400 00**
blue	**209 500 00**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

Bulb BA15d, 5 W
total length 42 mm

Voltage	12 V	24 V	30 V	115 V	230 V
	955 840 34	**955 840 35**	**955 840 32**	**955 840 57**	**955 840 38**

LED bulb BA15d
total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

Accessories

Sizes of Permanent Beacons

TECHNICAL DIAGRAMS:

see page 299

See note on page 347

WERMA SIGNALTECHNIK

209 LED Permanent Beacon

Base with integrated tube (accessory)

- Safe CAGE CLAMP® technology
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Dimensions (Ø x Height):	58 mm x 103 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting M25 x 1.5 mm

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**209 110 75**	**209 110 67**	**209 110 68**
green	**209 210 75**	**209 210 67**	**209 210 68**
yellow	**209 310 75**	**209 310 67**	**209 310 68**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

TECHNICAL DIAGRAMS:

see page 299

Sizes of Permanent Beacons

See note on page 347

24 V

PLC

210/213 Permanent Beacon

Permanent Beacon 210
(base mounting)

Permanent Beacon 213 with
integrated mounting bracket

Accessories

Sizes of Permanent Beacons

- Safe CAGE CLAMP® technology
- BA15d socket integrated in the base
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (210) Cable diameter 3-6 mm (213)

PERMANENT BEACON	**210**	**213**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	57 mm x 81 mm	57 mm x 107 mm
Operating voltage:	Max. 250 V	Max. 250 V
Bulb socket:	BA15d, 10 Watt max.	BA15d, 10 Watt max.
Bulb change:	Via removal of lens	Via removal of lens

Bulb not included in assembly.

ORDER SPECIFICATIONS:

	Base mounting 210	**Bracket mounting 213**
Voltage	12-240 V	12-240 V
red	**210 100 00**	**213 100 00**
green	**210 200 00**	**213 200 00**
yellow	**210 300 00**	**213 300 00**
clear	**210 400 00**	**213 400 00**
blue	**210 500 00**	**213 500 00**

ACCESSORIES:

Bulb BA15d, 7 W
total length 54 mm

Voltage	12 V	24 V	48 V	115 V	230 V
	955 015 34	**955 015 35**	**955 015 36**	**955 015 37**	**955 015 38**

LED bulb BA15d
total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

TECHNICAL DIAGRAMS: see page 300

See note on page 347 · Base mounting · Bracket mounting

211/214 LED Permanent Beacon

LED Permanent Beacon 211 (base mounting)

LED Permanent Beacon 214 with integrated mounting bracket

Housing with CAGE CLAMP® connection

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC
Connection:	CAGE CLAMP® technology max. 2,5 mm²
Cable entry:	Cable diameter max. 10 mm (211) Cable diameter 3-6 mm (214)

LED PERMANENT BEACON	**211**	**214**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	58 mm x 97 mm	58 mm x 123 mm

ORDER SPECIFICATIONS:

Base mounting 211			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**211 100 75**	**211 100 67**	**211 100 68**
green	**211 200 75**	**211 200 67**	**211 200 68**
yellow	**211 300 75**	**211 300 67**	**211 300 68**

Bracket mounting 214			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**214 100 75**	**214 100 67**	**214 100 68**
green	**214 200 75**	**214 200 67**	**214 200 68**
yellow	**214 300 75**	**214 300 67**	**214 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 300

Sizes of Permanent Beacons

See note on page 347 · Base mounting · Bracket mounting · 24 V

72 g · 78 g · IP65 · +50°C · -20°C · PLC

219 Permanent Beacon

- Safe CAGE CLAMP® technology
- BA15d socket integrated in the base
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 103 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting, M25 x 1.5 mm
Operating voltage:	Max. 250 V
Bulb socket:	BA15d, 10 Watt max.
Bulb change:	Via removal of lens

Bulb not included in assembly.

ORDER SPECIFICATIONS:

	12-240 V
red	**219 100 00**
green	**219 200 00**
yellow	**219 300 00**
clear	**219 400 00**
blue	**219 500 00**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

Bulb BA15d, 7 W
total length 54 mm

Voltage	12 V	24 V	48 V	115 V	230 V
	955 015 34	**955 015 35**	**955 015 36**	**955 015 37**	**955 015 38**

LED bulb BA15d
total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

Accessories

TECHNICAL DIAGRAMS: see page 301

Sizes of Permanent Beacons

See note on page 347

219 LED Permanent Beacon

Base with integrated tube (accessory)

- Safe CAGE CLAMP® technology
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Dimensions (Ø x Height):	58 mm x 119 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting, M25 x 1.5 mm

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**219 110 75**	**219 110 67**	**219 110 68**
green	**219 210 75**	**219 210 67**	**219 210 68**
yellow	**219 310 75**	**219 310 67**	**219 310 68**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

TECHNICAL DIAGRAMS:

see page 301

Sizes of Permanent Beacons

See note on page 347

24 V

850/851/852 Permanent Beacon

850

851

852

- Available with grey or black housing

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	57 mm x 88 mm (850) 57 mm x 108 mm (851) 57 mm x 101 mm (852)
Housing:	ABS (85X XXX 38) PC/ABS-Blend (85X XXX 08)
Lens:	PC, transparent
Fixing:	850: Base mounting 851: Bracket mounting 852: Tube mounting M25 x 1.5 mm
Socket:	BA15d max. 7 Watt
Connection:	Screw terminal max. 1.5 mm²
Cable entry:	Cable diameter max. 8.5 mm (850) Cable diameter max. 7 mm (851) Cable diameter max. 10 mm (852)

Bulb not included in assembly.

ORDER SPECIFICATIONS:

Base mounting 850		12-250 V			12-250 V
Black housing	red	**850 100 08**	Grey housing	red	**850 100 38**
	green	**850 200 08**		green	**850 200 38**
	yellow	**850 300 08**		yellow	**850 300 38**
	clear	**850 400 08**		clear	**850 400 38**
Bracket mounting 851		12-250 V			12-250 V
Black housing	red	**851 100 08**	Grey housing	red	**851 100 38**
	green	**851 200 08**		green	**851 200 38**
	yellow	**851 300 08**		yellow	**851 300 38**
	clear	**851 400 08**		clear	**851 400 38**
Tube mounting 852		12-250 V			12-250 V
Black housing	red	**852 100 08**	Grey housing	red	**852 100 38**
	yellow	**852 300 08**		yellow	**852 300 38**

Further colours and voltages on request.

ADDITIONAL INFORMATION:

Please also see the beacon series 209, 210, 213, 219 with additional advantages (see page 148 onwards)

- High protection rating IP 65
- BA15d socket integrated in the base
- Safe CAGE CLAMP® connection
- Optimum illumination
- Connection without product disassembly

ACCESSORIES: see next page

See note on page 347

ACCESSORIES:

Base with integrated tube with M25 x 1.5 mm incl. rubber seal	**960 693 03**
Adaptor M25 / M20 for fixing	**960 693 04**
Cable gland M25 x 1.5 mm	**975 209 02**

Bulb BA15d, 7 W
Total length 54 mm

Voltage	12 V	24 V	48 V	115 V	230 V
	955 015 34	**955 015 35**	**955 015 36**	**955 015 37**	**955 015 38**

LED bulb BA15d
Total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

Seal for 850 (required for IP 54)	**975 850 01**

TECHNICAL DIAGRAMS:

see page 321

220/223 Permanent Beacon

Permanent Beacon 220
(base mounting)

Permanent Beacon 223 with
integrated mounting bracket

Housing with
CAGE CLAMP® connection

- Safe CAGE CLAMP® technology
- BA15d socket integrated in the base
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC/ABS-Blend
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (220) Cable diameter 3-6 mm (223)

PERMANENT BEACON	**220**	**223**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	75 mm x 79 mm	75 mm x 105 mm
Operating voltage:	Max. 250 V	Max. 250 V
Bulb socket:	BA15d, 10 Watt max.	BA15d,10 Watt max.
Bulb change:	Via removal of lens	Via removal of lens

Bulb not included in assembly.

ORDER SPECIFICATIONS:

	Base mounting 220	**Bracket mounting 223**
Voltage	12-240 V	12-240 V
red	**220 100 00**	**223 100 00**
green	**220 200 00**	**223 200 00**
yellow	**220 300 00**	**223 300 00**
clear	**220 400 00**	**223 400 00**
blue	**220 500 00**	**223 500 00**

Further colours and voltages on request.

ACCESSORIES:

Bulb BA15d, 7 W
total length 54 mm

Voltage	12 V	24 V	48 V	115 V	230 V
	955 015 34	**955 015 35**	**955 015 36**	**955 015 37**	**955 015 38**

LED bulb BA15d
total length 42 mm

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	< 45 mA	< 15 mA	< 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

TECHNICAL DIAGRAMS: see page 301

Sizes of Permanent Beacons

See note on page 347 · Base mounting · Bracket mounting

221/224 LED Permanent Beacon

LED Permanent Beacon 221 (base mounting)

LED Permanent Beacon 224 with integrated mounting bracket

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC/ABS-Blend
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (221) Cable diameter 3-6 mm (224)

LED PERMANENT BEACON	**221**	**224**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	75 mm x 79 mm	75 mm x 105 mm

ORDER SPECIFICATIONS:

Base mounting 221			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**221 100 75**	**221 100 67**	**221 100 68**
green	**221 200 75**	**221 200 67**	**221 200 68**
yellow	**221 300 75**	**221 300 67**	**221 300 68**

Bracket mounting 224			
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	45 mA	25 mA	25 mA
red	**224 100 75**	**224 100 67**	**224 100 68**
green	**224 200 75**	**224 200 67**	**224 200 68**
yellow	**224 300 75**	**224 300 67**	**224 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 301 + 302

Sizes of Permanent Beacons

See note on page 347

Base mounting

Bracket mounting

24 V

806 Monitorable LED Permanent Beacon

TÜV Rheinland Gruppe — Bauart geprüft — Type approved

- TÜV certified LED Muting Beacon
- Current monitoring possible
- Approved for muting use according to IEC 61496-1
- For use in laser technology according to EN 60825-1, restart warning, timed triggering, change of operating mode

TECHNICAL SPECIFICATIONS:

Life duration up to 100,000 hrs

Dimensions (Ø x Height):	70 mm x 97 mm
Housing:	Terminal element: PA-GF, high impact Cap: PC
Lens:	PC, transparent
Fixing:	Base mounting, Bracket mounting
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 14 mm
Duty cycle:	100 %
Current consumption following failure of 3 of the 6 strips:	< 5 mA

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	60 mA
yellow	**806 350 55**
clear	**806 450 55**

ACCESSORIES:

Bracket, including cable gland	**960 000 02**
Bracket for 1-sided mounting	**975 840 85**

see page 67.

Bracket (accessory)

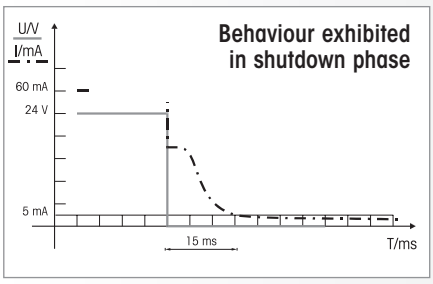
Accessories

ADDITIONAL INFORMATION:

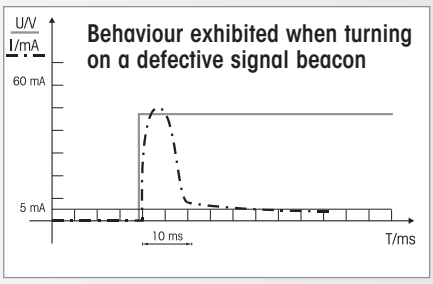
What does Muting mean?

Muting is the temporary automatic overriding of a safety protection device by means of a control system within the normal operating cycle of a machine. This bridging of the safety protection must be visually displayed in order to prevent workers mistakenly entering a dangerous area.

It is therefore necessary that the signal beacon in such applications can be triggered by failsafe technology and the bulb function can be monitored.
The standard colour for muting signalisation is clear; yellow is however also permitted.



Behaviour exhibited in shutdown phase



Behaviour exhibited when turning on a defective signal beacon

TECHNICAL DIAGRAMS: see page 315

See note on page 347

c UL us · CE · EAC · 180 g · IP65 · +55°C -20°C · TÜV Rheinland Gruppe

WERMA SIGNALTECHNIK

853 LED Permanent Beacon

- LED Permanent Beacon in attractive quadratic form
- Innovative connector to create traffic light combinations
- Easy assembly due to quick-release screws
- Thread/membrane combination keeps cabling requirements to a minimum
- Also available in 48 V

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Fixing:	Wall, base and ceiling mounting
Current consumption:	Max. 80 mA at 24 V
Equipment:	Elastic self-sealing membranes for cable entry without tools Eight integrated M20 threads, no nuts required Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assembly:	Incl. snap-on fixing bracket (optional use, see page 152)

The innovative connector (accessory) enables traffic light combinations to be created in a matter of seconds

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	48 V AC	115-230 V AC
red	**853 100 54**	**853 100 55**	**853 100 66**	**853 100 60**
green	**853 200 54**	**853 200 55**	**853 200 66**	**853 200 60**
yellow	**853 300 54**	**853 300 55**	**853 300 66**	**853 300 60**
clear	**853 400 54**	**853 400 55**	**853 400 66**	**853 400 60**
blue	**853 500 54**	**853 500 55**	**853 500 66**	**853 500 60**

ACCESSORIES:

Connector for traffic light combinations	**975 853 01**
Cable gland M20 x 1.5 mm, 8mm thread length	**975 853 02**

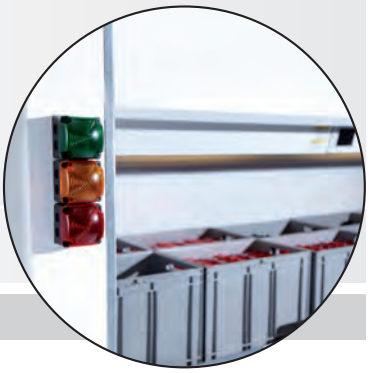
ADDITIONAL INFORMATION:

Combinations made easy

The LED Beacon 853 can be easily turned into a traffic light combination. Simply attach different coloured beacons together using the connector.

The eight cable entries with both self-sealing membranes and integrated M20 threads enable additional beacons to be attached to every side. There is no limit to the range of possible lighting designs that can be created.

Traffic light configurator at **www.werma.com**



Sizes of Permanent Beacons

TECHNICAL DIAGRAMS: see page 321

See note on page 347

24 V

826 Permanent Beacon

Base/Bracket Mounting

Tube Mounting

Accessories

- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes
- Simple mounting
- Removal of the lens only possible with tools

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Cable entry:	Cable diameter 5-7 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	Screw free clamp mechanism max. 1.5 mm²
Operating voltage:	Max. 250 V for BA15d
Bulb:	Max. 15 W
Duty cycle:	100 % max. 15 W, 50 % max. 25 W
Socket:	BA15d

Bulb not included in assembly.

ORDER SPECIFICATIONS:

Fixing	**Base/Bracket mounting**	**Tube mounting**
Voltage	12-240 V	12-240 V
red	**826 100 00**	**826 110 00**
green	**826 200 00**	**826 210 00**
yellow	**826 300 00**	**826 310 00**
clear	**826 400 00**	**826 410 00**
blue	**826 500 00**	**826 510 00**

ACCESSORIES:

Plastic bracket for wall mounting		**975 826 05**
Wire guard, galvanised, only for base mounting		**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long		**975 845 10**
Base for tube, plastic		**975 840 90**
Base for tube, metal		**975 840 91**
Bulb BA15d, 15 W, total length 48 mm	24 V **955 826 35**	230 V **955 826 38**

TECHNICAL DIAGRAMS:

see page 316

Sizes of Permanent Beacons

Base/Bracket mounting

See note on page 347

Base/Bracket mounting

Tube mounting

IP65

+50°C

-20°C

WERMA SIGNALTECHNIK

Monitored Permanent Beacon

- Built-in monitoring capability
- TÜV approval
- No additional external voltage required
- Two potential-free safety outputs for connection to control system

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base, bracket and tube mounting Base 975 840 90 must be ordered twice for base mounting - once as socket for beacon and once as base
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Rated voltage:	24 V DC ± 10 %
Input power 24 V AC/DC:	7 W
Bulb BA15d:	7 W/24 V
Output current capability:	30 V DC/100 mA
On state resistance of an output:	Max. 25 Ω
Fuse for 7 W bulb:	500 mA quick action (IEC 60127-3/3)
Atmospheric humidity:	≤ 95 % without moisture condensation
Response time,	
normal operation and with filament break:	1 ms to 5 ms
in fault cases with safety release:	< 300 ms (with short-circuit current ≥ 4 A)
Certification:	EN ISO 13849-1:2008 category 4, Peformance Level „e" EN ISO 13849-2:2008 validation
Bulb included in assembly.	

Bracket (accessory)

ORDER SPECIFICATIONS:

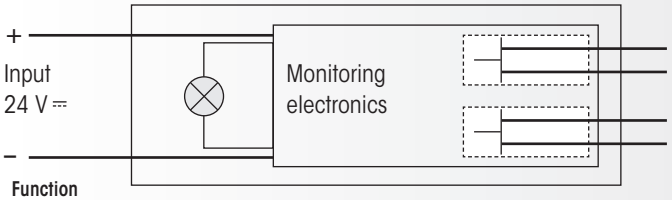
Voltage	24 V DC
red	**826 110 55**
yellow	**826 310 55**
clear	**826 410 55**

Tube with base (accessory)

ACCESSORIES:

Bulb BA15d, 7 W	**955 015 35**

ADDITIONAL INFORMATION:



Function

The device is equipped with a lamp monitor which signals the current flow of the incandescent lamp back to two electrically isolated, potential-free semiconductor outputs A and B (outputs closed). If the lamp has not been actuated, both outputs are open. In case of a fault and/or a lamp failure at least one output is opened.

Depending on the safety category, one or two outputs are to be used for a reliable lamp evaluation. In case of an incandescent filament short-circuit in the lamp, the integrated fuse is tripped. It must be replaced by a new fuse in accordance with the specifications after the lamp has been replaced by a lamp of equal wattage.

Sizes of Permanent Beacons

TECHNICAL DIAGRAMS: see page 316

See note on page 347

829 LED Permanent/Blinking Beacon

Base/Bracket mounting

Tube mounting

Accessories

- Multi-functional LED beacon
- Interchangeable light effects
- Shock-proof and vibration resistant
- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Cable entry:	Cable diameter 5-7 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	Screw terminal with wire protection 0.5 mm^2 - 2.5 mm^2

Life duration up to 50,000 hrs

LED PERMANENT/BLINKING BEACON (INTERCHANGEABLE LIGHT EFFECT)

Blink frequency:	C. 1.5 Hz
Operating voltage:	24 V DC

LED PERMANENT BEACON

Operating voltage:	115 V AC	230 V AC

ORDER SPECIFICATIONS:

LED PERMANENT/BLINKING	**Base/Bracket mounting**	**Tube mounting**
Voltage	24 V DC	24 V DC
Current consumption	≤ 150 mA	≤ 150 mA
red	**829 100 55**	**829 107 55**
green	**829 200 55**	**829 207 55**
yellow	**829 300 55**	**829 307 55**
blue	**829 500 55**	**829 507 55**

LED PERMANENT	**Base/Bracket mounting**		**Tube mounting**	
Voltage	115 V AC	230 V AC	115 V AC	230 V AC
Current consumption	≤ 30 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
red	**829 130 67**	**829 130 68**	**829 137 67**	**829 137 68**
green	**829 230 67**	**829 230 68**	**829 237 67**	**829 237 68**
yellow	**829 330 67**	**829 330 68**	**829 337 67**	**829 337 68**
blue	**829 530 67**	**829 530 68**	**829 537 67**	**829 537 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

TECHNICAL DIAGRAMS:

see page 317

Sizes of Permanent Beacons

Base/Bracket mounting

See note on page 347

Base/Bracket mounting

Tube mounting

WERMA SIGNALTECHNIK

829

LED Permanent/Blinking/Rotating Beacon with external triggering

Base/Bracket mounting

Bracket (accessories)

Three different light effects with one device

Sizes of Permanent Beacons

- Multi-functional LED beacon
- 3 light effects can be remotely selected
- Electrically isolated signal inputs
- Positive and negative logic possible
- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Cable entry:	Cable diameter 5-7 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	Screw terminal with wire protection 0.5 mm^2 - 2.5 mm^2
Blink frequency:	C. 1.5 Hz
Rotation frequency:	C. 180 r.p.m.

Life duration up to 50,000 hrs

ORDER SPECIFICATIONS:

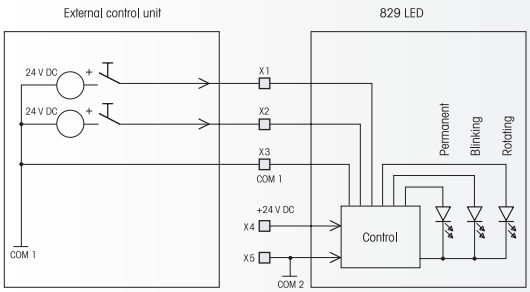
Fixing	**Base/Bracket mounting**	**Tube mounting**
Voltage	24 V DC	24 V DC
Current consumption	≤ 300 mA	≤ 300 mA
red	**829 150 55**	**829 157 55**
green	**829 250 55**	**829 257 55**
yellow	**829 350 55**	**829 357 55**
blue	**829 550 55**	**829 557 55**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

ADDITIONAL INFORMATION:

829 with external triggering - Light effects set via control cables



Thanks to the external trigger function, the range of light effects offered by the LED Beacon 829 can be set by means of electrically isolated, binary coded 24 V control cables. This guarantees a much greater level of resistance to electrical interference.
The machine operator can use the different signals to indicate various machine conditions - without having to make adjustments to the beacon itself. In addition the LED beacon 829 can be used in conjunction with both positive and negative trigger logic.

TECHNICAL DIAGRAMS:

see page 317

See note on page 347

Base/Bracket mounting

Tube mounting

220 g

255 g

IP65

+50°C

-20°C

829 Monitored LED Permanent Beacon

Monitored Permanent Beacon with long life, maintenance-free LED technology

Bracket (accessory)

- Durable LED Permanent Beacon with built-in monitoring capability
- No additional external voltage required
- Two potential-free safety outputs for connection to control system

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Diameter x Height):	98 mm x 137 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base, bracket and tube mounting Base 975 840 90 must be ordered twice for tube mounting - once as socket for beacon and once as base
Installation position:	Vertical
Cable outlet:	Downwards
Current consumption:	≤ 145 mA
Duty cycle:	100 %
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Rated voltage:	24 V DC
Input power 24 V DC:	c. 3.5 W
Output current capability:	30 V DC/100 mA
On state resistance of an output:	Max. 25 Ω
Atmospheric humidity:	≤ 95 % without moisture condensation
Response time,	
normal operation and with LED failure:	1 ms to 5 ms
in fault cases with safety release:	< 1 s (with short-circuit current ≥ 1 A)
Certification:	EN ISO 13849-1:2008 category 4, Peformance Level "e" EN ISO 13849-2:2008 validation

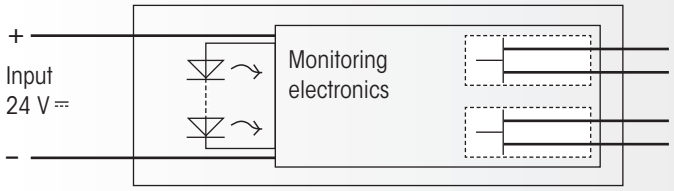
ORDER SPECIFICATIONS:

Voltage	24 V DC
red	**829 170 55**
yellow	**829 370 55**
clear	**829 470 55**

ACCESSORIES:

Bracket	**975 826 05**

ADDITIONAL INFORMATION:



Function
The device is equipped with monitoring electronics which signal the current flow of the beacon back to two electrically isolated, potential-free semiconductor outputs A and B (outputs closed).

If the beacon has not been actuated, both outputs are open. In case of a fault at least one output is opened.

TECHNICAL DIAGRAMS:

see page 317

Sizes of Permanent Beacons

See note on page 347

895 Permanent Beacon

- Large signal beacon for powerful signal effect
- With a multitude of symbols
- High light intensity thanks to optimised lens

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	150 mm x 148 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Socket:	E27 max. 25 W 2 sockets E14 each with max. 15 W with adhesive stickers E27 max. 15 W
Fixing:	Base mounting, tube mounting and fixing bracket (accessory)
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm
Connection:	Screw-free clamp mechanism max. 1.5 mm²

ORDER SPECIFICATIONS:

Voltage	12-240 V AC/DC
red	**895 100 00**
green	**895 200 00**
yellow	**895 300 00**
clear	**895 400 00**
blue	**895 500 00**

Bulb not included in assembly.

PERMANENT LIGHT WITH TWO SOCKETS (incl. reflector)

Voltage	12-240 V AC/DC
red	**895 110 00**

ACCESSORIES:

Fixing bracket, additional reflector, Bulbs and LED Bulbs, Adhesive Stickers see Permanent/ Traffic Light Beacon (page 176).

TECHNICAL DIAGRAMS:

see page 326

Audible addition:
The Multi-Tone Sounder 190 with 110 dB (see page 253)

See note on page 347

CE EAC 400 g IP65 +50°C -30°C

839 LED Permanent Beacon

- Robust aluminium housing including wire guard
- Salt water resistant
- DC multi-voltage version
- High Protection rating IP 67
- Robust bracket made of V2A stainless steel (accessory)

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	153 mm x 198 mm
Housing:	Black laquered aluminium with integral wire guard
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (included in assembly) Cable diameter 6-13 mm
Installation position:	As required

ORDER SPECIFICATIONS:

Voltage	12-50 V DC	230 V AC
Current consumption	500-100 mA	50 mA
red	**839 100 55**	**839 100 68**
yellow	**839 300 55**	**839 300 68**

ACCESSORIES:

Mounting bracket	**975 839 02**

TECHNICAL DIAGRAMS:

see page 317

Also suitable for use in rough conditions

Sizes of Permanent Beacons

See note on page 347

CE EAC 1,28 kg IP67 +50°C -30°C

WERMA SIGNALTECHNIK

280 LED Permanent Beacon

- High light intesity
- Adaptor for tube mounting (accessory)
- High impact resistance to 20 Joules
- DC multi-voltage version

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	12-50 V DC	230 V AC
Current consumption	12 V: 500 mA 50 V: 100 mA	50 mA
red	**280 100 55**	**280 100 68**
yellow	**280 300 55**	**280 300 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Wire guard, only for base mounting	**975 883 08**

TECHNICAL DIAGRAMS:

see page 303

Plastic bracket (accessory)

Plastic bracket, adaptor for tube mounting and wire guard (accessories)

High light output using unique LED technology

Sizes of Permanent Beacons

See note on page 347

Obstruction Light

Why do obstacles need to be illuminated?

The law stipulates that buildings of a specific height and in the vicinity of airports as well as factory chimneys, towers, masts etc. must be equipped with obstruction lights.

This special lighting makes obstacles visible for pilots in the dark or when visibility is poor. Obstruction lighting is one of the most important aspects of flight safety.

What directives and regulations are there?

The method of marking obstacles to air traffic is laid down by diverse laws, regulations and recommendations. These regulations have a clearly defined sphere of influence and are **internationally interlinked.**

The International Civil Aviation Organisation **(ICAO)** is a special organisation within the United Nations created to establish and develop universal regulations for safety, continuity and economic efficiency in international air traffic. The recommendations of the ICAO are not directly binding in the member states, but must be transformed by them into the appropriate **national legal regulations.**

In **Germany** the Ministry for Transport and Construction Development **(BMVBS)** issues the regulations covering obstruction lighting on buildings. The **ICAO** regulations regarding the methods of marking and lighting aviation obstacles can be found in ICAO Annex 14.

- **"Low intensity obstacle beacon type A":** a red permanent night-time warning beacon for fixed obstructions with a brightness of 10 cd.
- **"Low intensity obstacle beacon type B":** a red permanent night-time warning beacon for fixed obstructions with a brightness of 32 cd.

Where are obstacle lights deployed?

- **Germany:** Marking of aviation obstacles by night at any height providing the highest point of the obstacle can be marked.
- **According to ICAO:** Marking of aviation obstacles by night up to 45 m ("Low-intensity Obstacle Light, Type A").

Low-intensity LED Obstruction Light Type A and B

NEW

LED Obstruction Light Type B

LED Obstruction Light Type A - The adaptor (accessory) allows quick and simple mounting on a tube

Plastic bracket, adaptor for tube mounting (accessories)

Sizes of Permanent Beacons

- For use as "Low-intensity Obstruction Light, Type A or B" in accordance with ICAO Annex 14
- NEW 230 V version with or without monitoring function
- Very bright solution which far exceeds the required light output (32 cd)
- High impact resistance to 20 Joules

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent, clear
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Duty cycle:	100 %

Current consumption at failure of 2 of the 12 LED strips: < 50mA

ORDER SPECIFICATIONS:

Low-intensity LED Obstruction Light Type A

Voltage	12-50 V DC
Current consumption	500-100 mA
aviation red	**280 410 55**

NEW **Low-intensity LED Obstruction Light Type B**

Voltage	24 V DC	230 V AC	230 V AC with monitoring funct.
Current consumption	~ 400 mA	~ 200 mA	~ 200 mA / < 50 mA (Failure mode)
aviation red	**280 470 55**	**280 470 68**	**280 480 68**

ACCESSORIES:

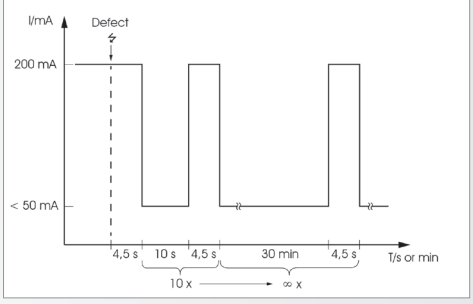
Plastic bracket for wall mounting	**975 883 06**
Wire guard	**975 883 08**
Adaptor for tube mounting	**975 883 09**

ADDITIONAL INFORMATION:

Monitoring function:
To provide enhanced safety for obstruction light applications WERMA has developed a variant with an integrated monitoring function.

Should any two of the twelve LED strips fail, the light will switch to failure mode (see image). This can be detected for example by a current monitoring relay. After repeatedly checking the product status the unit will remain in failure mode for 30 minutes before again checking the status.

Behaviour of defective obstruction light



TECHNICAL DIAGRAMS: see page 303

See note on page 347

281 Low-intensity LED Obstruction Light Type A and B

LED Obstruction Light Type B

- LED Obstruction Light with robust glass/metal housing
- For international use as „Low-intensity Obstacle Light, Type A or B" in accordance with ICAO Annex 14

NEW
- 230 V version with or without monitoring function (Type B)
- Suitable for use in tough operating conditions, salt water resistant

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	185 mm x 205 mm
Housing:	Aluminium, coloured powder coating
Lens:	Reinforced borosilicate glass
Fixing:	Base mounting, tube mounting M25 (no accessory required)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable gland M25 x 1.5 mm (included in assembly), Cable diameter 9-17 mm Reducer unit (included in assembly)

LED Obstruction Light Type A

ORDER SPECIFICATIONS:

Low-intensity LED Obstruction Light Type A

Voltage	12-50 V DC
Current consumption	500-100 mA
aviation red	**281 410 55**

NEW

Low-intensity LED Obstruction Light Type B

Voltage	24 V DC	230 V AC	230 V AC with monitoring funct.
Current consumption	~ 400 mA	~ 200 mA	~ 200 mA / < 50 mA (Failure mode)
aviation red	**281 470 55**	**281 470 68**	**281 480 68**

ADDITIONAL INFORMATION:

Salt water and fuel resistant

To protect the obstruction light against sea salt, UV radiation or aviation fuel, WERMA has selected a particularly robust material - the aluminium die-cast housing is made of a high-quality salt water resistant alloy which is covered with a powder coating.

The glass lens is made of hardened borosilicate glass. This ensures that the signalling device does not weather even in the toughest conditions.

Further information on the monitoring function can be found on page 145.

TECHNICAL DIAGRAMS:

see page 303

See note on page 347

WERMA SIGNALTECHNIK

202/205 Flashing Beacon

Flashing Beacon 202
(base mounting)

Flashing Beacon 205 with
integrated mounting bracket

Housing with
CAGE CLAMP® connection

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (202) Cable diameter 3-6 mm (205)

FLASHING BEACON	**202**	**205**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	58 mm x 81 mm	58 mm x 107 mm
Flash frequency:	C. 0.75 Hz	C. 0.75 Hz
Flash energy:	1 Ws	1 Ws
Life duration:	4 x 10^6 flashes	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Base mounting 202			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**202 100 55**	**202 100 67**	**202 100 68**
yellow	**202 300 55**	**202 300 67**	**202 300 68**

Bracket mounting 205			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**205 100 55**	**205 100 67**	**205 100 68**
yellow	**205 300 55**	**205 300 67**	**205 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 298 + 299

Sizes of Flashing Beacons

See note on page 347 · Base mounting 82 g · Bracket mounting 88 g · IP65 · +50°C / -20°C · 1 Ws

209 Flashing Beacon

- Safe CAGE CLAMP® technology
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	58 mm x 103 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting M25 x 1.5 mm
Flash frequency:	C. 0.75 Hz
Flash energy:	1 Ws
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**209 120 55**	**209 120 67**	**209 120 68**
yellow	**209 320 55**	**209 320 67**	**209 320 68**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

TECHNICAL DIAGRAMS:

see page 299

Base with integrated tube (accessory)

Sizes of Flashing Beacons

See note on page 347

212/215 Flashing Beacon

Flashing Beacon 212
(Base mounting)

Flashing Beacon 215 with integrated mounting bracket

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (212) Cable diameter 3-6 mm (215)

FLASHING BEACON	**212**	**215**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	58 mm x 97 mm	58 mm x 123 mm
Flash frequency:	C. 0.75 Hz	C. 0.75 Hz
Flash energy:	1 Ws	1 Ws
Life duration:	4 x 10^6 flashes	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Base mounting 212			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**212 100 55**	**212 100 67**	**212 100 68**
yellow	**212 300 55**	**212 300 67**	**212 300 68**

Bracket mounting 215			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**215 100 55**	**215 100 67**	**215 100 68**
yellow	**215 300 55**	**215 300 67**	**215 300 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 300

Sizes of Flashing Beacons

See note on page 347 | Base mounting | Bracket mounting

88 g | 94 g | IP65 | +50°C | -20°C | 1 Ws

219 Flashing Beacon

Base with tube (accessory)

- Safe CAGE CLAMP® technology
- Optimum illumination
- Tube mounting
- Single hole mounting possible with cable gland

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	58 mm x 119 mm
Housing:	PA-GF, high impact
Lens:	PC, transparent Ring: PC
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Tube mounting M25 x 1.5 mm
Flash frequency:	C. 0.75 Hz
Flash energy:	1 Ws
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**219 120 55**	**219 120 67**	**219 120 68**
yellow	**219 320 55**	**219 320 67**	**219 320 68**

ACCESSORIES:

Base with integrated tube, M25 x 1.5 mm	**975 209 01**
Cable gland M25 x 1.5 mm	**975 209 02**

TECHNICAL DIAGRAMS:

see page 301

Sizes of Flashing Beacons

See note on page 347

222/225 Flashing Beacon

Flashing Beacon 222
(base mounting)

Flashing Beacon 225 with
integrated mounting bracket

- Safe CAGE CLAMP® technology
- Optimum illumination
- Available for base or bracket mounting
- Connection without the need to disassemble the product

TECHNICAL SPECIFICATIONS:

Housing:	PA-GF, high impact
Lens:	PC, transparent; Ring: PC/ABS-Blend
Connection:	CAGE CLAMP® technology max. 2.5 mm²
Cable entry:	Cable diameter max. 10 mm (222) Cable diameter 3-6 mm (225)

FLASHING BEACON	**222**	**225**
Fixing:	Base mounting with flat seal	Bracket mounting incl. cable gland M12 x 1.5 mm
Dimensions (Ø x Height):	75 mm x 79 mm	75 mm x 105 mm
Flash frequency:	C. 0.75 Hz	C. 0.75 Hz
Flash energy:	1 Ws	1 Ws
Life duration:	4 x 10^6 flashes	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Base mounting 222			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**222 100 55**	**222 100 67**	**222 100 68**
yellow	**222 300 55**	**222 300 67**	**222 300 68**

Bracket mounting 225			
Voltage	24 V DC	115 V AC	230 V AC
Current consumption	100 mA	20 mA	30 mA
red	**225 100 55**	**225 100 67**	**225 100 68**
yellow	**225 300 55**	**225 300 67**	**225 300 68**
blue	**225 500 55**	**225 500 67**	**225 500 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS:

see page 301 + 302

Sizes of Flashing Beacons

See note on page 347

Base mounting

Bracket mounting

124 g

130 g

IP65

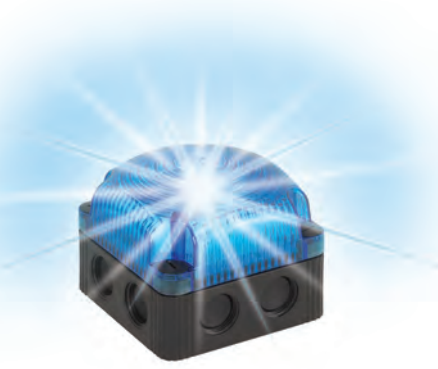
+50°C

-20°C

1 Ws

853 LED Double Flash Beacon

- LED Double Flash Beacon in attractive quadratic form
- Intense double flash with low power consumption
- Innovative connector to create traffic light combinations
- Easy assembly due to quick-release screws
- Thread/membrane combination keeps cabling requirements to a minimum
- Also available in 48 V



Intense double flash effect with low power consumption

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Fixing:	Wall, base and ceiling mounting
Current consumption:	Max. 80 mA at 24 V
Equipment:	Eight self-sealing membranes for cable entry without tools Eight integrated M20 threads, no nuts required Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assembly:	Incl. snap-on fixing bracket (optional use)

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	48 V AC	115-230 V AC
red	**853 110 54**	**853 110 55**	**853 110 66**	**853 110 60**
green	**853 210 54**	**853 210 55**	**853 210 66**	**853 210 60**
yellow	**853 310 54**	**853 310 55**	**853 310 66**	**853 310 60**
clear	**853 410 54**	**853 410 55**	**853 410 66**	**853 410 60**
blue	**853 510 54**	**853 510 55**	**853 510 66**	**853 510 60**

ACCESSORIES:

Connector for traffic light combinations (For further information see page 135)	**975 853 01**
Cable gland M20 x 1.5 mm 8 mm thread length	**975 853 02**

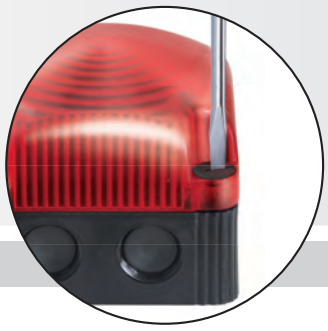
Time-saving alternative: The snap-on fixing bracket (included in assembly)

ADDITIONAL INFORMATION:

Save time installing the product

To fix the 853 beacon to the wall four holes have to be drilled. To speed things up the snap-on fixing bracket delivered with the beacon offers a time-saving alternative: simply drill two holes to attach the fixing bracket to the wall and snap the beacon onto it.

The cable can be fed through one of the eight self-sealing membranes without any tools saving 30% of the usual installation time. Once the cable has been connected to the terminals, the lens can be clipped onto the base and secured using the four captive quick-release screws.



Easy assembly due to quick-release screws

TECHNICAL DIAGRAMS:

see page 321

Sizes of Flashing Beacons

CE 160 g IP67 +50°C -25°C 24 V PLC

WERMA SIGNALTECHNIK

853 LED EVS* Beacon

- LED EVS Beacon in attractive quadratic form
- Attention-grabbing flickering light
- Innovative connector to create traffic light combinations
- Also available in 48 V
- Easy assembly due to quick-release screws
- Thread/membrane combination keeps cabling requirements to a minimum

The innovative connector (accessory) enables traffic light combinations to be created in a matter of seconds

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 8 mm, optional Cable gland M20 (accessory)
Fixing:	Wall, base and ceiling mounting
Current consumption:	Max. 200 mA at 24 V
Equipment:	Eight self-sealing membranes for cable entry without tools Eight integrated M20 threads, no nuts required Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assembly:	Incl. snap-on fixing bracket (optional use, see page 152)

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	48 V AC	115-230 V AC
red	**853 120 54**	**853 120 55**	**853 120 66**	**853 120 60**
green	**853 220 54**	**853 220 55**	**853 220 66**	**853 220 60**
yellow	**853 320 54**	**853 320 55**	**853 320 66**	**853 320 60**
clear	**853 420 54**	**853 420 55**	**853 420 66**	**853 420 60**
blue	**853 520 54**	**853 520 55**	**853 520 66**	**853 520 60**

ACCESSORIES:

Connector for traffic light combinations (For further information see page 119)	**975 853 01**
Cable gland M20 x 1.5 mm 8 mm thread length	**975 853 02**

ADDITIONAL INFORMATION:

* **EVS** = Enhanced Visibility System.
Further Information can be found in the chapter "General Informations" beginning on page 352.
Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 321

The "EVS" light signal ensures a maximum attention-grabbing effect

Sizes of Flashing Beacons

CE 160 g IP67 +50°C -25°C 24 V PLC

897 Double Flash Beacon

- **Large signal beacon for powerful signal effectiv**
- **High light intensity thanks to optimised lens**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	150 mm x 148 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Fixing:	Base mounting, tube mounting and fixing bracket (accessory)
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm
Connection:	Screw terminal, max. 2.5 mm^2
Flash frequency:	1 Hz
Flash energy:	15 Ws
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	800 mA	200 mA
red	**897 100 55**	**897 100 68**
yellow	**897 300 55**	**897 300 68**

Further colours and voltages on request.

ACCESSORIES:

Fixing bracket, adhesive stickers see Permanent/ Traffic Light Beacon 890 (page 176).

TECHNICAL DIAGRAMS:

see page 326

**Audible addition:
The Multi-Tone Sounder 190
with 110 dB (see page 253)**

See note
on page 347

WERMA SIGNALTECHNIK

830/835 Flashing Beacon

Base mounting 830

Wall mounting 835

Wire guard and bracket (accessories)

- High flash power

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	108 mm x 133 mm (830) 108 mm x 172 mm (835)
Housing:	ABS
Lens:	PC, transparent
Fixing:	830: Base mounting 835: Bracket mounting (included in assembly)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Rubber squeeze grommet Ø 5-7 mm
Flash frequency:	C. 1 Hz
Life duration:	4 x 10⁶ flashes

ORDER SPECIFICATIONS:

Base mounting 830		
Voltage	24 V DC	230 V AC
Current consumption	250 mA	140 mA
red	**830 152 55**	**830 152 68**
yellow	**830 352 55**	**830 352 68**
Bracket mounting 835		
Voltage	24 V DC	230 V AC
Current consumption	250 mA	140 mA
red	**835 152 55**	**835 152 68**
yellow	**835 352 55**	**835 352 68**

Further colours and voltages on request.

ACCESSORIES:

Wire guard for base and bracket mounting	**975 830 00**
Bracket for wall mounting for 830	**975 835 01**

ADDITIONAL INFORMATION:

Please also see Flashing Beacon 828 and LED Flashing Beacon 829 with additional advantages (see page 157 and 159)

- High protection rating IP 65
- Simple mounting
- Shock-proof and vibration resistant (LED Flashing Beacon)
- Life duration up to 50,000 hrs (LED Flashing Beacon)

TECHNICAL DIAGRAMS:

see page 317

See note on page 347 | 830 | 835

CE | EAC | 300 g | 360 g | IP 54 | +50°C -20°C | 5 Ws | PLC

827 Blinking Beacon

Base/Bracket Mounting

Tube mounting

Accessories

- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes
- Simple mounting
- Removal of the lens only possible with tools

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)		
Cable entry:	Cable diameter 5-7 mm		
Housing:	PC/ABS-Blend		
Lens:	PC, transparent		
Connection:	Screw terminal with wire protection max. 2,5 mm²		
Bulb:	Max. 25 W		
Blinking frequency:	1.5 Hz		
Starting current:	24 V AC/DC 3 A	115 V AC 0,6 A	230 V AC 0,35 A
Socket:	BA15d		

Bulb included in assembly.

ORDER SPECIFICATIONS:

Base/Bracket mounting			
Voltage	24 V AC/DC	115 V AC/DC	230 V AC/DC
red	**827 100 75**	**827 100 77**	**827 100 78**
yellow	**827 300 75**	**827 300 77**	**827 300 78**
Tube mounting			
Voltage	24 V AC/DC	115 V AC/DC	230 V AC/DC
red	**827 110 75**	**827 110 77**	**827 110 78**
yellow	**827 310 75**	**827 310 77**	**827 310 78**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

Bulb BA15d, 25 W, total length max. 55 mm

Voltage	24 V AC/DC	115 V AC/DC	230 V AC/DC
	955 827 35	**955 827 37**	**955 827 38**

TECHNICAL DIAGRAMS:

see page 316

Sizes of Flashing Beacons

See note on page 347 | Base/Bracket mounting | Tube mounting

828 Flashing Beacon

Base/Bracket Mounting

Tube mounting

Accessories

- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes
- Also available in 10-60 V AC/DC version
- Removal of the lens only possible with tools
- Also available with 2 frequencies

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Cable entry:	Cable diameter 5-7 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent

FLASHING BEACON 828

Connection:	Screw terminal with wire protection 0.5-2.5 mm²
Flash frequency:	c. 1 Hz
Life duration:	4 x 10^6 flashes

12 V: Safety contact is triggered by removal of lens.

FLASHING BEACON 828 WITH 2 FREQUENCIES

Connection:	Screw terminal with wire protection max. 2.5 mm²
Flash frequency:	0.5 Hz or 1.5 Hz can be set externally
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

FLASHING BEACON 828

Base/Bracket mounting

Voltage	12 V DC	24 V DC	10-60 V AC/DC	115 V AC	230 V AC
Current consumpt.	500 mA	300 mA	500-120 mA	65 mA	150 mA
red	**828 100 54**	**828 100 55**	**828 180 70**	**828 100 67**	**828 100 68**
yellow	**828 300 54**	**828 300 55**	**828 380 70**	**828 300 67**	**828 300 68**
clear	-	**828 400 55**	**828 480 70**	-	**828 400 68**

Tube mounting

Voltage	24 V DC	115 V AC	230 V AC
red	**828 140 55**	**828 140 67**	**828 140 68**
yellow	**828 340 55**	**828 340 67**	**828 340 68**
clear	**828 440 55**	-	-

FLASHING BEACON 828 WITH 2 FREQUENCIES

	Base/Bracket mounting	Tube mounting
Voltage	24 V DC	24 V DC
Current consumption	500 mA	500 mA
red	**828 120 55**	**828 160 55**
yellow	**828 320 55**	**828 360 55**

ACCESSORIES:

Accessories see page 156.

TECHNICAL DIAGRAMS:

see page 316

828 X00 XX
828 X40 XX
828 X20 XX
828 X60 XX

See note on page 347

Base/Bracket mounting

Tube mounting

IP65

+50°C -20°C

5 Ws

Sizes of Flashing Beacons

828 Flashing Beacon for use in road tunnels

Modified flashing beacon 828 specifically for use in road tunnels

Clear identification of escape routes can save lives

A special valve in the lens also prevents the build-up of condensation inside the beacon

- Xenon flashing beacon for use in road tunnels
- Developed specifically for installation underneath warning signs
- A special valve in the lens also prevents the build-up of condensation inside the beacon, ensuring optimum protection against even the most demanding tunnel cleaning operations

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm
Cable entry:	Cable diameter 5-7 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm^2
Flash frequency:	C. 1 Hz
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	230 V AC
Current consumption	140 mA
yellow	**828 370 68**
clear	**828 470 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**

TECHNICAL DIAGRAMS:

see page 316

Sizes of Flashing Beacons

See note on page 347

829 LED Double Flash Beacon

Base/Bracket Mounting

- Intense double flash with low power consumption
- High flash power from two consecutive flashes

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Cable entry:	Cable diameter 5-7 mm
Connection:	Screw terminal with wire protection max. 2.5 mm²

Tube Mounting (tube and base for tube - accessory)

ORDER SPECIFICATIONS:

Base/Bracket mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 100 mA	< 100 mA
red	**829 120 55**	**829 120 68**
yellow	**829 320 55**	**829 320 68**
clear	**829 420 55**	**829 420 68**
Tube mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 100 mA	< 100 mA
red	**829 127 55**	**829 127 68**
yellow	**829 327 55**	**829 327 68**
clear	**829 427 55**	**829 427 68**

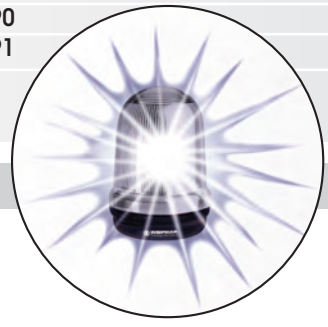
ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

(Accessories see page 156)

TECHNICAL DIAGRAMS:

see page 317



LED flash enables use in safety relevant applications or with batteries/power packs

Sizes of Flashing Beacons

See note on page 347

Tube-mounting

829 LED EVS* Beacon

Base/Bracket mounting

Tube mounting

Accessories

- **Attention-grabbing flickering light**
- **Developed on a neurobiological basis**
- **Extremely powerful signal effect**
- **Random sequence of light signals prevents acclimatisation effect**

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Cable entry:	Cable diameter 5-7 mm
Connection:	Screw terminal with wire protection max. 2.5 mm²

ORDER SPECIFICATIONS:

Base/Bracket mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 300 mA	< 150 mA
red	**829 190 55**	**829 190 68**
yellow	**829 390 55**	**829 390 68**
clear	**829 490 55**	**829 490 68**

Tube mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 300 mA	< 150 mA
red	**829 197 55**	**829 197 68**
yellow	**829 397 55**	**829 397 68**
clear	**829 497 55**	**829 497 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

ADDITIONAL INFORMATION:

*** EVS** = Enhanced Visibility System.

Further information can be found in the chapter "General Information" beginning on page 352.
Please note the photosensitive epilepsy warning on page 352.

The "EVS" light effect ensures a maximum attention-grabbing effect

TECHNICAL DIAGRAMS:

see page 317

Sizes of Flashing Beacons

See note on page 347

Tube mounting

WERMA SIGNALTECHNIK

839 Double Flash Beacon

- Robust aluminium housing including wire guard
- High flash power from two consecutive flashes
- High Protection rating IP 67
- Salt water resistant
- Robust bracket made of V2A stainless steel (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	153 mm x 198 mm
Housing:	Black laquered aluminium with integral wire guard
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal with wire protection max. 2.5 mm^2
Cable entry:	Cable gland M20 x 1.5 mm (included in assembly) Cable diameter 6-13 mm
Installation position:	As required
Flash energy:	15 Ws
Flash frequency:	C. 1 Hz
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	800 mA	200 mA
red	**839 152 55**	**839 152 68**
yellow	**839 352 55**	**839 352 68**

ACCESSORIES:

Mounting bracket	**975 839 02**

TECHNICAL DIAGRAMS:

see page 317

Generates a high signal effect thanks to two consecutive flashes

Sizes of Flashing Beacons

See note on page 347

1,31 kg · IP67 · +50°C / -30°C · 15 Ws

838 Double Flash Beacon

- High flash power from two consecutive flashes
- High light intensity
- Adaptor for tube mounting (accessory)
- High impact resistance to 20 Joules

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, Bracket mounting (accessory), Tube mounting (accessory)
Connection:	Screw terminal with wire protection 2.5 mm^2
Cable entry:	Cable diameter 5-7 mm
Flash energy:	15 Ws
Flash frequency:	C. 1 Hz
Power supply frequency:	50/60 Hz
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption:	800 mA	400 mA	200 mA
red	**838 100 55**	**838 100 67**	**838 100 68**
yellow	**838 300 55**	**838 300 67**	**838 300 68**

Wire guard (accessory)

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Wire guard, only for base mounting	**975 883 08**

Adaptor for tube mounting and plastic bracket (accessories)

TECHNICAL DIAGRAMS:

see page 317

Sizes of Flashing Beacons

See note on page 347

WERMA SIGNALTECHNIK

280 LED Double Flash Beacon

Base mounting

The adaptor (accessory) allows quick and simple mounting on a tube

Plastic bracket, Adaptor for tube mounting and wire guard (accessories)

- Intense double flash with low power consumption
- High flash power from two consecutive flashes
- Adaptor for tube mounting (accessory)
- High impact up to 20 Joules

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 m
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	< 150 mA	< 350 mA
red	**280 150 55**	**280 150 60**
yellow	**280 350 55**	**280 350 60**
clear	**280 450 55**	**280 450 60**

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Wire guard, only for base mounting	**975 883 08**

ADDITIONAL INFORMATION:

The LED Beacon 280 is also available as LED EVS Beacon (see page 164), LED Permanent Beacon (see page 143) or LED Rotating Beacon (see page 170).

TECHNICAL DIAGRAMS:

see page 303

Two consecutive flashes generate a brilliant signal

Sizes of Flashing Beacons

See note on page 347

280 LED EVS* Beacon

Patent approved

Base mounting

Bracket mounting (accessory)

- Attention-grabbing flickering light
- Developed on a neurobiological basis
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	< 500 mA	< 350 mA
red	**280 160 55**	**280 160 60**
yellow	**280 360 55**	**280 360 60**
clear	**280 460 55**	**280 460 60**

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Wire guard, only for base mounting	**975 883 08**

(Accessories see page 163)

ADDITIONAL INFORMATION:

* **EVS** = Enhanced Visibility System

Further Information can be found in the chapter "General Information" beginning on page 352.

Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 303

Sizes of Flashing Beacons

See note on page 347

WERMA SIGNALTECHNIK

885 Rotating Mirror Beacon

Base mounting

Rotating Mirror Beacon 885 with tube and base (accessories)

Plastic bracket und wire guard (accessories)

Sizes of Rotating Beacons

- High light intensity in compact form
- Tube mounting solution suitable for Ø 25 mm and 1/2" NPT tubes
- Installation without the need to disassemble the mechanism
- Extremely quiet

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 151 mm (Base mounting) 98 mm x 200 mm (Tube mounting)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket/tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Installation position:	Standing
Halogen bulb:	G 6.35 20 W 12 V / 24 V
Mirror rotation rate:	C. 180 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %

Halogen bulb included in assembly.

ORDER SPECIFICATIONS:

Base mounting

Voltage	12 V DC	24 V AC/DC	115 V AC/ / 0.4 A	115 V DC/ / 0.2 A	230 V AC/ / 0.2 A	230 V DC / 0.1 A
Current consumpt.	1.9 A	1.0 A				
red	**885 100 54**	**885 100 75**			**885 100 78**	
green	**885 200 54**	**885 200 75**			**885 200 78**	
yellow	**885 300 54**	**885 300 75**			**885 300 78**	
blue	**885 500 54**	**885 500 75**			**885 500 78**	

Tube mounting

Voltage	12 V DC	24 V AC/DC	115 V AC/ / 0.4 A	115 V DC/ / 0.2 A	230 V AC/ / 0.2 A	230 V DC / 0.1 A
Current consumpt.	1.9 A	1.0 A				
red	**885 110 54**	**885 110 75**			**885 110 78**	
green	**885 210 54**	**885 210 75**			**885 210 78**	
yellow	**885 310 54**	**885 310 75**			**885 310 78**	
blue	**885 510 54**	**885 510 75**			**885 510 78**	

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Base for tube mounting Ø 25 mm, plastic, Incl. rubber seal	**975 840 90**
Base for tube mounting Ø 25 mm, metal, Incl. rubber seal	**975 840 91**
Tube Ø 25 mm, all anodized alluminium	
100 mm	**975 845 10**
250 mm	**975 840 25**

SPARE PARTS:

Halogen bulb 20 W/12 V for 12 V DC 115 V AC/DC, 230 V AC	**955 885 24**
Halogen bulb 20 W/24 V for 24 V AC/DC	**955 885 25**

TECHNICAL DIAGRAMS: see page 325

See note on page 347

885 Rotating Mirror Beacon

- Integrated flexible tube
- With 2 pole plug connection according to ISO 4165
- Elastic material prevents the beacon from breaking off
- Full rotating mirror functionality in compact form

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 255 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Tube mounting
Connection:	2 pole plug connection (according to ISO 4165)
Cable entry:	Cable diameter 5-7 mm
Installation position:	As required
Halogen bulb:	G 6.35 20 W 12 V/24 V
Mirror rotating rate:	C. 180 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %

Halogen bulb included in assembly.

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V AC/DC
Current consumption	1.9 A	1.0 A
red	**885 120 54**	**885 120 75**
green	**885 220 54**	**885 220 75**
yellow	**885 320 54**	**885 320 75**
blue	**885 520 54**	**885 520 75**

SPARE PARTS:

Halogen bulb 20 W/12 V for 12 V DC 115 V AC/DC, 230 V AC	**955 885 24**
Halogen bulb 20 W/24 V for 24 V AC/DC	**955 885 25**

ACCESSORIES:

Flange with counter-plug for electrical connection	**975 826 20**

Flange with counter-plug for electrical connection (accessory)

TECHNICAL DIAGRAMS:

see page 325

The flexible tube, made of an elastic material, is hard-wearing and prevents the beacon from breaking off

Sizes of Rotating Beacons

See note on page 347

WERMA SIGNALTECHNIK

839 Rotating Mirror Beacon

- Robust aluminium housing including wire guard
- Extreme durability thanks to low wear belt drive
- Salt water resistant
- Extremely quiet
- Installation without the need to disassemble the mechanism
- Robust bracket made of V2A stainless steel (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	153 mm x 198 mm
Housing:	Black laquered aluminium with integral wire guard
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (included in assembly) Cable diameter 6-13 mm
Installation position:	As required
Halogen bulb:	G 6.35 20 W 12/24 V
Mirror rotating rate:	C. 180 r.p.m.
Service life of drive:	> 5.000 hrs

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	/ 115 V DC	/ 230 V AC	/ 230 V DC
Current consumption	1.0 A	0.35 A	/ 0.5 A	/ 0.15 A	/ 0.1 A
red	**839 160 75**		**839 160 78**		
yellow	**839 360 75**		**839 360 78**		

ACCESSORIES:

Mounting bracket	**975 839 02**

SPARE PARTS:

Halogen bulb 20 W/12 V for 115 V AC/DC, 230 V AC	**955 885 24**
Halogen bulb 20 W/24 V for 24 V AC/DC	**955 885 25**

Mounting bracket (accessory)

TECHNICAL DIAGRAMS:

see page 317

Also suitable for use in rough conditions

Sizes of Rotating Beacons

See note on page 347

CE EAC 1,36 kg IP67 +50°C -30°C

839 LED Rotating Beacon

Mounting bracket
(accessory)

- Robust aluminium housing including wire guard
- Wear-free due to the abscence of any moving mechanical components
- Salt water resistant
- Intense rotating signal effect with low power consumption
- AC multi-voltage version
- Robust bracket made of V2A stainless steel (accessory)

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	153 mm x 198 mm
Housing:	Black laquered aluminium with integral wire guard
Lens:	PC, transparent
Fixing:	Base mounting
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (included in assembly) Cable diameter 6-13 mm
Installation position:	As required
Rotation rate:	C. 180 r.p.m.

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	150 mA	70-180 mA
red	**839 120 55**	**839 120 68**
yellow	**839 320 55**	**839 320 68**

Mounting bracket	**975 839 02**

TECHNICAL DIAGRAMS:

see page 317

Generates a high signal effect thanks to the LEDs programmed to create a rotating light

Sizes of Rotating Beacons

See note on page 347

829 LED Rotating Beacon

Tube mounting

Base/Bracket mounting

Accessories

- Extremely high light intensitiy
- Wear-free due to the absence of any moving mechanical components
- Intense rotating signal effect with low power consumption
- Shock-proof and vibration-resistant

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	98 mm x 137 mm (Base/Bracket mounting) 98 mm x 200 mm (Tube mounting)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Cable entry:	Cable diameter 5-7 mm
Connection:	Screw terminal with wire protection max. 2.5 mm²
Rotation rate:	C. 180 r.p.m.

ORDER SPECIFICATIONS:

Base/Bracket mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 170 mA	< 200 mA
red	**829 110 55**	**829 110 68**
green	**829 210 55**	**829 210 68**
yellow	**829 310 55**	**829 310 68**
clear	**829 410 55**	**829 410 68**
blue	**829 510 55**	**829 510 68**

Tube mounting		
Voltage	24 V DC	115-230 V AC
Current consumption	< 170 mA	< 200 mA
red	**829 117 55**	**829 117 68**
green	**829 217 55**	**829 217 68**
yellow	**829 317 55**	**829 317 68**
clear	**829 417 55**	**829 417 68**
blue	**829 517 55**	**829 517 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 826 05**
Wire guard, galvanised, only for base mounting	**975 826 03**
Tube Ø 25 mm, all anodized aluminium, 100 mm long	**975 845 10**
Base for tube, plastic	**975 840 90**
Base for tube, metal	**975 840 91**

TECHNICAL DIAGRAMS:

see page 317

Generates a distinctive rotating signal by triggering high output LEDs in sequence

Sizes of Rotating Beacons

Base/Bracket mounting 200 g

Tube mounting 235 g

IP65

+50°C -20°C

280 LED Rotating Beacon

- Extremely high light intensity
- Wear-free due to the absence of any moving mechanical components
- Intense rotating signal effect with low power consumption
- Shock proof and resistant against vibration
- High impact resistance to 20 Joules

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend, black
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Rotation rate:	C. 180 r.p.m.
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	150 mA	< 200 mA
red	**280 120 55**	**280 120 68**
yellow	**280 320 55**	**280 320 68**

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Wire guard, only for base mounting	**975 883 08**

TECHNICAL DIAGRAMS:

see page 303

High impact resistance to 20 Joules

Plastic bracket, adaptor for tube mounting and wire guard (accessories)

Generates a high signal effect thanks to the LEDs programmed to create a rotating light

Sizes of Rotating Beacons

See note on page 347

24 V

WERMA SIGNALTECHNIK

884 Revolving Signal Beacon

- Greater signal effect particularly in poor conditions thanks to three light beams
- Low rotation rate
- Three Fresnel lenses effect light convergence and optimise visibility
- High impact resistance to 20 Joules

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 m x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting, tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Drive:	Wheel and disc drive, motor in centre of gravity
Halogen bulb:	G 6.35 35 W 12 V / 24 V
Mirror rotation rate:	60 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %

Halogen bulb included in assembly.

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	230 V AC
Current consumption	1.6 A	0.17 A
red	**884 100 75**	**884 100 68**
green	**884 200 75**	**884 200 68**
yellow	**884 300 75**	**884 300 68**
blue	**884 500 75**	**884 500 68**

Further colours and voltages on request.

Bracket (accessory)

Plastic bracket, adaptor for tube mounting and wire guard (accessories)

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Base for tube mounting	**975 840 91**
Tube, Ø 25 mm, 100 mm long	**975 845 10**
Tube, Ø 25 mm, 250 mm long	**975 840 25**
Wire guard, only for base mounting	**975 883 08**

SPARE PARTS:

Halogen bulb 35 W/12 V for 230 V AC	**955 883 34**
Halogen bulb 35 W/24 V for 24 V AC/DC	**955 883 35**

3 Fresnel lenses are set at a 120° angle

TECHNICAL DIAGRAMS:

see page 325

Sizes of Rotating Beacons

See note on page 347

883 Rotating Mirror Beacon

- Extreme durability thanks to lowwear wheel and disc drive
- Adaptor for tube mounting (accessory)
- Installation without the need to disassemble the mechanism
- High impact resistance to 20 Joules

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	142 mm x 218 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting, tube mounting (accessory)
Connection:	Screw terminal with wire protection max. 2.5 mm²
Cable entry:	Cable diameter 5-7 mm
Drive:	Wheel and disc drive, motor in centre of gravity
Halogen bulb:	G 6.35 35 W 12 V / 24 V
Mirror rotation rate:	c. 180 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %

Halogen bulb included in assembly.

Bracket (accessory)

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V AC/DC	115 V AC/DC	230 V AC
Current consumpt.	3 A	1.6 A	0.35 A	0.17 A
red	**883 100 54**	**883 100 75**	**883 100 77**	**883 100 68**
green	**883 200 54**	**883 200 75**	**883 200 77**	**883 200 68**
yellow	**883 300 54**	**883 300 75**	**883 300 77**	**883 300 68**
blue	**883 500 54**	**883 500 75**	**883 500 77**	**883 500 68**

Further colours and voltages on request.

ACCESSORIES:

Plastic bracket for wall mounting	**975 883 06**
Adaptor for tube mounting	**975 883 09**
Base for tube mounting	**975 840 91**
Tube, Ø 25 mm, 100 mm long	**975 845 10**
Tube, Ø 25 mm, 250 mm long	**975 840 25**
Wire guard, only for base mounting	**975 883 08**

Plastic bracket, adaptor for tube mounting and wire guard (accessories)

SPARE PARTS:

Halogen bulb 35 W/12 V for 12 V DC, 115 V AC/DC, 230 V AC	**955 883 34**
Halogen bulb 35 W/24 V for 24 V AC/DC	**955 883 35**

Low wear wheel and disc drive

TECHNICAL DIAGRAMS:

see page 325

Sizes of Rotating Beacons

See note on page 347

WERMA SIGNALTECHNIK

880 Rotating Mirror Beacon

- High intensity optical signal with halogen bulb
- "e" approval for automotive use (yellow, 24 V)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	152 mm x 215 mm
Housing:	Thermoplastic with injected metal base
Lens:	Plexiglass (PMMA)
Fixing:	Base, bracket (accessory), tube mounting (accessory)
Connection:	Screw terminal 0.5-1.5 mm²
Cable entry:	Cable diameter 5-8 mm
Mirror rotation rate:	C. 170 r.p.m.

Assembly incl. halogen bulb H1.

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	3.0 A	0.3 A
red	**880 152 55**	**880 152 68**
yellow	**880 352 55**	**880 352 68**

Further colours and voltages on request.

ACCESSORIES:

Flange for tube, max. 29.8 mm	**880 000 00**
Bracket for wall mounting	**975 881 01**

SPARE PARTS:

Bulb H 1 55 W for 230 V AC	**955 880 34**
Bulb H 1 70 W for 24 V AC/DC	**955 880 35**

ADDITIONAL INFORMATION:

Please also see Rotating Mirror Beacon 883 with additional advantages (see page 172)

- High protection rating IP 65
- Modern design
- High impact to 20 Joules
- Long life duration thanks to low wear wheel and disc drive
- Installation without the need to disassemble the mechanism

TECHNICAL DIAGRAMS:

see page 325

See note on page 347

230 V 2,3 kg | 24 V 1,4 kg | IP54 | +50°C -20°C | 880 352 55 e2

881 Rotating Mirror Beacon

- **Competitively priced rotating mirror beacon with bulb included**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	150 mm x 204 mm
Housing:	ABS
Lens:	PC, transparent
Fixing:	Base, bracket (accessory), tube mounting (accessory)
Connection:	Screw terminal 0.5-1.5 mm²
Cable entry:	Cable diameter 5-8 mm
Mirror rotating rate:	C. 170 r.p.m.

Bulb included in assembly.

ORDER SPECIFICATIONS:

Voltage	48 V AC/DC	230 V AC
Current consumption	1.0 A	0.3 A
red	**881 152 56**	**881 152 98**
yellow	**881 352 56**	**881 352 98**

ACCESSORIES:

Flange for tube, max. 29.8 mm	**880 000 00**
Bracket for wall mounting	**975 881 01**

SPARE PARTS:

Bulb E14, 40 W

Voltage	48 V AC/DC	230 V AC/DC
	955 880 66	**955 880 68**

TECHNICAL DIAGRAMS:

see page 325

See note on page 347

890 LED Beacon/LED Traffic Light

LED Permanent Beacon

LED Traffic Light Combination with mounting bracket (accessory)

Clear lenses ensure signalling effect even in direct sunlight

- LED Beacon for traffic light combinations
- Clear signalling effect even in direct sunlight
- Maintainance-free LED technology
- Innovative fixing bracket for simple mounting

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	150 mm x 154 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Connection:	Screw terminal max. 1.5 mm²
Installation position:	As required
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm, included in assembly.

ORDER SPECIFICATIONS:

Voltage	12-24 V DC	115 V AC	230 V AC
Current consumption	< 200 mA	< 35 mA	< 35 mA
red	**890 120 55**	**890 120 67**	**890 120 68**
green	**890 220 55**	**890 220 67**	**890 220 68**
yellow	**890 320 55**	**890 320 67**	**890 320 68**

ACCESSORIES:

FIXING BRACKET

Fixing bracket for one beacon	**975 890 33**
Fixing bracket for two beacons	**975 890 34**
Fixing bracket for three beacons	**975 890 35**
Fixing bracket for four beacons	**975 890 37**

Mounting material and connecting grommet included in assembly.
Further information can be found on page 178.

CONNECTING GROMMET

Connecting grommet for traffic light combinations	**975 890 25**

TUBE ADAPTOR

Adaptor for tube mounting (suitable for Ø 75 mm tubes, see page 177)	**975 890 36**

ADDITIONAL INFORMATION:

Traffic light configurator at **www.werma.com**

TECHNICAL DIAGRAMS: see page 326

See note on page 347

CE EAC 490 g IP65 +50°C -20°C

The LED Beacon 890 in combination with Multi-Tone Sounder 190 (see page 216)

890 Permanent/Traffic Light Beacon

Permanent Beacon

- Permanent Beacon for traffic light combinations
- Innovative fixing bracket for simple mounting
- Also with two bulb sockets for uniform safety, even in the case of bulb failure

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	150 mm x 154 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Socket:	E27 max. 25 W at 890 X00 00 2 sockets each E14 with max. 15 W at 890 X10 00 with adhesive stickers E27 max. 15 W
Fixing:	Base mounting, fixing bracket (accessory), tube mounting (accessory)
Connection:	Screw-free clamp mechanism max. 1.5 mm²
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm, included in assembly

Traffic Light Combination with mounting bracket (accessory)

ORDER SPECIFICATIONS:

PERMANENT BEACON

Voltage	12-240 V AC/DC
red	**890 100 00**
green	**890 200 00**
yellow	**890 300 00**
clear	**890 400 00**
blue	**890 500 00**

PERMANENT BEACON WITH 2 SOCKETS (INCL. REFLECTOR)

Voltage	12-240 V AC/DC
red	**890 110 00**
green	**890 210 00**
yellow	**890 310 00**

Further colours and voltages on request.

Permanent beacon with two sockets

ADDITIONAL INFORMATION:

Please also see LED Beacon/LED Traffic Light 890 with additional advantages (see p. 175)

- Maintenance-free LED technology
- Life duration up to 50,000 hrs
- Clear signalling effect even in direct sunlight

Traffic light configurator at **www.werma.com**

ACCESSORIES: see next page

See note on page 347

WERMA SIGNALTECHNIK

Beacon 890 in combination with Multi-Tone Sounder 190 (see page 216)

The adaptor (accessory) allows quick and simple mounting on a tube (Ø 75 mm)

890 with adhesive sticker (accessory)

ACCESSORIES:

FIXING BRACKET

Fixing bracket for one beacon	**975 890 33**
Fixing bracket for two beacons	**975 890 34**
Fixing bracket for three beacons	**975 890 35**
Fixing bracket for four beacons	**975 890 37**

Mounting material and connecting grommet included in assembly.
Further information can be found on page 178.

CONNECTING GROMMET

Connecting grommet for traffic light combinations	**975 890 25**

TUBE ADAPTOR

Adaptor for tube mounting (suitable for Ø 75 mm tubes)	**975 890 36**

REFLECTOR

Additional reflector for 890 X00 00	**975 890 02**

BULBS

LED bulb E27, 24 V	**956 X20 75**
LED bulb E27, 115 V	**956 X20 67**
LED bulb E27, 230 V	**956 X20 68**

X see page 167.

