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

ROTACOD absolute encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (bits)	Power supply (Vdc)	NPN / Push-Pull	SSI	BiSS	Modbus / RS485	Add. incremental track	Analogue output	Operating temp. °C (°F) min. - max.	Protection max.
						connector	cable										
	**MS36 - MSC36** Magnetic encoders Compact, singleturn **Light-duty**	124	36	● 6 ○ 6	12000		•	13	+10 +30		•					-20 +85 (-4 +185)	IP67
	**MM36 - MMC36** Magnetic encoders Compact, multiturn **Light-duty**	126	36	● 6 ○ 6	12000		•	12 x 15	+10 +30		•					-20 +85 (-4 +185)	IP67
	**AS36 - ASC36** Optical encoder Compact, singleturn High resolution **Industrial / Feedback**	128	36	● 6 ○ 6	6000		•	20	+10 +30		•	•				-40 +100 (-40 +212)	IP65
	**AM36 - AMC36** Optical encoder Compact, multiturn High resolution **Industrial / Feedback**	130	36	● 6 ○ 6	6000		•	20 x 12	+10 +30		•	•				-40 +100 (-40 +212)	IP65
	**ES58 - ES58S - ESC58** Optical encoders Standard, singleturn **Industrial**	132	58	● 12 ○ 15	12000	•	•	13	+7,5 +34	•	•		•	•		-40 +100 (-40 +212)	IP67
	**EM58 - EM58S - EMC58** Optical encoders Standard, multiturn **Industrial**	135 138	58	● 12 ○ 15	12000	•	•	13 x 14	+7,5 +34	•	•		•	•		-40 +100 (-40 +212)	IP67
	**HS58 - HS58S - HSC58** Optical singleturn encoders High resolution **Industrial / Feedback**	141	58	● 12 ○ 15	6000	•	•	19 + 2048	+10 +30		•	•		•		-40 +100 (-40 +212)	IP65
	**HM58 - HM58S - HMC58** Optical multiturn encoders High resolution **Industrial / Feedback**	144	58	● 12 ○ 15	6000	•	•	16 x 14 + 2048	+10 +30		•	•		•		-40 +100 (-40 +212)	IP65
	**HSCT - HMCT** Optical singleturn and multiturn encoder Through hollow shaft **Industrial / Feedback**	147	58	○ 15	6000	•	•	18 16 x 12 + 2048	+10 +30		•	•		•		-25 +85 (-13 +185)	IP65

ROTACOD absolute encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (bits)	Power supply (Vdc)	NPN / Push-Pull	SSI	BiSS	Modbus / RS485	Add. incremental track	Analogue output	Operating temp. °C (°F) (max.)	Protection max.
						connector	cable										
	**AS58 - AS58S - ASC58** Optical singleturn encoders **Industrial**	149	58	● 12 ○ 15	6000	•	•	13	+10 +30	•	•					-40 +100 (-40 +212)	IP65
	**AM58 - AM58S - AMC58** Optical multiturn encoders **Industrial**	152	58	● 12 ○ 15	6000	•	•	13 x 12	+10 +30	•	•					-40 +100 (-40 +212)	IP65
	**MH58S** Magnetic multiturn For wind generators, steel mills & mobile equipment **Heavy-duty / Wind**	155	58	● 10	6000	•		12 x 12	+10 +30		•				•	-40 +85 (-40 +185)	IP67
	**MM58 - MM58S - MMC58** Magnetic multiturn encoders **Industrial**	157	58	● 12 ○ 15	12000		•	12 x 16	+10 +30		•					-20 +85 (-4 +185)	IP67
	**HM58 P - HM58S P HMC58 P** Optical multiturn encoders Programmable **Industrial**	159	58	● 12 ○ 15	6000	•	•	18 x 14	+10 +30	•	•					-40 +100 (-40 +212)	IP65
	**EM58 TA** Programmable encoder with analogue output Teach-in buttons **Industrial**	162	58	● 12 ○ 15	12000	•	•	12 x 14	+13 +30						•	-25 +85 (-13 +185)	IP67
	**AS58 A - AM58 A** Optical absolute encoders Analogue output **Industrial**	165	58	● 12 ○ 15	6000	•		12 12 x 4 9 x 6 6 x 8	+15 +30						•	-25 +85 (-13 +185)	IP65
	**EM58 PA** Optical multiturn encoder Programmable analogue output **Industrial**	168	58	● 12 ○ 15	6000	•		12 x 14	+15 +30						•	-25 +85 (-13 +185)	IP65
	**ASR58 - AMR58** Optical singleturn and multiturn encoders Integrated cam switch programmer **Industrial**	171	58	● 12	6000	•		12 12 x 8	+10 +30	•					•	-25 +85 (-13 +185)	IP65

ROTACOD absolute encoders

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Resolution max. (Bit)	Power supply (Vdc)	NPN / Push-Pull	SSI	BiSS	Modbus / RS485	Add. incremental track	Analogue output	Operating temp. °C (°F) (max.)	Protection max.
						connector	cable										
	**AST6 - AMT6** Optical singleturn and multiturn encoder Square flange, US size **Industrial**	174	65	● 12	6000	•	•	13 x 14	+10 +30	•	•			•		-40 +100 (-40 +212)	IP66
	**XAC77** Optical multiturn encoder ATEX II 2GD Ex d IIC T6 Zones 1, 2, 21, 22 **Heavy-duty**	177	77	○ 14	6000		•	16 x 14	+10 +30	•	•	•		•	•	-25 +85 (-13 +185)	IP65
	**AM9 - AMC9** Optical multiturn encoders Flat design **Industrial**	180	88	● 10 ○ 15	6000	•		13 x 12	+10 +30		•					-40 +100 (-40 +212)	IP65

