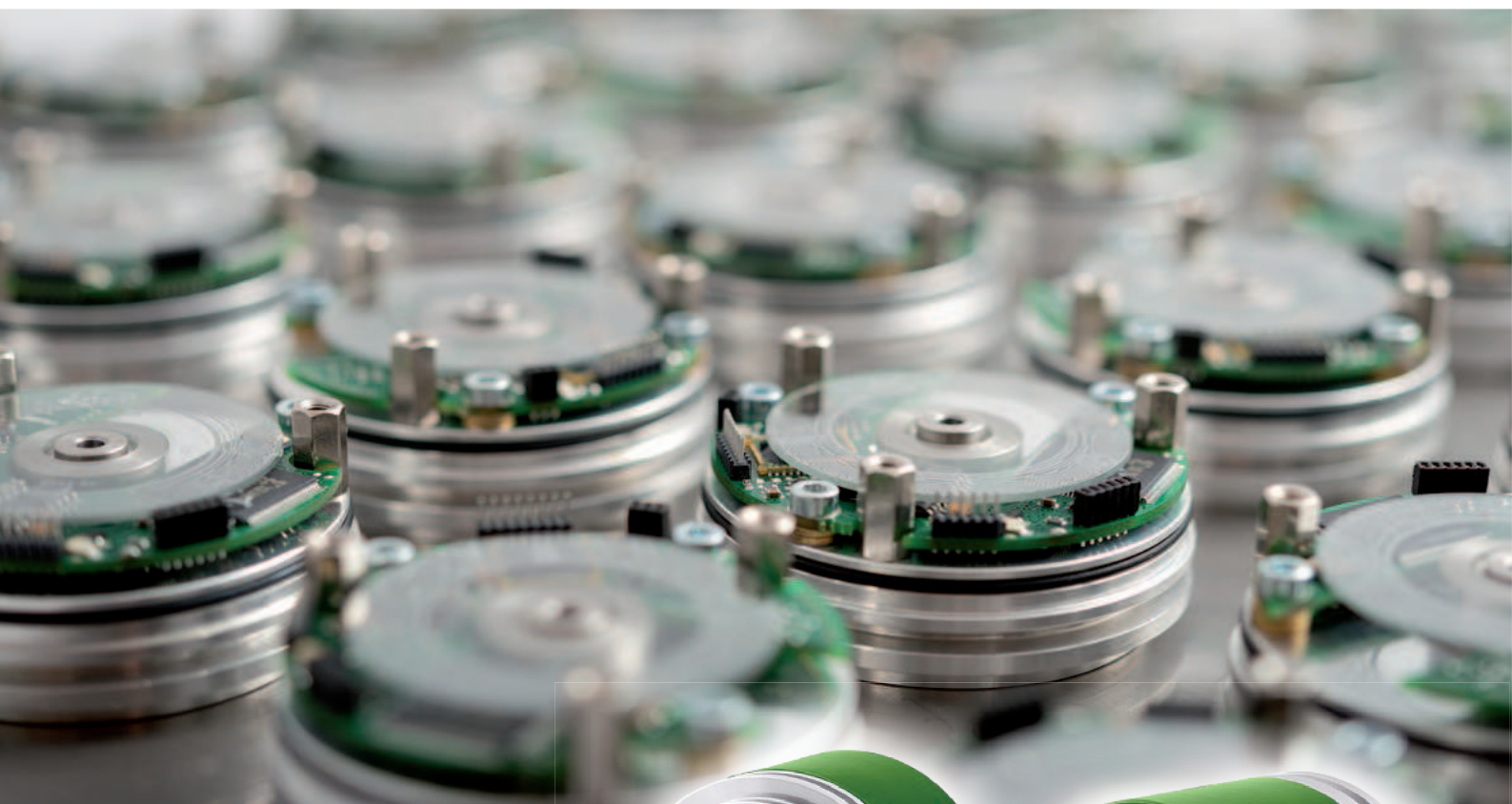




**30 YEARS
YOUNG**
1982.2012



Smart encoders & actuators



Incremental & absolute rotary encoders,
heavy-duty, bearingless and feedback

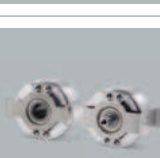


2013

ROTAPULS incremental encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (PPR)	Output frequency max. (kHz)	Power supply (Vdc)	NPN	PNP	1Vpp	Push-Pull	Line Driver	Universal circuit	Operating temp. °C (°F) min. – max.	Protection max.
						connector	cable											
	I28 Optical miniature encoder Light-duty	64	28	● 5	3000		•	1024	100	+5 +10 +30 +5 +30	•			•	•	•	-20 +70 (-4 +158)	IP54
	MI36 - MC36 Magnetic encoders, compact Light-duty	66	36	● 6 ○ 6	12000		•	2048	300	+5 +10 +30	•			•	•		-25 +85 (-13 +185)	IP67
	MI36K - MC36K Magnetic encoders Stainless steel version Food industry Light-duty Food	68	36	● 6	12000		•	2048	300	+5 +10 +30	•			•	•		-25 +85 (-13 +185)	IP67
	I40 - I41 Optical encoders, compact Light-duty	70	40	● 8	6000		•	5000	100	+5 +10 +30 +5 +30	•	•		•	•	•	-25 +85 (-13 +185)	IP66
	CK41 - CK46 Optical encoders, compact Light-duty	72	41 46	○ 6	6000		•	5000	100	+5 +10 +30 +5 +30	•	•		•	•	•	-25 +85 (-13 +185)	IP65
	C50 - C51 Optical encoders High temperature Industrial / Feedback	74 76	50	○ 10	6000 3000		•	2048 2500	100	+5 +10 +30 +5 +30	•			•	•	•	-40 +100 (-40 +212) -25 +85 (-13 +185)	IP65
	CB50 Optical encoder for servo motors UVW signals Feedback	78	50	○ 10	6000	•		2500/ 8 poles	200	+5 +10 +30				•	•		-20 +100 (-4 +212)	IP20
	I58 - I58S Optical standard encoders Industrial	80	58	● 12	12000	•	•	10000	300	+5 +10 +30 +5 +30	•	•	•	•	•	•	-40 +100 (-40 +212)	IP65
	I58SK Optical encoder Stainless steel version Food industry Industrial Food	82	58	● 12	12000	•	•	10000	300	+5 +10 +30 +5 +30	•	•	•	•	•	•	-40 +100 (-40 +212)	IP66

ROTAPULS incremental encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (PPR)	Output frequency max. (kHz)	Power supply (Vdc)	NPN	PNP	1 Vpp	Push-Pull	Line Driver	Universal circuit	Operating temp. °C (°F) min. – max.	Protection max.
						connector	cable											
	IP58 – CP58 Programmable encoder Industrial	84	58	● 12 ○ 15	12000	•	•	32768	1000	+5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	C58 – C59 – C60 Optical standard encoders Through hollow shaft Industrial	86	58	○ 15	6000	•	•	5000	100	+5 +10 +30 +5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	C58A – C58R Optical standard encoders Through hollow shaft Industrial / Feedback	88	58	○ 15	6000	•	•	5000	100	+5 +10 +30 +5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	CK58 – CK59 – CK60 Optical standard encoders Blind hollow shaft Industrial	90	58	○ 15	6000	•	•	10000	300	+5 +10 +30 +5 +30	•	•	•	•	•	•	-40 +100 (-40 +212)	IP65
	CB59 – CB60 Optical encoders for servo motors Sine/cosine Feedback / Lift	92	58	● 1:10 ○ 15	12000	•	•	2048/ 1 sin/cos	300	+5			•				-20 +100 (-4 +212)	IP40
	MI58 – MI58S Magnetic encoders Sealed circuits Industrial	94	58	● 12	12000	•	•	10000	500	+5 +10 +30 +5 +30				•	•	•	-25 +85 (-13 +185)	IP67
	MC58 – MC59 – MC60 Magnetic encoders Sealed circuits Through hollow shaft Industrial	94	58	○ 15	6000	•	•	10000	500	+5 +10 +30 +5 +30				•	•	•	-25 +85 (-13 +185)	IP67
	I65 – IT65 Optical encoders Square flange, US size Industrial	98	65	● 12	6000	•	•	10000	300	+5 +10 +30 +5 +30	•	•		•	•	•	-40 +100 (-40 +212)	IP66
	IT68 Optical encoder Industrial	100	65	● 15	6000	•	•	10000	300	+5 +10 +30 +5 +30	•	•		•	•	•	-40 +100 (-40 +212)	IP66

ROTAPULS incremental encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (PPR)	Output frequency max. (kHz)	Power supply (Vdc)	NPN	PNP	1Vpp	Push-Pull	Line Driver	Universal circuit	Operating temp. °C (°F) min. - max.	Protection max.
						connector	cable											
	XC77 Optical encoder ATEX II 2GD Ex d IIC T6 Zones 1, 2, 21, 22 Heavy-duty	102	77	○ 14	6000	•	•	10000	300	+5 +10 +30 +5 +30	•			•	•	•	-25 +85 (-13 +185)	IP66
	C80 Optical encoder for lift motors Feedback / Lift	104	80	○ 30	6000	•	•	4096	100	+5 +10 +30 +5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	C81 Optical encoder Through hollow shaft Heavy-duty Feedback	106	80	○ 44	3000	•	•	4096	200	+5 +10 +30 +5 +30			•	•	•	•	-40 +100 (-40 +212)	IP65
	C82 Optical encoder for lift motors Feedback / Lift	108	80	○ 44	3000	•	•	8192	200	+5 +10 +30 +5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	I115 - I116 Optical encoders Redundant version (I116) Heavy-duty / Wind	110 112	115	● 11	6000	•	•	5000	100	+5 +10 +30 +5 +30	•	•		•	•	•	-40 +100 (-40 +212)	IP66
	C100 - C101 Optical encoders for wind generator applications Redundant version (C101) Heavy-duty / Wind	114 116	100	○ 1:17 ○ 16	6000	•	•	2500 2048	100	+5 +10 +30 +5 +30				•	•	•	-40 +100 (-40 +212)	IP65
	I70 Belt pulley with integrated encoder Heavy-duty	118	54	-	3600	•	•	500	30	+10 +30				•			-20 +85 (-4 +185)	IP65
	ICS Optical encoder Spring loaded shaft Heavy-duty	120	172x80 x53	● 12	6000	•	•	1068	60	+5 +10 +30 +5 +30	•	•		•	•	•	-25 +85 (-13 +185)	IP65
	I105 Optical encoder High resolution Industrial	122	105	● 10	6000	•	•	18000	300	+5 +10 +30 +5 +30				•	•	•	-25 +85 (-13 +185)	IP65

ROTAPULS

Incremental encoder

Series

I28



- Miniature incremental encoder, Ø 28mm
- Robust metal housing
- Resolution up to 2048 pulses/rev.
- For office equipment, electromedical and light industrial applications



I28

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

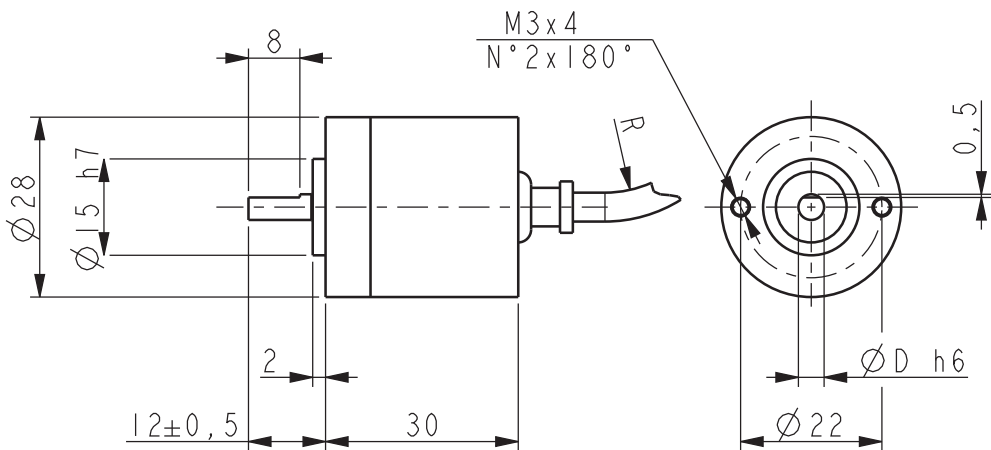
Dimensions:	see drawing
Shaft diameter:	Ø 4, 5 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	3000 rpm max.
Starting torque (at 20°C):	0,1 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 50 g (1,7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	100-200-360-500-512-720-1000-1024-1440-2000-2048
Counting frequency:	30 ÷ 100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	50 mA max.
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes



I28

Order code

I28	-	X a	-	XXXX b	XXX c	XX d	XX e	/Sxxx f
-----	---	--------	---	-----------	----------	---------	---------	------------

a OUTPUT CIRCUITS Y = Push Pull L = Line Driver (RS422) H = PP/LD Universal circuit b RESOLUTION (PPR) See electrical specifications	c OUTPUT SIGNALS BNF = AB BCU = AB, /AB ZNF = AB0 ZCU = AB0, /AB0	d SUPPLY VOLTAGE 1 = +5V±5% (L output circuit) 2 = +10V÷ +30V (Y output circuit) 4 = +5V÷+30V (H output circuit) e CABLE LENGTH - = cable output 1 m (standard) L2 = cable output 2 m Lx = cable output x m	f CUSTOM VERSION
--	---	---	--------------------------------

ROTAMAG

Magnetic incremental encoders

Series

MI36 • MC36



- Compact magnetic incremental encoder
- Resolution up to 2048 pulses/rev.
- Ø 6 mm solid or hollow shaft
- IP67 with sealed circuits (optional)



MI36 • MC36

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection with sealed circuits

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	12000 rpm max.
Starting torque (at 20°C):	0,1 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cabl output 1 m (3.3 ft)
Weight:	~ 50 g (1,7 oz)
Option:	• additional cabl

ELECTRICAL SPECIFICATIONS

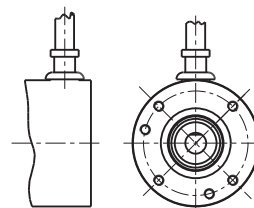
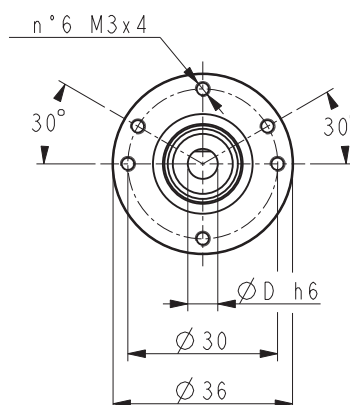
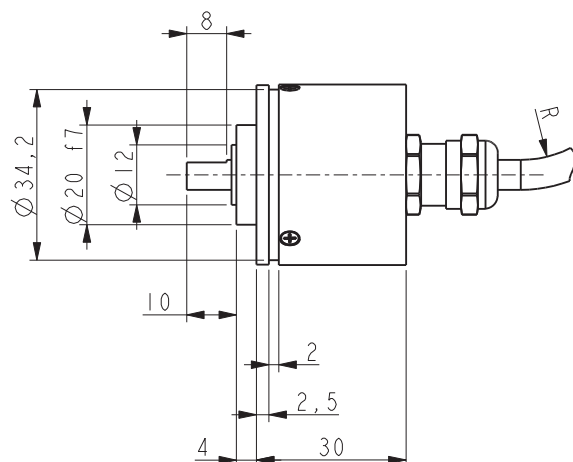
Resolution (PPR):	4-8-10-16-20-25-32-40-50-64-80-100-125-128 200-250-256-400-500-512-1024-2048
Accuracy:	± 1°
Counting frequency:	300 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver
Power supply:	5Vdc ±5%, +10Vdc +30Vdc
Consumption:	50 mA max.
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4

MATERIALS

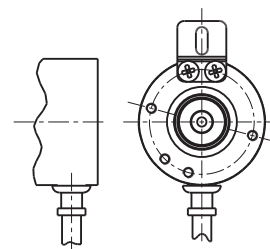
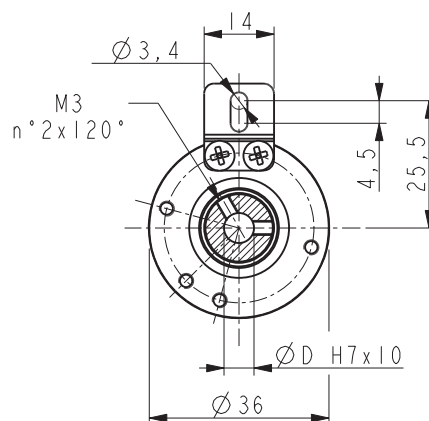
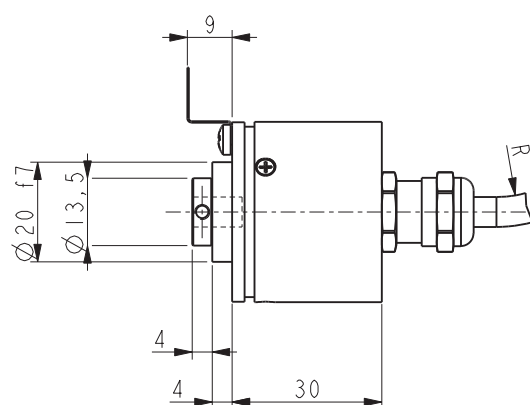
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305

ACCESSORIES

PAN-6:	Aluminium coupling
PGF-6:	Flexible coupling



MI36



MC36

Order code

MI36	-	X	-	XXXX	XXX	X	X	X	X	XX	/Sxxx
MC36		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

(a) OUTPUT CIRCUITS

N = NPN o.c.
Y = Push Pull
L = Line Driver (RS422)

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS

BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y or N output circuit)

(e) SHAFT DIAMETER

6 = 6 mm

(f) CONNECTION POSITION

- = axial
R = radial

(g) PROTECTION

- = IP65
J = IP67 with sealed circuits

(h) CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

(i) CUSTOM VERSION

ROTAMAG

Magnetic incremental encoder

Series

MI36K • MC36K



- Compact magnetic encoders
- Stainless steel housing for the food industry
- IP67 protection with sealed circuits (option)



MI36K • MC36K

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection with sealed circuits

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	12000 rpm max.
Starting torque (at 20°C):	0,1 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 50 g (1,7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

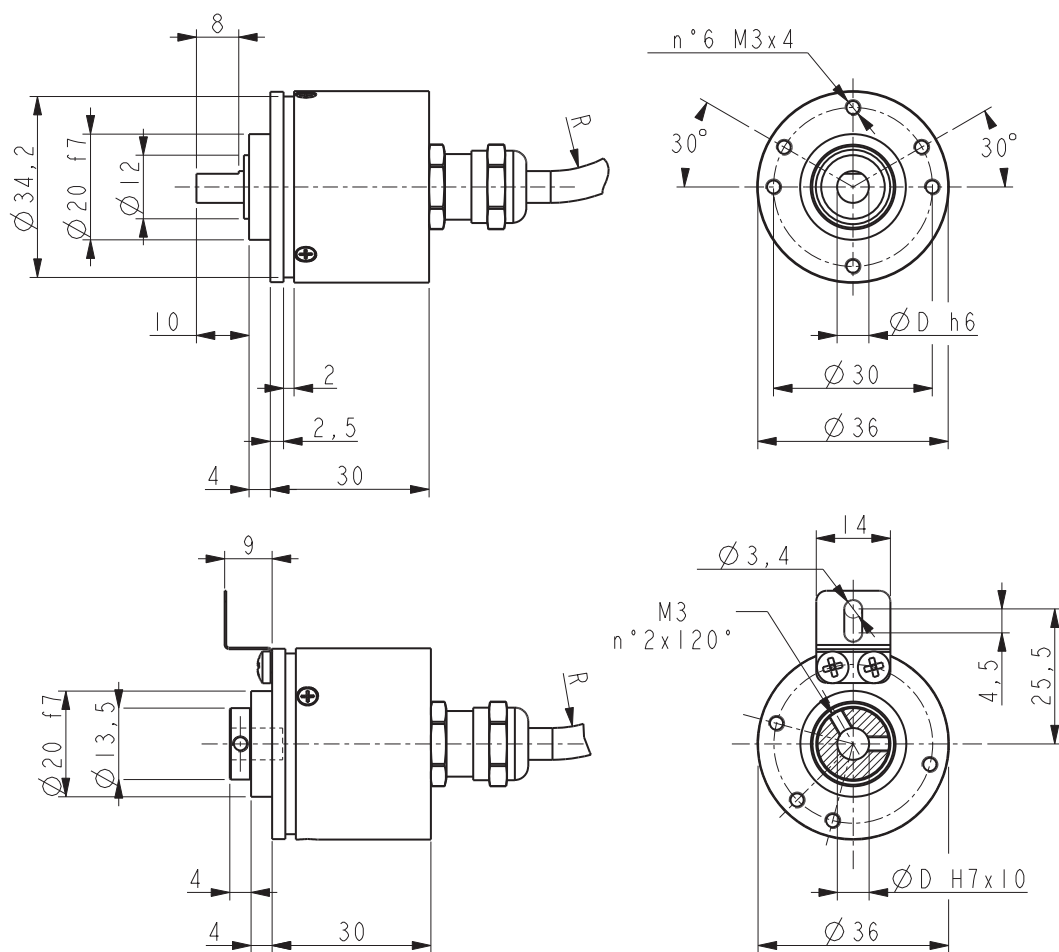
Resolution (PPR):	4-8-10-16-20-25-32-40-50-64-80-100-125-128 200-250-256-400-500-512-1024-2048
Accuracy:	± 1°
Counting frequency:	300 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver
Power supply:	5Vdc ±5%, +10Vdc +30Vdc
Consumption:	50 mA max.
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4

MATERIALS

Flange:	AISI 303 stainless steel
Housing:	AISI 303 stainless steel
Bearings:	ABEC 5
Shaft:	AISI 303 stainless steel

ACCESSORIES

MST5-16-6-6:	Stainless steel coupling
--------------	--------------------------



MI36K

MC36K

Order code

MI36K MC36K	-	X a	-	XXXX b	XXX c	X d	X e	X f	X g	XX h	/Sxxx i
----------------	---	--------	---	-----------	----------	--------	--------	--------	--------	---------	------------

a OUTPUT CIRCUITS

N = NPN
Y = Push Pull
L = Line Driver (RS422)

b RESOLUTION (PPR)

See electrical specifications

c OUTPUT SIGNALS

ZNF = ABO
ZCU = ABO, /ABO

d SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y or N output circuit)

e SHAFT DIAMETER

6 = 6 mm

f CONNECTION POSITION

- = axial

g PROTECTION

- = IP65
J = IP67 with sealed circuits

h CABLE LENGTH

L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

i CUSTOM VERSION

ROTAPULS

Incremental encoders

Series

I40 • I41



- Compact industrial encoders
- Preferential versions with fast delivery
- Universal output circuit HTL/TTL
- High resolution up to 4096 PPR



I41 • I40

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP65, IP66 protection shaft end

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 6.35 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	0,1 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cabl output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cabl

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	1-2-5-8-10-15-20-30-32-40-50-56-60-72-84-90-100-120 125-127-150-176-180-200-250-256-300-314-320-360-400 500-512-540-600-625-635-720-900-1000-1024(*)-1080-1200 1250-1440-1500-1600-1800-2000-2048(*)-2400-2500-2880 3600-4000(*)-4096(*)
(*) not available for I40 series	
Counting frequency:	50 ÷ 100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

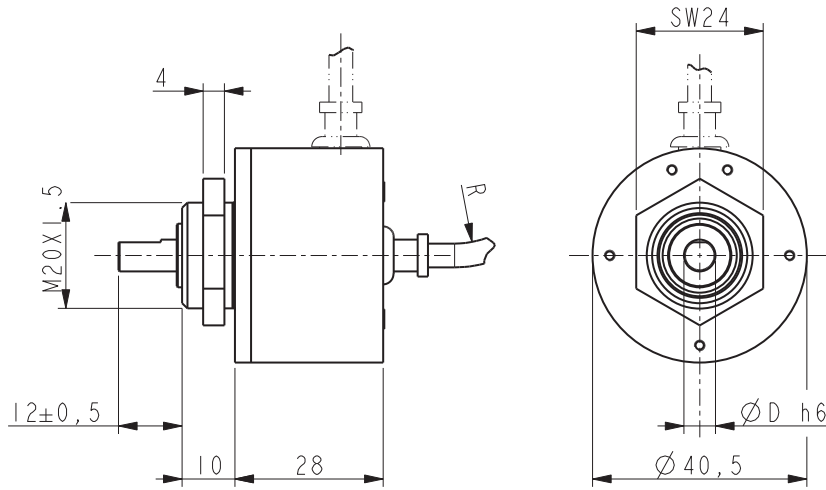
Flange:	anticorodal, UNI EN AW-6082
Housing:	fibre glass epoxy resin
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