Bulb E27, 24 V / 25 W	**955 890 55**
Bulb E27, 115 V / 25 W	**955 890 67**
Bulb E27, 230 V / 25 W	**955 890 68**
Bulb E14, 230 V / 15 W	**955 890 38**

ADHESIVE STICKERS:

→	**975 890 52**
STOP	**975 890 53**
START	**975 890 54**
↯	**975 890 64**
✋	**975 890 65**

TECHNICAL DIAGRAMS:

see page 326

Fixing bracket for 890/190

Fixing bracket for
(LED) Beacons 890
and Multi-Tone Sounder 190

- Beacon/Traffic Light can be completely pre-assembled on the fixing bracket and connected before attachment
- Easy mounting in just a few steps
- Also suitable for Multi-Tone Sounder 190
- High Protection rating IP 65

TECHNICAL SPECIFICATIONS:

Material Fixing bracket:	PC/ABS-Blend
Material Connecting Grommet:	PA 6.6
Assembly:	Fixing bracket with mounting material and connecting grommet Beacon not included in assembly.
Suitable for:	LED Beacon/LED Traffic Light 890 (see page 175) Permanent/Traffic Light Beacon 890 (see page 176) Multi-Tone Sounder 190 (see page 253)

ORDER SPECIFICATIONS:

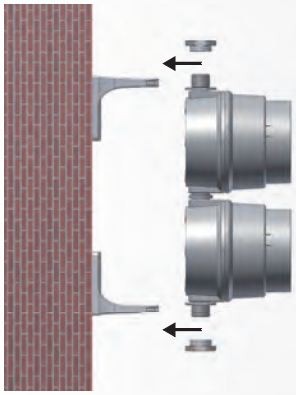
Fixing bracket for one beacon	**975 890 33**
Fixing bracket for two beacons	**975 890 34**
Fixing bracket for three beacons	**975 890 35**
Fixing bracket for four beacons	**975 890 37**

The fixing bracket can be mounted
pointing inwards or outwards

NEW FIXING BRACKET FOR SIMPLE MOUNTING:

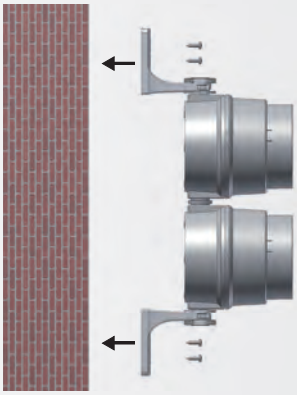
Method No. 1

- Attach the bracket to the wall
- Connect the pre-assembled Traffic Light/Multi-Tone Sounder
- Tighten the nuts on both sides



Method No. 2

- Connect and assemble the Traffic Light
- Attach the Traffic Light/Multi-Tone Sounder to the bracket and tighten the nuts on both sides
- Attach the complete bracket and Traffic Light/Multi-Tone Sounder to the wall



TECHNICAL DIAGRAMS:

see page 326

WERMA SIGNALTECHNIK

853 Traffic Light

The innovative connector (accessory) enables traffic light combinations to be created in a matter of seconds

Three highly visible light effects are available

The LED beacon can be used with the sounder

- LED Permanent, LED Double Flash or LED EVS* Beacon in attractive quadratic form
- Innovative connector to create traffic light combinations
- Easy assembly due to quick-release screws
- Thread/membrane combination keeps cabling requirements to a minimum

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Fixing:	Wall, base and ceiling mounting
Possible colours:	Red, green, yellow, clear, blue
Operating voltage:	12 V DC, 24 V DC, 115-230 V AC
Current consumption:	Max. 80 mA at 24 V (LED Permanent Beacon) Max. 80 mA at 24 V (LED Double Flash Beacon) Max. 200 mA at 24 V (LED EVS Beacon)
Equipment:	Eight self-sealing membranes for cable entry without tools Eight integrated M20 threads, no nuts required Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assembly:	Incl. snap-on fixing bracket (optional use)

ORDER SPECIFICATIONS:

LED Permanent Beacon 853	**see page 135**
LED Double Flash Beacon 853	**see page 152**
LED EVS Beacon 853	**see page 153**
Sounder 153	**see page 252**

ACCESSORIES:

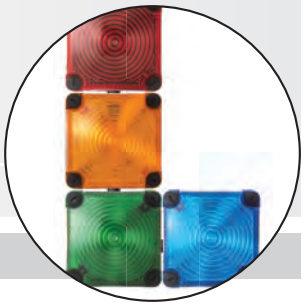
Connector for traffic light combinations	**975 853 01**
Cable gland M20 x 1.5 mm, 8 mm thread length	**975 853 02**

ADDITIONAL INFORMATION:

Combinations made easy
The LED Beacon 853/Sounder 153 can be easily turned into a traffic light combination. Simply attach different coloured beacons or sounder together using the connector.

The eight cable entries with both self-sealing membranes and integrated M20 threads enable additional beacons to be attached to every side. There is no limit to the range of possible lighting designs that can be created.

Traffic light configurator at **www.werma.com**



Individual lighting designs thanks to eight possible cable entries

TECHNICAL DIAGRAMS:

see page 321

See note on page 347 | 853 X00 XX | 853 X10 XX | 853 X20 XX | 24 V

894 LED Traffic Light

LED Traffic Light (3 tier)

The direction of the optical signal can be individually adjusted

Clear lenses ensure signalling effect even in direct sunlight

- High visibility LED Traffic Light in an innovative, award-winning design
- Clear signalling even in direct sunlight thanks to clear lenses
- Simple mounting due to integrated mounting bracket
- Very good sideward visibility
- Protection rating IP 65/IP 69k

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	2 tier: 85 mm x 309 mm x 136 mm 3 tier: 85 mm x 394 mm x 136 mm
Housing:	PC/ABS, grey
Lens:	PC, transparent
Fixing:	Wall mounting, tube mounting (accessory)
Installation position:	Vertical/hanging
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 13 mm
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	60 mA (red/yellow) 120 mA (green)	30 mA per tier at 230 V/50 Hz
red / green	**894 160 55**	**894 160 68**
red / yellow / green	**894 180 55**	**894 180 68**

ACCESSORIES:

Fixing bracket underneath	**975 894 01**
Adaptor for tube mounting (suitable for Ø 75 mm tubes, see page 181)	**975 894 02**

ADDITIONAL INFORMATION:

"Small traffic light series" wins "iF product design award 2009"
WERMA has won the prestigious "iF product design award" for the design and production of its "small traffic light series".

Since its introduction in 1953, this design prize has been an enduring, renowned hallmark for "excellent" design.

High visibility LED Traffic Light with integrated siren see page 214

TECHNICAL DIAGRAMS:

see page 326

See note on page 347

2 tier 380 g

3 tier 410 g

IP65/IP69k

+50°C -30°C

WERMA SIGNALTECHNIK

894 LED Beacon / LED Traffic Light

LED Beacon (1 tier)

The direction of the optical signal can be individually adjusted

The adaptor (accessory) allows quick and simple mounting on a tube

- High visibility LED Beacon/ Traffic Light in an innovative, award-winning design
- Colour intensive light effect thanks to LEDs in the same colour as the lenses
- Simple mounting due to integrated mounting bracket
- Very good sideward visibility
- Protection rating IP 65/IP 69k

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	1 tier: 85 mm x 224 mm x 136 mm 2 tier: 85 mm x 309 mm x 136 mm 3 tier: 85 mm x 394 mm x 136 mm
Housing:	PC/ABS, grey
Lens:	PC, transparent
Fixing:	Wall mounting, tube mounting (accessory)
Installation position:	Vertical/hanging
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 13 mm
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	60 mA (red/yellow) 120 mA (green)	30 mA per tier at 230 V/50 Hz
red	**894 010 55**	**894 010 68**
green	**894 020 55**	**894 020 68**
yellow	**894 030 55**	**894 030 68**
red / green	**894 060 55**	**894 060 68**
red / yellow / green	**894 080 55**	**894 080 68**

ACCESSORIES:

Fixing bracket underneath	**975 894 01**
Adaptor for tube mounting (suitable for Ø 75 mm tubes)	**975 894 02**

ADDITIONAL INFORMATION:

Maximum flexibility

Thanks to the innovative bracket, the direction of the signal can be individually adjusted. After the bracket has been mounted, the customer can adjust the light direction to suit his requirements.

The LED traffic light can be turned through 360 degrees guaranteeing optimum visibility from all angles.

TECHNICAL DIAGRAMS:

see page 326

See note on page 347

1 tier 350 g | 2 tier 380 g | 3 tier 410 g | IP65/IP69k | +50°C / -30°C

956 LED Bulb BA15d

- Extremely long life duration
- To fit in WERMA Signal towers and signal devices with BA15d socket
- Resistant against shock and vibration
- Frontal beam direction

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Housing:	PA fibreglass, high-impact
Lens:	PC, transparent
Socket:	BA15d
For use with:	200, 203, 206, 209, 210, 213, 216, 219, 220, 223, 641, 805, 840, 846, 850, 851, 852

Slight deviatons in the form of the bulbs are possible.

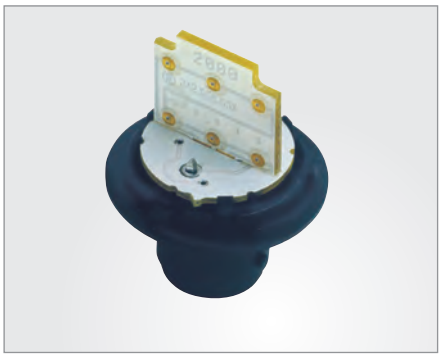
Suitable for use in Kombi*SIGN* 71

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 45 mA	≤ 15 mA	≤ 15 mA
red	**956 100 75**	**956 100 67**	**956 100 68**
green	**956 200 75**	**956 200 67**	**956 200 68**
yellow	**956 300 75**	**956 300 67**	**956 300 68**
white	**956 400 75**	**956 400 67**	**956 400 68**
blue	**956 500 75**	**956 500 67**	**956 500 68**

TECHNICAL DIAGRAMS:

see page 326



Chip-On-Board technology

Manual grip facility

WERMA SIGNALTECHNIK

956 LED Bulb E27

- Extremely long life duration
- To fit in WERMA Permanent/ Traffic Light Beacon 890
- Resistant against shock and vibration

TECHNICAL SPECIFICATIONS:

Socket:	E27
For use with:	890, 895

Slight deviatons in the form of the bulbs are possible.

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 30 mA	≤ 30 mA	≤ 30 mA
red	**956 120 75**	**956 120 67**	**956 120 68**
green	**956 220 75**	**956 220 67**	**956 220 68**
yellow	**956 320 75**	**956 320 67**	**956 320 68**

Suitable for use in Permanent/Traffic Light Beacons 890 (see page 176)

Bulb Overview

	PART NO.	DESCRIPTION	TOTAL LENGTH(mm)	VOLTAGE	FOR USE WITH:								
	**955 840 34**	Bulb BA15d 5 W	42	12 V	200	203	209	641	800	840	845		
	955 840 35	Bulb BA15d 5 W	42	24 V	200	203	209	641	800	840	845		
	955 840 32	Bulb BA15d 5 W	42	30 V	200	203	209	641	800	840	845		
	955 840 57	Bulb BA15d 5 W	42	115 V	200	203	209	641	800	840	845		
	955 840 38	Bulb BA15d 5 W	42	230 V	200	203	209	641	800	840	845		
	**955 015 34**	Bulb BA15d 7 W	52	12 V	210	213	219	220	480	580	815		850
	955 015 35	Bulb BA15d 7 W	52	24 V	210	213	219	220	480	580	815	826	850
	955 015 36	Bulb BA15d 7 W	52	48 V	210	213	219	220	480	580	815	monit.	850
	955 015 37	Bulb BA15d 7 W	52	115 V	210	213	219	220	480	580	815		850
	955 015 38	Bulb BA15d 7 W	52	230 V	210	213	219	220	480	580	815		850
	**955 826 35**	Bulb BA15d 15 W	45	24 V	826								
	955 826 38	Bulb BA15d 15 W	45	230 V	826								
	**955 827 35**	Bulb BA15d 25 W	55	24 V	827								
	955 827 37	Bulb BA15d 25 W	55	115 V	827								
	955 827 38	Bulb BA15d 25 W	55	230 V	827								
	**955 890 38**	Bulb E14 15 W	76	230 V	890	895							
	**955 880 66**	Bulb E14 40 W	76	48 V	881								
	955 880 67	Bulb E14 40 W	76	115 V	881								
	955 880 68	Bulb E14 40 W	76	230 V	881								

Minimal differences in form are possible within the different bulb models.

	PART NO.	DESCRIPTION	TOTAL LENGTH (mm)	VOLTAGE	FOR USE WITH:
	**955 890 55** **955 890 67** **955 890 68**	Bulb E27 25 W Bulb E27 25 W Bulb E27 25 W	100 100 100	24 V 115 V 230 V	890 895 890 895 890 895
	**955 883 34** **955 883 35**	Halogen bulb G 6.35 35 W Halogen bulb G 6.35 35 W	40 40	12 V 24 V	783 784 883 884 783 784 883 884
	**955 885 24** **955 885 25**	Halogen bulb G 6.35 20 W Halogen bulb G 6.35 20 W	40 40	12 V 24 V	783 885 783 885
	**955 880 34** **955 880 35**	Halogen bulb H 1 55 W Halogen bulb H 1 70 W	57 57	12 V 24 V	880 880
	**956 x00 75** **956 x00 67** **956 x00 68** x see page 182	LED bulb BA15d LED bulb BA15d LED bulb BA15d	42 42 42	24 V 115 V 230 V	200, 203, 206, 209, 210, 213, 216, 219, 220, 223, 641, 805, 840, 846, 850, 851, 852
	**956 x20 75** **956 x20 67** **956 x20 68** x see page 183	LED bulb E27 LED bulb E27 LED bulb E27	65 65 65	24 V 115 V 230 V	890 895 890 895 890 895

Minimal differences in form are possible within the different bulb models.


WERMA
SIGNALTECHNIK
424 X20 75
24V≂ IP65 ta50°C

Overview Optical-Audible Signal Devices

LED/Buzzer Combination

150 Installation model

80 dB
Page 218

450 Installation model with acknowledgement funcition

80 dB
Page 219

450 Installation model for AS-Interface

80 dB
Page 220

420/422 Base, Wall mounting

92 dB
Page 192

Flash/Buzzer Combination

421/423 Base, Wall mounting

92 dB
Page 194

Light/Buzzer Combination

480 Wall mounting

90 dB
Page 198

Light/Horn Combination

580 Wall mounting

92 dB
Page 199

Flash/Horn Combination

425 Wall Mounting

98 dB
Page 197

581 Wall Mounting

92 dB
Page 199

LED/Horn Combination

424 Wall Mounting

98 dB
Page 196

434 Wall Mounting

108 dB
Page 204

435 Wall Mounting

108 dB
Page 206

LED/Flash/EVS/ Horn Combination

435 Wall Mounting

108 dB
Page 205

LED/Flash/EVS/ Multi-Tone Sounder Comb.

431/433 Base, Wall Mounting

108 dB
Page 201

LED/Multi-Tone Sounder Combination

420/422 Base, Wall Mounting

105 dB
Page 193

430/432 Base, Wall Mounting

108 dB
Page 200

431/433 Base, Wall Mounting

108 dB
Page 202

LED Double Flash/ Multi-Tone Sounder Combination

444 Base, Wall Mounting

114 dB
Page 211

LED EVS/ Multi-Tone Sounder Combination

444 Base, Wall Mounting

114 dB
Page 212

Signal Towers with Audible Element

Modular and pre-assembled signal towers with audible element, Vario*SIGN*, Flat*SIGN*, Clean*SIGN* with buzzer

80-105 dB
Page 222

Flash/Multi-Tone Sounder Combination

421 Base Mounting

105 dB
Page 195

423 Wall Mounting

109 dB
Page 195

439 Wall Mounting

105 dB
Page 207

441 Wall Mounting

110 dB
Page 208

442 Wall Mounting

120 dB
Page 209

LED Traffic Light/Siren Combination

494 Wall Mounting 2 and 3 tier

90 dB
Page 214

494 Wall Mounting 1, 2 and 3 tier

90 dB
Page 214

(LED)Traffic Light/Multi-Tone Sounder Combination

Permanent Beacon 890 with Multi-Tone Sounder 190

110 dB
Page 216

LED Permanent Beacon 890 with Multi-Tone Sounder 190

110 dB
Page 216

LED Beacon 853 with Sounder 153

105 dB
Page 217

Surface Housing for Combinations

975 Surface Housings for 1, 2 or 3 products

Page 221

Sounds

The sounds of these products can be played from our website www.werma.com under the heading “Optical-Audible Signal Devices”.

Further information

Further information about the “Audible” theme can be found in the chapter “General Information” beginning on page 358.

Optical-Audible Signal Devices

Double safety with optical-audible signals

Under certain conditions operational sites with a high or changing noise level require a coloured, optical stimulus in addition to the audible signal. The combination of optical and audible signals leads to greater effectivity as both the eyes and ears are addressed by the sensory stimuli. The combination of an optical and an audible signal rules out the possibility of mistakes or the audible signal being overheard.

Variety of signals

WERMA supplies a large number of audible signals which can also be enhanced with the addition of optical light signals.

AUDIBLE SIGNALS

- Sirens and Multi-Tone Sounders
- (Installation) Buzzers
- Horns

OPTICAL SIGNALS

- LED Permanent Light
- (LED) Flashing Light and
- LED Double Flash Light
- LED EVS Signal
- LED Rotating Light
- LED Permanent/Flash/EVS Light

A successful combination: the optical-audible 43x signal devices

WERMA has expanded its range of optical-audible signal devices with the addition of the 43x series. The products offer a wide choice of light effects ranging from a light-intense LED permanent light, a powerful LED rotating light or a flexible combined version with LED permanent/flashing/EVS light effects. As an audible supplement, users have the choice of a multi-tone sounder or a horn.

The optical and audible signals can be triggered separately to provide users with the option of activating just one signal type or both at the same time to generate a maximum level of awareness. In addition to versions for base mounting, the signal devices are also available with a practical integrated mounting bracket.

iF product design award for outstanding design

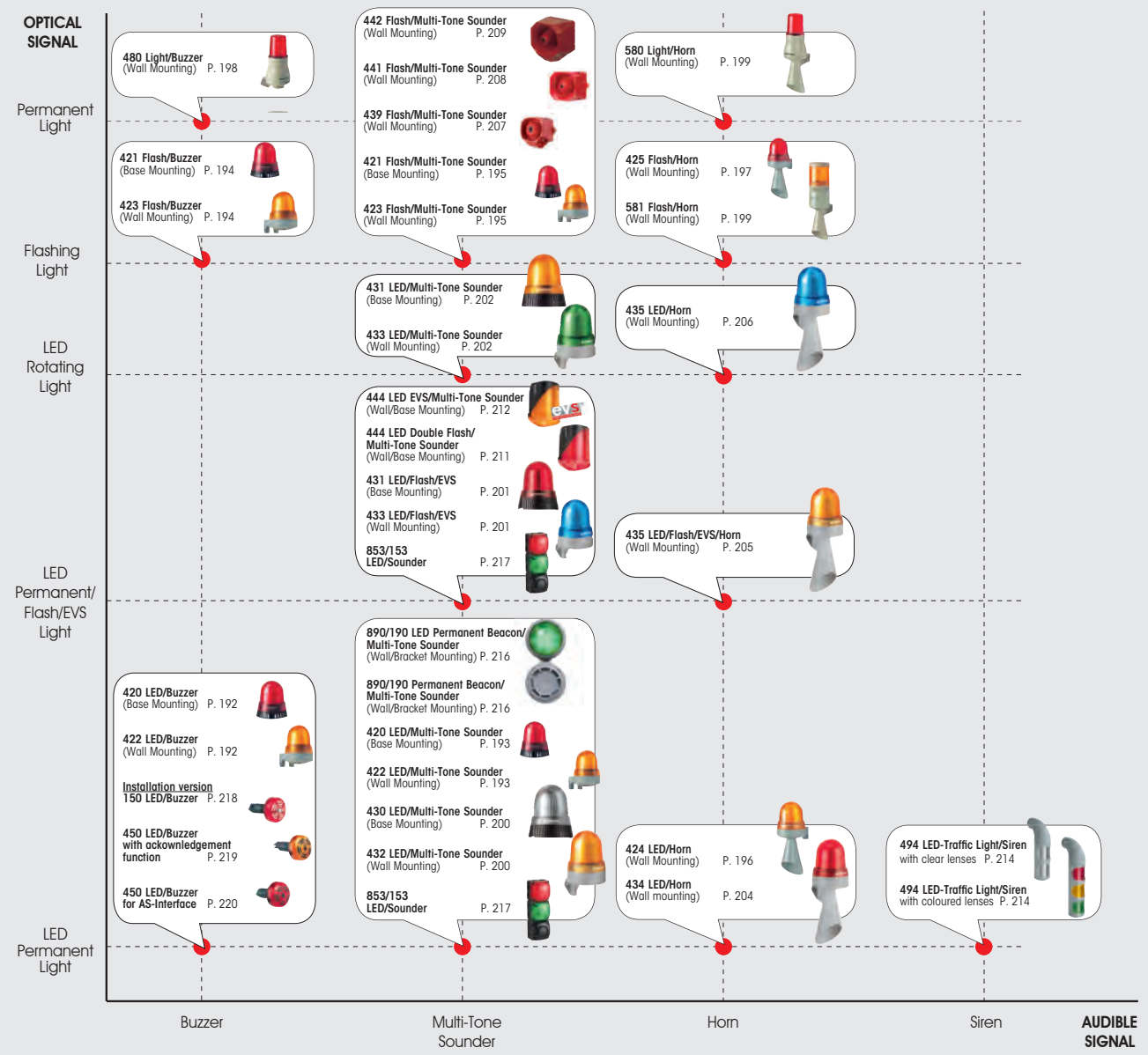
The WERMA 43x signal device range won the coveted iF product design award in 2012. With their innovative and unique design, the attractive signal devices stood out in a highly-qualified, internationally competitive field. For over 58 years the iF product design award has been a globally respected brand for design excellence.

With this latest award, WERMA signal devices have again been recognised for their outstanding design quality. The products have repeatedly distinguished themselves through their appealing design, and for this reason been awarded internationally coveted prizes such as the red dot design award and the iF Award.

Quick Finder for Optical-Audible Signal Devices

WERMA provides its customers with a comprehensive selection of Optical-Audible Signal Devices. A range of different light effects and signal tones are available.

With our Quick Finder you can quickly and easily select the correct signal device for your application. If you require additional support, simply give us a call!

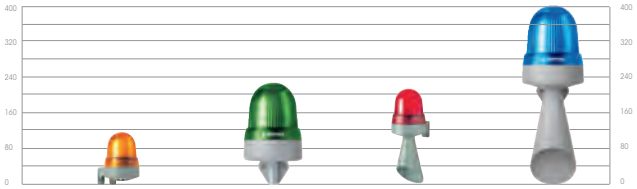


Size comparison

BASE MOUNTING

Series	420/421	430/431
L x H x W		
Ø	89 mm	146 mm
Height	100.5 mm	171 mm
Page	192 onwards	200 onwards

WALL MOUNTING



Series	422/423	432/433	424/425	434/435
L x H x W	83 x 120,5 x 91 mm		83 x 235 x 91 mm	
Ø		134 mm		134 mm
Height		235 mm		407 mm
Page	192 onwards	200 onwards	196 onwards	204 onwards

Comparison of sound output

442	Flash/Multi-Tone Sounder Combination	Page 209

120 dB

114 dB

432	LED Permanent/Multi-Tone Sounder Combination	Page 200
433	LED Permanent/Flash/EVS/Multi-Tone Sounder Comb.	Page 201
433	LED Rotating/Multi-Tone Sounder Combination	Page 202

112 dB

110 dB

422	LED/Multi-Tone Sounder Combination	Page 193
423	Flash/Multi-Tone Sounder Combination	Page 195

109 dB

108 dB

420	LED/Multi-Tone Sounder Combination	Page 193
421	Flash/Multi-Tone Sounder Combination	Page 195
439	Flash/Multi-Tone Sounder Combination	Page 207

105 dB

100 dB

98 dB

494	LED Traffic Light/Siren Combination	Page 214
494	LED Beacon/Siren Combination	Page 214

96 dB

92 dB

480	Light/Buzzer Combination	Page 198

90 dB

80 dB

Sound output in db
(measured
at 1 m distance)

WERMA SIGNALTECHNIK

120 dB

114 dB

444	LED EVS/Multi-Tone Sounder Combination	Page 212
444	LED Double Flash/Multi-Tone Sounder Combination	Page 211

112 dB

110 dB

441	Flash/Multi-Tone Sounder Combination	Page 208
190/890	(LED) Beacon/Multi-Tone Sounder Combination	Page 216

109 dB

108 dB

430	LED Permanent/Multi-Tone Sounder Combination	Page 200
431	LED Permanent/Flash/EVS/Multi-Tone Sounder Combinat.	Page 201
431	LED Rotating/Multi-Tone Sounder Combination	Page 202
434	LED Permanent/Horn Combination	Page 204
435	LED Permanent/Flash/EVS/Horn Combination	Page 205
435	LED Rotating/Horn Combination	Page 206

105 dB

853/153	LED/Sounder Combination	Page 217

100 dB

98 dB

424	LED/Horn Combination	Page 196
425	Flash/Horn Combination	Page 197

96 dB

92 dB

420	LED/Buzzer Combination	Page 192
421	Flash/Buzzer Combination	Page 194
422	LED/Buzzer Combination	Page 192
423	Flash/Buzzer Combination	Page 194
580	Light/Horn Combination	Page 199
581	Flash/Horn Combination	Page 199

90 dB

80 dB

150	LED/Buzzer Combination	Page 218
450	LED/Buzzer Combination with acknowledgement function	Page 219
450	LED/Buzzer Combination for AS-Interface	Page 220

Sound output in db (measured at 1 m distance)

420/422 LED/Buzzer Combination

Base mounting

The adaptor (accessory) allows quick and simple mounting on a tube

Wall mounting

- Buzzer in combination with LED Permanent Beacon
- Adaptor for tube mounting (accessory)
- Easy to mount
- Optical and audible signals can be triggered separately
- Continuous or pulse tone selectable
- Integrated mounting bracket (422)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 100.5 mm (Base/tube mounting)
(L x H x W):	83 mm x 120.5 mm x 91 mm (Wall mounting)
Housing:	Base/tube mounting: PC, black
	Wall mounting: PC-ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Continuous tone or pulse tone, adjustable
	12 V: only continuous tone
Tone frequency:	2.3 kHz (c. 3.3 kHz at 12 V)
Fixing:	Base mounting, tube mounting (accessory)
	Wall mounting, Sound outlet facing downwards

Play Sound www.werma.com

ORDER SPECIFICATIONS:

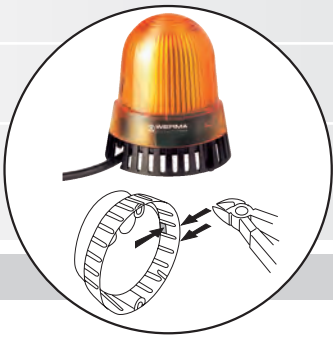
Voltage	12 V DC	24 V AC/DC	115 V AC	230 V AC
Current consumpt. LED	80 mA	45 mA	25 mA	25 mA
Current consumpt. Buzzer	40 mA	15 mA	15 mA	25 mA
Base/Tube mounting				
red	**420 110 54**	**420 110 75**	**420 110 67**	**420 110 68**
yellow	**420 310 54**	**420 310 75**	**420 310 67**	**420 310 68**
Wall mounting				
red	**422 110 54**	**422 110 75**	**422 110 67**	**422 110 68**
yellow	-	**422 310 75**	**422 310 67**	**422 310 68**

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 420 01**
Base for tube Ø 25 mm, plastic, incl. rubber sea	**975 840 90**
Base for tube Ø 25 mm, metal, incl. rubber seal	**975 840 91**
Rohr Ø 25 mm, Aluminium eloxiert	
100 mm	**975 845 10**
250 mm	**975 840 25**

TECHNICAL DIAGRAMS:

see page 304



A piece of the rim can be broken out to allow for cable entry from the side

Size comparison

See note on page 347

24 V

WERMA SIGNALTECHNIK

420/422 LED/Multi-Tone Sounder Combination

Base mounting

Mounting holes integrated into the product rim allow easy mounting without having to remove the lens

Wall mounting

Size comparison

- Multi-Tone Sounder in combination with LED Permanent Beacon
- Optical and audible signals can be triggered separately
- Choice of 8 different tones
- Easy to mount
- Adjustable sound output
- Integrated mounting bracket (422)
- Adaptor for tube mounting (accessory)

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 100.5 mm (Base/tube mounting)
(L x H x W):	83 mm x 120.5 mm x 91 mm (Wall mounting)
Housing:	Base/tube mounting: PC black
	Wall mounting: PC-ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm^2
Cable entry:	Cable diameter max. 9 mm
Fixing:	Base mounting, tube mounting (accessory)
	Wall mounting, Sound outlet facing downwards
Tone type:	Selectable, see table below
Tone frequency:	See table below

Play Sound www.werma.com

TONE TYPES AND FREQUENCIES:

Tone No.	Tone type
1	Horn tone (c. 110 Hz)
2	Continuous tone (c. 3.0 KHz)
3	1 Hz tone (c. 3.0 KHz)
4	20 Hz whistle tone (c. 3.0 KHz)
5	800-970 Hz rising @ 1 Hz
6	2400-2850 Hz rising @ 7 Hz
7	1200-500 Hz falling @ 1 Hz
8	Alternating tone 800 Hz / 1200 Hz @ 1Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC
Current consumption LED	45 mA
Current consumption MTS	80 mA
Base/Tube mounting	
red	**420 120 75**
yellow	**420 320 75**
Wall mounting	
red	**422 120 75**
yellow	**422 320 75**

ACCESSORIES:

Accessories see page 192.

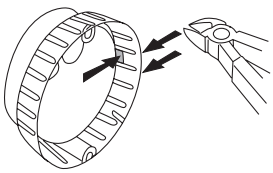
TECHNICAL DIAGRAMS: see page 304

See note on page 347

421/423 Flash/Buzzer Combination

Base mounting

Wall mounting



A piece of the rim can be broken out to allow for cable entry from the side

- Buzzer in combination with Xenon Flash
- Optical and audible signal can be triggered separately
- Easy to mount
- Continuous or pulse tone selectable
- Adaptor for tube mounting (accessory)
- Integrated mounting bracket (423)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 100.5 mm (Base/tube mounting)
(L x H x W):	83 mm x 120.5 mm x 91 mm (Wall mounting)
Housing:	Base/tube mounting: PC, black
	Wall mounting: PC-ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screwable protection with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Continuous or pulse tone, selectable
Tone frequency:	2.3 kHz
Flash energy:	1 Ws
Flash frequency:	1 Hz
Fixing:	Base mounting, tube mounting (accessory), Wall mounting, Sound outlet facing downwards
Life duration:	4 x 10^6 flashes

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption Flash	120 mA	25 mA	35 mA
Current consumption Buzzer	15 mA	15 mA	25 mA
Base/Tube mounting			
red	**421 110 75**	**421 110 67**	**421 110 68**
yellow	**421 310 75**	**421 310 67**	**421 310 68**
Wall mounting			
red	**423 110 75**	**423 110 67**	**423 110 68**
yellow	**423 310 75**	**423 310 67**	**423 310 68**

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 420 01**
Base for tube Ø 25 mm, plastic, incl. rubber seal	**975 840 90**
Base for tube Ø 25 mm, metal, incl. rubber seal	**975 840 91**
Tube Ø 25 mm, all anodized aluminium	
100 mm	**975 845 10**
250 mm	**975 840 25**

TECHNICAL DIAGRAMS:

see page 304

Size comparison

See note on page 347

CE EAC 120 g IP65 +50°C -20°C 1 Ws 92 dB

WERMA SIGNALTECHNIK

421/423 Flash/Multi-Tone Sounder Combination

Base mounting

Wall mounting

Mounting holes integrated into the product rim allow easy mounting without having to remove the lens

- Multi-Tone Sounder in combination with Xenon Flash
- Optical and audible signal can be triggered separately
- Choice of 8 different tones
- Adjustable sound output
- Easy to mount
- Adaptor for tube mounting (accessory)
- Integrated mounting bracket (423)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 100.5 mm (Base/tube mounting)
(L x H x W):	83 mm x 120.5 mm x 91 mm (Wall mounting)
Housing:	Base/tube mounting: PC black
	Wall mounting: PC-ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm^2
Cable entry:	Cable diameter max. 9 mm
Flash energy:	1 Ws
Flash frequency:	1 Hz
Fixing:	Base mounting, tube mounting (accessory)
	Wall mounting, Sound outlet facing downwards
Life duration:	4 x 10^6 flashes
Tone type:	Selectable, see table below
Tone frequency:	See table below

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone No.	**Tone type**
1	Horn tone (c. 110 Hz)
2	Continuous tone (c. 3.0 KHz)
3	1 Hz tone (c. 3.0 KHz)
4	20 Hz whistle tone (c. 3.0 KHz)
5	800-970 Hz rising @ 1 Hz
6	2400-2850 Hz rising @ 7 Hz
7	1200-500 Hz falling @ 1 Hz
8	Alternating tone 800 Hz / 1200 Hz @ 1Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC
Current consumption Flash	120 mA
Current consumption MTS	80 mA
Base/Tube mounting	
red	**421 120 75**
yellow	**421 320 75**
Wall mounting	
red	**423 120 75**
yellow	**423 320 75**

ACCESSORIES:

Accessories see page 194.

TECHNICAL DIAGRAMS: see page 304

See note on page 347

CE EAC 120 g IP65 +50°C -20°C 105 dB 1 Ws 8

Size comparison

424 LED/Horn Combination

- Electronic Horn in combination with LED Permanent Beacon
- Horn with long life duration up to 5,000 hrs
- Optical and audible signal can be triggered separately
- Adjustable sound output (24 V version)

Life duration up to 50,000 hrs (LED) + 5,000 hrs (Horn)

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 234.5 mm x 91 mm
Housing:	PC/ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Fixing:	Wall mounting, sound outlet facing downwards
Life duration:	50,000 hrs (LED Permanent light) 5,000 hrs (Horn)
Tone frequency:	110 Hz

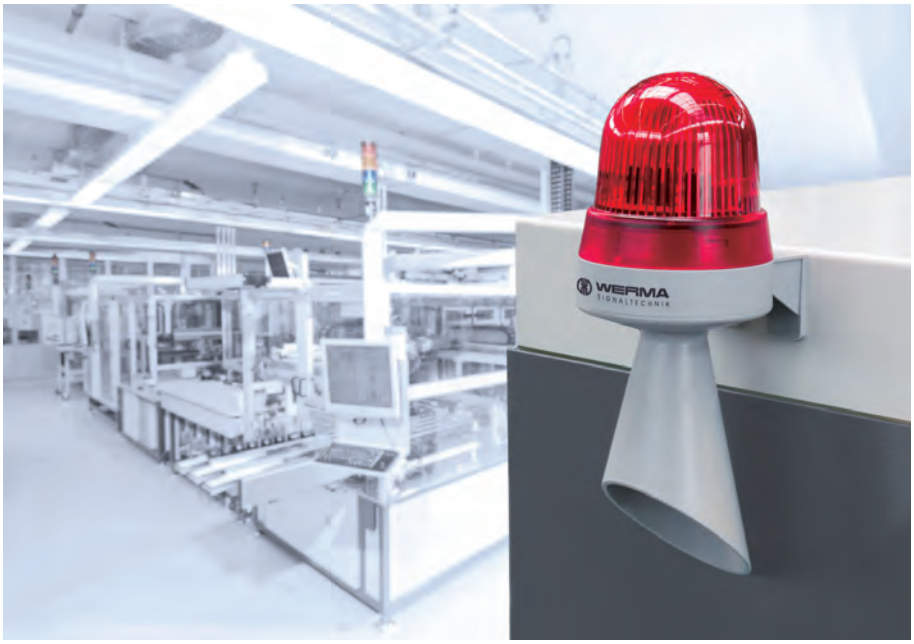
ORDER SPECIFICATIONS:

Play Sound www.werma.com

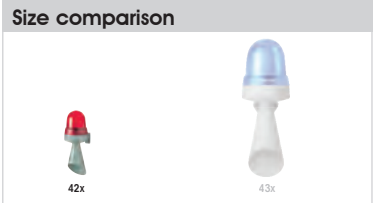
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption LED	45 mA	25 mA	25 mA
Current consumption Horn	80 mA	70 mA	70 mA
red	**424 120 75**	**424 120 67**	**424 120 68**
yellow	**424 320 75**	**424 320 67**	**424 320 68**

TECHNICAL DIAGRAMS:

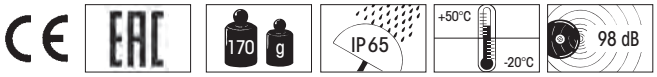
see page 304



Size comparison



See note on page 347



WERMA SIGNALTECHNIK

425 Flash/Horn Combination

- Electronic Horn in combination with Xenon Flash
- Horn with long life duration of up to 5,000 hrs
- Optical and audible signal can be triggered separately
- Adjustable sound output (24 V version)

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 234.5 mm x 91 mm
Housing:	PC/ABS-Blend; PC grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm^2
Cable entry:	Cable diameter max. 9 mm
Flash energy:	1 Ws
Flash frequency:	1 Hz
Fixing:	Wall mounting, sound outlet facing downwards
Life duration:	4 x 10^6 flashes (Xenon Flash)
	5,000 hrs (Horn)
Tone frequency:	110 Hz

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption Flash	120 mA	30 mA	30 mA
Current consumption Horn	80 mA	70 mA	70 mA
red	**425 120 75**	**425 120 67**	**425 120 68**
yellow	**425 320 75**	**425 320 67**	**425 320 68**

TECHNICAL DIAGRAMS:

see page 304

Size comparison

See note on page 347

CE EAC 190 g IP65 +50°C -20°C 98 dB 1 Ws

480 Light/Buzzer Combination

- Light and sound can be triggered separately
- Integrated mounting bracket

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 158.5 mm x 77 mm
Housing:	ABS
Lens:	PC, transparent
Socket:	BA15d, max. 7 Watt
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone frequency:	C. 2400 Hz
Duty cycle:	100 %

Bulb included in assembly. Bulb Overview see pages 184 and 185.

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	230 V AC
Current consumption	320 mA	50 mA
red	**480 152 55**	**480 152 68**
yellow	**480 352 55**	**480 352 68**

Further colours and voltages on request.

ADDITIONAL INFORMATION:

Please also see LED/Buzzer Combination 422 with additional advantages (page 192)

- High protection rating IP 65
- Buzzer in combination with LED
- Long life duration of up to 50,000 hrs
- Continuous and pulse tone selectable

TECHNICAL DIAGRAMS:

see page 306

See note on page 347

CE EAC 200 g IP33 +50°C 0°C 90 dB

WERMA SIGNALTECHNIK

580 Light/Horn Combination

- Light and sound can be triggered separately
- Integrated mounting bracket

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 251 mm x 77 mm
Housing:	ABS
Lens:	PC, transparent
Socket:	B15d, max. 7 Watt
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter max. 9 mm
Duty cycle:	100 %

Bulb included in assembly. Bulb Overview see pages 184 and 185.

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	42 V AC	230 V AC
Current consumption	360 mA	250 mA	50 mA
red	**580 152 55**	**580 152 66**	**580 152 68**
yellow	**580 352 55**	-	**580 352 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS: see page 307

See note on page 347

CE EAC 270 g IP33 +50°C -20°C 92 dB

ADDITIONAL INFORMATION:

Please also see LED/Horn Combination 424 with add. advantages (page 196)

- High protection rating IP 65
- Horn with a life duration of up to 5,000 hrs
- LED Permanent light with a life duration of up to 50,000 hrs

581 Flash/Horn Combination

- Light and sound can be triggered separately
- Integrated mounting bracket

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 292 mm x 77 mm
Housing:	ABS
Lens:	PC, transparent
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter max. 9 mm
Flash frequency:	C. 1 Hz
Flash energy:	2 Ws
Life duration:	4 x 10⁶ flashes

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	12 V DC	24 V DC	230 V AC
Current consumption	300 mA	200 mA	30 mA
red	-	**581 152 55**	**581 152 68**
yellow	**581 352 54**	**581 352 55**	**581 352 68**

Further colours and voltages on request.

TECHNICAL DIAGRAMS: see page 308

See note on page 347

CE EAC 300 g IP33 +50°C -20°C 92 dB 2 Ws

ADDITIONAL INFORMATION:

Please also see Flash/Horn Combination 425 with add. advantages (Page 197)

- High Protection rating IP 65
- Horn with a life duration of up to 5,000 hrs
- Adjustable sound output

430/432 LED/Multi-Tone Sounder Combination

LED Permanent Light in combination with Multi-Tone Sounder

Quick and simple wall mounting without additional accessories thanks to integrated mounting bracket

Mounting holes integrated into the product rim allow easy mounting without having to remove the lens

Size comparison

- 32 tones can be set to meet the requirements of the application, one tone can be triggered externally
- Adjustable sound output
- Optical and audible warning can be separately triggered for two stage signalling
- Integrated bracket for simple wall mounting without additional accessories (432)

Life duration up to 50,000 hrs (LED) + 5,000 hrs (Horn)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	146 mm x 171 mm (Base mounting) 134 mm x 235 mm (Wall mounting)
Housing:	Base mounting: PC, black Wall mounting: PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Base mounting (430), Wall mounting (432) Tube mounting (accessory, only for 430)
Installation position:	Sound outlet facing downwards
Tone type and frequency:	32 tones adjustable, see table on page 203.

ORDER SPECIFICATIONS:

Base mounting 430			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	350 mA 230 mA (red)	700 mA 550 mA (red)	100 mA 80 mA (red)
red	**430 100 75**	**430 100 70**	**430 100 60**
green	**430 200 75**	**430 200 70**	**430 200 60**
yellow	**430 300 75**	**430 300 70**	**430 300 60**
clear	**430 400 75**	**430 400 70**	**430 400 60**
blue	**430 500 75**	**430 500 70**	**430 500 60**

Wall mounting 432			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	350 mA 220 mA (red)	700 mA 550 mA (red)	100 mA 80 mA (red)
red	**432 100 75**	**432 100 70**	**432 100 60**
green	**432 200 75**	**432 200 70**	**432 200 60**
yellow	**432 300 75**	**432 300 70**	**432 300 60**
clear	**432 400 75**	**432 400 70**	**432 400 60**
blue	**432 500 75**	**432 500 70**	**432 500 60**

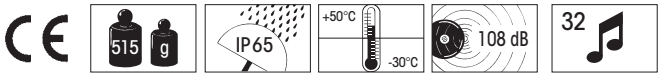
*Current consumption at 10 V / 115 V

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 430 01**

TECHNICAL DIAGRAMS:

see page 304



WERMA SIGNALTECHNIK

431/433

LED Permanent/Flashing/EVS*/ Multi-Tone Sounder Combination

Multi-functional LED beacon: 3 light effects can be externally triggered

The adaptor enables mounting on a tube

- 3 light effects can be triggered externally
- 32 tones can be set to meet the requirements of the application, one tone can be triggered externally
- Adjustable sound output
- Optical and audible warning can be separately triggered for two stage signalling
- Integrated bracket for simple wall mounting without additional accessories (433)

Life duration up to 50,000 hrs (LED) + 5,000 hrs (Horn)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	146 mm x 171 mm (Base mounting) 134 mm x 235 mm (Wall mounting)
Housing:	Base mounting: PC/ABS-Blend, black Wall mounting: PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Base mounting (431), Wall mounting (433), Tube mounting (accessory, only for 431)
Installation position:	Sound outlet facing downwards
Tone type and frequency:	32 tones adjustable, see table on page 203

ORDER SPECIFICATIONS:

Base mounting 431			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	350 mA 220 mA (red)	700 mA 530 mA (red)	100 mA 80 mA (red)
red	**431 100 75**	**431 100 70**	**431 100 60**
green	**431 200 75**	**431 200 70**	**431 200 60**
yellow	**431 300 75**	**431 300 70**	**431 300 60**
clear	**431 400 75**	**431 400 70**	**431 400 60**
blue	**431 500 75**	**431 500 70**	**431 500 60**

Wall mounting 433			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	350 mA 220 mA (red)	700 mA 530 mA (red)	100 mA 80 mA (red)
red	**433 100 75**	**433 100 70**	**433 100 60**
green	**433 200 75**	**433 200 70**	**433 200 60**
yellow	**433 300 75**	**433 300 70**	**433 300 60**
clear	**433 400 75**	**433 400 70**	**433 400 60**
blue	**433 500 75**	**433 500 70**	**433 500 60**

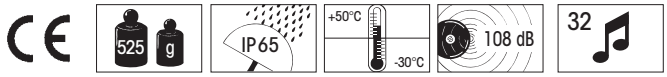
*Current consumption at 10 V / 115 V

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 430 01**

* **EVS** = Enhanced Visibility System.
Further Information can be found in the chapter "General Information" beginning on page 352. **Please note the photosensitive epilepsy warning on page 352.**

TECHNICAL DIAGRAMS: see page 304



431/433 LED Rotating/Multi-Tone Sounder Combination

Quick and simple wall mounting without additional accessories thanks to integrated mounting bracket

Base mounting

- Wear-free, intense rotating signal effect with low power consumption
- 32 tones can be set to meet the requirements of the application, one tone can be triggered externally
- Adjustable sound output
- Optical and audible warning can be separately triggered for two stage signalling
- Integrated bracket for simple wall mounting without additional accessories (433)

Life duration up to 50,000 hrs (LED) + 5,000 hrs (Horn)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	146 mm x 171 mm (Base mounting) 134 mm x 235 mm (Wall mounting)
Housing:	Base mounting: PC, black Wall mounting: PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Base mounting (431), Wall mounting (433) Tube mounting (accessory, only for 431)
Installation position:	Sound outlet facing downwards
Tone type and frequency:	32 tones adjustable, see table on page 203.

ORDER SPECIFICATIONS:

Base mounting 431			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	220 mA	500 mA	70 mA
	120 mA (red)	300 mA (red)	45 mA (red)
red	**431 110 75**	**431 110 70**	**431 110 60**
green	**431 210 75**	**431 210 70**	**431 210 60**
yellow	**431 310 75**	**431 310 70**	**431 310 60**
clear	**431 410 75**	**431 410 70**	**431 410 60**
blue	**431 510 75**	**431 510 70**	**431 510 60**

Wall mounting 433			
Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	190 mA	340 mA	55 mA
Current consumption LED	220 mA	500 mA	70 mA
	120 mA (red)	300 mA (red)	45 mA (red)
red	**433 110 75**	**433 110 70**	**433 110 60**
green	**433 210 75**	**433 210 70**	**433 210 60**
yellow	**433 310 75**	**433 310 70**	**433 310 60**
clear	**433 410 75**	**433 410 70**	**433 410 60**
blue	**433 510 75**	**433 510 70**	**433 510 60**

*Current consumption at 10 V / 115 V

ACCESSORIES:

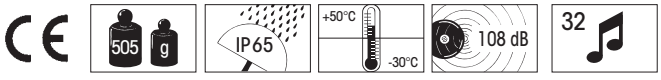
Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 430 01**

TECHNICAL DIAGRAMS:

see page 304 + 305

Intense rotating signal effect with low power consumption

Size comparison



WERMA SIGNALTECHNIK

43x Tone table for Multi-Tone Sounder

The Multi-Tone Sounder Combinations 43x offers a large choice of international signal tones for the widest range of applications. The tone types and frequencies can be found in the table below:

TONE TYPES AND FREQUENCIES:

Tone 1	Tone type	Frequency (Hz)	Description	Use	Tone 2	Sound output (dbA)
1	continuous	200		BS 5839-1:2002	440 Hz cont.	97
2	rising	800 & 970	7 Hz		14	102
3	rising	800 & 970	1 Hz		14	103
4	continuous	2850			14	104
5	rising	2400 - 2850	7 Hz		4	109
6	rising	2400 - 2850	1 Hz		4	110
7	rising	500 - 1200	3 s, then 0.5 s OFF (then repeat)		14	106
8	falling	1200 - 500	1 Hz	DIN 33404-3	14	104
9	alternating	2400 & 2850	2 Hz		4	111
10	pulse	970	0.5 Hz (1 s On/1 s Off)	BS 5839 Part 1 1988	14	101
11	alternating	800 & 970	1 Hz	BS 5839 Part 1 1988	14	105
12	pulse	2850	0.5 Hz		4	104
13	pulse	970		0,25 s On/1 s Off	14	98
14	continuous	970		BS 5839-1:2002 PFEER - Toxic gas	10	102
15	alternating	554 & 440		France NFS	14	101
16	pulse	660	150 ms On/150 ms Off	Swedish	16	96
17	pulse	660	1.8 s On/1.8 s Off	Swedish	17	98
18	pulse	660	6.5 s On/13 s Off	Swedish	18	98
19	continuous	660		Swedish	19	98
20	alternating	554 & 440	0.5 Hz		20	102
21	pulse	660	1 Hz	Swedish	21	97
22	pulse	2850	150 ms On/100 ms Off	GB	14	104
23	rising	800 - 970	50 Hz (low)	BS 5839 Part 1 1988	14	102
24	rising	2400 - 2850	50 Hz (high)		4	109
25	pulse	970	3 x 500 ms ON/500 ms OFF / 1.5 s silence, then repeat (low)	ISO 8201 US Temporal	26	101
26	pulse	2850	3 x 500 ms ON/500 ms OFF / 1.5 s silence, then repeat (high)	ISO 8201 US Temporal	25	104
27	continuous	4000			27	92
28	rising	2000 - 2850	7 Hz		2000 Hz cont.	111
29	alternating	988 & 645	2 Hz		988 Hz cont.	102
30	alternating	510 & 610	2 Hz		510 Hz cont.	102
31	alternating	800 & 970	2 Hz	5839-1:2002	800 Hz cont.	105
32	alternating	800 & 1200	1 Hz		800 Hz cont.	105

434 LED/Horn Combination

Award winning design Winner of the iF product design award 2012

- Maintenance-free, electronic horn with a long life duration of up to 5,000 hrs
- Optical and audible warning can be separately triggered for two stage signalling
- Sound output can be set to meet the requirements of the application
- Integrated bracket for simple wall mounting without additional accessories

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs (LED)

Dimensions (L x H x W):	134 mm x 407 mm x 144 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Wall mounting, integrated mounting bracket
Installation position:	Sound outlet facing downwards
Tone frequency:	C. 110 Hz
Life duration:	Up to 50,000 h (LED), up to 5,000 h (Horn)

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	55 mA	210 mA	30 mA
Current consumption LED	350 mA	700 mA	100 mA
	230 mA (red)	550 mA (red)	80 mA (red)
red	**434 100 75**	**434 100 70**	**434 100 60**
green	**434 200 75**	**434 200 70**	**434 200 60**
yellow	**434 300 75**	**434 300 70**	**434 300 60**
clear	**434 400 75**	**434 400 70**	**434 400 60**
blue	**434 500 75**	**434 500 70**	**434 500 60**

*Current consumption at 10 V / 115 V

TECHNICAL DIAGRAMS:

see page 305

Loud, long-life combination for a diverse range of applications

Quick and simple wall mounting without additional accessories thanks to integrated mounting bracket

Size comparison

WERMA SIGNALTECHNIK

435 LED Permanent/Flashing/EVS*/Horn Combination

Multi-functional LED beacon: 3 light effects can be triggered externally

- Maintenance-free, electronic horn with long life duration of up to 5,000 hrs
- Sound output can be set to meet the requirements of the application
- 3 light effects can be triggered externally
- Optical and audible warning can be separately triggered for two stage signalling
- Integrated bracket for simple wall mounting without additional accessories

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs (LED)

Dimensions (L x H x W):	134 mm x 407 mm x 144 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Wall mounting, integrated mounting bracket
Installation position:	Sound outlet facing downwards
Tone frequency:	C. 110 Hz
Life duration:	Up to 50,000 h (LED), up to 5,000 h (Horn)

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	55 mA	210 mA	30 mA
Current consumption LED	350 mA	700 mA	100 mA
	220 mA (red)	550 mA (red)	80 mA (red)
red	**435 100 75**	**435 100 70**	**435 100 60**
green	**435 200 75**	**435 200 70**	**435 200 60**
yellow	**435 300 75**	**435 300 70**	**435 300 60**
clear	**435 400 75**	**435 400 70**	**435 400 60**
blue	**435 500 75**	**435 500 70**	**435 500 60**

*Current consumption at 10 V / 115 V

The "EVS"* light effect ensures a maximum attention-grabbing effect

ACCESSORIES:

***EVS** = Enhanced Visibility System

Further Information see page 352.

Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 305

Loud, long-life horn for a diverse range of applications

Size comparison

CE 635 g IP65 +50°C -30°C 108 dB

435 LED Rotating/Horn Combination

Award winning design Winner of the iF product design award 2012

Quick and simple wall mounting without additional accessories thanks to integrated mounting bracket

Size comparison

- Maintenance-free, electronic horn with long life duration of up to 5,000 hrs
- Sound output can be set to meet the requirements of the application
- Wear-free, intense rotating signal effect with low power consumption
- Optical and audible warning can be separately triggered for two stage signalling
- Integrated bracket for simple wall mounting without additional accessories

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs (LED)

Dimensions (L x H x W):	134 mm x 407 mm x 144 mm
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Fixing:	Wall mounting, integrated mounting bracket
Installation position:	Sound outlet facing downwards
Tone frequency:	C. 110 Hz
Life duration:	Up to 50,000 h (LED), up to 5,000 h (Horn)

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC*
Current consumption MTS	55 mA	210 mA	30 mA
Current consumption LED	220 mA	500 mA	70 mA
	150 mA (red)	300 mA (red)	45 mA (red)
red	**435 110 75**	**435 110 70**	**435 110 60**
green	**435 210 75**	**435 210 70**	**435 210 60**
yellow	**435 310 75**	**435 310 70**	**435 310 60**
clear	**435 410 75**	**435 410 70**	**435 410 60**
blue	**435 510 75**	**435 510 70**	**435 510 60**

*Current consumption at 10 V / 115 V

TECHNICAL DIAGRAMS:

see page 305

Intense rotating signal effect thanks to long-life, wear-free LED technology

CE 615 g IP65 +50°C -30°C 108 dB

WERMA SIGNALTECHNIK

439 Flash/Multi-Tone Sounder Combination

- Multi-Tone Sounder in combination with Xenon Flash
- 32 tones for a diverse range of applications
- Adjustable sound output up to 105 dB
- 2 tones can be triggered externally
- Optical and audible signal can be triggered separately

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	136 mm x 138 mm x 119 mm
Housing:	ABS
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Flash frequency:	1 Hz
Flash energy:	1.6 Ws
Tone types and frequencies:	Selectable via DIP switch

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	9-60 V DC	110-230 V AC
Current consumption	230 mA (24 V)	30 mA (230 V)
Housing / Flash		
red / red	**439 010 55**	**439 010 68**
red / yellow	**439 030 55**	**439 030 68**
grey / red	**439 110 55**	**439 110 68**
grey / yellow	**439 130 55**	**439 130 68**

ACCESSORIES:

Cable gland M20 x 1.5 mm	**975 444 01**

TONE TYPES AND FREQUENCIES:

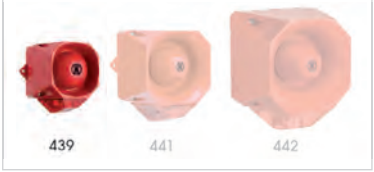
For further details see www.werma.com.

TECHNICAL DIAGRAMS:

see page 305

Multi-Tone Sounder in combination with a powerful Xenon Flash

Size comparison



See note on page 347

CE EAC 600 g IP66 +70°C -25°C 1,6 Ws 105 dB 32

441 Flash/Multi-Tone Sounder Combination

- Multi-Tone Sounder in Combination with Xenon Flash
- 32 tones for a diverse range of applications
- Adjustable sound output up to 110 dB
- 2 tones can be triggered externally
- Optical and audible signal can be triggered separately

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	165 mm x 169 mm x 132 mm
Housing:	PC/ABS-Blend
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Flash frequency:	1 Hz
Flash energy:	2.5 Ws
Tone types and frequencies:	Selectable via DIP switch

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	9-60 V DC	230 V AC
Current consumption	230 mA	35 mA
Housing / Flash		
red / red	**441 010 55**	**441 010 68**
red / yellow	**441 030 55**	**441 030 68**
grey / red	**441 110 55**	**441 110 68**
grey / yellow	**441 130 55**	**441 130 68**

ACCESSORIES:

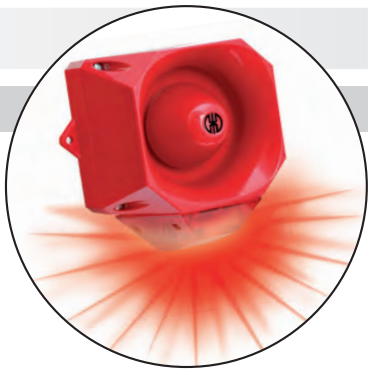
Cable gland M20 x 1.5 mm	**975 444 01**

TONE TYPES AND FREQUENCIES:

For further details see www.werma.com.

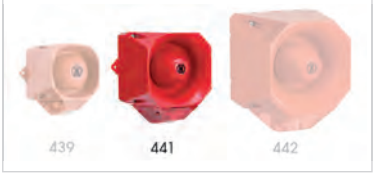
TECHNICAL DIAGRAMS:

see page 305



Multi-Tone Sounder in combination with a powerful Xenon Flash

Size comparison



See note on page 347

CE EAC 800 g IP66 +75°C -25°C 2,5 Ws 110 dB 32

WERMA SIGNALTECHNIK

442 Flash/Multi-Tone Sounder Combination

- Multi-Tone Sounder in combination with Xenon Flash
- 4 different flash frequencies (24 V Version)
- 42 tones for a diverse range of applications
- Adjustable sound output up to 120 dB
- 3 tones can be triggered externally
- Duration of signal phase selectable
- Optical and audible signal can be triggered separately

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	168 mm x 211 mm x 155 mm
Housing:	PC/ABS-Blend
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Tone types and frequencies:	Selectable via DIP switch, see table on page 210

ORDER SPECIFICATIONS:

Play Sound www.werma.com

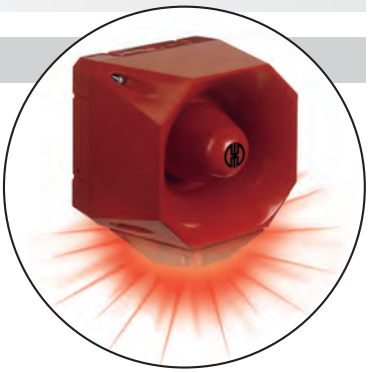
Voltage	18-30 V DC		115 / 230 V AC
Current cons. Multi Tone Sounder	450 mA		130 / 65 mA
Current consumption Flash	127-389 mA (dependent on voltage and flash frequency)		– / 15 mA (dependent on voltage and flash frequency)
Flash frequency	0,75 Hz/1 Hz	1,25 Hz/2 Hz	1 Hz (Flash can only be operated with 230 V)
Flash energy	3,5 Ws	2 Ws	2 Ws
Housing/Flash			
red/red	**442 010 55**		**442 010 68**
red/yellow	**442 030 55**		**442 030 68**
grey/red	**442 110 55**		**442 110 68**
grey/yellow	**442 130 55**		**442 130 68**

ACCESSORIES:

Cable gland M20 x 1.5 mm	**975 444 01**

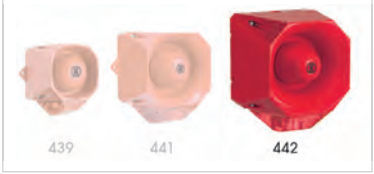
TECHNICAL DIAGRAMS:

see page 305



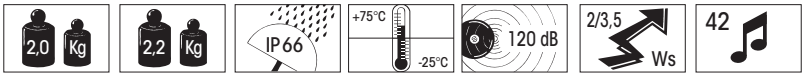
Loud Multi-Tone Sounder in combination with a powerful Xenon Flash

Size comparison



See note on page 347

442 XX0 55 | 442 XX0 68



442 Combination

The Flash/Multi-Tone Sounder Combination 442 offers a large choice of international signal tones for the widest spectrum of applications. 3 tones can be triggered externally. The first two tones can be freely chosen. The third tone is paired with the second tone.

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone 1+2 No	Tone type	Use	Output (dBA)	Tone 3
1	alternating 800/970 Hz in 2 Hz stroke (250 ms-250 ms)		120	14
2	rising 800/970 Hz in 7 Hz stroke (7/s)		120	14
3	rising 800/970 Hz in 1 Hz stroke (1/s)		120	14
4	continuous 2,850 Hz		111	9
5	rising 2,400-2,850 Hz in 7 Hz stroke		109	4
6	rising 2,400-2,850 Hz in 1 Hz stroke		110	4
7	500-1,200 Hz rising in 3 sec., 0.5 sec. OFF	Slow Whoop Holland	119	14
8	falling 1,200-500 Hz in 1 Hz stroke	DIN/PFEER (PAPA), DIN 33404-3, VDS tested	119	14
9	alternating 2,400/2,850 Hz in 2 Hz stroke (250 ms-250 ms)		113	4
10	pulse 970 Hz in 0,5 Hz stroke (1 sec. ON / 1 sec. OFF)	PFEER Alarm	117	14
11	alternating 800/970 Hz in 1 Hz stroke (500 ms-500 ms)		118	14
12	pulse 2,850 Hz in 0.5 Hz stroke (1 sec. ON / 1 sec. OFF)		112	4
13	970 Hz pulse: 0.25 sec. ON / 1 sec. OFF		117	14
14	continuous 970 Hz	PFEER - Toxic gas	118	8
15	554 Hz/100 ms alternating 440 Hz/400 ms	French alarm signal AFNOR NFS 32S 32-001	115	14
16	660 Hz pulse: 150 ms ON, 150 ms. OFF	Swedish alarm signal	114	14
17	660 Hz pulse: 1.8 sec. ON, 1.8 sec. OFF	Swedish alarm signal	115	14
18	660 Hz pulse: 6.5 sec. ON, 13 sec. OFF	Swedish alarm signal	115	14
19	continuous 660 Hz	Swedish alarm signal	116	1
20	alternating 554/440 Hz in 0.5 Hz stroke (1 sec. ON / 1 sec. OFF)	Swedish alarm signal	115	19
21	pulse 660 Hz in 1 Hz stroke (500 ms-500 ms)	Swedish alarm signal	115	4
22	pulse 2,850 Hz in 4 Hz stroke (150 ms ON / 100 ms OFF)		110	4
23	rising 800-970 Hz in 50 Hz stroke		117	14
24	rising 2,400-2,850 Hz in 50 Hz stroke		110	4
25	970 Hz puls.: 3 x 500 ms. ON, 500 ms OFF, break 1.5 sec.	ISO 8201 / US Temporal	118	14
26	2,850 Hz puls.: 3 x 500 ms. ON, 500 ms OFF, break 1.5 sec.	ISO 8201 / US Temporal	112	4
27	continuous 4,000 Hz		105	6
28	alternating 800/970 Hz in 2 Hz stroke (250 ms-250 ms)		118	14
29	alternating 990/650 Hz in 2 Hz stroke (250 ms-250 ms)		117	14
30	alternating 510/610 Hz in 2 Hz stroke (250 ms-250 ms)		116	14
31	rising 300-1,200 Hz in 1 Hz stroke		118	14
32	continuous Bell		117	3
33	continuous Bell: 3x500 ms. Pulse, 1.5 sec. Silence, then repeat	Bell / US Temporal	117	14
34	alternating 1,000/2,000 Hz in 1 Hz stroke (500 ms-500 ms)	Singapore	115	4
35	pulse 420 Hz (0,625 sec.)	Australian alarm signal	118	14
36	500-1,200 Hz rising in 3.75 sec., then 0,25 sec. OFF	Australian alarm signal (Evacuation)	117	14
37	rising 1,400-1,600 Hz in 1 sec., falling in 0.5 sec.	NF C 48-265	116	14
38	500-1,200 Hz rising and falling in 3 sec.	Siren	117	14
39	pulse 720 Hz: 0.7 sec. ON, 0.3 sec. OFF	German industrial alarm	118	14
40	rising 422-775 Hz in 0.85 sec., 1 sec. silence, then repeat	NFPA Whoop	118	14
41	continuous 470 Hz	Horn (USA)	114	3
42	continuous 370 Hz	Air Horn (USA)	113	3

444

LED Double Flash/ Multi-Tone Sounder Combination

Base mounting

Wall mounting

- Multi-Tone Sounder in combination with LED Double Flash
- Sound output adjustable up to 114 dB (C)/110 db (A)
- 32 tones
- 3 Tones can be triggered externally
- Optical and audible signal can be triggered separately

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	109 mm x 112.5 mm x 152 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	24 V: Screw terminal with wire protection max. 1.5 mm² 115/230 V: CAGE CLAMP®
Cable entry:	Membrane for cable diameter max. 13 mm
Fixing:	Wall, base and ceiling mounting
Life duration:	Up to 50,000 hrs (LED Double Flash)
Flash frequency:	C. 1 Hz

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage		24 V AC/DC	115 V AC	230 V AC
Current consumption	Optical	60 mA	30 mA	30 mA
	Audible	200 mA	55 mA	30 mA
red		**444 100 75**	**444 100 67**	**444 100 68**
yellow		**444 300 75**	**444 300 67**	**444 300 68**

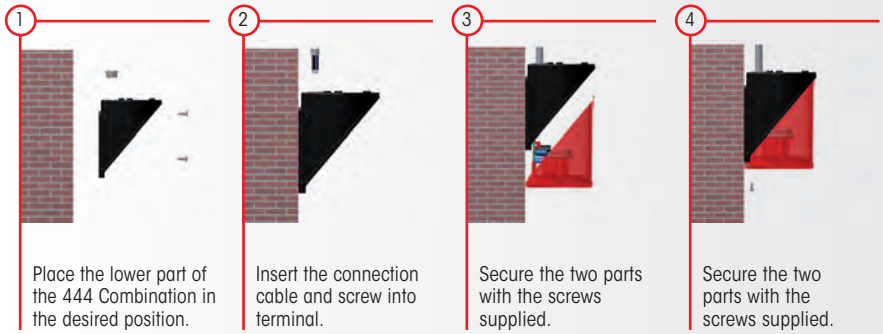
ACCESSORIES:

Cable gland M20 x 1.5 mm (for cable strain relief) Protection rating IP 65 is provided even without cable gland	**975 444 01**

TONE TYPES AND FREQUENCIES:

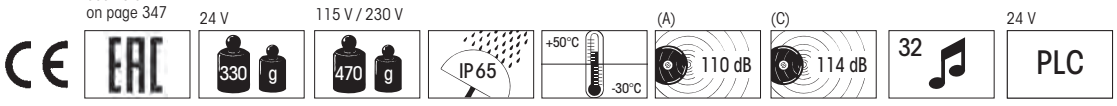
Selectable via DIP switch, see tone table on page 213.

QUICK AND SIMPLE MOUNTING



TECHNICAL DIAGRAMS: see page 305

See note on page 347



LED EVS*/Multi-Tone Sounder Combination

Base mounting

The „EVS“ light effect ensures a maximum attention-grabbing effect

- Multi-Tone Sounder in combination with LED EVS* signal
- Random sequence of light signals prevents acclimatisation effect
- 32 tones for a diverse range of applications
- Sound output adjustable up to 114 dB (C)/110 db (A)
- 3 tones can be triggered externally
- Optical and audible signal can be triggered separately

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (L x H x W):	109 mm x 112.5 mm x 152 mm
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	24 V: Screw terminal with wire protection max. 2.5 mm² 115/230 V: CAGE CLAMP®
Cable entry:	Membrane for cable diamter max. 13 mm
Fixing:	Wall, base and ceiling mounting
Life duration:	Up to 50,000 hrs (LED EVS)

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage		24 V AC/DC	115 V AC	230 V AC
Current consumption	Optical	60 mA	30 mA	30 mA
	Audible	220 mA	55 mA	30 mA
red		**444 110 75**	**444 110 67**	**444 110 68**
yellow		**444 310 75**	**444 310 67**	**444 310 68**

ACCESSORIES:

Cable gland M20 x 1.5 mm (for cable strain relief) **975 444 01**
Protection rating IP 65 is provided even without cable gland

TONE TYPES AND FREQUENCIES:

Selectable via DIP switch, see tone table on page 213.

ADDITIONAL INFORMATION:

* **EVS** = Enhanced Visibility System.
Further Information can be found in the chapter "General Information" on page 352.
Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 305

See note on page 347

CE EAC

24 V 330 g | 115 V / 230 V 470 g | IP65 | +50°C -30°C | 110 dB | 114 dB | 32 | 24 V PLC

WERMA SIGNALTECHNIK

444 Combination

The 444 Combinations offer a large choice of international signal tones for the widest spectrum of applications. 3 tones can be triggered externally.

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone 1	Tone type	Frequency (Hz)	Description	Use	Tone 2	Sound output (dbA)
1	continuous	200		BS 5839-1:2002	440 Hz cont.	97
2	rising	800 & 970	7 Hz		14	102
3	rising	800 & 970	1 Hz		14	103
4	continuous	2850			14	104
5	rising	2400 - 2850	7 Hz		4	109
6	rising	2400 - 2850	1 Hz		4	110
7	rising	500 - 1200	3 s, then 0.5 s OFF (then repeat)		14	106
8	falling	1200 - 500	1 Hz	DIN 33404-3	14	104
9	alternating	2400 & 2850	2 Hz		4	111
10	pulse	970	0.5 Hz (1 s On/1 s Off)	BS 5839 Part 1 1988	14	101
11	alternating	800 & 970	1 Hz	BS 5839 Part 1 1988	14	105
12	pulse	2850	0.5 Hz		4	104
13	pulse	970		0,25 s On/1 s Off	14	98
14	continuous	970		BS 5839-1:2002 PFEER - Toxic gas	10	102
15	alternating	554 & 440		France NFS	14	101
16	pulse	660	150 ms On/150 ms Off	Swedish	16	96
17	pulse	660	1.8 s On/1.8 s Off	Swedish	17	98
18	pulse	660	6.5 s On/13 s Off	Swedish	18	98
19	continuous	660		Swedish	19	98
20	alternating	554 & 440	0.5 Hz		20	102
21	pulse	660	1 Hz	Swedish	21	97
22	pulse	2850	150 ms On/100 ms Off	GB	14	104
23	rising	800 - 970	50 Hz (low)	BS 5839 Part 1 1988	14	102
24	rising	2400 - 2850	50 Hz (high)		4	109
25	pulse	970	3 x 500 ms ON/500 ms OFF / 1.5 s silence, then repeat (low)	ISO 8201 US Temporal	26	101
26	pulse	2850	3 x 500 ms ON/500 ms OFF / 1.5 s silence, then repeat (high)	ISO 8201 US Temporal	25	104
27	continuous	4000			27	92
28	rising	2000 - 2850	7 Hz		2000 Hz cont.	111
29	alternating	988 & 645	2 Hz		988 Hz cont.	102
30	alternating	510 & 610	2 Hz		510 Hz cont.	102
31	alternating	800 & 970	2 Hz	5839-1:2002	800 cont.	105
32	alternating	800 & 1200	1 Hz		800 cont.	105

LED Traffic Light / Siren Combination

LED Traffic Light with integrated siren (2 tier)

Integrated siren with high sound output

Clear lenses ensure signalling effect even in direct sunlight

- High visibility LED Traffic Light with independently triggerable integrated siren
- Unmistakable signalling even in direct sunlight thanks to clear lenses
- Simple mounting due to integrated mounting bracket
- The optical signal also offers very good sideward visibility
- Protection rating IP 65/IP 69k

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	2 tier: 85 mm x 309 mm x 136 mm 3 tier: 85 mm x 394 mm x 136 mm
Housing:	PC/ABS, grey
Lens:	PC, transparent
Fixing:	Wall mounting, tube mounting (accessory)
Installation position:	Vertical/hanging
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 13 mm
Duty cycle:	100 %
Tone type:	Continuous tone

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage		24 V DC	115 to 230 V AC
Current Consumption	LED	60 mA (red/yellow) 120 mA (green)	30 mA per tier at 230 V/50 Hz
	Siren	20 mA	30 mA at 230 V/50 Hz
red / green		**494 160 55**	**494 160 68**
red / yellow / green		**494 180 55**	**494 180 68**

ACCESSORIES:

Adaptor for tube mounting **975 894 02**
(suitable for Ø 75 mm tubes, see page 215)

ADDITIONAL INFORMATION:

"Small Traffic Light Series" wins "iF product design award 2009"
WERMA has won the prestigious "iF product design award" for the design and production of its "small traffic light series". Since its introduction in 1953, this design prize has been an enduring, renowned hallmark for "excellent" design.