ROTACOD absolute encoders • Fieldbus

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection		Connection cap with PG	Connection cap with connectors	Resolution max. (bits)	Power supply (Vdc)	CANopen	CANopen LIFT	Profibus-DP	DeviceNet	EtherCAT	Operating temp. °C (°F) (max.)	Protection max.
						connector	cable											
	**AS58 PB - AM58 PB** Optical singleturn and multiturn encoders Profibus-DP interface **Industrial**	182	58	● 12 ○ 15	6000			•	•	13 13 x 12	+10 +30			•			-25 +85 (-13 +185)	IP65
	**AS58 CB - AM58 CB** Optical singleturn and multiturn encoders CANbus interface **Industrial**	184	58	● 12 ○ 15	6000			•	•	13 13 x 12	+10 +30	•	•				-25 +85 (-13 +185)	IP65
	**HS58 FB - HM58 FB** Optical singleturn & multiturn encoders Fieldbus, high resolution **Industrial**	186	58	● 12 ○ 15	6000			•	•	18 16 x 14	+10 +30	•	•	•	•		-25 +85 (-13 +185)	IP65

ROTACOD Absolute encoders • Fieldbus

		Page	Housing ø (mm)	Shaft max. ø (mm)	Shaft rotational speed max. (rpm)	Connection: connector	Connection: cable	Connection cap with PG	Connection cap with connectors	Resolution max. (bits)	Power supply (Vdc)	CANopen / CANlift	Profibus-DP	DeviceNet	EtherCAT	Profinet	Operating temp. °C (°F) min. - max.	Protection max.
	**AM58 K** Optical multiturn encoders Profibus, CANbus interface Stainless steel version **Industrial / Food**	188	58	● 12	6000			•	•	13 x 12	+10 +30	•	•				-25 +85 (-13 +185)	IP65
	**ASx58x - AMx58x CANopen** Direct connection Single & multiturn **Industrial**	190	58	● 12 ○ 15	6000	•	•			18 16 x 14	+10 +30	•					-25 +85 (-13 +185)	IP65
	**HM58 EC - HM58S EC HMC58 EC** Optical multiturn encoders EtherCAT interface **Industrial**	193	58	● 12 ○ 15	6000			-	•	16 x 14	+10 +30				•		-25 +85 (-13 +185)	IP65
	**EM58 -HS58 - HM58 PT** Optical encoders Profinet interface **Industrial**	195	58	● 12 ○ 15	6000			-	•	16 x 14	+10 +30					•	-25 +85 (-13 +185)	IP65
	**XAC77 PB + CB** ATEX multiturn encoder Profibus and CANbus interfaces (point to point) **Heavy-duty**	177	77	○ 14	6000		•			18 16 x 14	+10 +30	•	•				-25 +85 (-13 +185)	IP66
	**XAC77 FB** Absolute encoder Profibus, CANbus and DeviceNet interfaces **Heavy-duty**	197	77	○ 14	6000			•	•	18 16 x 14	+10 +30	•	•	•			-25 +85 (-13 +185)	IP66

ROTAPULS • ROTACOD bearingless 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	SSI	Operating temp. °C (°F) min. - max.	Protection max.
						connector	cable											
	**IM30 - IM31 - IM56** Encoder modules **Light-duty** **Feedback**	199	30÷56	○ 8	3000	•		2048	100	+5	•				•		-40 +85 (-40 +185)	IP20
	**SGSM - SGSD** Modular magnetic encoders Redundant (SGSD) **Heavy-duty** **Feedback**	203	-	○ 50	6000		•	1024	100	+5 +10 +30				•	•		-40 +85 (-40 +185)	IP68
	**MIK36** Shaftless incremental encoder **Industrial** **Feedback**	205	36	○10	40000		•	2048	300	+5 +10 +30	•	•		•	•		-20 +85 (-4 +185)	IP68
	**MSK36** Shaftless absolute encoder **Industrial** **Feedback**	205	36	○10	40000		•	13 Bit	300	+10 +30						•	-20 +85 (-4 +185)	IP68
	**SMRI** Incremental magnetic ring encoders **Heavy-duty** **Feedback**	207	-	○ 250		•	•	90000	2000	+5 +10 +30				•	•		-20 +85 (-4 +185)	IP67
	**SMRA** Absolute magnetic ring encoder **Heavy-duty** **Feedback**		-	○ 380		•	•	18 Bit	-	+10 +30						•	-20 +85 (-4 +185)	IP67

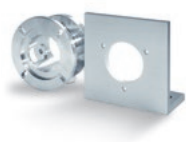
DRAW WIRE UNITS & Accessories

		Dimensions (mm)	Measurement length max. (mm)	Stroke per turn (mm)	Measuring speed max. (m/sec)	Sensor		Potentiometer	Incremental encoder	Absolute encoder	Fieldbus encoder	Atex encoder
						integrated	external					
	**SFP** Draw wire potentiometer Miniature **Light-duty**	56 x 55 x 79	2000	100	2	•		•				
	**SFE** Draw wire encoder Miniature **Light-duty**	56 x 55 x 64	2000	100	2	•			•			
	**SFA** Draw wire encoder Miniature **Light-duty**	56 x 56 x 79	2000	100	2	•				•		
	**SFI - SFA** Draw wire unit **Industrial**	125 x 83 x 58	6800	200 204,8	2,5		•		•	•	•	
	**SAK-10000** **SAK-15000** Draw wire unit Reinforced winding mechanism **Industrial**	233,5 x 128 x 135	15000	300	10		•		•	•	•	•
	**SBK-20000, SBK-30000** **SBK-40000, SBK-50000** Draw wire unit Reinforced winding mechanism **Industrial**	401 x 190 x 200	50000	500	10		•		•	•	•	•

Flexible couplings

Complete range of encoder and transmission couplings

Flexible or rigid
Zero-backlash
Electrically insulated
Vibration absorbing
High torque & stiffness versions
Grub screw or collar fixing
Versions with keyway
Stainless steel versions



Mounting and Connection accessories

Mounting accessories for encoders and electrical connections

Spring loaded brackets
Mounting bells and adapter flanges
Fixing clamps, Reducing sleeves
Connectors
Cordsets