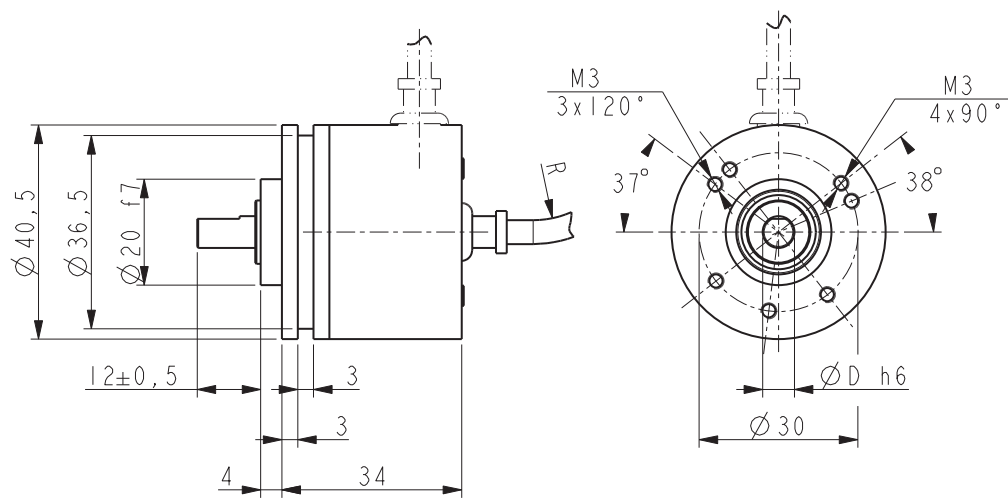
I41-H-100ZCU46L2	100 PPR, HTL/TTL output
I41-H-200ZCU46L2	200 PPR, HTL/TTL output
I41-H-360ZCU46L2	360 PPR, HTL/TTL output
I41-H-500ZCU46L2	500 PPR, HTL/TTL output
I41-H-1000ZCU46L2	1000 PPR, HTL/TTL output
I41-H-1024ZCU46L2	1024 PPR, HTL/TTL output

ACCESSORIES

EDE9S:	9 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



I40



I41

Order code

I40	-	X	-	XXXX	XXX	X	XX	X	X	XX	/Sxxx
I41		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

(a) OUTPUT CIRCUITS N = NPN o.c. P = PNP o.c. Y = Push Pull L = Line Driver (RS422) H = PP/LD universal circuit (b) RESOLUTION (PPR) See electrical specifications	(c) OUTPUT SIGNAL BNF = AB BCU = AB, /AB ZNF = AB0 ZCU = AB0, /AB0 (d) POWER SUPPLY 1 = +5V±5% (L output circuit) 2 = +10V÷ +30V (Y, N, P output circuit) 4 = +5V÷ +30V (H output circuit)	(e) SHAFT DIAMETER 6 = 6 mm P6 = 6.35 mm - 1/4" (f) PROTECTION - = IP64 P = IP65 Q = IP66 shaft side (only I41)	(g) CONNECTION POSITION - = axial R = radial (h) CABLE LENGTH - = cable output 1 m (standard) L2 = cable output 2 m Lx = cable output x m CLx = x m cable with DSub 9 pin inline plug (i) CUSTOM VERSION
--	--	---	--

ROTAPULS

Incremental encoders

Series

CK41 • CK46

- Compact hollow shaft encoders
- Preferential versions with fast delivery
- Universal output circuit
- Resolution up to 4096 PPR



CK46 • CK41

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Operating temperature range:	-25°C +85°C (-13°F, +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Protection:	IP64
Option:	• IP65 protection (3000 rpm max, torque 1 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 6.35, 8 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	0,1 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Options:	• additional cable • DSub 9 pin inline connector

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	1-2-5-8-10-15-20-30-32-40-50-56-60-72-84-90-100-120 125-127-150-176-180-200-250-256-300-314-320-360-400 500-512-540-600-625-635-720-900-1000-1024-1080-1200 1250-1440-1500-1600-1800-2000-2048-2400-2500-2880 3600-4000-4096
Counting frequency:	50 ÷ 100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

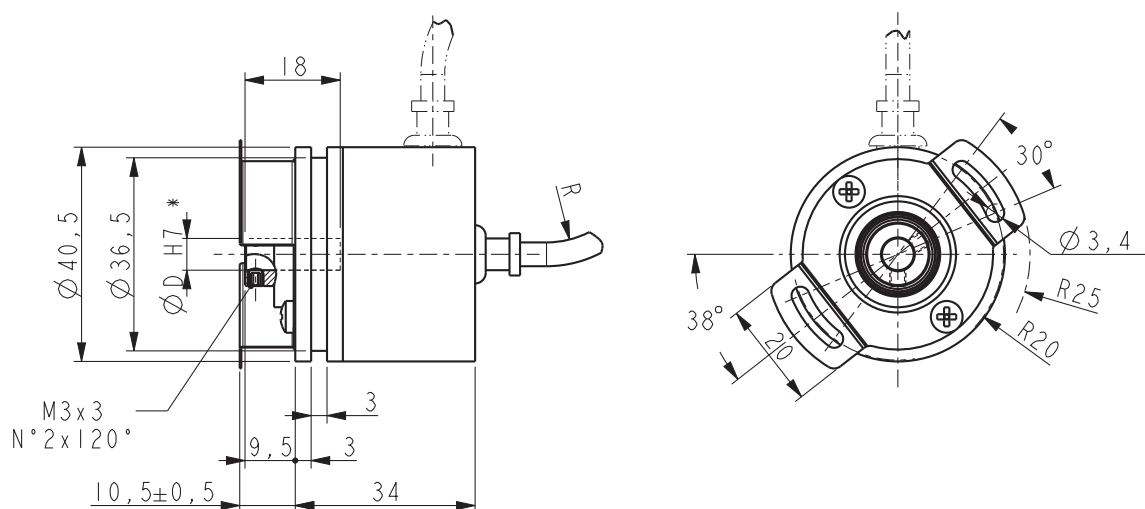
Flange:	anticorodal, UNI EN AW-6082
Housing:	fibre glass epoxy resin
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

CK41-H-1000ZCU46L2	1000 PPR, HTL/TTL output
CK41-H-1024ZCU46L2	1024 PPR, HTL/TTL output
CK41-H-2000ZCU46L2	2000 PPR, HTL/TTL output
CK41-H-2048ZCU46L2	2048 PPR, HTL/TTL output

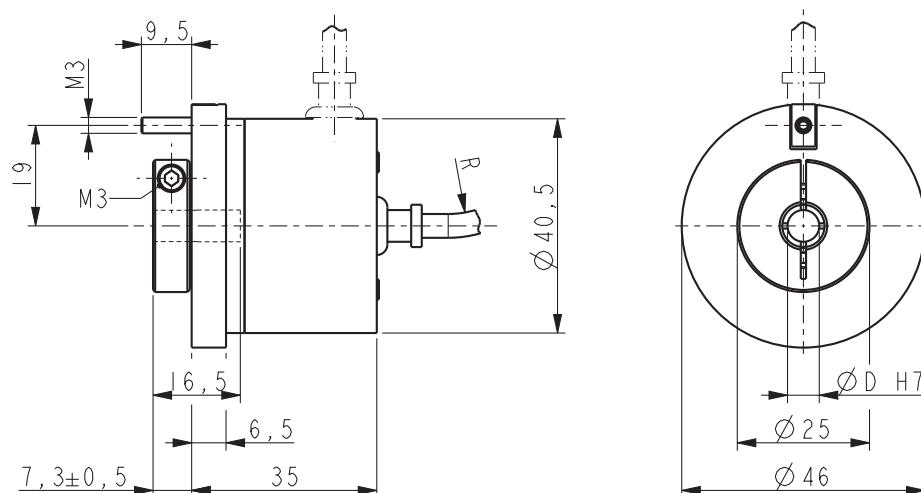
ACCESSORIES

EDE9S:	9 pin DSub mating connector
--------	-----------------------------



* $\varnothing 8$ bore depth = 9mm

CK41



CK46

Order code

CK41	-	X	-	XXXX	XXX	X	XX	X	X	XX	/Sxxx
CK46		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

(a) OUTPUT CIRCUITS

N = NPN o.c.
P = PNP o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS

BNF = AB
BCU = AB, /AB
ZNF = ABO
ZCU = ABO, /ABO

(d) POWER SUPPLY

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y, N, P output circuit)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm (only CK41)

(f) PROTECTION

- = IP64 (standard)
P = IP65

(g) CONNECTION POSITION

- = axial (standard)
R = radial

(h) CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(i) CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

C50



- Best selling small size hollow shaft encoder
- Ideally suited for motor feedback applications
- Extended standard operating temperature from -40°C to 100°C
- Preferential versions with fast delivery
- Universal output circuit TTL/HTL 5-30Vdc



C50

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• IP54 Protection (low inertia bearings, 10000 rpm for short periods)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	≤ 0,25 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Options:	• additional cable • DSub 9 pin inline connector

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	100-180-200-250-256-300-360-400-500-512-600 1000-1024-2000-2048-4096
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

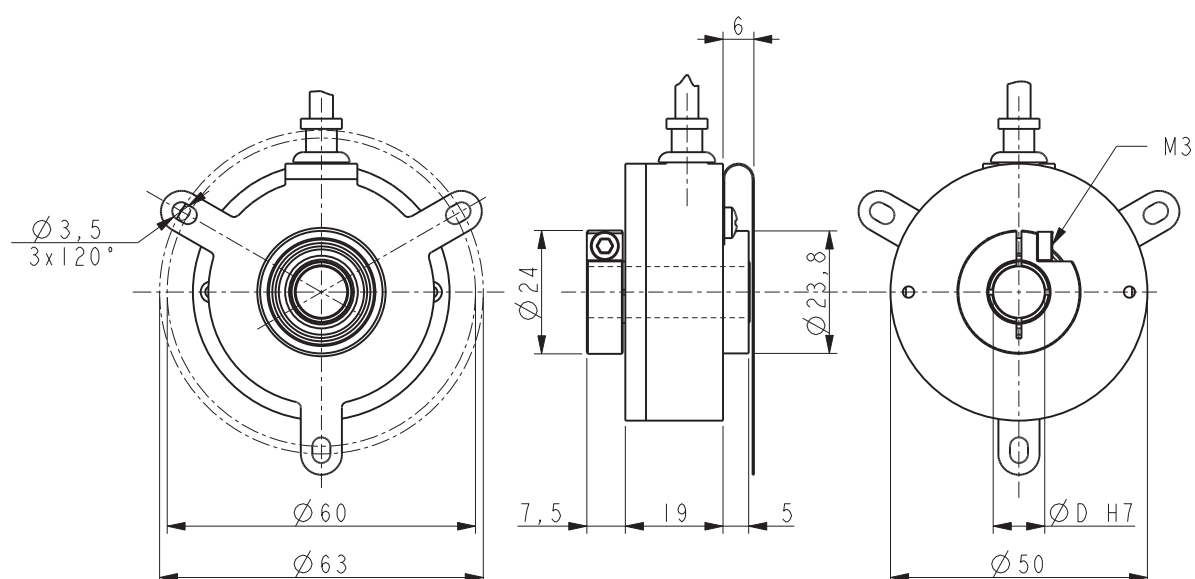
Flange:	zamac die cast
Housing:	zamac die cast
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

C50-H-100ZCU410	100 PPR, HTL/TTL output
C50-H-360ZCU410	360 PPR, HTL/TTL output
C50-H-500ZCU410	500 PPR, HTL/TTL output
C50-H-1000ZCU410L2	1000 PPR, HTL/TTL output
C50-H-1024ZCU410L2	1024 PPR, HTL/TTL output

ACCESSORIES

EDE9S:	9 pin DSub mating connector
--------	-----------------------------



C50

Order code

C50	-	X (a)	-	XXXX (b)	XXX (c)	X (d)	XX (e)	X (f)	XX (g)	/Sxxx (h)
-----	---	----------	---	-------------	------------	----------	-----------	----------	-----------	--------------

① OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

② RESOLUTION (PPR)

See electrical specifications

③ OUTPUT SIGNALS

BNF = AB
BCU = AB, /AB
ZNF = ABO
ZCU = ABO, /ABO

④ SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

⑤ SHAFT DIAMETER

6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm

⑥ PROTECTION

- = IP65 (standard)
V = IP54 (low inertia bearings)

⑦ CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin
inline plug

⑧ CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

C51



- Small size incremental encoder with high resolution
- DC and AC motor feedback



C51

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP65 Protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	3000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

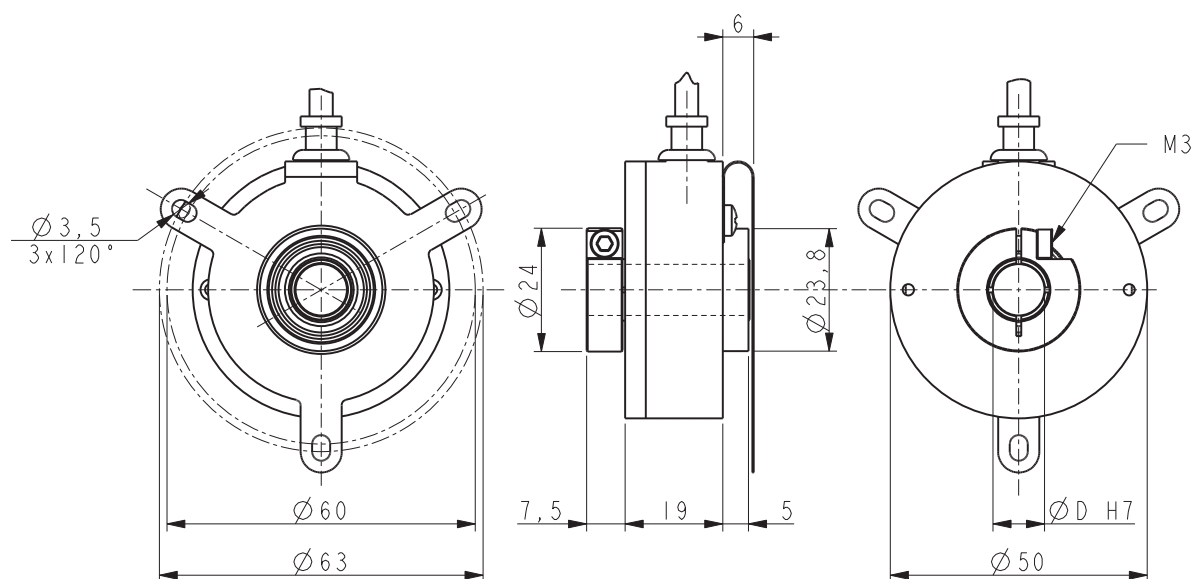
Resolution (PPR):	6-10-12-15-25-36-40-45-50-60-80-90-900 1500-2000-2048-2500
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V,+5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EDE9S:	9 pin DSub mating connector
--------	-----------------------------



C51

Order code

C51	-	X (a)	-	XXXX (b)	XXX (c)	X (d)	XX (e)	X (f)	XX (g)	/Sxxx (h)
-----	---	----------	---	-------------	------------	----------	-----------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS

BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

(d) SUPPLY VOLTAGE

1 = +5V $\pm$ 5% (L output circuit)
2 = +10V $\div$ +30V (Y output circuit)
4 = +5V $\div$ +30V (H output circuit)

(e) SHAFT DIAMETER

6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm

(f) PROTECTION

- = IP54 (standard)
P = IP65

(g) CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(h) CUSTOM VERSION

ROTAPULS

Feedback encoder for brushless motors

Series

CB50



- Brushless motor (BLDC) feedback encoder
- UVW commutation signals
- Easy installation with PCB connector
- Compact through hollow shaft encoder



CB50

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP20
Operating temperature range:	-20°C +100°C (-4°F + 212°F)
Storage temperature range:	-20°C +100°C (-4°F + 212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	0,2 Ncm (typical)
Misalignment:	± 0,3 mm axial ± 0,06 mm radial ± 0,2° mm angular
Bearings life:	2 x 10 ⁹ rev. min.
Electrical connections:	pins or PCB connection cable
Weight:	~ 100 g (3,5 oz)

ELECTRICAL SPECIFICATIONS

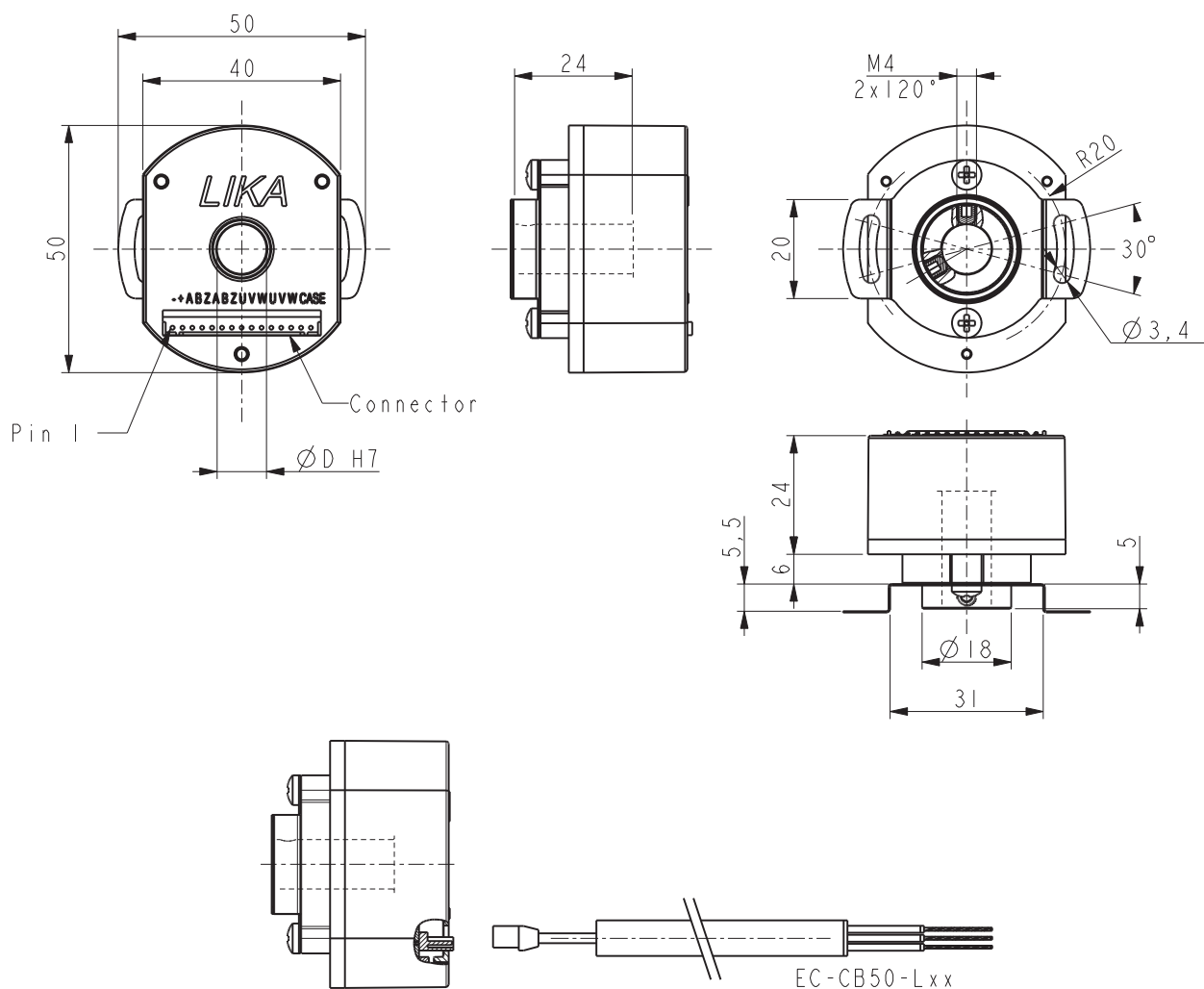
Pulse rate - Poles:	1000-1024-1250-2000-2048-2500
U, V, W commutations signals:	4 - 6 - 8 poles
Counting frequency:	100 ÷ 200 kHz max.
Output circuits:	Push-Pull, Line Driver
Power supply:	+5V±5%, +10V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	zamac die cast
Housing:	plastic, NYLON 6 FV 15%
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EC-CB50:	mating connector with cable (30 cm/11.8 in.)
----------	---



CB50

Order code

CB50	-	X (a)	-	XXXX (b)	/	X (c)	X (d)	XX (e)	/Sxxx (f)
------	---	----------	---	-------------	---	----------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

Y = Push Pull

L = Line Driver (RS422)

(b) RESOLUTION (PPR)

1000, 1024, 1250, 2000, 2048, 2500

(c) N° POLES

4 = 4 poles

6 = 6 poles

8 = 8 poles

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)

2 = +10V÷ +30V (Y output circuit)

(e) SHAFT DIAMETER

6 = 6 mm

P6 = 6.35 mm - 1/4"

8 = 8 mm

P9 = 9.52 mm - 3/8"

10 = 10 mm

(f) CUSTOM VERSION

ROTAPULS

Incremental encoders

Series

I58 • I58S



- Standard encoder for general industrial application
- Pulse rates up to 10000 PPR (real)
- Servo or clamp flange mounting
- High operating temperature range (optional)
- Line Driver, HTL and sine/cosine output circuits



I58 • I58S

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	typ. 6000 rpm / 12000 temporary
Starting torque at 20°C:	I58: 0,15 Ncm / I58S: 0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 200 g (7 oz)
Options:	• additional cable • DSub 9 pin inline plug

ELECTRICAL SPECIFICATIONS

Resolution (PPR): (output circuit N, P, Y, L, H)	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80-90 100-120-127-142-150-160-180-200-216-230-236-240-250-254 256-267-270-300-314-360-375-400-410-435-471-500-512-600 635-720-750-800-900-1000-1024-1068-1200-1250-1270-1400 1440-1500-1800-2000-2048-2250-2400-2500-3000-3600-4000 4096-5000-6000-8192-9000-10000
Resolution (PPR): (output circuit V)	500-512-1000-1024-1250-2000-2048-2500
Counting frequency:	100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit, Sine/cosine
Power supply:	+5V±5%, +10V +30V, +5V +30V (sine/cosine only +5V±5%)
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L and V circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Counting frequency up to 300 kHz • Line Driver 24/5V

MATERIALS

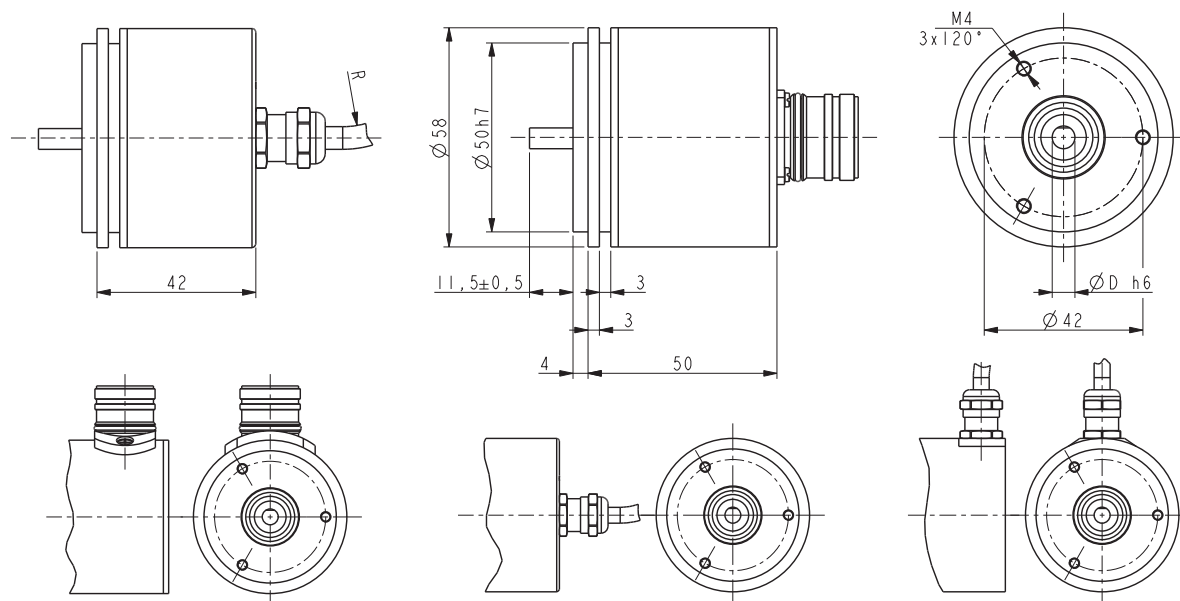
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