TECHNICAL DIAGRAMS:

see page 306

See note on page 347

2 tier 380 g | 3 tier 410 g | IP65/IP69k | +50°C -30°C | 90 dB

WERMA SIGNALTECHNIK

LED Beacon / Siren Combination

product design award 2009

LED Beacon with integrated Siren (1 tier)

Integrated siren with high sound output

The adaptor (accessory) allows quick and simple mounting on tubes (Ø 75 mm)

- High visibility LED Traffic Light with independently triggerable integrated siren
- Colour intensive light effect thanks to LEDs in the same colour as the lenses
- Simple mounting due to integrated mounting bracket
- The optical signal also offers very good sideward visibility
- Protection rating IP 65/IP 69k

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	1 tier: 85 mm x 224 mm x 136 mm 2 tier: 85 mm x 309 mm x 136 mm 3 tier: 85 mm x 394 mm x 136 mm
Housing:	PC/ABS, grey
Lens:	PC, transparent
Fixing:	Wall mounting, Tube mounting (accessory)
Installation position:	Vertical
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 13 mm
Duty cycle:	100 %
Tone type:	Continuous tone

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage		24 V DC	115 to 230 V AC
Current Consumption	LED	60 mA (red/yellow) 120 mA (green)	30 mA per tier at 230 V/50 Hz
	Siren	20 mA	30 mA at 230 V/50 Hz
red		**494 010 55**	**494 010 68**
green		**494 020 55**	**494 020 68**
yellow		**494 030 55**	**494 030 68**
red / green		**494 060 55**	**494 060 68**
red / yellow / green		**494 080 55**	**494 080 68**

ACCESSORIES:

Adaptor for tube mounting (suitable for Ø 75 mm tubes)	**975 894 02**

ADDITIONAL INFORMATION:

Maximum flexibility

Thanks to the innovative bracket, the direction of the signal can be individually adjusted. After the bracket has been mounted, the customer can adjust the direction to suit his requirements.

The LED traffic light can be turned through 360 degrees guaranteeing optimum visibility from all angles.

The direction of the optical signal can be individually adjusted

TECHNICAL DIAGRAMS:

see page 306

See note on page 347

1 tier 350 g | 2 tier 380 g | 3 tier 410 g | IP65/IP69k | +50°C -30°C | 90 dB

890/190

(LED) Beacon 890/Multi-Tone Sounder 190 Combination

Light intensive and loud traffic light combination

The fixing bracket can be mounted pointing inwards or outwards (accessory)

- 32 tones for a diverse range of applications
- Sound output adjustable up to 114 dB (C)/110 dB (A)
- 3 tones can be triggered externally
- Fixing bracket for easy combination with (LED) Permanent Beacon/ Traffic Light 890

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	150 mm x 154 mm (890) 150 mm x 127 mm (190)
Housing:	PC/ABS-Blend, grey
Lens:	PC, transparent
Fixing:	Base mounting, fixing bracket (accessory)
Connection:	Screw terminal
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm, included in assembly

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Multi-Tone Sounder 190			
Voltage	10-30 V DC	115 V AC	230 V AC
Current consumption	< 180 mA	< 55 mA	< 30 mA
grey	**190 000 55**	**190 000 67**	**190 000 68**
LED Beacon 890			
Voltage	12-24 V DC	115 V AC	230 V AC
Current consumption	< 200 mA	< 35 mA	< 35 mA
red	**890 120 55**	**890 120 67**	**890 120 68**
green	**890 220 55**	**890 220 67**	**890 220 68**
yellow	**890 320 55**	**890 320 67**	**890 320 68**

Permanent Beacon 890	
Voltage	12-240 V AC/DC
red	**890 100 00**
green	**890 200 00**
yellow	**890 300 00**
clear	**890 400 00**
blue	**890 500 00**

ACCESSORIES:

Fixing bracket, tube adaptor and connecting grommet see page 176.

TONE TYPES AND FREQUENCIES:

Selectable via DIP switch, see tone table on page 251.

ADDITIONAL INFORMATION:

Traffic light configurator at **www.werma.com**

TECHNICAL DIAGRAMS: see page 298 + 326

See note on page 347

(A) (C)

CE EAC IP65 +50°C -30°C 110 dB 114 dB 32 PLC

WERMA SIGNALTECHNIK

853/153

LED Beacon 853/ Sounder 153 Combination

- Up to 8 different tones (12 V; 24 V)
- 3 tones can be triggered externally (12 V; 24 V)
- Externally adjustable sound output (-10 dB)
- „Status Light" to emphasise the audible warning signal
- Innovative connector to create traffic light combinations
- Easy assembly due to quick-release screws

The innovative connector (accessory) enables traffic light combinations to be created in a matter of seconds

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	LED Beacon 853: PC, transparent Sounder 153: PC, tinted black
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 8 mm, optional cable gland M20 (accessory)
Fixing:	Wall, base and ceiling mounting
Equipment:	Eight self-sealing membranes for cable entry without tools. Eight integrated M20 threads, no nuts required. Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assembly:	Incl. snap-on fixing bracket (optional use)

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V DC	48 V AC	115-230 VAC
Current consumption	150 mA	100 mA	150 mA	75 mA (115 V)
				150 mA (230 V)
	153 000 54	**153 000 55**	**153 000 66**	**153 000 60**

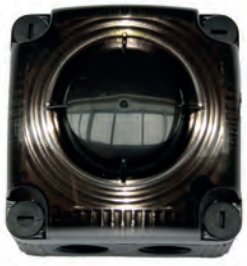
The technical specifications and order specifications of the LED Beacons can be found at www.werma.com or on page 135 (LED Permanant Beacon), page 152 (LED Double Flash Beacon) and page 153 (LED EVS Beacon).

ACCESSORIES:

Connector for traffic light combinations	**975 853 01**
Cable gland M20 x 1.5 mm, 8 mm thread length	**975 853 02**

TONE TYPES AND FREQUENCIES:

Tone	Tone type	Tone	Tone type
1	Continous tone (ca. 3000 Hz)	5	800 - 970 Hz rising @ 1 Hz
2	Horn tone (ca. 110 Hz)	6	2400 - 2850 Hz rising @ 7 Hz
3	1 Hz tone (ca. 3,0 kHz)	7	1200 - 500 Hz falling @ 1 Hz
4	20 Hz whistle tone (ca. 3,0 kHz)	8	Alternating tone 800 Hz/1200 Hz@1 Hz



"Status Light" function to generate additional awareness of the audible signal

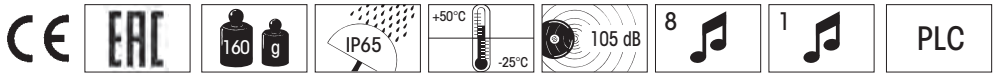
ADDITIONAL INFORMATION:

Traffic light configurator at **www.werma.com**

TECHNICAL DIAGRAMS: see page 297 + 321

See note on page 347

12 V, 24 V | 48 V, 115-230 V



150 LED/Buzzer Combination

- LED Permanent light
- Continuous tone can be additionally activated
- Simple connection by means of connector plug

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	50 mm x 22 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	Connector plug with screw terminal max. 1.5 mm²
Tone type:	Continuous
Tone frequency:	C. 2.8 kHz
Duty cycle:	100 %
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device

Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	< 50 mA	< 20 mA	< 20 mA
red	**150 100 55**	**150 100 67**	**150 100 68**
yellow	**150 300 55**	**150 300 67**	**150 300 68**

TECHNICAL DIAGRAMS:

see page 297

See note on page 347

c UL us CE EAC 30 g IP65 +50°C -20°C 80 dB 24 V PLC

WERMA SIGNALTECHNIK

450

LED/Buzzer Combination with acknowledgement function

- LED permanent light with additional continuous tone
- Silence the audible signal by lightly pressing the frontal area
- Potential-free output for transmission of the acknowledgement signal to the control unit
- Positive and negative logic

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Diameter x Height):	50 mm x 22 mm (Protrusion from panel)
Housing:	PC/ABS-Blend
Lens:	PC, transparent
Connection:	Screw terminal max. 0.5 mm²
Signal input:	24 V DC
Acknowledgement output:	Semiconductor-Relay U_{max} = 30 V I_{max} = 100 mA $R_{ON\ max}$ = 25 Ohm
Tone type:	Continuous
Tone frequency:	C. 2.8 kHz
Duty cycle:	100 %
Fixing:	Installation mounting for Ø 22,5 mm (M22 x 1.5 mm) with anti-twist device

Nut and seal included in assembly.

The audible signal can be turned off in seconds by lightly pressing the front of the product

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC
Current consumption	40-80 mA
red	**450 100 55**
yellow	**450 300 55**

ADDITIONAL INFORMATION:

1

The occurrence of a malfunction or an error is indicated by means of an optical-audible signal.

2

The audible signal can be turned off in seconds by lightly pressing the front of the product.

3

The acknowledgement signal is sent to the control unit via an electronic switch and the malfunction is now only indicated by the optical signal.

TECHNICAL DIAGRAMS:

see page 306

See note on page 347

c UL us | CE | EAC | 35 g | IP65 | +50°C -20°C | 80 dB | PLC

450 LED/Buzzer Combination with acknowledgement function for AS-Interface

Patent approved

- LED Permanent light with additional continuous tone
- Silence the audible signal by lightly pressing the frontal area
- Acknowledgement signal fed back to the Master via AS-Interface Bus

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	50 mm x 22 mm (Protrusion from panel)
Housing:	PC, black
Lens:	PC, transparent
Connection:	Screw terminal with wire protection max. 1.5 mm²
Power supply AS-Interface:	Via bus conduction
Operating voltage:	25 V ... 31.6 V according to the AS-Interface specification
IO-Code:	B_{hex}
ID-Code:	A_{hex}
ID2-Code:	E_{hex}
Tone type:	Continuous
Tone frequency:	C. 2.8 kHz
Duty cycle:	100 %
Fixing:	Installation mounting for Ø 22.5 mm (M22 x 1.5 mm) with anti-twist device

Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	via AS-Interface
Current consumption	≤ 80 mA
red	**450 110 55**
yellow	**450 310 55**

ADDITIONAL INFORMATION:

Unique acknowledgement function with feedback signal via AS-Interface Bus

The addition of the LED/Buzzer Combination 450 with acknowledgement function expands WERMA's range of products with integrated AS-Interface®. The combination unites a very bright light signal with the powerful sound of a buzzer.

This product also features a unique acknowledgement function: by gently pressing the front surface of the product the audible signal can be turned off in a matter of seconds (see page 219). This acknowledgement signal is fed back to the master via the AS-Interface Bus and the malfunction is only indicated by means of the optical signal.

Expanded addressing and a sound output of 80 dB

The 450 Combination for AS-Interface enables an expanded addressing (A/B technology) of up to 62 modules. The power required is drawn from the Bus voltage.

TECHNICAL DIAGRAMS:

see page 306

Class 2

See note on page 347

Approval No. 78701

35 g

IP65

+50°C -20°C

80 dB

PLC

WERMA SIGNALTECHNIK

975 Surface Housing for Combinations

Surface housing double

- Various combinations possible
- High protection rating IP 65
- Versatile range of applications thanks to cable exit at side

TECHNICAL SPECIFICATIONS:

Dimensions (W x H x D):	single:	80.5 mm x 55 mm x 82 mm
	double:	160 mm x 55 mm x 78 mm
	triple:	240 mm x 60 mm x 80 mm
Housing:	ABS and PC/ABS-Blend	
Cable entry:	Cable gland M16 x 1.5 mm for circular cable Ø 5-10 mm	

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Single surface housing	**975 109 02**
Double surface housing for 1 beacon and 1 buzzer	**975 109 03**
Triple surface housing for 2 beacons and 1 buzzer	**975 109 04**

Assembly comprises of only the surface housing. Beacons 800-802, 815-817 (p. 107/109) and buzzers 109 and 110 (pages 229/237) have to be ordered additionally.

Single surface housing

TECHNICAL DIAGRAMS:

see page 330

single double triple

130 g | 200 g | 310 g | IP65

Signal Tower with Audible Element • modular

Signal tower Kombi*SIGN* 71 with base with integrated tube (accessory)

2-sided bracket (accessory) with Kombi*SIGN* 70 elements

Kombi*SIGN* 50 with buzzer

- Kombi*SIGN* Signal Tower with audible element
- Sound output up to 105 dB
- Can be combined with all optical elements
- Can be triggered separately

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (Ø x Height):	See Kombi*SIGN* 50, 70 and 71
Housing:	See Kombi*SIGN* 50, 70 and 71
Lens:	Polycarbonate transparent
Fixing:	Base mounting, wall mounting, tube mounting (accessory)
Connection:	Screw terminal or CAGE CLAMP®
Seal:	Pre-mounted with each element
Number of modules possible:	Kombi*SIGN* 70 and 71: Max. 5 With 2-sided bracket: Max. 10 Kombi*SIGN* 50: Max. 4 The audible element is to be mounted at the top of the signal tower.

ORDER SPECIFICATIONS:

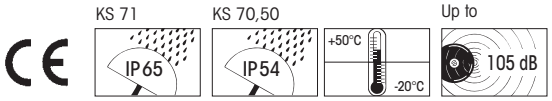
See Kombi*SIGN* 50, 70 and 71 (Pages 31, 47, 61 onwards)

ADDITIONAL INFORMATION:

With our "Configurator" you can put together a signal tower quickly and easily according to your requirements.
The configurator interactively guides the user through a series of pictures and questions to create an individual signal tower solution in just a few clicks.

TECHNICAL DIAGRAMS:

see pages 309 + 318 onwards



Signal Tower with integrated buzzer • pre-assembled

KOMPAKT 37 with base with integrated tube

Flat*SIGN*

Vario*SIGN*

Clean*SIGN* for wall mounting

- Completely pre-assembled
- Sound output up to 85 dB
- Can be triggered separately

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (Ø x Height):	See KOMPAKT 37, Flat*SIGN*, Vario*SIGN*, Clean*SIGN*
Housing:	See KOMPAKT 37, Flat*SIGN*, Vario*SIGN*, Clean*SIGN*
Lens:	See KOMPAKT 37, Flat*SIGN*, Vario*SIGN*, Clean*SIGN*
Fixing:	Base mounting, wall mounting, tube mounting
Connection:	See KOMPAKT 37, Flat*SIGN*, Vario*SIGN*, Clean*SIGN*

ORDER SPECIFICATIONS:

See KOMPAKT 37, Flat*SIGN*, Vari*SIGN* and Clean*SIGN* beginning on page 71.

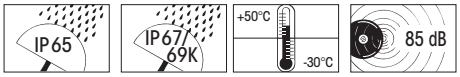
ADDITIONAL INFORMATION:

On the signal tower pages of **www.werma.com** use the selection tool „Configurator" to select the Kompakt 37 signal tower according to your requirements. With the help of intuitive questions and pictures you will be able to make your choice with just a few mouse clicks.

TECHNICAL DIAGRAMS:

see Pages 311 + 312

KOMPAKT 37
Flat*SIGN*
Vario*SIGN*




WERMA
SIGNALTECHNIK
584 000 75
24V≂ IP65 ta50°C

Overview Audible Signal Devices

Electronic Buzzers

107 Installation Buzzer

80 dB
Page 228

109 Installation Buzzer

80 dB
Page 229

111 Installation Buzzer

80 dB
Page 230

114 Installation Buzzer

85 dB
Page 231

118 Installation Buzzer

90 dB
Page 233

118 483 Buzzer

90 dB
Page 234

127 Buzzer

92 dB
Page 235

128 Buzzer

92 dB
Page 236

Electromechanical Buzzers

338 AC Installation Buzzer

65-75 dB
Page 232

382 Installation Buzzer

90 dB
Page 232

Sirens and Multi-Tone Sounders

110 Installation Multi-Tone Sounder

100 dB
Page 237

123 Electronic Siren

105 dB
Page 240

129 Multi-Tone Sounder

110 dB
Page 238

126 Multi-Tone Sounder

105 dB
Page 241

133 Multi-Tone Sounder

105 dB
Page 242

134 Multi-Tone Sounder

109 dB
Page 243

140 Multi-Tone Sounder

115 dB
Page 244

139 Multi-Tone Sounder

105 dB
Page 246

141 Multi-Tone Sounder

110 dB
Page 247

142 Multi-Tone Sounder

120 dB
Page 248

144 Multi-Tone Sounder

114 dB
Page 250

153 Sounder

105 dB
Page 252

190 Multi-Tone Sounder

110 dB
Page 253

Signal Horns

482

83/92 dB
Page 254

570

108 dB
Page 255

571

108 dB
Page 256

572

104 dB
Page 256

573

105 dB
Page 257

574

108 dB
Page 261

575

108 dB
Page 262

582

92 dB
Page 263

584

98 dB
Page 264

585

98 dB
Page 265

Alarm Bell

914

98 dB
Page 260

Sounds and Further Information

The sounds of these products can be played from our website www.werma.com under the heading "Audible Signal Devices".

Further information about the "Audible" theme can be found in the chapter "General Information" beginning on page 358.

A Summary of Audible Signal Devices

120 dB	142	Multi-Tone Sounder	Page 248

110 dB	574	Horn	Page 261
	575	Horn	Page 262
	134	Multi-Tone Sounder	Page 243
	570	Signal Horn	Page 255
105 dB	571	Signal Horn	Page 256

100 dB	110	Installation Multi-Tone Sounder	Page 237

90 dB	127	Buzzer	Page 235
	128	Buzzer	Page 236
	582	Signal Horn	Page 263
85 dB	482	Signal Horn	Page 254

80 dB	111	Installiation Buzzer	Page 230
	109	Electronic Installation Buzzer	Page 229
65-75 dB	107	Electronic Installation Buzzer (80 dB at 10 cm distance)	Page 228

Sound output in db (measured at 1 m distance)

Further information about the "Audible" theme can be found in the chapter "General Information" beginning on page 358.

Play Sound www.werma.com

120 dB

190	Multi-Tone Sounder	Page 253
144	Multi-Tone Sounder	Page 250
141	Multi-Tone Sounder	Page 247
129	Multi-Tone Sounder	Page 238
140	Multi-Tone Sounder	Page 244

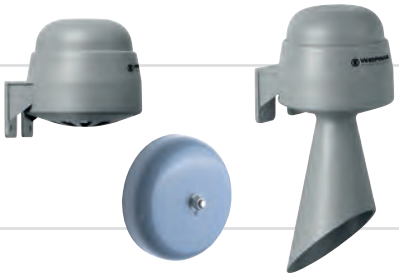
110 dB

105 dB

133	Multi-Tone Sounder	Page 242
126	Multi-Tone Sounder	Page 241
139	Multi-Tone Sounder	Page 246
153	Siren	Page 252
572	Horn	Page 256
573	Horn	Page 257

100 dB

584	Horn	Page 264
585	Horn	Page 265
914	Alarm Bell	Page 260



90 dB

118/119	Installation Buzzer	Page 233
382	Installation Buzzer	Page 232
118483/ 119483	Buzzer	Page 234

85 dB

114	Installation Buzzer	Page 231

80 dB

65-75 dB

Sound output in db (measured at 1 m distance)

338	AC Installation Buzzer	Page 232

107 Electronic Installation Buzzer

- For the 22.5 mm control panel programme
- Low current consumption
- High protection rating IP 65

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	28 mm x 12 mm (Protrusion from panel)
Housing:	PA fibreglass, high-impact
Tone frequency:	C. 2,400 Hz / c. 3,200 Hz (12 V)
Tone type:	Continuous tone or pulse tone with approx. 1 Hz
Fixing:	Installation mounting for Ø 22.5 mm (M22)
Connection:	Connector plug with screw terminal max. 1.5 mm²
Life duration:	> 5,000 hrs

ORDER SPECIFICATIONS:

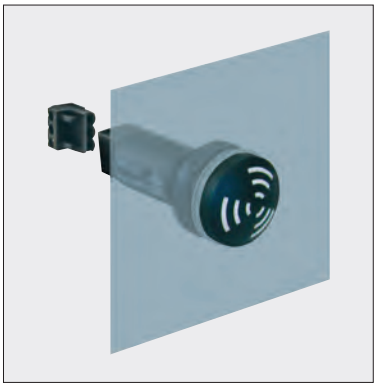
Play Sound www.werma.com

Voltage	12 V DC	24 V AC/DC	115 V AC/DC	230 V AC
Current Consumpt.	≤ 10 mA	≤ 8 mA	≤ 8 mA	≤ 8 mA
Continuous tone	**107 000 54**	**107 000 75**	**107 000 77**	**107 000 68**
Pulse tone	**107 010 54**	**107 010 75**	**107 010 77**	**107 010 68**

(12 V = / **107 000 54** and **107 010 54** without UL approval)

TECHNICAL DIAGRAMS:

see page 294



Simple connection by means of connector plug

High protection rating IP 65 for use in rough conditions

See note on page 347

WERMA SIGNALTECHNIK

Electronic Installation Buzzer

- For the 22.5 mm control panel programme
- High protection rating IP 65

Surface housing (accessory)

Surface housing (triple) for
2 beacons and 1 audible element
(not included in assembly)

Life duration up to 5,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	52 mm x 35 mm (Protrusion from pan
Housing:	PC/ABS-Blend; Cap: PC
Tone frequency:	C. 2,100 Hz
Tone type:	Continuous tone or pulse tone with approx. 1 Hz
Fixing:	Install. mounting for Ø 22.5 mm (M22) with anti-twist device
Connection:	Connector plug with screw terminal max. 1.5 mm^2
Life duration:	> 5,000 hrs

Play Sound www.werma.com

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC/DC	230 V AC
Current consumption	25 mA	25 mA	25 mA
Continuous tone	**109 000 75**	**109 000 77**	**109 000 68**
Pulse tone	**109 010 75**	**109 010 77**	**109 010 68**

ACCESSORIES:

Bracket with protective cap (IP54)	**975 109 01** (see picture on page 237)
Single surface housing	**975 109 02**
Double surface housing	**975 109 03**
Triple surface housing	**975 109 04**

Assembly comprises of only the surface housing. Beacons 800-802 (page 107 onwards) or 815-817 (page 109 onwards) have to be ordered additionally.

TECHNICAL DIAGRAMS:

see page 294

See note on page 347

c UL us CE EAC 50 g IP65 +50°C -20°C 80 dB

111 Installation buzzer

Thanks to its minimum level of protrusion the installation buzzer 111 is ideal for control panel applications

Simple installation with single hole mounting for M22

- Electronic buzzer for the 22.5 mm control panel and switch gear programme
- Simple connection via plug connection
- Positive and negative control logic
- Continuous or pulse tone can be triggered externally

TECHNICAL SPECIFICATIONS:

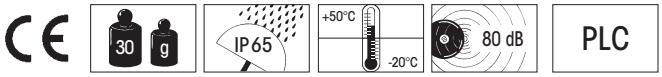
Dimensions (Ø x Height):	50 mm x 22 mm (Protrusion from panel)
Housing:	PC/ABS-Blend, black; Cap: PC
Ton frequency:	C. 2.8 Khz
Ton type:	Continuous or pulse tone
Fixing:	Installation mounting for Ø 22,5 mm (M22 x 1,5 mm)
Connection:	Screw terminal max. 1.5 mm^2
Life duration:	> 5.000 hrs
Assembly:	Nut and seal included in assembly.

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	20 mA	20 mA
Continuous tone	**111 000 55**	**111 000 68**

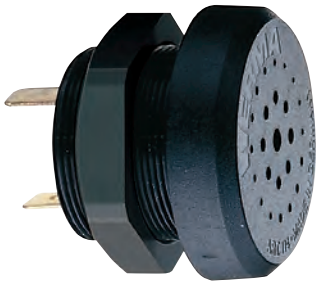
TECHNICAL DIAGRAMS:

see page 294



WERMA SIGNALTECHNIK

114 Electronic Installation Buzzer



- **Installation buzzer for use in control panels**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	42.5 mm x 10 mm (Protrusion from panel)
Housing:	PC/ABS-Blend; Nut: PA fibreglass, high-impact
Connection:	Spades 6.3 x 0.8 mm, finger proof model according to BGV A2, when used with insulated spades
Tone frequency:	C. 2,400 Hz
Fixing:	Installation mounting for Ø 30.5 mm (M30)

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC (12-30 V)	230 V AC (110-240 V)
Current consumption	20 mA	20 mA
	114 068 15	**114 068 28**

TECHNICAL DIAGRAMS:

see page 294

See note on page 347

CE EAC 50 g IP30 +60°C -20°C 85 dB

338 AC Installation Buzzer

338 373

338 323

- **AC buzzer for use in electrical appliances**

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	23 mm x 18.5 mm x 40 mm (338 273)
Tone frequency:	100 Hz
Mounting:	As required
Fixing:	M3 or M4 thread

Play Sound www.werma.com

ORDER SPECIFICATIONS:

230 V AC, c. 75 dB, spades, fixing: M3	**338 273 28**
230 V AC, c. 75 dB, solder lugs for printed circuits, fixing: M3	**338 323 28**
230 V AC, c. 75 dB, spades, 6.3 x 0.8 mm, fixing: M3	**338 373 28**
230 V AC, c. 75 dB, spades, 6.3 x 0.8 mm, fixing: M4	**338 374 28**

Further voltages on request.

TECHNICAL DIAGRAMS: see page 303

See note on page 347

EAC | 30 g | 65-75 dB

382 Installation Buzzer

- **All-purpose installation buzzer**
- **Low current consumption**

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	54.5 mm x 36.5 mm
Housing:	Steel, passivated
Connection:	AC: 2 wires, 215 mm long DC: 2 wires, 50 mm long The housing of the DC version is current-carrying
Fixing:	M3 thread

Play Sound www.werma.com

ORDER SPECIFICATIONS:

AC Version		
Voltage	230 V AC	
Current consumption	15 mA	
	382 013 68	
DC Version		
Voltage	6 V DC	24 V DC
Current consumption	100 mA	70 mA
	382 013 53	**382 013 55**

Further voltages on request.

TECHNICAL DIAGRAMS: see page 304

See note on page 347

CE | EAC | 50 g | 90 dB

118/119 Electronic Installation Buzzer

- Low current consumption
- IP 43 with cap
- Type 118 continuous tone
- Type 119 continuous tone and pulse tone
- NEW • Version with three externally triggerable tones

Cap

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	43 mm x 13 mm (Protrusion from panel)
Housing:	ABS
Connection:	Spades 6.3 x 0.8 mm, finger proof model according to BGV A2, when used with insulated spades
Tone frequency:	C. 2,400 Hz
Tone type:	Type 118 Continuous tone Type 119 Continuous tone and pulse tone, c. 1 Hz, selectable via plug-in terminal Version with 3 tones: see table
Fixing:	Installation mounting for Ø 28 mm (M28)

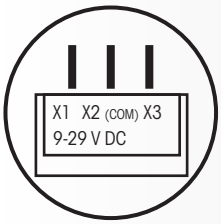
Play Sound www.werma.com

ORDER SPECIFICATIONS:

Voltage	12 V DC	24 V AC/DC	48 V AC/DC	115 V AC/DC	230 V AC
Current consumpt.	20 mA	20 mA	20 mA	20 mA	20 mA
Continuous tone	**118 068 14**	**118 068 15**	**118 068 26**	**118 068 27**	**118 068 28**
Continuous/pulse tone	-	**119 068 15**	**119 068 26**	**119 068 27**	**119 068 28**

NEW Voltage		24 V DC (9-29 V DC)
Current consumpt.		< 30 mA (at tone 1)
3 tones		**119 004 55**

ADDITIONAL INFORMATION:



PIN			
Tone 1	X1	X3 (COM)	2,7 kHz
Tone 2	X2	X3 (COM)	270 Hz
Tone 3	X1 + X2	X3 (COM)	337 Hz

ACCESSORIES:

Cap	**975 118 00**

TECHNICAL DIAGRAMS:

see page 294 + 295

The Installation Buzzer 118/119 is also available in an Ex version (see page 288)

See note on page 347 | With cap | With cap

CE EAC 50 g IP30 IP43 +60°C 0°C 90 dB 80 dB

118 483/119 483 Electronic Buzzer

- For wall mounting
- Type 118 483 continuous tone
- Type 119 483 continuous and pulse tone

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 79.5 mm x 77 mm
Housing:	ABS
Connection:	Spades 6.3 x 0.8 mm, Finger proof model according to BGV A2, when used with insulated spades
Cable entry:	Cable diameter max. 9 mm
Tone frequency:	C. 2,400 Hz
Tone type:	Type 118 483 Continuous tone Type 119 483 Continuous tone and pulse tone, c. 1 Hz selectable via plug-in terminal
Fixing:	Bracket mounting, Sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC (12-30 V)	230 V AC (110-240V)
Current consumption	20 mA	20 mA
Continuous tone	**118 483 15**	**118 483 28**
Continuous / pulse tone	**119 483 15**	**119 483 28**

Further voltages on request.

ADDITIONAL INFORMATION:

Please also see Buzzer 128 with additional advantages (see page 236)

- Continuous or pulse tone selectable
- Modern design

TECHNICAL DIAGRAMS:

see page 295

See note on page 347

CE EAC 94 g IP33 +60°C 0°C 90 dB

WERMA SIGNALTECHNIK

Buzzer

Base mounting

- Continuous or pulse tone selectable
- Cable entry from the side possible
- Easy to mount
- High protection rating IP 65
- Adaptor for tube mounting (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 64 mm
Housing:	PC, black
Fixing:	Base mounting, tube mounting (accessory)
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Continuous or pulse tone, selectable
Tone frequency:	2.3 kHz
Life duration:	> 5,000 hrs
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 15 mA	≤ 15 mA	≤ 15 mA
	127 000 75	**127 000 67**	**127 000 68**

The adaptor (accessory) allows quick and simple mounting on a tube

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 420 01**
Base for tube Ø 25 mm, plastic, incl. rubber seal	**975 840 90**
Base for tube Ø 25 mm, metal, incl. rubber seal	**975 840 91**
Tube Ø 25 mm, all anodized aluminium	
100 mm	**975 845 10**
250 mm	**975 840 25**

TECHNICAL DIAGRAMS:

see page 295

A piece of the rim can be broken out to allow for cable entry from the side

Buzzer in combination with Xenon Flash or LED Permanent Light see 194 and 192

See note on page 347

24 V

128 Buzzer

- Continuous or pulse tone selectable
- Integrated mounting bracket
- Modern design

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 84 mm x 91 mm
Housing:	PC, PC/ABS-Blend, grey
Fixing:	Bracket mounting
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Continuous or pulse tone, selectable
Tone frequency:	2.3 kHz
Life duration:	> 5,000 hrs
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 15 mA	≤ 15 mA	≤ 15 mA
	128 000 75	**128 000 67**	**128 000 68**

TECHNICAL DIAGRAMS:

see page 296

Buzzer in combination with Xenon Flash or LED Permanent Light
see pages 192 and 194

See note on page 347

CE EAC 90 g IP65 +50°C -20°C 92 dB 24 V PLC

WERMA SIGNALTECHNIK

Electr. Installation Multi-Tone Sounder

- For the 22.5 mm control panel programme
- High protection rating IP 65
- 8 different tones selectable
- Adjustable sound output

Surface housing (accessory)

Bracket (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	72 mm x 40 mm (Protrusion from panel)
Housing:	PC/ABS-Blend; Cap: PC
Sound output:	Max. 100 dB (sound output is adjustable on rear side when mounted)
Fixing:	Installation mounting for Ø 22.5 mm (M22) with anti-twist device
Connection:	Connector plug with screw terminal max. 1.5 mm²
Life duration:	> 5,000 hrs

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

8 tones selectable on rear side of the housing

position 0	420 Hz	1.6 kHz	86 dB (A)
position 1	1 Hz	1.6 kHz	86 dB (A)
position 2	20 Hz	1.6 kHz	86 dB (A)
position 3		1.6 kHz	88 dB (A)
position 4	420 Hz	3.4 kHz	90 dB (A)
position 5	1 Hz	3.4 kHz	100 dB (A)
position 6	20 Hz	3.4 kHz	96 dB (A)
position 7		3.4 kHz	100 dB (A)

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	80 mA	40 mA	40 mA
	110 000 75	**110 000 67**	**110 000 68**

ACCESSORIES:

Bracket with protective cap (IP 54)	**975 109 01**
Surface housing IP 65 (single)	**975 109 02**
Surface housing IP 65 (double) for 1 installation beacon and 1 audible element	**975 109 03**
Surface housing IP 65 (triple) for 2 installation beacons and 1 audible element	**975 109 04**

Further information see page 221.

TECHNICAL DIAGRAMS:

see page 294

See note on page 347

129 Electronic Multi-Tone Sounder

- Multi-Tone Sounder in die-cast aluminium housing
- German Lloyd Approval
- Salt water resistant
- 31 different tones available
- High protection rating IP 67

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	133 mm x 161 mm x 143 mm
Housing:	Die-cast aluminium
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter M20 x 1.5 mm
	Cable diameter 8-12 mm
Tone types and frequencies:	Selectable via DIP switch, see table on the right

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	420 mA	120 mA	60 mA
	129 052 55	**129 052 67**	**129 052 68**

ADDITIONAL INFORMATION:

Multi-Tone Sounder 129 approved according to German Lloyd - Ship Classification and Technical Monitoring

German Lloyd sets technical, quality and safety standards for the industry and the maritime sectors. In addition to the classification of ships of all types, German Lloyd is also active as a worldwide technical monitoring authority.

TECHNICAL DIAGRAMS:

see page 296

See note on page 347

24 V 230 V

WERMA SIGNALTECHNIK

129 Tone table

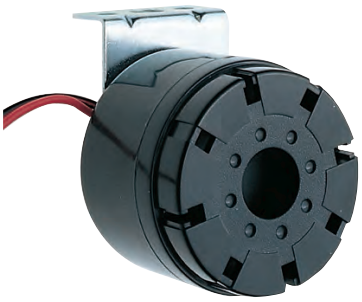
The 129 Multi-Tone Sounder offers a large choice of international signal tones for the widest spectrum of applications.

TONE TYPES AND FREQUENCIES:

Tone 1	Tone type	Description
1	falling 1,200-500 Hz in 1 Hz stroke	DIN 33404
2	950 Hz pulse: 3 x 500 ms ON, 500 ms OFF, Pause 1.5 sec.	ISO 8201
3	alternating 825 Hz/1,025 Hz in 2 Hz stroke	
4	continuous 950 Hz	
5	950 Hz pulse: 1 sec. ON, 1 sec. OFF	
6	500-1.200 Hz rising and falling in 3 sec.	Siren
7	554 Hz/100 ms alternating 440 Hz/400 ms	French fire alarm signal AFNOR NFS 32 S 32-001
8	pulse 700 Hz: 150 ms ON, 150 ms OFF, Dauer 1 Min.	
9	pulse 800 Hz: 4 ms ON, 4 ms OFF	
10	continuous 500 Hz	
11	continuous 725 Hz	
12	continuous 825 Hz	
13	continuous 1,250 Hz	
14	continuous 1,500 Hz	
15	pulse 500 Hz: 500 ms ON, 500 ms OFF	
16	pulse 825 Hz: 500 ms ON, 500 ms OFF	
17	pulse 725: 0.7 sec. ON, 0.3 sec. OFF	
18	pulse 800 Hz: 0.25 sec. ON, 1 sec. OFF	
19	alternating 800 Hz/1,000 Hz in 2 Hz stroke	
20	pulse 825 Hz: 2.5 sec. ON, 2.5 sec OFF x 7, dann 7 sec. PULS	
21	pulse 950 Hz: 1 sec. ON, 1 sec. OFF, 3 sec. ON, 1 sec. OFF	
22	rising 500-1,200 Hz in 3 sec., 0.5 sec OFF	
23	rising 500-2,400 Hz in 3 sec.	
24	alternating 825 Hz/1,075 Hz in 1 Hz stroke	
25	alternating 500 Hz/900 Hz in 2 Hz stroke	
26	alternating 1,200 Hz/1,400 Hz in 25 Hz stroke	
27	rising 300-1,200 Hz in 3 sec.	
28	700-1,500 Hz rising and falling in 3 sec.	
29	rising 150-1,000 Hz in 10 sec., 40 sec. ON, falling in 10 sec.	
30	pulse 680 Hz: 0.875 sec. ON, 0.875 sec. OFF	
31	rising 1,400-1,600 Hz in 1 sec., falling in 0.5 sec.	NF C 48-265

123 Electronic Siren

- Loud compact siren



TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	54 mm x 66.5 mm x 67 mm
Housing:	ABS
Tone frequency:	2,700 - 3,500 Hz
Tone type:	Alternating
Connection:	2 wires, c. 450 mm long
Fixing:	Metal bracket

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	12 V DC	24 V DC
Current consumption:	150 mA	100 mA
	123 100 54	**123 200 55**

TECHNICAL DIAGRAMS:

see page 295

See note on page 347

CE EAC 80 g IP54 +70°C -30°C 105 dB

126 Electronic Multi-Tone Sounder

- **4 different tones can be triggered externally**

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 79.5 mm x 77 mm	
Housing:	ABS	
Tone types and frequencies:	Continuous tone:	c. 2,700 Hz
	Continuous tone:	c. 530 Hz
	Bell:	c. 2,700 Hz (pulse 20 Hz)
	Pulse tone:	c. 2,700 Hz (pulse 1 Hz)
Connection:	Screw terminal with wire protection max. 2.5 mm²	
Cable entry:	Cable diameter max. 9 mm	
Fixing:	Bracket mounting, sound outlet facing downwards	

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	12-24 V DC
Current consumption:	80 mA
	126 052 15

ADDITIONAL INFORMATION:

Please also see Multi-Tone Sounder 134 with additional advantages (see page 243)

- Choice of 8 different tones
- Extremely high sound output up to 109 dB
- Adjustable sound output

TECHNICAL DIAGRAMS:

see page 295

See note on page 347

CE EAC 140 g IP33 +50°C -20°C 105 dB 4 PLC

Multi-Tone Sounder

Base mounting

The adaptor (accessory) allows quick and simple mounting on a tube

Top view: Mounting holes integrated into the product rim allow easy mounting without having to remove the cap

- Choice of 8 different tones
- Adjustable sound output
- Cable entry from the side possible
- Easy to mount
- Adaptor for tube mounting (accessory)

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	89 mm x 64 mm
Housing:	PC, black
Fixing:	Base mounting, tube mounting (accessory)
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Selectable, see table
Tone frequencies:	See table
Life duration:	> 5,000 hrs
Duty cycle:	100 %

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone	Tone type
1	Horn tone (c. 110 Hz)
2	Continuous tone (c. 3.0 KHz)
3	1 Hz tone (c. 3.0 KHz)
4	20 Hz whistle tone (c. 3.0 KHz)
5	800-970 Hz rising @ 1 Hz
6	2400-2850 Hz rising @ 7 Hz
7	1200-500 Hz falling @ 1 Hz
8	Alternating tone 800 Hz + 1200 Hz @ 1Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC
Current consumption	≤ 80 mA
	133 000 75

ACCESSORIES:

Adaptor for tube mounting, plastic, for tube Ø 25 mm	**975 420 01**
Base for tube Ø 25 mm, plastic, incl. rubber seal	**975 840 90**
Base for tube Ø 25 mm, metal, incl. rubber seal	**975 840 91**
Tube Ø 25 mm, all anodized aluminium	
100 mm	**975 845 10**
250 mm	**975 840 25**

TECHNICAL DIAGRAMS:

see page 296

Multi-Tone Sounder in combination with Xenon Flash or LED Permanent Light see pages 193 and 195

See note on page 347

CE EAC 80 g IP65 +50°C -20°C 105 dB 8 PLC

WERMA SIGNALTECHNIK

134 Multi-Tone Sounder

- Choice of 8 different tones
- Extremely high sound output up to 109 dB
- Adjustable sound output
- Integrated mounting bracket

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 84 mm x 91 mm
Housing:	PC, PC/ABS-Blend, grey
Fixing:	Bracket mounting
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone type:	Selectable, see table
Tone frequencies:	See table
Life duration:	> 5,000 hrs
Duty cycle:	100 %

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone	Tone type
1	Horn tone (c. 110 Hz)
2	Continuous tone (c. 3.0 KHz)
3	1 Hz tone (c. 3.0 KHz)
4	20 Hz whistle tone (c. 3.0 KHz)
5	800-970 Hz rising @ 1 Hz
6	2400-2850 Hz rising @ 7 Hz
7	1200-500 Hz falling @ 1 Hz
8	Alternating tone 800 Hz + 1200 Hz @ 1Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC
Current consumption	≤ 80 mA
	134 000 75

TECHNICAL DIAGRAMS:

see page 296

Multi-Tone Sounder in combination with Xenon Flash or LED Permanent Light
see pages 193 and 195

See note on page 347

CE EAC 100 g IP65 +50°C -20°C 109 dB 8 PLC

140 Multi-Tone Sounder

- 32 tones for a diverse range of applications
- Adjustable sound output to 115 dB
- Direct external setting of two tones possible with low voltage version

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	100 mm x 100 mm (IP 54)
Housing:	PC-ABS
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1,5 mm Cable gland not included in assembly.
Tone types and frequencies:	Selectable via DIP switch, see table on opposite page

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	9-28 V DC
Current consumption	≤ 120 mA
red	**140 150 50**
white	**140 950 50**

Products with EN54-3 (VdS) approval for fire call point applications

Voltage	9-28 V DC
Current consumption	≤ 120 mA
red	**140 160 50**
white	**140 960 50**

Voltage	110-240 V AC
Current consumption	≤ 40 mA
red	**140 150 60**
white	**140 950 60**

ACCESSORIES:

Cable gland M20 x 1.5 mm	**975 444 01**

TECHNICAL DIAGRAMS:

see page 296

140.X60.XX

See note on page 347 | 9-28 V | 110-240 V | with use of rear cable entry | IP54 | IP65 | +70°C / -40°C | 115 dB | 32

WERMA SIGNALTECHNIK

140 Tone table

The 140 Multi-Tone Sounder offers a large choice of international signal tones for the widest spectrum of applications. The low voltage version allows two tones to be triggered externally.

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Selectable via DIP switch

Tone 1 No.	Tone type	Description	Sound output (dBA) (12 V)	(24 V)	Tone 2 Low voltage version
1	alternating 800/970 Hz in 2 Hz stroke	BS 5839-1: 2002	101	105	14
2	rising 800/970 Hz in 7 Hz stroke		103	107	14
3	rising 800/970 Hz in 1 Hz stroke	BS 5839-1: 2002	104	108	14
4	continuous 2,850 Hz		110	115	14
5	rising 2,400-2,850 Hz in 7 Hz stroke		108	114	4
6	rising 2,400-2,850 Hz in 1 Hz stroke		109	115	4
7	500-1,200 Hz rising in 3 sec., 0.5 sec OFF		100	104	14
8	falling 1,200-500 Hz in 1 Hz stroke	DIN 33404	99	104	14
9	alternating 2,400/2,850 Hz in 2 Hz stroke		108	115	4
10	pulse 970 Hz in 0.5 Hz stroke	Back-up-alarm BS 5839 Part 1 1988	98	105	14
11	alternating 800/970 Hz in 1 Hz stroke	BS5839 Part 1 1988	100	105	14
12	pulse 2,850 Hz in 0.5 Hz stroke		107	114	4
13	970 Hz pulse: 0.25 sec. ON / 1 sec. OFF		96	105	14
14	continuous 970 Hz	BS 5839-1: 2002	101	105	15
15	554 Hz/100 ms alternating 440 Hz/400 ms	French alarm signal AFNOR NFS 32 S 32-001	97	102	14
16	660 Hz pulse: 150 ms ON, 150 ms OFF	Swedish alarm signal	97	101	17
17	660 Hz pulse: 1.8 sec. ON, 1.8 sec. OFF	Swedish alarm signal	97	103	16
18	660 Hz pulse: 6.5 sec. ON, 13 sec. OFF	Swedish alarm signal	99	103	14
19	continuous 660 Hz	Swedish alarm signal	99	103	21
20	alternating 554/440 Hz in 0.5 Hz stroke		99	103	21
21	pulse 660 Hz in 1 Hz stroke	Swedish alarm signal	98	104	19
22	2,850 Hz pulse: 150 ms ON, 100 ms OFF	Pedestrian crossing GB	109	115	14
23	rising 800/970 Hz in 50 Hz stroke	Low frequency BS 5839 Part 1 1988	101	106	14
24	rising 2,400-2,850 Hz in 50 Hz stroke	High frequency	106	112	4
25	970 Hz pulse: 3 x 500 ms ON, 500 ms OFF, Pause 1.5 sec.	ISO 8201 Low frequency: Evacuation	101	105	26
26	2,850 Hz pulse: 3 x 500 ms ON, 500 ms OFF, Pause 1.5 sec.	ISO 8201 High frequency	109	115	25
27	970/800 Hz alternating: 1.5 s ON, 0.5 s OFF		96	105	17
28	alternating 800/970 Hz in 2 Hz stroke	FP 1063.1-Telecoms/BS 5839-1: 2002	99	105	10
29	alternating 988/645 Hz in 2 Hz stroke		99	104	988 Hz cont. tone
30	alternating 510/610 Hz in 2 Hz stroke		97	102	510 Hz cont. tone
31	falling 1,200-300 Hz in 1 Hz stroke		99	104	13
32	alternating 510/610 Hz in 1 Hz stroke		97	102	510 Hz cont. tone

139 Multi-Tone Sounder

- Adjustable sound output up to 105 dB
- 32 tones for a diverse range of applications
- 2 tones can be triggered externally (24 V)
- High protection rating IP 66

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (L x H x W):	136 mm x 108 mm x 119 mm
Housing:	ABS
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Tone types and frequencies:	Selectable via DIP switch

ORDER SPECIFICATIONS:

Voltage	9-60 V DC	115/230 V AC
Current consumption	13 mA (24 V)	20 mA (230 V)
red	**139 000 55**	**139 000 68**
grey	**139 100 55**	**139 100 68**

ACCESSORIES:

Cable gland M20 x 1.5 mm	**975 444 01**

TONE TYPES AND FREQUENCIES:

For further details see www.werma.com.

TECHNICAL DIAGRAMS:

see page 296

Multi-Tone Sounder 139 in combination with a powerful Xenon Flash
see page 207

Size comparison

See note on page 347

CE EAC 500 g IP66 +70°C -25°C 105 dB 32

WERMA SIGNALTECHNIK

141 Multi-Tone Sounder

- Adjustable sound output up to 110 dB
- 32 tones for a diverse range of applications
- 2 tones can be triggered externally
- High protection rating IP 66

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (L x H x W):	165 mm x 136 mm x 132 mm
Housing:	PC/ABS-Blend
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Tone types and frequencies:	Selectable via DIP switch

ORDER SPECIFICATIONS:

Voltage	9-60 V DC	115/230 V AC
Current consumption	120 mA (24V)	22 mA (230 V)
red	**141 000 55**	**141 000 68**
grey	**141 100 55**	**141 100 68**

ACCESSORIES:

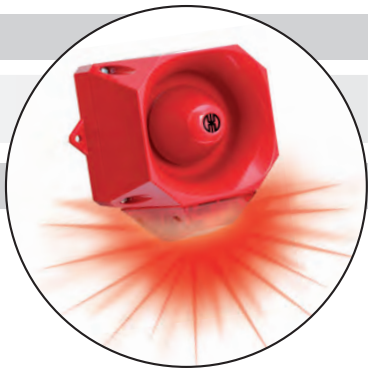
Cable gland M20 x 1.5 mm	**975 444 01**

TONE TYPES AND FREQUENCIES:

For further details see www.werma.com.

TECHNICAL DIAGRAMS:

see page 297



Multi-Tone Sounder 141 in Combination with a powerful Xenon Flash
see page 208

Size comparison

See note on page 347

CE EAC 800 g IP66 +70°C -25°C 110 dB 32

142 Electronic Multi-Tone Sounder

- Adjustable sound output up to 120 dB
- 42 tones for a diverse range of applications
- 3 tones can be triggered externally
- Duration of signal phase selectable
- High protection ration IP 66

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (L x H x W):	168 mm x 168 mm x 155 mm
Housing:	PC/ABS-Blend
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm (not included in assembly)
Tone types and frequencies:	Selectable via DIP switch, see table on the opposite page

ORDER SPECIFICATIONS:

Voltage	18-30 V DC	115/230 V AC
Current consumption	450 mA	130 mA (115 V) / 65 mA (230 V)
red	**142 000 55**	**142 000 68**
grey	**142 100 55**	**142 100 68**

ACCESSORIES:

Cable gland M20 x 1.5 mm	**975 444 01**

TECHNICAL DIAGRAMS:

see page 297

The Electronic Multi-Tone Sounder 142 is also available with a Xenon Flash
see page 209

Size comparison

See note on page 347 | 142 X00 68 | 142 X00 55

CE EAC 1,8 kg 1,6 kg IP66 +75°C -25°C 120 dB 42

WERMA SIGNALTECHNIK

142 Tone table

The 142 Multi-Tone Sounder offers a large choice of international signal tones for the widest spectrum of applications. The first two tones can be freely chosen. The third tone is paired with the second tone.

TONE TYPES AND FREQUENCIES:

Tone 1+2 No	Tone type	Use	Output (dBA)	Tone 3
1	alternating 800/970 Hz in 2 Hz stroke (250 ms-250 ms)		120	14
2	rising 800/970 Hz in 7 Hz stroke (7/s)		120	14
3	rising 800/970 Hz in 1 Hz stroke (1/s)		120	14
4	continuous 2,850 Hz		111	9
5	rising 2,400-2,850 Hz in 7 Hz stroke		109	4
6	rising 2,400-2,850 Hz in 1 Hz stroke		110	4
7	500-1,200 Hz rising in 3 sec., 0.5 sec. OFF	Slow Whoop Holland	119	14
8	falling 1,200-500 Hz in 1 Hz stroke	DIN/PFEER (PAPA), DIN 33404-3, VDS tested	119	14
9	alternating 2,400/2,850 Hz in 2 Hz stroke (250 ms-250 ms)		113	4
10	pulse 970 Hz in 0,5 Hz stroke (1 sec. ON / 1 sec. OFF)	PFEER Alarm	117	14
11	alternating 800/970 Hz in 1 Hz stroke (500 ms-500 ms)		118	14
12	pulse 2,850 Hz in 0.5 Hz stroke (1 sec. ON / 1 sec. OFF)		112	4
13	970 Hz pulse: 0.25 sec. ON / 1 sec. OFF		117	14
14	continuous 970 Hz	PFEER - Toxic gas	118	8
15	554 Hz/100 ms alternating 440 Hz/400 ms	French alarm signal AFNOR NFS 32 S 32-001	115	14
16	660 Hz pulse: 150 ms ON, 150 ms. OFF	Swedish alarm signal	114	14
17	660 Hz pulse: 1.8 sec. ON, 1.8 sec. OFF	Swedish alarm signal	115	14
18	660 Hz pulse: 6.5 sec. ON, 13 sec. OFF	Swedish alarm signal	115	14
19	continuous 660 Hz	Swedish alarm signal	116	1
20	alternating 554/440 Hz in 0.5 Hz stroke (1 sec. ON / 1 sec. OFF)	Swedish alarm signal	115	19
21	pulse 660 Hz in 1 Hz stroke (500 ms-500 ms)	Swedish alarm signal	115	4
22	pulse 2,850 Hz in 4 Hz stroke (150 ms ON / 100 ms OFF)		110	4
23	rising 800-970 Hz in 50 Hz stroke		117	14
24	rising 2,400-2,850 Hz in 50 Hz stroke		110	4
25	970 Hz puls.: 3 x 500 ms. ON, 500 ms OFF, break 1.5 sec.	ISO 8201 / US Temporal	118	14
26	2,850 Hz puls.: 3 x 500 ms. ON, 500 ms OFF, break 1.5 sec.	ISO 8201 / US Temporal	112	4
27	continuous 4,000 Hz		105	6
28	alternating 800/970 Hz in 2 Hz stroke (250 ms-250 ms)		118	14
29	alternating 990/650 Hz in 2 Hz stroke (250 ms-250 ms)		117	14
30	alternating 510/610 Hz in 2 Hz stroke (250 ms-250 ms)		116	14
31	rising 300-1,200 Hz in 1 Hz stroke		118	14
32	continuous Bell		117	3
33	continuous Bell: 3x500 ms. Pulse, 1.5 sec. Silence, then repeat	Bell / US Temporal	117	14
34	alternating 1,000/2,000 Hz in 1 Hz stroke (500 ms-500 ms)	Singapore	115	4
35	pulse 420 Hz (0,625 sec.)	Australian alarm signal	118	14
36	500-1,200 Hz rising in 3,75 sec., then 0,25 sec. OFF	Australian alarm signal (Evacuation)	117	14
37	rising 1,400-1,600 Hz in 1 sec., falling in 0.5 sec.	NF C 48-265	116	14
38	500-1,200 Hz rising and falling 3 sec.	Siren	117	14
39	pulse 720 Hz: 0.7 sec. ON, 0.3 sec. OFF	German industrial alarm	118	14
40	rising 422-775 Hz in 0.85 sec., 1 sec. silence, then repeat	NFPA Whoop	118	14
41	continuous 470 Hz	Horn (USA)	114	3
42	continuous 370 Hz	Air Horn (USA)	113	3

Multi-Tone Sounder

Base Mounting

- Sound output adjustable up to 114 dB (C), 110 dB (A)
- 32 tones for a diverse range of applications
- 3 Tones can be triggered externally

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	109 mm x 112.5 mm x 152 mm
Housing:	PC/ABS-Blend
Connection:	24 V: Screw terminal with wire protection max. 1.5 mm²
	115/230 V: CAGE CLAMP®
Cable entry:	Membrane for cable diameter max. 13 mm
Fixing:	Wall, base and ceiling mounting
Tone types and frequencies:	Selectable via DIP switch, see table on the opposite page

ORDER SPECIFICATIONS:

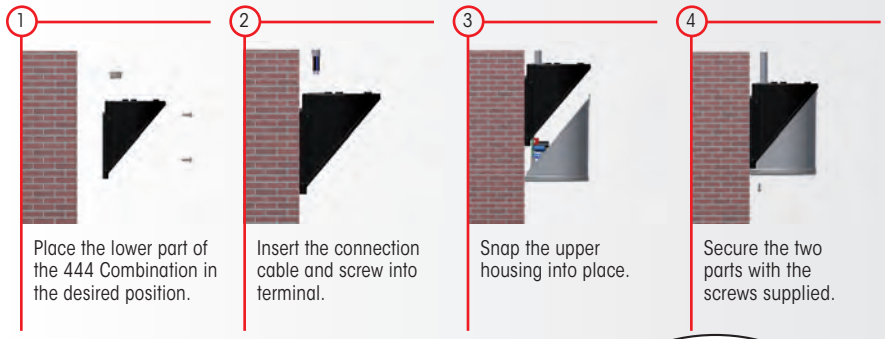
Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	200 mA	55 mA	30 mA
	144 000 75	**144 000 67**	**144 000 68**

Wall mounting

ACCESSORIES:

Cable gland M20 x 1.5 mm (for cable strain relief) Protection rating IP 65 is provided even without cable gland	**975 444 01**

QUICK AND SIMPLE MOUNTING:



1. Place the lower part of the 444 Combination in the desired position.
2. Insert the connection cable and screw into terminal.
3. Snap the upper housing into place.
4. Secure the two parts with the screws supplied.

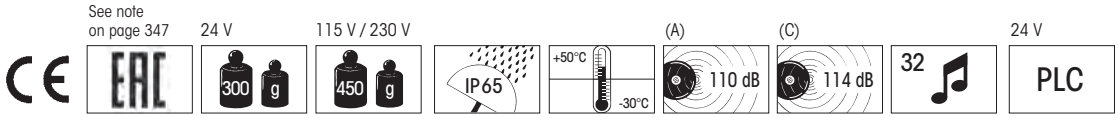
ADDITIONAL INFORMATION:

The various mounting options (wall, base or ceiling) maximise the sound output of the Multi-Tone Sounder.

TECHNICAL DIAGRAMS:

see page 297

Multi-Tone Sounder in combination with LED Double Flash (Page 211) or LED EVS Signal (Page 212)



WERMA SIGNALTECHNIK

144 Tone table

The 144 Multi-Tone Sounder offers a large choice of international signal tones for the widest spectrum of applications. 3 tones can be triggered externally.

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

Tone 1	Tone type	Frequency	Description	Use	Tone 2	Tone 3	Output (dBA)
1	continuous	200		BS 5839-1:2002	440 Hz cont.	554 Hz cont.	97
2	rising	800 & 970	7 Hz		14	800 Hz cont.	102
3	rising	800 & 970	1 Hz		14	800 Hz cont.	103
4	continuous	2850			14	9	104
5	rising	2400 - 2850	7 Hz		4	2400 Hz cont.	109
6	rising	2400 - 2850	1 Hz		4	2400 Hz cont.	110
7	rising	500 - 1200	3 s, then 0.5 s OFF (then repeat)		14	8	106
8	falling	1200 - 500	1 Hz	DIN 33404-3	14	7	104
9	alternating	2400 & 2850	2 Hz		4	2400 Hz cont.	111
10	pulse	970	0.5 Hz (1 s On/1 s Off)	BS 5839 Part 1 1988	14	800 Hz cont.	101
11	alternating	800 & 970	1 Hz	BS 5839 Part 1 1988	14	800 Hz cont.	105
12	pulse	2850	0.5 Hz		4	22	104
13	pulse	970		0,25 s On/1 s Off	14	800 Hz cont.	98
14	continuous	970		BS 5839-1:2002 PFEER - Toxic gas	10	8	102
15	alternating	554 & 440		France NFS	14	800 Hz cont.	101
16	pulse	660	150 ms On/150 ms Off	Swedish	16	14	96
17	pulse	660	1.8 s On/1.8 s Off	Swedish	17	14	98
18	pulse	660	6.5 s On/13 s Off	Swedish	18	14	98
19	continuous	660		Swedish	19	31	98
20	alternating	554 & 440	0.5 Hz		20	19	102
21	pulse	660	1 Hz	Swedish	21	4	97
22	pulse	2850	150 ms On/100 ms Off	GB	14	4	104
23	rising	800 - 970	50 Hz (low)	BS 5839 Part 1 1988	14	800 Hz cont.	102
24	rising	2400 - 2850	50 Hz (high)		4	2400 Hz cont.	109
25	pulse	970	3 x 500 ms ON/500 ms OFF / 1,5 s silence, then repeat (low)	ISO 8201 US Temporal	26	14	101
26	pulse	2850	3 x 500 ms ON/500 ms OFF / 1,5 s Pause, then repeat (low)	ISO 8201 US Temporal	25	4	104
27	continuous	4000			27	6	92
28	rising	2000 - 2850	7 Hz		2000 Hz cont.	4	111
29	alternating	988 & 645	2 Hz		988 Hz cont.	645 Hz cont.	102
30	alternating	510 & 610	2 Hz		510 Hz cont.	610 Hz cont.	102
31	alternating	800 & 970	2 Hz	5839-1:2002	800 cont.	14	105
32	alternating	800 & 1200	1 Hz		800 cont.	1200 Hz cont.	105

153 Sounder

- Up to 8 different tones (12 V; 24 V)
- 3 tones can be triggered externally (12 V; 24 V)
- Externally adjustable sound output (-10 dB)
- „Status Light" to emphasise the audible warning signal
- Ideal addition to LED Beacon 853
- Innovative connector to create traffic light combinations
- Easy assembly due to quick-release screws
- Ideal addition to LED Beacon 853

The innovative connector (accessory) enables traffic light combinations to be created in a matter of seconds

„Status Light" function to generate additional awareness of the audible signal

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	85 mm x 85 mm x 72 mm
Housing:	PP-GF, black
Lens:	PC, tinted black
Connection:	Screw terminal with wire protection, max. 1.5 mm²
Cable entry:	Cable diameter max. 8 mm, optional cable gland M20 (accessory)
Fixing:	Wall, base and ceiling mounting
Equipment:	Eight self-sealing membranes for cable entry without tools. Eight integrated M20 threads, no nuts required. Optional use of a cable gland, thread length of cable gland ≤ 9 mm (accessory)
Assebly:	Incl. snap-on fixing bracket (optional use)

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	12 V DC	24 V DC	48 V AC	115-230 VAC
Current consumption	150 mA	100 mA	150 mA	75 mA (115 V) 150 mA (230 V)
	153 000 54	**153 000 55**	**153 000 66**	**153 000 60**

The technical specifications and order specifications of the 853 LED Beacons can be found at www.werma.com or on page 135 (LED Permanent Beacon), page 152 (LED Double Flash Beacon) and on page 153 (LED EVS Beacon).
Traffic light configurator at **www.werma.com**

ACCESSORIES:

Connector for traffic light combinations	**975 853 01**
Cable gland M20 x 1.5 mm, 8 mm thread length	**975 853 02**

TONE TYPES AND FREQUENCIES:

Tone	Tone type	Tone	Ton type
1	Continuous tone (ca. 3000 Hz)	5	800 - 970 Hz rising @ 1 Hz
2	Horn tone (ca. 110 Hz)	6	2400 - 2850 Hz rising @ 7 Hz
3	1 Hz tone (ca. 3,0 kHz)	7	1200 - 500 Hz falling @ 1 Hz
4	20 Hz whistle tone (ca. 3,0 kHz)	8	Alternating tone 800 Hz/1200 Hz@1 Hz

TECHNICAL DIAGRAMS:

see page 297

12 V, 24 V 48 V, 115-230 V

CE 160 g IP66 +50°C -25°C 105 dB 8 1

WERMA SIGNALTECHNIK

190 Multi-Tone Sounder

- 32 tones for a diverse range of applications
- Adjustable sound output up to 114 dB (C),110 dB (A)
- 3 tones can be triggered externally
- Fixing bracket for easy combination with (LED) Permanent Beacon/
- Traffic Light 890

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (Ø x Height):	150 mm x 128 mm
Housing:	PC/ABS-Blend, grey
Fixing:	Base mounting, fixing bracket (accessory)
Connection:	Screw terminal
Cable entry:	From top or bottom with cable gland M20 x 1.5 mm or from the back with rubber grommet Ø 6-12 mm, included in assembly

ORDER SPECIFICATIONS:

Voltage	10-30 V DC	115 V AC	230 V AC
Current consumption	< 180 mA	< 55 mA	< 30 mA
	190 000 55	**190 000 67**	**190 000 68**

The fixing bracket can be mounted pointing inwards or outwards

ACCESSORIES:

FIXING BRACKET

Fixing bracket for one beacon	**975 890 33**
Fixing bracket for two beacons	**975 890 34**
Fixing bracket for three beacons	**975 890 35**
Fixing bracket for four beacons	**975 890 37**

Mounting material and connecting grommet included in assembly.

Further information can be found on page 178.

CONNECTION GROMMET

Connection grommet for traffic light combinations **975 890 25**

TUBE ADAPTOR

Adaptor for tube mounting **975 890 36**
(suitable for Ø 75 mm tubes, see page 176)

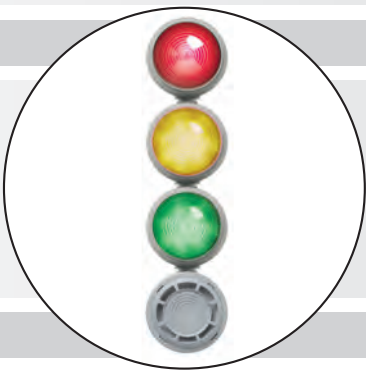
TONE TYPES AND FREQUENCIES:

Selectable via DIP switch, see tone table on page 251.

ADDITIONAL INFORMATION:

An easy addition to an optical solution
The multi-tone sounder 190 has been designed in the same housing as the 890 series (LED) beacons (see page 175 and 176). The sounder can therefore be effortlessly combined with up to three beacons, available in the colours red, yellow, green, blue and clear.

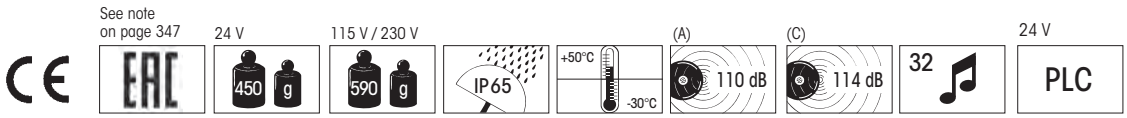
Traffic light configurator at **www.werma.com**



Loud Multi-Tone Sounder in combination with (LED) Beacon 890

TECHNICAL DIAGRAMS:

see page 298



482 Signal Horn

- **Also available with low current-consumption for use as lift alarm**

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 79.5 mm x 77 mm
Housing:	ABS
Connection:	Screw terminal with wire protection, 1.0-1.5 mm² fine strand, 1.0-2.5 mm² single wire
Cable entry:	Cable diameter 9 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

AC Version			
Voltage	24 V AC	42 V AC	230 V AC
Current consumption	190 mA	75 mA	15 mA
	482 052 65	**482 052 66**	**482 052 68**
DC Version			
Voltage	12 V DC	24 V DC	
Current consumption	150 mA	70 mA	
	482 052 54	**482 052 55**	
Lift Alarm			
Voltage	6 V DC	12 V DC	
Current consumption	80 mA	130 mA	
	482 347 13	**482 347 14**	

Further voltages on request.

ADDITIONAL INFORMATION:

Please also see Horn 585 with additional advantages (see page 265)

- High protection rating IP 65
- Loud electronic horn
- High life duration up to 5,000 hrs
- Sound output 98 dB

TECHNICAL DIAGRAMS:

see page 306

See note on page 347

Lift alarm

CE EAC 160 g IP33 +60°C -20°C 92 dB 83 dB

WERMA SIGNALTECHNIK

570 Signal Horn

- Suitable for indoor and outdoor applications
- Pulse tone available

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	148 mm x 350 mm x 152 mm
Housing:	ABS
Connection:	Screw terminal max. 2.5 mm
Cable entry:	Rubber squeeze grommet Ø 7-10 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Continuous tone (AC)

Voltage	24 V AC (50 Hz)	42-48 V AC (50 Hz)	115 V AC (50/60 Hz)	230 V AC (50 Hz)
Current consumpt.	500 mA	250 mA	200 mA	70 mA
	570 052 65	**570 052 66**	**570 052 67**	**570 052 68**

Pulse tone (AC)

Voltage	230 V AC (50 Hz)
Current consumpt.	≤ 70 mA
	570 100 68

Continuous tone (DC)

Voltage	24 V DC	115 V DC	230 V DC
Current consumpt.	350 mA	150 mA	100 mA
	570 052 55	**570 052 57**	**570 052 58**

Further voltages on request.

TECHNICAL DIAGRAMS:

see page 306

The Horn 570 is also available in an Ex version (see page 290)

See note on page 347

CE EAC 1 kg IP55 +60°C -20°C 108 dB

571 Signal Horn

- Suitable for maritime applications
- Corrosion-proof aluminium housing

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	132 mm x 340 mm x 139 mm
Housing:	Aluminium alloy, corrosion-proof
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm
	Cable diameter 10-12 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	115 V AC (50 Hz/60 Hz)	230 V AC
Current consumption	350 mA	200 mA	70 mA
	571 052 55	**571 052 67**	**571 052 68**

TECHNICAL DIAGRAMS: see page 307

See note on page 347

CE EAC 1,7 kg IP55 +60°C -20°C 108 dB

572 Signal Horn

- High Protection rating IP 65

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	156 mm x 118 mm x 223 mm
Housing:	Aluminium, grey varnish
	Cap: ABS
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland at side, M20 x 1.5 mm
	Cable diameter 10-12 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	115 V AC (50 Hz/60 Hz)	230 V AC
Current consumption	350 mA	200 mA	70 mA
	572 000 55	**572 000 67**	**572 000 68**

Further voltages on request.

TECHNICAL DIAGRAMS: see page 307

See note on page 347

CE EAC 1,8 kg IP65 +60°C -20°C 104 dB

573 Signal Horn

- Modern design
- Cable gland for strain relief
- Concealed fixing screws
- High protection rating IP 65

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	178 mm x 104 mm x 207 mm
Fixing dimensions (L x H):	130 mm x 160 mm
Housing:	PC/ABS-Blend
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M16 x 1.5 mm Cable diameter 5-10 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	24 V AC (50 Hz)	42-48 V AC (50/60 Hz)	115 AC (50/60 Hz)	230 V AC (50 Hz)
Current consumpt.	350 mA	500 mA	250 mA	200 mA	70 mA
	573 000 55	**573 000 65**	**573 000 66**	**573 000 67**	**573 000 68**

TECHNICAL DIAGRAMS:

see page 307

The Horn 573 is also available in an Ex version (see page 291)

See note on page 347

170 Three Tone Gong

- Melodious A-major three tone sound output
- Adjustable sound output
- Continuous operation possible
- Multiple Gongs can be operated in parallel
- Frequency set by manufacturer
- Triggering by means of time relay or timer switch

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	148 mm x 350 mm x 152 mm
Housing:	ABS
Connection:	Screw terminal with wire protection max. 25 mm²
Cable entry:	Rubber squeeze grommet Ø 7-10 mm
Tone type:	A-major 3 tone
Sound output duration:	C. 8 seconds
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	230 V AC
Current consumption	200 mA	35 mA
	170 000 55	**170 000 68**

ADDITIONAL INFORMATION:

Product no longer available.

For further advice please contact your WERMA sales contact.

TECHNICAL DIAGRAMS:

see page 297

See note on page 347

CE EAC 820 g IP55 +50°C -20°C 100 dB

WERMA SIGNALTECHNIK

172 Three Tone Gong

- Innovative, modern design
- Melodious A-major three tone sound output
- Adjustable sound output
- Multiple Gongs can be operated in parallel
- Frequency set by manufacturer
- Triggering by means of time relay or timer switch

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	178 mm x 104 mm x 207
Housing:	PC/ABS-Blend
Connection:	Screw terminal with wire protection 0.5-2.5 mm^2
Cable entry:	Cable gland M16 x 1.5 mm
	Cable diameter 5-10 mm
Duty cycle:	Max. 5 min
Tone type:	A-major three tone
Sound output duration:	C. 8 seconds
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	12-24 V AC/DC	230 V AC
Current consumption	250 mA	40 mA
	172 000 75	**172 000 68**

ADDITIONAL INFORMATION:

Product no longer available

For further advice please contact your WERMA sales contact.

TECHNICAL DIAGRAMS:

see page 298

See note on page 347

CE EAC 1 kg IP65 +50°C -20°C 100 dB

914 Alarm Bell

- Robust alarm bell
- High protection rating IP 66

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Depth):	167 mm x 76 mm
Housing:	Steel bell, epoxy dust enamelled
Connection:	Screw terminal max. 1.5 mm²
Cable entry:	Cable gland M16 x 1.5 mm Cable diameter 5-10 mm

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V DC	110 V AC (50/60 Hz)	230 V AC
Current consumption	300 mA	90 mA	55 mA
	914 052 55	**914 052 67**	**914 052 68** (50 Hz) **914 053 68** (60 Hz)

Further voltages on request.

TECHNICAL DIAGRAMS:

see page 326

See note on page 347

IP66 +50°C -30°C 98 dB

at DC - 98 dB(A)
at AC - 100 dB(A)

WERMA SIGNALTECHNIK

574 Signal Horn

- Maintenance-free, electronic horn with a long life duration of up to 5,000 hrs
- Sound output can be set to meet the requirements of the application up to 108 dB
- Integrated bracket for simple wall mounting without additional accessories

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (Ø x Height):	134 mm x 340 mm
Housing:	PC/ABS-Blend, grey
Fixing:	Wall mounting, integrated mounting bracket
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Tone frequency:	C. 110 Hz

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC
Current consumption	55 mA	210 mA	30 mA
	574 000 75	**574 000 70**	**574 000 60**

* Current consumption at 10 V / 115 V

ADDITIONAL INFORMATION:

State-of-the-art technology is used in the signal horns to guarantee an extremely long life of up to 5,000 hours: the high-volume horn tone is emitted with the aid of sophisticated electronics.

WERMA has intentionally avoided the use of electromechanical components which are susceptible to wear and tear, and has in this way ensured that the long-life horns can be used up to ten times longer than similar conventional electromechnanical products.