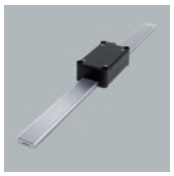
Metric wheels and Gears

Metric wheels with 200 and 500 mm circumference
Aluminum or Rubber surface
Metric wheel encoders (IR65 series on request)
Racks and pinions (ICS series)

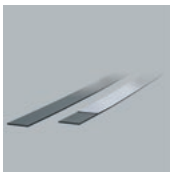
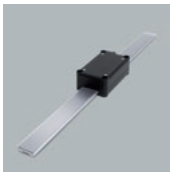
LINEPULS incremental magnetic sensors

		Dimensions (mm)	Connection		Resolution max. (µm)	Travel speed max. (m/s)	Push-Pull	Line Driver	1Vpp	Reference	Limit switches	Power supply (Vdc)	Operating temp. °C (°F) min. - max.	Protection max.
			connector	cable										
	**MT - MTS** Magnetic tape Incremental coding	MT: 10 MTS: 5 x 100 m max.	-	-	-	-	-	-	-	-	-	-	-40 +120 (-40 +248)	IP67
	**SME51** Magnetic sensor Status LED, wipers **Industrial**	40 x 25 x 10		•	5	16	•	•		•		+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SME52** Magnetic sensor Status LED, wipers Limit switches **Industrial**	40 x 25 x 10		•	5	16	•	•		•	•	+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SME21** Magnetic sensor Status LED, wipers **Industrial / Feedback**	40 x 25 x 10		•	1	16	•	•		•		+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SME22** Magnetic sensor Status LED, wipers Limit switches **Industrial / Feedback**	40 x 25 x 10		•	1	16	•	•		•	•	+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SME11** High performance sensor for linear motors Status LED, wipers **Feedback**	40 x 25 x 10		•	0,5	16	•	•		•		+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SME12** High performance sensor for linear motors Status LED, wipers Limit switches **Feedback**	40 x 25 x 10		•	0,5	16	•	•		•	•	+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SMS11** Magnetic sensor for linear motors Sine/cosine output **Feedback**	40 x 25 x 10		•	1000	16			•	•		+5	-25 +85 (-13 +185)	IP67
	**SMS12** Magnetic sensor for linear motors Sine/cosine output Limit switches **Feedback**	40 x 25 x 10		•	1000	16			•	•	•	+5	-25 +85 (-13 +185)	IP67

LINEPULS incremental magnetic sensors

		Dimensions (mm)	Connection		Resolution max. (µm)	Travel speed max. (m/s)	Push-Pull	Line Driver	1Vpp	Reference	Limit switches	Power supply (Vdc)	Operating temp. °C (°F) min. - max.	Protection max.
			connector	cable										
	**SMB2 - SMB5** Magnetic sensors External converter **Industrial**	25 x 15 x 8,5		•	50	16	•	•				+5 +10 +30	-25 +85 (-13 +185)	IP68
	**SMI2 - SMI5** Linear incremental encoder with resolution selector **Feedback**	25 x 15 x 8,5	•		2	16	•	•				+5 +10 +30	-25 +85 (-13 +185)	IP68
	**SMSR** Miniature magnetic sensor for linear motors and pick & place applications **Feedback**	25 x 15 x 8,5		•	1000	10			•			+5	-25 +85 (-13 +185)	IP68
	**SMX2 - SMX5** Magnetic speed sensors **Heavy-duty**	M10 x 30		•	5 mm (1.25) 2 mm (0.5)	30 (7,5 kHz)	•	•				+5 +30	-10 +70 (+14 +158)	IP67
	**SMK** Robust magnetic sensor for standard applications **Heavy-duty**	40 x 25 x 10		•	10	2,5	•	•				+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SML - SMH** Robust magnetic sensors for standard applications **Heavy-duty**	40 x 25 x 10		•	100	10	•	•				+5 +10 +30	-25 +85 (-13 +185)	IP67
	**SMIG** Magnetic system with self-guiding sensor head **Heavy-duty**	80 x 48 x 28	•	•	5	1	•	•				+5 +10 +30	-25 +85 (-13 +185)	IP67

LINECOD absolute magnetic sensors

		Dimensions (mm)	Connection		Resolution max. (µm)	Travel speed max. (m/s)	SSI	BiSS	RS485	Profibus	CANopen / CANlift	Analogue	Power supply (Vdc)	Operating temp. °C (°F) min. - max.	Protection max.
			connector	cable											
	**MTA1 - MTA5** Magnetic tape Absolute coding	20 x 5,1 m	-	-	-	-	-	-	-	-	-		-	-40 +120 (-40 +248)	IP67
	**SMA5** Compact magnetic sensor SSI interface **Industrial**	65 x 20 x 20		•	5	5	•						+10 +30	-25 +85 (-13 +185)	IP67
	**SMA1** Compact magnetic sensor BiSS + sin/cos interface **Feedback**	85 x 21 x 20		•	5	5	•	•					+10 +30	-25 +85 (-13 +185)	IP67
	**SMAG** Magnetic system with self-guiding sensor head **Heavy-duty**	80 x 48 x 28	•	•	5	1	•						+10 +30	-25 +85 (-13 +185)	IP65
	**SMAX** Low cost magnetic sensor **Heavy-duty**	80 x 40 x 22		•	100	5	•		•			•	+10 +30	-25 +85 (-13 +185)	IP68 IP69K
	**SMAL** Magnetic sensor for long distances Elevators **Industrial**	190 x 52 x 45	•	•	1 mm	5	•		•	•	•		+10 +30	-25 +85 (-13 +185)	IP54
	**SMAL2** Magnetic sensor for long distances Elevators **Lift / Industrial**	147 x 100 x 60		•	0,1 mm	5	•		•		•		+10 +30	-25 +85 (-13 +185)	IP54