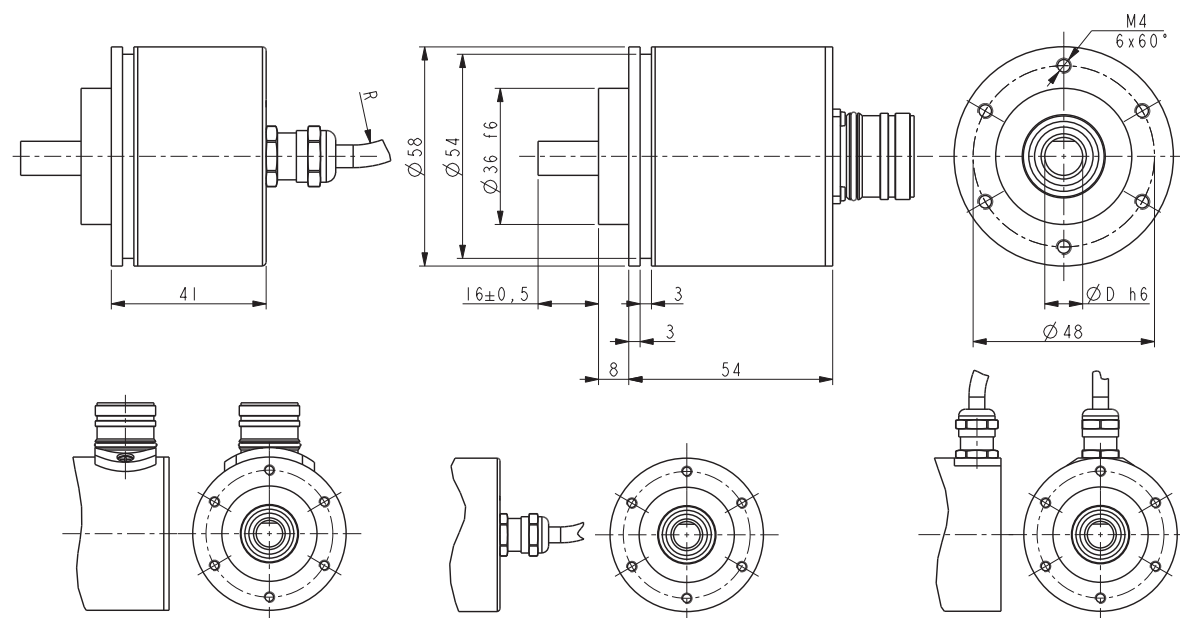
I58-H-500ZCU46RL2	I58-H-500ZCZ46R
I58-H-1000ZCU46RL2	I58-H-1000ZCZ46R
I58-H-1024ZCU46RL2	I58-H-1024ZCZ46R
I58-H-2048ZCU46RL2	I58-H-2048ZCZ46R
I58-H-2500ZCU46RL2	I58-H-2500ZCZ46R
I58-H-500ZCZ46	I58S-H-500ZCZ410R
I58-H-1000ZCZ46	I58S-H-1000ZCZ410R
I58-H-1024ZCZ46	I58S-H-1024ZCZ410R
I58-H-2048ZCZ46	I58S-H-2048ZCZ410R
I58-H-2500ZCZ46	I58S-H-2500ZCZ410R

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter, M23 connector
EDE 9S:	9 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



I58



I58S

Order code

I58	-	X	-	XXXXX	XXX	X	XX	X	X	X	X	XX	/Sxxx
I58S		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)

Ⓐ OUTPUT CIRCUITS

N = NPN o.c.
P = PNP o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit
V = 1 Vpp sine/cosine

Ⓑ RESOLUTION (PPR)

See electrical specifications

Ⓒ OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output (except V output)
ZNF = AB0, cable output (except V output)
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = AB0 /AB0, M23 12 pin plug
ZCM = AB0 /AB0, M12 8 pin plug

Ⓓ SUPPLY VOLTAGE

1 = +5V±5% (L, V output circuit)
2 = +10V÷ +30V (N, P, Y output circuit)
4 = +5V÷ +30V (H output circuit)

Ⓔ SHAFT DIAMETER

6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm

Ⓕ CONNECTION POSITION

- = axial
R = radial

Ⓖ PROTECTION

- = IP64 (standard)
P = IP65

Ⓗ COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz

Ⓘ OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F) standard
K = -40°C +100°C (-40°F +212°F)

Ⓙ CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

Ⓚ CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

I58SK



- Stainless steel encoder for the food industry
- IP67 washdown protection
- Clamp flange mounting
- Cable or M23 connector output
- HTL, TTL and sine/cosine output



I58SK

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	6000 rpm
Starting torque at 20°C:	0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 nichel plated plug or axial cable 1 m (3.3 ft)
Weight:	~ 500 g (17,6 oz)
Options:	• additional cable

ELECTRICAL SPECIFICATIONS

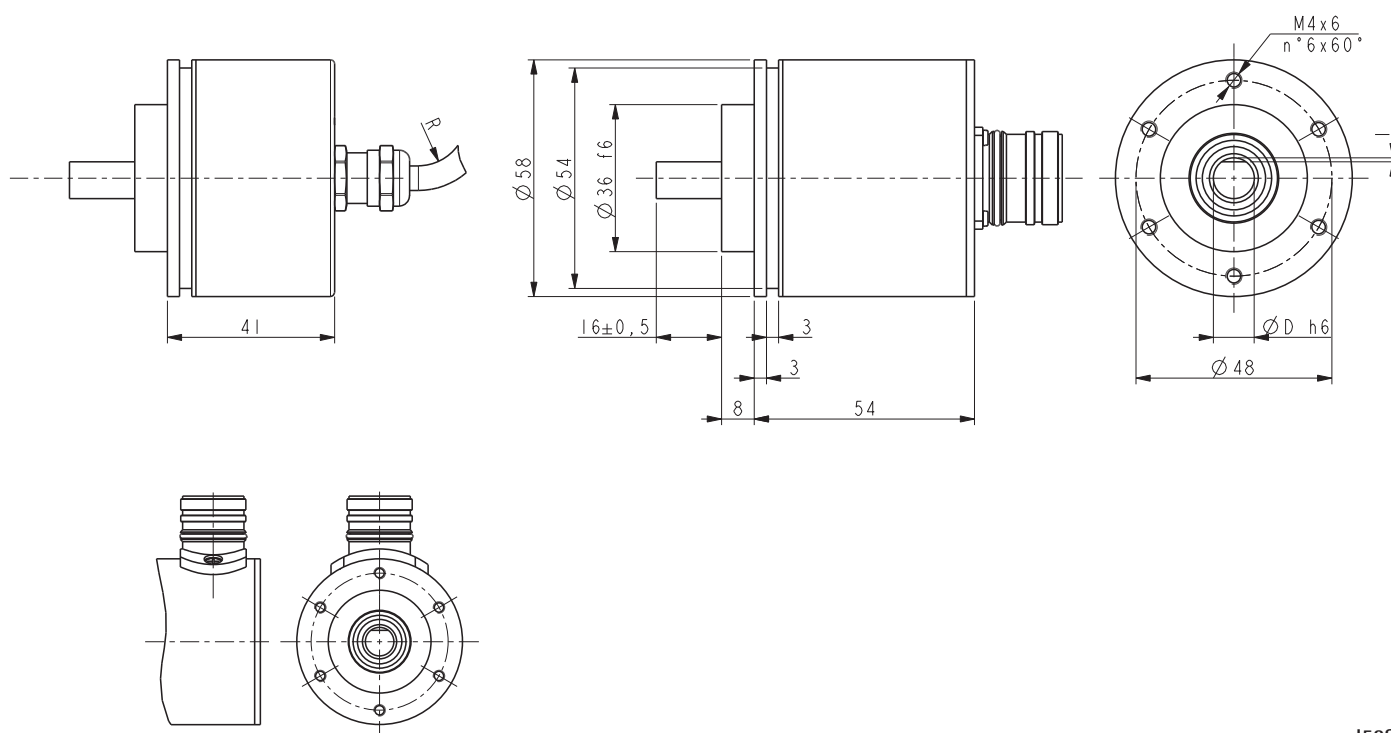
Resolution (PPR): (output circuit N, P, Y, L, H)	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80-90 100-120-127-142-150-160-180-200-216-230-236-240-250-254 256-267-270-300-314-360-375-400-410-435-471-500-512-600 635-720-750-800-900-1000-1024-1068-1200-1250-1270-1400 1440-1500-1800-2000-2048-2250-2400-2500-3000-3600-4000 4096-5000-6000-8192-9000-10000
Resolution (PPR): (output circuit V)	500-512-1000-1024-1250-2000-2048-2500
Counting frequency:	100 kHz max.
Output circuits:	NPN o.c., PNP o.c., Push-Pull, Line Driver, Universal circuit, Sine/cosine
Power supply:	+5V±5%, +10V +30V, +5V +30V (sine/cosine only +5V±5%)
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L and V circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Options:	• Counting frequency up to 300 kHz • Line Driver 24/5V

MATERIALS

Flange:	AISI 410 stainless steel
Housing:	AISI 410 stainless steel
Bearings:	ABEC 5
Shaft:	AISI 303 stainless steel

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 connector
MWSS, MSTs:	stainless steel flexible couplings



I58SK

Order code

I58SK	-	X a	-	XXXXX b	XXX c	X d	XX e	X f	X g	X h	XX i	/Sxxx j
-------	---	--------	---	------------	----------	--------	---------	--------	--------	--------	---------	------------

a OUTPUT CIRCUITS

N = NPN o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit
V = 1 Vpp (sine/cosine)

b RESOLUTION (PPR)

See electrical specifications

c OUTPUT SIGNALS / CONNECTIONS

ZCU = ABO /ABO, cable output
ZCZ = ABO /ABO, M23 12 pin plug

d SUPPLY VOLTAGE

1 = +5V±5% (L, V output circuit)
2 = +10V÷ +30V (N, P, Y output circuit)
4 = +5V÷ +30V (H output circuit)

e SHAFT DIAMETER

6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm

f CONNECTION POSITION

- = axial (standard)
R = radial (only with M23 connector)

g COUNTING FREQUENCY

- = 100 kHz standard
W = 300 kHz

h OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F) standard
K = -40°C +100°C (-40°F +212°F)

i CABLE LENGTH
(not with ZCZ)

L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

j CUSTOM VERSION

ROTAPULS

Programmable incremental encoder

Series

IP58 • IP58S • CKP58



- Programmable incremental encoder
- Resolution from 1 to 65536 PPR
- Freely programmable index (push-button)
- Counting direction cw, ccw
- Push-Pull + Line Driver compatible output
- Selectable output voltage 5Vdc or 10-30Vdc
- Programmable via USB cable



IP58

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	typ. 6000 rpm / 12000 temporary
Starting torque at 20°C:	IP58: 0,15 Ncm / IP58S, CKP58: 0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 200 g (7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

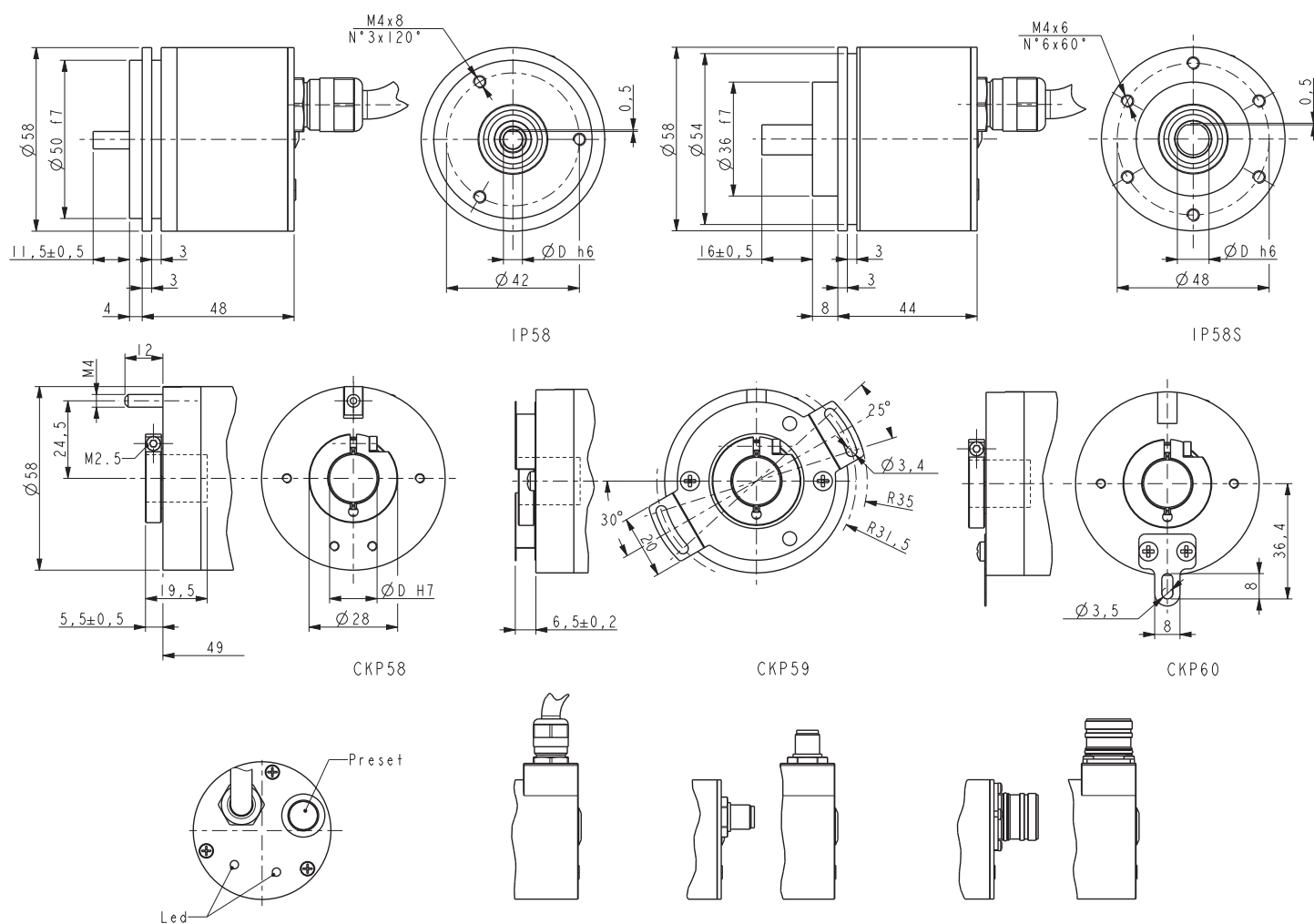
Resolution (PPR):	programmable from 1 to 65536
Counting frequency:	800 kHz max.
Output circuits:	Universal output (PP+LD compatible) 24/5V output programmable
Power supply:	+5V +30V
Consumption:	400 mW (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short cut
EMC:	electro-magnetic immunity, EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
BR1-xx:	reducing sleeves
PAN/PGF:	flexible couplings
KIT IP58:	USB programming kit



Order code

IP58 IP58S CKP58	-	X (a)	-	XXXX (b)	XXX (c)	X (d)	XX (e)	X (f)	XX (g)	/Sxxx (h)
------------------------	---	----------	---	-------------	------------	----------	-----------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

H = PP/LD universal circuit

(b) RESOLUTION (PPR)

PROG = programmable

(c) OUTPUT SIGNALS / CONNECTIONS

ZCU = AB0 /AB0, cable output

ZCZ = AB0 /AB0, M23 12 pin plug

ZCM = AB0 /AB0, M12 8 pin plug

(d) SUPPLY VOLTAGE

4 = +5V ÷ +30V

(e) SHAFT DIAMETER

6 = 6 mm

8 = 8 mm

P9 = 9.52 mm - 3/8"

10 = 10 mm

12 = 12 mm

14 = 14 mm (only CKP58)

15 = 15 mm (only CKP58)

(f) CONNECTION POSITION

- = axial

R = radial

(g) CABLE LENGTH

- = cable output 1 m (standard)

L2 = cable output 2 m

Lx = cable output x m

(h) CUSTOM VERSION

ROTAPULS

Incremental encoders

Series

C58 • C59 • C60



- Compact through hollow shaft encoders
- M23, M12 connector or cable output
- Ø15 or Ø14 mm shaft, other diameters with reduction sleeves
- Universal output circuit PP/LD



C60 • C58 • C59

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 1 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 14, 15 mm
Shaft loading (axial, radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 150 g (5,2 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

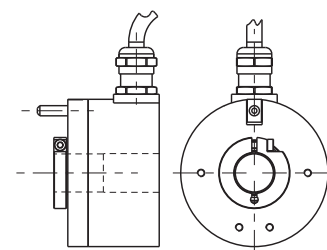
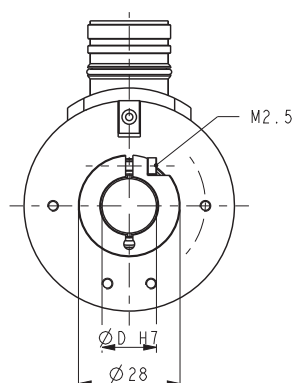
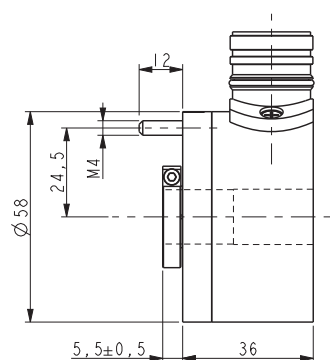
Resolution (PPR):	4-5-10-12-15-16-20-24-25-30-35-36-40-45-50-60-70 80-90-100-120-125-142-150-180-200-236-250-256 267-300-314-360-400-433-435-471-500-600-635-720 784-875-900-1000-1024-1250-1800-2000-2048-2500 3600-4000-4096-5000
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	counting frequency up to 300 kHz

MATERIALS

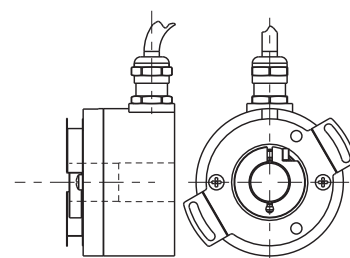
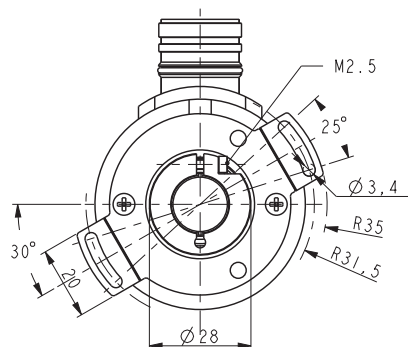
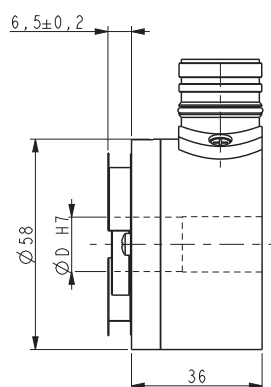
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

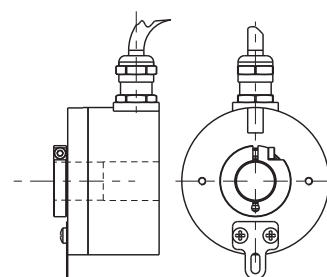
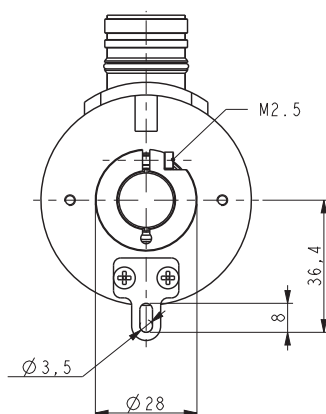
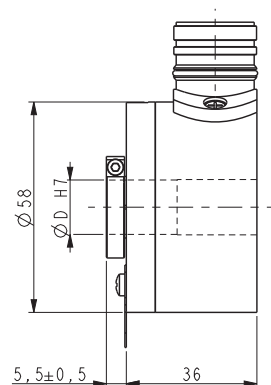
EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 conn.
EC-M12F8-LK-M8-5:	cordset 5 meters with M12 conn.
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves



C58



C59



C60

Order code

C58	-	X	-	XXXXX	XXX	X	XX	X	X	X	XX	/Sxxx
C59	-	Ⓐ	-	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓵
C60	-		-									

Ⓐ OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

Ⓑ RESOLUTION (PPR)

See electrical specifications

Ⓒ OUTPUT SIGNALS / CONNECTIONS

BNF = AB cable output
BCU = AB, /AB cable output
ZNF = ABO cable output
ZCU = ABO, /ABO cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = ABO /ABO, M23 12 pin plug
ZCM = ABO /ABO, M12 8 pin plug

Ⓓ SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

Ⓔ SHAFT DIAMETER

14 = 14 mm
15 = 15 mm

Ⓕ PROTECTION

- = IP64 (standard)
P = IP65

Ⓖ COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz

Ⓗ OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F) standard
K = -40°C +100°C (-40°F +212°F)

Ⓘ CABLE LENGTH

(not with BCZ, ZCZ, ZCM)

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

⓵ CUSTOM VERSION

ROTAPULS

Incremental encoders

Series

C58A • C58R



- Compact design, Ø 58 mm
- Through hollow shaft encoder
- Resolution up to 5000 pulses/rev.
- Feedback encoder for DC / AC motors
- C58A: fixing collar on front side
- C58R: fixing collar on back side



C58R • C58A

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 1 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 14, 15 mm
Shaft loading (axial, radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 150 g (5,2 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

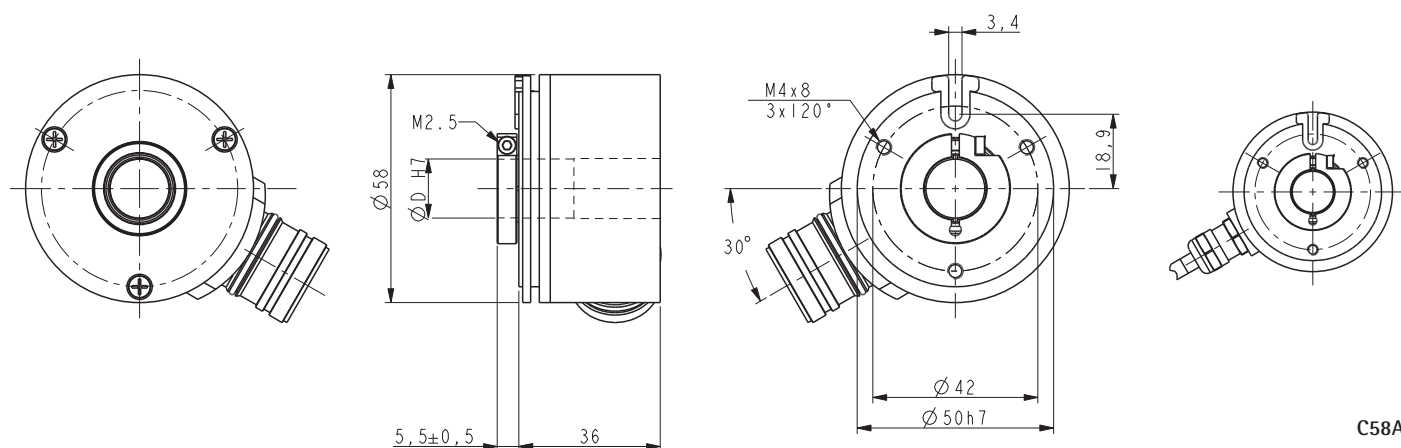
Resolution (PPR):	4-5-10-12-15-16-20-24-25-30-35-36-40-45-50-60-70 80-90-100-120-125-142-150-180-200-236-250-256 267-300-314-360-400-433-435-471-500-600-635-720 784-875-900-1000-1024-1250-1800-2000-2048-2500 3600-4000-4096-5000
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	counting frequency up to 300 KHz