TECHNICAL DIAGRAMS:

see page 307

535 g | IP65 | +50°C -30°C | 108 dB

575 Signal Horn

Quick and simple wall mounting without additional accessories thanks to integrated mounting bracket

- Maintenance-free, electronic horn with a long life duration of up to 5,000 hrs
- Sound output can be set to meet the requirements of the application up to 108 dB
- Integrated bracket for simple wall mounting without additional accessories

TECHNICAL SPECIFICATIONS:

Life duration up to 5,000 hrs

Dimensions (L x H x W):	134 mm x 169 mm x 144 mm
Housing:	PC/ABS-Blend, grey
Fixing:	Wall mounting, integrated mounting bracket
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 11 mm
Tone frequency:	C. 110 Hz

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	10-48 V AC/DC*	115-230 V AC
Current consumption	55 mA	210 mA	30 mA
	575 000 75	**575 000 70**	**575 000 60**

* Current consumption at 10 V / 115 V

TECHNICAL DIAGRAMS:

see page 307

WERMA SIGNALTECHNIK

582 Signal Horn

- Small horn with trumpet

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	70 mm x 172 mm x 77 mm
Housing:	ABS
Connection:	Screw terminal with wire protection, 1.0-1.5 mm² fine strand, 1.0-2.5 mm² single wire
Cable entry:	Cable diameter 9 mm
Fixing:	Wall mounting, sound outlet facing downwards

ORDER SPECIFICATIONS:

Play Sound www.werma.com

AC Version

Voltage	12 V AC	24 V AC	42 V AC	115 V AC	230 V AC
Current consumpt.	330 mA	190 mA	75 mA	15 mA	15 mA
	582 052 64	**582 052 65**	**582 052 66**	**582 052 67**	**582 052 68**

DC Version

Voltage	12 V DC	24 V DC
Current consumpt.	150 mA	70 mA
	582 052 54	**582 052 55**

Further voltages on request.

ADDITIONAL INFORMATION:

Please also see Horn 584 with additional advantages (see page 264)

- High protection rating IP 65
- Loud electronic horn
- High life duration up to 5,000 hrs
- Sound output 98 dB

TECHNICAL DIAGRAMS:

see page 308

See note on page 347

CE EAC 160 g IP33 +60°C -20°C 92 dB

584 Signal Horn

- Loud electronic horn
- High life duration up to 5,000 hrs
- Integrated mounting bracket
- High protection rating IP 65

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 198 mm x 91.5 mm
Housing:	PC, PC/ABS-Blend, grey
Fixing:	Wall mounting
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone frequency:	C. 110 Hz
Life duration:	> 5,000 hrs
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Play Sound

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 80 mA	≤ 70 mA	≤ 70 mA
	584 000 75	**584 000 67**	**584 000 68**

TECHNICAL DIAGRAMS:

see page 308

Horn in combination with Xenon Flash or LED Permanent Light see page 196 and 197

See note on page 347

EAC | 140 g | IP65 | +50°C -20°C | 98 dB | 24 V PLC

WERMA SIGNALTECHNIK

585 Signal Horn

- Loud electronic horn
- High life duration up to 5,000 hrs
- Integrated mounting bracket
- High protection rating IP 65

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	83 mm x 84 mm x 91.5 mm
Housing:	PC, PC/ABS-Blend, grey
Fixing:	Wall mounting
Installation position:	Sound outlet facing downwards
Connection:	Screw terminal with wire protection max. 1.5 mm²
Cable entry:	Cable diameter max. 9 mm
Tone frequency:	C. 110 Hz
Life duration:	> 5,000 hrs
Duty cycle:	100 %

ORDER SPECIFICATIONS:

Play Sound www.werma.com

Voltage	24 V AC/DC	115 V AC	230 V AC
Current consumption	≤ 80 mA	≤ 70 mA	≤ 70 mA
	585 000 75	**585 000 67**	**585 000 68**

ADDITIONAL INFORMATION:

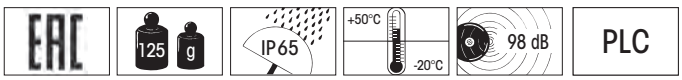
Thanks to the use of the most modern technology, the 584 and 585 horns have life duration of up to 5,000 hours (10 times longer than conventional horns).

The sound output can be adjusted up to 98 dB.

TECHNICAL DIAGRAMS:

see page 308

See note on page 347



Ex Signal Devices Overview

Ex (LED) Signal Towers

741 Ex LED Signal Tower

Zone 1 + 2
Page 275

Optical Ex Signal Devices

729 Ex LED Permanent Beacon

Zone 2 + 22
Page 276

782 Ex LED Permanent Beacon

Zone 1, 2, 21, 22
Page 277

785 Ex Rotating Mirror Beacon

Zone 1, 2, 21, 22
Page 278

783 Ex Rotating Mirror Beacon

Zone 1, 2, 21, 22
Page 279

729 Ex LED Rotating Beacon

Zone 1, 2, 21, 22
Page 280

782 Ex LED Rotating Beacon

Zone 1, 2, 21, 22
Page 281

784 Ex Rotating Beacon

Zone 1, 2, 21, 22
Page 282

729 Ex LED EVS Beacon

Zone 1, 2, 21, 22
Page 283

729 Ex LED Double Flash Beacon

Zone 1, 2, 21, 22
Page 284

728 Ex Flashing Beacon

Zone 1, 2, 21, 22
Page 286

738 Ex Double Flash Beacon

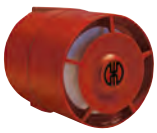
Zone 1, 2, 21, 22
Page 285

Audible Ex Signal Devices

718 Ex Electronic Installation Buzzer

Zone 1 + 2
Page 288

714 Ex Multi-Tone Sounder



Zone 0, 1, 2
Page 289

750 Ex Signal Horn

Zone 1 + 2
Page 290

761 Ex Signal Horn

Zone 1, 2, 21, 22
Page 291

Regulations and Requirements

Page 268 onwards

Signal devices in areas with explosion hazard

Avoidance of explosion - explosion protection

Safety in explosive areas can only be secured by close co-operation between all parties involved. Close co-operation between manufacturer, operator, safety inspector and safety authority is indispensable.

Three types of explosion protection can be defined:

Primary explosion protection

Primary explosion protection entails preventing the formation of an explosive atmosphere by, for example, adequate ventilation.

Secondary explosion protection

If it is not possible to prevent the build up of an explosive atmosphere through primary explosion protection, possible sources of ignition must be countered through secondary explosion protection.
WERMA can supply devices which are not sources of ignition.

Tertiary explosion protection methods

Tertiary explosion protection is used when the operator cannot completely eradicate ignition sources. Such measures are designed to reduce the vulnerability of explosion to non dangerous proportions.

Responsibilities of operator/contractor:

The operator or responsible contractor must first of all secure all areas against primary explosion. Other potentially explosive areas need then to be risk assessed. Areas will be designated by „zone", an explosion class defined and the max surface temperature defined.

Areas liable to explosion: Zone definitions

Zone definition is carried out according to EC Guideline 1999/92/EG.

The basis for the scope of protective measures required by the operator is the probability of a potentially explosive atmosphere occuring.

	Probability of occurance		
Explosion endangered zone through:	**Frequent, long term or regular**	**Occasional**	**Usually not, but if then only rarely and for a short period**
Inflammable gas, steam or mist	Zone 0	Zone 1	Zone 2
Inflammable dust or air	Zone 20	Zone 21	Zone 22

Explosion groups for gases, vapours and dusts

The **explosion group** is defined by the potentially explosive material and its flammability:

AREA	EXPLOSION GROUP	FLAMMABLE SUBSTANCES	FLAMMABILITY
Mining	I	Pit gas (Methane), coal dust	
Gas	IIA	Acetone, Petrol, Methanol, Propane, Toluene	relatively low
	IIB	Ethylene, City Gas	high
	IIC	Hydrogen, Acetylene, Carbon Sulphide	very high
Dust	IIIA	Flammable Lint	relatively low
	IIIB	Non-Conductive Dusts	high
	IIIC	Conductive Dusts	very high

All WERMA signal devices have been approved for use in the highest explosion groups IIC and IIIC and are thus suitable for use in those areas.

Surface temperature

Explosive materials define the max. **surface temperature** permissible by their ignition temperature.

Explosion protected components are to be specified so that no ignition can take place because of surface temperature.

IGNITION TEMPERATURES AND TEMPERATURE CLASSES OF EXPLOSION-ENDANGERED GAS AND VAPOUR ATMOSPHERES

Temperature classes	Ignition temp of gas/vapour atmosphere	Permissible surface temp of components
T1	≥ 450°C	≤ 450°C
T2	≥ 300 … ≤ 450°C	≤ 300°C
T3	≥ 200 … ≤ 300°C	≤ 200°C
T4	≥ 135 … ≤ 200°C	≤ 135°C
T5	≥ 100 … ≤ 135°C	≤ 100°C
T6	≥ 85 … ≤ 100°C	≤ 85°C

Dust is not temperature classified. Instead the max. permissible surface temperature is given in celcius.

WERMA can offer a variety of products for the different **temperature classes** of gas and vapour and **max. surface temperature**.

Signal devices in areas with explosive hazard

Device categories and EPL protection level

The ATEX directive divides the electrical components into 6 device categories. The IEC standards and the EN standards divide the devices into 6 protection levels or EPLs (Equipment Protection Levels). The device category and EPL are equivalent and indicate the zones in which the device may be used.

Material Group	Gas			Dust		
Equipment category	1G	2G	3G	1D	2D	3D
Protection level EPL	Ga	Gb	Gc	Da	Db	Dc
Suitable for zones	0,1,2	1,2	2	20,21,22	21,22	22

Manufacturers' obligations

Manufactures of equipment for use in explosive areas are obliged according to EC Guideline 94/9/EC to clearly mark the devices according to the permissible areas of use.

The procedure demands that all requirements for the awarding of the CE mark be tested by an independent approved authority. Devices in category 3 are excluded.

This will be confirmed by the EC type examination certificate. In addition the manufacturer must have an appropriate QA system approved by an EC certificate.

Minimum product marking of explosion-protected components

EC Guideline 94/9/EC and associated norms define the appearance of the symbol.

As norms have changed frequently in recent years so has the the appearance of the symbol. It has only been possible to adapt and update the appearance of the symbol which requires approval by the testing authority on a gradual basis. It is therefore possible that devices do not display the latest symbol but this does **not influence** their use in explosive areas.

There is a separate symbol for gas and explosive dust areas.

Further information below:

	Symbol - see Guideline 94/9/EC					Symbol according to norm classification				
GAS	CE	0102	Ex	II	2G	Ex	de	IIC	T6	Gb
DUST	CE	0102	Ex	II	2D	Ex	tb	IIIC	T80°C	Db
	1	2	3	4	5	6	7	8	9	10

1	CE Conformity symbol
2	Number of the named test authority Test Authority for evaluating the device
3	Ex Hexagon Symbol indicating suitable for use in explosive areas.
4	Group I = pit gas, coal dust II = all other explosion endangered areas
5	Device category Defines in which zones the device may be used
6	Ex symbol acc. to norm Relevant Ex norms will apply
7	Spark protection for electrical devices. Each letter represents an ignition protection level A, b or c shows the EPL. If all ignition protection levels have EPL the symbol need not be used after point 10
8	Explosion group Component is suitable for all low explosion groups.
9	Gas temp. class Max surface temp. for dust.
10	Protection level Defines in which zones the device can be used

Quick-Finder

Quick-Finder - the fastest way to find the right signal device for your application!

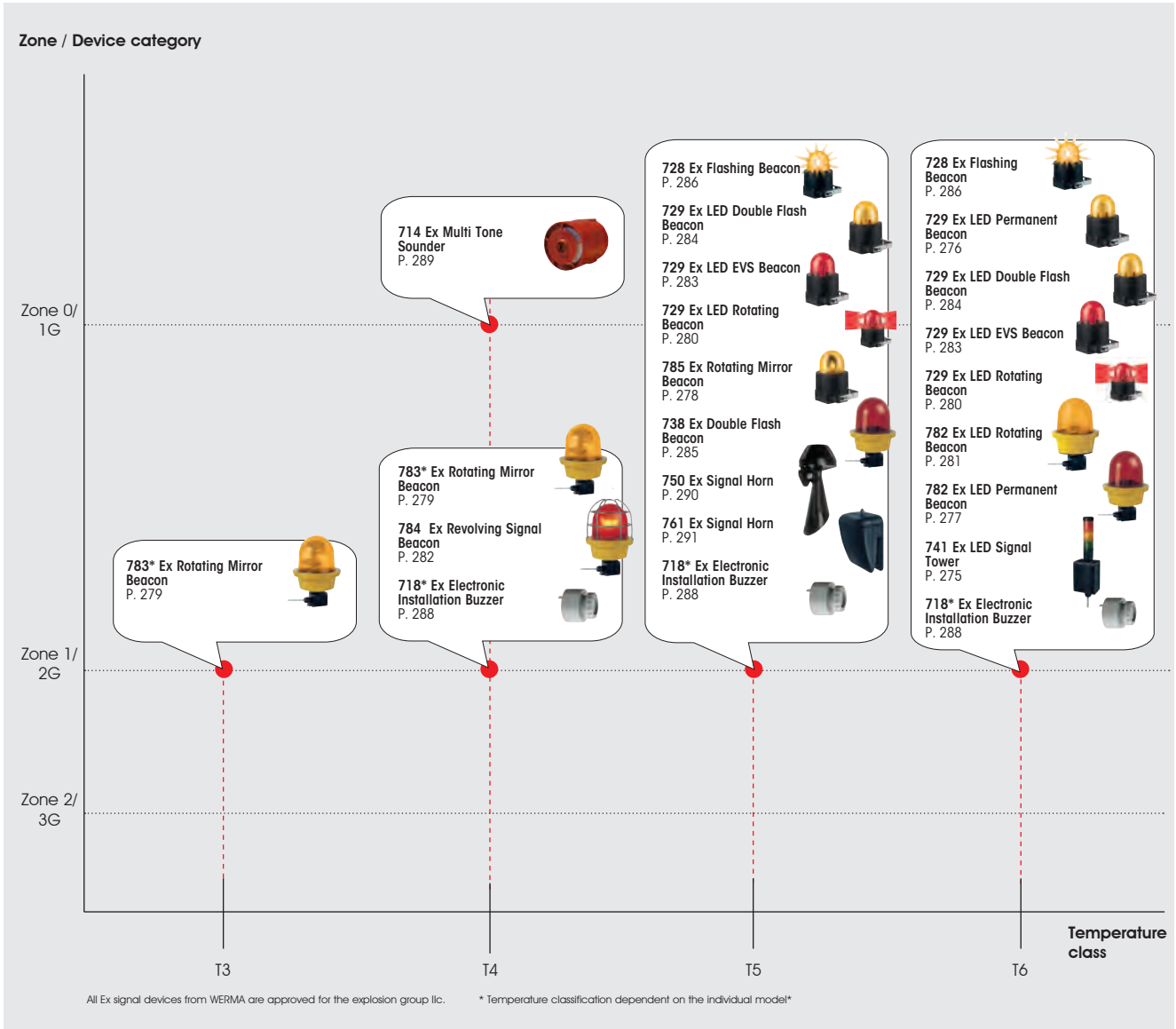
WERMA offers a comprehensive range of explosion protected signal devices. These are suitable for deployment in gas, vapour and dust atmospheres. With our Quick-Finder you can quickly and easily locate the correct signal device for your application.

How to proceed:
Choose the appropriate quick-finder for gas/vapour or dust atmospheres. Then select the zone and temperature or temperature class for the product you are seeking.

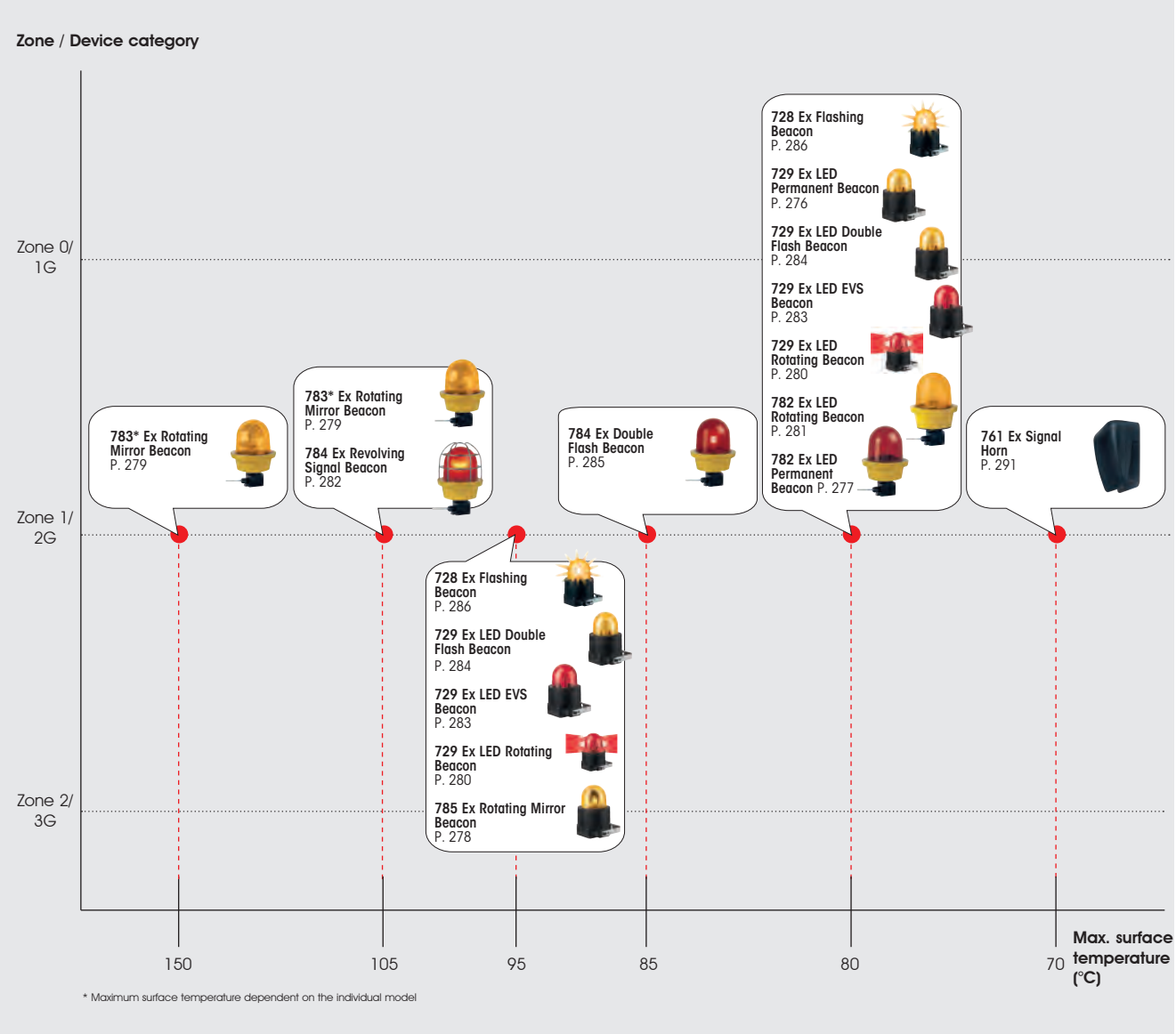
You can use any device which is:

- directly on the „red mark",
- to the right of the point and
- listed above the point.

Signal Devices for Gas or Vapour Atmospheres



Signal Devices for Dust Atmospheres



Should you require further help in selecting the appropriate device just give us a call.
Further information can be found on page 268 or on **www.werma.com**.

740 Ex Signal Tower

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Signal tower Kombi*SIGN* in flame-proof enclosure
- Available with up to 3 light elements
- Also available as LED version

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	154 mm x 431 mm x 201 mm
Housing:	Aluminium, glass
Connection:	Screw terminal max. 2.5 mm² incl. approved pressure resistant cable gland NPT 3/4"
Explosion protection:	Ex II 2G Ex d IIC T6 Ex II 2D Ex tD A21 IP68 T85°C
Approval:	L.C.I.E. 97 EX 6012

Technical specifications of signal tower Kombi*SIGN* 70 see page 47.

ORDER SPECIFICATIONS:

Voltage	12-230 V Bulb	24 V DC LED
red / green	**740 210 00**	**740 210 55**
red / yellow / green	**740 231 00**	**740 231 55**

ACCESSORIES:

Bulb BA15d, 5 W, 24 V	**955 840 35**
Bulb BA15d, 5 W, 230 V	**955 840 38**

ADDITIONAL INFORMATION:

Please replace with the series 741, see page 275.

TECHNICAL DIAGRAMS:

see page 313

CE Ex | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 6,3 kg | IP66/IP67 | +40°C -20°C | 24 V PLC

WERMA SIGNALTECHNIK

741 Ex LED Signal Tower

- Gas applications: Zones 1 and 2
- No additional zener barrier required
- Combination of encapsulation "m" and intrinsic safety "ib" with connection area "e"

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions of the Zener Barrier (L x H x W):	76 mm x 110 mm x 75 mm
Dimensions total:	2 tier (L x B x H): 76 mm x 229 mm x 75 mm
	3 tier (L x B x H): 76 mm x 263 mm x 75 mm
Housing:	Polyamide, black
Signal tower:	PC
Connection:	Screw terminal max. 2.5 mm^2
	incl. approved cable gland "e"
Explosion protection:	Ⓔx II 2G Ex e mb [ib] IIC T6 Gb
Approval:	PTB 06 ATEX 2005

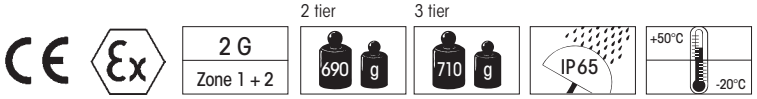
ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	< 90 mA
red / green	**741 110 55**
red / yellow	**741 120 55**
red / yellow / green	**741 130 55**

TECHNICAL DIAGRAMS:

see page 313

The Ex LED Signal Tower 741 warns of imminent danger in gas explosion endangered areas, e.g. in the chemical industry and paint shops



729 Ex LED Permanent Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Connection area "e" for simple connection and cabling to power source
- Salt water resistant
- Integral wire guard (VA stainless steel)
- Effective explosion protection even at extreme temperatures (-50°C to +50°C, with accessory)

The maintenance-free LEDs have a life duration of up to 50,000 hours

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	139 mm x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® max. 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-13 mm
Explosion protection:	Ex II 2G Ex d e IIC T6 Gb Ex II 2D Ex tb IIIC T80°C Db
Approval:	BVS 11 ATEX E 107 IECEx_BVS_11.0082
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

Additional protection with the robust wire guard (accessory)

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V/230 V AC
Current consumption	130 mA	30 mA at 230 V AC
red	**729 100 55**	**729 100 68**
yellow	**729 300 55**	**729 300 68**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connecting to an additional beacon	**975 729 01**

TECHNICAL DIAGRAMS:

see page 313

CE Ex IECEx 2 G Zone 1 + 2 2 D Zone 21 + 22 2,9 kg IP66 +50°C -40°C

WERMA SIGNALTECHNIK

782 Ex LED Permanent Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Connection area "e" for simple connection
- Extremely high light intensitiy
- Can be mounted as required
- Salt water resistant

TECHNICAL SPECIFICATIONS:

Life duration up to 50,000 hrs

Dimensions (Ø x Height):	209 mm x 315 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Mounting Plate:	VA stainless steel
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 5-13 mm
Connection area:	Increased Safety "e"
Installation position:	As required
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Duty cycle:	100 %
Explosion protection:	Ex II 2G Ex d e IIC T6 Gb Ex II 2D Ex tb IIIC T80°C Db
Approval:	PTB 06 ATEX 1039

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	200 mA	25-60 mA
red	**782 100 55**	**782 100 68**
yellow	**782 300 55**	**782 300 68**

Wire guard (accessory)

ACCESSORIES:

Wire guard	**975 783 01**
Mounting plate	**975 783 02**
Clamp for tube mounting 1¼"	**975 783 03**
Clamp for tube mounting 1½"	**975 783 04**
Clamp for tube mounting 2"	**975 783 05**
Bracket	**975 783 06**

Clamp for tube mounting (accessory)

TECHNICAL DIAGRAMS:

see page 314

Mounting plate (accessory)

Bracket (accessory)

Excellent light intensity and long life duration

CE Ex | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 4,4 kg | IP66 | +50°C -20°C

785 Ex Rotating Mirror Beacon

Long life duration thanks to low wear wheel and disc drive

Additional protection with the robust wire guard (accessory)

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Extreme durability thanks to low wear wheel and disc drive
- Salt water resistant
- Integrated mounting bracket (VA steel)
- Effective explosion protection even at extreme temperatures (-50°C to +50°C, with accessory)
- Connection area "e" for simple connection and cabling to power source

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	139 mm x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® max. 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-13 mm
Drive:	Wheel and disc drive, motor in centre of gravity
Mirror rotation rate:	180 r.p.m.
Service life of drive:	> 5,000 hours
Explosion protection:	Ⓔx II 2G Ex d e IIC T5 Gb Ⓔx II 2D Ex tb IIIC T95°C Db
Approval:	BVS 11 ATEX E 107
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V/230 V AC/DC
Current consumption	1.0 A	130 mA at 230 V AC/350 mA at 115 V AC
red	**785 100 75**	**785 100 70**
yellow	**785 300 75**	**785 300 70**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connection to an additional beacon	**975 729 01**

SPARE PARTS:

Halogen bulb 20 W/24 V for 24 V AC/DC	**955 885 25**
Halogen bulb 20 W/12 V for 115 V/230 V AC/DC	**955 885 24**

TECHNICAL DIAGRAMS:

see page 314

CE Ⓔx IECEx 2 G Zone 1 + 2 2 D Zone 21 + 22 2,9 kg IP66 +50°C -30°C

783 Ex Rotating Mirror Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Connection area "e" for simple connection
- High life duration thanks to low wear wheel and disc drive
- Can be mounted as required
- Salt water resistant

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	209 mm x 315 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Mounting Plate:	VA stainless steel
Connection:	Screw terminal max. 2.5 mm²
Cable gland:	Cable gland M20 x 1.5 mm Cable diameter 5-13 mm
Connection area:	Increased Safety "e"
Drive:	Wheel and disc drive, motor in centre of gravity
Installation position:	As required
Mirror rotation rate:	180 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Explosion protection:	Ex II 2G Ex d e IIC T3-T4 Gb (depending on version) Ex II 2D Ex tb IIIC 105 °C - 150 °C Db (depending on version)
Approval:	PTB 06 ATEX 1039
Accesory:	Halogen bulb. Bulb overview beginning on page 184.

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	24 V AC/DC	115 V AC/DC	230 V AC	230 V AC
Halogen bulb	20 W/24 V	35 W/24 V	35 W/12 V	20 W/12 V	35 W/12 V
Current consumption	900 mA	1,6 A	350 mA	110 mA	170 mA
Temperature Class (gas)	T4	T3	T3	T4	T3
Surface Temperature (dust)	105°C	150°C	150°C	105°C	150°C
red	**783 110 75**	**783 100 75**	**783 100 77**	**783 110 68**	**783 100 68**
yellow	**783 310 75**	**783 300 75**	**783 300 77**	**783 310 68**	**783 300 68**

Wire guard (accessory)

Clamp for tube mounting (accessory)

Mounting plate (accessory)

Bracket (accessory)

ACCESSORIES:

Wire guard	**975 783 01**
Mounting plate	**975 783 02**
Clamp for tube mounting 1¼"	**975 783 03**
Clamp for tube mounting 1½"	**975 783 04**
Clamp for tube mounting 2"	**975 783 05**
Bracket	**975 783 06**

SPARE PARTS:

Halogen bulb 20 W/24 V for 24 V AC/DC	**955 885 25**
Halogen bulb 20 W/12 V for 230 V AC	**955 885 24**
Halogen bulb 35 W/24 V for 24 V AC/DC	**955 883 35**
Halogen bulb 35 W/12 V for 115 V AC, 230 V AC	**955 883 34**

TECHNICAL DIAGRAMS:

see page 314

CE Ex | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 4,6 kg | IP66 | +40°C -20°C

729 Ex LED Rotating Beacon

Intense rotating signal effect with low power consumption

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Intense rotating signal effect with low power consumption
- Integrated mounting bracket (VA steel)
- Effective explosion protection even at extreme temperatures (-50°C to +50°C, with accessory)
- Connection area "e" for simple connection and cabling to power source
- Salt water resistant

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	139 mm x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® bis 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-13 mm
Rotation rate:	C. 180 r.p.m.
Duty cycle:	100 %
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

Innovative solution: The universal mounting bracket (included in assembly)

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V/230 V AC
Current consumption	< 170 mA	150 mA at 230 V AC
Explosion protection	Ⓔx II 2G Ex d e IIC T6 Gb Ⓔx II 2D Ex tb IIIC T80°C Db	Ⓔx II 2G Ex d e IIC T5 Gb Ⓔx II 2D Ex tb IIIC T95°C Db
Approval	BVS 11 ATEX E 107 IECEx_BVS_11.0082	BVS 11 ATEX E 107 IECEx_BVS_11.0082
red	**729 120 55**	**729 120 68**
yellow	**729 320 55**	**729 320 68**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connection to an additional beacon	**975 729 01**

TECHNICAL DIAGRAMS:

see page 313

CE Ⓔx IECEx 2 G Zone 1 + 2 2 D Zone 21 + 22 2,9 kg IP66 +50°C -40°C

WERMA SIGNALTECHNIK

782 Ex LED Rotating Beacon

Ex LED Rotating Beacon
with wire guard (accessory)

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Wear-free due to the absence of any moving mechanical components
- Intense rotating signal effect with low power consumption
- Connection area "e" for simple connection
- Can be mounted as required
- Salt water resistant

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	209 mm x 315 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Mounting Plate:	VA stainless steel
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 5-13 mm
Connection area:	Increased Safety "e"
Installation position:	As required
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Rotation rate:	C. 180 r.p.m.
Duty cycle:	100 %
Explosion protection:	Ⓔx II 2G Ex d e IIC T6 Gb Ⓔx II 2D Ex tb T 80 °C Db
Approval:	PTB 06 ATEX 1039

ORDER SPECIFICATIONS:

Voltage	24 V DC	115-230 V AC
Current consumption	150 mA	70-180 mA
red	**782 120 55**	**782 120 68**
yellow	**782 320 55**	**782 320 68**

ACCESSORIES:

Wire guard	**975 783 01**
Mounting plate	**975 783 02**
Clamp for tube mounting 11/4"	**975 783 03**
Clamp for tube mounting 11/2"	**975 783 04**
Clamp for tube mounting 2"	**975 783 05**
Bracket	**975 783 06**

(Accessories see page 279)

TECHNICAL DIAGRAMS:

see page 314

Generates a distinctive rotating signal by triggering high output LEDs in sequence

CE Ⓔx | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 4,4 kg | IP66 | +50°C -20°C

784 Ex Revolving Signal Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- 3 Fresnel lenses effect light convergence and optimise visibility
- Can be mounted as required
- Low rotation rate and long life duration thanks to low wear wheel and disc drive
- Connection area "e" for simple connection
- Salt water resistant

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	209 mm x 315 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Mounting Plate:	VA stainless steel
Connection:	Screw terminal max. 2.5 mm²
Cable gland:	Cable gland M20 x 1.5 mm Cable diameter 5-13 mm
Connection area:	Increased Safety "e"
Drive:	Wheel and disc drive, motor in centre of gravity
Installation position:	As required
Halogen bulb:	GY 6.35 35 W 12 V/24 V
Lens rotation rate:	60 r.p.m.
Service life of drive:	> 5,000 hrs
Duty cycle:	100 %
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Explosion protection:	Ⓔx II 2G Ex d e IIC T4 Gb Ⓔx II 2D Ex tb IIIC 105°C Db
Approval:	PTB 06 ATEX 1039

Halogen bulb included in assembly. Bulb overview see pages 184 + 201.

Wire guard (accessory)

ORDER SPECIFICATIONS:

Voltage	24 V AC/DC	115 V AC/DC	230 V AC
Current consumption	1,6 A	350 mA	170 mA
red	**784 100 75**	**784 100 77**	**784 100 68**
yellow	**784 300 75**	**784 300 77**	**784 300 68**

Clamp for tube mounting (accessory)

ACCESSORIES:

Wire guard	**975 783 01**
Mounting plate	**975 783 02**
Clamp for tube mounting 1¼"	**975 783 03**
Clamp for tube mounting 1½"	**975 783 04**
Clamp for tube mounting 2"	**975 783 05**
Bracket	**975 783 06**

Mounting plate (accessory)

SPARE PARTS:

Halogen bulb 35 W/24 V for 24 V AC/DC	**955 883 35**
Halogen bulb 35 W/12 V for 115 V AC, 230 V AC	**955 883 34**

Bracket (accessory)

TECHNICAL DIAGRAMS:

see page 314

CE Ⓔx | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 4,6 kg | IP66 | +40°C -20°C

WERMA SIGNALTECHNIK

729 Ex LED EVS* Beacon

The LED EVS* Beacon generates an attention-grabbing light effect

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Connection area "e" for simple connection and cabling to power source
- Extremely powerful signal effect
- Random sequence of light signals prevents acclimatisation effect
- For signalling extremely hazardous situations and the need for immediate action

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	139 x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® max. 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-13 mm
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

The LED EVS* Beacon generates an attention-grabbing light effect

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V/230 V AC
Current consumption	< 240 m A	140 mA at 230 V AC
Explosion protection	Ⓔx II 2G Ex d e IIC T6 Gb Ⓔx II 2D Ex tb IIIC T80°C Db	Ⓔx II 2G Ex d e IIC T5 Gb Ⓔx II 2D Ex tb IIIC T95°C Db
Approval	BVS 11 ATEX E 107 IECEx_BVS_11.0082	BVS 11 ATEX E 107 IECEx_BVS_11.0082
red	**729 160 55**	**729 160 68**
yellow	**729 360 55**	**729 360 68**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connection to an additional beacon	**975 729 01**

ADDITIONAL INFORMATION:

***EVS** = Enhanced Visibility System.
For further info see page 352.
Please note the photosensitive epilepsy warning on page 352.

TECHNICAL DIAGRAMS:

see page 313

CE Ⓔx IECEx | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 2,9 kg | IP66 | +50°C -40°C

729 Ex LED Double Flash Beacon

Intense double flash with low power consumption

Additional protection with the robust wire guard (accessory)

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Intense double flash with low power consumption
- Integrated mounting bracket (VA steel)
- Effective explosion protection even at extreme temperatures (-50°C to +50°C, with accessory)
- Connection area "e" for simple connection and cabling to power source
- Salt water resistant

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	139 x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® max. 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6 -13 mm
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V/230 V AC
Current consumption	< 140 m A	140 mA at 230 V AC
Explosion protection	Ex II 2G Ex d e IIC T6 Gb Ex II 2D Ex tb IIIC T80°C Db	Ex II 2G Ex d e IIC T5 Gb Ex II 2D Ex tb IIIC T95°C Db
Approval	BVS 11 ATEX E 107 IECEx_BVS_11.0082	BVS 11 ATEX E 107 IECEx_BVS_11.0082
red	**729 150 55**	**729 150 68**
yellow	**729 350 55**	**729 350 68**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connection to an additional beacon	**975 729 01**

TECHNICAL DIAGRAMS:

see page 313

CE Ex IECEx 2 G Zone 1 + 2 2 D Zone 21 + 22 2,9 kg IP66 +50°C -40°C

738 Ex Double Flash Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Connection area "e" for simple connection
- High flash power from two consecutive flashes
- Can be mounted as required
- Salt water resistant

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	209 mm x 315 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Mounting Plate:	VA stainless steel
Connection:	Screw terminal max. 2.5 mm²
Cable gland:	Cable gland M20 x 1.5 mm Cable diameter 5-13 mm
Connection area:	Increased Safety "e"
Installation position:	As required
Flash energy:	C. 15 Ws
Flash frequency:	C. 1 Hz
Life duration:	4 x 10^6 flashes
Fixing:	Base mounting, bracket mounting (accessory), tube mounting (accessory)
Explosion protection:	Ex II 2G Ex d e IIC T5 Gb Ex II 2D Ex tb IIIC 85°C - T 90°C Db (depending on the voltage)
Approval:	PTB 06 ATEX 1039

Wire guard (accessory)

ORDER SPECIFICATIONS:

Voltage	24 V DC	115 V AC	230 V AC
Current consumption	700 mA	300 mA	200 mA
Surface Temp. (dust)	85 °C	90 °C	85 °C
red	**738 100 55**	**738 100 67**	**738 100 68**
yellow	**738 300 55**	**738 300 67**	**738 300 68**

Clamp for tube mounting (accessory)

ACCESSORIES:

Wire guard	**975 783 01**
Mounting plate	**975 783 02**
Clamp for tube mounting 1¼"	**975 783 03**
Clamp for tube mounting 1½"	**975 783 04**
Clamp for tube mounting 2"	**975 783 05**
Bracket	**975 783 06**

Mounting plate (accessory)

TECHNICAL DIAGRAMS:

see page 313

Bracket (accessory)

The Ex Double Flash Beacon 738 provides signalling in a range of different explosion protected areas

CE Ex | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 4,4 kg | IP66 | +40°C -20°C | 15 Ws

728 Ex Flashing Beacon

Ex Flashing Beacon for use in gas and dust explosion-endangered areas

Innovative solution: The universal mounting bracket (included in assembly)

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Ex Flashing Beacon in compact housing
- Salt water resistant
- Integrated mounting bracket (VA steel)
- Effective explosion protection even at extreme temperatures (-50°C to +50°C, with accessory)
- Connection area "e" for simple connection and cabling to power source

Life duration up to 50,000 hrs

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	139 x 214 mm
Housing:	Black coated aluminium, salt water resistant
Lens:	Reinforced borosilicate glass
Connection:	CAGE CLAMP® max. 2.5 mm²
Fixing:	Wall, base and ceiling mounting Integrated mounting bracket, VA steel
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-13 mm
Flash energy:	C. 5 Ws
Flash frequency:	C. 1 Hz
Life duration:	4 x 10^6 flashes
Assembly:	Ex screw plug M20 x 1.5 mm Ex cable gland M20 x 1.5 mm

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	300 m A	150 mA
Explosion Protection	Ⓔx II 2G Ex d e IIC T6 Gb Ⓔx II 2D Ex tb IIIC T80°C Db	Ⓔx II 2G Ex d e IIC T5 Gb Ⓔx II 2D Ex tb IIIC T95°C Db
Approval	BVS 11 ATEX E 107 IECEx_BVS_11.0082	BVS 11 ATEX E 107 IECEx_BVS_11.0082
red	**728 100 55**	**728 100 68**
yellow	**728 300 55**	**728 300 68**

ACCESSORIES:

Ex wire guard, VA steel, stainless	**975 729 03**
Ex cable gland M20 x 1.5 mm, metal To expand the temperature range from -40 °C to -50 °C	**975 729 04**
Ex screw plug M20 x 1.5 mm	**975 729 02**
Ex cable gland M20 x 1.5 mm For connection to an additional beacon	**975 729 01**

TECHNICAL DIAGRAMS:

see page 313

CE Ⓔx IECEx | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 2,9 kg | IP66 | +50°C -40°C | 5 Ws

WERMA SIGNALTECHNIK

720 Ex Flashing Beacon

- Gas applications: Zones 1 and 2
- Dust applications: Zones 21 and 22
- Compact flashing beacon
- Improved temperature range

TECHNICAL SPECIFICATIONS:

Dimensions (L x H x W):	110 mm x 285 mm x 129 mm
Housing:	Aluminium
Lens:	Reinforced borosilicate glass
Wire guard:	Rust-proof steel, powder-coated
Connection:	Screwable 1.5 mm² fine-strand, 2.5 mm² single-wire
Cable entry:	Cable gland M20 x 1.5 mm Cable diameter 6-9 mm
Life duration:	5 x 10^6 flashes
Explosion protection:	Ⓔx II 2G Ex d e IIC T5/T6 Gb T6: -55 °C ≤ Ta ≤ +40 °C T5: -55 °C ≤ Ta ≤ +55 °C Ⓔx II 2D Ex tb IIIC T95°, T80° C Db
Approval:	PTB 01 ATEX 1057
Fixing:	Bracket mounting
Flash energy:	C. 15 Ws
Flash frequency:	1 Hz

ORDER SPECIFICATIONS:

Voltage	24 V DC	230 V AC
Current consumption	1 A	200 mA
red	**720 101 55**	**720 101 68**
yellow	**720 301 55**	**720 301 68**

ADDITIONAL INFORMATION:

Please replace with the series 741, see page 286.

TECHNICAL DIAGRAMS:

see page 313

CE Ⓔx | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 2 kg | IP67 | +40°C -55°C | 15 Ws

718 Ex Electronic Installation Buzzer

- Gas applications: Zones 1 and 2
- Intrinsically safe Ex installation buzzer
- For use with a Zener Barrier
- IP 43 with cap
- Low current consumption
- Continuous tone

Play Sound www.werma.com

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	43 mm x 13 mm (Protrusion from panel)
Housing:	ABS
Connection:	Spades 6.3 x 0.8 mm
Audio frequency:	C. 2,400 Hz
Duty cycle:	100 %
Explosion protection:	Ⓔx II 2G Ex ib IIC T4 / T5 / T6 Gb
Approval:	DMT 98 ATEX E 005 X
Maximum values of the Zener barrier:	Ui: 40 V DC, Ii: 660 mA
Minimum values of the Zener barrier:	For 24 V DC 15 V DC/20 mA

Maximum Input Power Pi:

Temp.-classes	Max. surrounding temperature + 40°C	+ 50°C	+ 60°C
T4	Pi = 1.3 W	Pi = 1.2 W	Pi = 1.0 W
T5	Pi = 0.82 W	Pi = 0.66 W	Pi = 0.52 W
T6	Pi = 0.6 W	Pi = 0.45 W	Pi = 0.3 W

Cap (accessory)

Zener Barrier (accessory)

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	20 mA
	718 000 55

ACCESSORIES:

PC/ABS-Blend Cap (IP 43)	**975 118 00**
Zener Barrier	**975 714 01**

TECHNICAL DIAGRAMS:

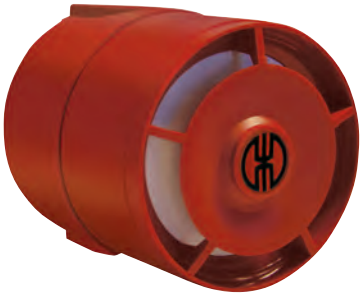
see page 312

with cap

CE Ⓔx | 2 G Zone 1 + 2 | 50 g | IP30 | IP43 | +60°C 0°C | 90 dB

WERMA SIGNALTECHNIK

714 Ex Multi-Tone Sounder



Zener Barrier (accessory)

- Gas applications: Zone 0, 1 and 2
- 26 tones for a diverse range of applications
- For use with a Zener Barrier
- Adjustable sound output to 103 dB
- High protection rating IP 65
- Direct external setting of two tones possible

TECHNICAL SPECIFICATIONS:

Dimensions (Ø x Height):	93 mm x 103 mm
Housing:	ABS
Connection:	Screw terminal max. 2.5 mm²
Cable entry:	Cable diameter max. 12 mm
Duty cycle:	100%
Tone types and frequencies:	Selectable via DIP switch, see table below
Fixing:	Wall mounting, base mounting
Installation position:	Sound outlet must not face upwards
Explosion protection:	Ⓔx II 1G EEx ia IIC T4 Ga
Approval:	BASEEFA 06 ATEX 0161

ORDER SPECIFICATIONS:

Voltage	24 V DC
Current consumption	14 mA
	714 000 55

ACCESSORIES:

Zener Barrier	**975 714 01**

TONE TYPES AND FREQUENCIES:

Play Sound www.werma.com

selectable via DIP switch

Ton A No.	Tone type	Ton A No.	Tone type
1	alternating 800/970 Hz in 2 Hz stroke	14	continuous 970 Hz
2	rising 800/970 Hz in 7 Hz stroke	15	554 Hz/100 ms alternating 440 Hz/400 ms
3	rising 800/970 Hz in 1 Hz stroke	16	660 Hz pulse: 150 ms ON, 150 ms OFF
4	continuous 2,850 Hz	17	660 Hz pulse: 1.8 sec. ON, 1.8 sec OFF
5	rising 2,400-2,850 Hz in 7 Hz stroke	18	660 Hz pulse: 6.5 sec. ON, 13 sec OFF
6	rising 2,400-2,850 Hz in 1 Hz stroke	19	continuous 660 Hz
7	500-1,200 Hz rising in 3 sec., 0.5 sec OFF	20	alternating 554/440 Hz in 0.5 Hz stroke
8	falling 1,200-500 Hz in 1 Hz stroke	21	pulse 660 Hz in 1Hz stroke
9	alternating 2,400/2,850 Hz in 2 Hz stroke	22	2,850 Hz pulse: 150 ms ON / 100 ms OFF
10	pulse 970 Hz in 0.5 Hz stroke	23	rising 800/970 Hz in 50 Hz stroke
11	alternating 800/970 Hz in 1 Hz stroke	24	rising 2,400-2,850 Hz in 50 Hz stroke
12	pulse 2,850 Hz in 0.5 Hz stroke	25	970 Hz pulse: 3 x 500 ms ON, 500 ms OFF, 1.5 sec. pause
13	970 Hz pulse: 0.25 sec. ON / 1 sec. OFF	26	2,850 Hz pulse: 3 x 500 ms ON, 500 ms OFF, 1.5 sec. pause

TECHNICAL DIAGRAMS:

see page 312

CE Ⓔx IECEx | 1 G Zone 0, 1 + 2 | 300 g | IP65 | +55°C -20°C | Up to 103 dB | 26

750 Ex Signal Horn

- Gas applications: Zone 1 and 2
- Fully encapsulated
- Silicone free

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

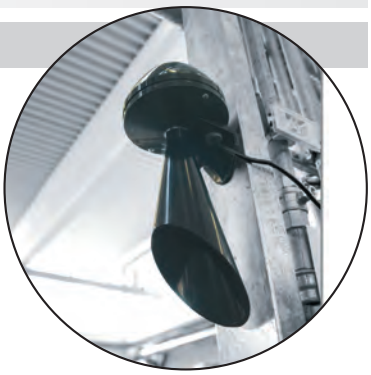
Dimensions (L x H x W):	148 mm x 350 mm x 152 mm
Housing:	PC/ABS-Blend
Connection:	Cable 3 m, 2 x 0.75 mm²
Fixing:	Bracket mounting, sound outlet facing downwards
Explosion protection	Ex II 2G Ex mb IIC T5 Gb
Approval:	BVS 03 ATEX E 118X

ORDER SPECIFICATIONS:

Voltage	24 V DC	24 V AC	42-48 V AC	115 V AC		230 V AC
Voltage range	21,6 V ... 26,4 V	21,6 V ... 26,4 V	37,8 V ... 52,8 V	102,5 V ... 126,5 V (50 Hz)	108 V ... 131 V (60 Hz)	208 V ... 250 V (50 Hz)
Current consumpt.	350 mA	450 mA	220 mA	205 mA		70 mA
	750 000 55	**750 000 65**	**750 000 66**	**750 000 67**		**750 000 68**

TECHNICAL DIAGRAMS:

see page 314



The Ex Signal Horn 750 warns of imminent danger in the chemical industry and paint shops

CE Ex | 2 G Zone 1 + 2 | 1,3 kg | IP55 | +50°C -40°C | 105 dB

WERMA SIGNALTECHNIK

761 Ex Signal Horn

- Gas applications: Zone 1 and 2
- Dust applications: Zone 21 and 22
- IP 65 for indoor and outdoor applications
- Flexible mounting possibilities
- Connection area "e" for simple connection

TECHNICAL SPECIFICATIONS:

Play Sound www.werma.com

Dimensions (L x H x W):	178 mm x 104 mm x 207 mm
Fixing dimensions (L x H):	130 mm x 160 mm
Housing:	PC
Connection:	CAGE CLAMP® max. 2.5 mm^2
Cable entry:	Cable gland M16 x 1.5 mm Cable diameter 6.5-9.5 mm
Fixing:	Wall mounting, base mounting
Explosion protection:	Ex II 2G Ex e mb IIC T5 Gb Ex II 2D Ex tb IIIC T 70°C Db
Approval:	BVS 03 ATEX E 118X

ORDER SPECIFICATIONS:

Voltage	24 V DC	24 V AC	48 V AC	115 V AC		230 V AC
Voltage range	21.6 V ... 26.4 V	21.6 V ... 26.4 V	37.8 V ... 52.8 V	102.5 V ... 126.5 V (50 Hz)	108 V ... 131 V (60 Hz)	208 V ... 250 V (50 Hz)
Current consumpt.	350 mA	450 mA	220 mA	205 mA		70 mA
	761 000 55	**761 000 65**	**761 000 66**	**761 000 67**		**761 000 68**

TECHNICAL DIAGRAMS:

see page 314

The Ex signal horn 761 can be used for a range of applications in gas and dust explosion endangered areas, e.g. in joinery and wood processing plants

CE Ex | 2 G Zone 1 + 2 | 2 D Zone 21 + 22 | 1,3 kg | IP65 | +50°C -40°C | max. 105 dB


Datum
Name
Werkstoff
K10/246/246/27/1730
HASCO
Aufspannplatte AS
0778.0
Maße ohne Toleranzangabe:
Bohrungskoordinaten: ±0.01
Stiftbohrungskoordinaten: ±0.01
WERMA
SIGNALTECH
6 800 201 51
Ersatz für –
Ersetzt durch –

Our Technical Diagrams

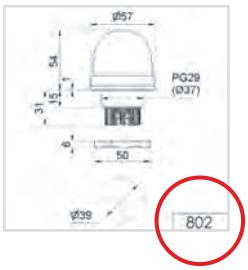
On the following pages you will find the technical diagrams for our products.
The dimensions are always stated in millimetres. Please note that the diagrams are not to scale.

Reference on the product page

In order to be able to find the technical diagrams for your desired product even more quickly, there is a reference on the relevant product page stating the page number for the corresponding diagram located in the "Technical diagrams" section

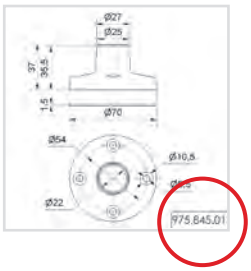
Layout of the technical diagrams

The technical diagrams are in numerical order of the first three digits of the article number.



Technical diagrams for accessories

The technical diagrams for our extensive accessories are in numerical order of the full article number (from page 294 onwards).

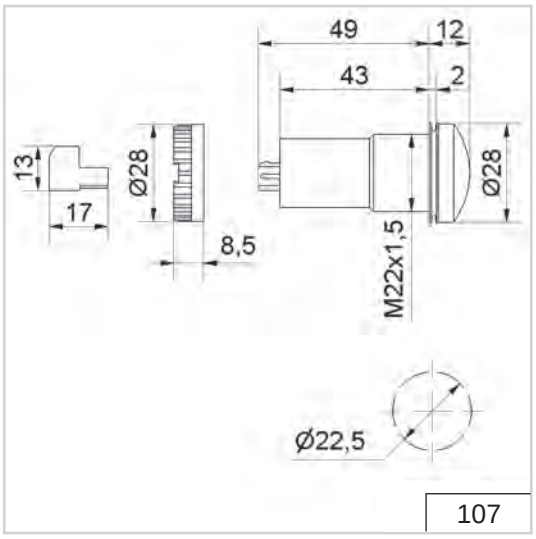


Digital data

You are welcome to request the technical diagrams in digital form.
The relevant 3D models, instruction leaflets and connection diagrams can be obtained from us or downloaded from our homepage at any time.

Select the required product or search with the aid of the part number, go to "downloads" and click on "drawing" and save the file.

Technical Diagrams



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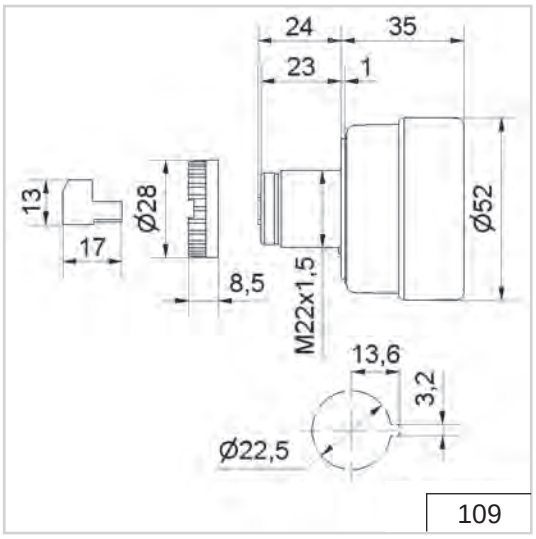

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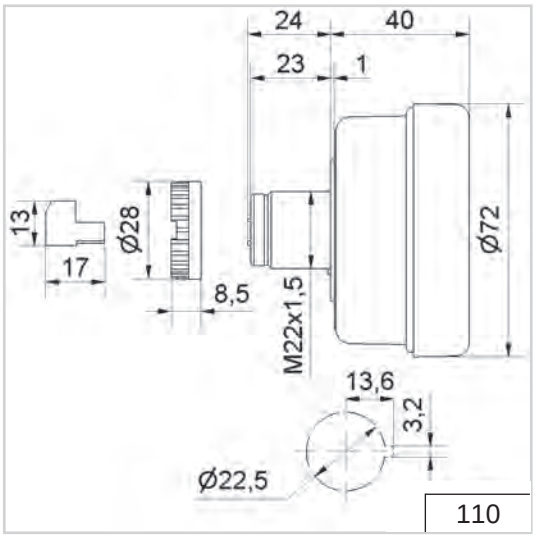

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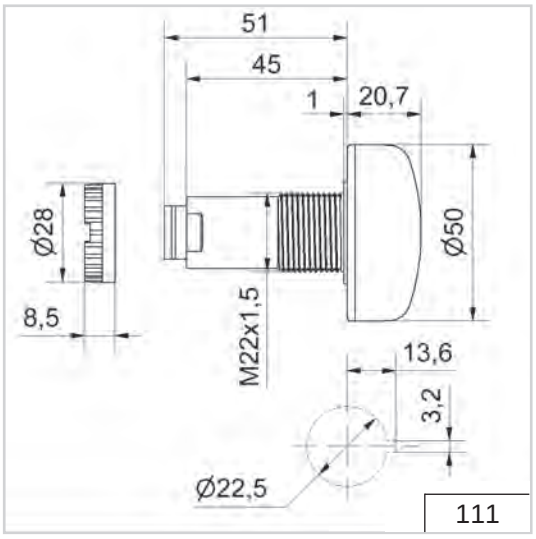

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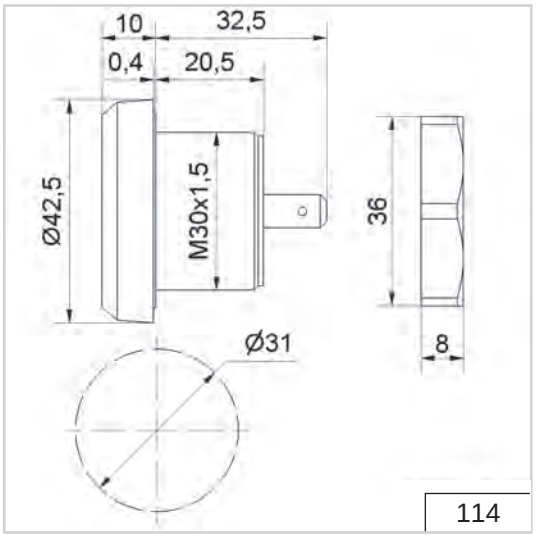

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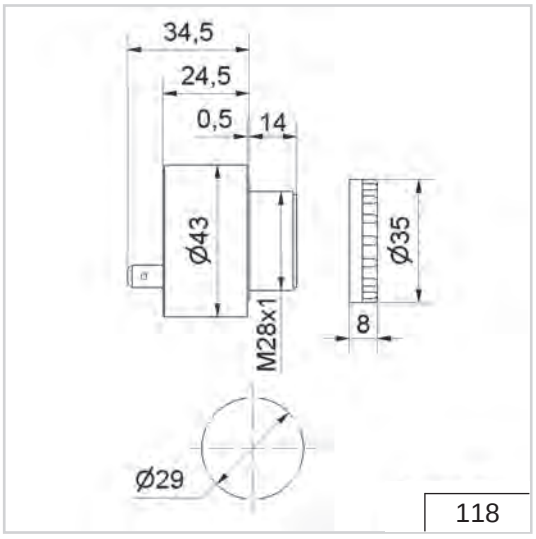

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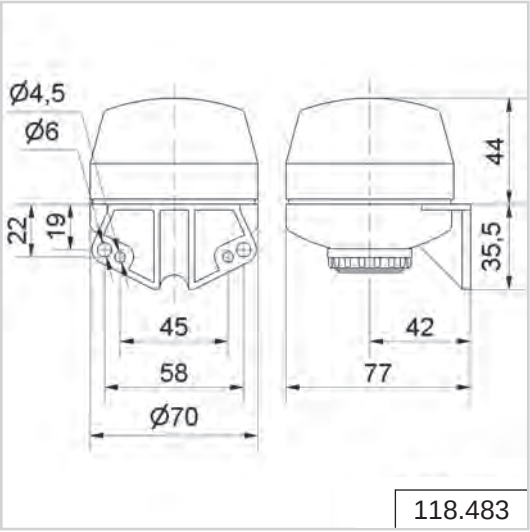

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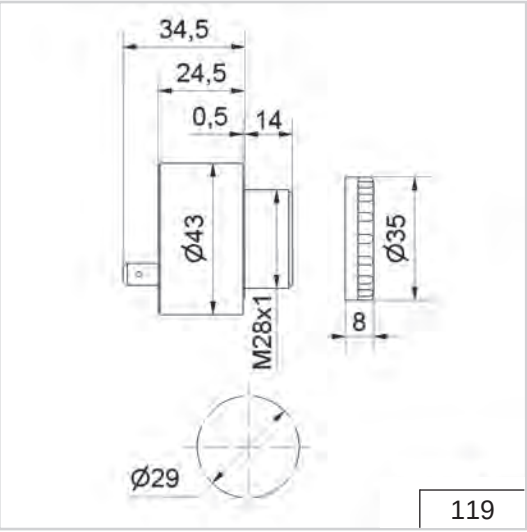

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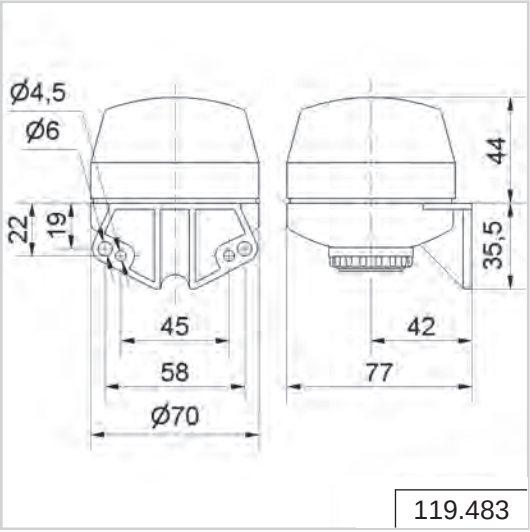

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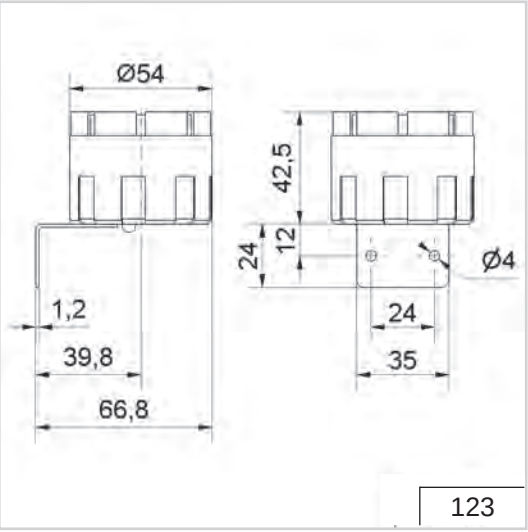

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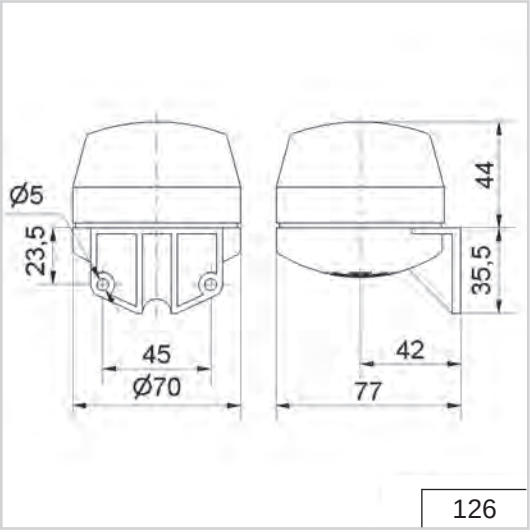

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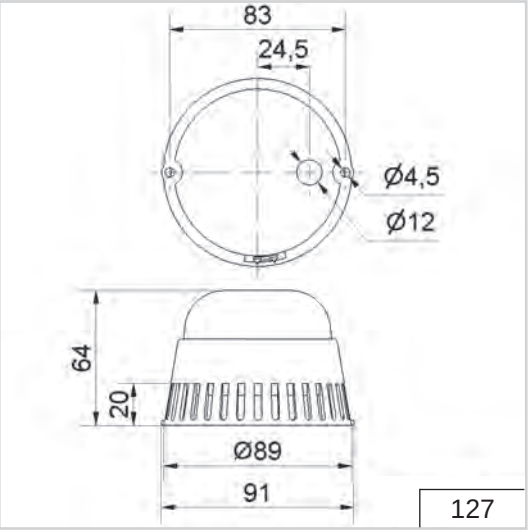

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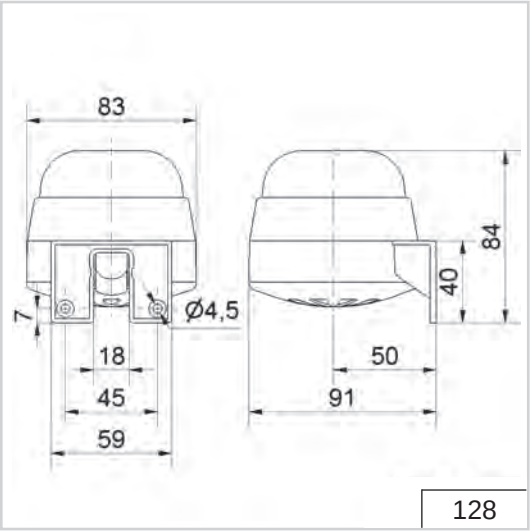
Technical Diagrams



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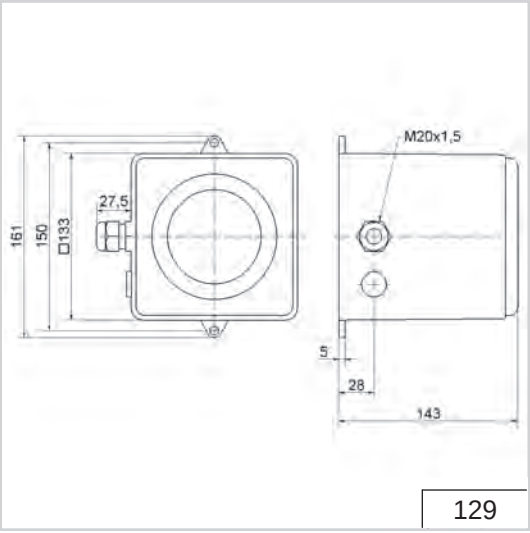

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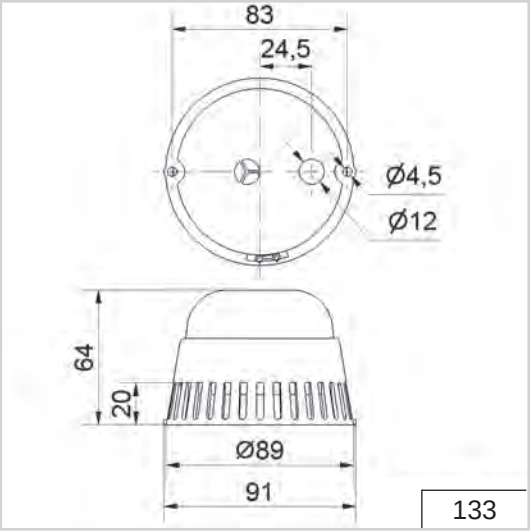

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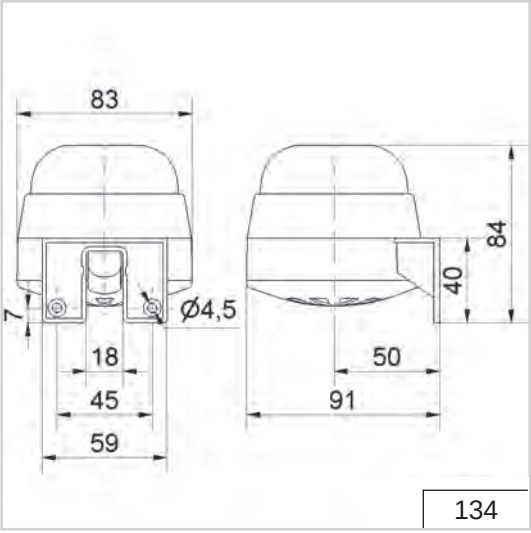

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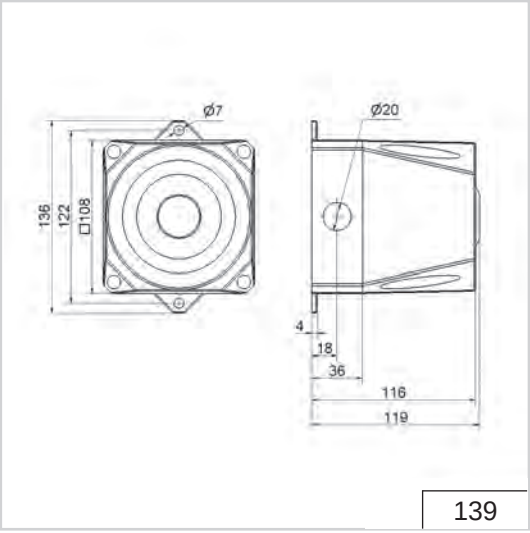

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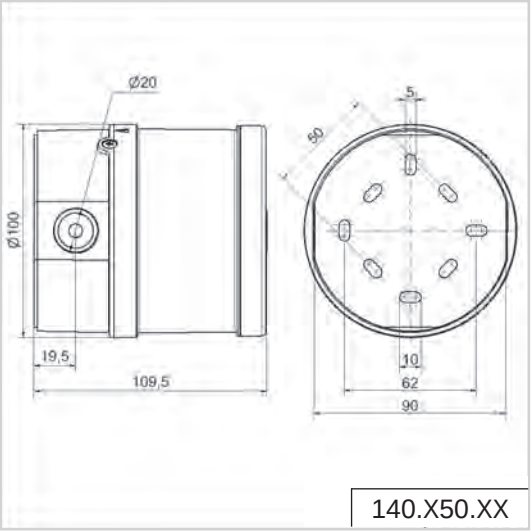

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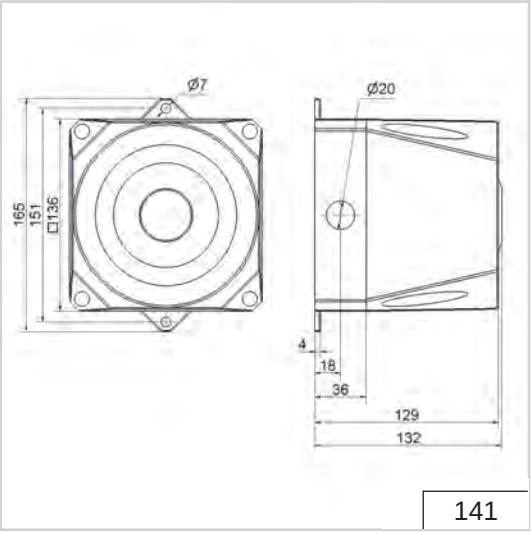

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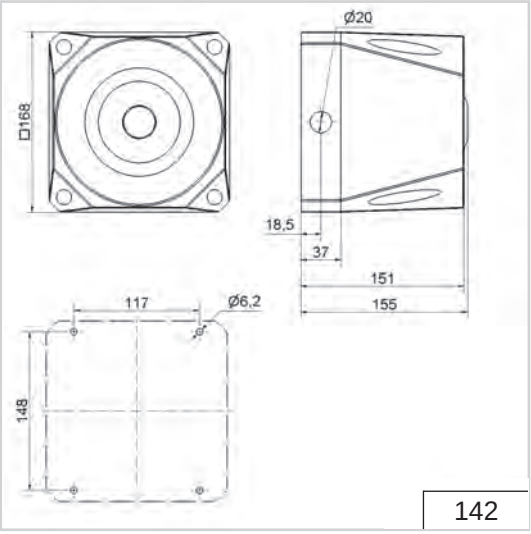

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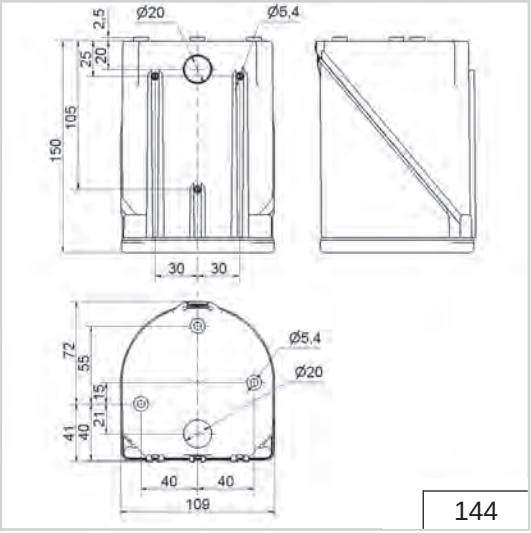

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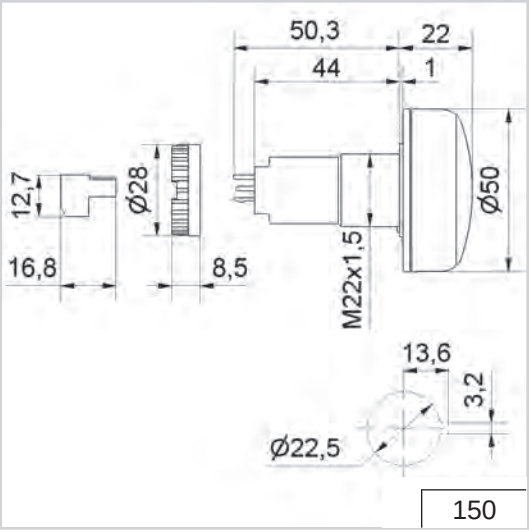

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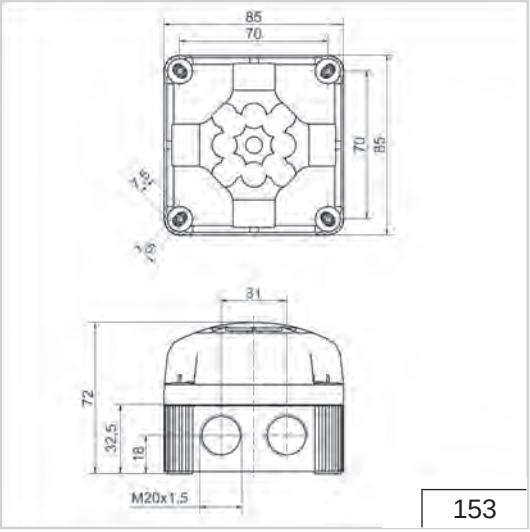

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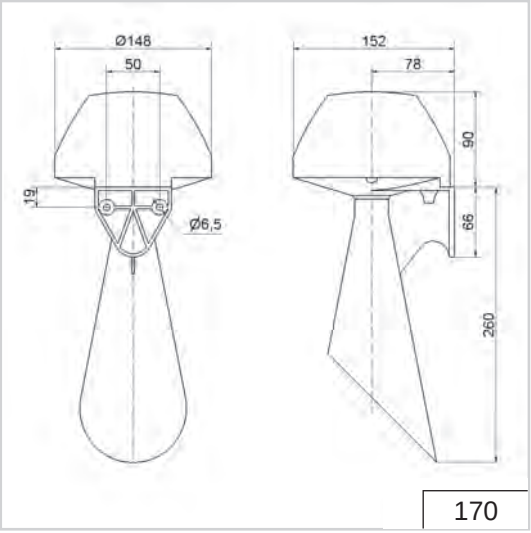