DRIVECOD rotary actuators

		Dimensions (mm)	Hollow shaft ø (mm)	Shaft rotational speed max. (rpm)	Nominal torque (Nm)	Max. torque (Nm)	Motor brake	Power supply (Vdc)	RS232 service Modbus	CANopen	Profibus	Modbus RS485	Operating temp. °C (°F) min. – max.	Protection max.
	**RD1A** Positioning unit with absolute encoder Brushless motor Diagnostic LEDs **Industrial**	59 x 112 x 125	14	240 120 60	1,2 2,4 5	3 6 12		24	•	•	•	•	0 +60 (32 +140)	IP65
	**RD12A** Positioning unit with absolute encoder Brushless motor Diagnostic LEDs **Industrial**	59 x 142 x 125	14	240 120 60	1,2 2,4 5	3 6 12	•	24	•	•	•	•	0 +60 (32 +140)	IP65
	**RD5** Compact positioning unit with absolute encoder Brushless motor **Industrial**	48,3 x 88 x 126,6	14	60	5	12		24		•	•	•	0 +60 (32 +140)	IP54
	**RD52** Compact positioning unit with absolute encoder Brushless motor **Industrial**	48,3 x 88 x 126,6	14	60	5	12	•	24		•	•	•	0 +60 (32 +140)	IP54
	**RD4** Positioning unit with absolute encoder Brushless motor **Heavy-duty**	65 x 153 x 160	20	94 62	10 15	15 30		24		•	•	•	0 +60 (32 +140)	IP65

POSICONTROL displays & interfaces

		Display	Display mode			Dimensions (mm)	Input				Counting frequency max. (kHz)	Interface RS232 / RS485	Power supply	Output max.
			linear	angular	mm/inch		AB0	SSI	1Vpp	Magnetic sensor				
	**LD120** Compact LED display for magnetic sensors **Industrial**	LED 5 digit	•	•	•	72 x 36 x 62				•	-	•	+10 +30	-
	**LD112** Compact LCD battery display **Industrial**	LCD 6 digit	•	•	•	72 x 48 x 31				•	-		battery	-
	**LD111 - LD141** Ultracompact OEM battery display **Industrial**	LCD 6 digit	•	•	•	61 x 39 x 23 87 x 60,5 x 47				•	-		battery	-
	**LD140 - LD142** Standard battery display **Industrial**	LCD 6 digit	•	•	•	96 x 72 x 47				•	-	•	battery	-
	**LD200** Universal position display **Industrial**	LED 8 digit	•	•	•	96 x 48 x 49	•	•	•	•	500	•	24 Vdc	3 x 24V @ 23mA
	**LD250** Absolute multi-function display **Industrial**	LED 6 digit	•		•	96 x 48 x 141		•			-	•	24 Vdc 115/230 Vac	0/4 - 20mA 0...±10Vdc
	**LD300** Incremental multi-function display **Industrial**	LED 6 digit	•		•	96 x 48 x 141	•				100	•	24 Vdc 115/230 Vac	0/4 - 20mA 0...±10Vdc
	**MC111- MC150** Position display for encoders Economic version (MC111) **Industrial**	LED 6 digit	•			96 x 72 x 60 96 x 72 x 71	•				25 1000		24 Vdc/Vac --- 24 Vdc/Vac 115 Vac 230 Vac	2 x 24V @ 600mA
	**MC221** Compact 2 axes position display **Industrial**	2 x LED 6 digit	•			96 x 96 x 72	•				500		24 Vdc	2 x 24V @ 600mA

POSICONTROL displays & interfaces

		Description	Input	Output	Service interface	Functions
	**IF10** **Industrial**	Universal incremental encoder signal splitter, converter & switcher DIN rail mounting	2 inputs HTL or TTL / RS422	2 outputs HTL or TTL / RS422		Adjustable inputs and outputs signal levels (can be mixed) Contactless switch-over Up to 1 MHz input frequency
	**IF20** **Industrial**	Signal converter for incremental encoder DIN rail mounting	HTL or TTL / RS422	HTL or TTL / RS422		Output voltage according to remote voltage Input/Output galvanically separated AB quadrature to UP/DOWN conversion
	**IF30** **Industrial**	Sine/Cosine signal interpolator DIN rail mounting	1Vpp	HTL (AB0) or RS422 (AB0 /AB0)		Adjustable interpolation rate up to x50 Adjustable pulse divider Filtering functions
	**IF50** **Industrial**	Incremental signal to Analogue converter DIN rail mounting	HTL or TTL / RS422	± 10 V 0- 20 mA 4 - 20 mA	RS232 RS485	Signal linearization Scaling factor Teach-in function
	**IF51** **Industrial**	Absolute SSI to Analogue converter DIN rail mounting	SSI (up to 25 bit)	± 10 V 0- 20 mA 4 - 20 mA	RS232 RS485	Bit blanking function Signal linearization Scaling factor
	**IF52** **Industrial**	Absolute SSI to Bit parallel converter DIN rail mounting	SSI (up to 25 bit)	Push-Pull	RS232	Signal linearization Scaling factor
	**IF60 - IF61** **Heavy-duty**	Fibre-optic signal converters for incremental encoders IF60 transmitter IF61 receiver	HTL or TTL / RS422	Optical signal		Safe signal transmission up to 1000 m Suitable for explosive areas and environments with extremly high electromagnetic fields
	**IF62 - IF63** **Heavy-duty**	Fibre-optic signal converters for absolute encoders IF62 transmitter IF63 receiver	SSI	Optical signal		Safe signal transmission up to 1500 m Suitable for explosive areas and environments with extremly high electromagnetic fields