MATERIALS

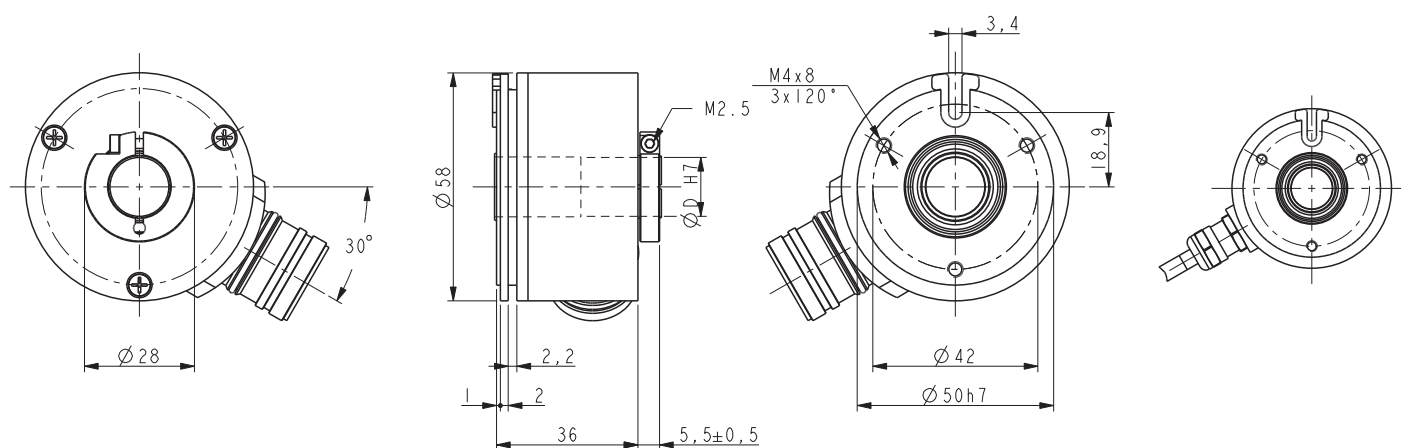
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 conn.
EC-M12F8-LK-M8-5:	cordset 5 meters with M12 conn.
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves



C58A



C58R

Order code

C58A	-	X	-	XXXXX	XXX	X	XX	X	X	X	XX	/Sxxx
C58R		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

(a) OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

BNF = AB cable output
BCU = AB, /AB cable output
ZNF = AB0 cable output
ZCU = AB0, /AB0 cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = AB0 /AB0, M23 12 pin plug
ZCM = AB0 /AB0, M12 8 pin plug

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

14 = 14 mm
15 = 15 mm

(f) PROTECTION

- = IP64 (standard)
P = IP65

(g) COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz

(h) OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F) standard
K = -40°C +100°C (-40°F +212°F)

(i) CABLE LENGTH
(not with BCZ, ZCZ, ZCM)

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(j) CUSTOM VERSION

ROTAPULS

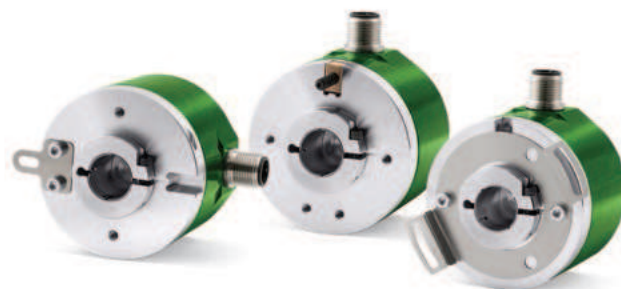
Incremental encoders

Series

CK58 • CK59 • CK60



- Standard encoder for heavy industrial applications
- Blind hollow shaft up to Ø 15 mm
- Connector or cable output
- ABO or sine/cosine signals



CK60 • CK58 • CK59

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (typ. 3000 rpm / 6000 temporary)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	14, 15 mm
Reducing sleeves from Ø 15 mm to:	Ø 6, 8, 9,52, 10, 11, 12 mm
Shaft loading (axial, radial):	50 N max.
Shaft rotational speed:	typ. 6000 rpm / 12000 temporary
Starting torque (at 20°C):	0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 200 g (7 oz)
Options:	• additional cable • DSub 9 pin inline plug

ELECTRICAL SPECIFICATIONS

Resolution (PPR): (output circuit N, P, Y, L, H)	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435471-500-512 600-635-720-750-800-900-1000-1024-1068-1200-1250-1270 1400-1440-1500-1800-2000-2048-2250-2400-2500-3000-3600 4000-4096-5000-6000-8192-9000-10000
Resolution (PPR): (output circuit V)	500-512-1000-1024-1250-2000-2048-2500
Counting frequency:	100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit, Sine/cosine
Power supply:	+5V±5%, +10V +30V, +5V +30V (sine/cosine only +5V±5%)
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L and V circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Counting frequency up to 300 kHz • Line Driver 24/5V

MATERIALS

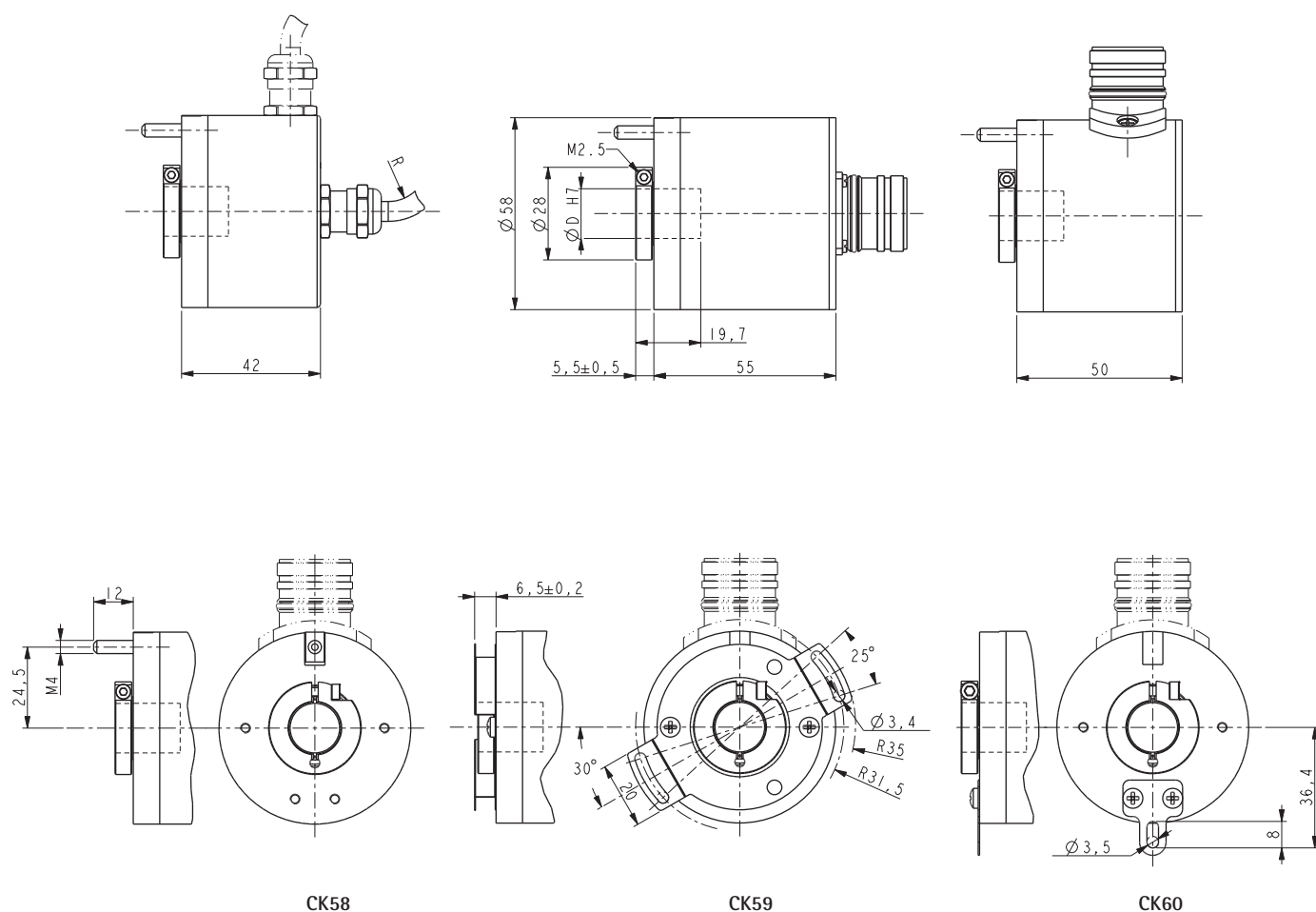
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

CK58-H-500ZCU415R	500 PPR, HTL/TTL output
CK58-H-1000ZCU415R	1000 PPR, HTL/TTL output
CK58-H-1024ZCU415R	1024 PPR, HTL/TTL output
CK58-H-2048ZCU415R	2048 PPR, HTL/TTL output

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 conn.
EC-M12F8-LK-M8-5:	cordset 5 meters with M12 conn.
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves



Order code

CK58	-	X	-	XXXXX	XXX	X	XX	X	X	X	X	XX	/Sxxx
CK59		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
CK60													

(a) OUTPUT CIRCUITS

N = NPN o.c.
P = PNP o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit
V = 1 Vpp sine/cosine

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output (except V output)
ZNF = AB0, cable output (except V output)
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = AB0 /AB0, M23 12 pin plug
ZCM = AB0 /AB0, M12 8 pin plug

(d) SUPPLY VOLTAGE

1 = +5V±5% (L, V output circuit)
2 = +10V÷ +30V (N, P, Y output circuit)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm

(f) CONNECTION POSITION

- = axial
R = radial

(g) PROTECTION

- = IP64 (standard)
P = IP65

(h) COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz

(i) OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F) standard
K = -40°C +100°C (-40°F +212°F)

(j) CABLE LENGTH

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(k) CUSTOM VERSION

ROTAPULS

Feedback encoder for servo & gearless motors

Series

CB59 • CB60



- Feedback encoder for servo & gearless motors
- 2048 PPR sine/cosine output
- Absolute track for rotor/stator position
- Hollow or tapered shaft design
- Pin compatible connector with market products



CB59 • CB60

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP40
Operating temperature range:	-20°C+100°C (-4°F +212°F)
Storage temperature range:	-20°C+100°C (-4°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	hollow, Ø 12.7, 15 mm solid, 1:10 taper
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	12000 rpm max.
Starting torque at 20°C:	0,15 Ncm (typical)
Bearings life:	10 ⁹ rev. min.
Electrical connections:	PCB connector (connection cable to be ordered separately)
Weight:	~ 200 g (7 oz)

ELECTRICAL SPECIFICATIONS

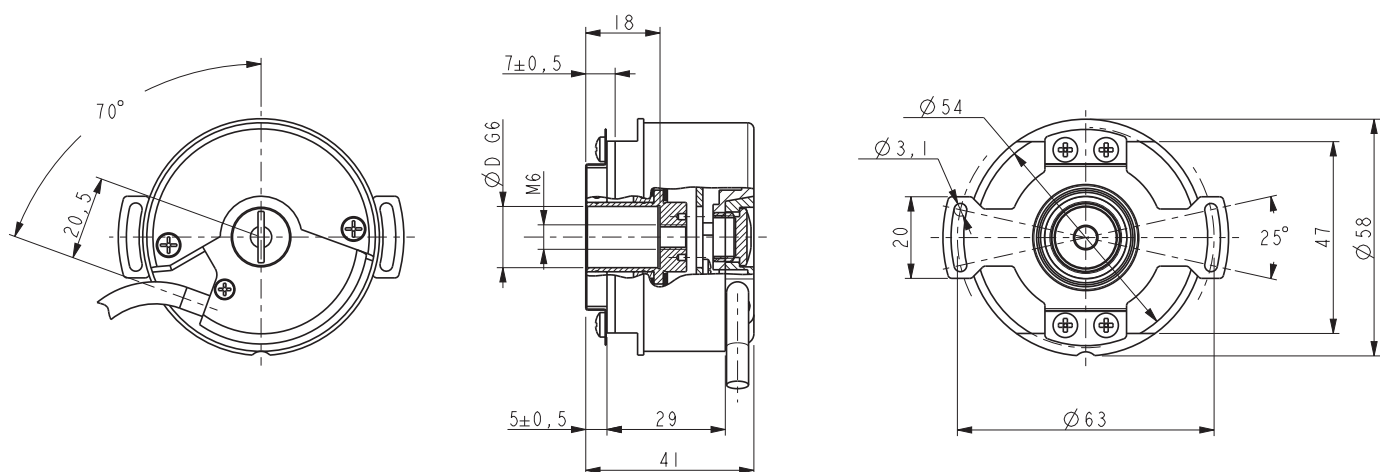
Resolution (PPR):	2048 + absolute Z-track
Counting frequency:	300 kHz max.
Output circuits:	1Vpp
Power supply:	+5V±5%
Consumption:	130 mA max.
Output current (each channel):	40 mA max.
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

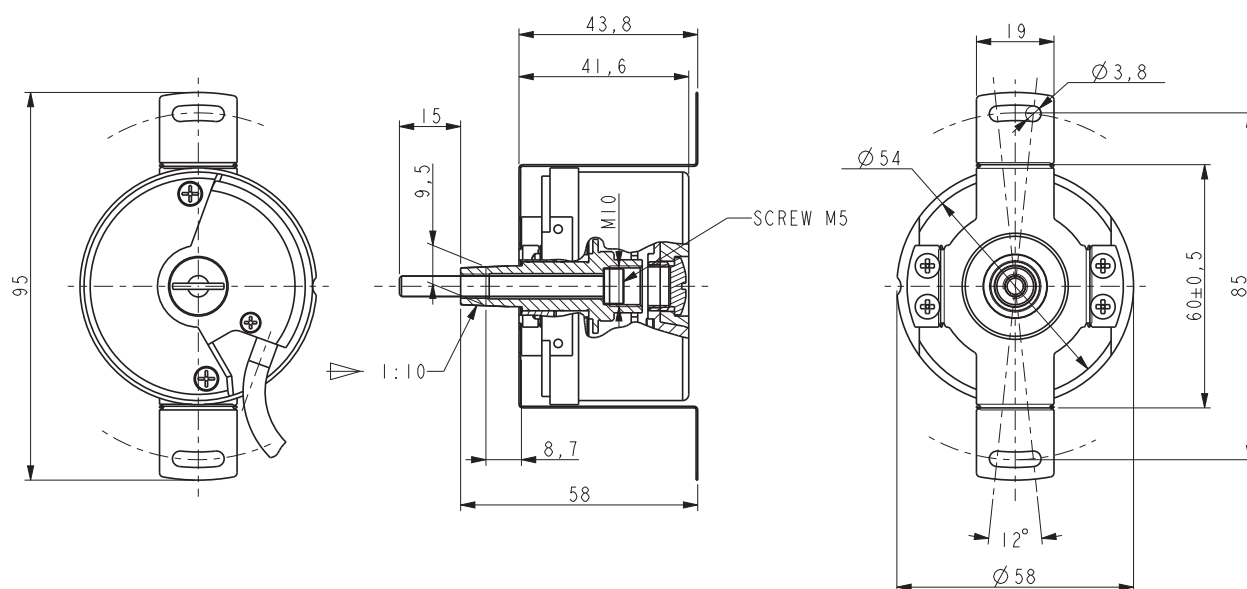
Flange:	aluminium, anticorodal, UNI EN AW-6082
Housing:	aluminium, anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EC-CB61-1:	Connection cable 1 m
EC-CB61-4:	Connection cable 4 m
EC-CB61-7:	Connection cable 7 m



CB59



CB60

Order code

CB59 CB60	-	X (a)	-	XXXX/X (b)	X (c)	XXX (d)	/Sxxx (e)
--------------	---	----------	---	---------------	----------	------------	--------------

Accessories order code

EC-CB61-1
EC-CB61-4
EC-CB61-7

(a) OUTPUT CIRCUIT
V = 1 Vpp sine/cosine + Z track

(b) RESOLUTION (PPR)
2048/1

(c) SUPPLY VOLTAGE
1 = +5V ±5%

(d) SHAFT DIAMETER
P12 = 12,7 mm - 1/2"
15 = 15 mm
C10 = 1:10 taper

(e) CUSTOM VERSION

Connection cable 1 m
Connection cable 4 m
Connection cable 7 m

ROTAMAG

Magnetic incremental encoders

Series

MI58 • MI58S • MC58 • MC59 • MC60



- Magnetic sensing technology
- Solid and through hollow shaft design
- Resolution up to 10000 PPR (others on request)
- High protection degree with sealed circuits



MI58 • MI58S

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection (with sealed circuits)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	MI58, MI58S: 12000 rpm max. MC58, MC59, MC60: 3000 rpm (typ), 6000 rpm max.
Starting torque at 20°C:	MI58, MI58S: ≤ 0,4 Ncm (typical) MC58, MC59, MC60: 1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 plug or cable output 1 m (3.3 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

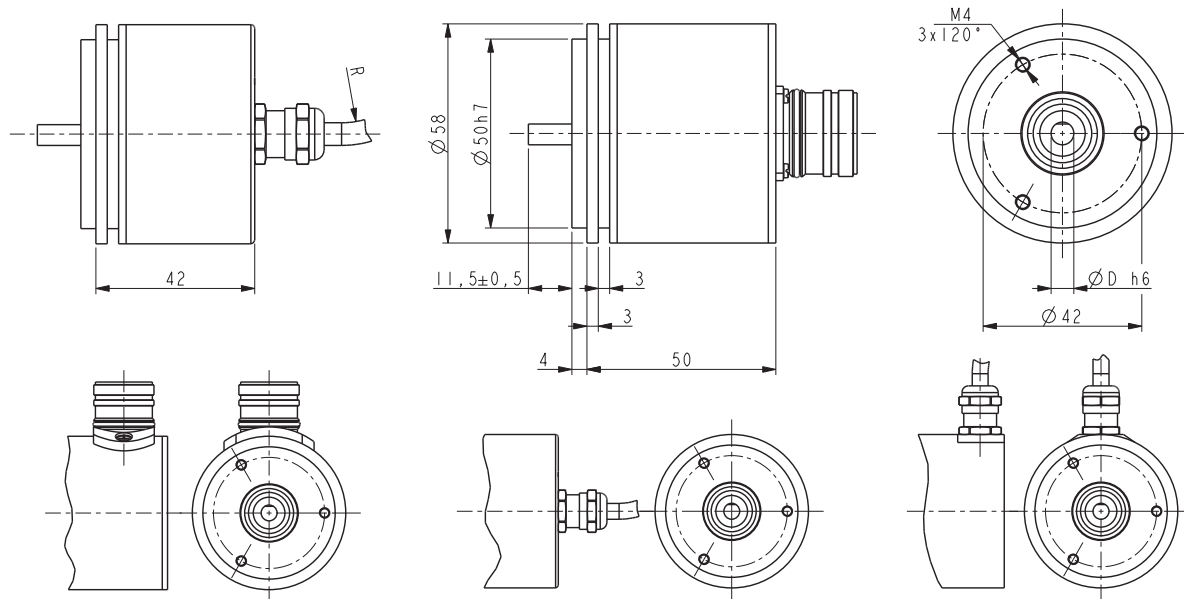
Resolution (PPR):	20-40-80-160-200-320-400-500-640-800-1000 1280-1600-2000-2500-2560-5000-10000
Accuracy:	± 0,5°
Counting frequency:	500 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	60 mA max.
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4

MATERIALS

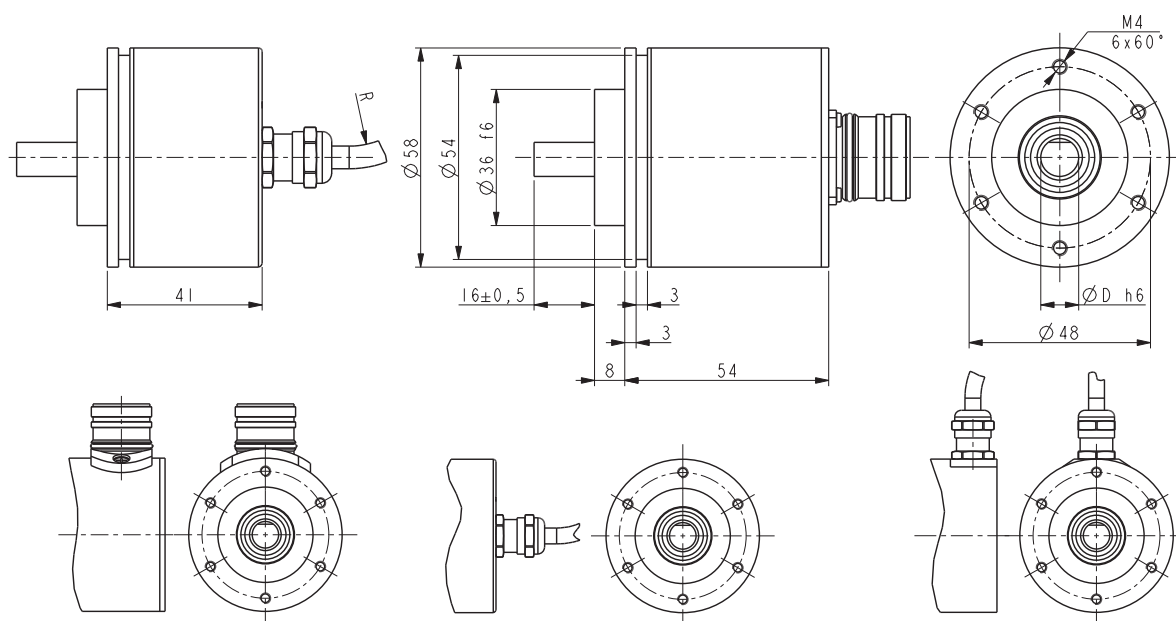
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 conn.
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps
BR1:	Reducing sleeves



MI58



MI58S

Order code

MI58	-	X	-	XXXXX	XXX	X	XX	X	X	X	/Sxxx
MI58S		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

a OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

b RESOLUTION (PPR)

See electrical specifications

c OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output
BCU = AB /AB, cable output
BCZ = AB /AB, M23 12 pin plug
ZNF = ABO, cable output
ZCU = ABO /ABO, cable output
ZCZ = ABO /ABO, M23 12 pin plug

d SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

e SHAFT DIAMETER

6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm

f CONNECTION POSITION

- = axial
R = radial

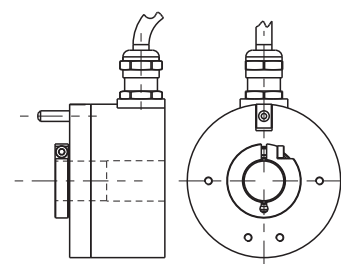
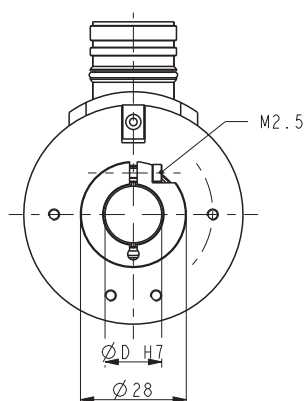
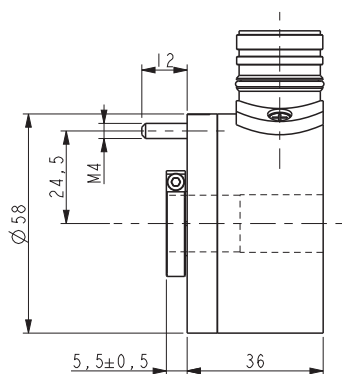
g PROTECTION

- = IP65 (standard)
J = IP67 (only with cable output)

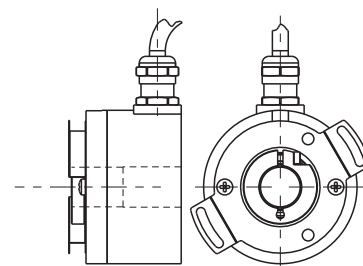
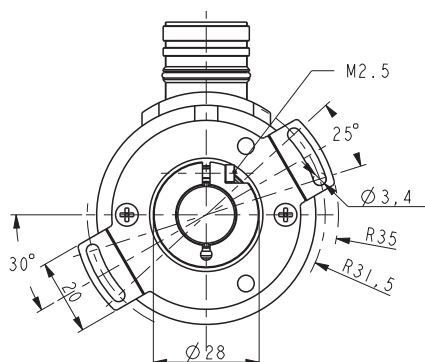
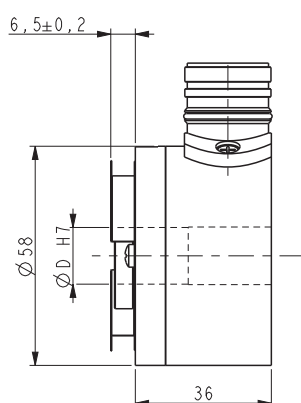
h CABLE LENGTH