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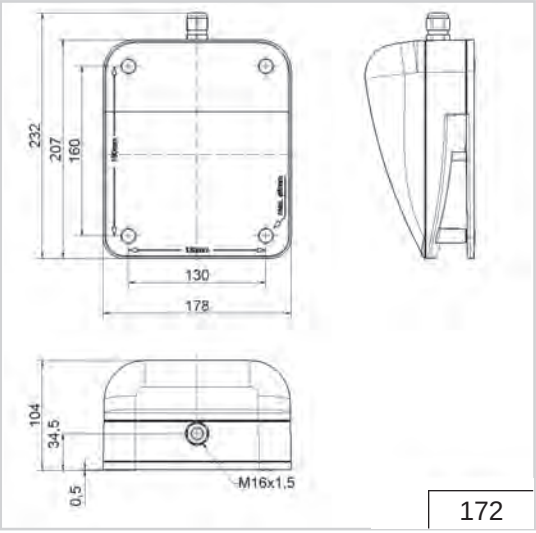
Technical Diagrams



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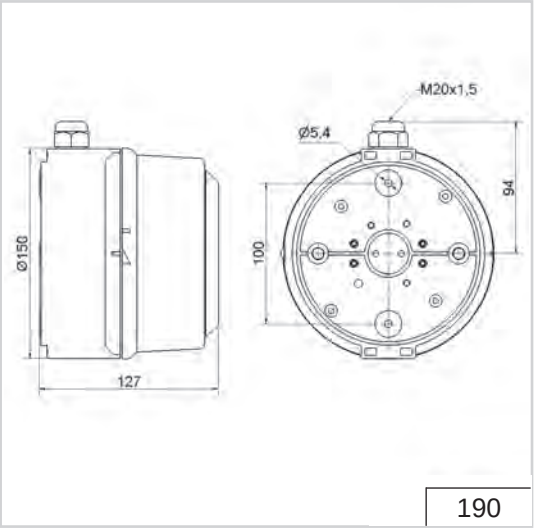

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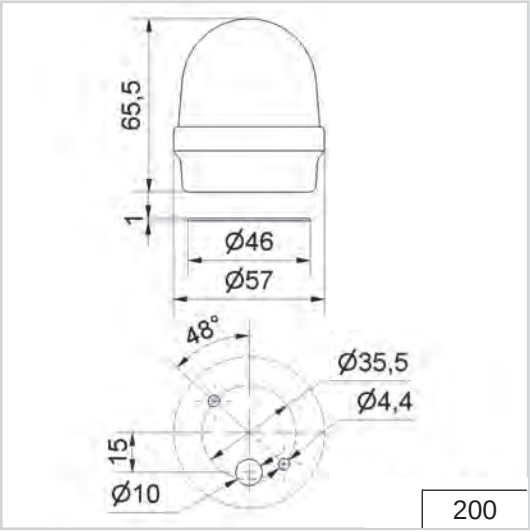

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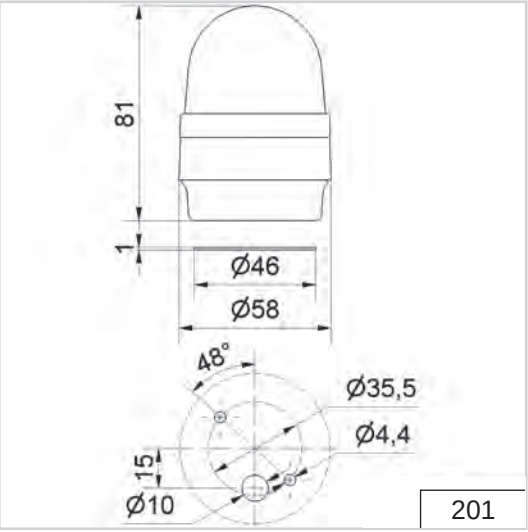

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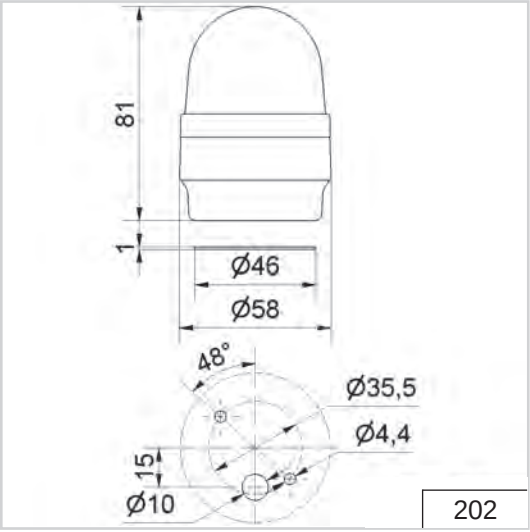

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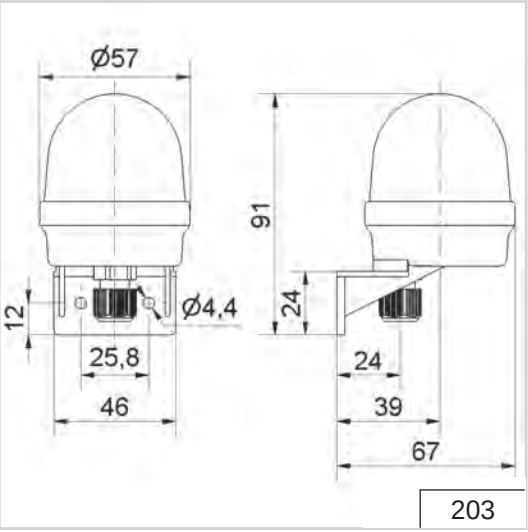

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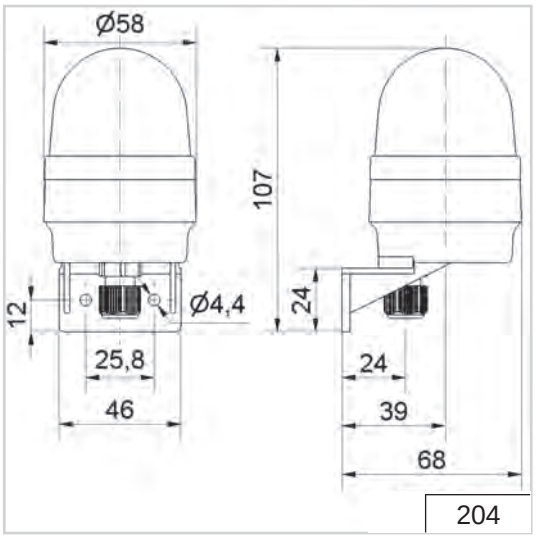

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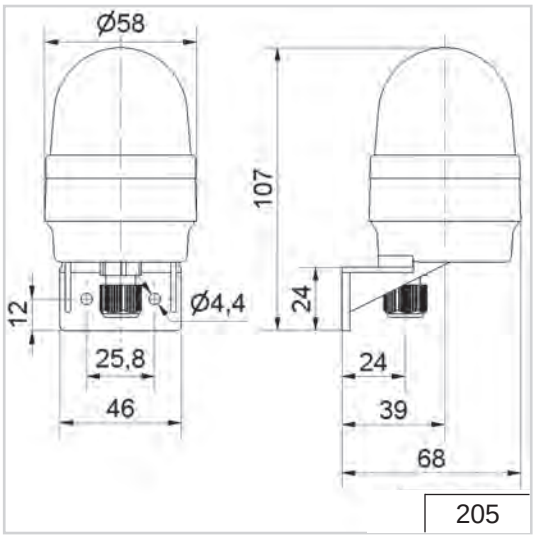

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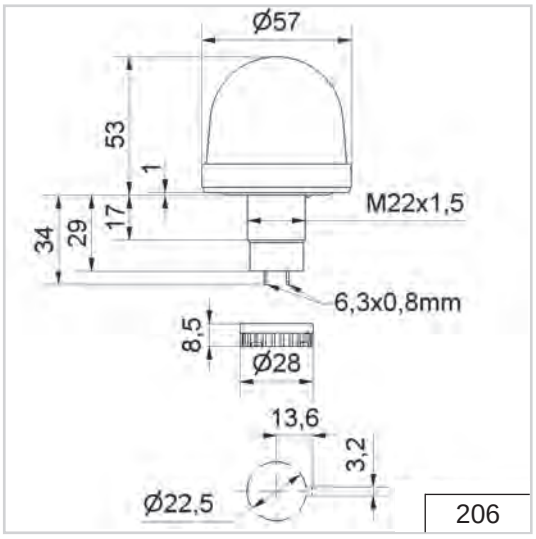

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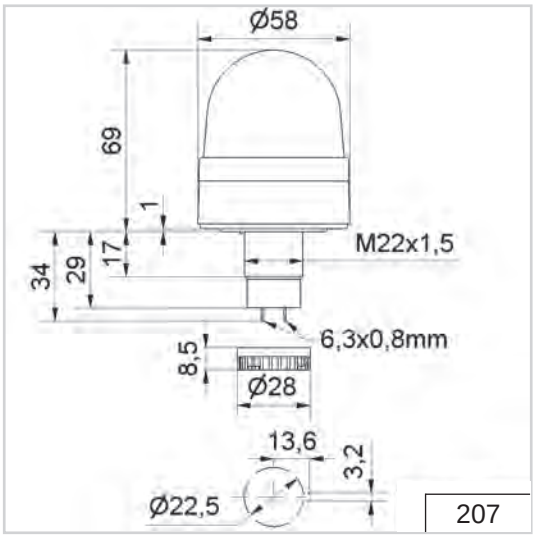

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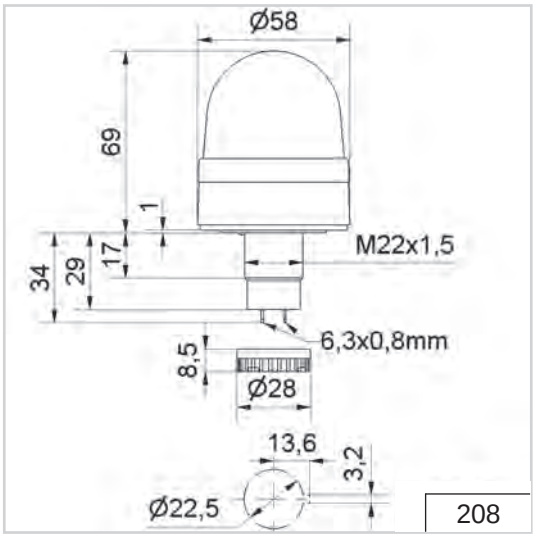

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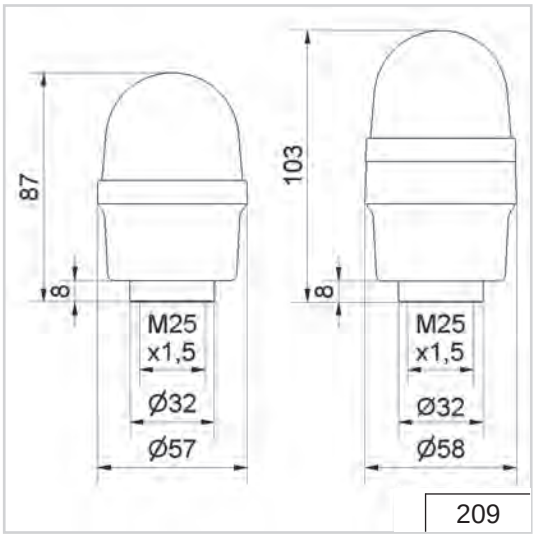

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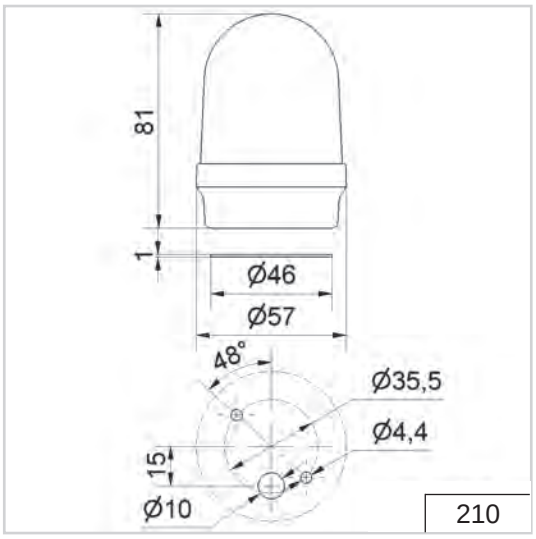
Technical Diagrams



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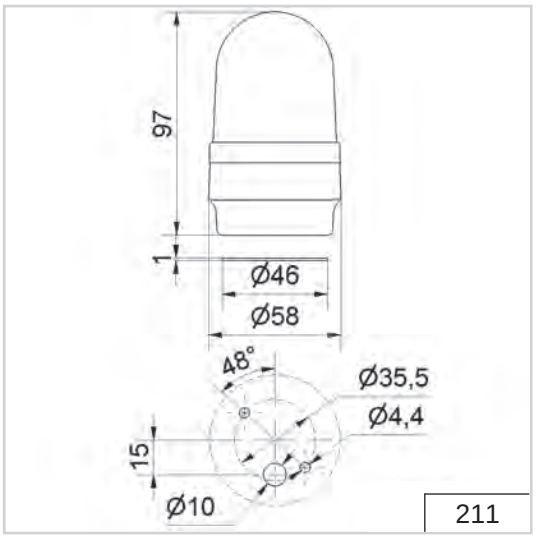

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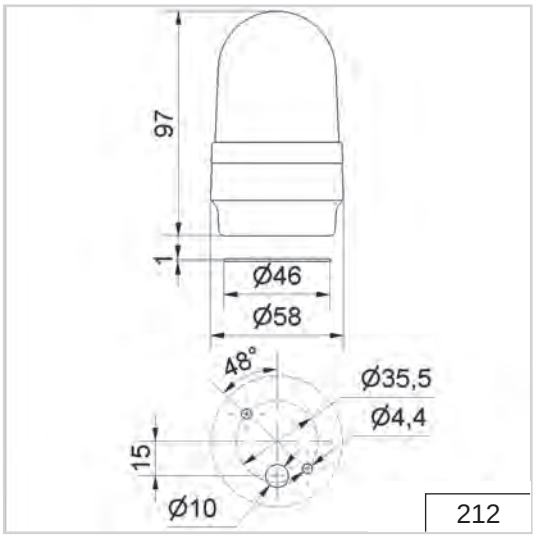

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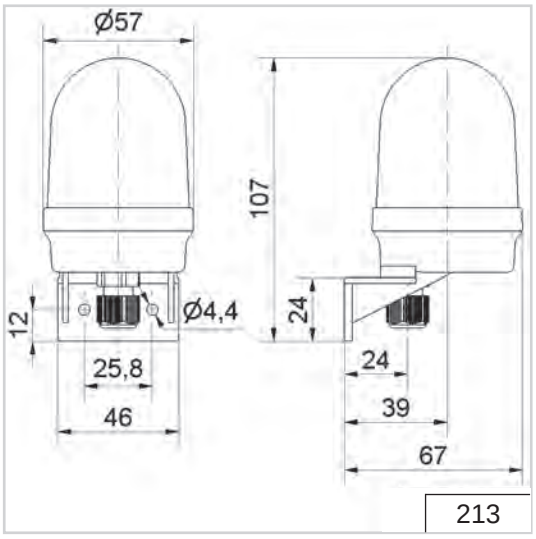

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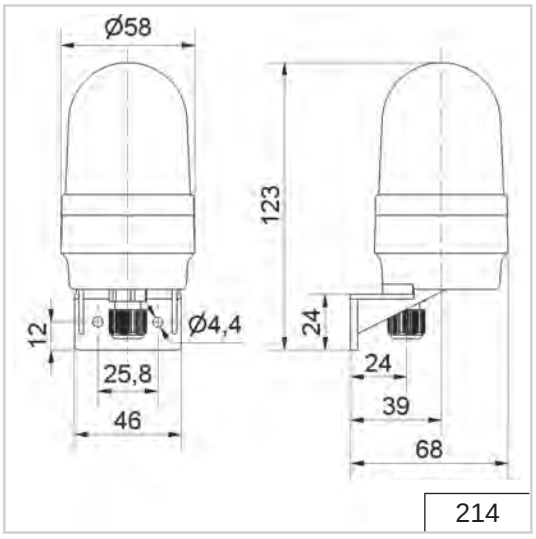

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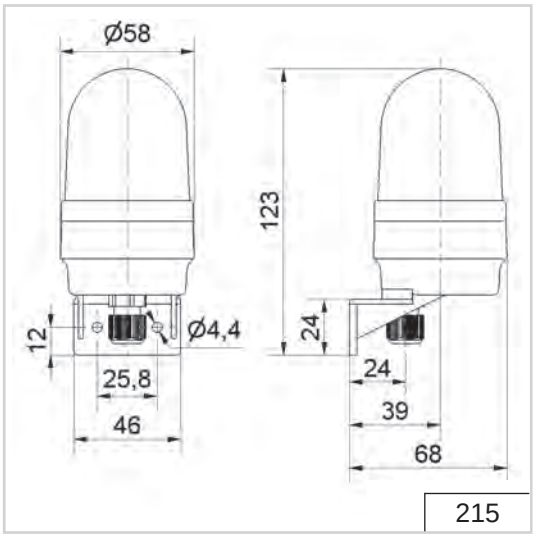

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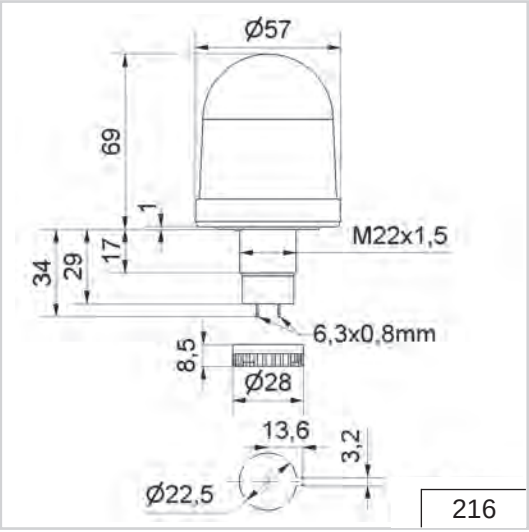

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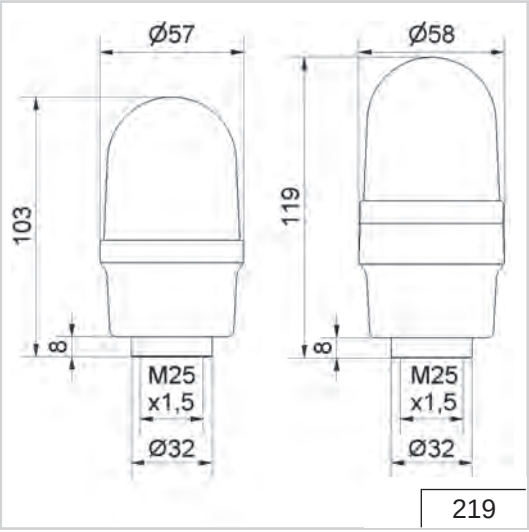

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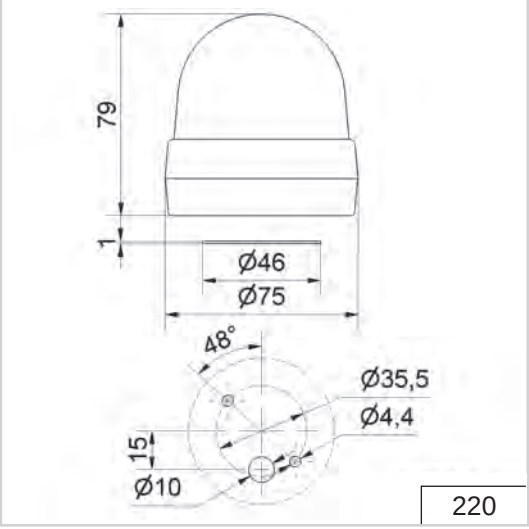

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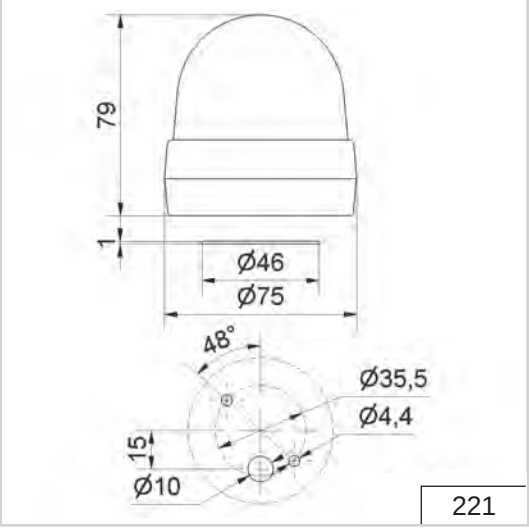

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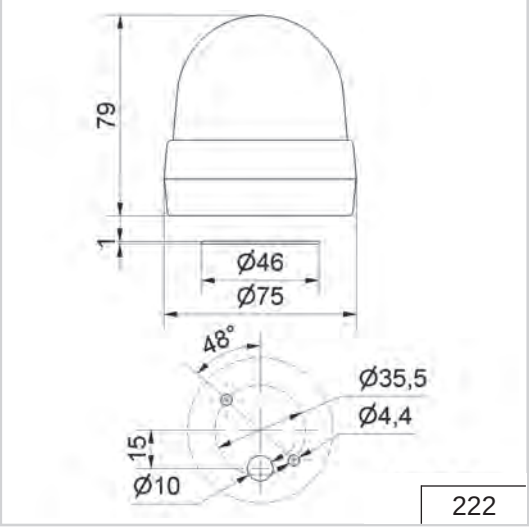

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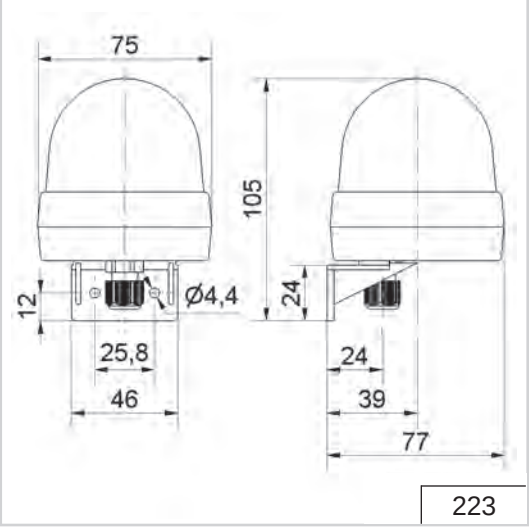

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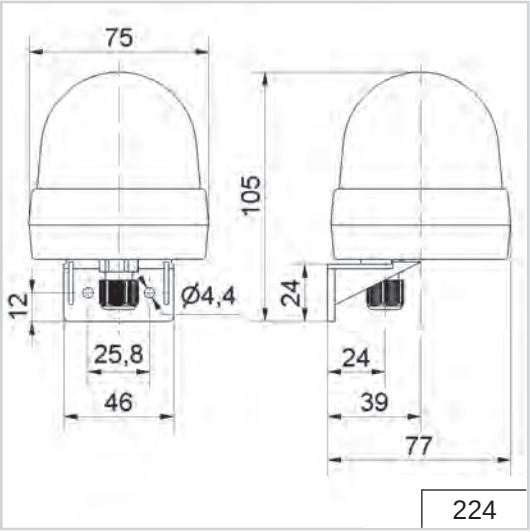
Technical Diagrams



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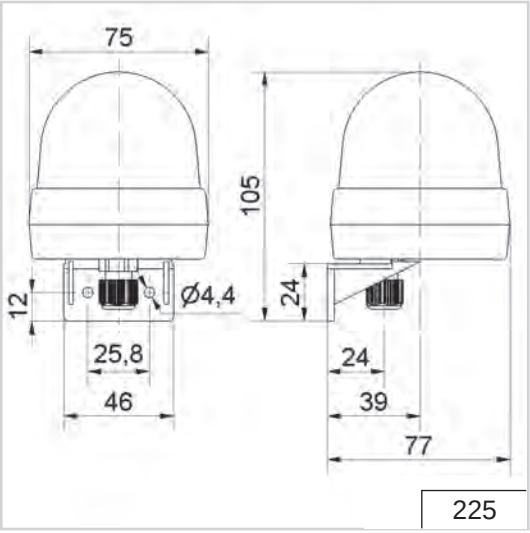

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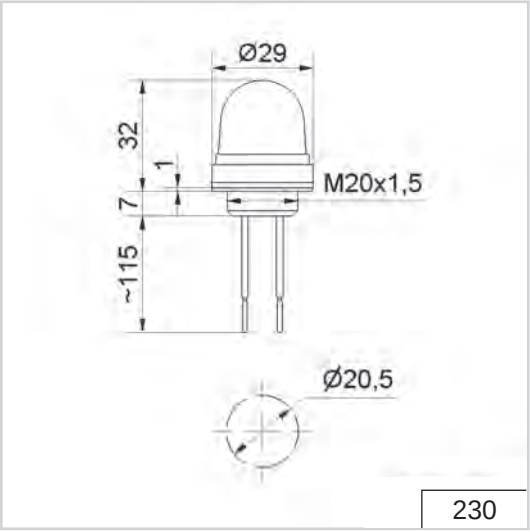

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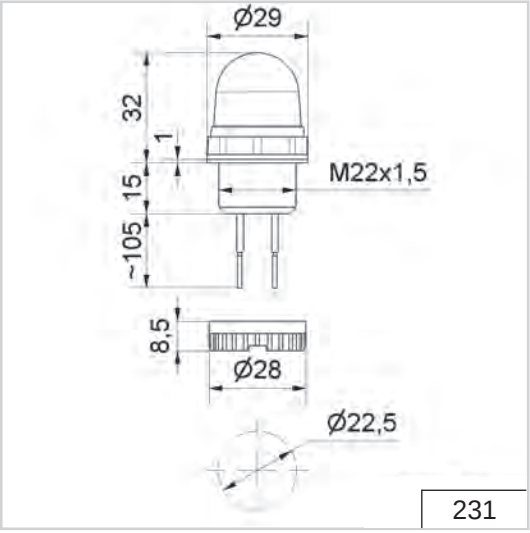

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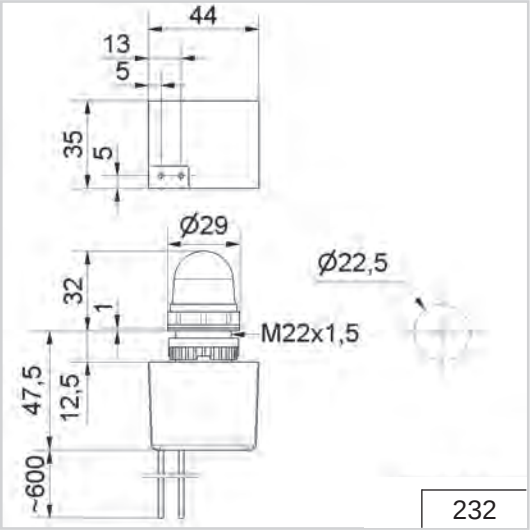

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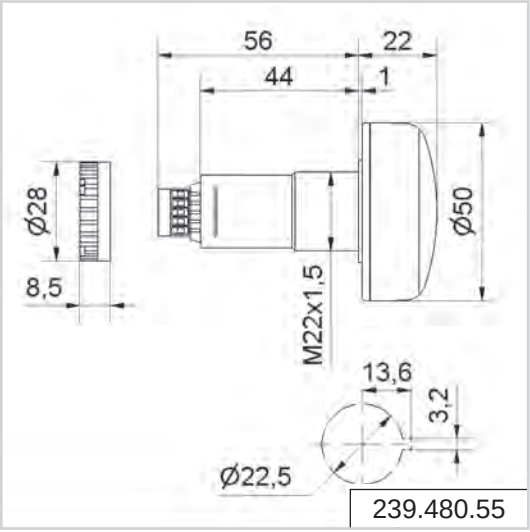

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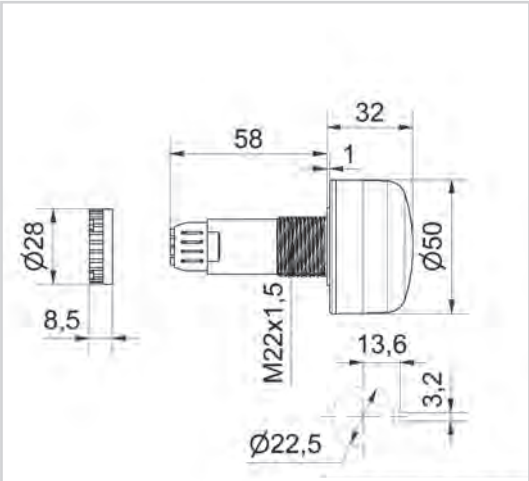

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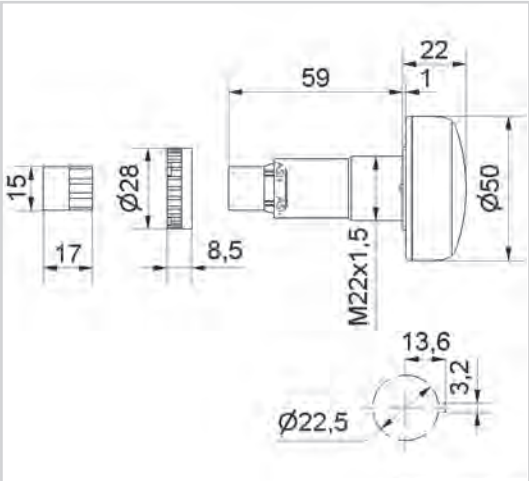

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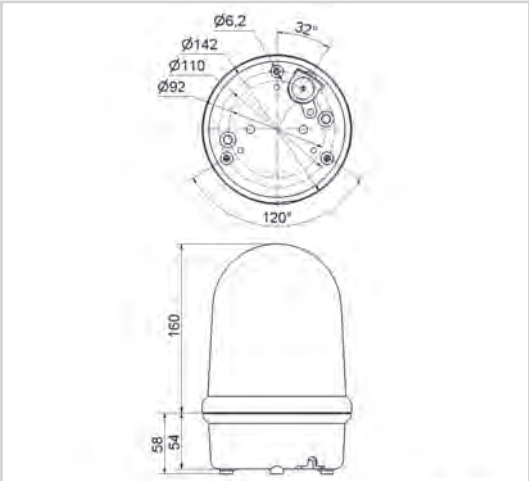

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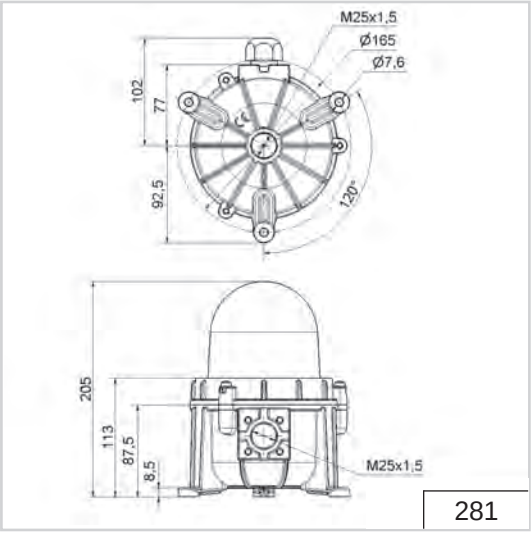

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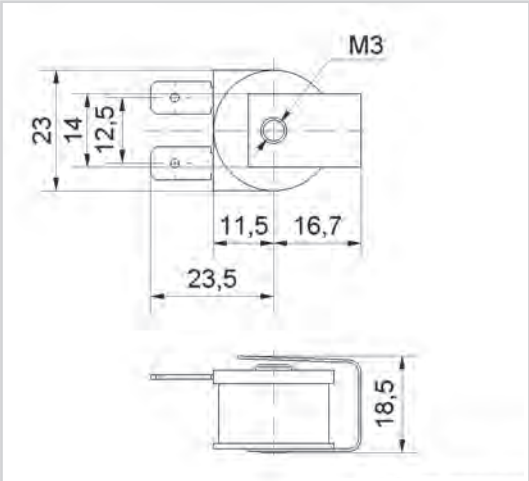

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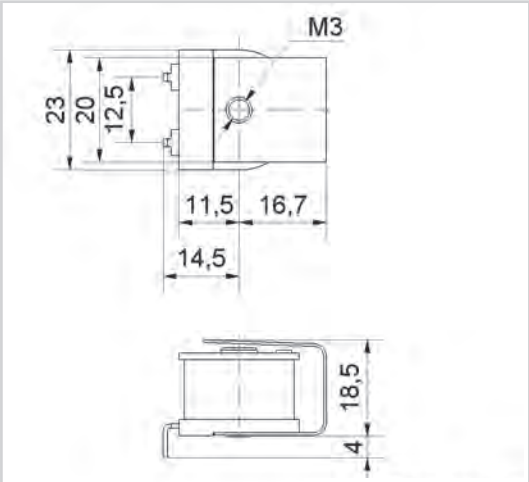

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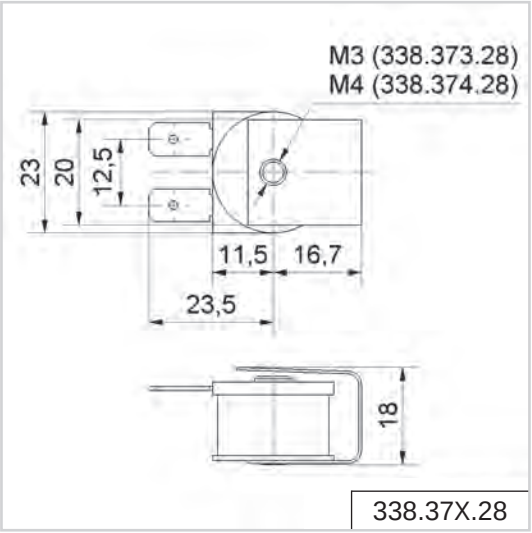
Technical Diagrams



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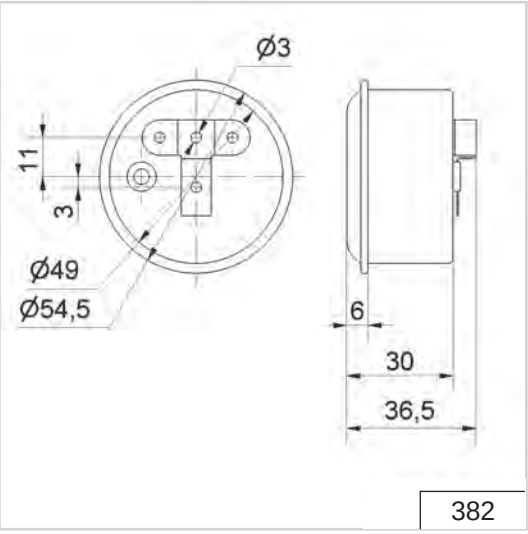

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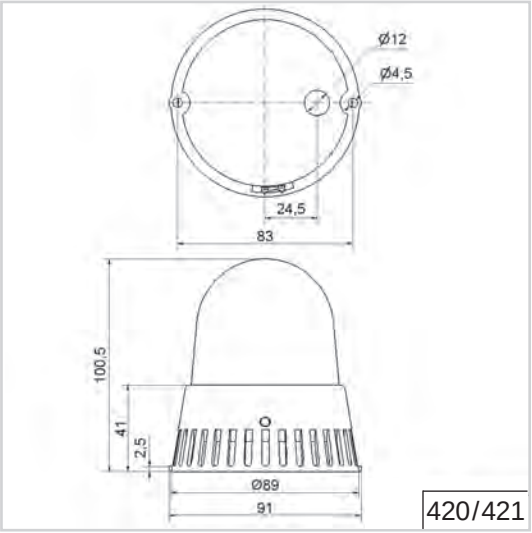

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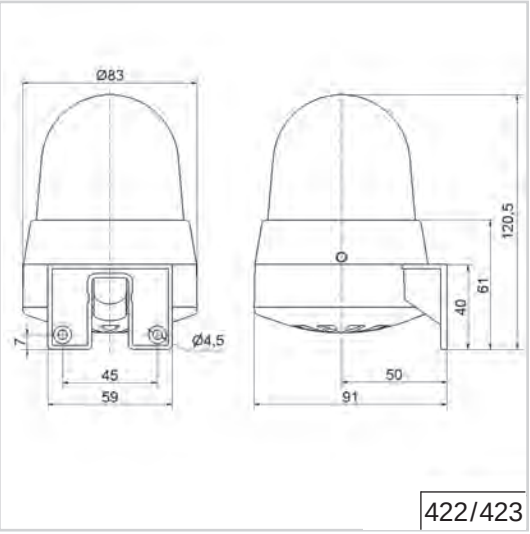

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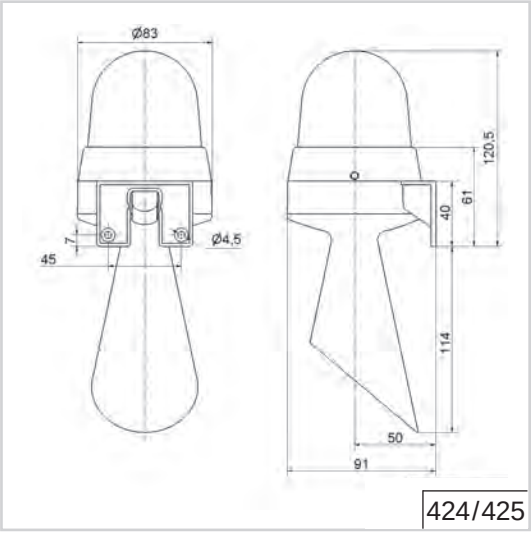

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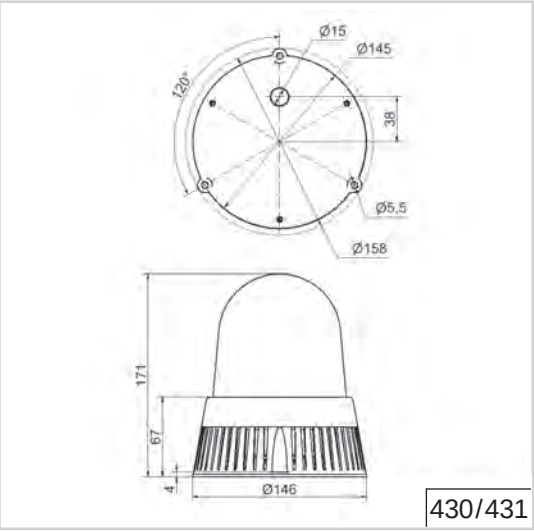

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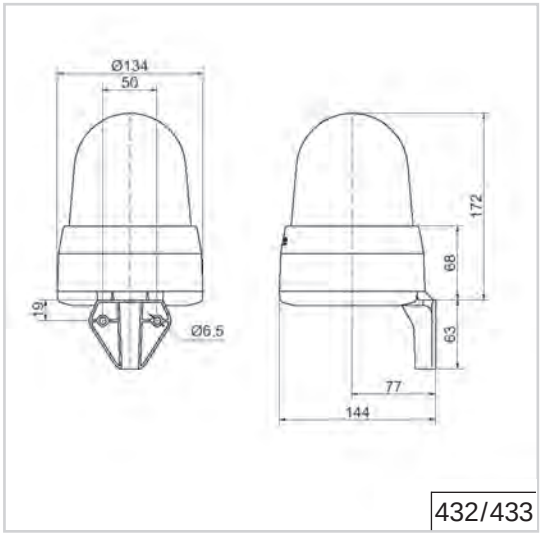

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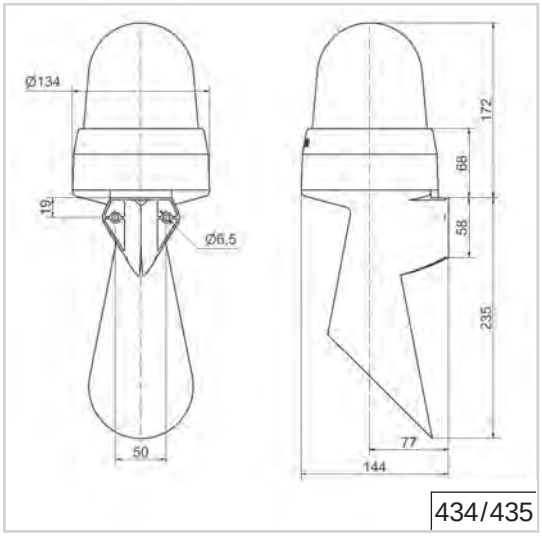

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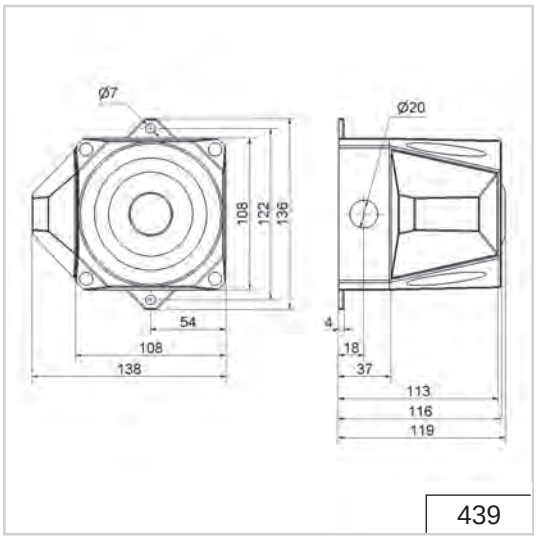

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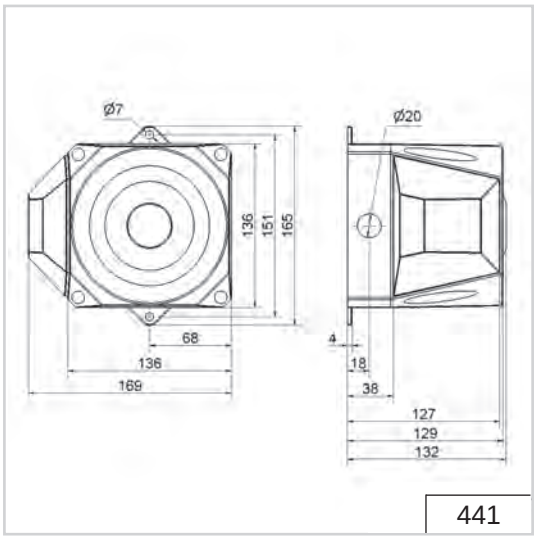

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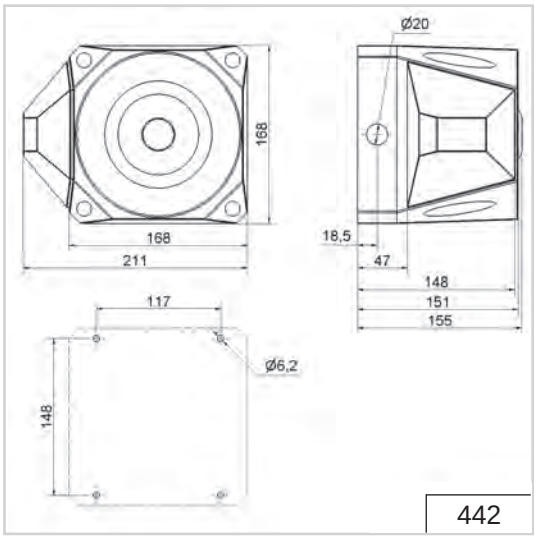

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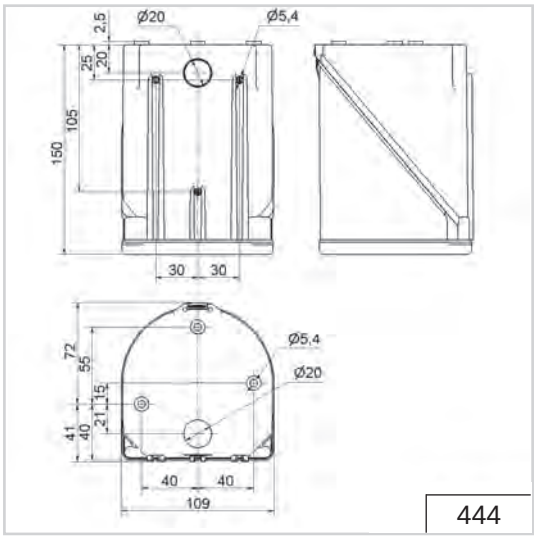

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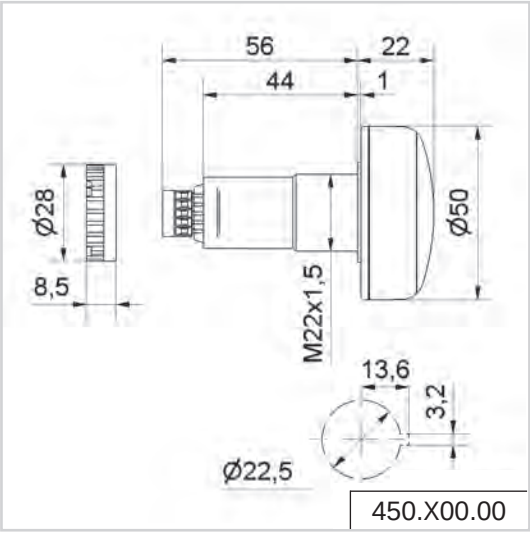
Technical Diagrams



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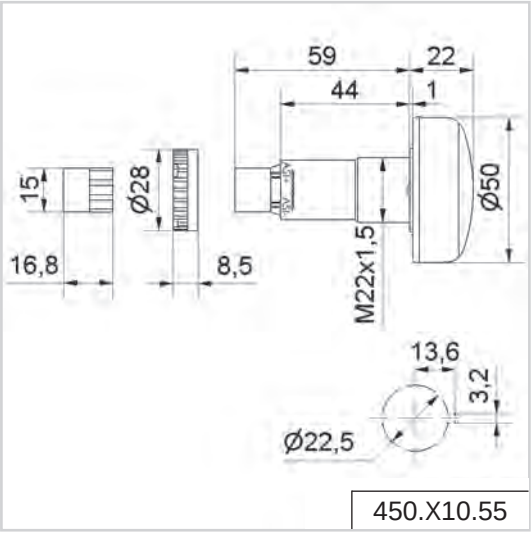

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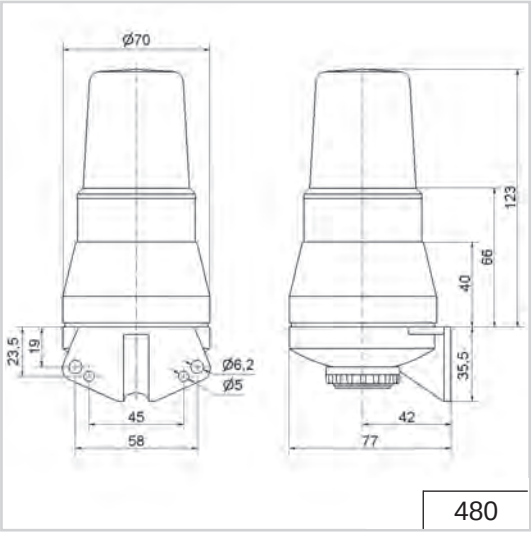

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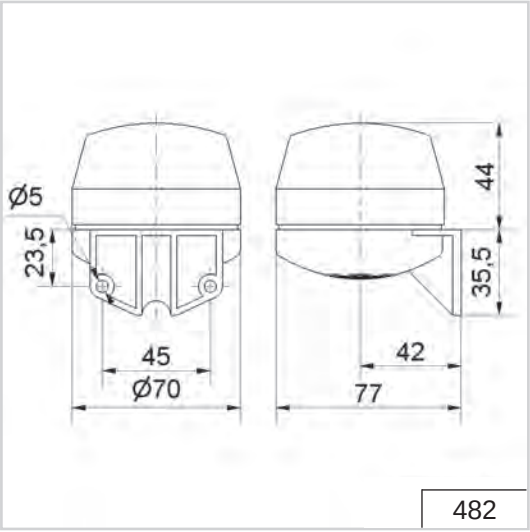

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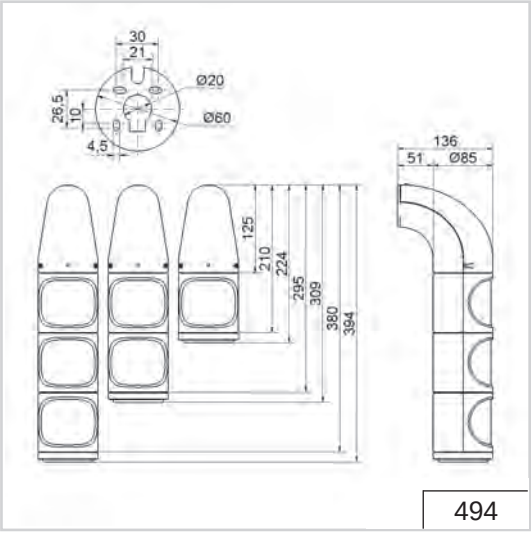

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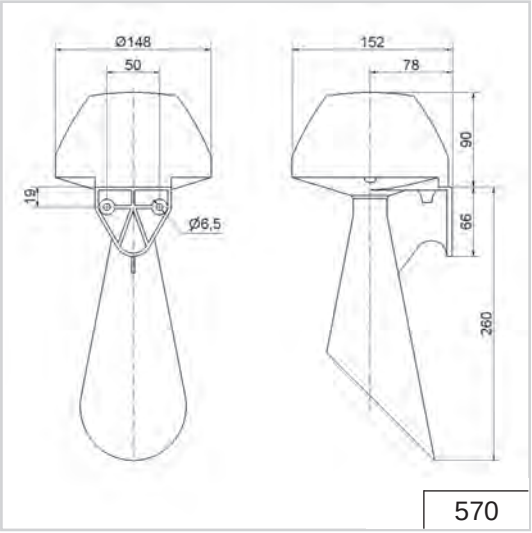

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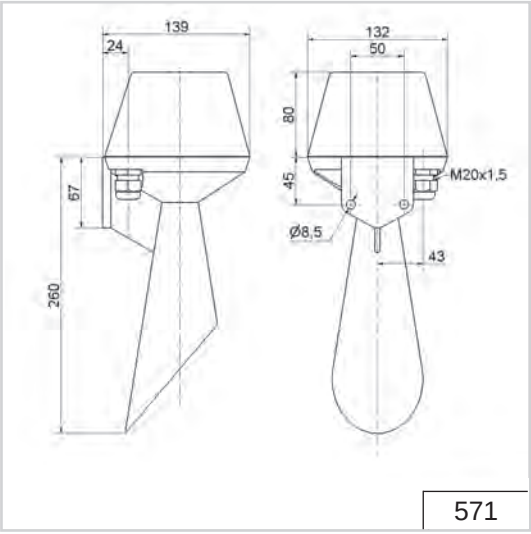

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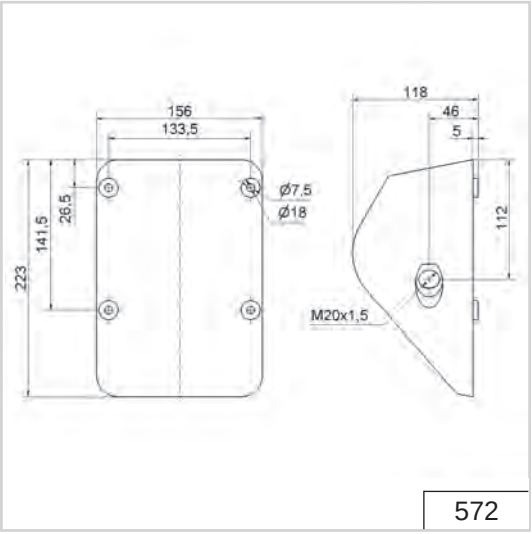

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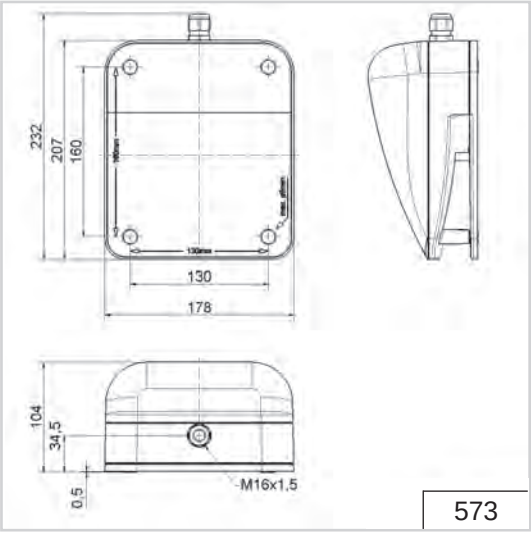

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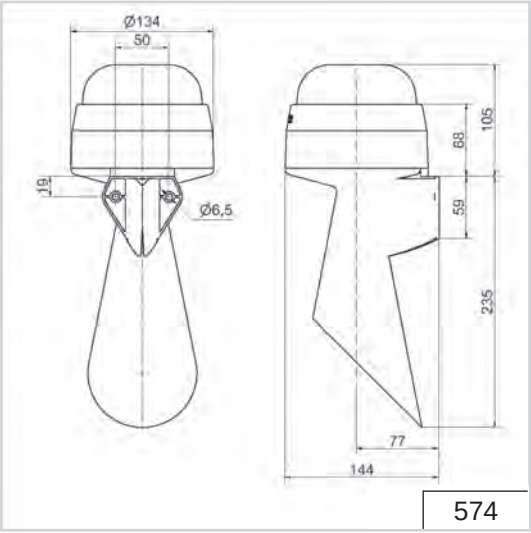

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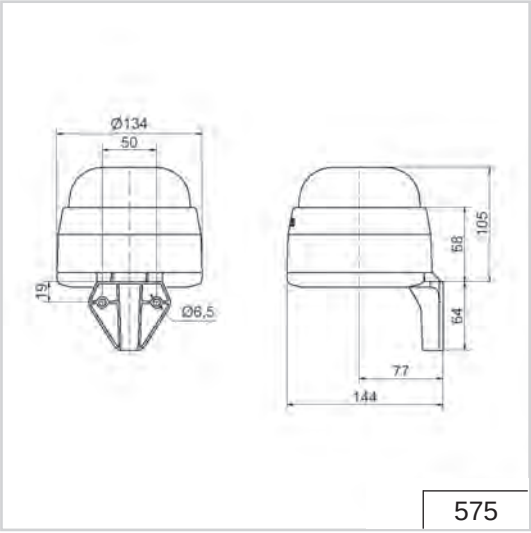

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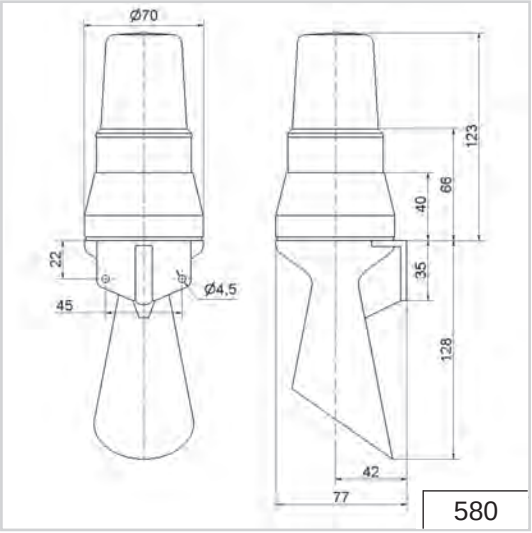

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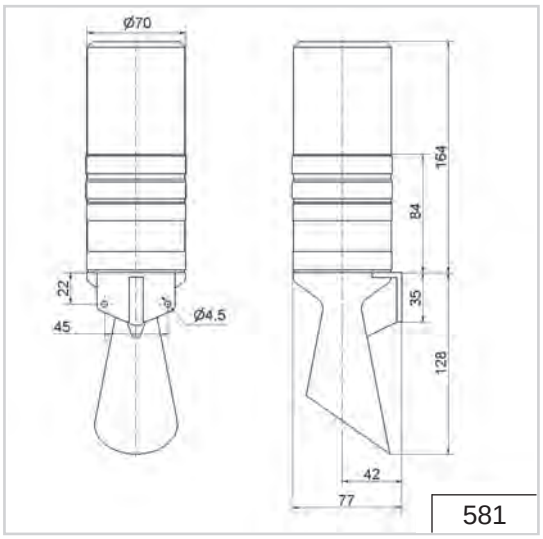
Technical Diagrams



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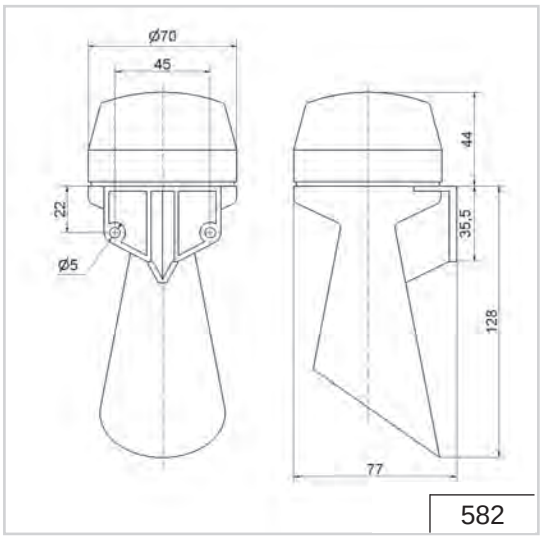

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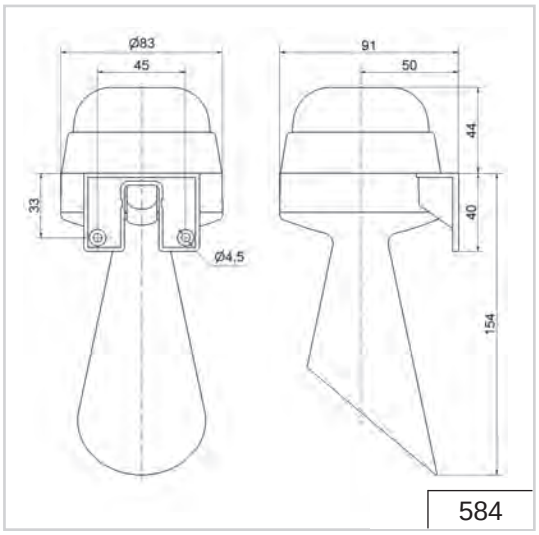

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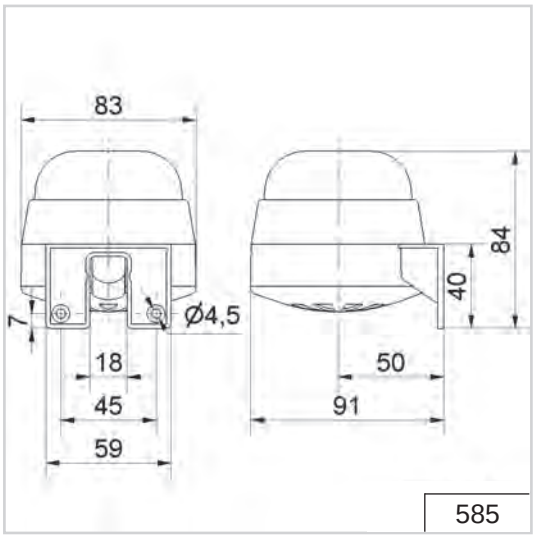

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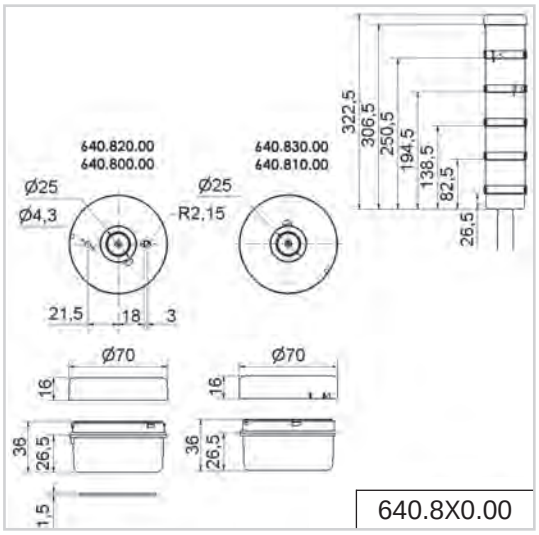

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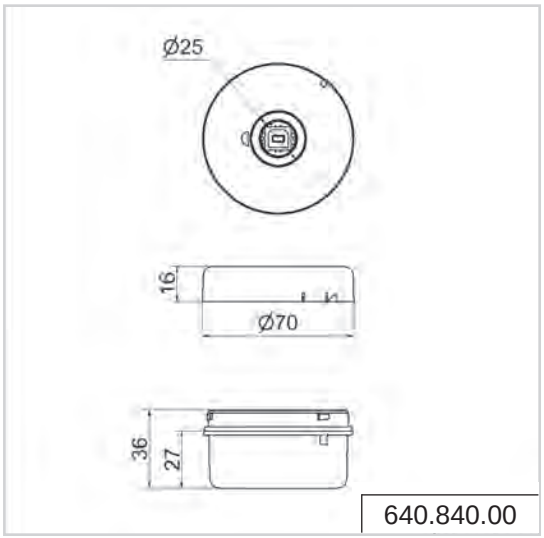

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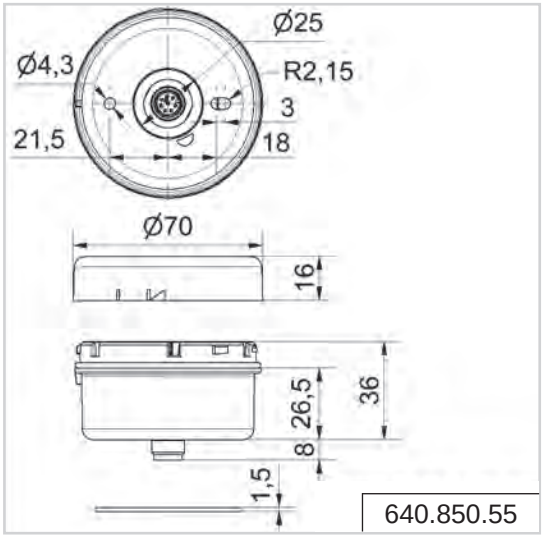

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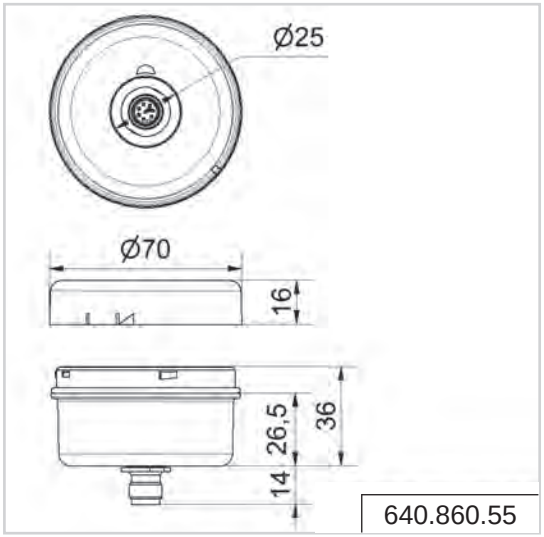

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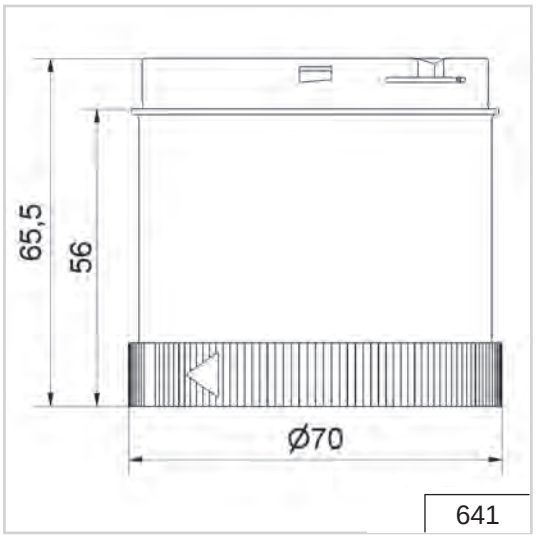

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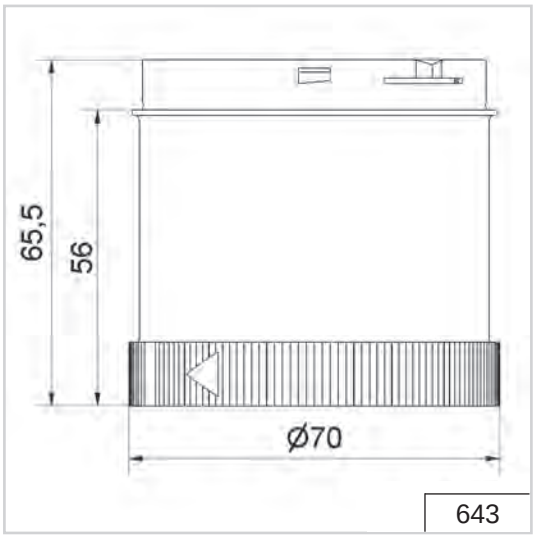

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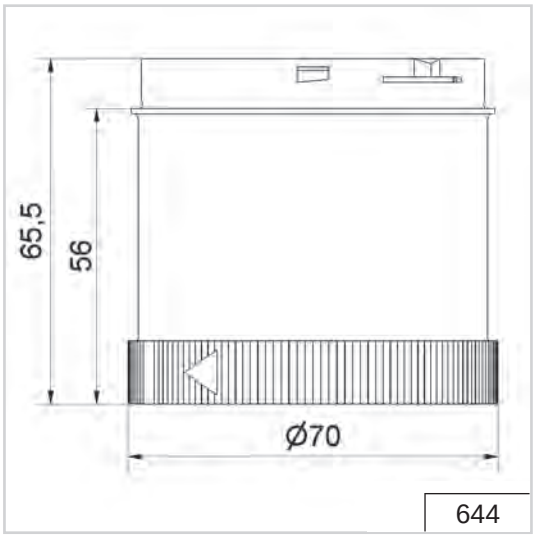

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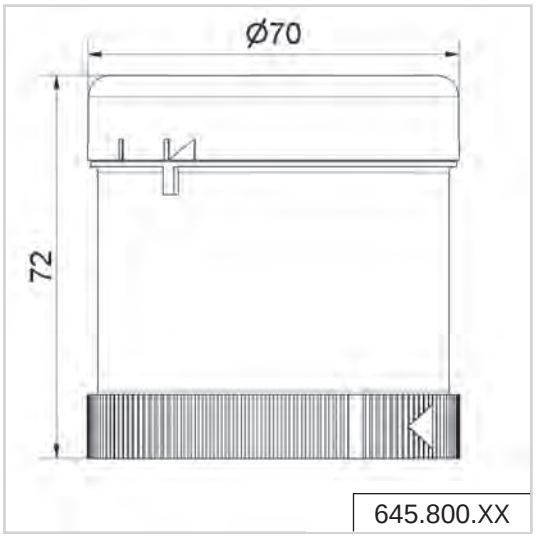

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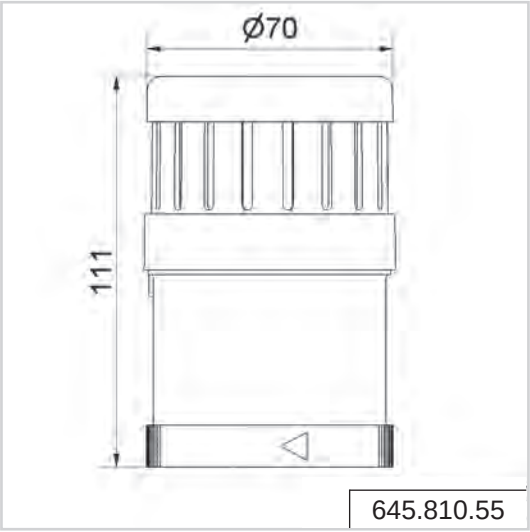
ADDITIONAL INFORMATION:

You are welcome to request the technical diagrams in digital form. The relevant 3D models, instruction leaflets and connection diagrams can be obtained from us or downloaded from our homepage at any time.