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

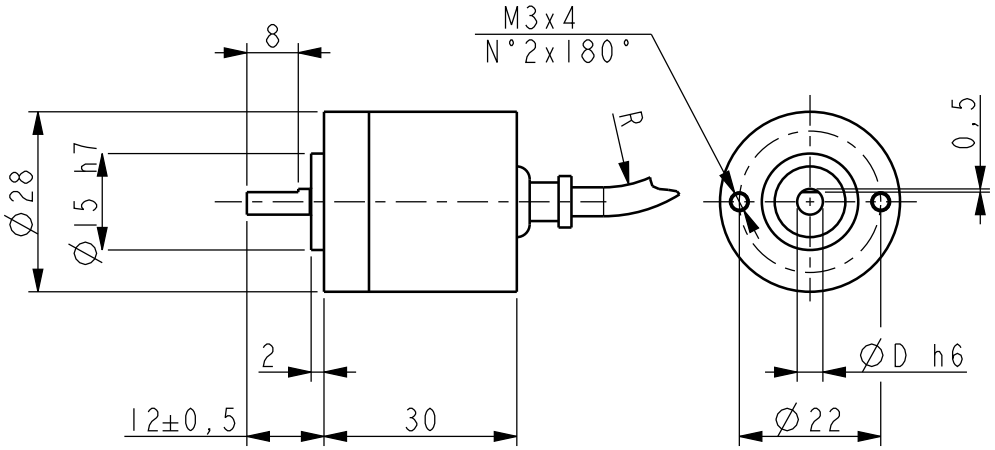
I28

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 ⓐ	-	XXXX ⓑ	XXX ⓒ	XX ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **OUTPUT CIRCUITS**
Y = Push Pull
L = Line Driver (RS422)
H = PP/LD Universal circuit

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

ⓔ **CABLE LENGTH**
- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓕ **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

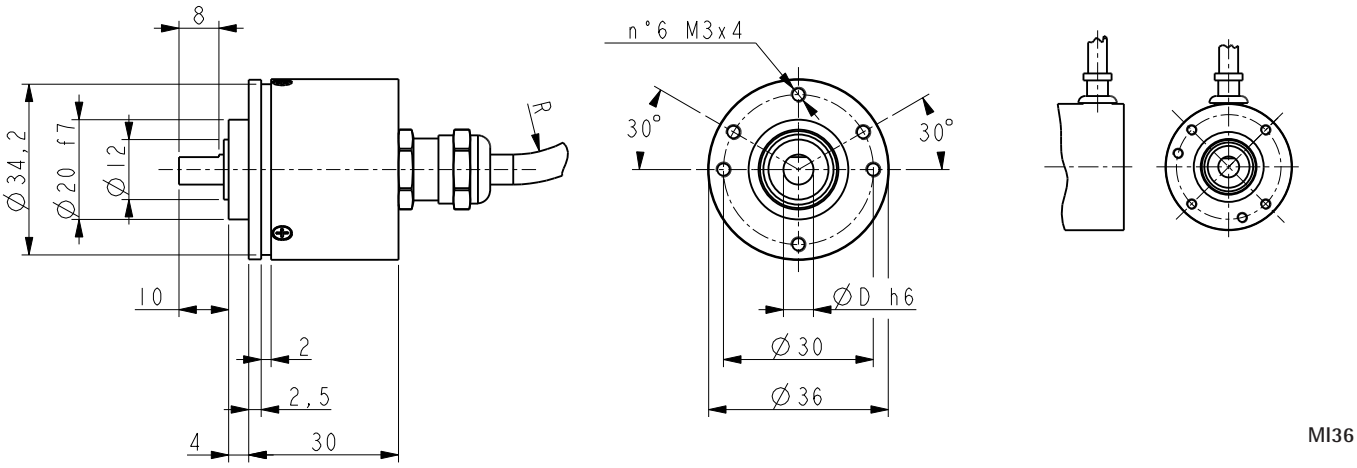
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection with sealed circuits

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:	cable output 1 m (3.3 ft)
Weight:	~ 50 g (1,7 oz)
Option:	• additional cable

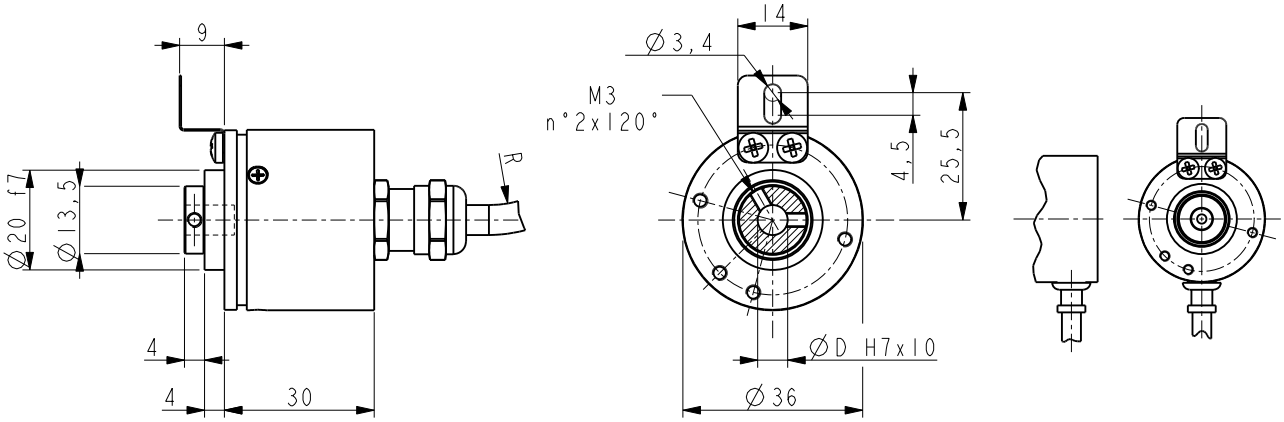
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	4-8-10-16-20-25-32-40-50-64-80-100-125-128 200-250-256-400-500-512-1024-2048
Accuracy:	± 1°
Counting frequency:	300 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver
Power supply:	5Vdc ±5%, +10Vdc +30Vdc
Consumption:	50 mA max.
Output current (each channel):	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:	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 MC36	-	X ⓐ	-	XXXX ⓑ	XXX ⓒ	X ⓓ	X ⓔ	X ⓕ	X ⓖ	XX ⓗ	/Sxxx ⓘ

ⓐ **OUTPUT CIRCUITS**
N = NPN o.c.
Y = Push Pull
L = Line Driver (RS422)

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

ⓔ **SHAFT DIAMETER**
6 = 6 mm

ⓕ **CONNECTION POSITION**
- = axial
R = radial

ⓖ **PROTECTION**
- = IP65
J = IP67 with sealed circuits

ⓗ **CABLE LENGTH**
- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓘ **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