(not with BCZ, ZCZ)
- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

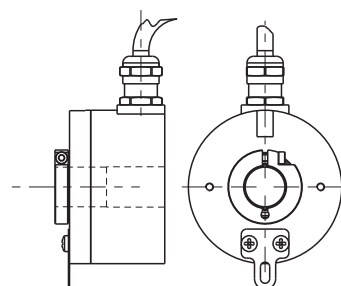
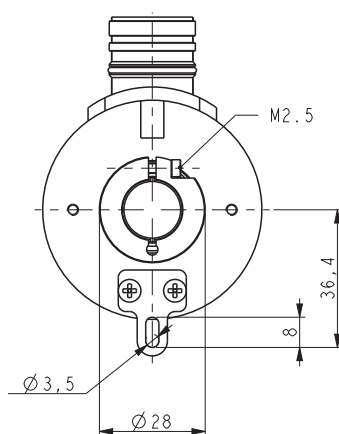
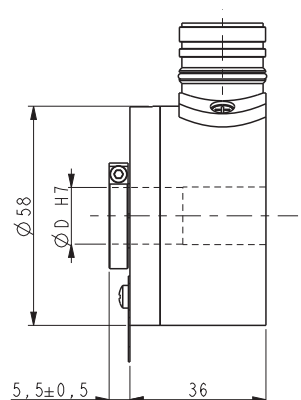
i CUSTOM VERSION



MC58



MC59



MC60

Order code

MC58	-	X	-	XXXXX	XXX	X	XX	X	X	X	/Sxxx
MC59		Ⓐ		Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ
MC60											

Ⓐ OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

Ⓑ RESOLUTION (PPR)

See electrical specifications

Ⓒ OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output
BCU = AB /AB, cable output
BCZ = AB /AB, M23 12 pin plug
ZNF = AB0, cable output
ZCU = AB0 /AB0, cable output
ZCZ = AB0 /AB0, M23 12 pin plug

Ⓓ SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

Ⓔ SHAFT DIAMETER

14 = 14 mm
15 = 15 mm

Ⓕ CONNECTION POSITION

- = axial
R = radial

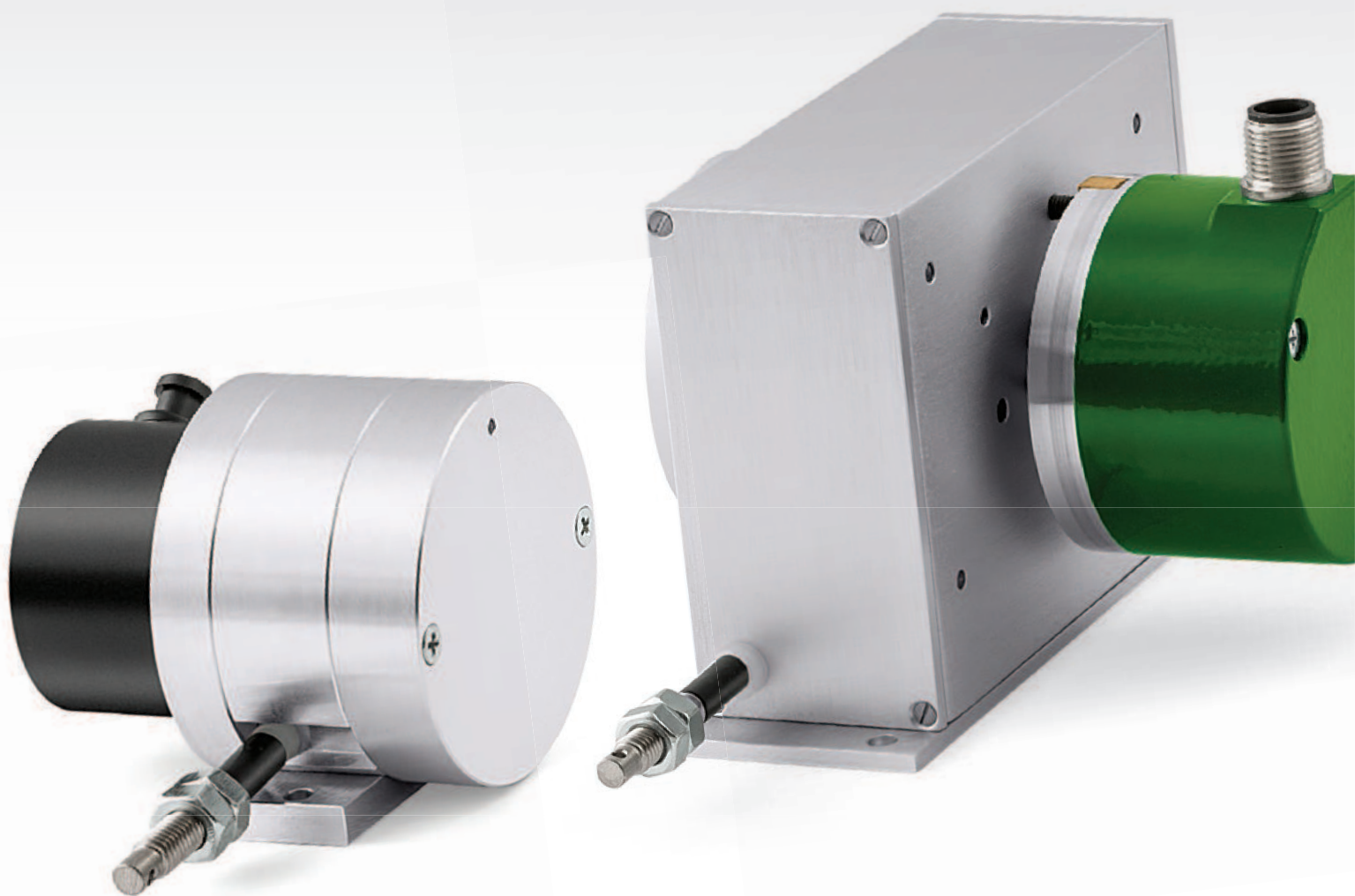
Ⓖ PROTECTION

- = IP65 (standard)
J = IP67 (only with cable output)

Ⓗ CABLE LENGTH
(not with BCZ, ZCZ)

- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

Ⓘ CUSTOM VERSION



discover our
Draw-wire catalogue on
www.lika.biz

ROTAPULS

Incremental encoders

Series

I65 • IT65



- Robust die cast housing
- High shaft load
- Protection up to IP66 (shaft side)
- Clamp flange
- Square flange, US size
- Preferential versions available



I65 • IT65

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP66 Protection shaft end (torque 2,5 Ncm and 3000 rpm max.)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	MIL 7 pin, MIL 10 pin plug or cable output 1 m (3.3 ft)
Weight:	~ 400 g (14,1 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150-160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435-471-500-512 600-635-720-750-800-900-1000-1024-1068-1200-1250-1270 1400-1440-1500-1800-2000-2048-2250-2400-2500-3000 3600-4000-4096-5000-6000-8192-9000-10000
Counting frequency:	100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz

MATERIALS

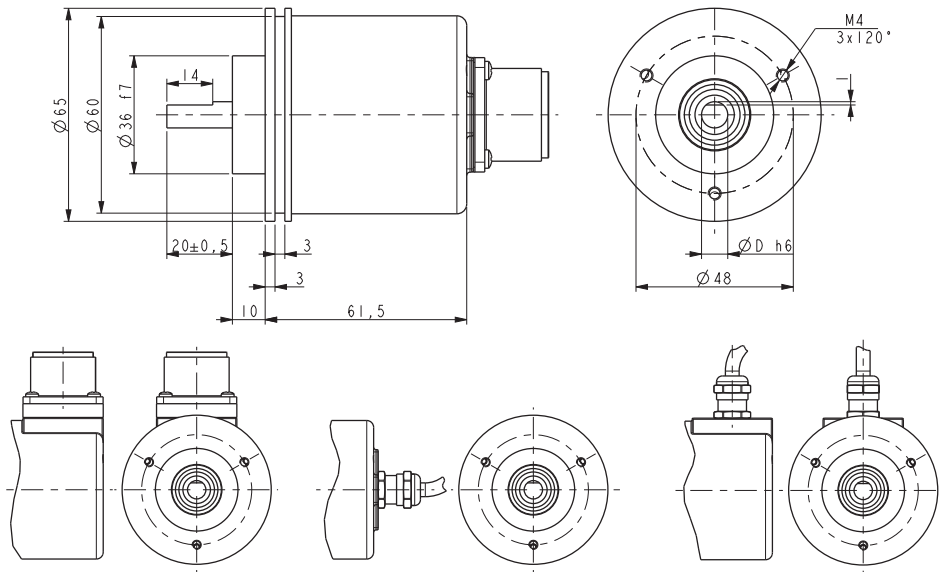
Flange:	anticorodal, UNI EN AW-6082
Housing:	zamac die cast
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS

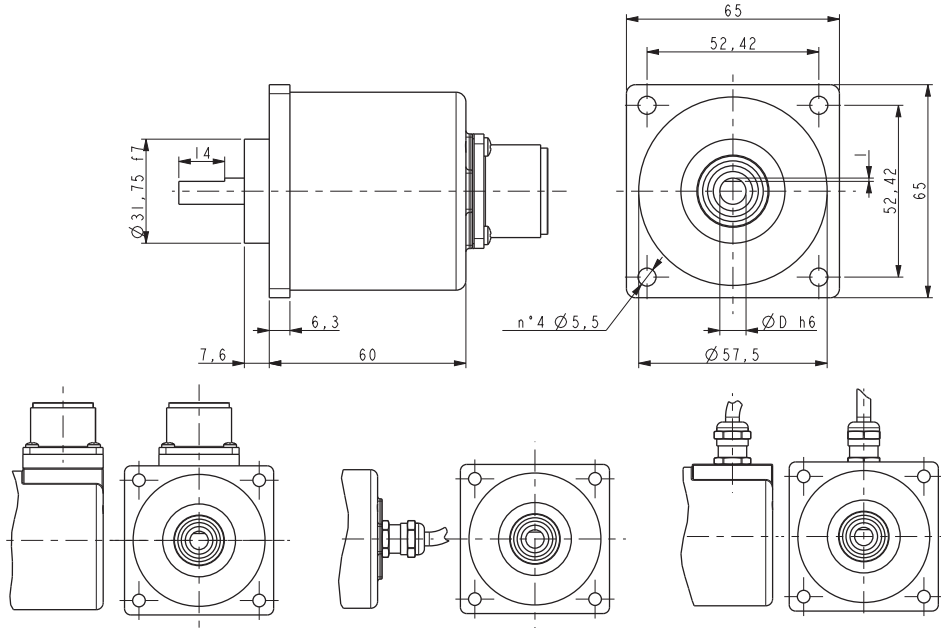
IT65-H-100ZCP4CR	100 PPR, HTL/TTL output
IT65-H-500ZCP4CR	500 PPR, HTL/TTL output
IT65-H-1000ZCP4CR	1000 PPR, HTL/TTL output
IT65-H-1024ZCP4CR	1024 PPR, HTL/TTL output
IT65-H-2500ZCP4CR	2500 PPR, HTL/TTL output
IT65-H-5000ZCP4CR	5000 PPR, HTL/TTL output

ACCESSORIES

E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



I65



IT65

Order code

I65	-	X	-	XXXXX	XXX	X	X	X	X	X	X	XX	/Sxxx
IT65		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)

(a) OUTPUT CIRCUITS N = NPN o.c. P = PNP o.c. Y = Push Pull L = Line Driver (RS422) H = PP/LD universal circuit (b) RESOLUTION (PPR) See electrical specifications	(c) OUTPUT SIGNALS / CONNECTIONS BNF = AB, cable output ZNF = AB0, cable output BND= AB, MIL 7 pin plug ZND= AB0, MIL 7 pin plug BCU = AB /AB, cable output ZCU = AB0 /AB0, cable output BCP = AB /AB, MIL 10 pin plug ZCP = AB0 /AB0, MIL 10 pin plug (d) SUPPLY VOLTAGE 1 = +5V±5% (L output circuit) 2 = +10V÷ +30V (Y output circuit) 4 = +5V÷ +30V (H output circuit)	(e) SHAFT DIAMETER B = 6 mm C = 8 mm D = 9.52 mm - 3/8" E = 10 mm F = 12 mm (f) CONNECTION POSITION - = axial R = radial (g) PROTECTION - = IP65 (standard) Q = IP66 protection shaft side	(h) COUNTING FREQUENCY - = 100 kHz (standard) W = 300 kHz (i) OPERATING TEMPERATURE - = -25°C +85°C (-13°F +185°F) standard K = -40°C +100°C (-40°F +212°F) (j) CABLE LENGTH - = cable output 1 m (standard) L2 = cable output 2 m Lx = cable output x m (k) CUSTOM VERSION
--	--	--	---

ROTAPULS

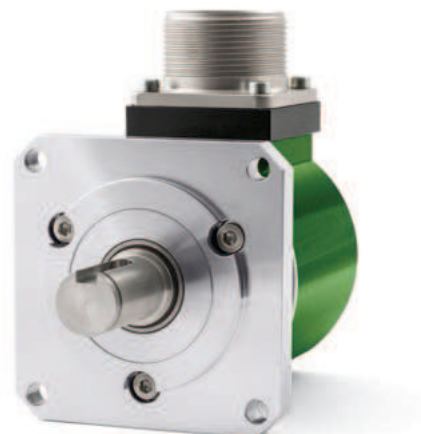
Incremental encoder

Series

IT68



- Popular machine tool encoder with increased reliability and performance
- Resolution up to 10000 PPR
- NPN, Push-Pull, Line Driver or Universal circuit
- Extended temperature range -40°C +100°C & IP66



IT68

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• IP66 Protection shaft end (torque 2,5 Ncm and 3000 rpm max.)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 15 mm with keyway
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	0,4 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	MIL 10 pin, MIL 17 pin plug or cable output 1 m (3.3 ft)
Weight:	~ 500 g (17,6 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

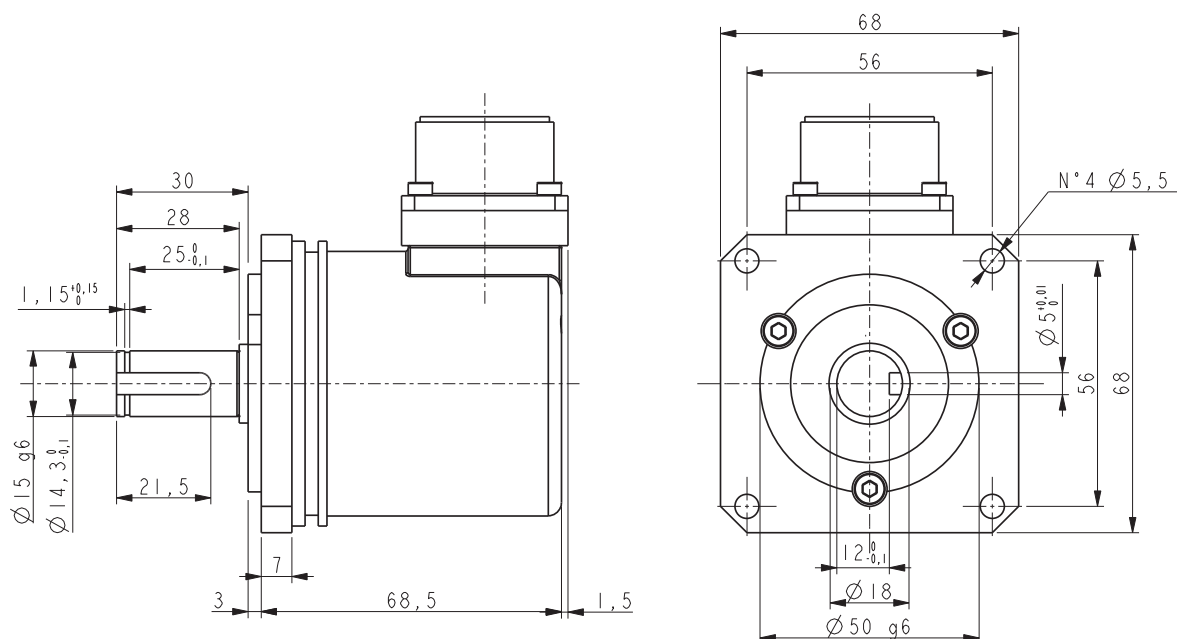
Resolution (PPR):	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150-160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435-471-500 512-600-635-720-750-800-900-1000-1024-1068-1200-1250 1270-1400-1440-1500-1800-2000-2048-2250-2400-2500 3000-3600-4000-4096-5000-6000-8192-9000-10000
Counting frequency:	100 kHz max.
Output circuits:	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz

MATERIALS

Flange:	anticorodal, UNI EN AW-6082
Housing:	zamac die cast
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

E17MLS:	17 pin MIL mating connector
E10MLS:	10 pin MIL mating connector



IT68

Order code

IT68	-	X (a)	-	XXXXX (b)	XXX (c)	X (d)	G (e)	X (f)	X (g)	X (h)	K (i)	XX (j)	/Sxxx (k)
------	---	----------	---	--------------	------------	----------	----------	----------	----------	----------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

N = NPN o.c.
P = PNP o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

ZCU = AB0 /AB0, cable output
ZCP = AB0 /AB0, MIL 10 pin plug
ZCQ = AB0 /AB0, MIL 17 pin plug

(d) SUPPLY VOLTAGE

1 = +5V $\pm$ 5% (L output circuit)
2 = +10V $\div$ +30V (N, P and Y output circuit)
4 = +5V $\div$ +30V (H output circuit)

(e) SHAFT DIAMETER

G = 15 mm

(f) CONNECTION POSITION

- = axial
R = radial

(g) PROTECTION

- = IP65 (standard)
Q = IP66 protection shaft side

(h) COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz

(i) OPERATING TEMPERATURE

K = -40°C +100°C (-40°F +212°F) standard

(j) CABLE LENGTH (only with ZCU)

L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

(k) CUSTOM VERSION

ROTAPULS

ATEX incremental encoder

Series

XC77



- Encoder with ATEX II 2GD Ex d IIC T6 certification
- Suitable for ATEX zones 1, 2, 21 and 22
- Compact & robust construction with axial/radial cable outlet
- Ø 14 mm hollow shaft
- Resolution up to 10000 PPR



XC77

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Environmental temperature at max. speed:	40°C max
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

Protection mode:	EEx d IIC T6
Dimensions:	see drawing
Hollow shaft diameter:	Ø 14 mm
Shaft loading (axial, radial):	60 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	≤ 5 Ncm
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 750 g (26,4 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

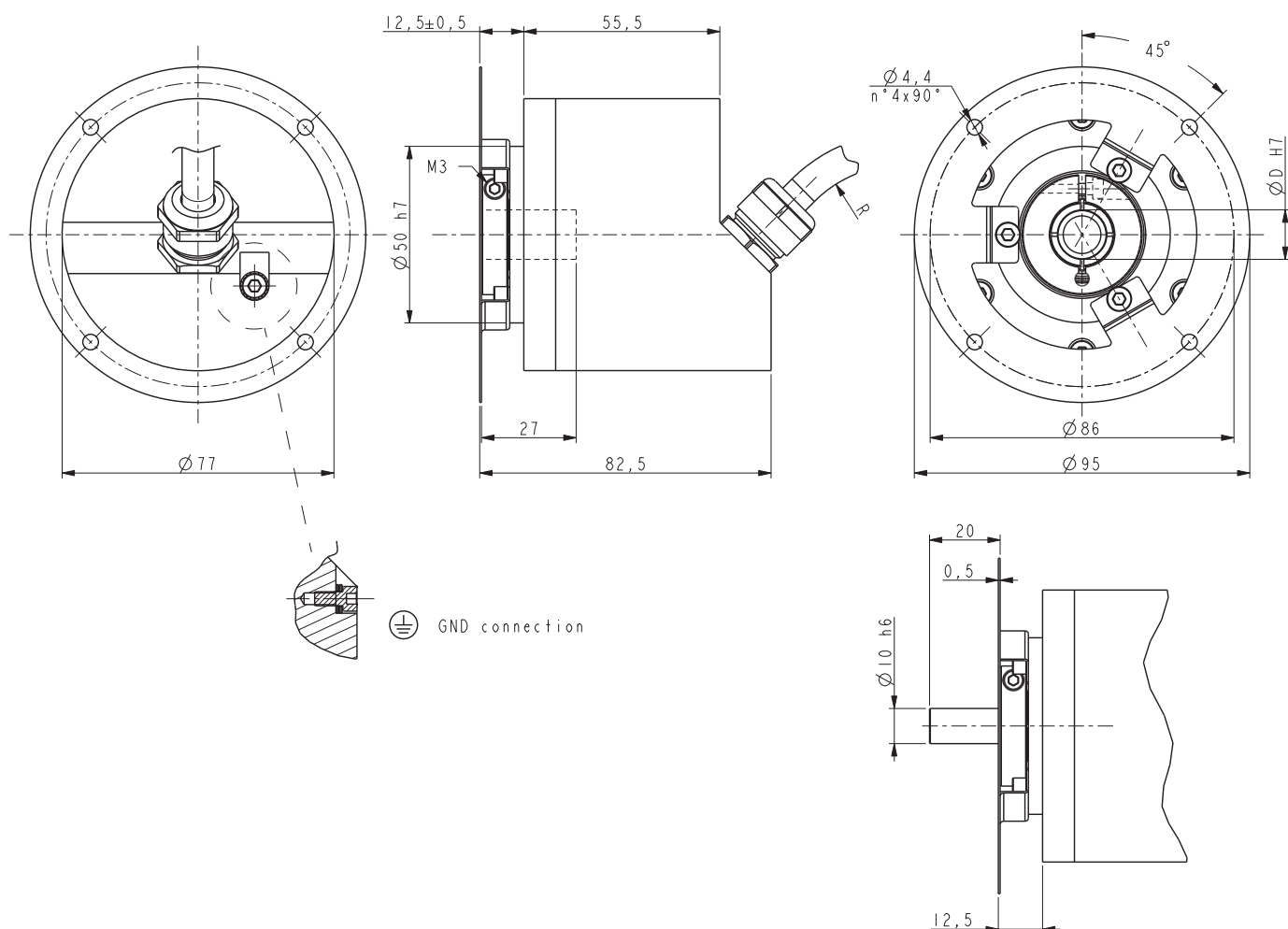
Resolution (PPR):	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150-160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435-471-500-512 600-635-720-750-800-900-1000-1024-1068-1200-1250-1270 1400-1440-1500-1800-2000-2048-2250-2400-2500-3000-3600 4000-4096-5000-6000-8192-9000-10000
Counting frequency:	100 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver, Universal circuit
Power supply:	+5Vdc ± 5%, +10Vdc +30Vdc, +5Vdc +30Vdc
Consumption:	70 mA (typical)
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082 (UNI EN 573)
Housing:	anticorodal, UNI EN AW-6082 (UNI EN 573)
Bearings:	ABEC 5
Shaft and clamping ring:	1.4305 (UNI EN 10088-1)

ACCESSORIES

LKM-1578:	Ø 10 mm shaft extension
-----------	-------------------------



XC77

Order code

XC77	-	X	-	XXXXX	XXX	X	XX	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)	(g)

(a) OUTPUT CIRCUITS

N = NPN o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTION

ZCU = AB0 /AB0, cable output

(d) SUPPLY VOLTAGE

1 = +5Vdc $\pm 5\%$ (L output circuit)
2 = +10Vdc $\div$ +30Vdc (N and Y output circuits)
4 = +5Vdc $\div$ +30Vdc (H output circuit)

(e) SHAFT DIAMETER

14 = 14 mm

(f) CABLE LENGTH

- = cable output 1 m cable
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m

(g) CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

C80



- Feedback encoder with for big size motors
- Precise optical sensing
- Very flat design
- Through hollow shaft up to Ø 30 mm
- Robust die cast housing with IP65 protection



C80

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (3000 rpm max, torque 2 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 25, 30 mm
Reducing sleeves, BR2-xx from Ø 30 mm to:	Ø 15, 5/8" (15,875), 16, 17, 18, 19, 20 22, 23, 24, 1" (25,4), 28 mm
Shaft loading (axial and radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1,5 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 12 pin plug or cable output 1 m (3.3 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	12-100-200-360-400-500-1000-1024-2000-2048
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V ±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