Technical Diagrams



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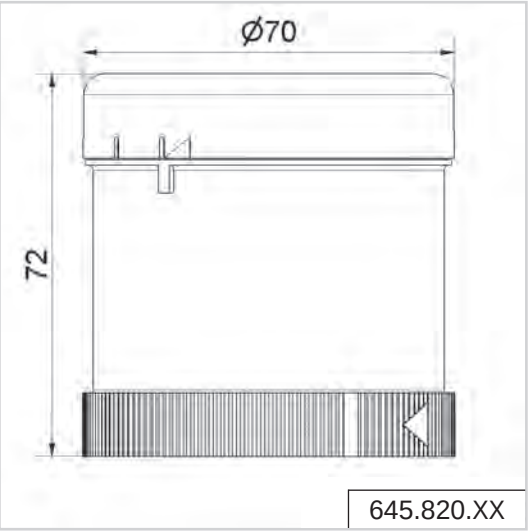

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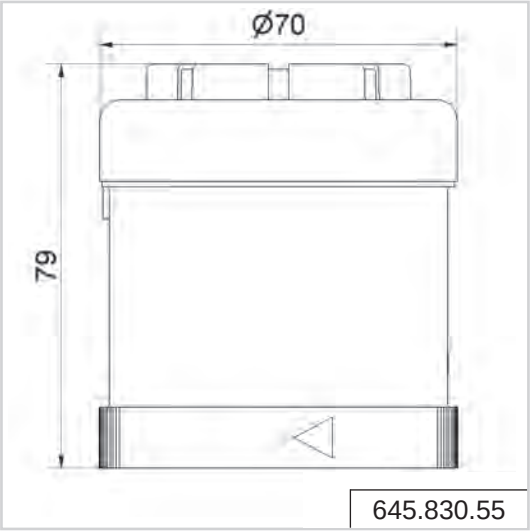

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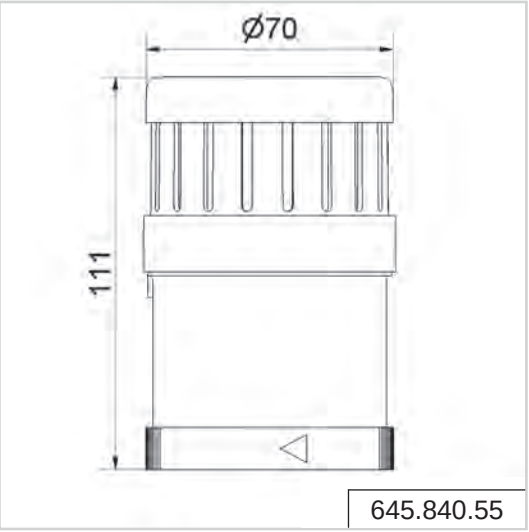

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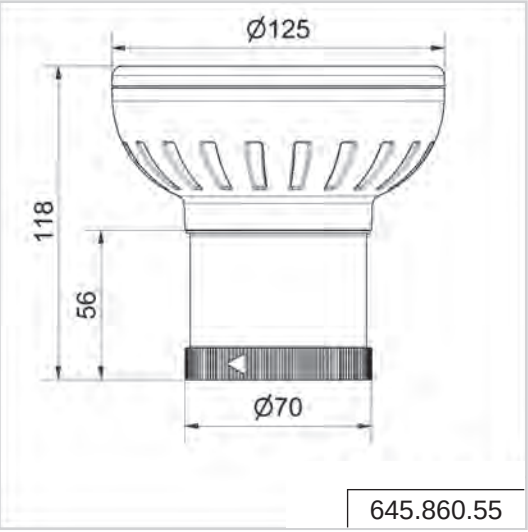

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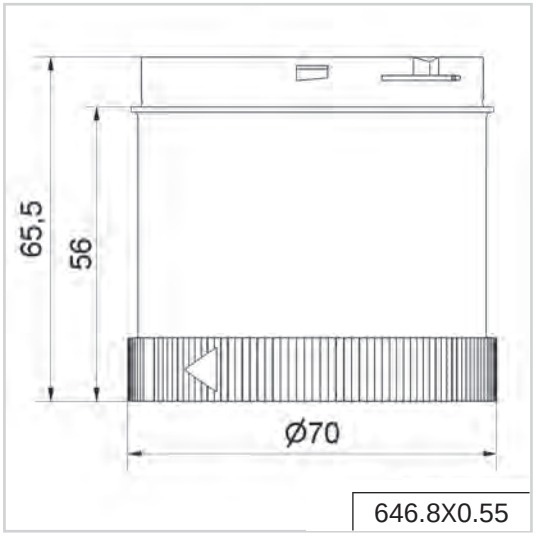

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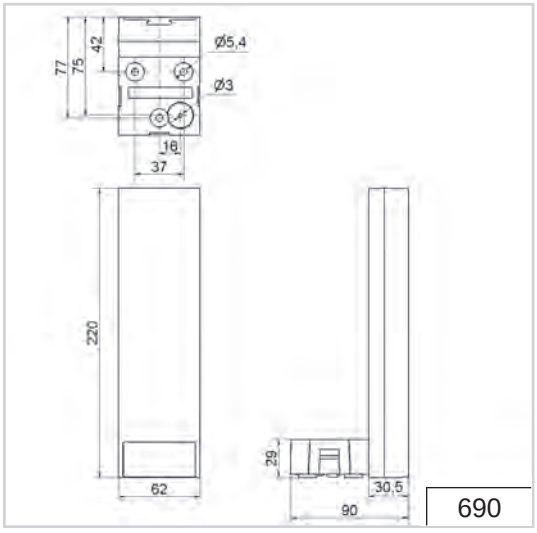

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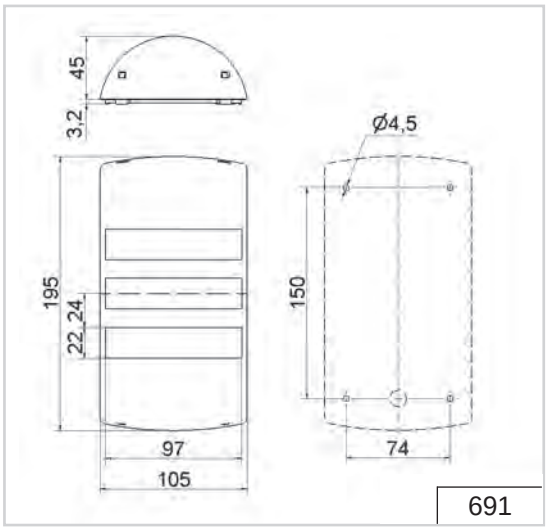

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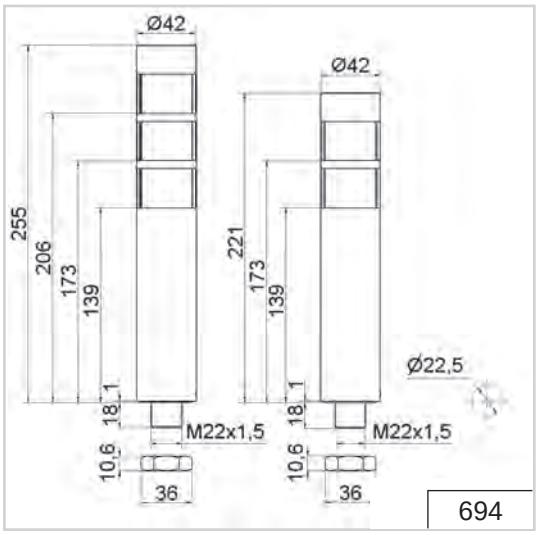

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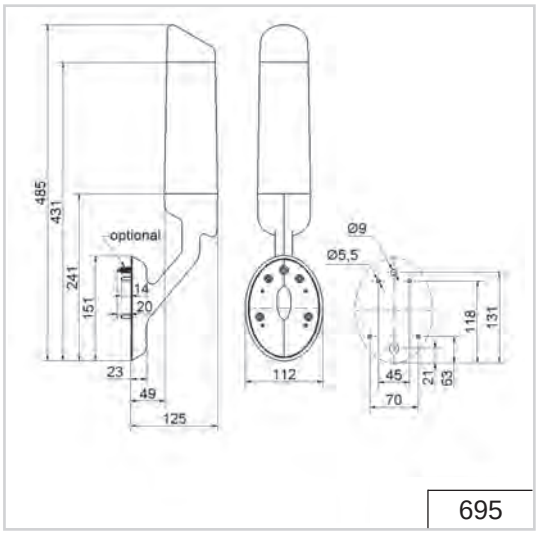

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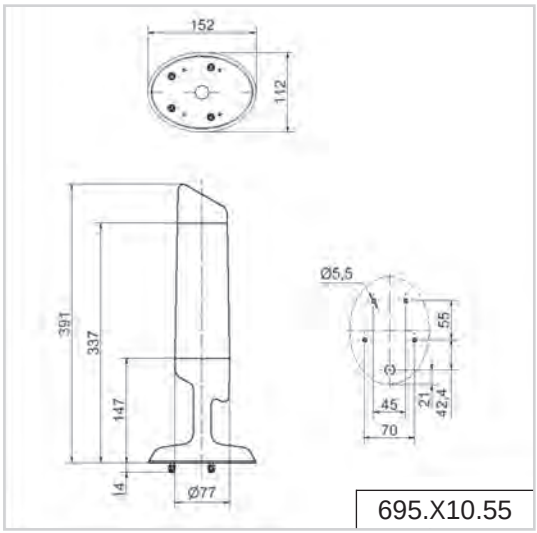

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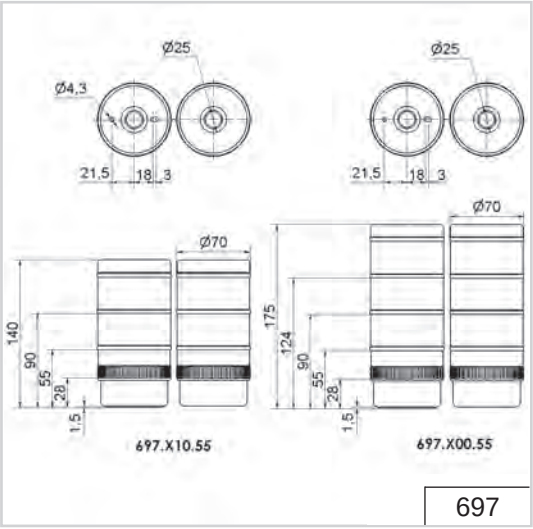

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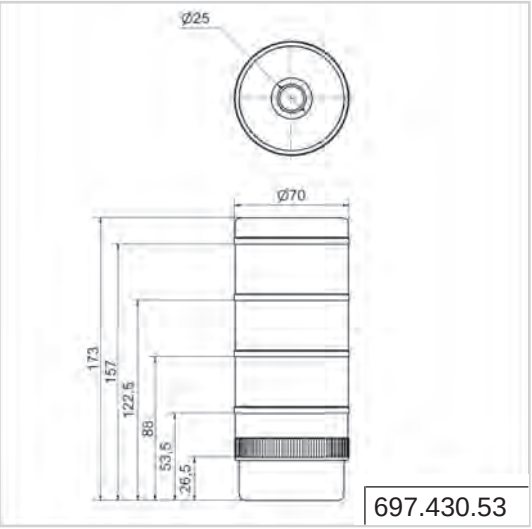

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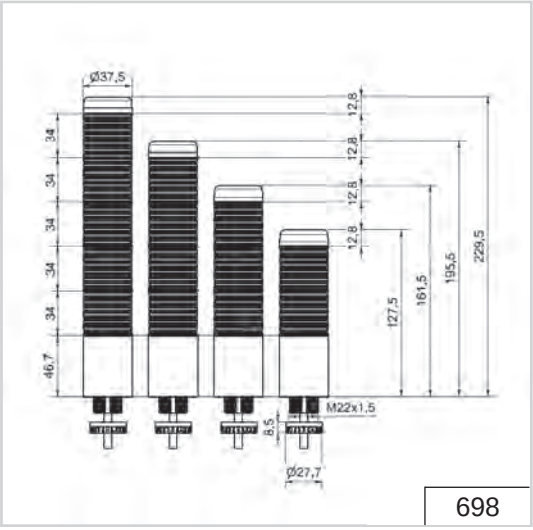

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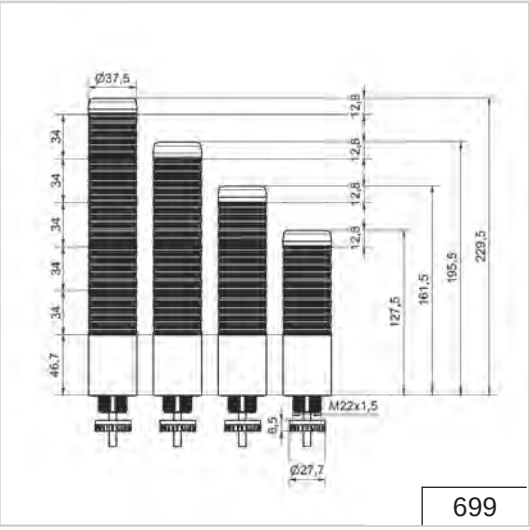

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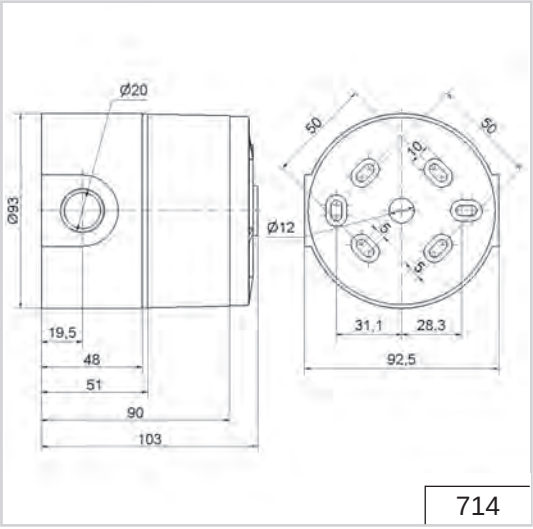

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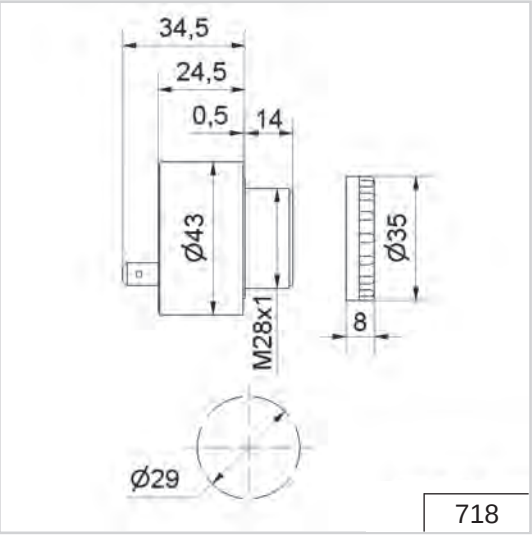

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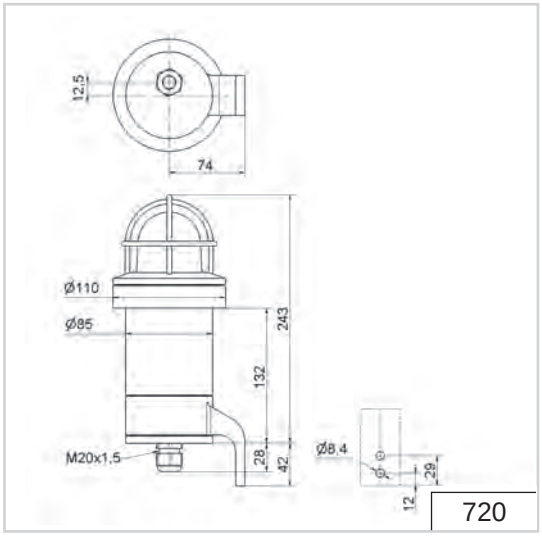

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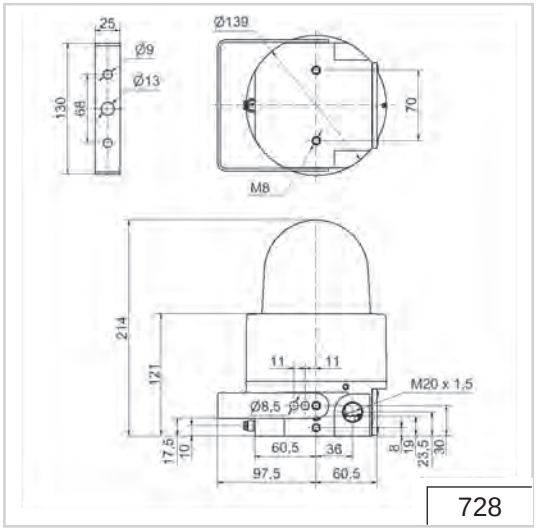

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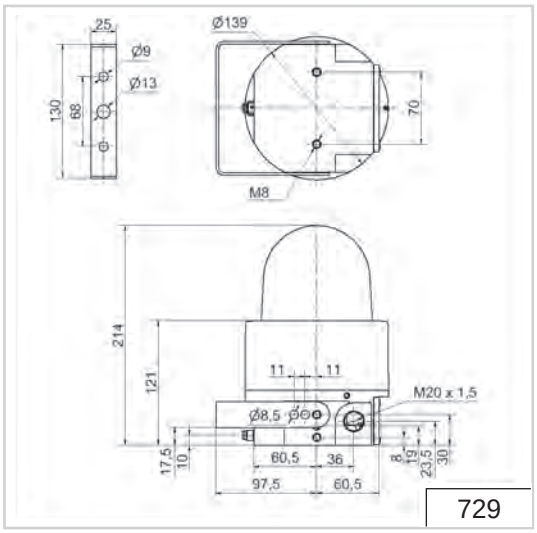

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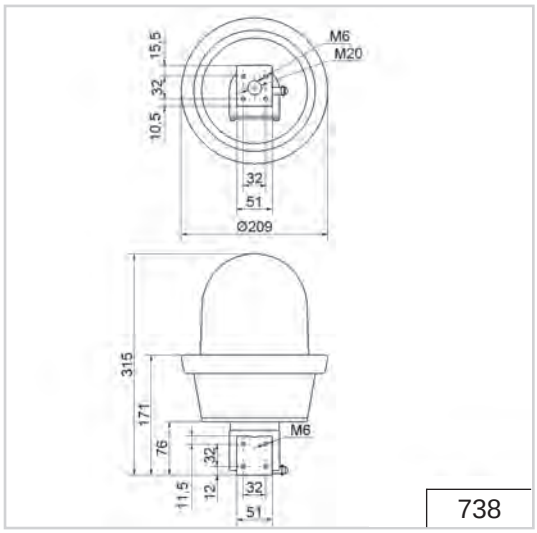

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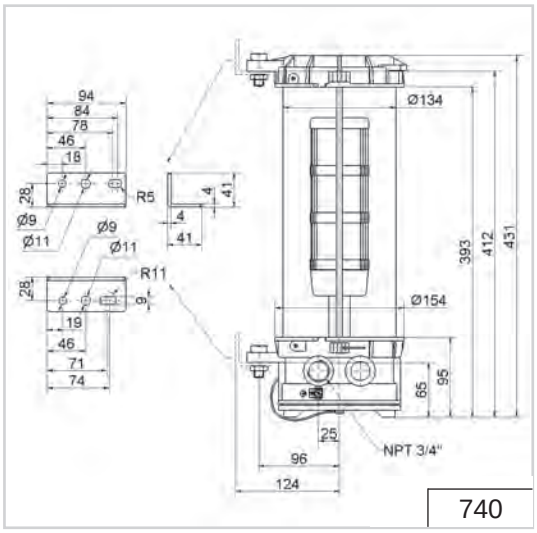

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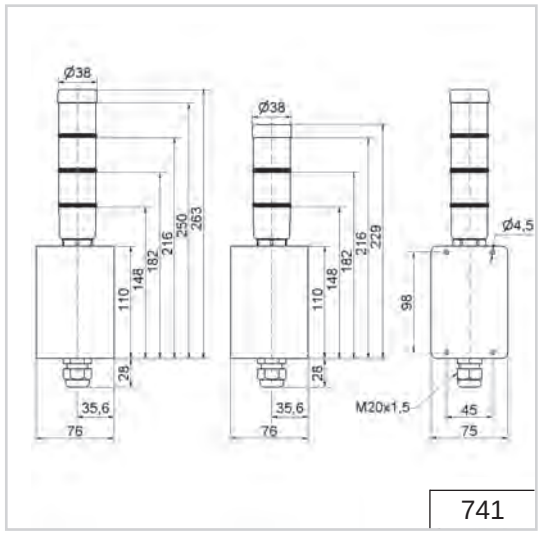

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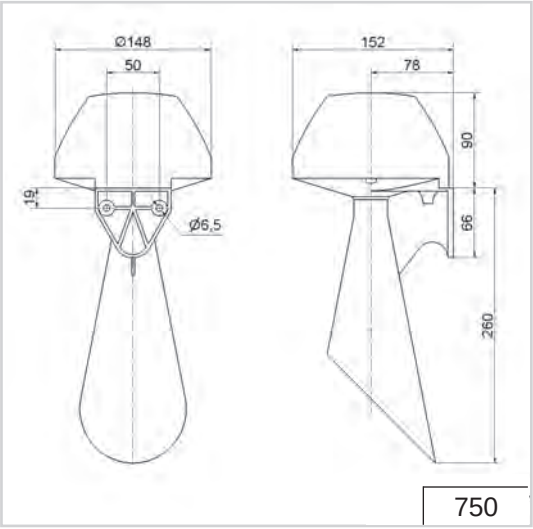
Technical Diagrams



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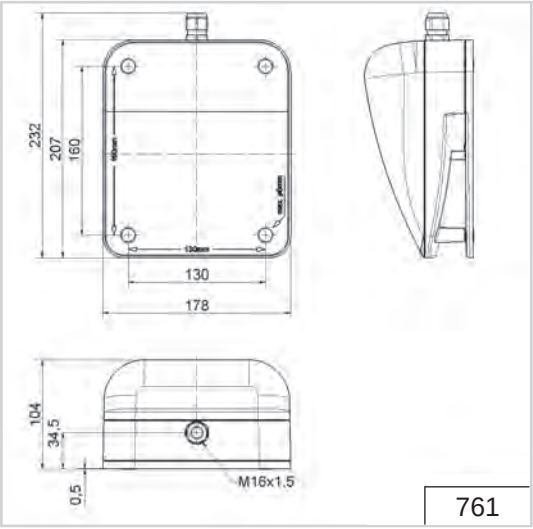

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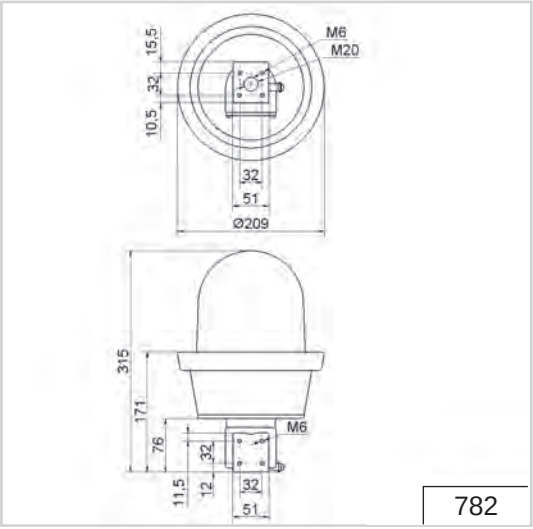

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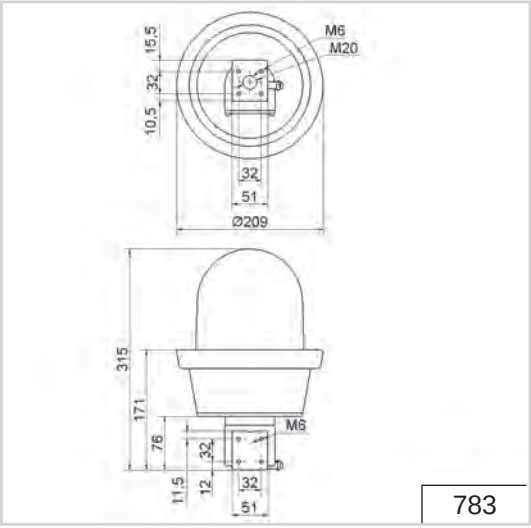

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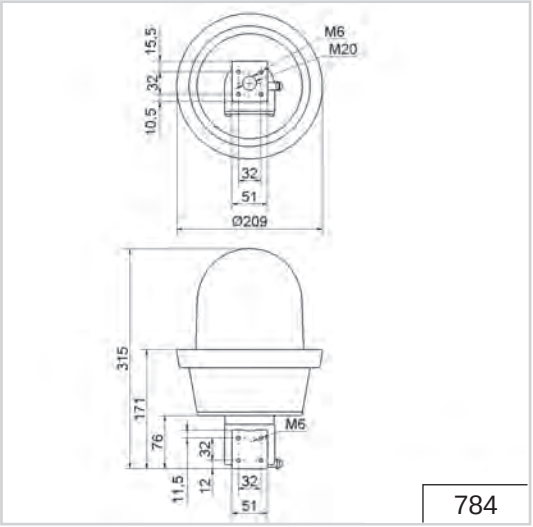

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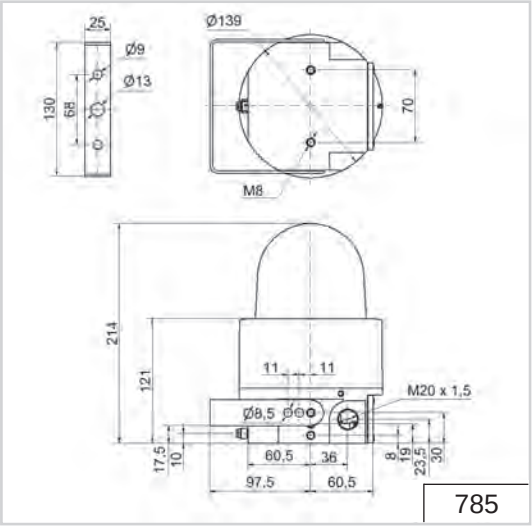

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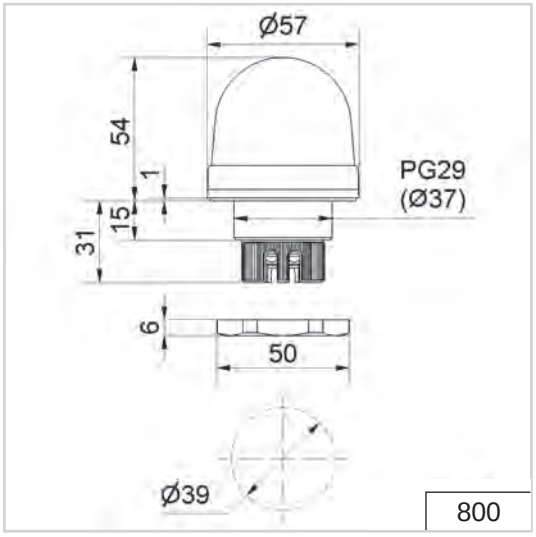

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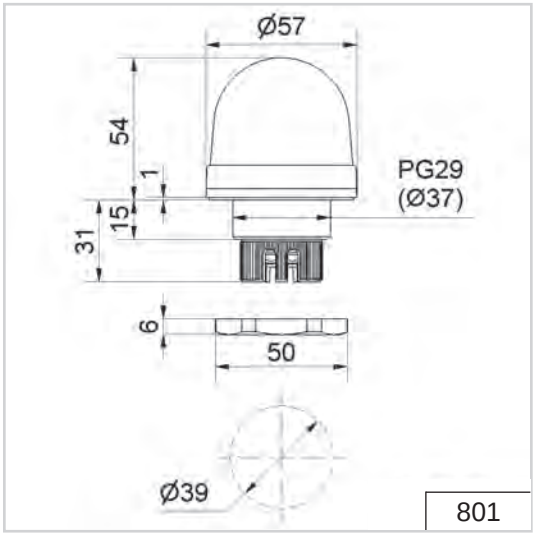

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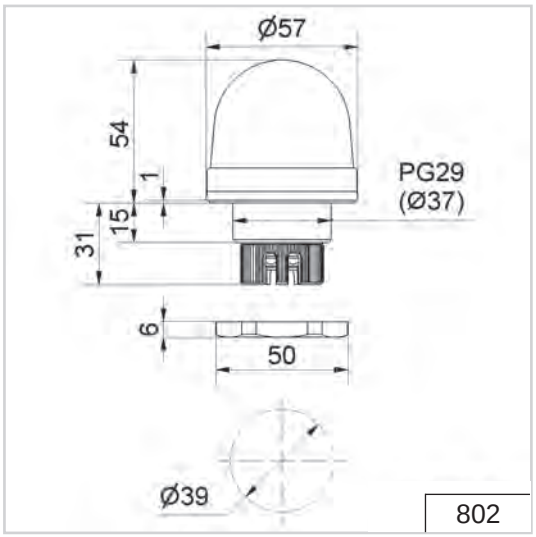

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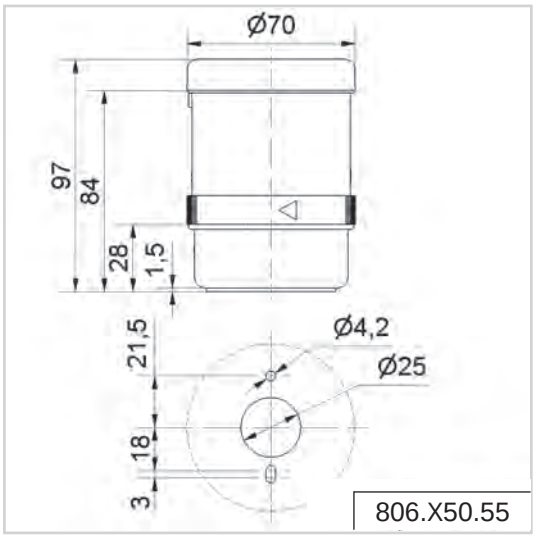

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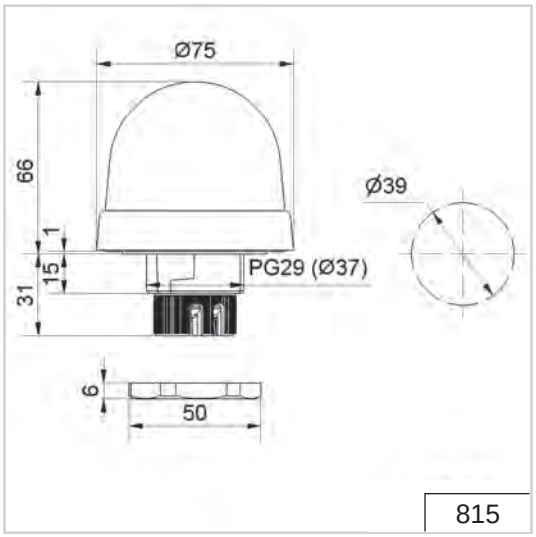

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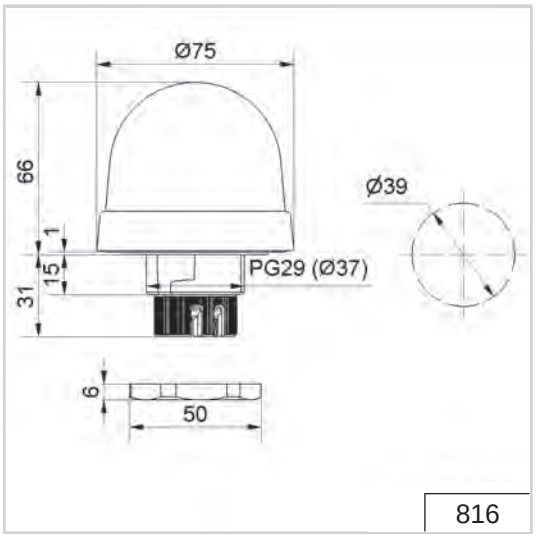

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ADDITIONAL INFORMATION:

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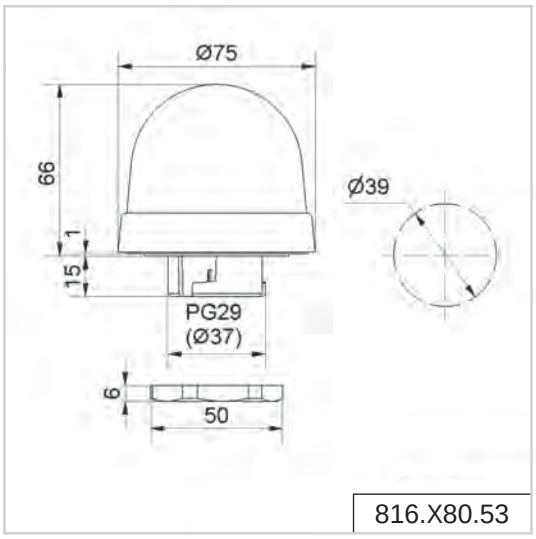
Technical Diagrams



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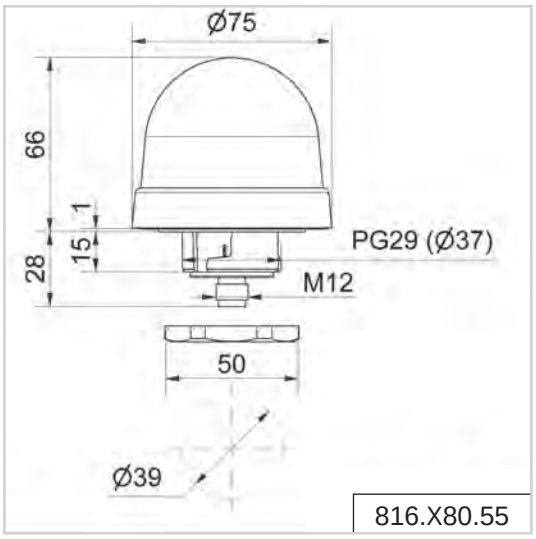

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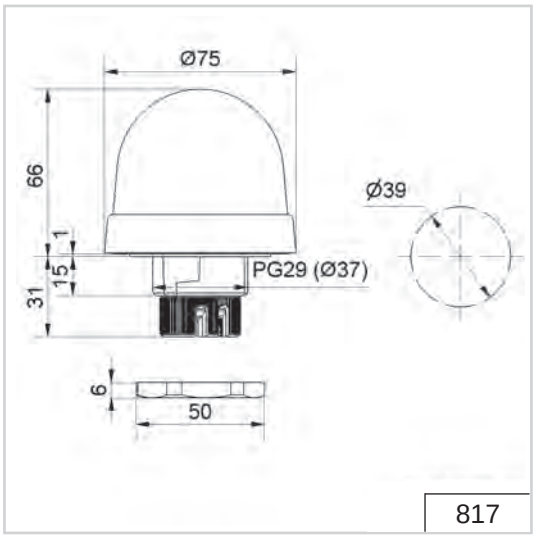

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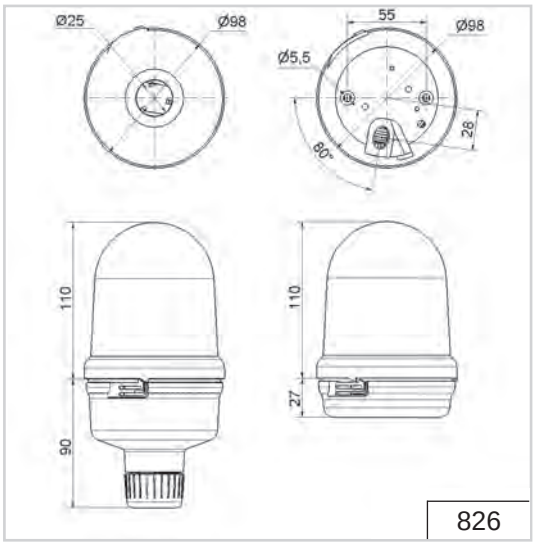

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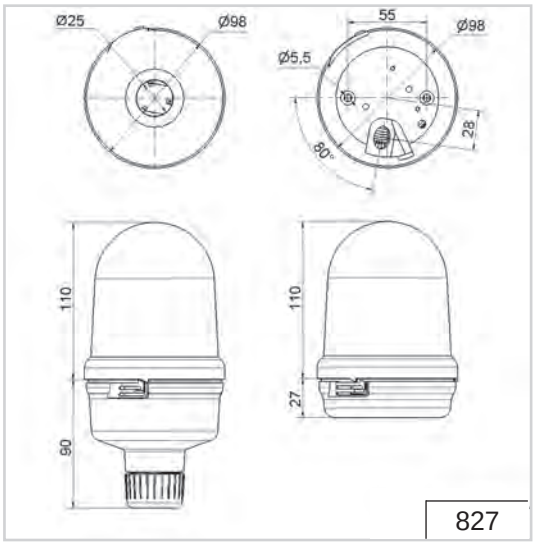

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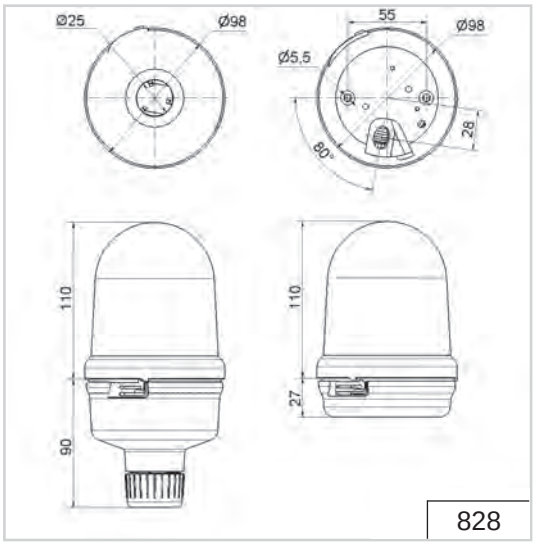

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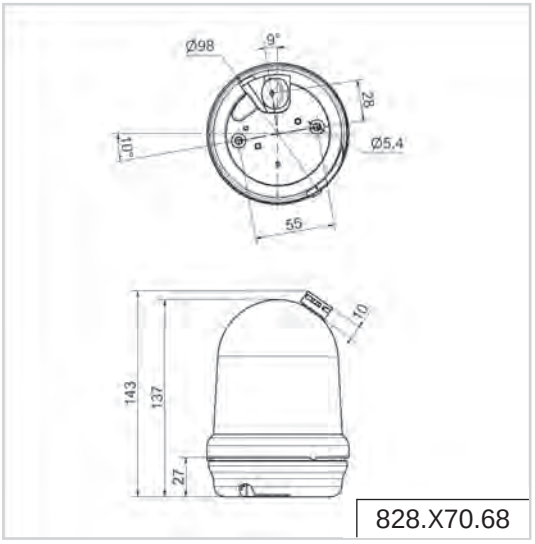
WERMA SIGNALTECHNIK



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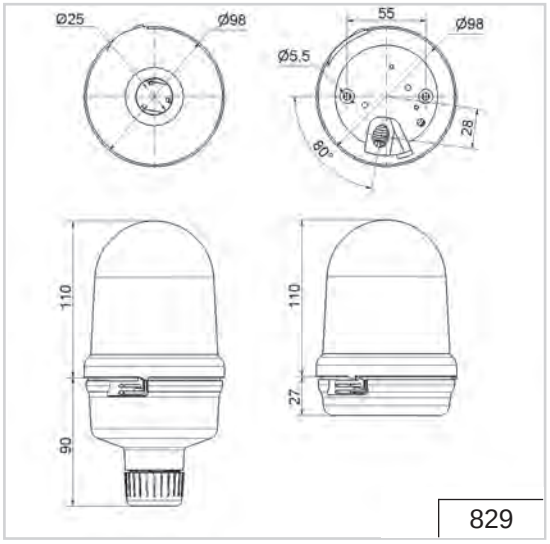

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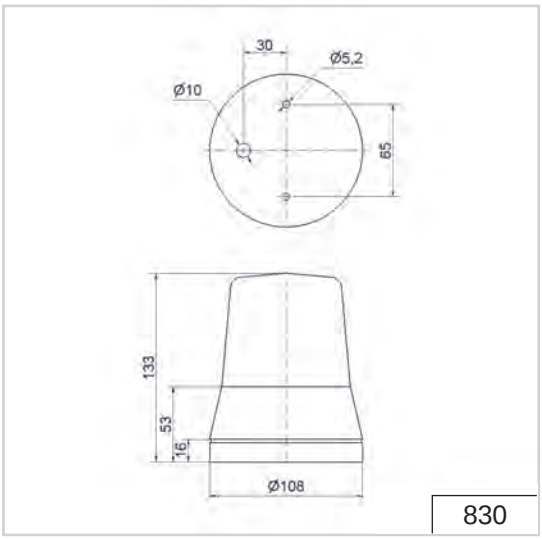

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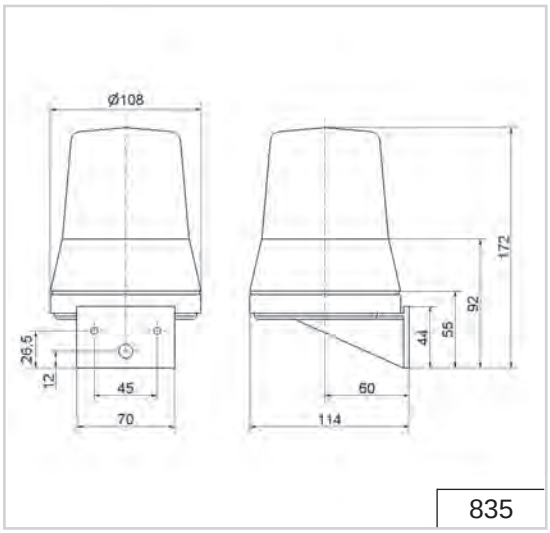

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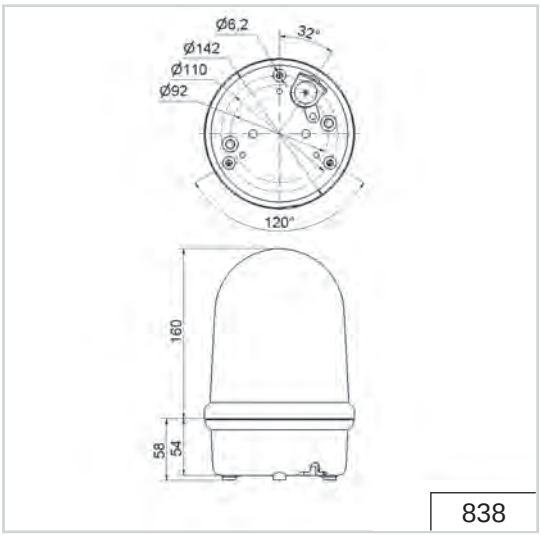

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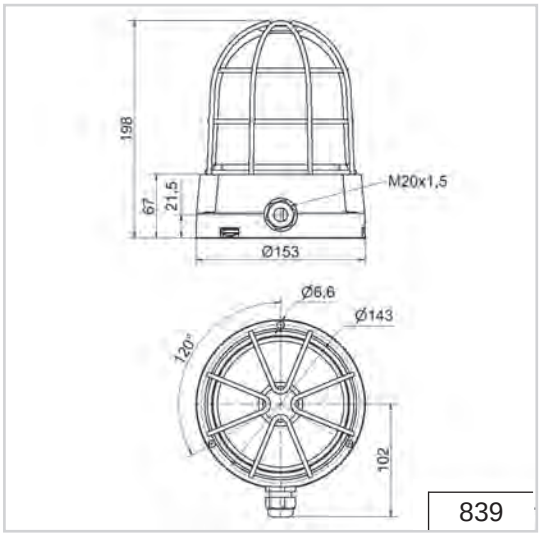

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ADDITIONAL INFORMATION:

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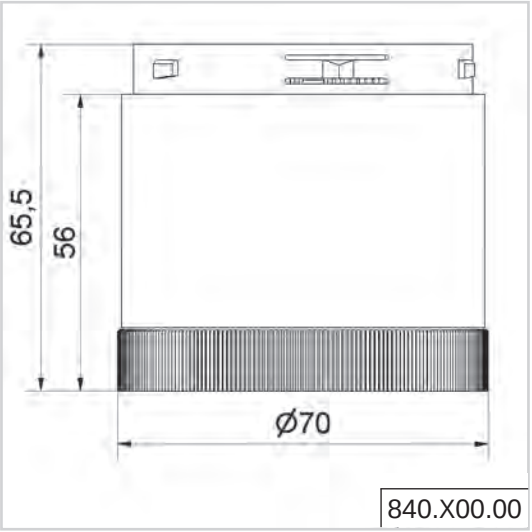
Technical Diagrams



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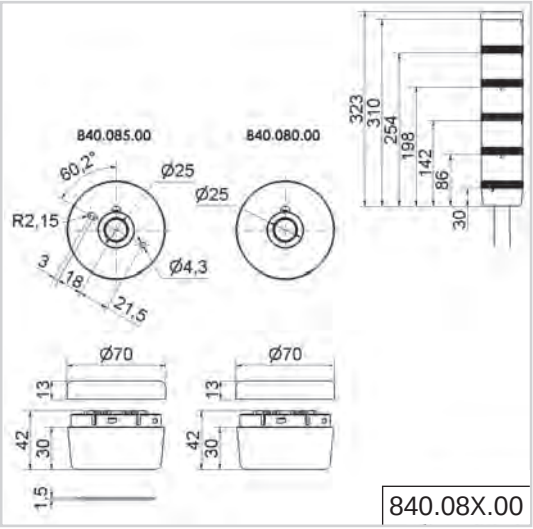

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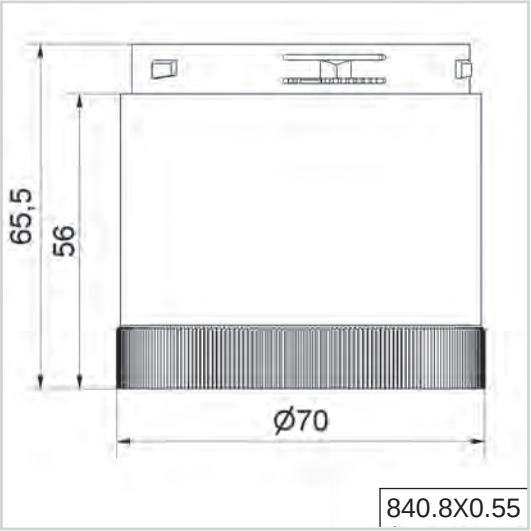

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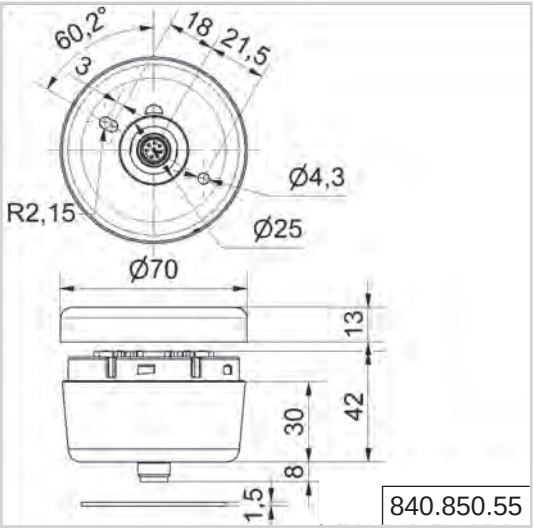

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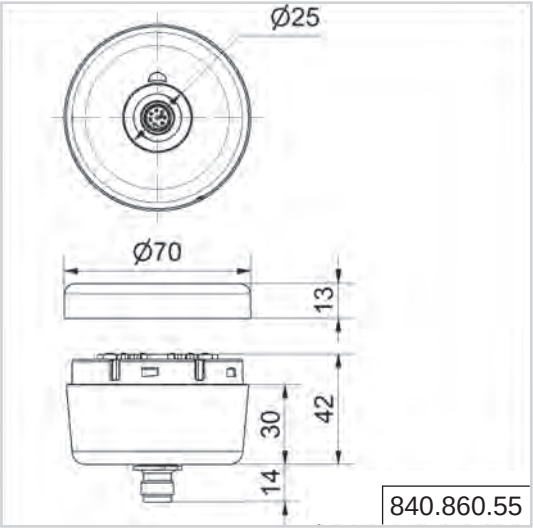

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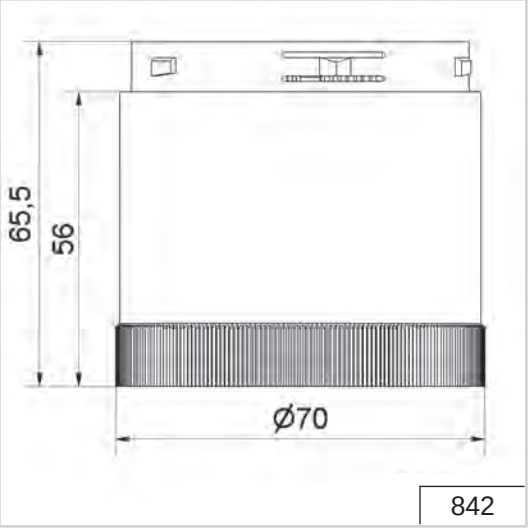

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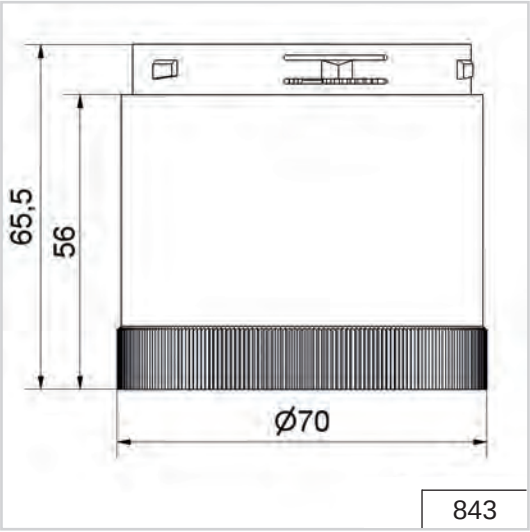
WERMA SIGNALTECHNIK



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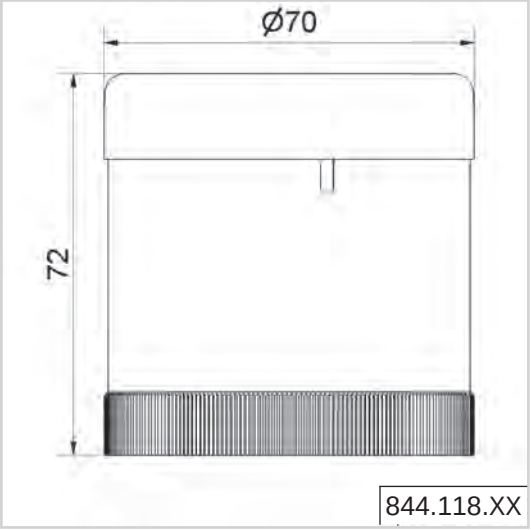

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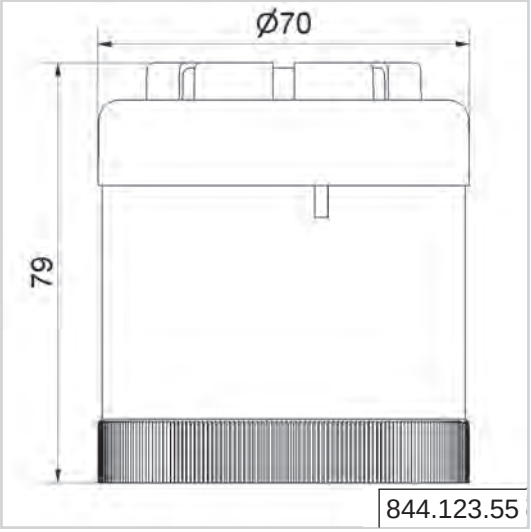

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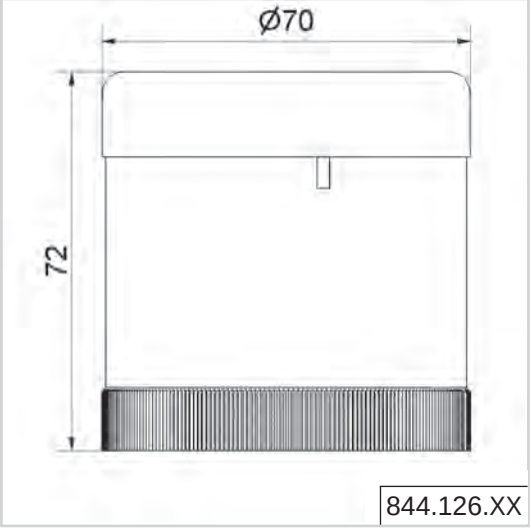

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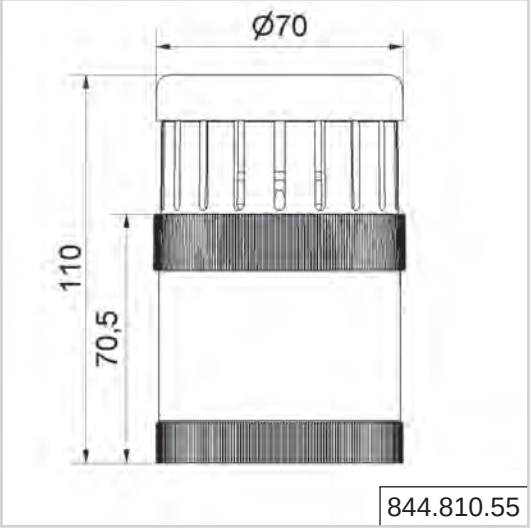

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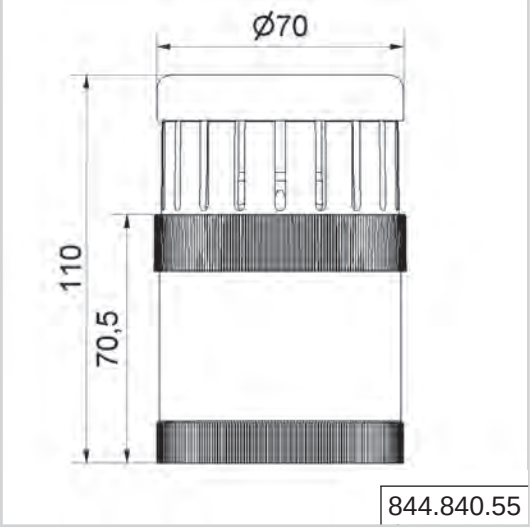

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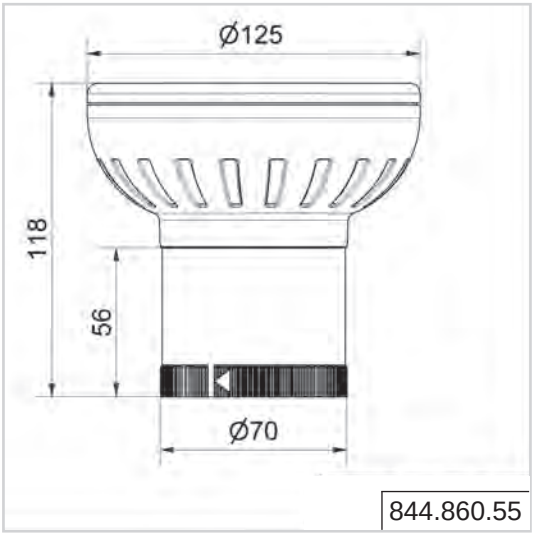
Technical Diagrams



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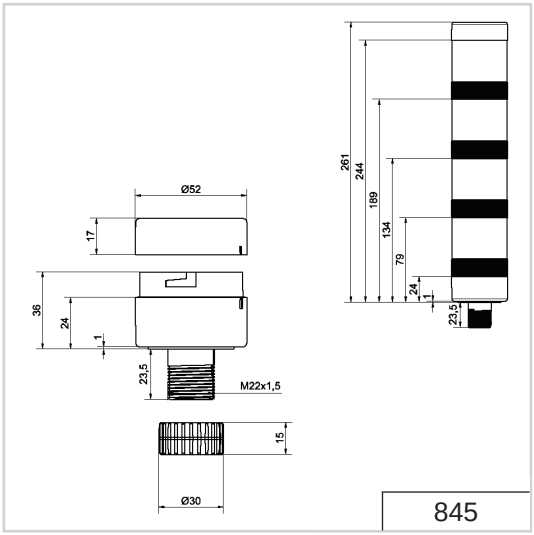

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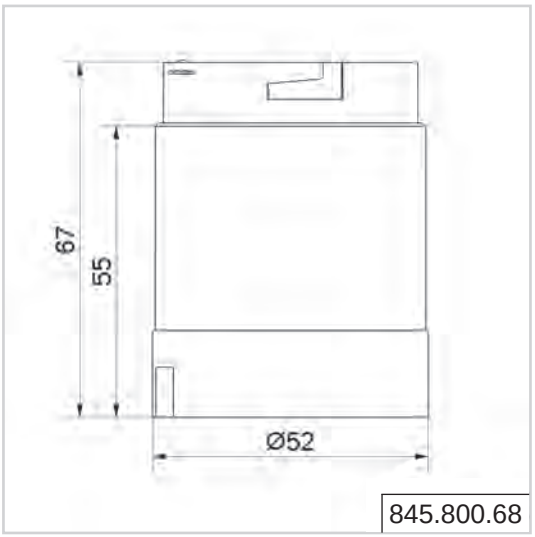

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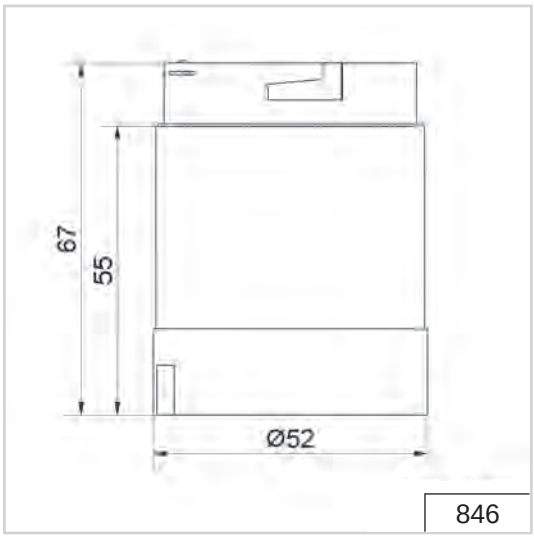

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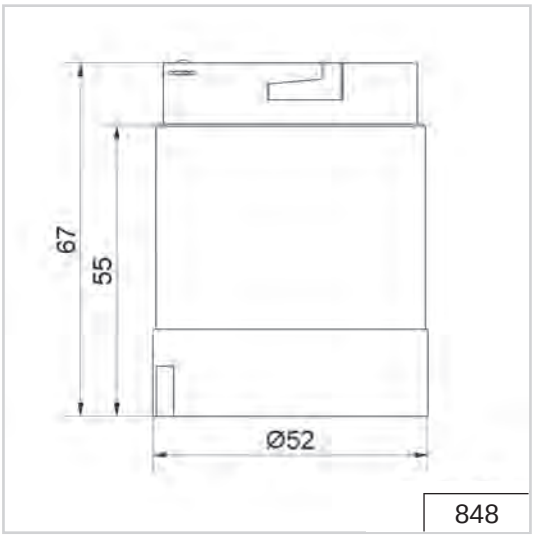

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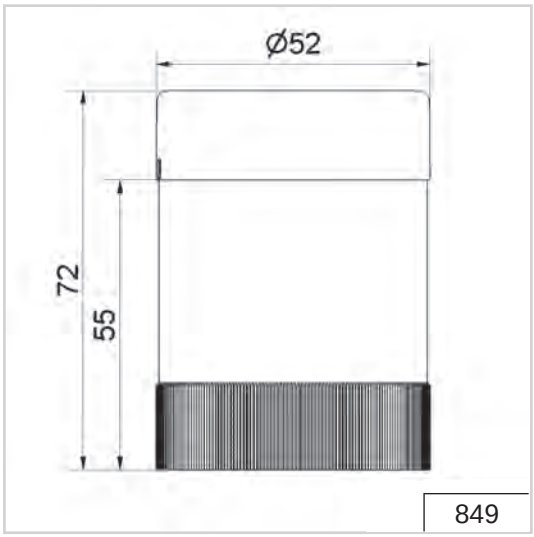

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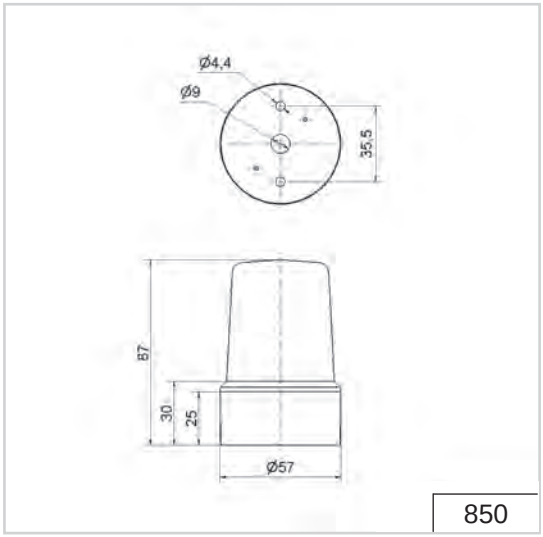

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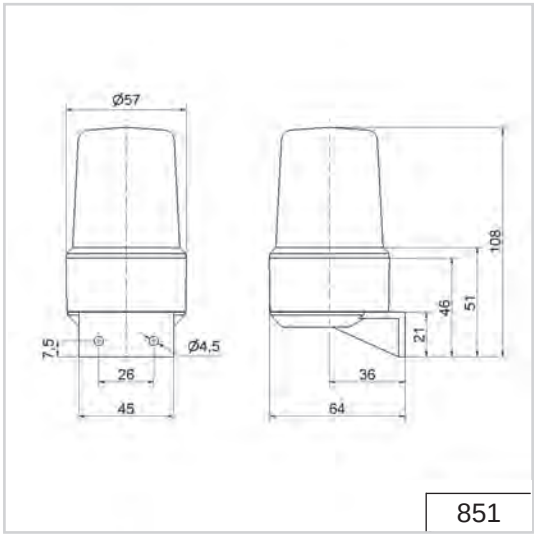

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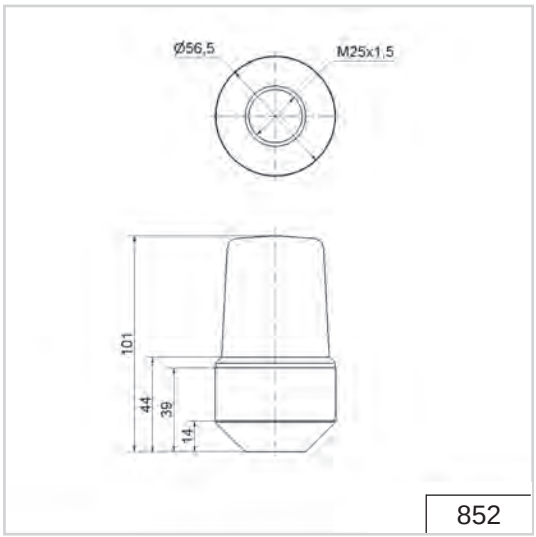

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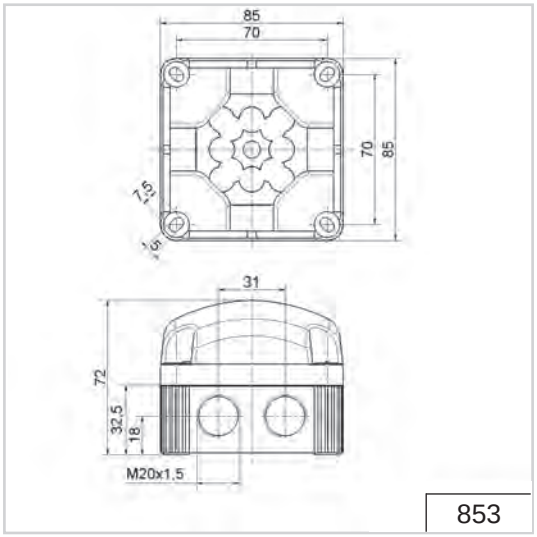

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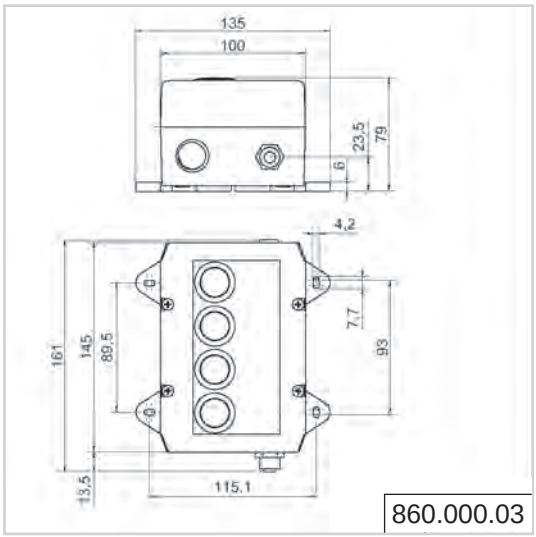

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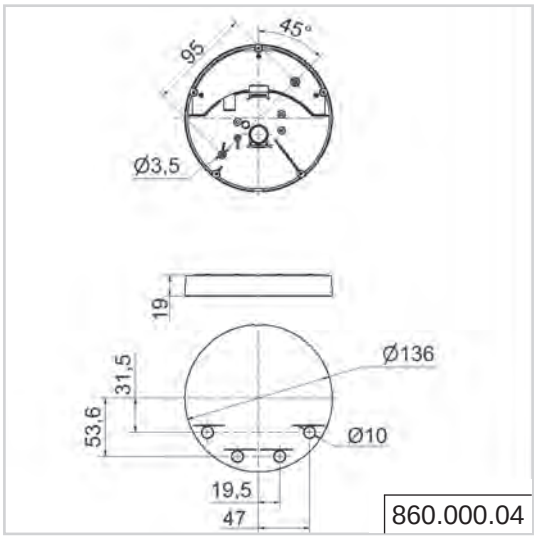

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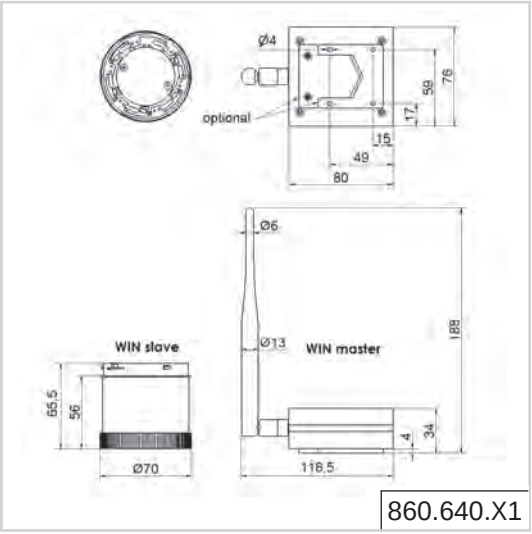
Technical Diagrams



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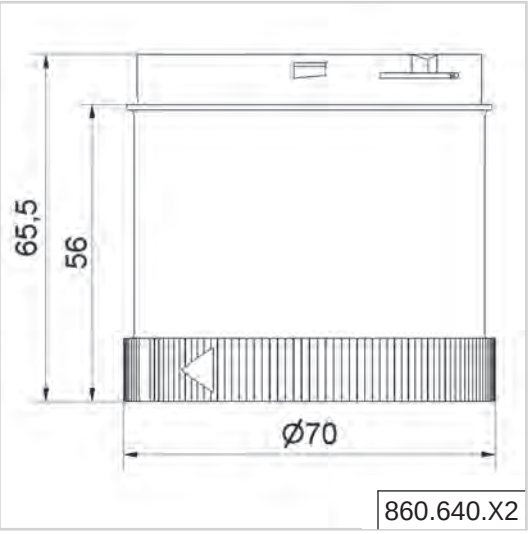

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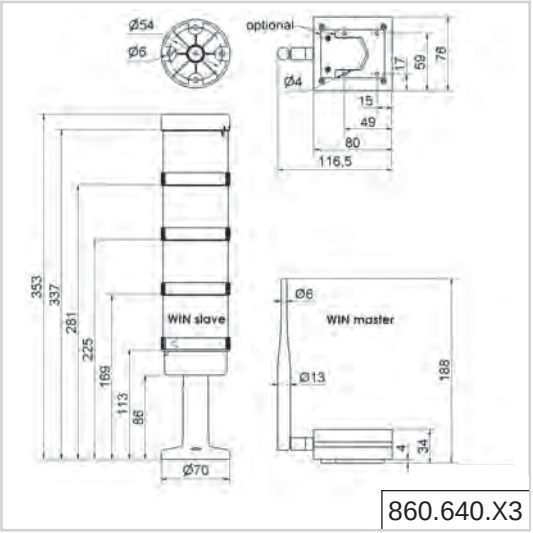

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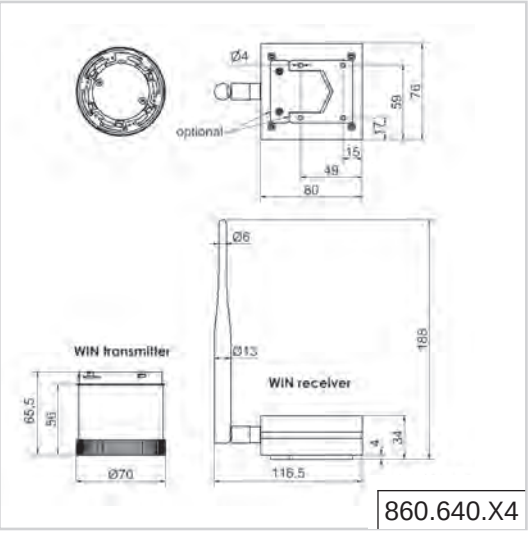

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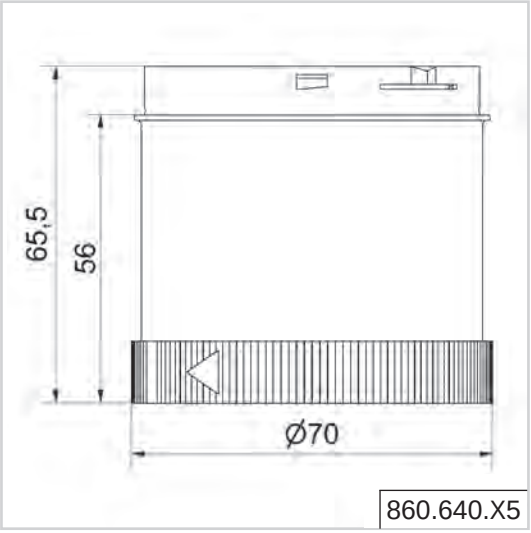

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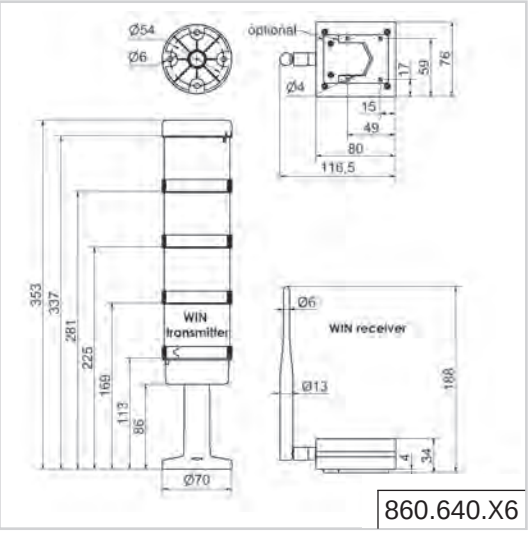

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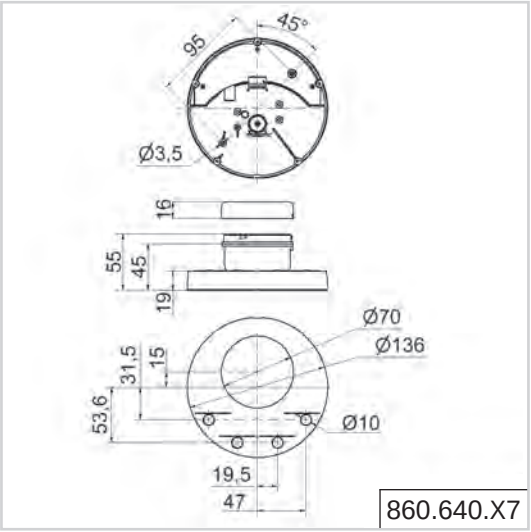

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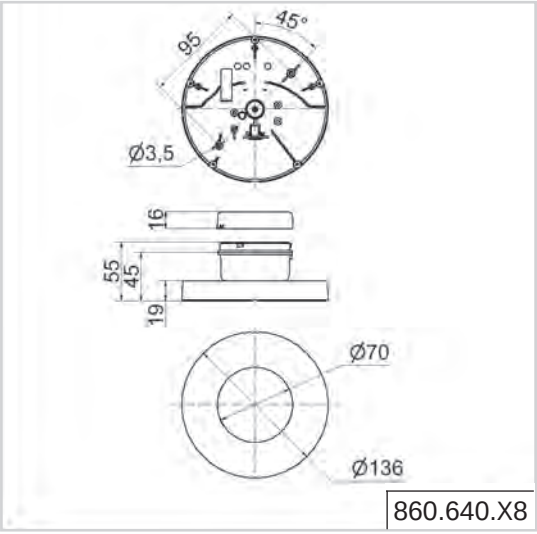

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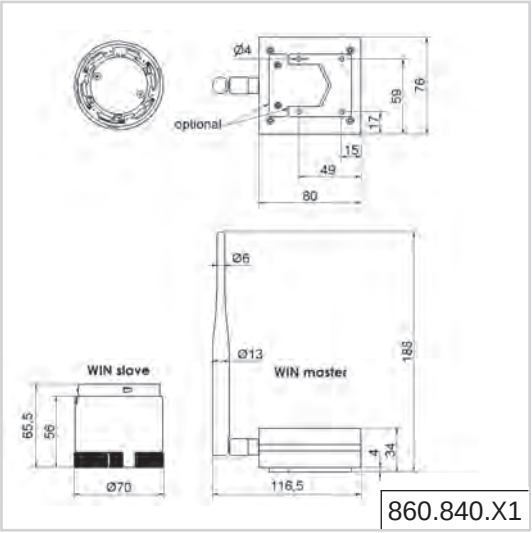

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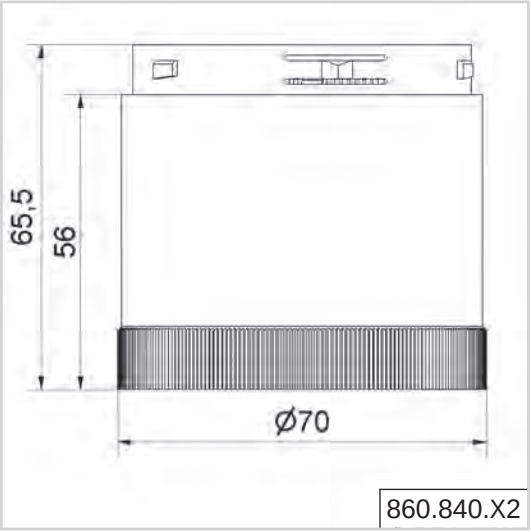

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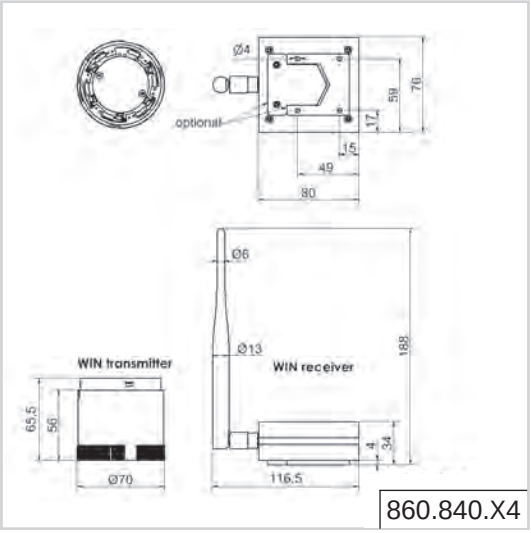