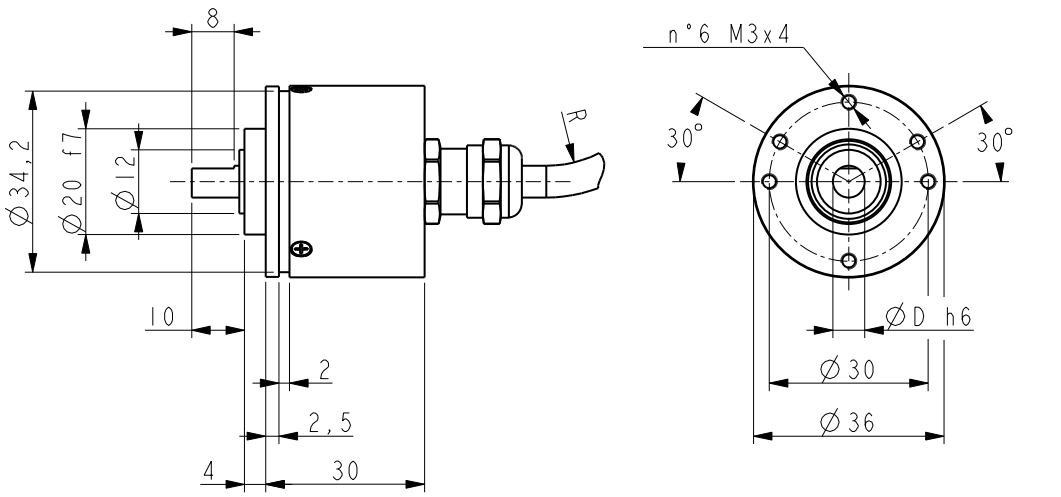
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection with sealed circuits

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

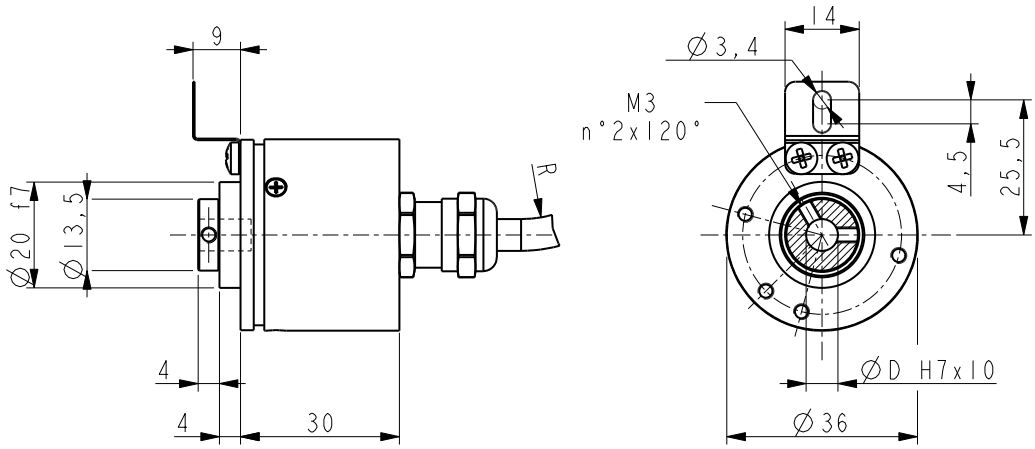
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	4-8-10-16-20-25-32-40-50-64-80-100-125-128 200-250-256-400-500-512-1024-2048
Accuracy:	± 1°
Counting frequency:	300 kHz max.
Output circuits:	NPN, Push-Pull, Line Driver
Power supply:	5Vdc ±5%, +10Vdc +30Vdc
Consumption:	50 mA max.
Output current (each channel):	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	
MSTS-16-6-6:	Stainless steel coupling



MI36K



MC36K

Order code

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

ⓐ **OUTPUT CIRCUITS**
N = NPN
Y = Push Pull
L = Line Driver (RS422)

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
ZNF = AB0
ZCU = AB0, /AB0

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

ⓔ **SHAFT DIAMETER**
6 = 6 mm

ⓕ **CONNECTION POSITION**
- = axial

ⓖ **PROTECTION**
- = IP65
J = IP67 with sealed circuits

ⓗ **CABLE LENGTH**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓘ **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

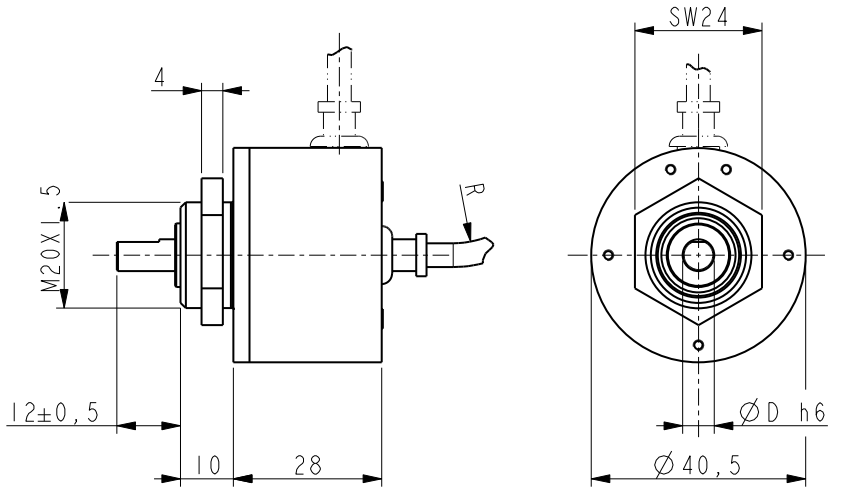
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 6.35 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	0,1 Ncm (typical)
Bearings life:	10^9 rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5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

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
(*) not available for I40 series	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.