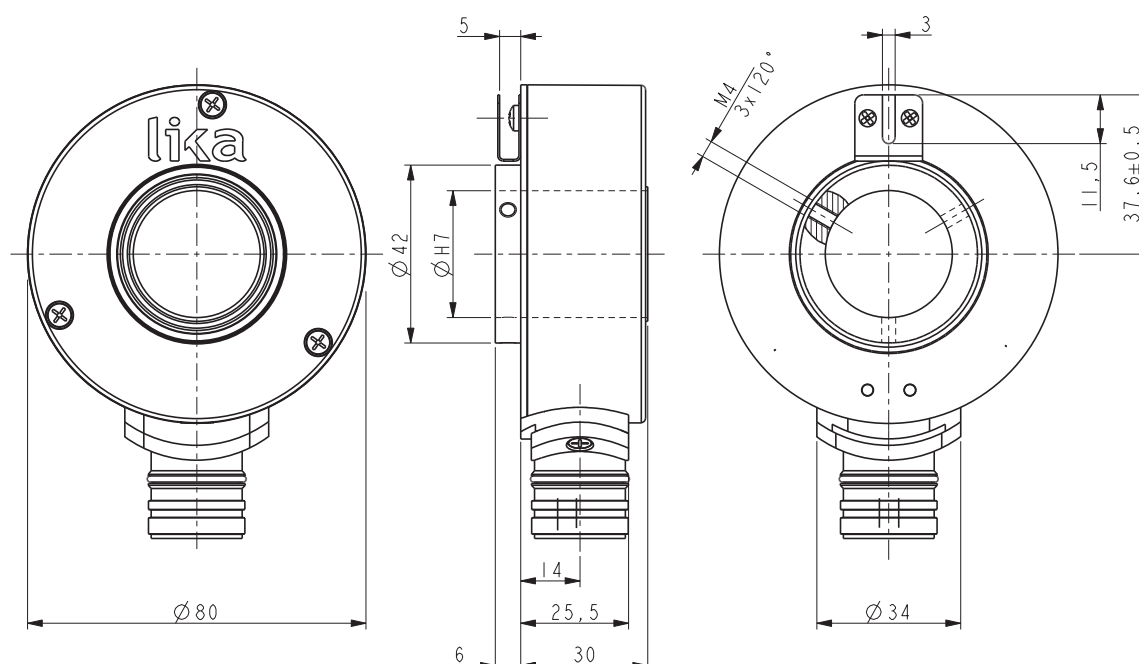
Flange:	die cast aluminium, UNI EN AC-46100
Housing:	die cast aluminium, UNI EN AC-46100
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic 1.4305 (UNI EN 10088-1)
Light source:	GaAl diodes

PREFERENTIAL MODELS

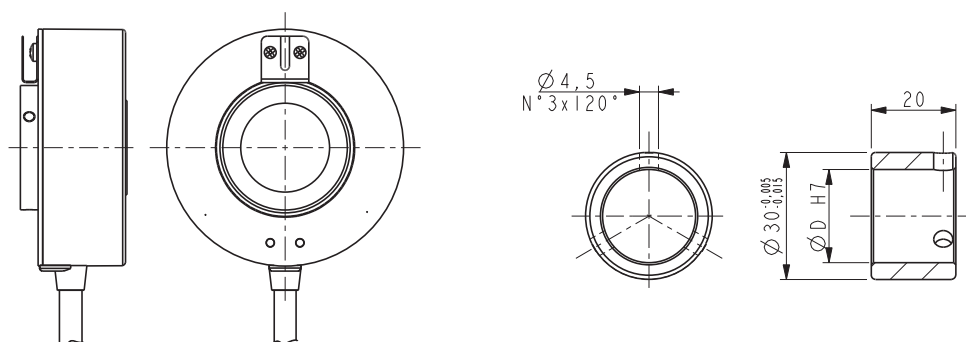
C80-H-1024ZCU430L2	1024 PPR, HTL/TTL output
C80-H-2048ZCU430L2	2048 PPR, HTL/TTL output

ACCESSORIES

EDE9S:	9 pin DSub mating connector
BR2-xx:	reducing sleeves
EPFL121:	12 pin M23 mating connector



C80



BR2-xx

Order code

C80	-	X	-	XXXXX	XXX	X	XX	X	X	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

(a) OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output
ZNF = AB0, cable output
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = AB0 /AB0, M23 12 pin plug

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

25 = 25 mm
30 = 30 mm

(f) PROTECTION

- = IP64 (standard)
P = IP65

(g) OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

(h) CABLE LENGTH

- = cable output 1 m
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(i) CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

C81



- Encoder for lift traction machines and big size motors
- Precise optical sensing
- Internal structure in stainless steel
- Hollow shaft from Ø 30 to Ø 44 mm



C81

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP65 Protection (2000 rpm max, torque 2 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 30, 34, 35, 38, 40, 42, 44 mm
Reducing sleeves, BR2-xx from Ø 30 mm to:	Ø 15, 5/8" (15,875), 16, 17, 18, 19, 20 22, 23, 24, 1" (25,4), 28 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	max. 2000 rpm@70°C (158°F)/IP54, 3000 rpm@100°C (212°F)/IP54 max. 1500 rpm@70°C (158°F)/IP65, 2000 rpm@100°C (212°F)/IP65
Starting torque (at 20°C):	4 ÷ 12 Ncm (typical)
Misalignment:	± 0,3 mm radial ± 0,2 mm axial
Bearing life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

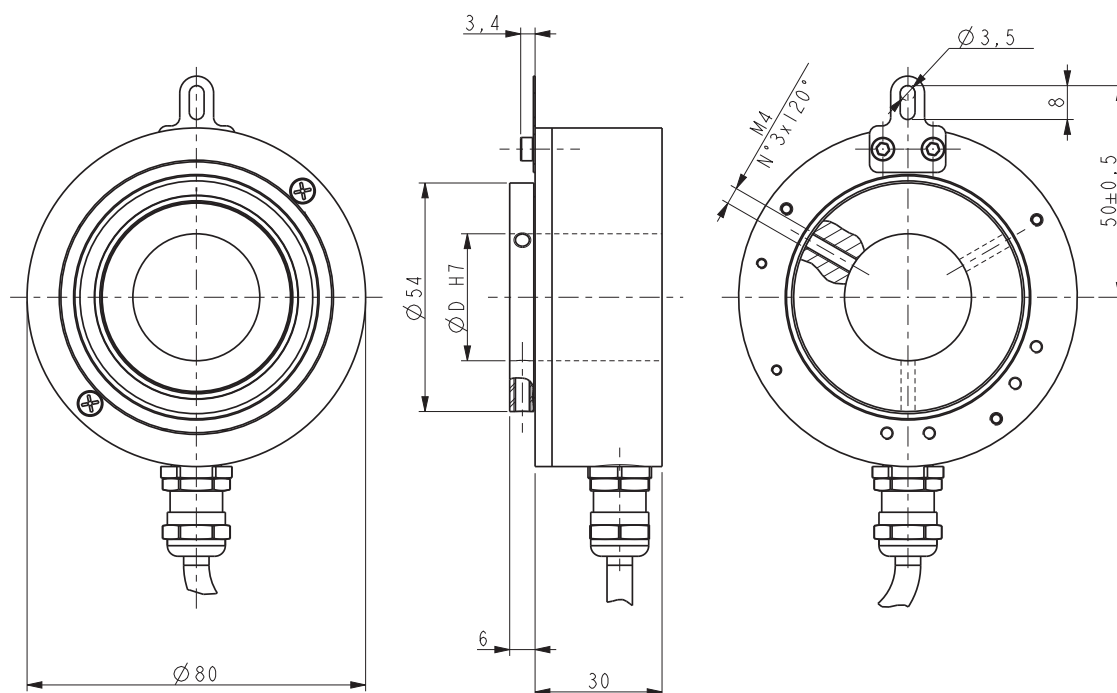
Resolution (PPR):	12-100-300-400-500-1024-2000-2048-2500-4096
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V ±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Output freq. 200 kHz max.

MATERIALS

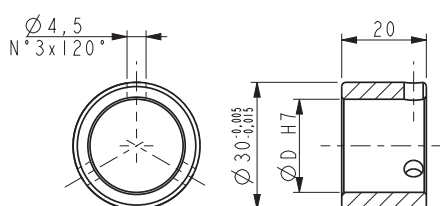
Flange:	steel, UNI EN 4305
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EDE9S:	9 pin DSub mating connector
BR2-xx:	reducing sleeves



C81



BR2-xx

Order code

C81	-	X	-	XXXXX	XXX	XX	X	X	X	XX	/Sxxx
		(a)		(b)	(c)	(e)	(f)	(g)	(h)	(i)	(j)

(a) OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output
ZNF = AB0, cable output
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output

(d) SUPPLY VOLTAGE

1 = $+5V \pm 5\%$ (L output circuit)
2 = $+10V \div +30V$ (Y output circuit)
4 = $+5V \div +30V$ (H output circuit)

(e) SHAFT DIAMETER

30 = 30 mm
34 = 34 mm
35 = 35 mm
38 = 38 mm
40 = 40 mm
42 = 42 mm
44 = 44 mm (43,97)

(f) PROTECTION

- = IP64 (standard)
P = IP65

(g) COUNTING FREQUENCY

- = 100 kHz standard
W = 200 kHz

(h) OPERATING TEMPERATURE

- = $-25^\circ\text{C} + 85^\circ\text{C}$ ($-13^\circ\text{F} + 185^\circ\text{F}$)
K = $-40^\circ\text{C} + 100^\circ\text{C}$ ($-40^\circ\text{F} + 212^\circ\text{F}$)

(i) CABLE LENGTH

- = cable output 1 m
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

(j) CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

C82



- Encoder for elevator motors
- Precise optical sensing
- Operating temperature up to -40°C $+100^{\circ}\text{C}$
- Resolution from 12 to 4096 PPR
- Hollow shaft from $\varnothing$ 30 to $\varnothing$ 44 mm



C82

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C $+85^{\circ}\text{C}$ (-13°F $+185^{\circ}\text{F}$)
Storage temperature range:	-25°C $+85^{\circ}\text{C}$ (-13°F $+185^{\circ}\text{F}$) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C $+100^{\circ}\text{C}$ (-40°F $+212^{\circ}\text{F}$) • IP65 Protection (2000 rpm max, torque 2 Ncm)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	$\varnothing$ 30, 34, 35, 38, 40, 42, 44 mm
Reducing sleeves, BR2-xx from $\varnothing$ 30 mm to:	$\varnothing$ 15, 5/8" (15,875), 16, 17, 18, 19, 20, 22, 23, 24, 1" (25,4), 28 mm
Shaft loading:	axial: 100 N max. radial: 200 N max.
Shaft rotational speed:	max. 2000 rpm@70°C (158°F)/IP54, 3000 rpm@100°C (212°F)/IP54 max. 1500 rpm@70°C (158°F)/IP65, 2000 rpm@100°C (212°F)/IP65
Starting torque at 20°C:	4 ÷ 12 Ncm (typical)
Misalignment:	$\pm$ 0,3 mm radial $\pm$ 0,2 mm axial
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 12 pin plug or cable output 1 m (3.3 ft)
Weight:	~ 0,3 g (10,6 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

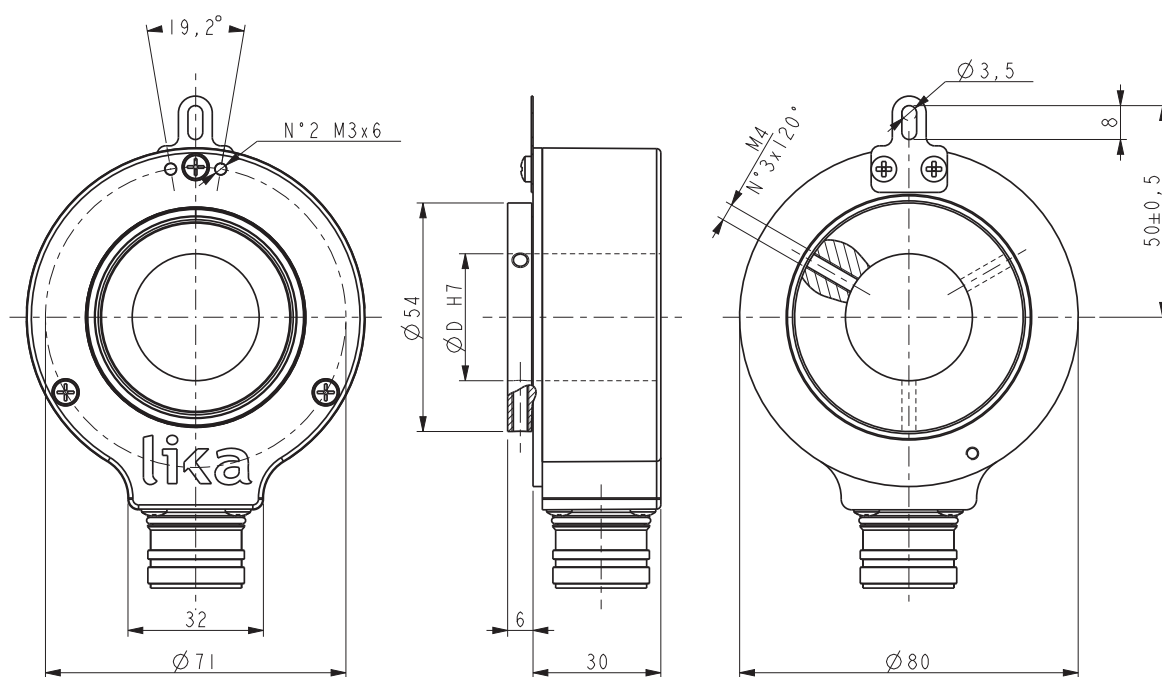
Resolution (PPR):	12-100-300-400-500-1024-2000-2048-2500-4096
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V $\pm$ 5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Output freq. 200 kHz max.

MATERIALS

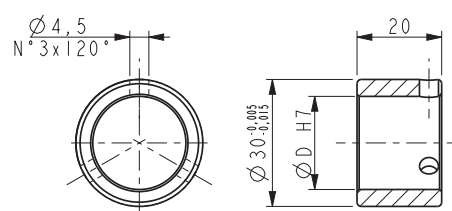
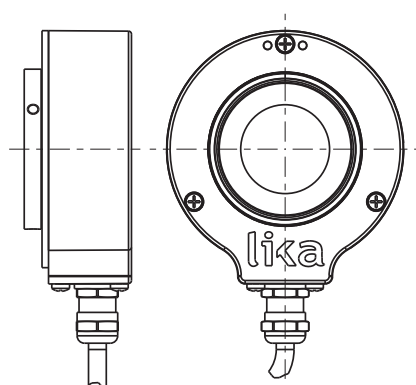
Flange:	anticorodal, UNI EN AW-6082
Housing:	die cast aluminium, UNI EN AC-46100
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL121:	M23 12 pin mating connector
BR2-xx:	reducing sleeves



C82



BR2-xx

Order code

C82	-	X	-	XXXXX	XXX	XX	XX	X	X	X	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

a OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

b RESOLUTION (PPR)

See electrical specifications

c OUTPUT SIGNALS / CONNECTIONS

BNF = AB, cable output
ZNF = AB0, cable output
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output
BCZ = AB /AB, M23 12 pin plug
ZCZ = AB0 /AB0, M23 12 pin plug

d SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

e SHAFT DIAMETER

30 = 30 mm
34 = 34 mm
35 = 35 mm
38 = 38 mm
40 = 40 mm
42 = 42 mm
44 = 44 mm (43,97)

f PROTECTION

- = IP64 protection (standard)
P = IP65 protection

g COUNTING FREQUENCY

- = 100 kHz (standard)
W = 200 kHz

h OPERATING TEMPERATURE

- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

i CABLE LENGTH

- = cable output 1 m
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

I115



- Heavy-duty encoder for harsh environments
- "Tachogenerator" design, B10 Euro-flange
- Rotatable connection with screw terminals
- High shaft load
- Power output circuit for long distance transmissions
- Corrosion and salt mist resistant housing



I115

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 11 mm
Shaft loading:	axial: 250 N radial: 350 N
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Weight:	~ 1 kg (35 oz)

ELECTRICAL SPECIFICATIONS

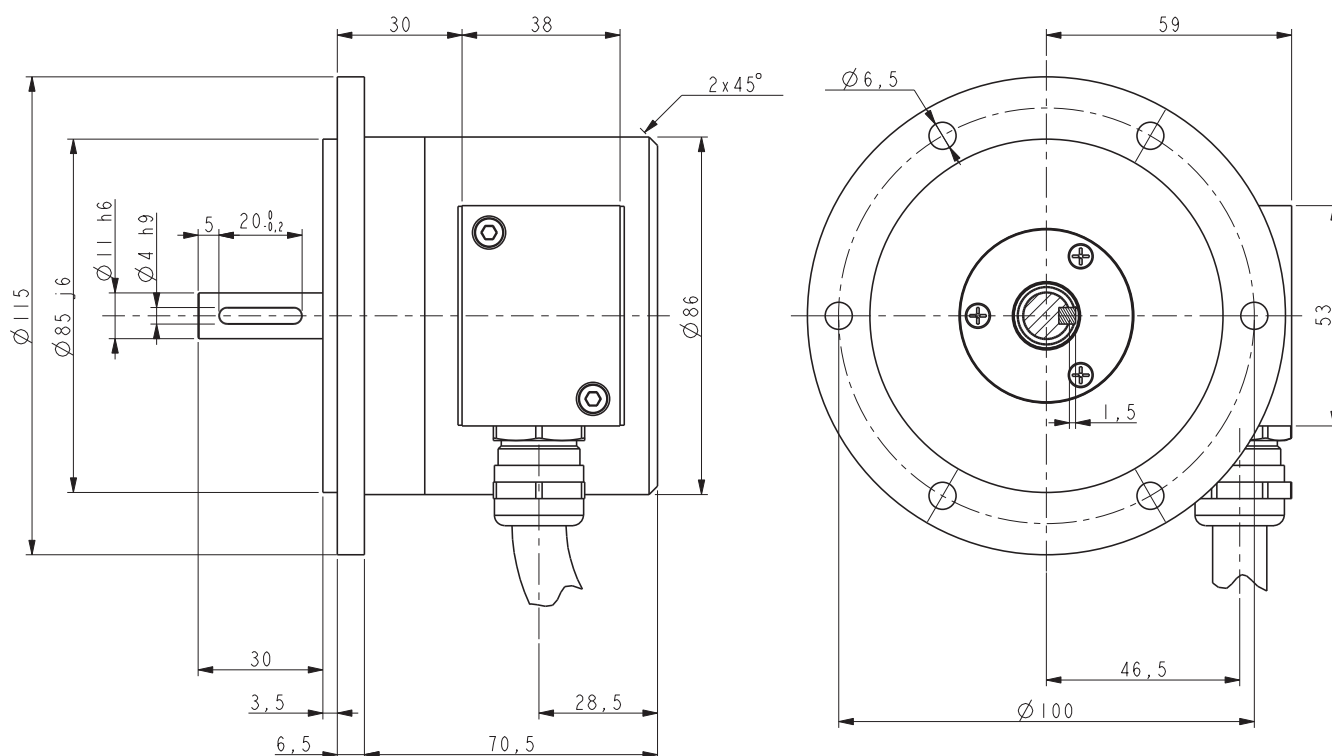
Resolution (PPR):	100-200-250-256-360-500-512-1000-1024-1250 1800-2000-2500
Counting frequency:	100 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver, Universal circuit, Power Push-Pull
Power supply:	+5V ±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Connections:	via terminal box, cable Ø 4 ÷ 10 mm

MATERIALS

Flange:	anticorodal, UNI EN AW-6082, anodized
Housing:	anticorodal, UNI EN AW-6082, anodized
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

MOL-32C-11K-11K:	flex. coupling with electric ins.
MST-32K-11-11:	stainless steel coupling
MDW-25C-11K-11K:	disk coupling



I115

Order code

I115	-	X (a)	-	XXXXX (b)	XXX (c)	X (d)	XX (e)	/Sxxx (f)
------	---	----------	---	--------------	------------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

N = NPN o.c.
Y = Push-Pull
L = Line Driver (RS422)
H = PP/LD universal circuit
T = Power Push-Pull

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNAL / CONNECTION

ZCT = ABO /ABO, terminal blocks

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (N, Y and T output circuits)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

11 = 11 mm

(f) CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

I116



- Double encoder with single housing design
- Heavy-duty construction for harsh environments
- Rotatable connections with screw terminals
- High shaft load
- Power output circuit for long distance transmissions
- Corrosion and salt mist resistant housing
- Two different resolutions or output circuits on request



I116

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft diameter:	Ø 11 mm
Shaft loading:	axial: 250 N radial: 350 N
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Weight:	1,6 kg (56,4 oz)

ELECTRICAL SPECIFICATIONS

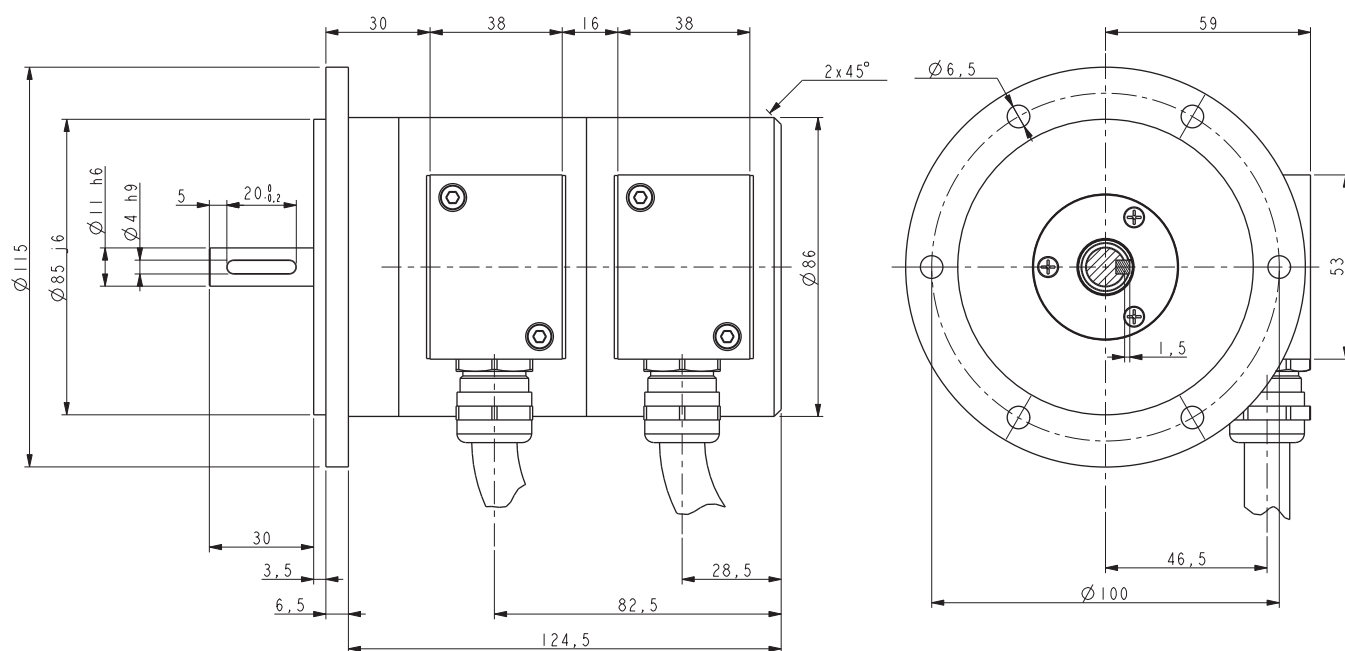
Resolution (PPR):	100-200-250-256-360-500-512-1000-1024-1250 1800-2000-2500
Counting frequency:	100 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver, Universal circuit, Power Push-Pull
Power supply:	+5V ±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Connections:	via terminal box, cable Ø 4 ÷ 10 mm

MATERIALS

Flange:	anticorodal, UNI EN AW-6082, anodized
Housing:	anticorodal, UNI EN AW-6082, anodized
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

MOL-32C-11K-11K:	flex. coupling with electric ins.
MST-32K-11-11:	stainless steel coupling
MDW-25C-11K-11K:	disk coupling



I116

Order code

I116	-	X	-	XXXXX	XXX	X	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)

(a) OUTPUT CIRCUITS

N = NPN o.c.
Y = Push-Pull
L = Line Driver (RS422)
H = PP/LD universal circuit
T = Power Push-Pull

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNAL / CONNECTION

ZCT = AB0 /AB0, terminal blocks

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (N, Y and T output circuits)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

11 = 11 mm

(f) CUSTOM VERSION

ROTAPULS

Incremental heavy-duty encoder

Series

C100



- Heavy-duty hollow shaft encoder
- Corrosion resistant, robust housing
- High shaft load and environmental protection
- Power outputs for long distance transmission
- M23 connector or screw terminals
- Electrical shaft insulation



C100

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Hollow shaft diameter:	Ø 16 mm 17 mm tapered
Shaft loading:	axial: 140 N radial: 350 N
Shaft rotational speed:	6000 rpm max. (short periods)
Electrical shaft insulation:	10 kV max.
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 plug, screw terminals or cable output 1 m (3.3 ft)
Weight:	~ 1 kg (35 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	1024-2048-2500
Counting frequency:	100 kHz max.
Output circuits:	Power Push-Pull, Line Driver, Power Line Driver, Universal circuit
Power supply:	+5V ±5%, +10V +30V, +5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	100 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082, anodized
Housing:	anticorodal, UNI EN AW-6082, anodized
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL121:	12 pin M23 mating connector
EC-C12F-S19-M8-xx:	cordset x m with M23 connector
PF4284/xx:	torque arm