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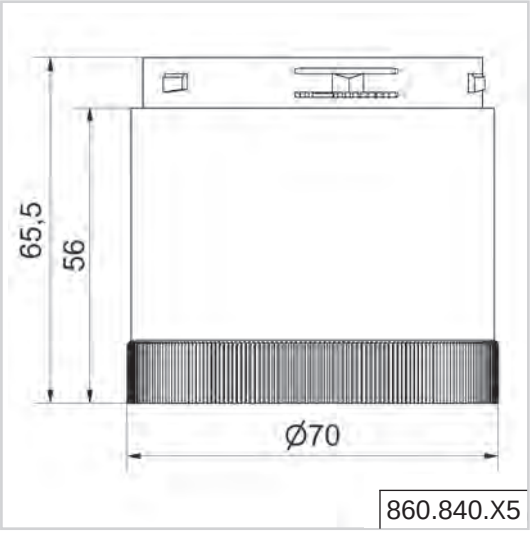

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ADDITIONAL INFORMATION:

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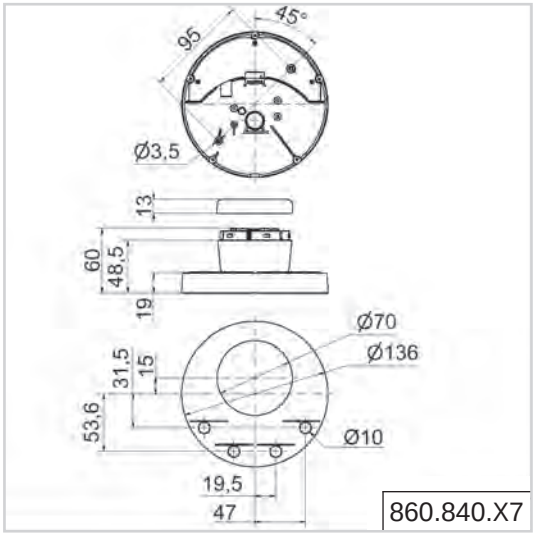
Technical Diagrams



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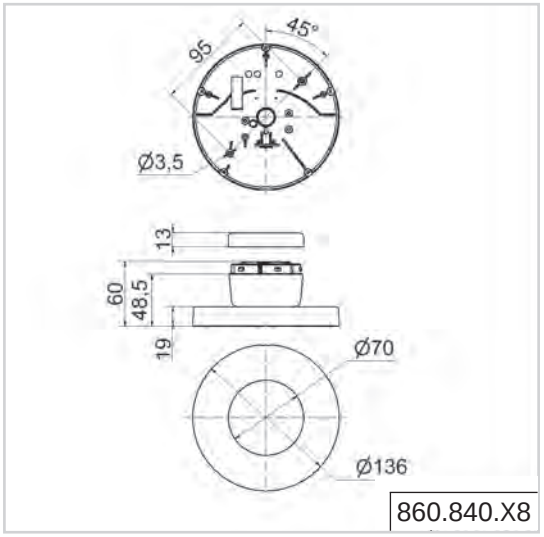

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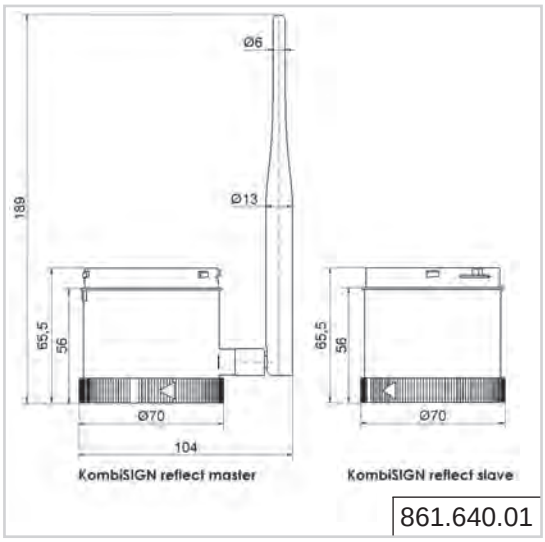

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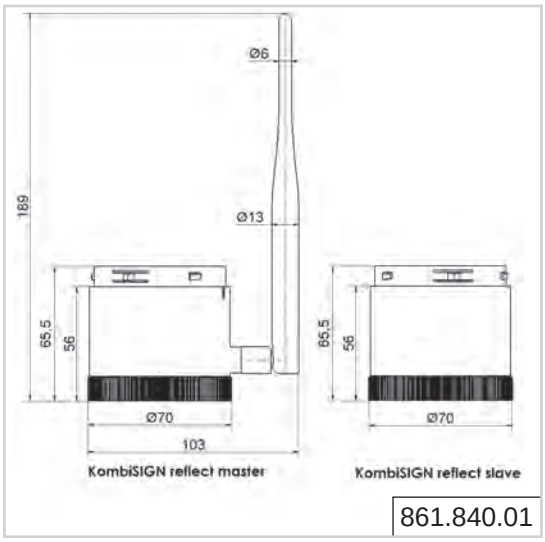

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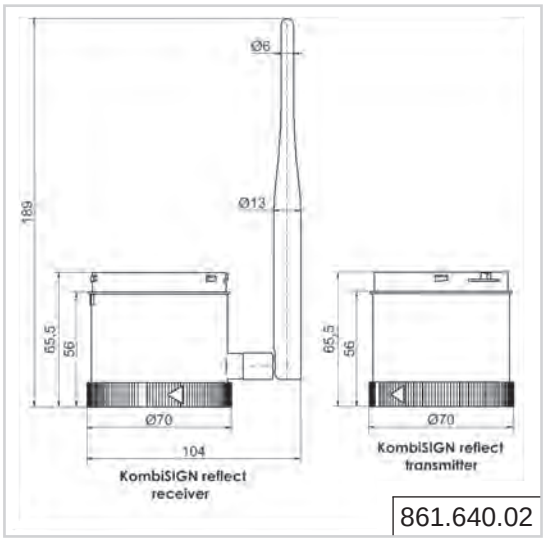

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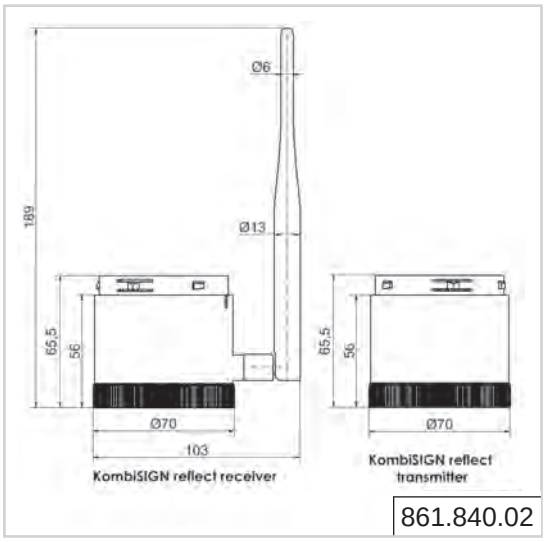

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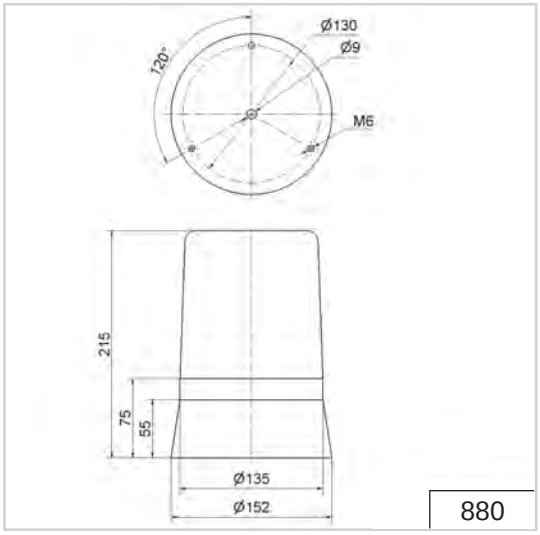

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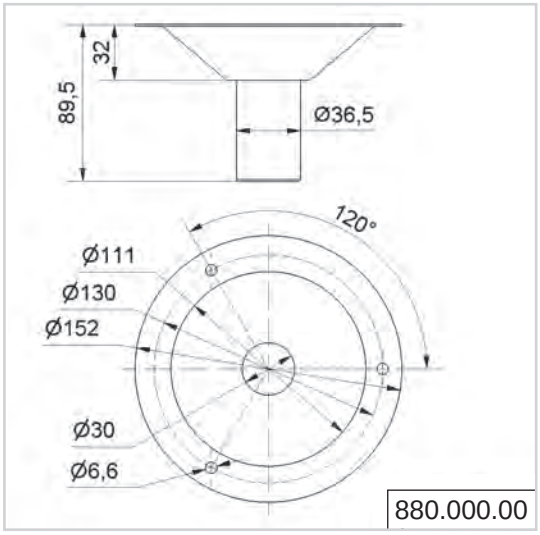

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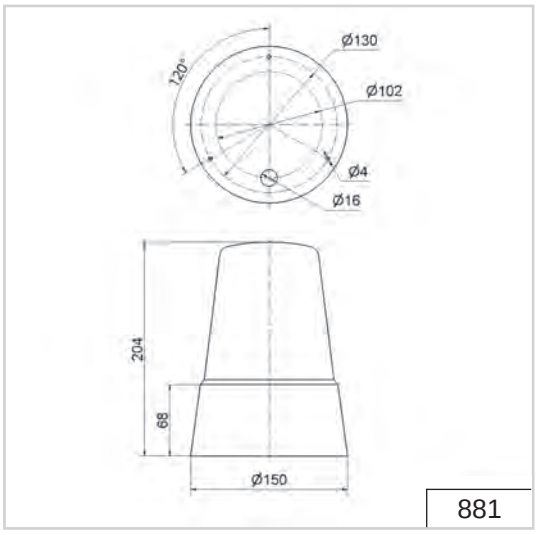

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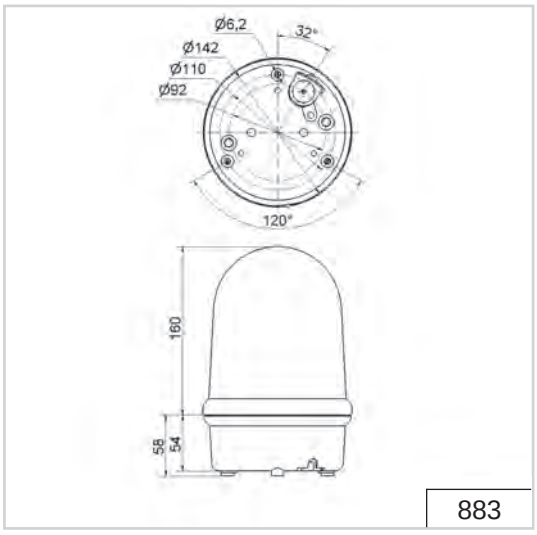

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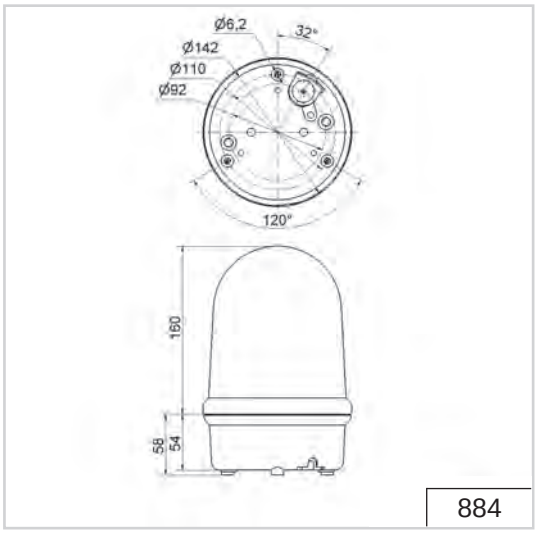

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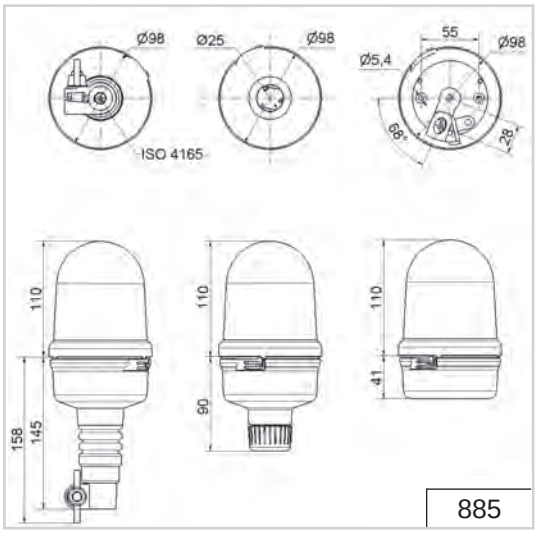

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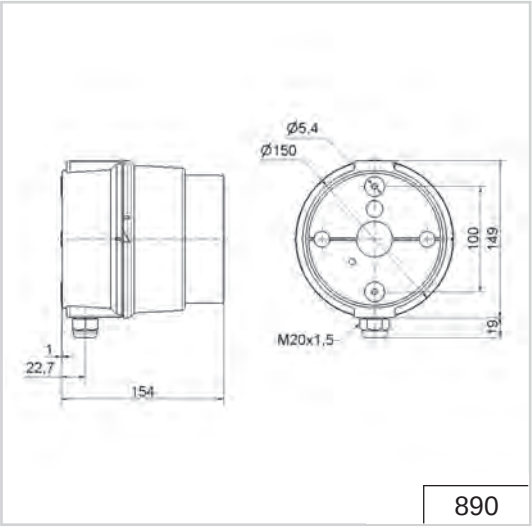
Technical Diagrams



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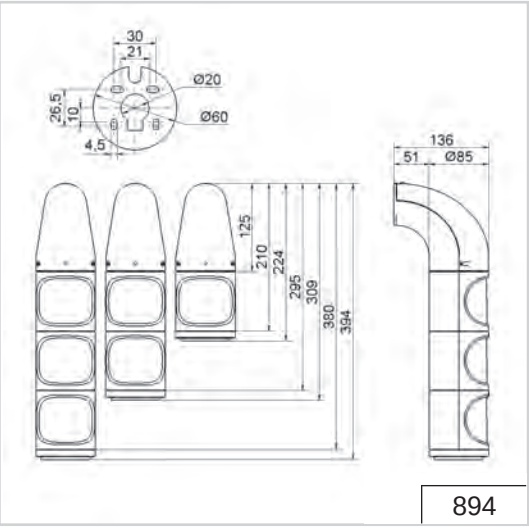

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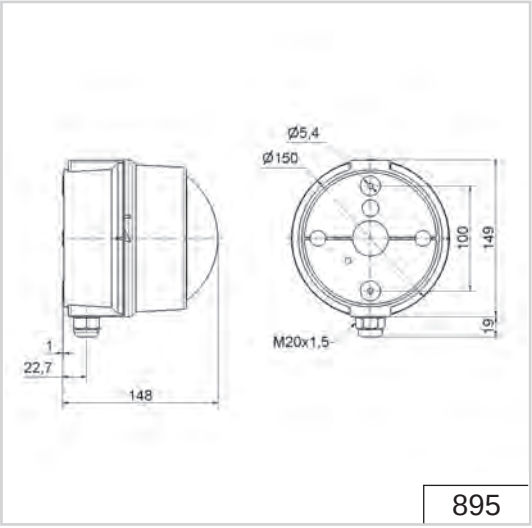

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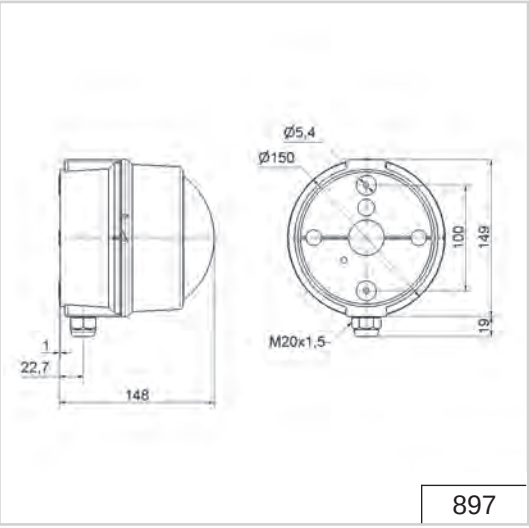

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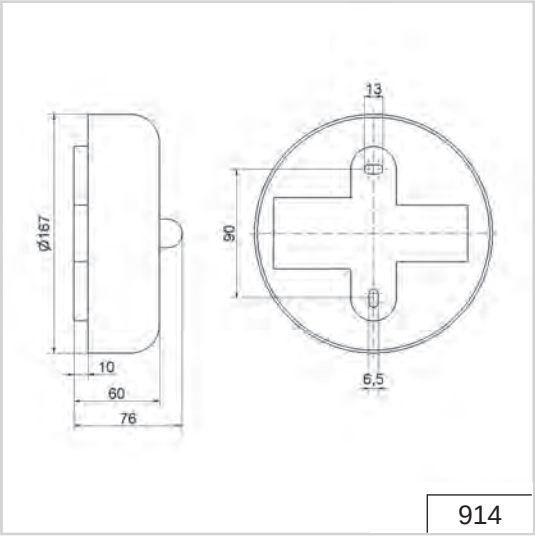

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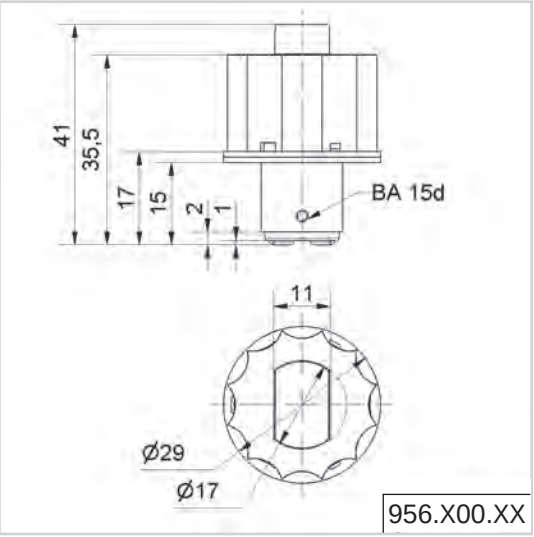

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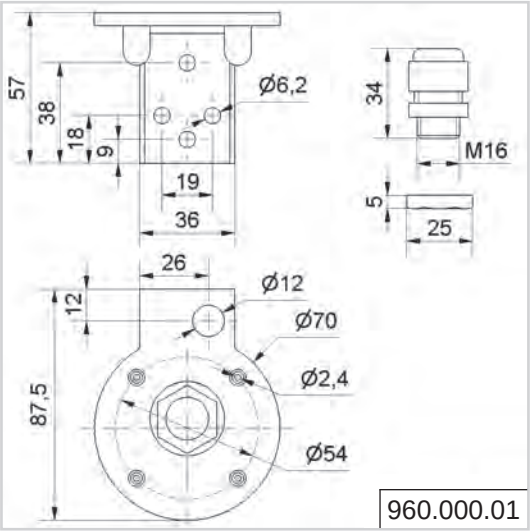
WERMA SIGNALTECHNIK



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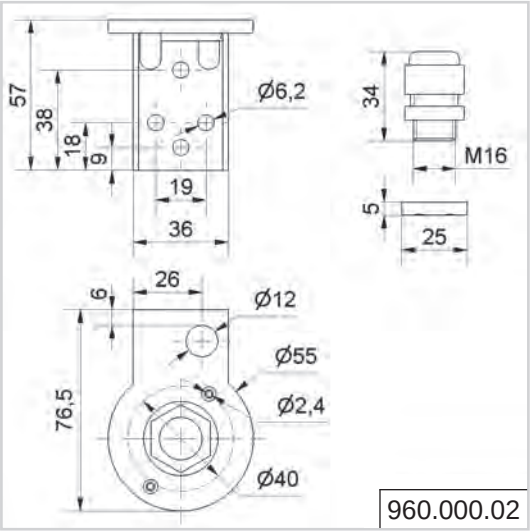

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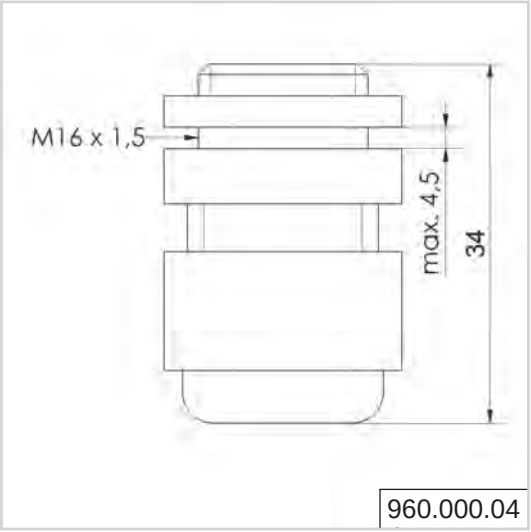

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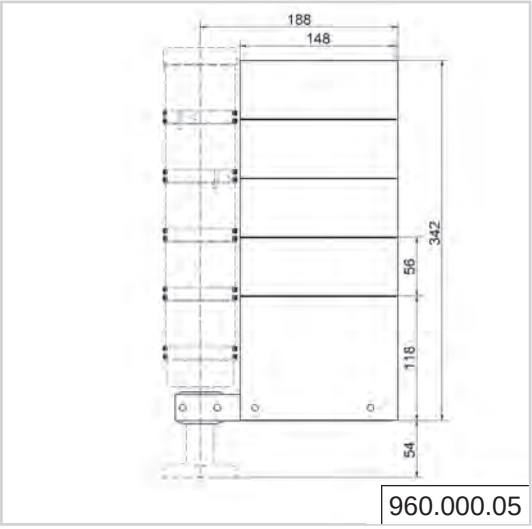

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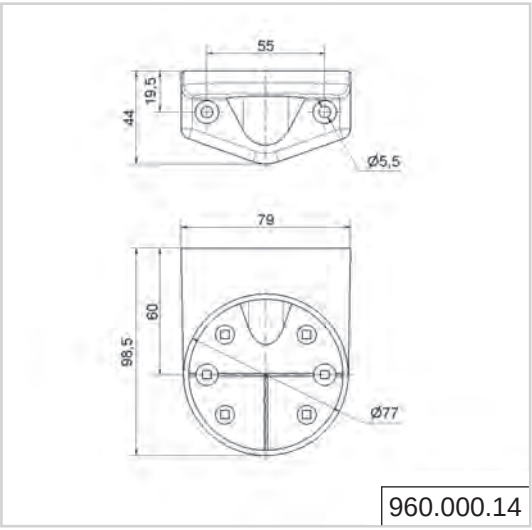

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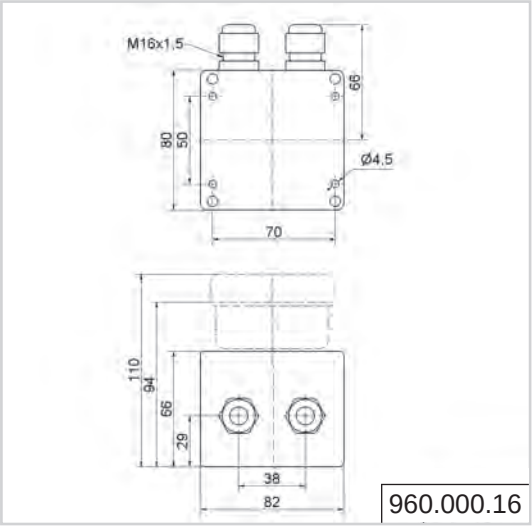

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ADDITIONAL INFORMATION:

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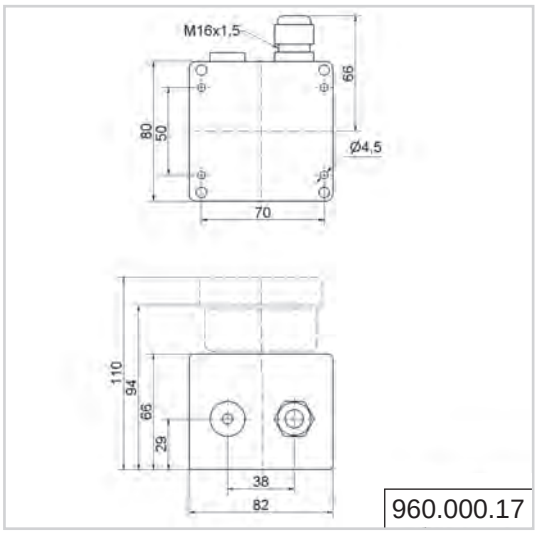
Technical Diagrams



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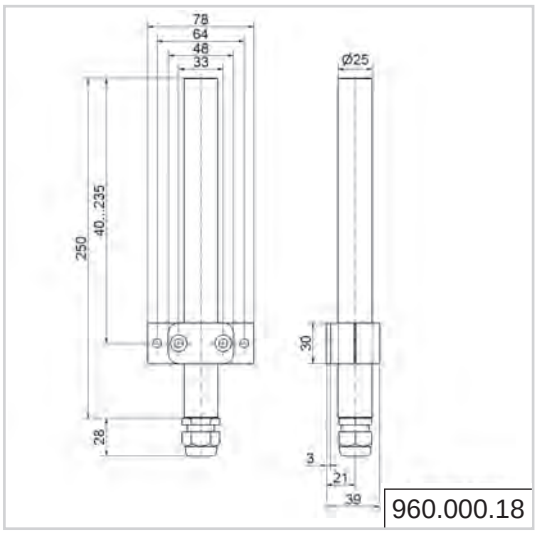

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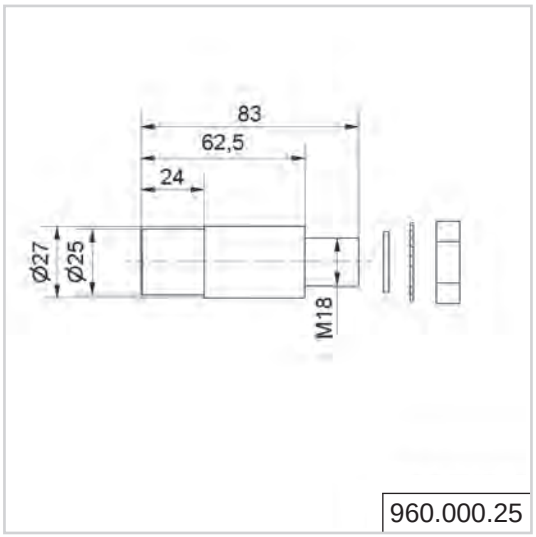

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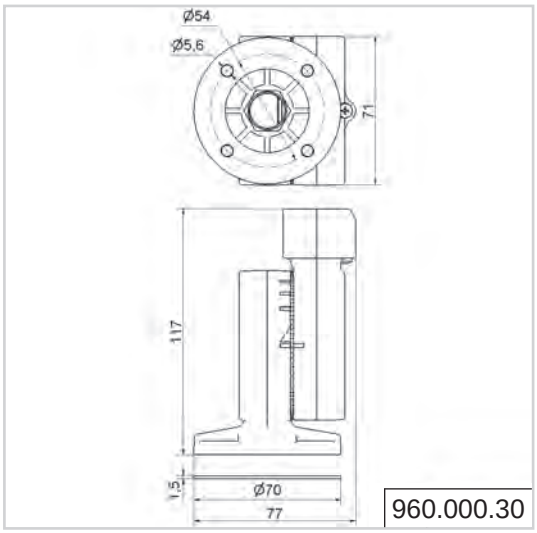

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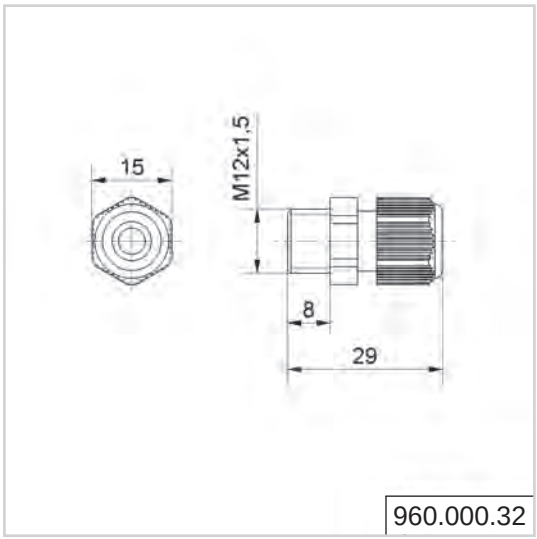

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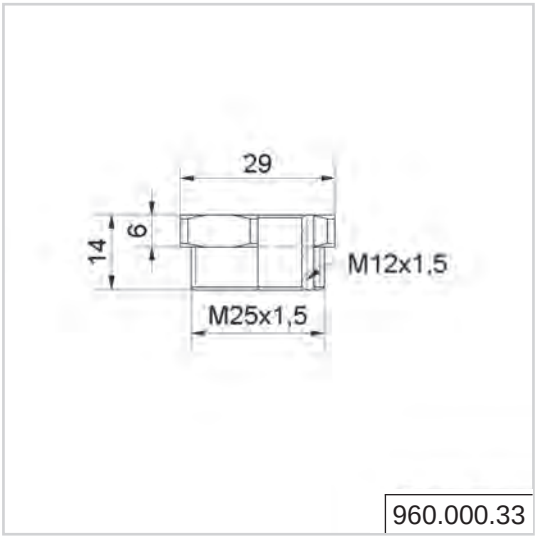

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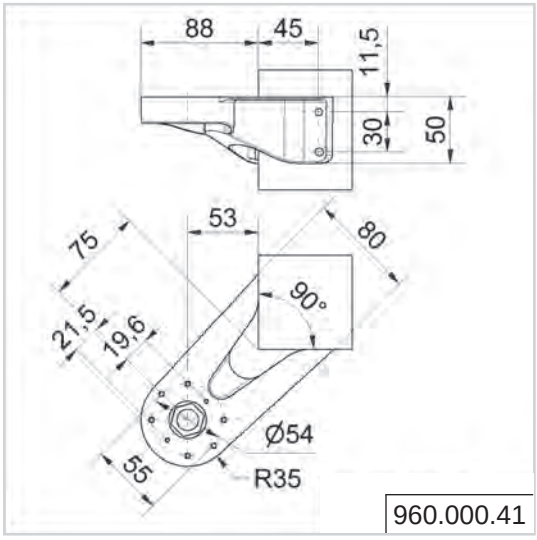

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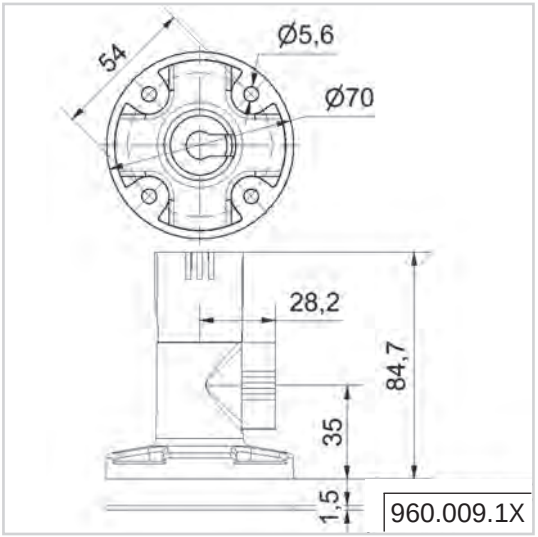

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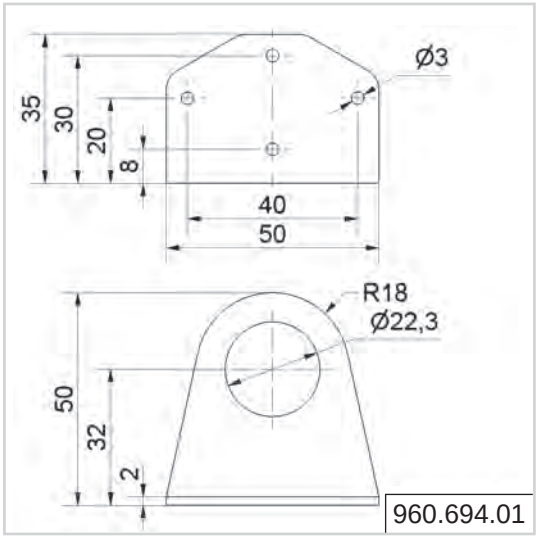

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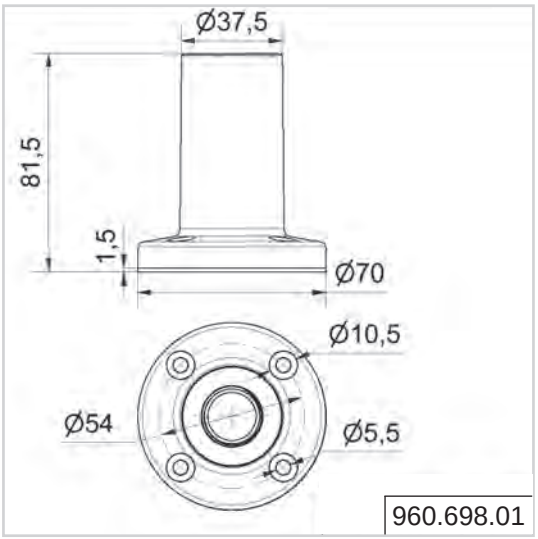

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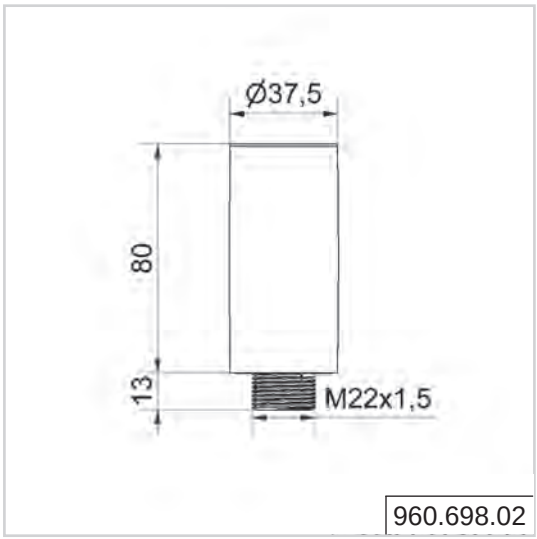

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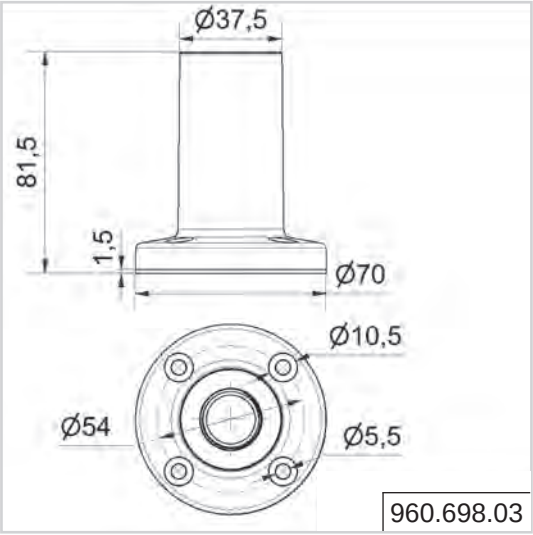
Technical Diagrams



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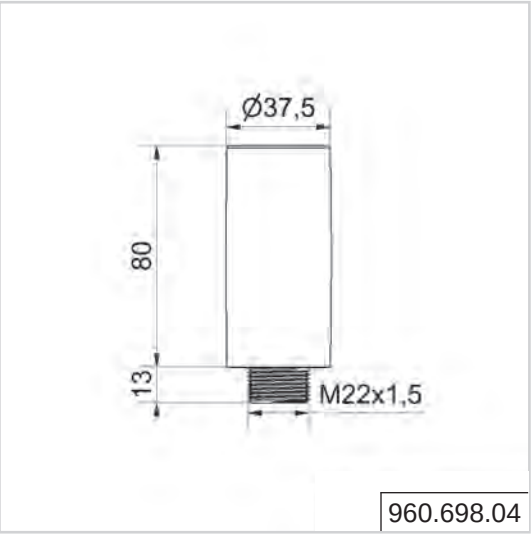

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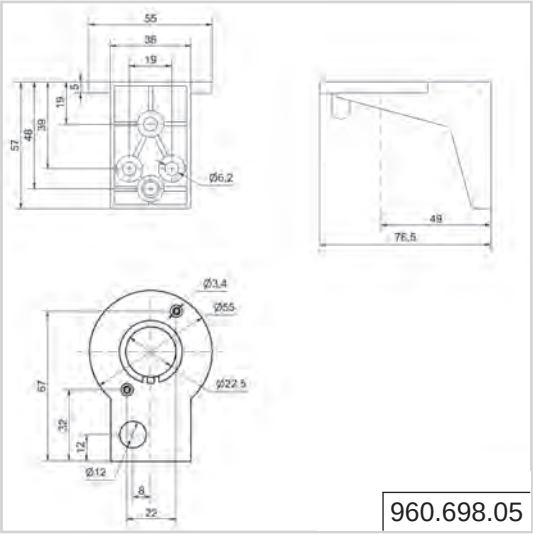

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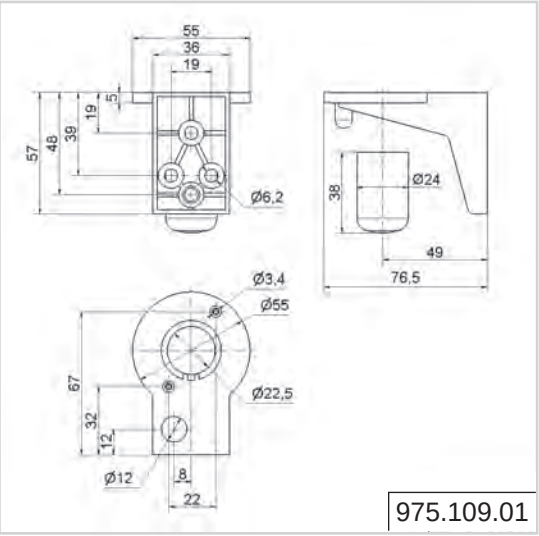

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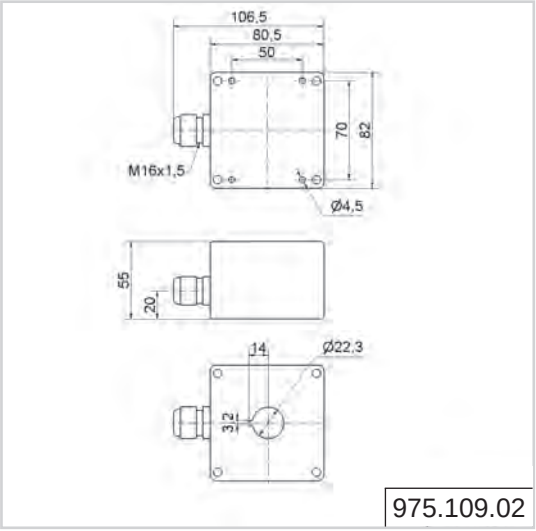

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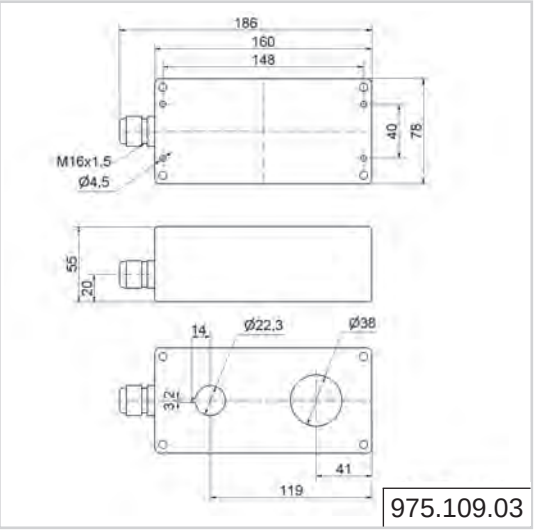

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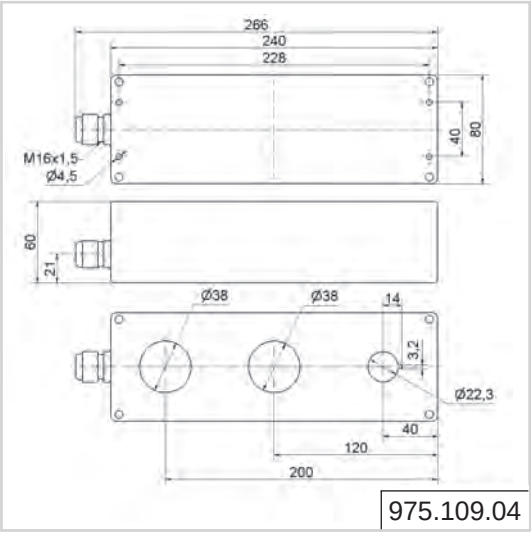
WERMA SIGNALTECHNIK



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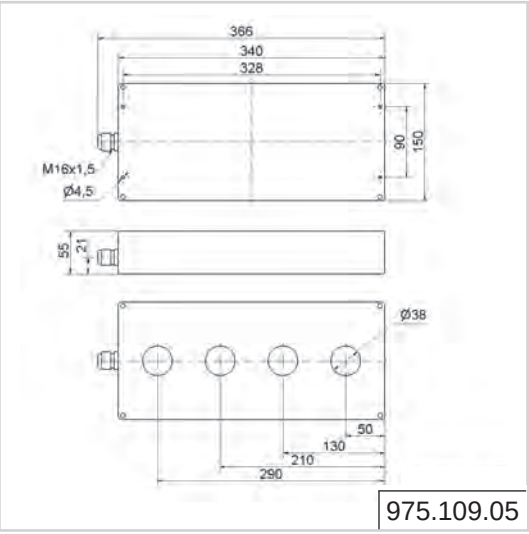

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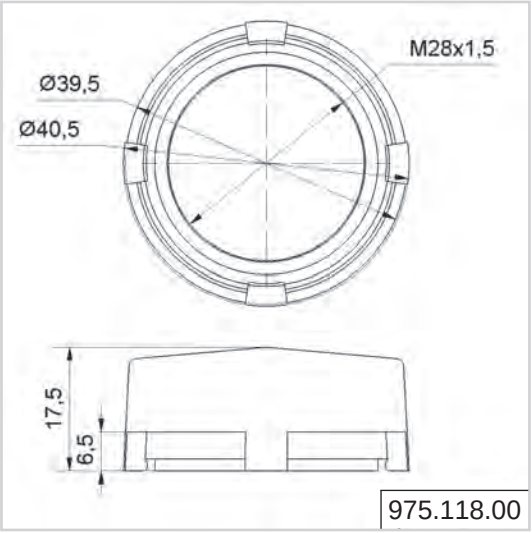

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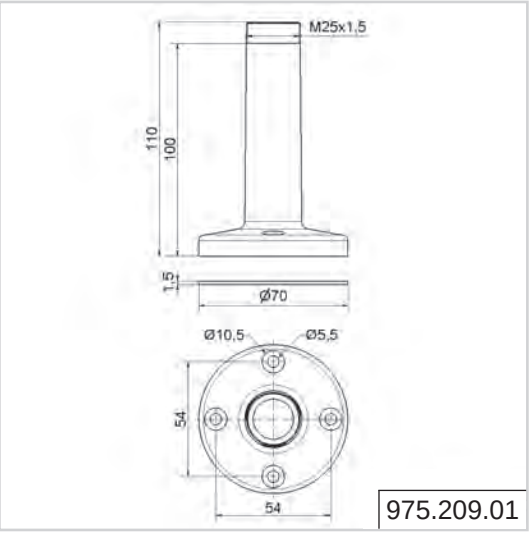

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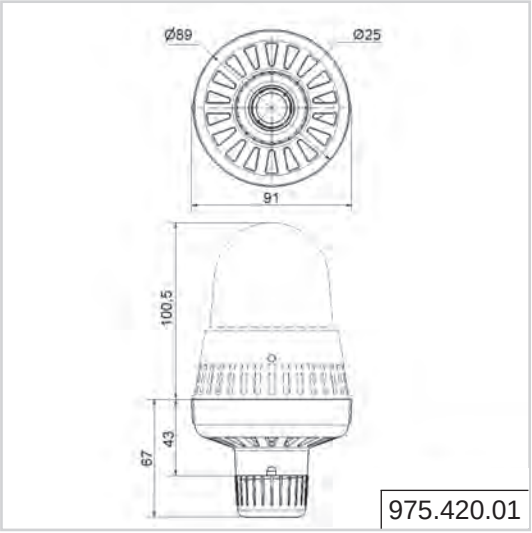

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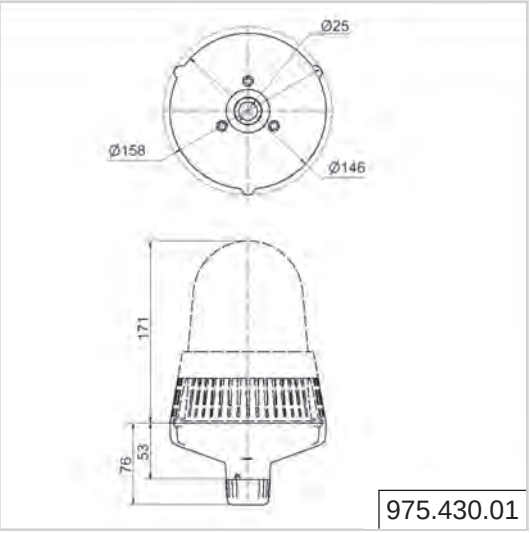

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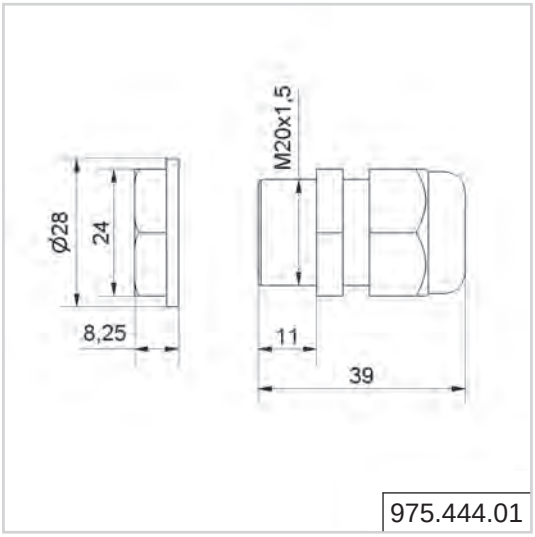
Technical Diagrams



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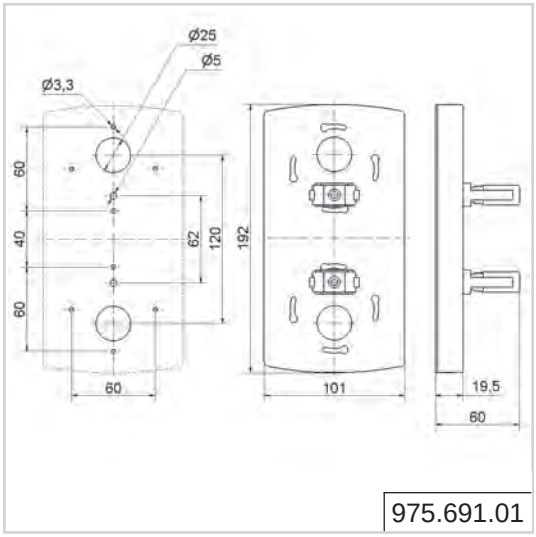

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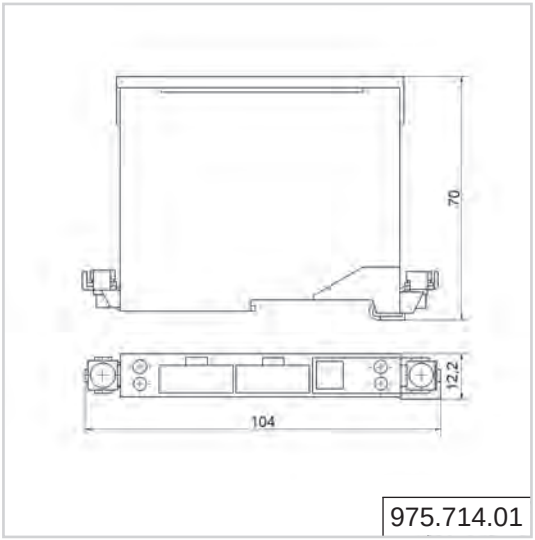

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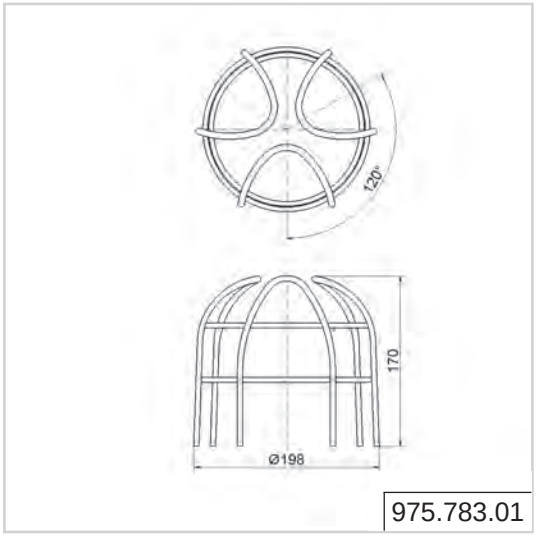

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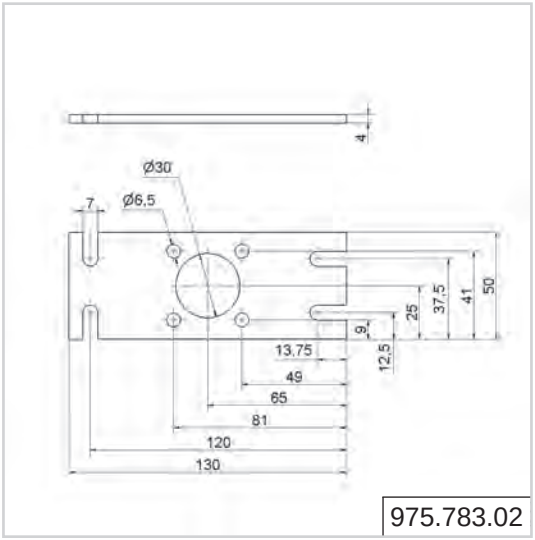

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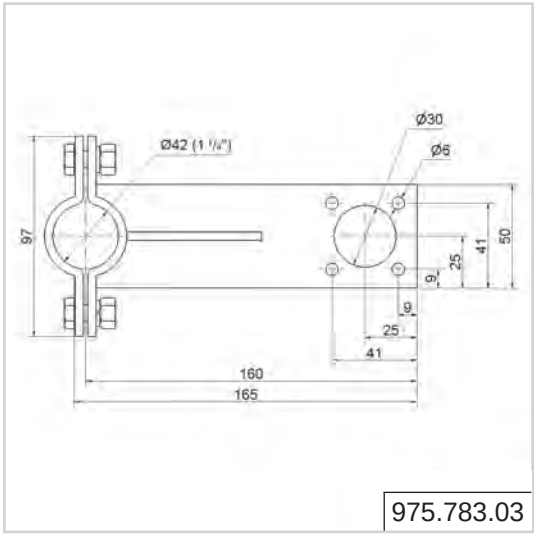

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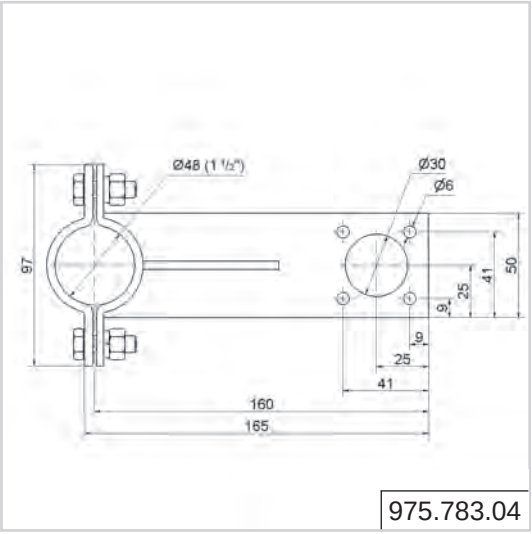

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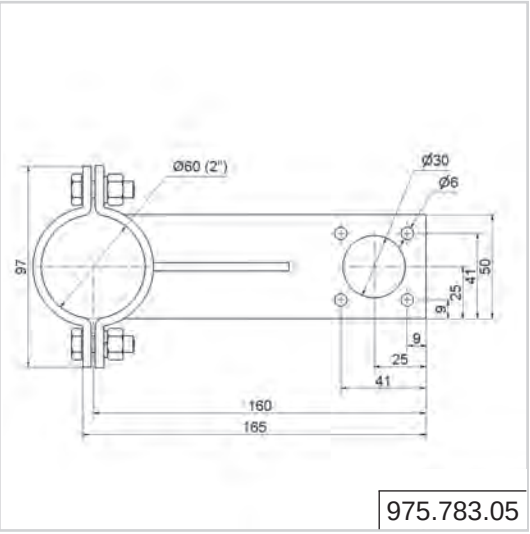

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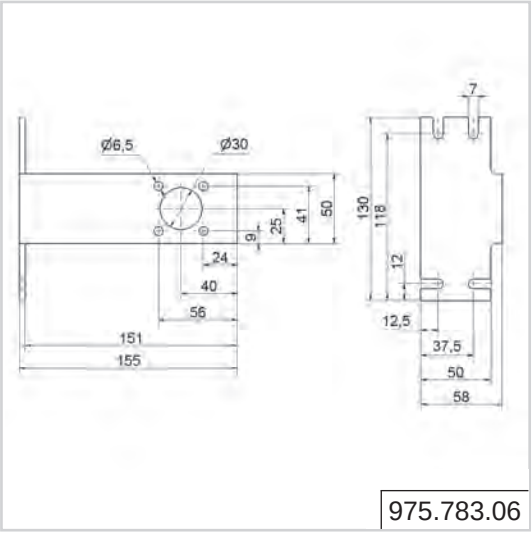

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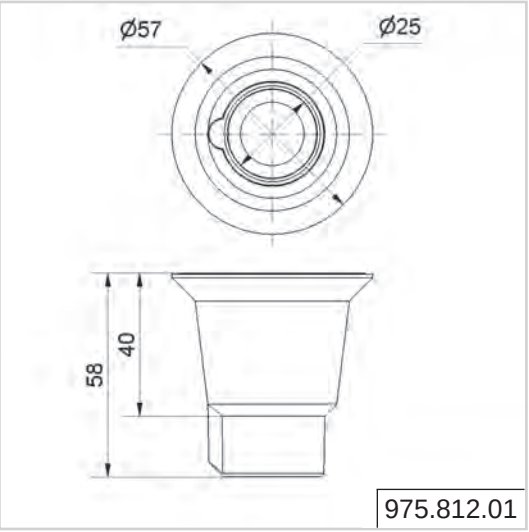

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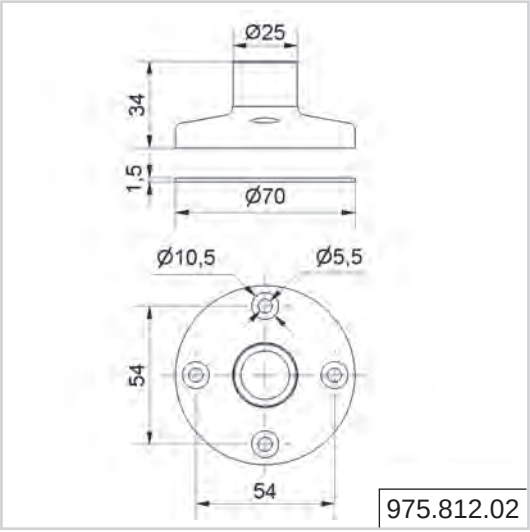

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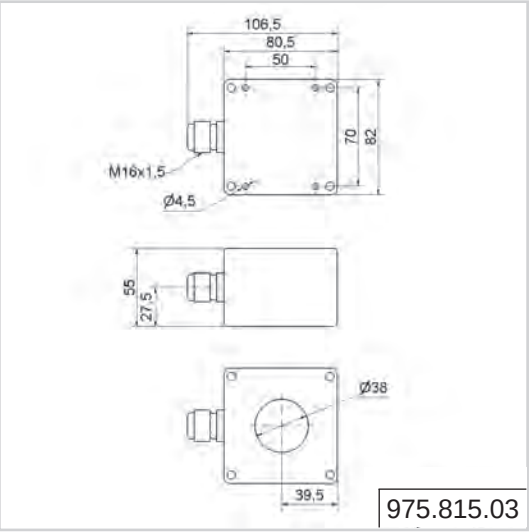

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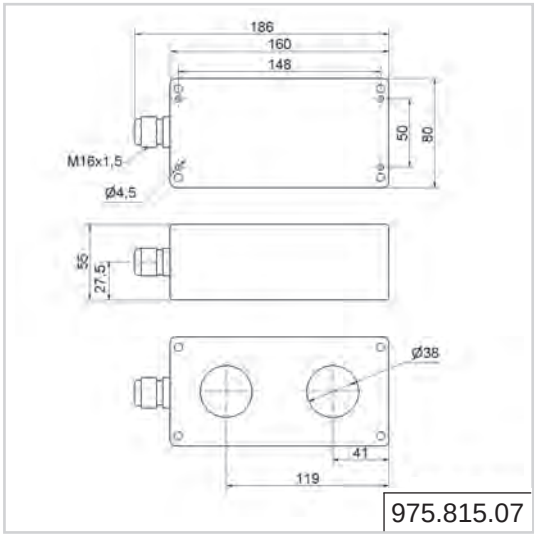
Technical Diagrams



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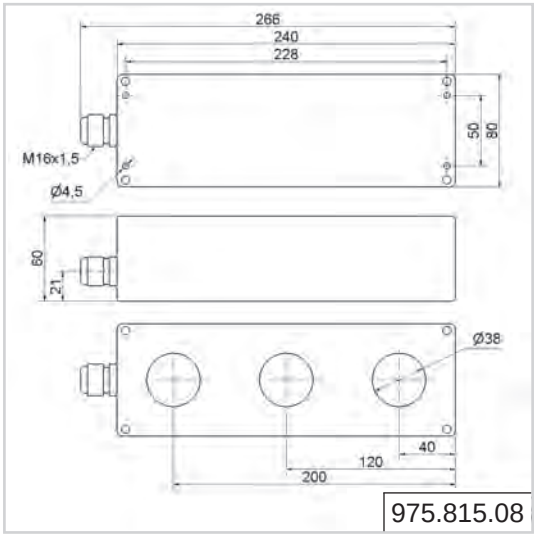

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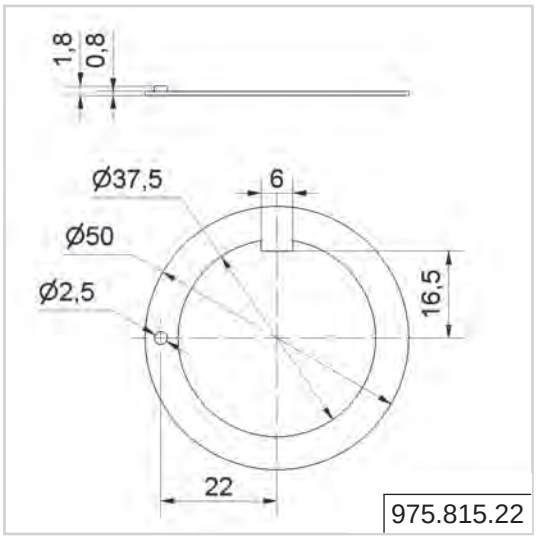

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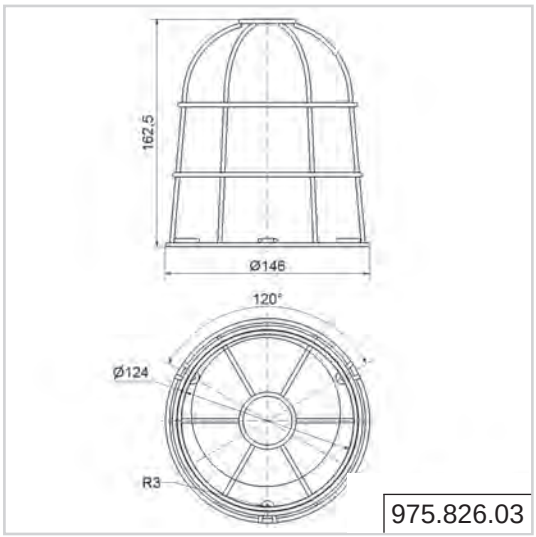

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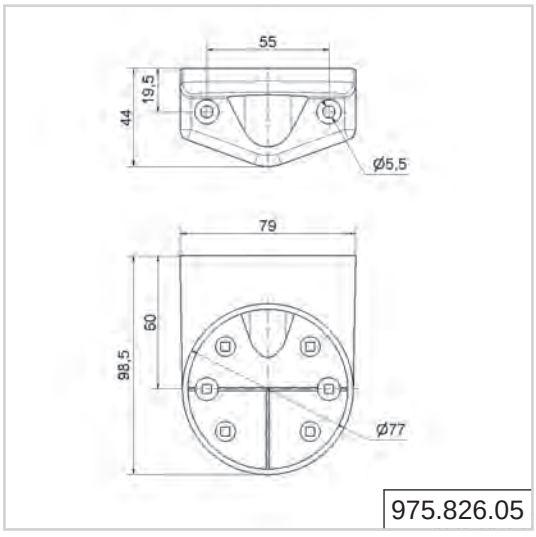

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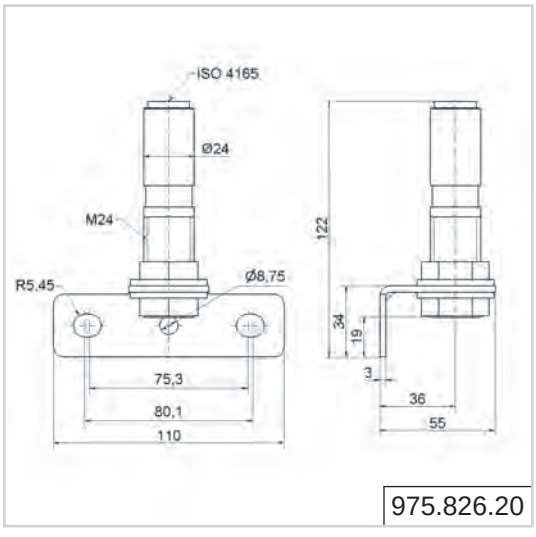

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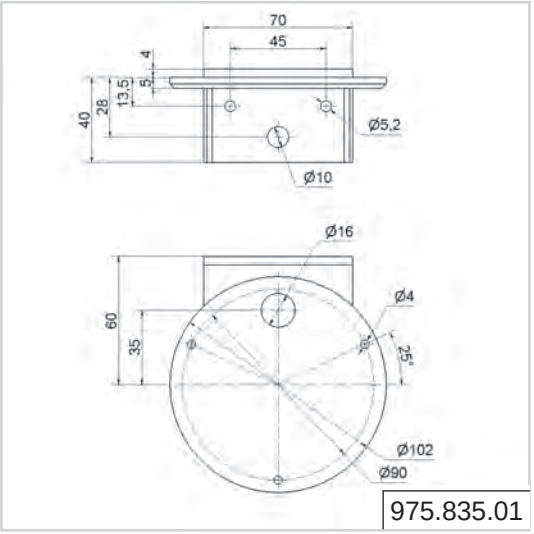

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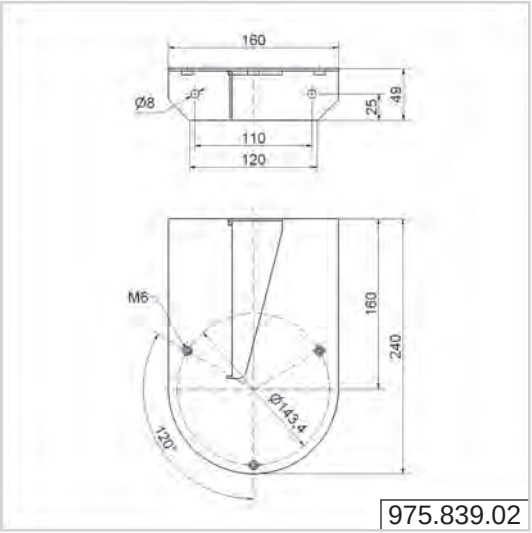

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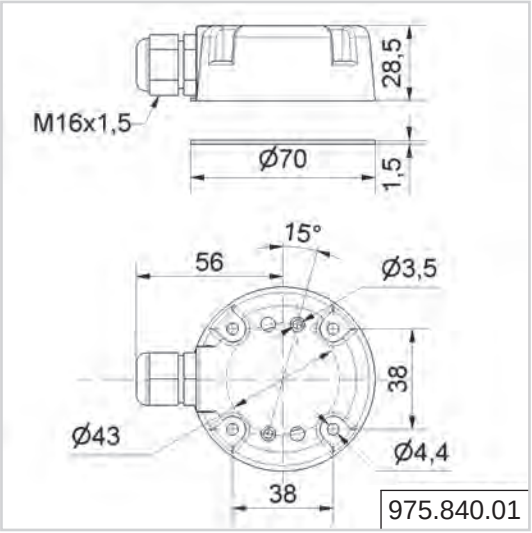

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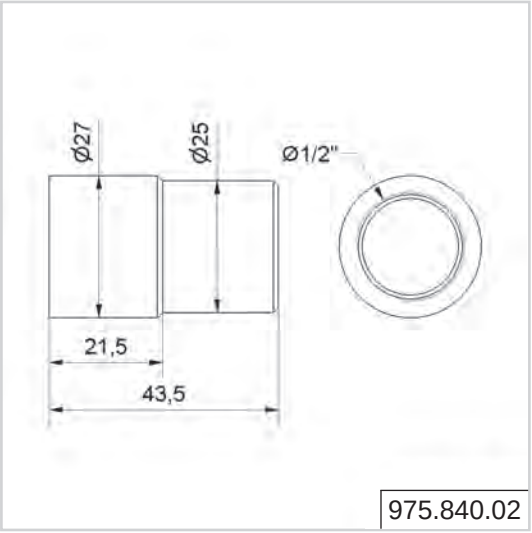

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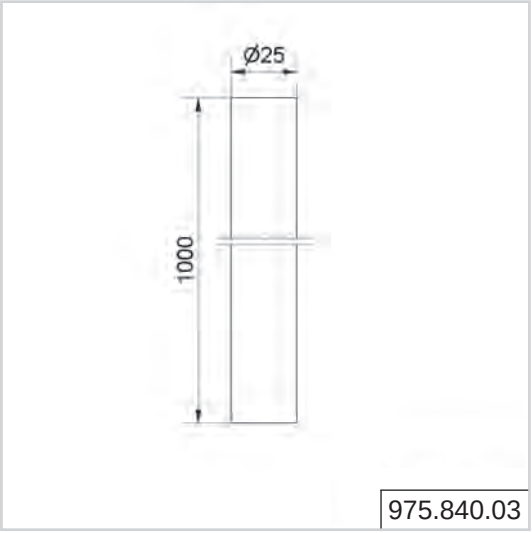

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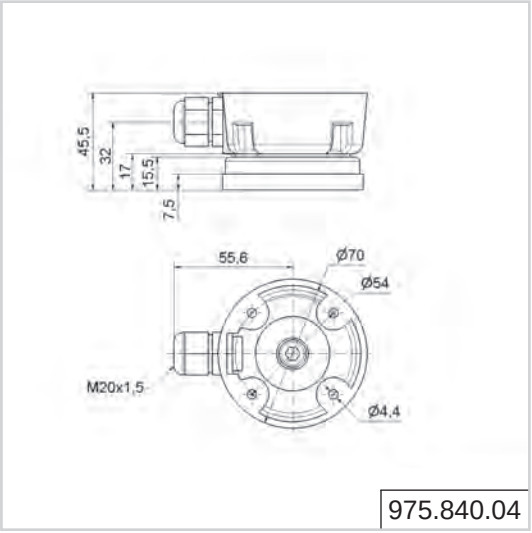

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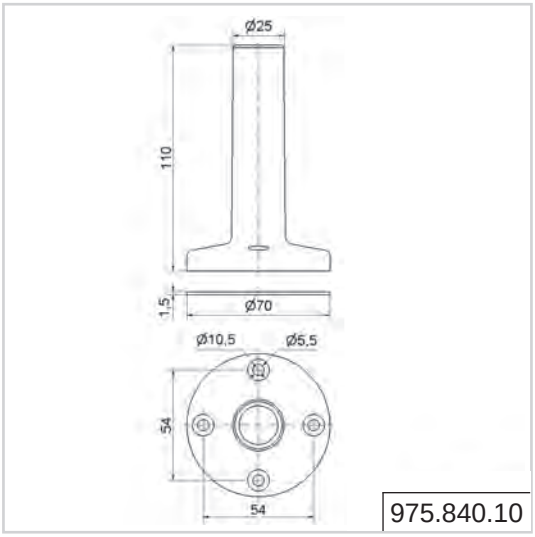
Technical Diagrams



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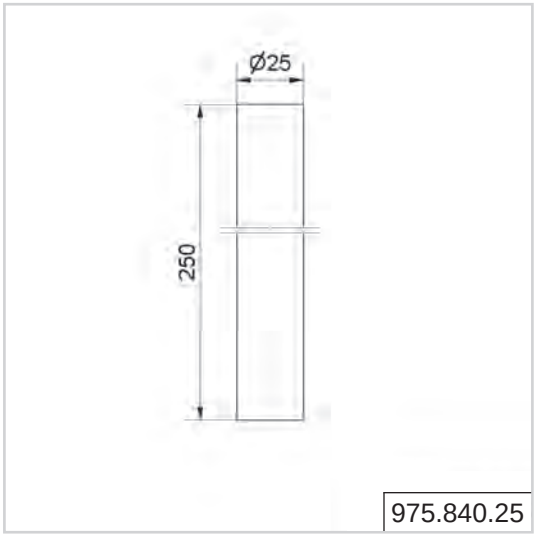

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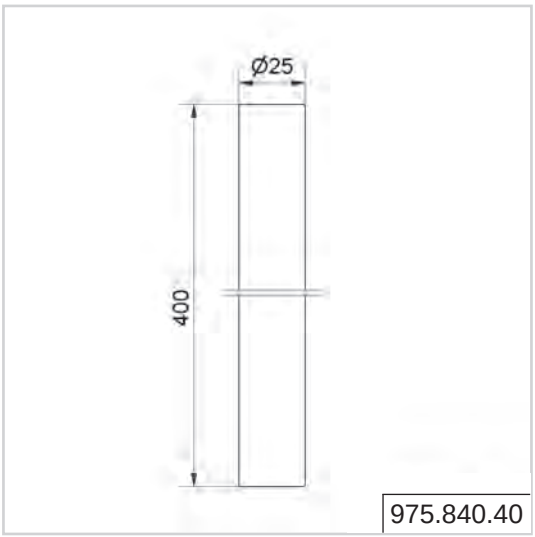

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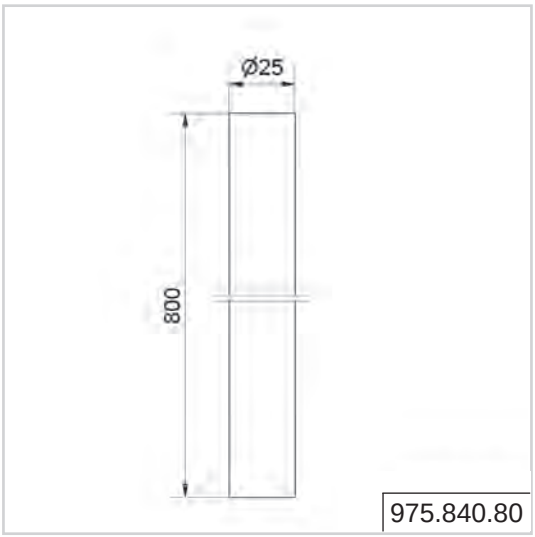