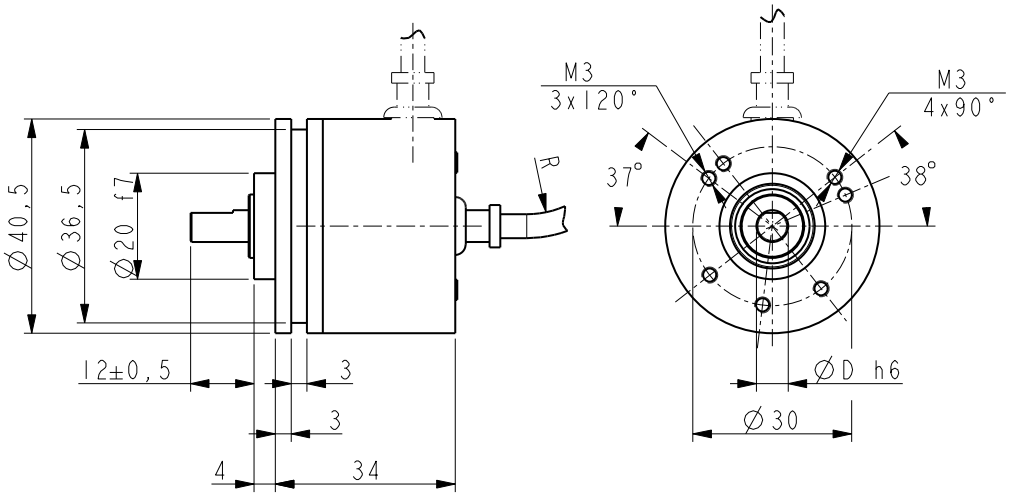
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	fibre glass epoxy resin
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

PREFERENTIAL MODELS	
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 I41	-	X ⓐ	-	XXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	XX ⓗ	/Sxxx ⓘ

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

ⓑ RESOLUTION (PPR)
See electrical specifications

ⓒ OUTPUT SIGNAL
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

ⓔ SHAFT DIAMETER
6 = 6 mm
P6 = 6.35 mm - 1/4"

ⓕ PROTECTION
- = IP64
P = IP65
Q = IP66 shaft side (only I41)

ⓖ CONNECTION POSITION
- = axial
R = radial

ⓗ 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 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)

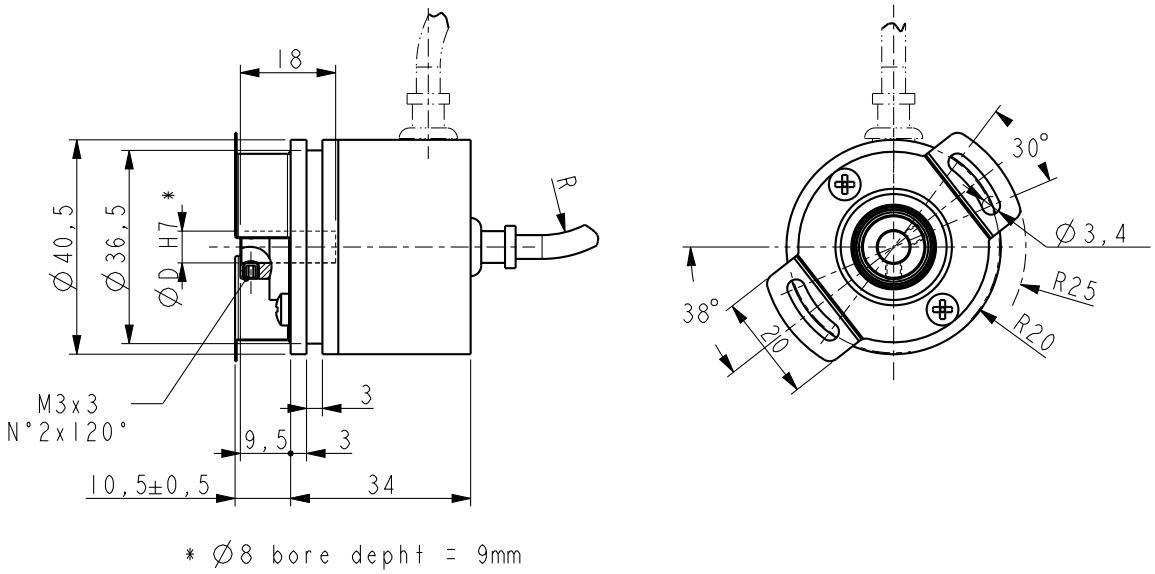
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 6.35, 8 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	0,1 Ncm (typical)
Bearings life:	10^9 rev. min.
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 100 g (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.

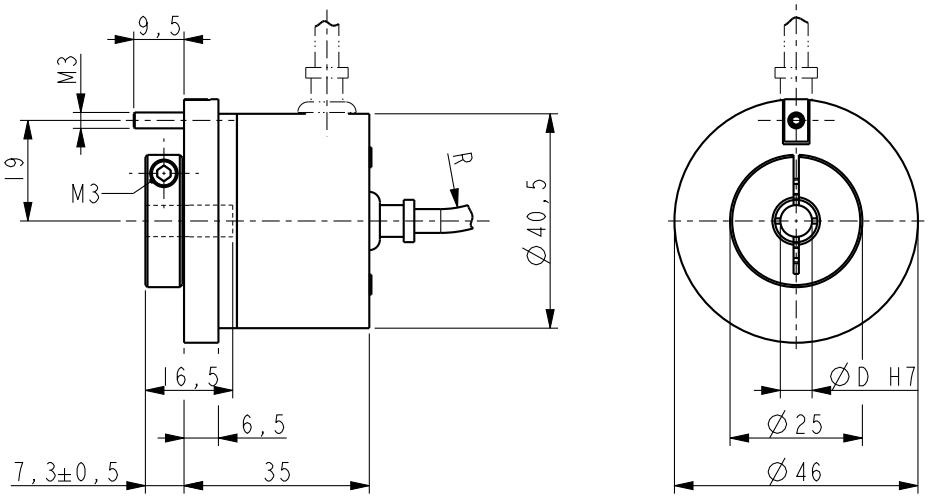
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	fibre glass epoxy resin
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