ROTAPULS

Incremental heavy-duty encoder

Series

C101



- Heavy industry & wind generator applications
- Redundant version with 2 galvanically separated outputs
- Electrical shaft insulation (10 kV) for bearing protection
- Power output for long distance transmission
- M23 connectors or terminal blocks
- Corrosion resistant housing
- High shaft load



C101

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 16 mm
Shaft loading:	axial: 140 N radial: 350 N
Shaft rotational speed:	6000 rpm max. (short periods)
Electrical shaft insulation:	10 kV max.
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	2 x M23 plug terminal blocks (max. cable Ø 9,5 mm)
Weight:	~ 1 kg (35 oz)

ELECTRICAL SPECIFICATIONS

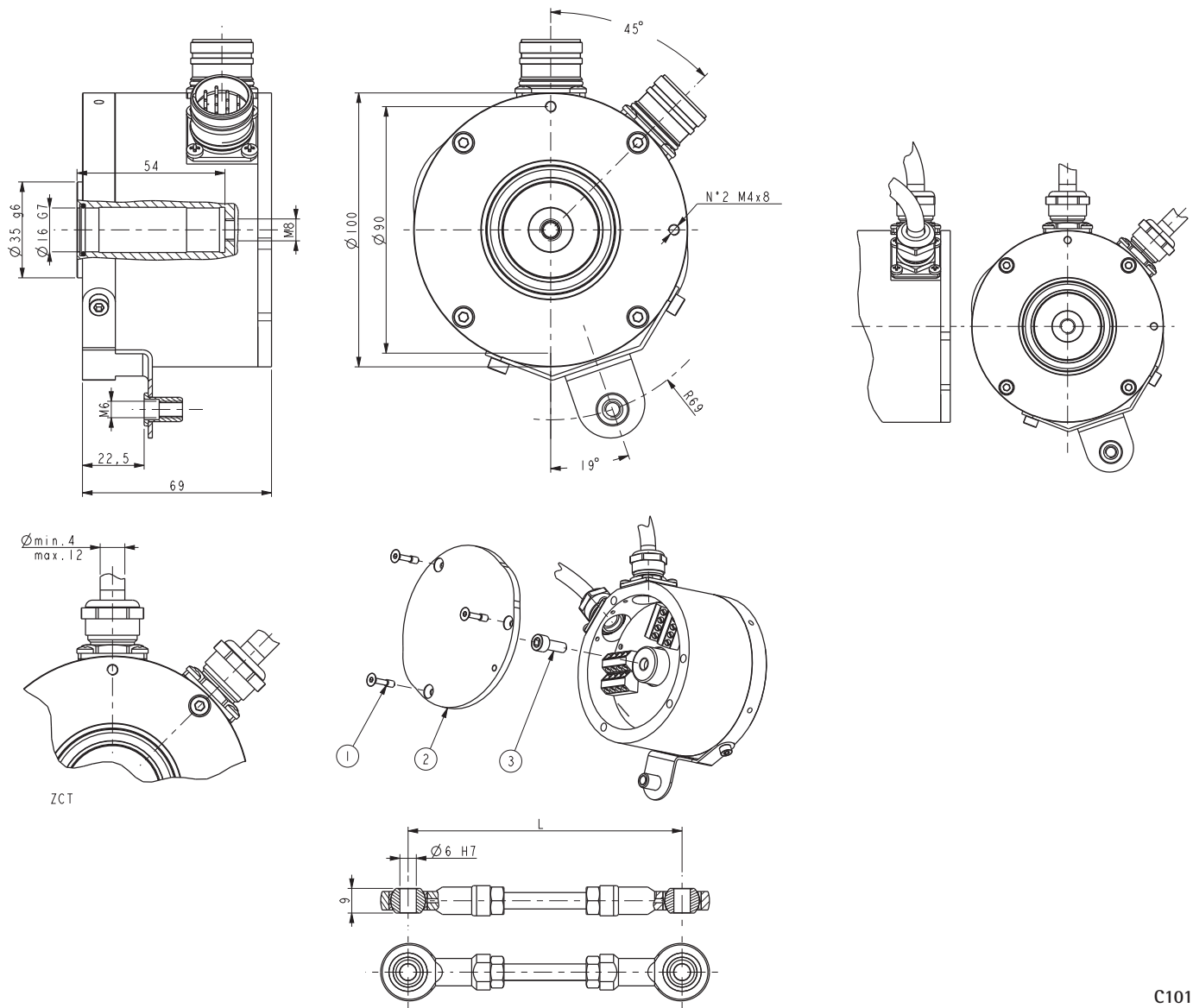
Resolution (PPR):	1024-2048
Counting frequency:	100 kHz max.
Output circuits:	Power Push-Pull, Power Line Driver
Power supply:	+5V ±5%, +10V +30V
Consumption:	70 mA (typical)
Output current (per channel):	100 mA max.
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Flange:	anticorodal, UNI EN AW-6082, anodized
Housing:	anticorodal, UNI EN AW-6082, anodized
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL121:	12 pin M23 mating connector
EC-C12F-S19-M8-xx:	cordset x m with M23 connector
PF4284/xx:	torque arm



C101

Order code

C101	-	X	-	XXXXX	XXX	X	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)

(a) OUTPUT CIRCUITS K = Power Line Driver T = Power Push Pull (b) RESOLUTION (PPR) 1024, 2048	(c) OUTPUT SIGNALS / CONNECTIONS ZCZ = AB0 /AB0, M23 12 pin plug ZCT = AB0 /AB0, screw terminals ZCU = AB0 /AB0, cable output (d) SUPPLY VOLTAGE 1 = +5V±5% (T output circuit) 2 = +10V÷ +30V (K output circuit)	(e) SHAFT DIAMETER 16 = 16 mm (f) CUSTOM VERSION
---	--	--

ROTAPULS

Timing belt pulley with integrated encoder

Series

I70



- Integrated pulley encoder with 500 pulses/turn
- HTD type pulley for 20 mm belts
- Extremely robust construction, 1000 N shaft load
- Silent running & long life-time
- Easy assembly by M12 screw and size 21 wrench key



I70

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-20°C +85°C (-4°F +185°F)
Storage temperature range:	-20°C +85°C (-4°F +185°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS

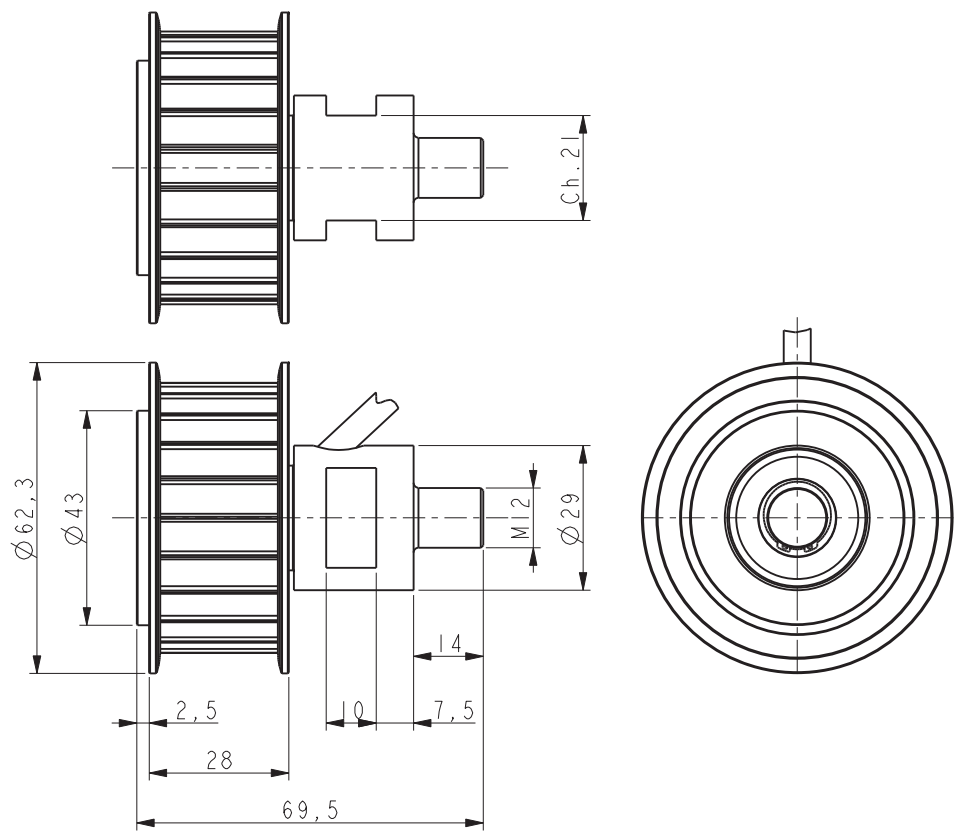
Dimensions:	see drawing
Pulley type:	HTD, 8 mm pitch, 22 teeth, belt width 20 mm
Shaft loading (axial and radial):	1000 N max.
Shaft rotational speed:	5000 rpm max.
Starting torque (at 20°C):	≤ 1,5 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 350 g (12,3 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

Resolution (PPR):	500
Counting frequency:	30 kHz max.
Output circuit:	Push-Pull
Power supply:	+10V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

Pulley:	Aluminium
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, AISI 303



170

Order code

170	-	X	-	XXX	XXX	X	XX	XX	/Sxxx
		(a)		(b)	(c)	(d)	(e)	(f)	(g)

(a) OUTPUT CIRCUITS Y = Push Pull (b) RESOLUTION (PPR) 500	(c) OUTPUT SIGNALS BNF = AB (d) SUPPLY VOLTAGE 2 = +10V÷ +30V (e) SHAFT FIXING 12 = M12	(f) CABLE LENGTH L1 = cable output 1 m Lx = cable output x m (g) CUSTOM VERSION
--	--	---

ROTAPULS

Incremental encoder

Series

ICS



- Robust & corrosion resistant housing
- For linear measurements with pinion + rack or metric wheel
- Movable shaft absorbs mounting misalignments
- Absolute version on request



ICS

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H.without condensation)
Protection:	IP67, connector IP65

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 12 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 3 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max)
Weight:	~ 1,2 kg (42,3 oz)

ELECTRICAL SPECIFICATIONS

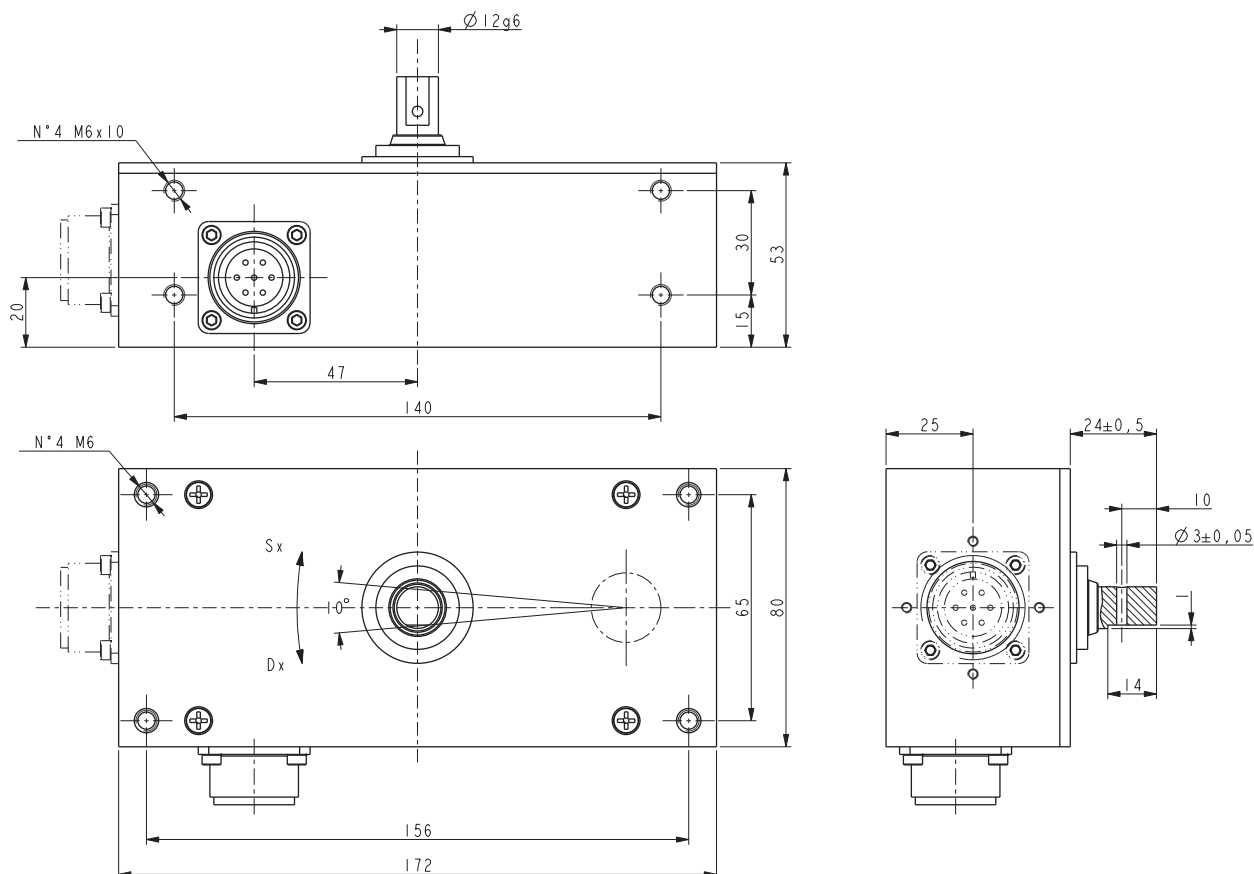
Resolution (PPR):	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150-160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435-471-500 512-600-635-720-750-800-900-1000-1024-1068-1200-1250 1270-1400-1440-1500-1800-2000-2048-2250-2400-2500
Pulses/mm:	to be result of pinion and rack ratio
Counting frequency:	60 kHz max.
Output circuit:	NPN, PNP, Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V,+5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.

MATERIALS

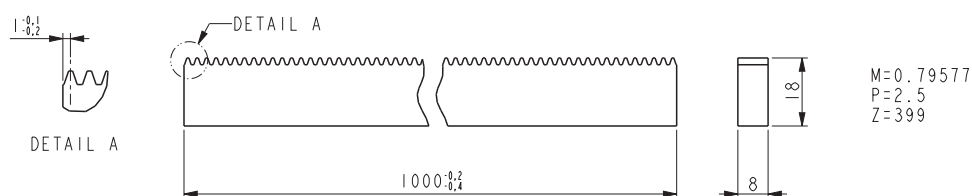
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
LKM-1225:	Z40 pinion
LKM-1224:	M0,79 rack



ICS



LKM-1224 (rack)

Order code

ICS	-	X (a)	-	XXXXX (b)	XXX (c)	X (d)	X (e)	XX (f)	X (g)	/Sxxx (h)
-----	---	----------	---	--------------	------------	----------	----------	-----------	----------	--------------

(a) OUTPUT CIRCUITS

N = NPN o.c.
P = PNP o.c.
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

⑥ RESOLUTION (PPR)

See electrical specifications

© OUTPUT SIGNALS / CONNECTIONS

BND = AB, MIL 7 pin plug
BCP = AB /AB, MIL 10 pin plug (only radial)
ZND = ABO, MIL 7 pin plug
ZCP = ABO /ABO, MIL 10 pin plug (only radial)

④ SUPPLY VOLTAGE

1 = +5V $\pm$ 5% (L output circuit)
2 = +10V $\div$ +30V (Y output circuit)
4 = +5V $\div$ +30V (H output circuit)

© SHAFT DIAMETER

$F = 12 \text{ mm}$

Ⓕ SHAFT REST POSITION

DX = right (see drawing)
SX = left (see drawing)

⑨ CONNECTION POSITION

R = radial (with BCP, ZCP)

h CUSTOM VERSION

ROTAPULS

Incremental encoder

Series

I105



- High resolution encoder for rotary & index tables
- 18000 PPR without interpolation
- Robust construction with IP65 protection
- Large operating temperature range



I105

ENVIRONMENTAL SPECIFICATIONS

Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-20°C+70°C (-4°F +158°F) - only for 16384 PPR +10°C +60°C (50°F +140°F) - only for 18000 PPR
Storage temperature range:	-20°C+80°C (-4°F +176°F) (98% R.H. without condensation)
Options:	• Operating temp. range: -40°C +100°C (only for 16384 PPR) • IP65 protection

MECHANICAL SPECIFICATIONS

Dimensions:	see drawing
Shaft hollow:	Ø 10 mm
Shaft loading (axial and radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 1 Ncm (typical)
Bearings life:	400 x 10 ⁶ rev. min. (10 ⁹ rev. min. with 20 N shaft loading max.)
Electrical connections:	cable output 2 m (6.56 ft)
Weight:	~ 900 g (31,7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS

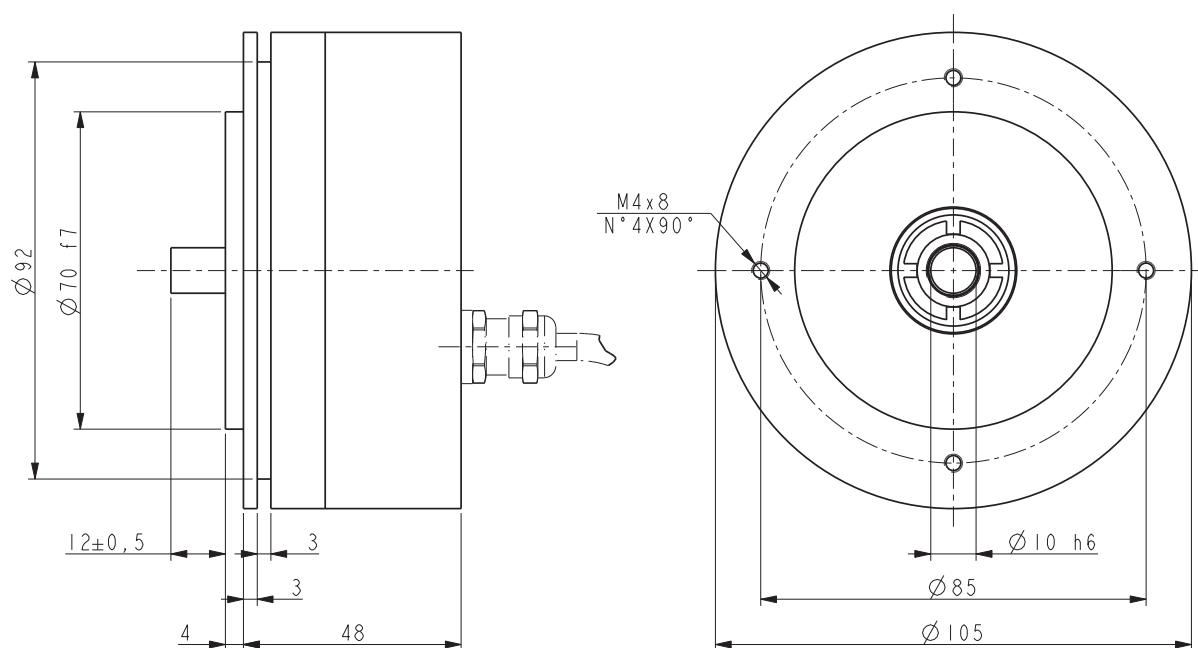
Resolution (PPR):	16384-18000
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V, +5V +30V
Consumption:	100 mA max.
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 hrs min.
Option:	• Output frequency up to 300 kHz max. (only for 16384 PPR; not in combination with K option)

MATERIALS

Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES

EPFL 121:	12 pin M23 mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



I105

Order code

I105	-	X (a)	-	XXXXX (b)	XXX (c)	X (d)	XX (e)	X (f)	X (g)	X (h)	XX (i)	/Sxxx (j)
------	---	----------	---	--------------	------------	----------	-----------	----------	----------	----------	-----------	--------------

(a) OUTPUT CIRCUITS

Y = Push Pull
L = Line Driver (RS422)
H = PP/LD universal circuit

(b) RESOLUTION (PPR)

See electrical specifications

(c) OUTPUT SIGNALS / CONNECTIONS

BCU = AB /AB, cable output
BCZ = AB /AB, M23 connector output
ZCU = AB0 /AB0, cable output
ZCZ = AB0 /AB0, M23 connector output

(d) SUPPLY VOLTAGE

1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)
4 = +5V÷ +30V (H output circuit)

(e) SHAFT DIAMETER

10 = 10 mm

(f) PROTECTION

- = IP64 (standard)
P = IP65

(g) COUNTING FREQUENCY

- = 100 kHz (standard)
W = 300 kHz
(only for 16384 PPR, not in combination with K option)

(h) OPERATING TEMPERATURE RANGE

- = standard (see specifications)
K = -40°C +100°C (-40°F +212°F)
(only for 16384 PPR, not in combination with W option)

(i) CABLE LENGTH

L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m

(j) CUSTOM VERSION



Electrical connections

Connection Signal	I5 type cable	I8 type cable	M12 8-pin	DSub 9-pin	M23 12-pin (1)	M23 12-pin (2)	MIL 17-pin
A, cos +	Brown	Yellow	3	1	1	5	A
/A, cos -	-	Blue	4	2	2	6	N
B, sin +	Blue	Green	5	3	3	8	C
/B, sin -	-	Orange	6	4	4	1	R
0	White	White	7	5	5	3	B
/0	-	Grey	8	6	6	4	P
+Vdc	Red	Red	2	8	7	12	H
0Vdc	Black	Black	1	9	8	10	K - M
Shield	Shield	Shield	Case	Case	Case	Case	T - case

(1) All models except C100 and C101

(2) Only C100 and C101

Picture (example)	Cable type	Order code
	I5 5 x 0,22 mm ² (24/7 AWG) PVC	Lika encoder cable type I5
	I8 8 x 0,22 mm ² (24/7 AWG) PVC	Lika encoder cable type I8

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		M12 8-pin plug Male, A coding IEC 61076-2-101 reference standard		E-M12F8
		DSub 9-pin plug EDE 9P		EDE 9S
		M23 12-pin plug EML 121		EPFL 121
		MIL 17-pin plug		n. a.