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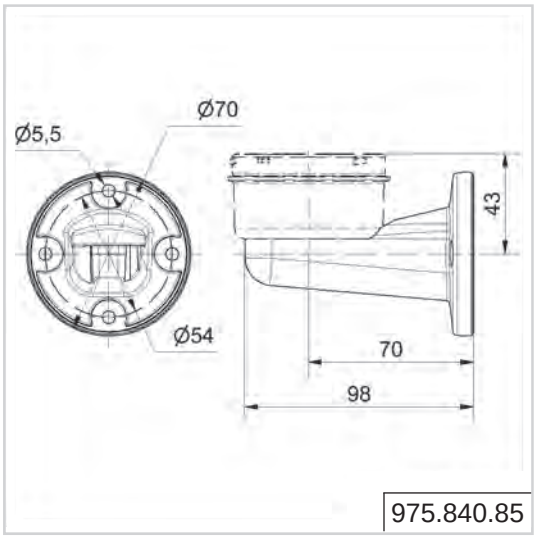

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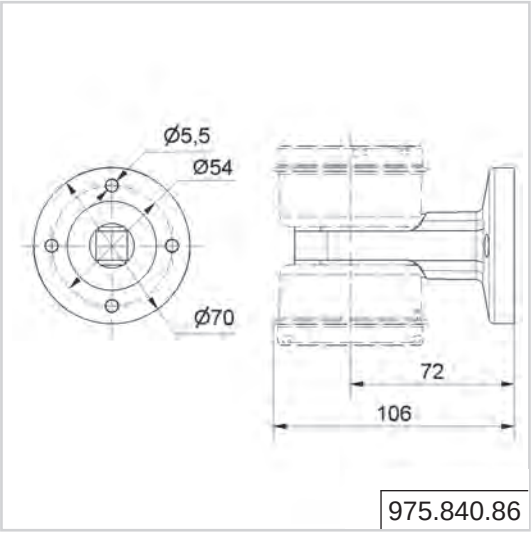

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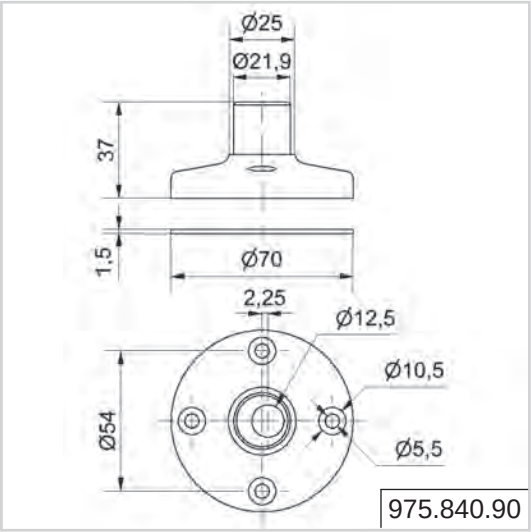

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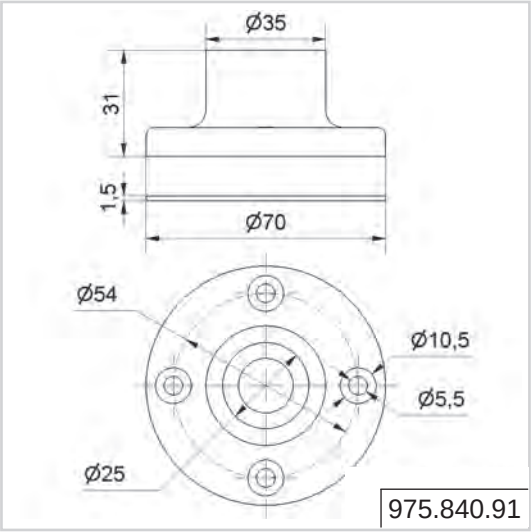

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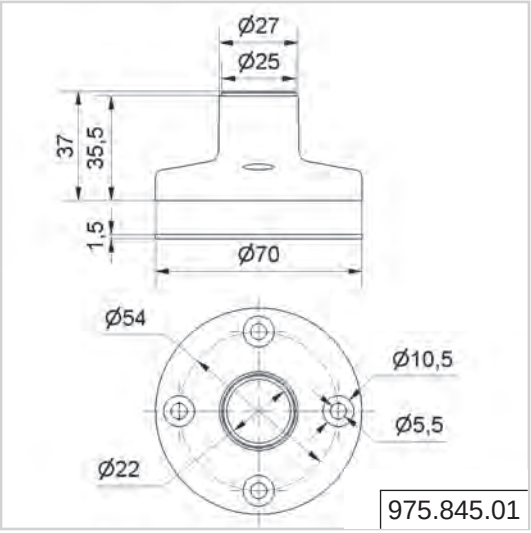

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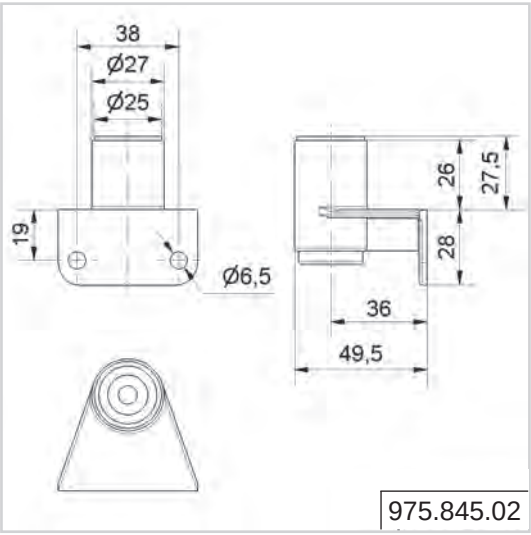

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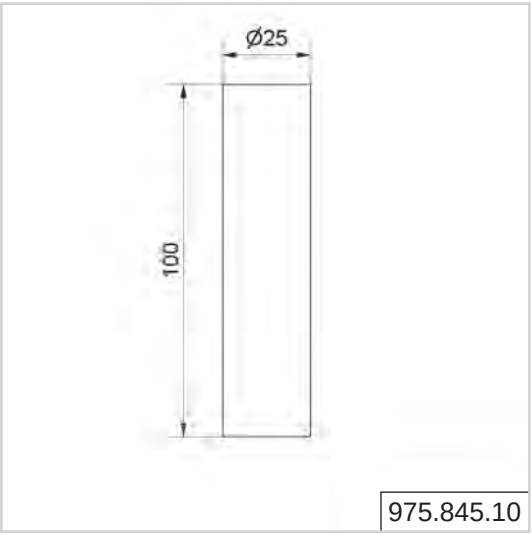

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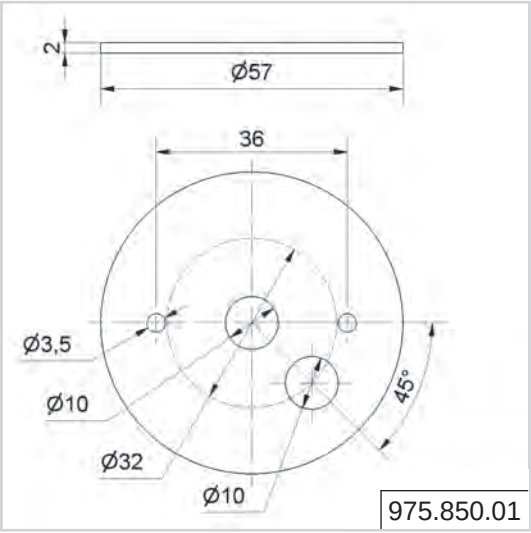
Technical Diagrams



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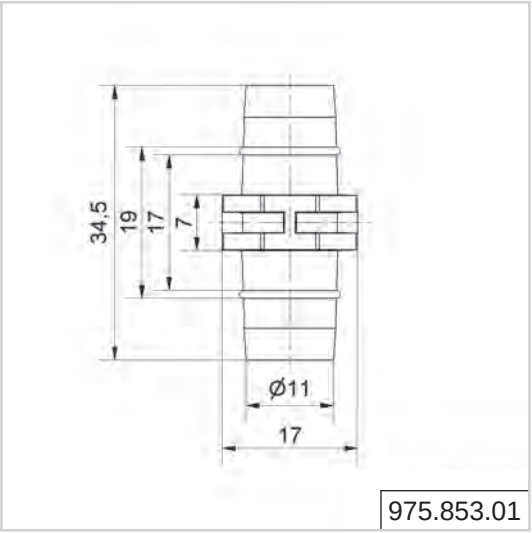

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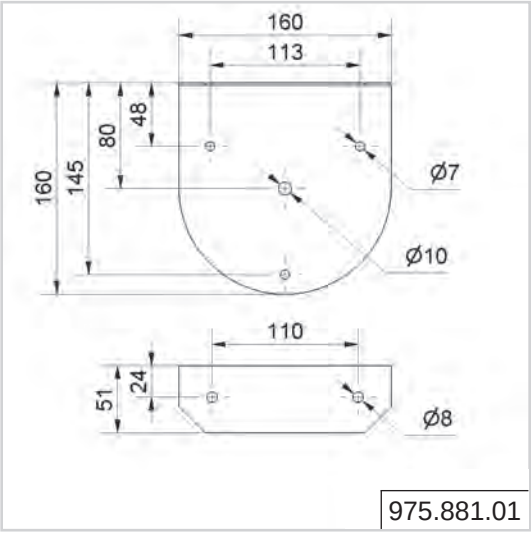

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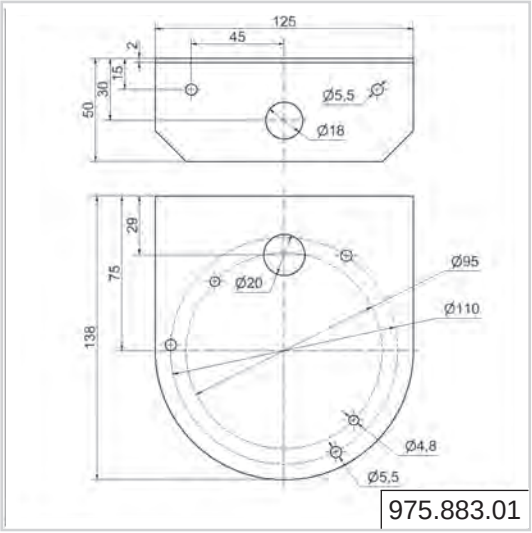

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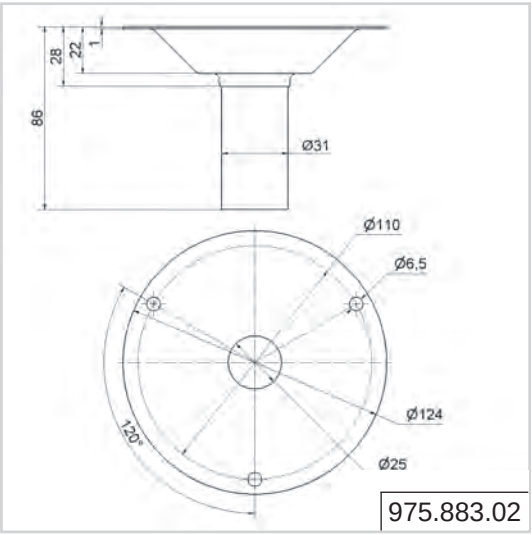

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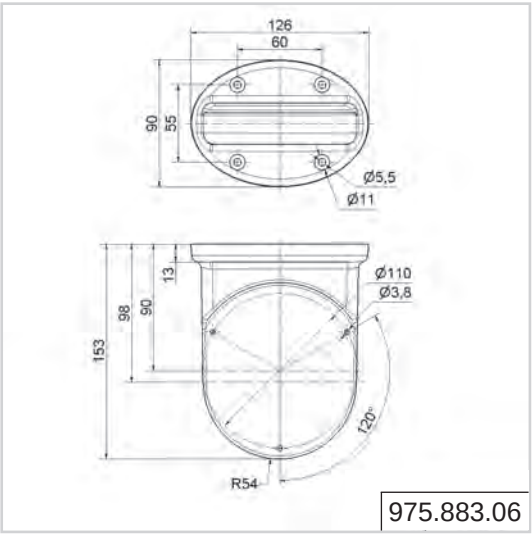

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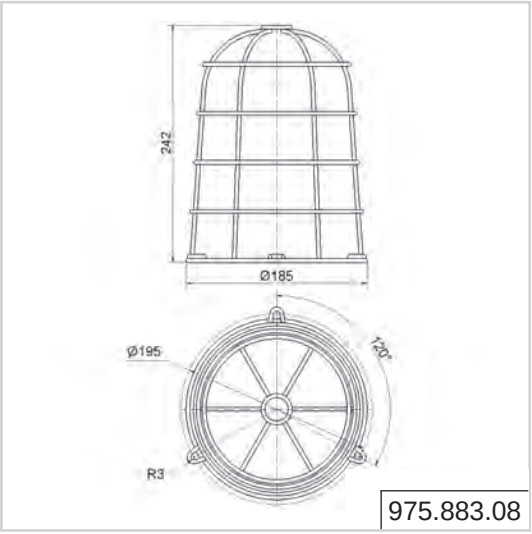

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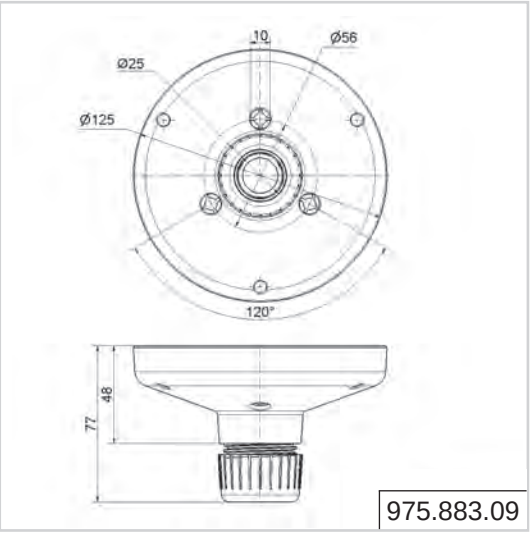

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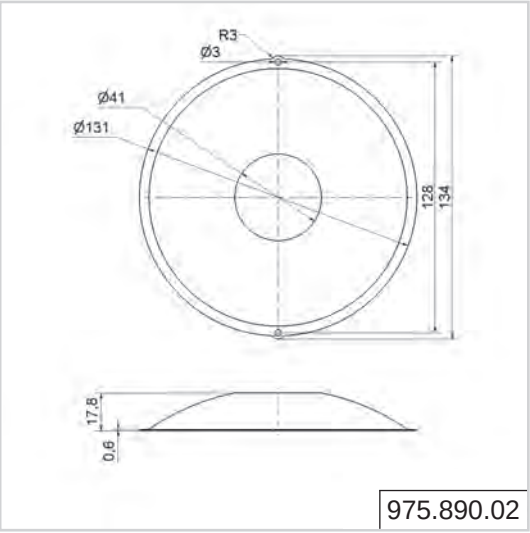

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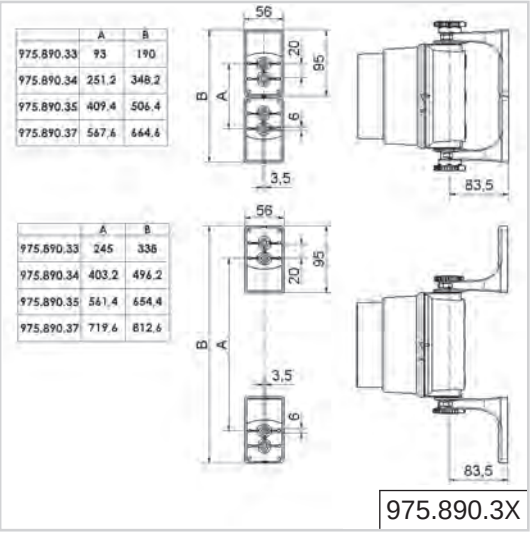

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975.890.33	93	190
975.890.34	251.2	348.2
975.890.35	409.4	506.4
975.890.37	567.6	664.6

	A	B
975.890.33	245	338
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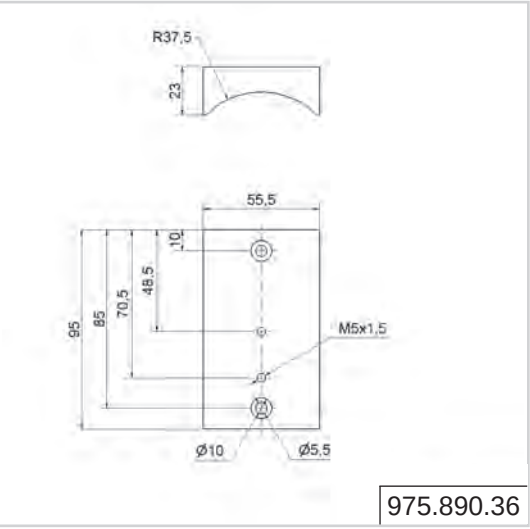
975.890.3X



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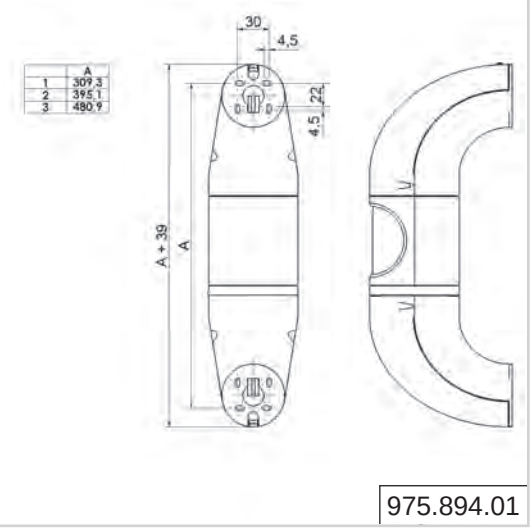

	A
1	309,3
2	395,1
3	480,9

975.894.01

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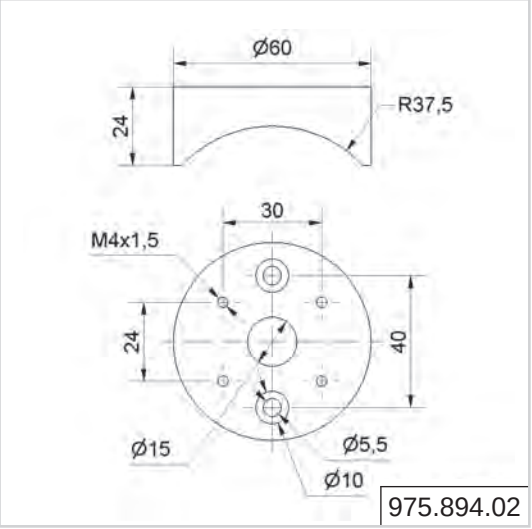

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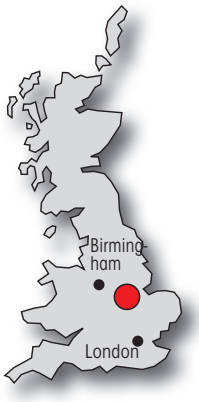

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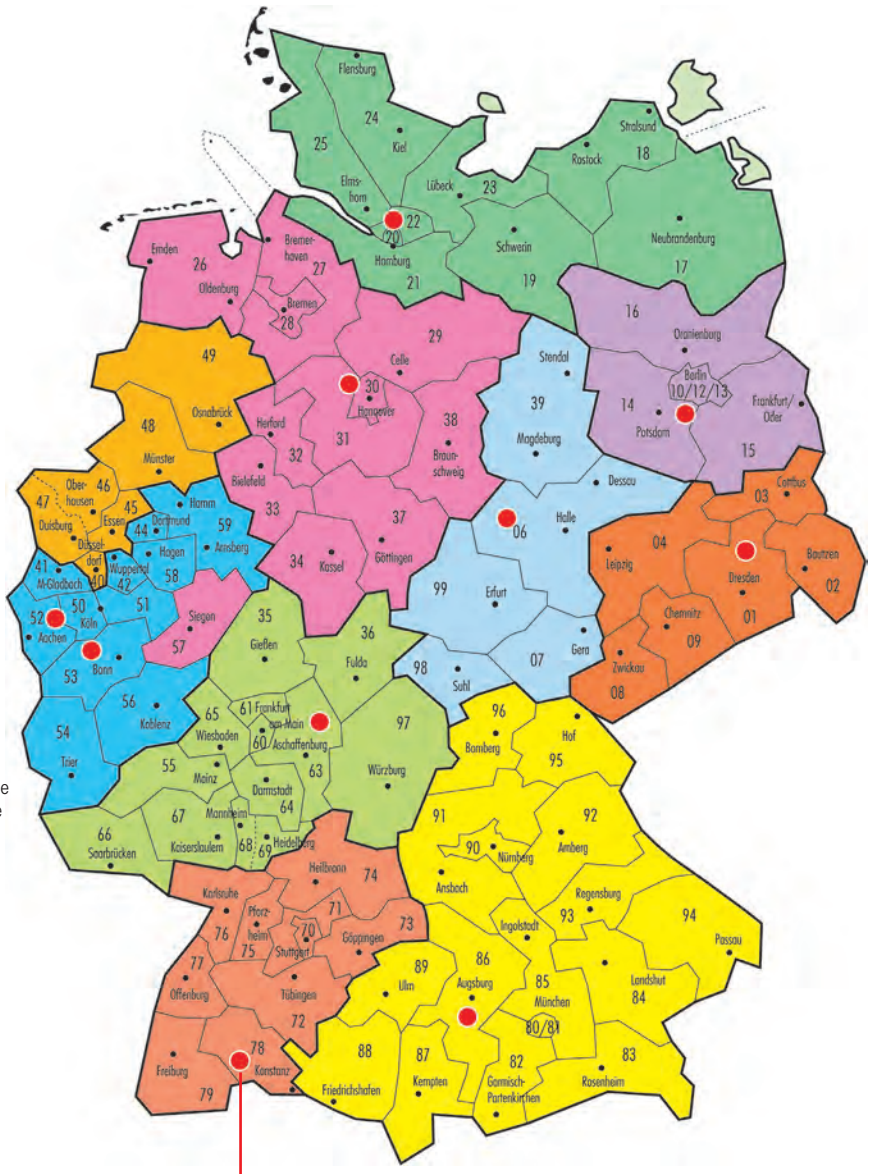

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SALES NETWORK - WORLDWIDE

Details of our international sales network can be found at **www.werma.com**

Terms and Conditions for Delivery and Payment

All supplies and services from our Rietheim, Germany plant are subject to the "General Conditions of Supply for Products and Services of the Electronic Industry" (ZVEI). Any divergent conditions are set in italics.

The foremost articles are listed hereto:

1. General conditions

The scope of the supplies or services (hereinafter called "Supplies") are defined by the written declarations of both parties to the contract. General terms and conditions of the Purchaser apply only where expressly accepted in writing by the Supplier or service provider (hereinafter called "Supplier").
Partial Supplies are permissible where they can be reasonably expected of the Purchaser.

2. Prices and terms of payment

Our prices are net prices, without V.A.T. or packaging charges and are valid from factory premises. Initial deliveries are on the basis of prepayment either by credit card, by bank transfer or cash on delivery (where available).

All payments are to be effected at the latest within 30 days of the date of invoice unless otherwise stated. WERMA grants 2% discount for payments effected within 14 days from the date of invoice.

3. Retention of title

The items of Supplies (Secured Goods) remain property of the Supplier until each and every claim against the Purchaser to which the Supplier is entitled under this business relationship has been duly satisfied. If the value of all security rights of the Supplier exceeds the value of all secured claims by more than 20%, the Supplier will release a corresponding part of the security rights at the Purchaser's request.

In cases of breaches of liabilities on the part of the Purchaser, in particular a default in payment, the Supplier is entitled to termination and to take back the goods. The taking back or assertion of the retention of title does not require termination by the Supplier.

No termination of contract shall arise in these circumstances or on a seizure of the goods by the Supplier, unless the Supplier should have expressly declared this.

WERMA's proprietary right expires only upon full payment.

4. Time for delivery and delay

Observance of the stipulated time for delivery is conditional upon the timely receipt of all documents, necessary permits and releases, especially of plans to be provided by the Purchaser, as well as fulfillment of the agreed terms of payment and other obligations by the Purchaser.

If non-observance of the time for delivery is due to force majeure such as mobilization, war, riot or similar events, e.g. strike or lock-out, such time shall be extended accordingly.

5. Transfer of risk

Even where "carriage paid" delivery has been agreed, the risk passes to the Purchaser as follows:
If the supply does not include assembly or erection, when goods have been delivered to or picked up by carrier. At the Purchaser's request and expense, supplies can be insured by the Supplier against the ordinary risks of transport.

6. Taking delivery

The purchaser may not refuse acceptance of deliveries on account of minor defects.

Goods may only be returned using the standard postal service with prior agreement. A Return Request must be completed and authorized by WERMA. Materials correctly supplied will be subject to a 20% handling fee on return.

Damaged goods, goods in not saleable or customized products (i.e. all articles which are not listed with order number in the currently valid catalogue) are not returnable. Return costs are the purchaser's responsibility.

7. Warranty

The Supplier shall be liable for material defects as follows:
All those parts or services which display a material defect within the limitation period (regardless of the period of operation) shall at the discretion of the Supplier be improved subsequently without payment, re-delivered or re-rendered, provided that the cause of this was already present at the time of passing of risk.

Claims for material defect shall be barred after 24 months.
This shall not apply in as far as statute prescribes longer periods by virtue of sections 438 (1) (2) (buildings and building materials), 479 (1) (claim under a right of recourse) and 634a (1) (2) (building defects) BGB.

The Purchaser shall notify the Supplier in writing of material defects without delay.

Payments by the Purchaser may be withheld on notification of defect to such an extent as bears a reasonable relationship to the material defects arising. The Purchaser may only withhold payments if notification of a defect is given, for which there is unquestionable justification. The Supplier may require the Purchaser to reimburse the expenses arising from cases where the notification of defect is unjustifiable.

The Supplier shall initially always be allowed the opportunity of subsequent performance within a reasonable period of time. The Purchaser may rescind the contract or reduce the payment regard-

less of any claims for damages in pursuance of section 9 hereto, if the subsequent performance shall fail to be effective.

Claims based on a defect shall not arise merely for a slight discrepancy from the agreed characteristic, for merely slight impairment to usefulness, for natural wear of loss which arises following the passing of risk as a consequence of improper or negligent treatment, excessive use, unsuitable operating materials, defective building work, unsuitable building ground or which arise by reason of particular external influences which are not anticipated by the contract, as well as for defects in software which are not reproducible.

No claims based on a defect shall similarly arise for the consequences resulting from improper modifications made or improper repair work carried out by the Purchaser or third party. Claims by the Purchaser for expenses necessitated for the purposes of subsequent performance, in particular costs of carriage, transport, work and materials are excluded to such an extent as the expenses increase because the subject matter of the delivery has been subsequently conveyed to a location other than the place of business of the Purchaser, unless the conveyance corresponds with its use according to contract.

Legal claims by the Purchaser against the Supplier under a right of recourse shall only arise inasmuch as the Purchaser has not entered into any agreements with its customer over and above the statutory claims arising for defects. The preceding paragraph shall further apply correspondingly to the extent of the claims under a right of recourse of the Purchaser against the Supplier.

Furthermore, section 9 hereto (further liability) shall apply to claims for damages. More far-reaching or further claims by the Purchaser against the Supplier and those acting on its behalf on account of a defect other than those regulated in this section are excluded.

8. Impossibility of performance, revision of contract

The Purchaser may demand damages to such extent as the delivery is impossible unless the Supplier is not responsible for the impossibility.

The claim for damages of the Purchaser shall however be limited to 10 % of the value of that part of the delivery which cannot be taken into useful operation by reason of the impossibility. This limitation shall not apply in so far as liability is imposed by law in cases of willfulness, gross negligence or on account of death, physical injury or impairment to health. An alteration in the onus to proof to the detriment of the Purchaser is not connected herewith. The right of the Purchaser to rescind the contract shall remain unaffected.

Where unforeseeable events as described in Art. 4 paragraph 2 substantially change the economic importance or the contents of the supplies or considerably affect the Supplier's business, the contract will be adapted accordingly with due regard to the principle of good faith. Where this is not economically reasonable, the Supplier has the right to terminate the contract. If the Supplier wants to make use of this right of termination, he has to notify the Purchaser in writing immediately after becoming aware of the significance of the event. This applies even where at first an extension of the delivery time had been agreed with the Purchaser.

9. Further liability

Claims by the Purchaser for compensation and reimbursement of expenses (hereinafter called "further liability") on whatever legal basis, in particular on account of breach of duties arising out of the contractual obligation and from tortious acts, are excluded.

This shall not apply where liability is imposed by law, for example, pursuant to the law of product liability, in cases of willfulness, gross negligence, on account of death, physical injury or impairment to health, or on account of breach of material contractual obligations.

The further liability for breach of material contractual obligations shall however be limited to foreseeable damage typical for a contract, unless willfulness or gross negligence is present or liability exists on account of death, physical injury or impairment to health.

An alteration in the onus of proof to the detriment of the Purchaser is not connected with the said provisions.

10. Competent Court

Sole competent court for any dispute arising directly or indirectly from the above contract is D-78532 Tuttlingen.

All contractual business is regulated by German law, not regarding the United Nations Agreement concerning international sales (CISG).

11. Validity of the contract

Even in case of legal invalidity of individual items, the remaining parts of the contract remain binding save where adherence to the contract would mean an undue hardship on one of the parties.

12. Alterations

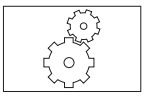
WERMA reserves the right to alter its products to the end of technical improvement.

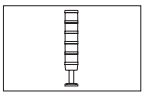
WERMA Tax Number 21083/05258

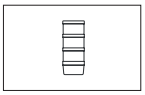
These Terms and Conditions apply to WERMA Rietheim. Terms and Conditions for other countries are available on request.

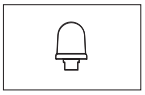
General Information

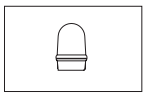
Key to Pictograms "Product Groups"

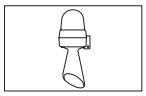

Product Group "Systems for Process Optimisation in Production, Assembly and Logistic areas"

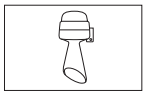

Product Group "Signal Towers · Modular"


Product Group "Signal Towers · Completely pre-assembled"


Product Group "Optical Signal Devices · Installation Beacons"


Product Group "Optical Signal Devices · Free-standing Beacons"

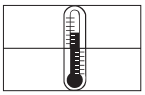

Product Group "Optical-Audible Signal Devices"

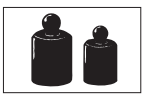

Product Group "Audible Signal Devices"

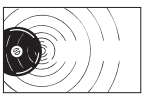
Product Group "Ex Signal Devices"

Key to Pictograms "Product Descriptions"


Protection rating according to EN 60 529. Explanation page 318

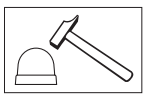

Working temperature in °C, highest and lowest rating


Net weight excluding packaging, in grams, ie. kgs


Volume in decibels (dB (A)) measured at 1m distance


Number of possible tones


Flash energy in watt seconds (Joules)


Impact resistance in Joules

Suitable for triggering via PLC

Key to Pictograms "Marks of conformity and protection types"

All WERMA products bearing the CE mark conform to current EU regulations and are tested for adherence to EMC codes.

Products in compliance with the AS-Interface specifications (EN 50295, IEC 62026-2) and which have been certified by the AS International Association are marked with the AS-Interface certification logo (shadowed logo).

This mark confirms that the product is suited to the intended application and conforms to the relevant standards and guidelines. In addition, the technical specifications provided by the manufacturer are certified by the TÜV.

Products with this mark have been tested and registered by UL for the North American market. This certification is also valid for Canada. The WERMA production facility is audited by UL.
Products with the addendum "Class 2" may only be used in electric circuits that have been constructed in accordance with UL Class 2.

The aim of EHEDG (European Hygienic Engineering and Design Group) is to prepare and publish guidelines for hygienic engineering in the maufacturing and packaging of foodstuffs.
The certification by this consortium confirms compliance with strict design criteria for avoiding weaknesses in construction and for minimising the risk of contamination.

The Fraunhofer Institute certificate for production engineering and automisation (IPA) is a test label for products which have been qualified according to recognised standards and guidelines as to their objective suitablility for use in clean rooms.

Devices bearing this mark and number are authorised for use in hazardous areas. Ex devices guarantee a high level of resistance to extreme conditions.

The VdS guidelines contain the standards which signal devices must fulfil in order to be built into intruder and fire alarm systems.

The Eurasian conformity symbol EAC is granted by the customs union Russia/Bellarussia/Kazakhstan. The EAC symbol confirms that the product has undergone the conformity procedures and has met its technical requirements. It will replace the current GOST R certificate in the summer of 2014.

German Lloyd sets technical, quality and safety standards for the industrial and maritime sector.
In addition to the classification of ships of all types, German Lloyd is also active as a world-wide technical monitoring society.

This approval symbol documents that the product fulfills the minimum technical requirements for use on vehicles.

The IECEx certification confirms that the product has been certified as suitable for use in explosion endangered applications. The product has been manufactured at a site which is continuously assessed by the responsible authorities. The certificate is recognised in all countries participating in the IECEx system.

The special organisation of the United Nations has given the ICAO (International Civil Aviation Organisation) the task of establishing and developing uniform regulations governing the safety and economic viability of civil aviation processes. The guidelines of the ICAO will only be applicable to all member states but must also be transferred into local statutes of law.

General Information

General notes on catalogue descriptions

Sound levels and frequencies
The specified sound levels are based on tests carried out in our factory. These levels are typical for the specific products and inevitably subject to variation. Mounting position and/or type can alter specifications.

The rated frequencies of buzzers are also dependent on the tolerances of the individual components and can vary up to 500 Hz from the quoted rating. No frequency rating can be stated for horns as the spectrum is so wide that any stated rating cannot be accurate. The fundamental frequency for AC devices is 100 Hz, for DC devices c. 200 - 500 Hz. This means that they emit a deeper tone than piezo devices which have values typically between 2000 and 3000 Hz.

Current consumption
The current consumption levels quoted are standard values. The ratings are based on the virtual value for AC, i.e. the average value for Dc.

The measured value is normally calculated over a period of 10 seconds. The highest current consumption rating can be considerably higher than the calculated rating.

The starting current of a product can be above the rated current by ten fold.

Assured values
The technical specifications of our products have been rigorously and thoroughly tested. A quality guarantee according to § 463 BGB is however only applicable where expressly stated.
WERMA is only liable for damage arising from the failure of guaranteed properties when the guarantee was expressly intended to protect the customer from this damage.

Measurements, weights, ratings and illustrations are subject to technical amendment.

Product descriptions

The product descriptions found in the price list and on all documents are made up of the following information:

Product type:	**Fixing:**	**Tone type:**	**Voltage:**	**Colour:**
Electronic Buzzer	BM = Base mounting	32 tones	12 V	BK = black
LED Permanent Beacon	BWM = Base/Bracket mounting	4 tones	24 V	BU = blue
etc.	EM = Installation mounting	etc.	115 V	CL = clear
	RM = Tube mounting		230 V	GN = green
	WM = Bracket mounting	alternating cont./pulse	etc.	GY = grey
		continuous pulse		RD = red
				YE = yellow
				WH = white
				MC = multicolour

Examples:
Electr. Buzzer EM Continuous tone 115 V UC
LED Permanent Beacon EM 24 V DC RD

Note: Colour order of a signal tower from the bottom to the top

Technical Drawings, CAD Drawings and Connection Diagrams

A detailed drawing of each product can be found under the **heading "Technical Diagrams" beginning on page 294 onwards**. The technical diagrams are in the numerical order of the first three digits of the article number.

To help customers find the technical diagrams for the desired product even more quickly, we have included a reference on the relevant product page stating the page number for the corresponding diagram located in the "Technical diagrams" section.

You are welcome to request the technical diagrams in **digital form**. The relevant **3D models**, **instruction leaflets** and **connection diagrams** can be obtained from us or downloaded from our home-page at any time.

Select the required produc t or search with the aid of the part number, go to "downloads" and click on "drawing" and save the file.

Key to optical signals

Colour: Red

Meaning:
extreme danger /
hazardous conditions

Colour: Yellow

Meaning:
beware /
dangerous conditions
imminent

Colour: Green

Meaning:
normal conditions

Colour: White/ Clear

Meaning:
no particular
meaning

Colour: Blue

Meaning:
conditions requiring
defined action

Key to audible signals

Multi-Tone

Description
scale in differing frequencies (various high / low frequencies) with regular, cyclical intervals

Meaning:
extreme danger /
immediate action

Two-Tone

Description
scale in differing frequencies (one high, one low frequency) with regular, cyclical intervals

Meaning:
extreme danger /
immediate action

Alternating Tone

Description
continuous tone with graduated decrease and increase of sound frequencies

Meaning:
danger / immediate action

Pulse Tone

Description
regular intervals between on and off cycle

Meaning:
danger / immediate
reaction

Continuous tone

Description
continuous tone in specific frequency

Meaning:
safety

MTTF values

"MTTF" is the abreviation for **Mean Time To Failure** and is also described as the average life cycle or **"$MTTF_d$"** (= the average time until failure leading to a dangerous situation).

The European Norm **EN ISO 13849-1** has caused a new significance to be attached to "MTTF" values, because they are used to evaluate machine safety within the conformity tests.

The MTTF is a statistical value, which is calculated by **means of testing or experience** of past values. It does not provide a guaranteed life duration or a guaranteed functional period.

MTTF values have been calculated for a variety of **WERMA products**. Please contact us for further details.

Contamination at the site

Devices with the protection rating of IP54 or higher, or which are exposed on one side, may only be installed in areas which have a contamination degree of 2 or better. Or the exposed side must be sealed with an additional sealing element.

General Information

Protection ratings

Protection ratings for signal devices: Protection ratings for housings DIN EN 60529 (DIN VDE 0470 IEC 60529).

First digit:
degree of protection against contact with dangerous parts and the intrusion of foreign particles.

IP 0X no protection

IP 1X protection against contact with the back of the hand.

IP 2X protection against finger contact with live or moving parts in the appliance. The test finger with Ø 12 mm and 80 mm length must not come into contact with dangerous parts. A ball of 12.5 mm diameter should not be able to fully penetrate the housing.

IP 3X test bar Ø 2.5 mm may not penetrate the housing.

IP 4X a wire with Ø 1 mm may not penetrate the housing.

IP 5X complete protection against dust cannot be guaranteed, but dust is not able to accumulate in such a way as to impair the operation of the device.

IP 6X total protection against dust (no penetration).

Second digit:
degree of protection against water.

IP X0 no protection

IP X1 protection against vertically falling water drops.

IP X2 protection against water drops so long as the device is tilted to an angle of 15°.

IP X3 protection against water spraying at any angle up to 60° to the vertical.

IP X4 protection against water spraying at any angle.

IP X5 protection against jets of water directed from any angle at the appliance.

IP X6 protection against heavy seas. A strong jet of water may not harm the appliance.

IP X7 protection against occasional immersion.

IP X8 protection against permanent immersion.

IP X9k protection against water during high pressure / steam cleaning.

Comparison between NEMA and IEC protection ratings - classification

NEMA Protection Type Number	Protection	IEC Protection Classification Designation
1	Falling dirt	IP 10
2	Dripping water and falling dirt	IP 11
3	Wind blown dust, rain and hail;	
	no damage due to external ice formation	IP 54
3 R	Rain and hail; no damage due to external ice formation	IP 14
3 S	Wind blown dust, rain and hail;	
	can be operated even with external ice formation	IP 54
4	Wind blown dust, rain, splashes and a direct jet of water;	
	no damage due to external ice formation	IP 56
4 X	Wind blown dust, rain, splashes and a direct jet of water;	
	no damage due to external ice formation, corrosion protection	
5	Dust, falling dirt, dripping non-corrosive liquids	IP 52
6	Direct jet of water, temporary submersion;	
	no damage due to external ice formation	IP 67
6 P	Direct jet of water, longer periods of submersion;	
	no damage due to external ice formation	IP 67
12 and 12 K	Circulating dust, falling dirt, dripping non-corrosive liquids	IP 52
13	Dust, splashes of water, oil, non-corrosive liquids	IP 54

Cannot be used to convert IEC Classification Designations to NEMA Type Numbers.
Note: This comparison is based on tests specified in IEC Publication 60529.

AS-Interface

AS-Interface, the Actuator Sensor Interface and its distinctive 'yellow cable' is one of the most innovative networking solutions in modern automation technology.

Conceived in 1990 as a cost-efficient, feature-rich alternative to conventional hard-wiring, AS-Interface has now been proven in hundreds of thousands of products and applications spanning the entire automation spectrum.

AS-Interface offers many of the benefits of more powerful and expensive fieldbuses, but at much lower cost and at much simpler application. The complete network is controlled automatically by a 'master' which polls the network sending and receiving data from each connected device in turn. It automatically senses and registers any connected devices, thus neither configuration nor application-specific software for the master is necessary.

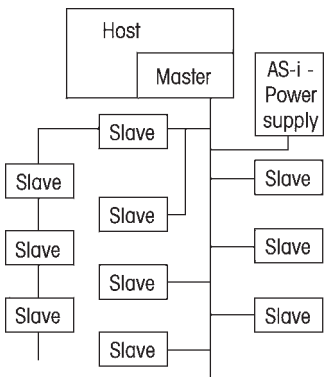
Unique technology

Due to the cable structure, AS-Interface offers a unique mounting technology. Without any cutting or removal of insulation, sharp pins penetrate the cable insulation making the electrical contact as the connection elements are closed. This technology ensures protection up to IP 65.

Cost savings

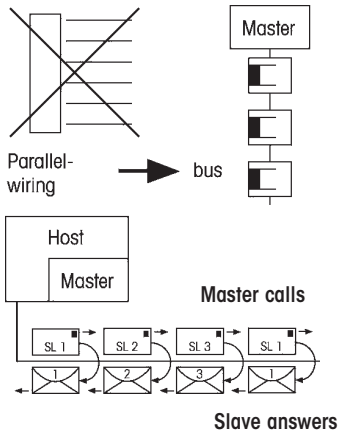
In general, applications from as few as ten sensors and actuators to very large systems can benefit, especially when the whole life cost advantages are taken into account. Distributing the input and output functionality is one starting point for cost savings, enabling point to point wiring systems to be reduced to a single cable, eliminating or reducing cable trees, service cabinets and multiple connectors. The special AS-Interface connection technology replaces labour-intensive wiring. The tree structure permits better optimised system design and improved layouts, bringing easier installation and maintenance. Network configuration is eliminated.

System Survey



- Single master-slave principle
- Up to 62 slaves with one master
- Per slave up to 4 digital inputs + 4 digital outputs
- Max. 248 digital inputs and outputs
- Additional 4 parameter bits/salve
- Also possible: analogue I/O
- Electronic addressing of slaves
- Free structure of the network

How AS-Interface® works



- AS-Interface® - a bus system, which subsitutes parallel wired installation from pic to sensors and actuators
- Data and energy in the same cable
- 1 Master and max. 62 slaves
- Total cycle time < 10 ms - with max. number of 32 slaves
- Master-slave principle: The master calls and the slave answers immediately

Cable power

The yellow cable can carry up to 8 A, which means that no additional wiring is required in typical installations. Several hundred mA may be drawn by a single slave device on the network. Where higher power is needed, or for emergency stop situations, a black secondary DC or AC power cable offers complementary advantages. If round cable is preferred, a wide variety of screw and push-fit termination modules offer this, with no performance compromise.

Products with AS-Interface

WERMA Signaltechnik GmbH & Co. KG has been a member of the AS - Interface® Association since 1996.

WERMA's product range encompasses the LED/Buzzer Combination 450 with acknowledgement function for AS- Interface®. The combination unites a very bright light signal with the powerful sound of a buzzer. By gently pressing the front surface of the product the audible signal can be turned off in a matter of seconds. This acknowledgement signal is fed back to the master via the AS-Interface Bus.

In addition, the LED Installation Beacon (Multicolour) 239 is available for AS-Interface®. This is suitable for the extended addressing (A/B engineering) of up to 62 modules. This beacon is provided with electricity via the bus.

WERMA's product range also contains products with AS-Interface® for Kombi*SIGN* 50, 70 and 71 as well as customised developments. The entire BUS electronic system is integrated in the element placed at the base of the signal tower. The Kombi*SIGN* AS-Interface® elements offer the customer beneficial features such as an addressing socket and status LEDs. A user-friendly sliding switch inside the module can be used to provide the power supply required for the signal towers from an external 24 V auxiliary voltage or via the integrated bus bypass.

EVS - Enhanced Visibility System

Patent approved

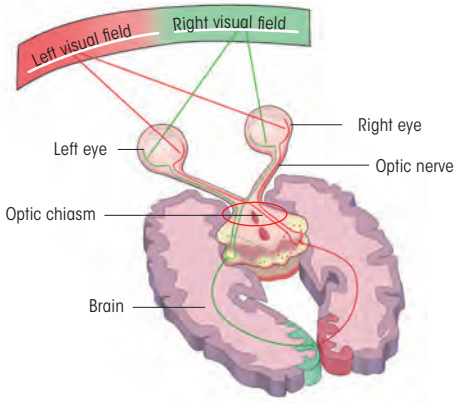
A groundbreaking innovation in LED technology opens up a completely new dimension in optical signalling. Enhanced Visibility System, or the electronic improvement of visibility, EVS for short, is the name WERMA has given to this latest development which promises to bring about a revolution in signal technology.

EVS - attention-grabbing neurobiological light effect

The flickering of neon lamps and comparable lighting effects are highly effective at attracting our attention. The neurobiological basis of this phenomenon is explained by a university scientist as follows: Light signals are processed in the human brain, not directly in the eye. In order to be consciously registered there, incoming stimuli first have to pass through a form of filter.

This filter has a "protective" function. During sleep it reduces disturbing stimuli to a minimum and assists in "overlooking" regular or continuous signals.

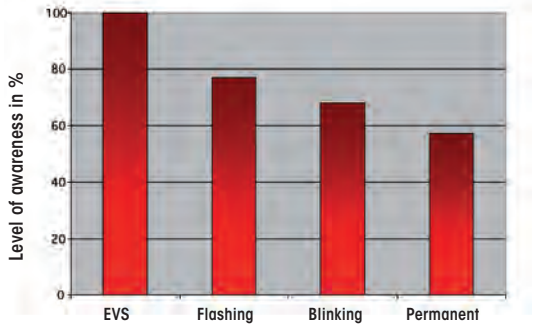
Irregular light impulses can circumvent the brain's filter function. Random light signals fail to generate an acclimatisation effect and the brain is unable to escape the stimulus, even when the flickering continues for an extended period.



The way in which the brain processes visual stimuli formed the basis for the development of the new EVS technology

EVS - flickering light without acclimatisation

Laboratory Test Results
Level of awareness generated by different light effects



On the basis of this understanding, WERMA's R+D department set out to find a flickering light with a high degree of effectivity in attracting attention. In a multi-stage laboratory experiment test candidates were asked to judge a series of different light signals and determine the most eye-catching light.

The result of the study was a stochastic flickering light with optimal attention-grabbing characteristics: EVS - Enhanced Visibility System! The light effect of this system is completely new and distinguishes it from all previous systems.

Epilepsy warning

People who suffer from photosensitive epilepsy may suffer epileptic fits or other loss of consciousness if exposed to certain types of flashing lights or other light effects. This might also occur in people who thus far have not suffered any sort of epileptic fit.

EVS signal devices communicate highly urgent situations

As a result of the extremely powerful signal effect, the EVS light is especially suited to signalling acute or highly important conditions. The EVS element can also be deployed in hazardous situations or in areas where immediate action is required.

Integrated into Kombi*SIGN* Signal Towers, the EVS LED Element generates a highly attention-grabbing signal (see page 46 and 31).

This innovative technology is also used in the 853, 280 and 829 series (page 152 onwards) and in the optical-audible combinations 444 (page 211 onwards) and 43x (page 200 onwards).

EVS - unique light effect using LED technology

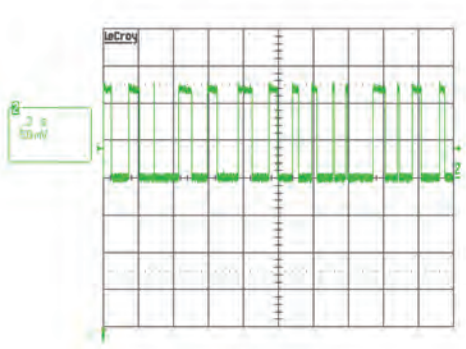
For the EVS system WERMA employs light emitting diodes. A microprocessor generates random light signals.

This gives the light a very "agitated" character which proves highly effective in drawing the attention of those in its vicinity - even when seen out of the corner of the eye.

Up to now LED signal devices have confined themselves to imitating the light effects of light bulbs or xenon flashes, EVS however utilises the strengths of light emitting diodes. LEDs are capable of generating the required high flickering frequency with ease - frequencies which xenon flashes are for example incapable of generating.

There are a series of additional, classical advantages to LEDs - their resistance to vibration and shocks, their long life duration as well as their low energy consumption.

Typical 2 second section of an EVS LED element's illumination sequence



LED Element „ultrabright“

Good visibility, even in direct sunlight, is a basic precondition for the reliable deployment of signal devices in outdoor areas. This is a standard feature of the signal towers and beacons from WERMA Signaltechnik. There are however applications which place even more extreme demands on the visibility of optical signalling.

Up to 20 times brighter

Thanks to its sophisticated triggering, the innovative LED element "ultrabright" is up to 20 times brighter than conventional LED beacons - making it almost certainly the **brightest permanent light** that the world of signalling technology currently has to offer.

Furthermore, the **intelligent electronics** ensure that the LEDs operate at maximum brightness, depending on the ambient and operating temperatures. The "ultrabright" LED element is therefore always working at its optimum, and the energy-saving LED technology ensures that power consumption is kept to a minimum.

Brighter than sunlight

For example, the signalling of **mobile crane movements** on large construction sites must be clearly visible over large distances, even when the signal beacon is exposed to direct sunlight.

The "ultrabright" LED signal tower element for the WERMA signal towers Kombi*SIGN* 70 and 71, effortlessly meets these requirements. Its **bundled light** is brighter than the incidental sunlight, making it clearly visible.

“Ultrabright“ masters the reflection of sunlight in snowy conditions

Skiers on the piste enjoy the sunlight. However, at the lift **turnstiles** sunlight reflected from the snow can be debilitating. Even in these extreme conditions, the Kombi*SIGN* "ultrabright" element wins out against the blinding sunlight, **providing a clear and unambiguous signal:** "Please enter now!"

In short: Wherever the sun or other lighting factors impede visual perception, the WERMA signal towers Kombi*SIGN* 70 and 71 triumph with their "ultrabright" LED element.

You will find further technical information together with the order data on page 50 (Kombi*SIGN* 70) and page 35 (Kombi*SIGN* 71).

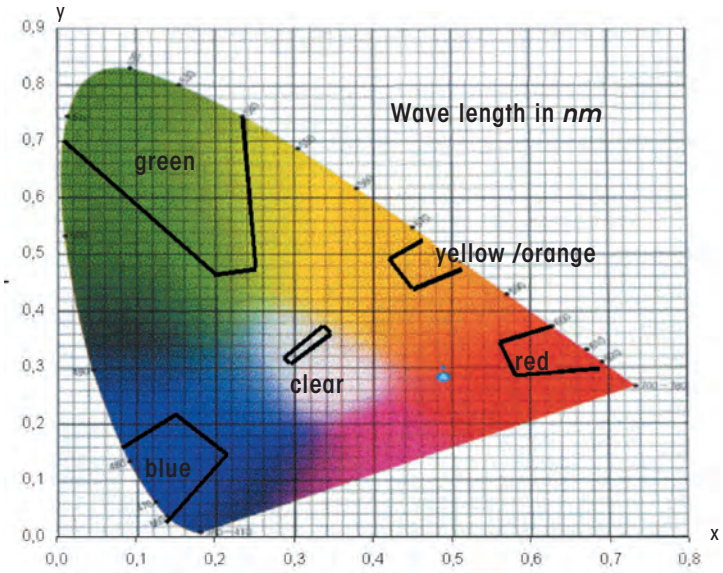
Light in Signalling technology

Types of optical signal devices

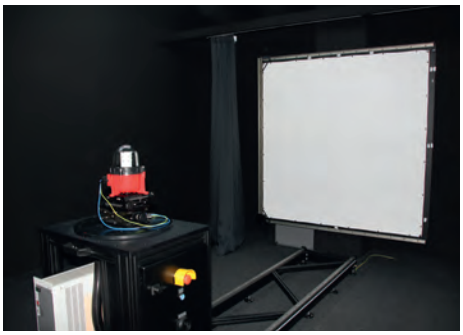
We differentiate between permanent, blinking and flashing beacons as well as beacons with rotating light. The appropriate signal type must be chosen to meet the needs of the specific application, whether as a warning, an informative signal or a simple piece of information.

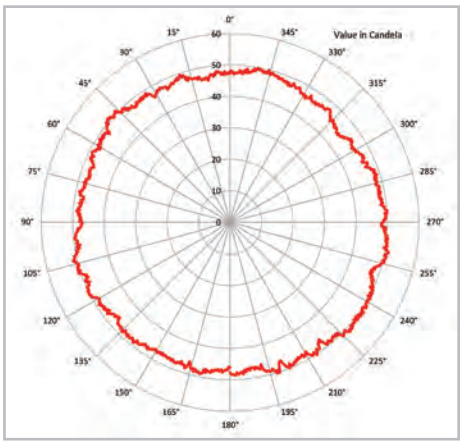
Signalling technology relies mainly on the colours green, red, yellow, blue and clear.

The following diagram shows the position of these colours in the spectrum:



WERMA offers all round capabilities in optical and audible signals for the most arduous conditions





WERMA places very high demands on itself with regard to product quality and life duration. High investment in our laboratory and development areas underpin this activity.

WERMA has risen to a new technologicel level through the work with its Light Laboratory and Thermo Analysis equipment, both of which have led to improved flexibility and know-how within the development department. This in turn leads to a quicker response to customer demands - all of course within the confines of the high WERMA quality.

The sophisticated Thermoanalysis equipment and our in-house Light Laboratory is leading to much more objective evaluation of the life duration of our products. This means it is possible to offer an optimised product with the longest possible life duration, brightest or most appropriate light picture and best thermodynamics.

WERMA has an unprecedented know how and quality in the field of LED technology.

Performance Measurement:

- Light distribution charts (Polardiagram) in Candela.
- Light intensity measurement.
- Timed lapse measurement of light in Candela and Lux.
- Flash intensity measurement in Candela.

Light in Signalling technology

Optical Signals in everyday life

The field of signalling technology offers us not only the possibility of audible signals, but also that of optical signals. These are to be found everywhere in everyday life; at traffic lights, in alarm systems or where obstructions arise. Countless uses can also be found in the industrial sector, above all in the signalisation of a machine operating status.

The generation of light - a summary of the possibilities

Light can be generated in various ways. Signalling technology mostly uses bulbs, halogen bulbs, electric discharge tubes and LEDs.

Bulbs

A tungsten filament is heated up to a high temperature, so radiating energy over a wide wavelength. This is perceived as light similar to sunlight. The tungsten filament evaporates with time. When the tungsten content falls below a certain level, the maximum life duration of the bulb is reached. As tungsten oxidises quickly and is destroyed when it comes into contact with air, the filament must be kept in a non-oxidising atmosphere such as vacuum. This leads us to the familiar light bulb with its sealed glass body.

Halogen bulbs

These are bulbs wherein the tungsten filament is enclosed by a small amount of halogen. The resulting chemical reaction has the effect of lengthening the life of the tungsten and stabilising the light output throughout the entire life duration of the bulb.

Electric discharge tubes

Xenon flash tubes are widely used in signalling technology. They consist of a glass tube filled with the inert gas xenon. A sufficiently high voltage leads to a discharge of energy with a spark gap and a flash of high intensity.

LED

Light emitting diodes are constructed using certain semiconductors. Foreign atoms are built into the semiconductor with the purpose of optimising the conductibility. Half of the semiconductor (n-region) is doped with foreign atoms that contain one bonding electron more than the semiconductor atom. This surplus atom can move freely and increases conductibility.
The other half (p-region) is doped with foreign atoms containing one electron less than the semiconductor. When the LED is switched on, these faults ("holes") fill up with free electrons (recombination). Energy in the form of radiant photons is hereby released. The energy and therefore the colour of the light emitted is determined by the material the semiconductor is made of; e.g. GaAsP (Gallium Arsenic Phosphide) results in red light.

LED - Beacons with many advantages

LEDs offer many advantages when compared with conventional light bulbs:

- Minute dimensions
- Low current consumption
- Low heat generation
- Extremely high life duration of up to 50,000 hours
- All major colours can be realised
- Vibration and shock resistance
- Immediate illumination

Fundamental units of light magnitude

The fields of lighting and signalling technology differentiate between fundamental units to define light itself. The most important of these are the units Lumen, Candela and Lux.

Lumen (unit lm)

Light current is measured in Lumen; this is the unit for the entire visible light output of a light-emitting source. The light current is defined by the following formula known as the brightness characteristic:

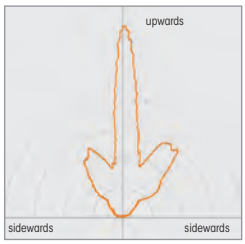
Light current ϕ [in *lm*] = radiation capacity x brightness characteristic V(λ)

The brightness impression upon the human eye is based on a sensitivity curve V(λ) which reproduces the sensation felt by the eye in relation to the wavelength. The maximum point on this curve is at about 555 nm; we see best at this wavelength; V(555 nm) = 1.

Candela (unit cd)

In signalling technology only the part of the light current that is emitted in a certain direction is of importance. This light intensity is measured in Candela. It is defined by the light current of a lamp and the steradian measure $\frac{1}{4\pi\ \mathrm{sr}}$.

$$\text{Light intensity [in } cd\text{]} = \frac{\text{Light current } \phi}{\text{Steradian measure } \Omega}$$



A complete sphere has a dihedral angle of $\Omega = 4\ \pi$ sr. sr stands for the steradian and is the unit for the dihedral angle.

Example: a household candle emitting a light intensity of 12,566 Lumen has a light intensity in relation to the steridian measure $\frac{12{,}566\ \mathrm{lm}}{4\pi\ \mathrm{sr}} \approx 1\,\mathrm{cd}$.
This explains the name: candela is the Latin word for candle.

Lux (unit lx)

Illumination density is an important unit in lighting installations. It is the measure of the brightness with which an area is illuminated. Whereas light intensity (in cd) is a property of a light source, illumination density is calculated in regard to the area to be illuminated.
Where the light current emitted is constant, the following formula is applicable:

$$\text{Light density E [in lux]} = \frac{\text{Light current } \phi}{\text{Surface A}}$$

Acoustics in Signalling technology

Research and development at WERMA

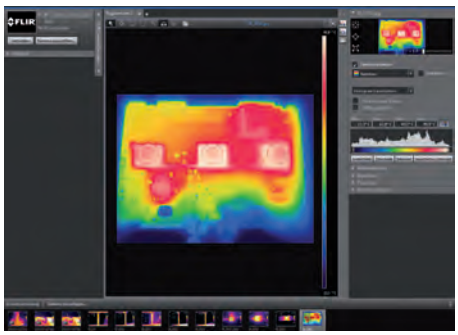
For over 50 years WERMA has been developing audible signal devices of the highest quality. Year after year we invest in research and development, enabling us to offer our customers innovative products employing state of the art technology.

Today our development team has a number of acoustic specialists in its ranks, equipped with the latest laboratory and test equipment.

WERMA places great importance on acoustic measuring technology and life duration testing facilities. Our products are only brought onto the market after they have passed the toughest of product tests.

The optimal sound generation and diffusion is achieved by means of extensive calculations, simulations and subsequent tests. For example, the horn dimensions of an audible signal device are precisely tailored to the required frequency.

Most demanding requirements for industrial applications



Especially in general industry our products are subject to extreme environmental influences. This might include temperature variation, voltage changes, electromagnetic interference and other such influences which may not however have any impact on the functionality of our products.

Extensive and exhaustive tests are carried out to ensure that these factors are eliminated in the most effective manner.

WERMA has the most effective and sophisticated Electromagnetic test equipment to carry out such work.

This enables us to offer an appropriate product even for the most demanding applications - naturally within any relevant guidelines and norms.

Performance Measurements:

- Thermographic image equipment
- Temperature measurement over time
- Resistance to interference - SURGE, Burst, Power Fail, ESD
- Resistance to interference analyses

Audible signals are everywhere!

Audible signals warn, protect and guide us in the modern industrial world. They function where caution, prudence and clarity are imperative, indicate emergencies and demand direct action. They are globally understood, irrespective of language, written or spoken.

Audible signals are deployed where an optical signal is insufficient or inappropriate. A wide range of products belong to this essential group of audible signal devices: The car horn, indispensable for driving in traffic, the buzzer of an egg timer, the school bell signalling break times and the siren on emergency vehicles.

Audible devices also enjoy a wide range of applications in industrial environments where they are deployed to indicate malfunctions or to provide a warning in dangerous situations. The basic signal is provided by one or more tones or a sequence of tones, and is to raise awareness and alert to a specific danger.

Types of sound generation used in signal technology

Electromechanical sound generation

Electromechanical signal horns from WERMA work according to the oscillating armature principle. This can also be described as a special form of Wagner's interrupter, whereby an electromagnetic oscillation generator produces mechanical oscillations.

The oscillation generator is composed of a solid iron core with a field coil and a moving armature that is held at rest by a plate spring (membrane). When an electric current passes through the field coil, the armature is pulled i.e. pushed from its resting position. If the am-perage or the direction of the current changes continually, the armature oscillates. This is achieved by means of an alternating current or an appropriately prepared direct current.
The mechanical adjustment is such that the armature strikes the iron core, leading to a considerable amplification of the principle audible vibrations (structure-borne noise).

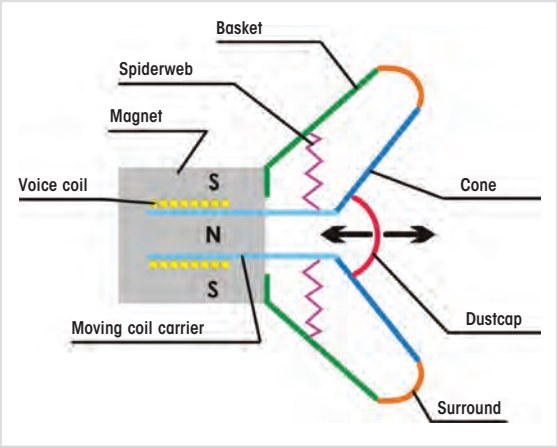
As opposed to the classical Wagner's interrupter where the oscillating element simultaneously controls the current flow (interrupter), producing considerable radio interference voltages, the oscillating armature operating with an alternating current does not produce any interference voltages. When operating with a constant current the suppressors can be integrated into the required driving circuits.

As a result of this operating principle such systems are resistant to extreme temperatures and humidity. The life duration is solely determined by the mechanical wear and tear of the parts.

Acoustics in Signalling technology

Loudspeakers (electro-dynamic sound generation)

A loudspeaker converts an alternating electric current into sound waves. This occurs by means of the interaction between the electric current and a permanent magnet. The coil is positioned within the magnetic field of the permanent magnet. When an electric current is applied to the coil, the Lorentz force generated leads to a deflection of the coil, causing the membrane to vibrate.



As a result of the centering spider this proceeds in an up and down motion. It centres the coil and, together with the bead, ensures that it returns to the resting position.

With the use of the appropriate size of membrane and material, as well as different drives (coils and permanent magnets), loudspeakers can be optimised for a variety of different frequency ranges.

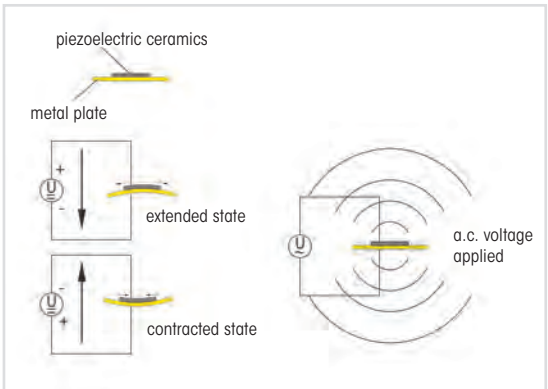
Acoustic capsule (electromagnetic sound generation)

The acoustic capsule belongs to the group of electromagnetic sound generators. This principle was previously used for telephone earpieces. Within the capsule a permanent magnet serves to pre-magnetise the armature which is connected to the membrane. This is made to oscillate and these oscillations are then converted into audible tones. The acoustic capsule is characterized by a relatively simple construction and a compact form and displays a high degree of effectivity.

Piezo disc

Piezoelectricity (also known as the piezoelectric effect, or for short: piezo effect) refers to the interaction of mechanical pressure (Greek piezein = to press) and electrical currents in solid bodies. It describes the phenomenon whereby the deformation of certain materials leads to the generation of an electric charge at the surface (direct piezoelectric effect).

In a reverse process these materials (predominately crystals) deform when a voltage is applied. The deflection is relatively small so they need to be transmitted to a membrane, from where the oscillations excite air molecules which are then perceived as sound.



Audibility factor of audible signals devices

One of the most important properties of audible signals is their sound output and therefore their audibility factor. The signal must be able to be heard without disturbing those around it.

The audibility of an audible signal is dependent on a number of different factors:

- the sound output of the signal (in dB)
- the tone frequency (in Hz)
- the distance between signal device and recipient
- the noise level of the surrounding area
- other influences (for example air humidity, wind direction)

Principle acoustic parameters

Sound output level

The sound output level L_p refers to the logarithmic relationship of the square of the sound output of an acoustic event to the square of the reference value p_0 = 20 µP. The result is given in decibels (abbreviation dB).

$$L_p = 10 \log_{10}\left(\frac{p_1^2}{p_0^2}\right) \text{dB} = 20 \log_{10}\left(\frac{p_1}{p_0}\right) \text{dB}$$

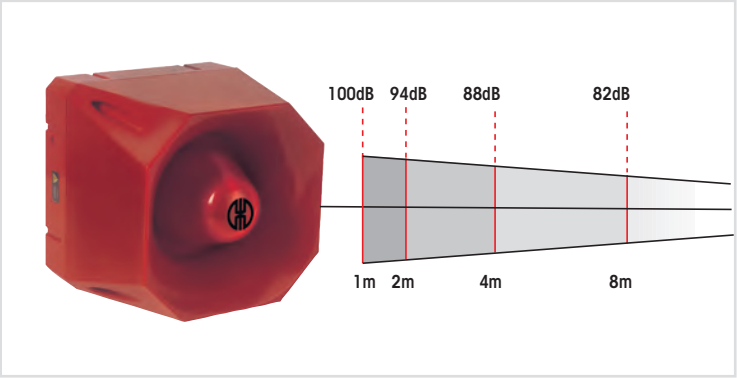
When indicating an absolute level (with reference to the standardized reference level p_0 the abbreviation "SPL" (sound pressure level) is added.

With intermediate to high levels and frequencies a sound output difference of 10 dB is heard as approximately twice as loud. Differences of 3 dB are clearly audible. The perceived sound level is not just dependent on the sound output level, but also on the spectrum of the sound signal and its temporal progression. Single tones are perceived as being considerably louder than a broadband audible signal with the same sound output level. Audible signals with sharply changing levels are also perceived as being significantly louder than uniform audible signals with the same average level.

Weighting curves (A, B and C according to DIN EN 61672-1, formerly IEC/DIN 651) are the curves from weighting filters that are applied to the sound output signal. They are designed to reproduce a similar frequency response as that of the human ear for a specific sound level. However they are only able to achieve a rough approximation, the values obtained for the weighted sound output measurements do not exactly match those of the human ear.

Weighting levels are indicated by the corresponding letter of the frequency weighting, e.g. a C weighting sound output level is given in dB (C). In the field of technical acoustics the A weighting level is predominately employed. For this reason WERMA specifies levels in dB (A).

Acoustics in Signalling technology



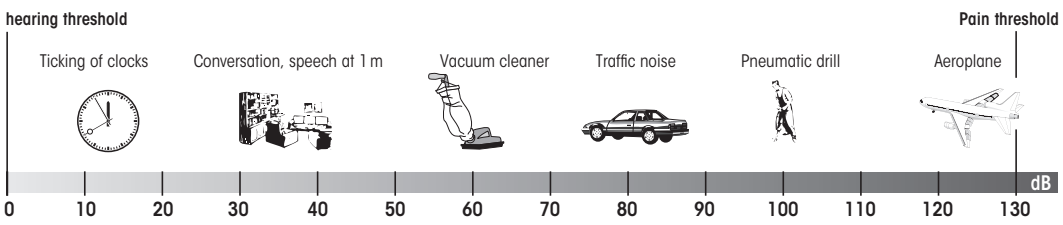
The sound output level is always dependent on the distance from the source of the sound. WERMA specifications are always based on a measuring distance of 1 m, unless otherwise stated.

In the case of point sound sources (generally applies for all sources radiating equally in all directions), the sound output level decreases by **6 dB with each doubling of the distance from the source**.

Table of working range

Sound pressure level dB (A)	Distance in m												
	1	2	3	5	10	20	30	50	100	200	300	500	1000
	120	114	110	106	100	94	90	86	80	74	70	66	60
	118	112	108	104	98	92	88	84	78	72	68	64	58
	116	110	106	102	96	90	86	82	76	70	66	62	56
	114	108	104	100	94	88	84	80	74	68	64	60	54
	112	106	102	98	92	86	82	78	72	66	62	58	52
	110	104	100	96	90	84	80	76	70	64	60	56	50
	108	102	98	94	88	82	78	74	68	62	58	54	48
	106	100	96	92	86	80	76	72	66	60	56	52	46
	104	98	94	90	84	78	74	70	64	58	54	50	44
	102	96	92	88	82	76	72	68	62	56	52	48	42
	100	94	90	86	80	74	70	66	60	54	50	46	40
	98	92	88	84	78	72	68	64	58	52	48	44	38
	96	90	86	82	76	70	66	62	56	50	46	42	
	94	88	84	80	74	68	64	60	54	48	44	40	
	92	86	82	78	72	66	62	58	52	46	42	38	
	90	84	80	76	70	64	60	56	50	44	40		
	85	79	75	71	65	59	55	51	45	39			
	80	74	70	66	60	54	50	46	40				
	75	69	65	61	55	49	45	41					
	70	64	60	56	50	44	40	36					
	65	59	55	51	45	39	35						

Examples of noise in everyday life



Tone frequency

Sound is a series of fluctuations in the air pressure at different amplitudes occurring at a specific rate per unit of time. This rate is termed frequency and is measured in the unit 1/s = 1Hz (Hertz). It is named after the German physicist Heinrich Rudolf Hertz. A tone is generated by an oscillation at a certain frequency. The musical tone A for example, has a frequency of 440 Hz. Noise is the term used to describe a number of overlapping tones.

The human ear is only capable of hearing tones within a certain frequency range. In the case of children this range is between 20 and 20,000 Hz. This sensitivity declines with increasing age: by the age of 50 the limit is approximately 12,000 Hz, and with advanced age this is often as low as 5,000 Hz.

The human ear hears tones of different frequencies at different relative strengths. The limit of audibility and the pain threshold are therefore dependent on the respective frequency. For this reason audible signal devices generally operate at a frequency between 500 and 3,000 Hz.

Environmental factors

In addition to the sound output level, the tone frequency and the distance to the signal device, environmental factors are also decisive for the quality of the signal. Wind, humidity or even rain all have an effect on audibility. A very important factor is the ambient noise level.

In industrial environments in particular, the ambient noise level produced by machines is often very high. Accordingly, the signal devices must produce a sufficiently high sound output in order to be heard.

WERMA has developed loud signal horns and sirens for this purpose. With fluctuating ambient noise levels, the use of a siren with a self-adjusting sound level is recommended - a patented invention from WERMA.

Product number index

Our Products

If you are searching for a specific product, then our overview pages at the beginning of each product section provide additional support. All product variants for the specific product group are arranged according to their features (for example light effect or sound output).

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Signal Towers · pre assembled

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Audible Signal Devices

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