Electrical connections				
Connection	MIL 7-pin	MIL 10-pin	DIN 7-pin	DIN 12-pin
Signal				
A	A	A	1	C
/A	-	B	-	D
B	C	C	3	E
/B	-	D	-	F
0	E	E	5	G
/0	-	F	-	H
+Vdc	G	J	7	A
0Vdc	F	I	6	J
Shield	Case	Case	Case	Case

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		MIL 7-pin plug E7MLP		E7MLS
		MIL 10-pin plug E10MLP		E10MLS
		DIN 7-pin connector DIN7FP		DIN7M
		DIN 12-pin connector DIN12FP		DIN12M

ROTAPULS • ROTACOD

Cable specifications

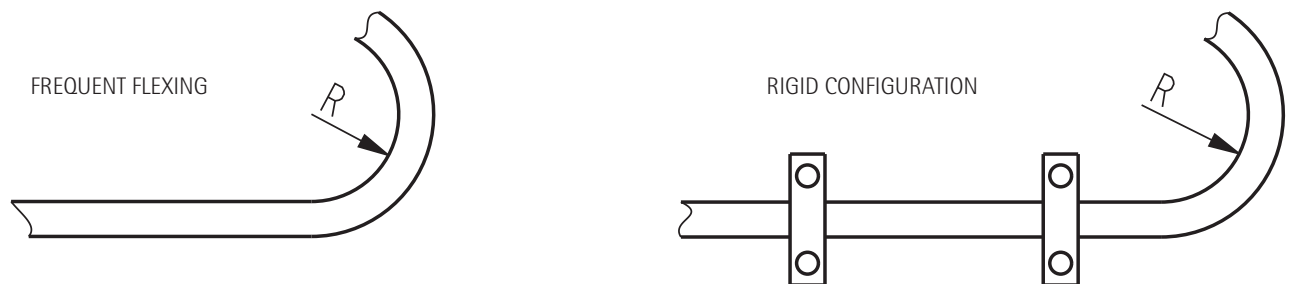
Order code Cable type	Description	Notes
I5 Incremental encoders ABO	Cross section: 5 x 0,22mm ² (24/7 AWG) Jacket: PVC, flame retardant Shield: AL/PET foil + copper conductor External-Ø: 4,5 ±0,1 mm Min. bending radius: fix min. 23 mm / flexible min. 45 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <90 Ω/km	RoHS Ref. standard UL1581
I8 Incremental encoders ABO /ABO	Cross section: 8 x 0,22mm ² (24/7 AWG) Jacket: PVC, flame retardant Shield: AL/PET foil + copper conductor External-Ø: 5,1 ±0,1 mm Min. bending radius: fix min. 25 mm / flexible min. 50 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <90 Ω/km	RoHS Ref. standard UL1581
A8 Absolute encoders SSI, Analogue output	Cross section: 4 x 2 x 0,25mm ² (24 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >75% External-Ø: 7,0 ±0,15 mm Min. bending radius: fix min. 40 mm / flexible min. 75 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <80 Ω/km	RoHS Ref. standard UL1581
T12 Absolute encoders BiSS/SSI + AB /AB output	Cross section: 4x0,25 + 4x2x0,14mm ² (24/26 AWG) Jacket: TPU, extraflexible Shield: tinned copper braid, coverage >85% External-Ø: 6,1 ±0,1 mm Min. bending radius: fix min. 25 mm / dynamic min. 45 mm Operating temperature: fix -40 +90°C / dynamic -50 +90°C Conductor resistance: <90 Ω/km - <148 Ω/km	RoHS Ref. standard UL1581 Halogen free Oil, hydrolisys, abrasion resistant Cable chain capable 10 m/s max, 6 m/s2 >1000000 cycles
M8 Absolute encoders SSI	Cross section: 2x0,22 + 6x0,14mm ² (24/26 AWG) Jacket: TPU, extraflexible Shield: tinned copper braid, coverage >85% External-Ø: 5,5 ±0,1 mm Min. bending radius: min 25 mm / dynamic min. 45 mm Operating temperature: fix -40 +90°C / dynamic -50 +90°C Conductor resistance: <90 Ω/km - <148 Ω/km	RoHS Ref. standard UL1581 Halogen free Oil, hydrolisys, abrasion resistant Cable chain capable 10 m/s max, 6 m/s2 >1000000 cycles
CB CAN, Modbus encoders	Cross section: 2x2x0,24 + 1x0,22mm ² Jacket: PUR/TMPU Shield: tinned copper braid, coverage >85% External-Ø: 6,6 ±0,5 mm Min. bending radius: fix 50 mm / dynamic 70 mm Operating temperature: fix -50 +80°C Characteristic impedance at 1 MHz: 120 Ω ±10%	RoHS Ref. standard UL758, UL1581 CSA/UL approval (AWM style 20417 60°C 30V)
A16 Absolute single turn encoder cable (bit parallel)	Cross section: 16 x 0,14mm ² Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 7,2 ±0,3 mm Bending radius: fix min. 45 mm / flexible min. 75 mm Conductor resistance: <148 Ω/km Operating temperature: fix min. -30 +70°C / -5 +70°C	RoHS

ROTAPULS • ROTACOD

Cable specifications

Order code Cable type	Description	Notes
A19 Absolute single turn encoder cable (bit parallel)	Cross section: 19 x 0,14mm ² Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 7,2 ±0,3 mm Bending radius: fix min. 45 mm / flexible min. 75 mm Conductor resistance: <148 Ω/km Operating temperature: fix -20 +80°C / -5 +80°C	RoHS
A32 Absolute multi turn encoder cable (bit parallel)	Cross section: 32 x 0,14mm ² (26 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid External-Ø: 9,1 ±0,4 mm Bending radius: fix min. 45 mm / flexible min. 90 mm Conductor resistance: <150 Ω/km Operating temperature: fix min. -30 +70°C / -5 +70°C	RoHS
A40 HM58 P Programmable encoder cable (bit parallel)	Cross section: 40 x 0,14mm ² (26 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 10,2 ±0,1 mm Bending radius: fix min. 50 mm / flexible min. 100 mm Conductor resistance: <250 Ω/km Operating temperature: fix -40 +80°C / -5 +80°C	RoHS

Cables having bending radius indicated with "flexible" can be used in low speed moving installations, while cables indicated with bending radius "dynamic" can be used in high speed and acceleration installations.



ROTAPULS • ROTACOD

Flexible couplings



			Allowable misalignment	Vibration absorption	Zero backlash	High torsional stiffness	Stainless steel	Electrical insulation
PAN		Flexible helix coupling. Aluminium body with grub screw fixing. Allows high misalignments combined with good stiffness.	●			●		
PGF		Double-loop coupling. Thermoplastic loops and metal hubs with grub screws. Allows very high radial and axial misalignments. Silent running and good vibration absorption.	○	●				○
MST – MSTs		Aluminium (MST) or stainless steel (MSTs) slit coupling. Grub screw or collar fixing. Keyway holes available. Medium flexibility, high torsional stiffness.	●		○	●	✓	
MSX		Duraluminium slit coupling with grub screws. High transmission accuracy in both directions. Zero backlash, excellent torsional stiffness. For encoder/servomotor applications.			○	○		
MOL – MOS		Oldham coupling, standard (MOL) and compact (MOS) version. Grub screw and collar fixing, keyway holes. Easy assembly of hubs with different diameters. Ideal for high misalignments at medium speed.	○	●				○
MSF		Soft flexible coupling with grub screws. Easy assembly of hubs with different diameters. For encoders and general purpose motors.	●	●				○
MFB – MFBS		Bellow couplings with grub screw or collar fixing. Stainless steel, corrosion resistant version (MFBS). Good response time and constant velocity.	●		○	●	✓	
MDW-MDS-XBW		Precision disk couplings for encoders and servomotors. Adjustable nr. of disk and length by 1 mm. High rotational speed and excellent response. Clean-room service on request.	●		○	○	✓	

○ = excellent

● = good

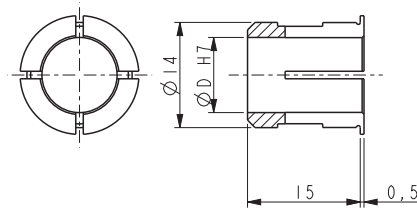
✓ = available

ROTAPULS • ROTACOD

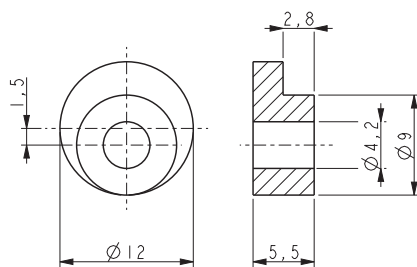
Accessories

BR1 reducing sleeve

BR1-12	Ø 12 mm h7
BR1-11	Ø 11 mm h7
BR1-10	Ø 10 mm h7
BR1-9.52	Ø 9.52 mm h7
BR1-8	Ø 8 mm h7
BR1-6	Ø 6 mm h7



BR1 reducing sleeve

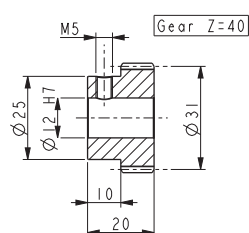
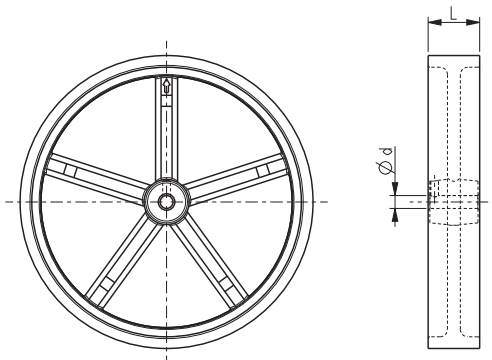


LKM-386 Fixing clamps

For all encoders with servo flange.
Kit LKM-386 is supplied as a set of 3 clamps, screws and nuts.

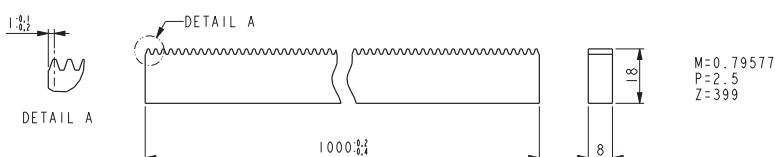
Mod.	Circ.	Surface	Ø d	L
RM200G	200 mm	rubber (smooth)	6 mm	12 mm
RM200Z	200 mm	metal (notched)	6 mm	12 mm
RM200GZ	200 mm	rubber (notched)	6 mm	12 mm
RM500G	500 mm	rubber (smooth)	8 mm	24 mm
RM500Z	500 mm	metal (notched)	8 mm	24 mm
RM500GZ	500 mm	rubber (notched)	8 mm	24 mm
RM500G-10	500 mm	rubber (smooth)	10 mm	24 mm
RM500GZ-10	500 mm	rubber (notched)	10 mm	24 mm

RM200, RM500 metric wheels



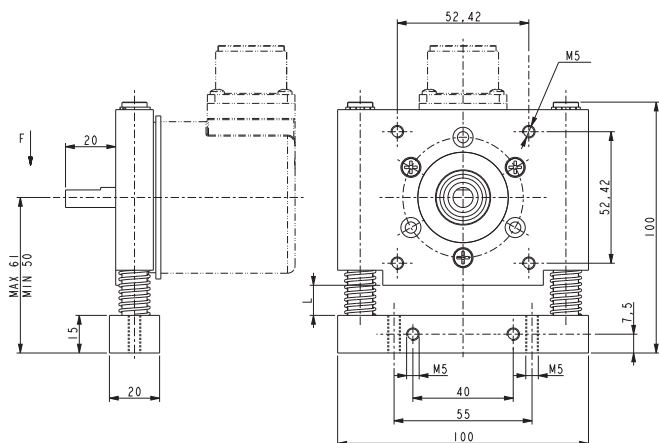
PF4260 (pinion) & LKM-1224 (rack)

For linear measurements.
1 turn of pinion equals 100 mm.
Suitable models: ICS, see PF0408.



ROTAPULS • ROTACOD

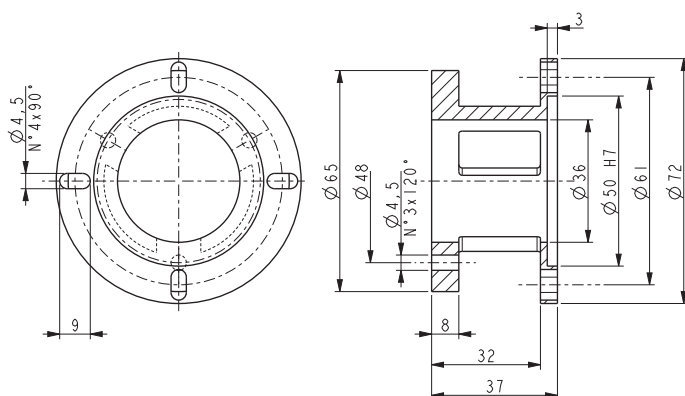
Accessories



PF0408 spring loaded fixing support

Can absorb misalignments when encoders are used with rack/pinions or metric wheels.

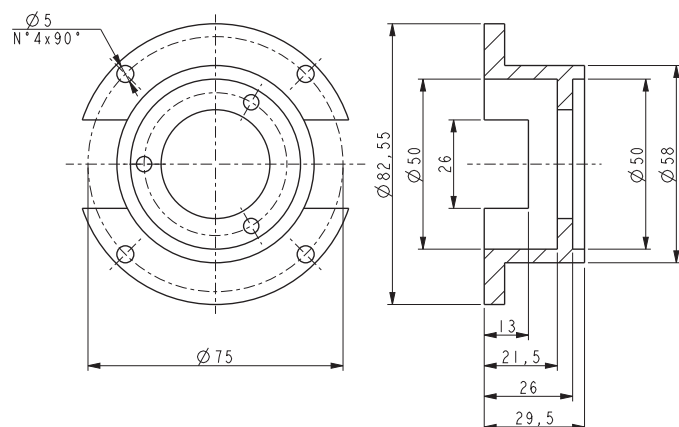
Suitable models: I58S, ES58S, EM58S, AS58S, AM58S.



PF4256 mounting bell

Suitable for all encoders having clamp flange (I58S, ES/EM58S, AS/AM58S).

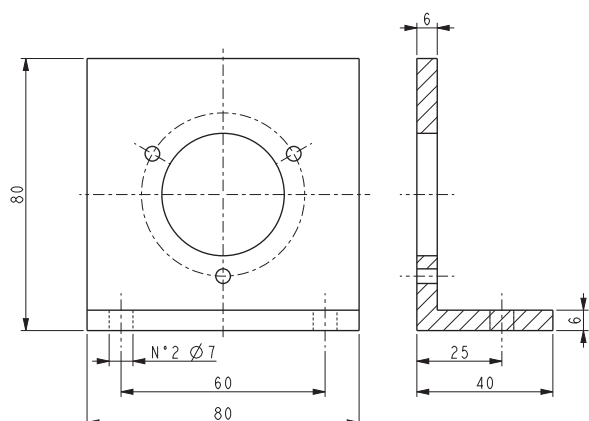
Fixing screws are supplied.



PF4264 mounting bell

Suitable for all encoders having servo flange (I58S, ES/EM58S, AS/AM58S).

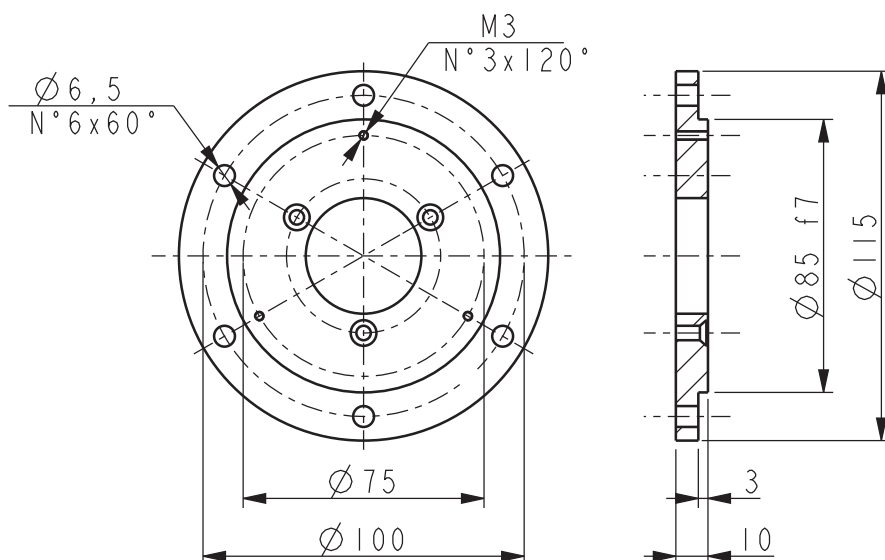
Fixing screws are supplied.



PF4257 mounting bracket

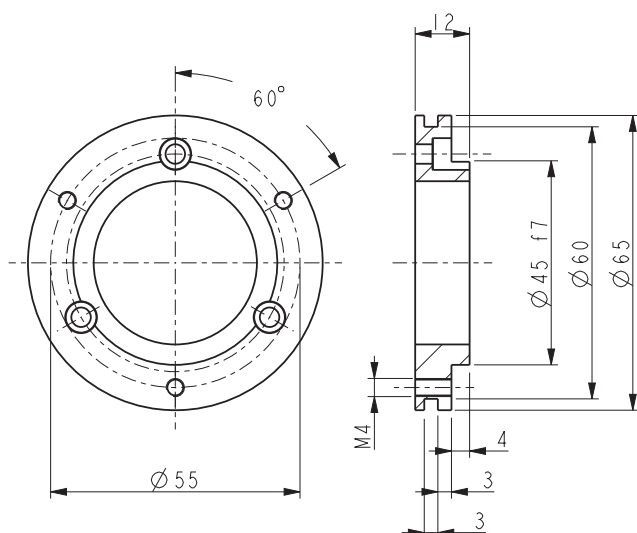
Suitable for all encoders having clamp flange (I58S, ES/EM58S, AS/AM58S).

Fixing screws are supplied.



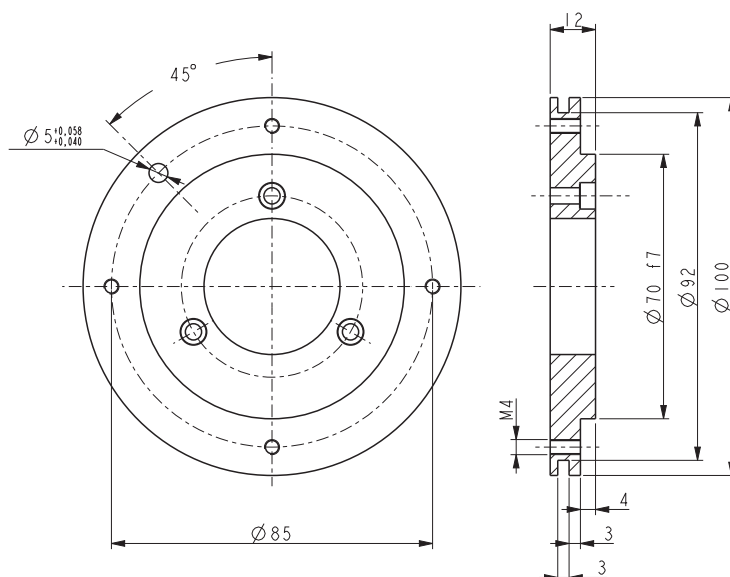
PF4258 adapter flange

Euroflange B10 adapter for:
I58S, I65, ES/EM58S, AS/AM58S encoders



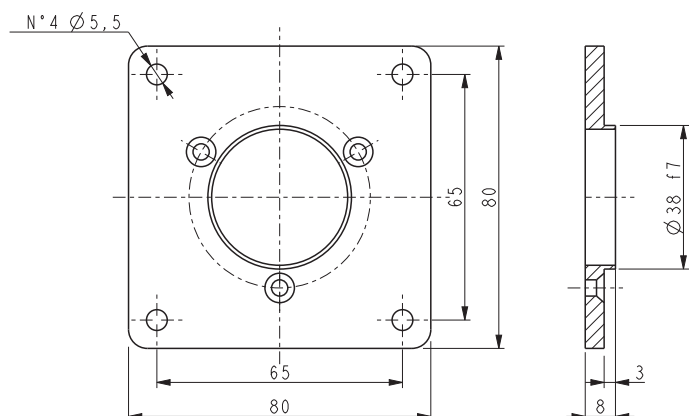
PF4263 adapter flange

Adapter flange to replace AS6 and AM6
encoders with AS58S and AM58S series.



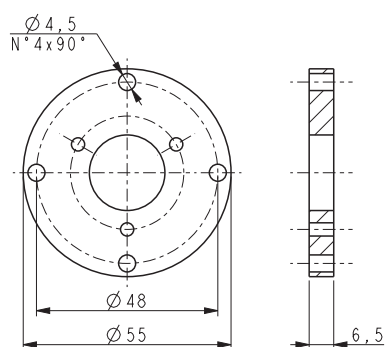
PF4262 adapter flange

Adapter flange to replace AS1 and AM1
encoders with AS58S and AM58S series.



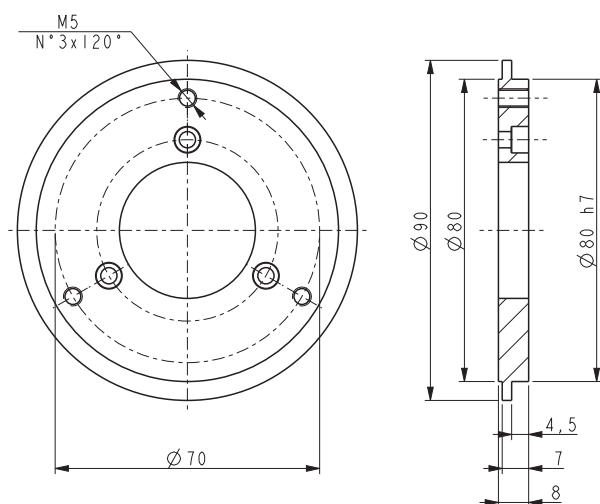
PF4259 square flange

Adapter for:
I58S, I65, ES/EM58S, AS/AM58S encoders.
Fixing screws are supplied.



PF4266 adapter flange

Adapter flange for:
I41 encoder for fixing on Ø 48 or □ 34 mm
Fixing screws are supplied.



PF4274 adapter flange

Adapter flange for:
I58S, ES/EM58S, AS/AM58S encoders to
Ø 90 mounting.
Fixing screws are supplied.

ROTAPULS • ROTACOD

Accessories

CONNECTOR 1



Example of cordset, EC-M7F-LK-I5-3:

MIL connector 7 pin, standard connection, 5 wires cable, 3 m length

EC

CONNECTOR 1

CONNECTOR 2



Example of extension cable, EXC-M7F-LK-I5-3-M7M-LK:

MIL connector 7 pin, standard connection, 5 wires cable, 3 meters length, 7 pin MIL plug, standard connection

EXC

Order code

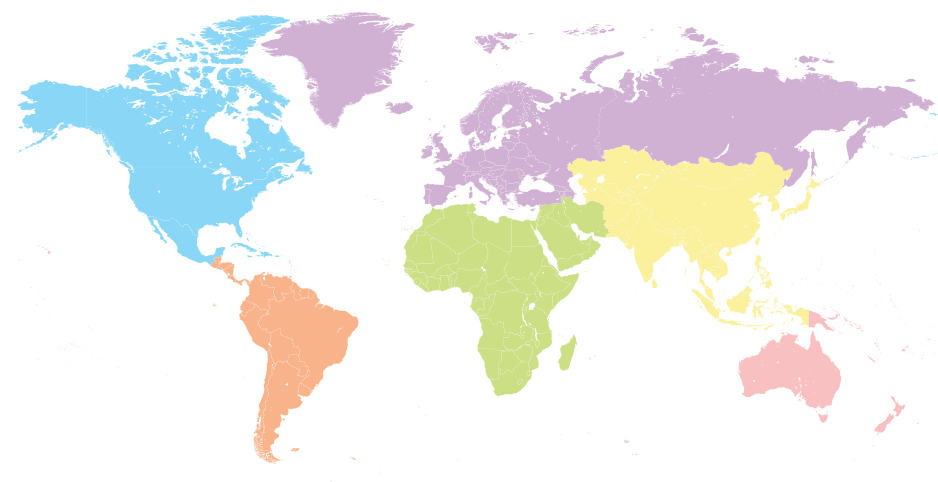
Additional code for EXC

EC	-	XXXXX	-	XXX	-	XXX	-	X	X	-	X
EXC		Ⓐ		Ⓑ		Ⓒ		Ⓓ			

Ⓐ CONNECTOR 1 M7F = MIL connector 7 pin M7FP = MIL connector 7 pin + PG M10F = MIL connector 10 pin M10FP = MIL connector 10 pin + PG M19F = MIL connector 19 pin M32F = MIL connector 32 pin M41F = MIL connector 41 pin M7M = MIL 7 pin plug M10M = MIL 10 pin plug M19M = MIL 19 pin plug M32M = MIL 32 pin plug M41M = MIL 41 pin plug T7M = DIN 7 pin plug T12M = DIN 12 pin plug T8F = DIN 8 pin plug C12F = M23 12 pin connector cw CR12F = M23 12 pin connector ccw C12M = M23 12 pin plug cw CR17F = M23 17 pin connector ccw D9M = DSub 9 pin plug D15MV = DSub 15 pin plug, hi-density D15M = DSub 15 pin plug D25M = DSub 25 pin plug D9F = DSub 9 pin connector D15FV = DSub 15 pin connector, hi-density D15F = DSub 15 pin plug D25F = DSub 25 pin plug	Ⓑ ELECTRICAL CONNECTION 1 LK = Standard Lika Sxx = Specific connections Ⓒ CABLE SPECIFICATIONS I5 = 5 wire cable (AB0) I8 = 8 wire cable (AB0 /AB0) A8 = 2 x 4 twisted wires cable (AS58, AM58, SSI series) A19 = 19 wires cable (AS58 Bit parallel series) A32 = 32 wires cable (AM58 Bit parallel series) A40 = 40 wires cable (HM58 P Bit parallel series) M8 = 8 wires hi-flex cable T12 = 12 wires hi-flex twisted cable	Ⓓ CABLE LENGTH 1 = 1 m 3 = 3 m 5 = 5 m 10 = 10 m 15 = 15 m ... = ... 20 = 20 m CONNECTOR 2 see connector 1 ELECTRICAL CONNECTIONS 2 see electrical connections 1
--	---	--

Note - connector: female connection
plug: male connection

**Lika Electronic is present
in the following countries:**



Argentina	Lithuania
Australia	Malaysia
Austria	Mexico
Belarus	Netherlands
Belgium	New Zealand
Brasil	Norway
Canada	Poland
China	Portugal
Czech Republic	Russia
Denmark	Singapore
Dubai	Slovakia
Estonia	South Africa
Finland	South Korea
France	Spain
Germany	Sweden
Greece	Switzerland
Hong-Kong	Taiwan
India	Thailand
Indonesia	Turkey
Iran	United Kingdom
Israel	Ukraina
Italy	Uruguay
Japan	U.S.A.
Latvia	Vietnam

www.lika.biz > distributors