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



CK41



CK46

Order code

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

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

ⓔ **SHAFT DIAMETER**
6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm (only CK41)

ⓕ **PROTECTION**
- = IP64 (standard)
P = IP65

ⓖ **CONNECTION POSITION**
- = axial (standard)
R = radial

ⓗ **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 **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)

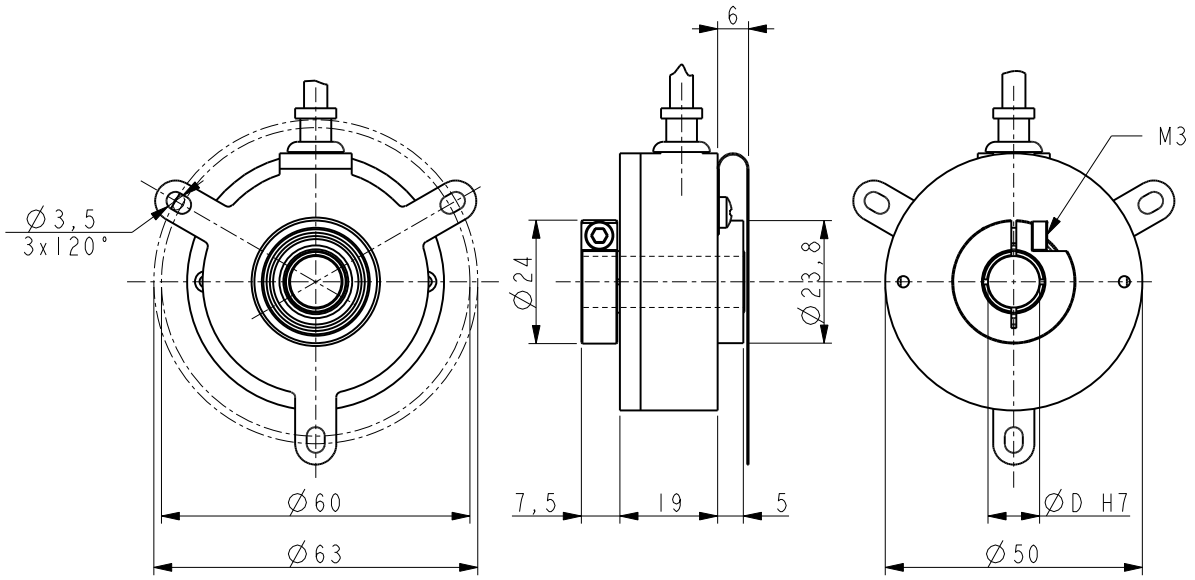
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	Ø 6, 6.35, 8, 9.52, 10 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	≤ 0,25 Ncm (typical)
Bearings life:	10^9 rev. min.
Electrical connections:	cable output 1 m (3.3 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 ⓐ	-	XXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	XX ⓖ	/Sxxx ⓗ

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

ⓑ RESOLUTION (PPR)
See electrical specifications

ⓒ OUTPUT SIGNALS
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

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

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

ⓖ 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 C51

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

C51

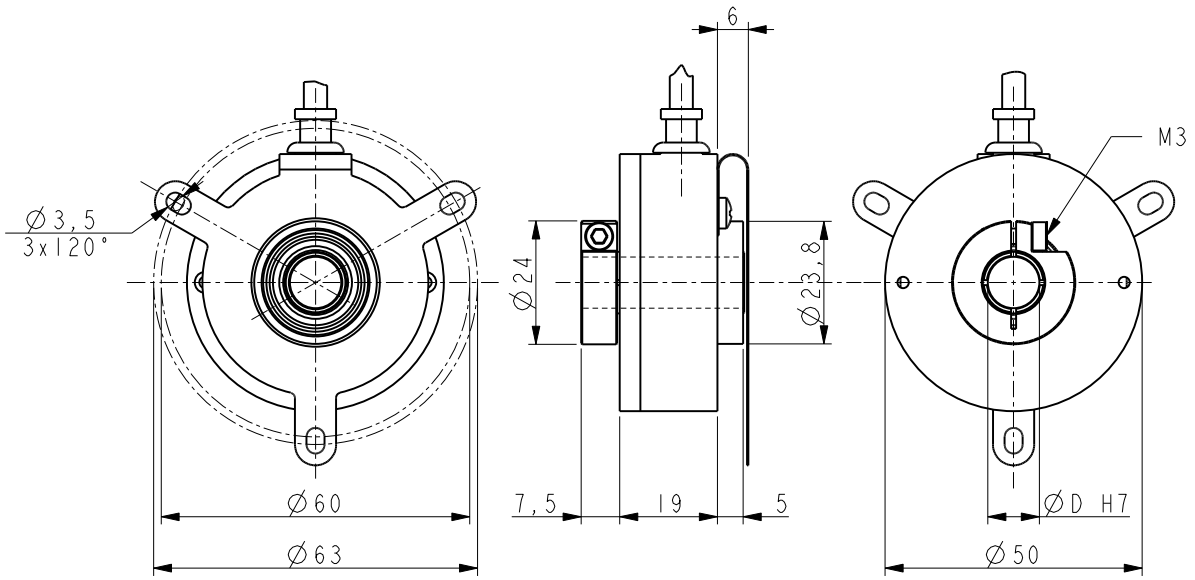
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP65 Protection

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

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

ⓑ RESOLUTION (PPR)
See electrical specifications

ⓒ OUTPUT SIGNALS
BNF = AB
BCU = AB, /AB
ZNF = AB0
ZCU = AB0, /AB0

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

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

ⓕ PROTECTION
- = IP54 (standard)
P = IP65

ⓖ 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

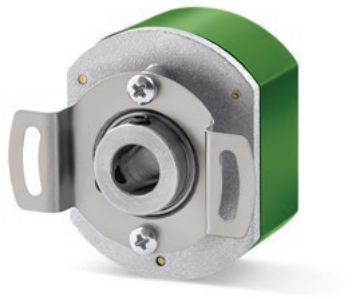
ⓗ CUSTOM VERSION

ROTAPULS

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

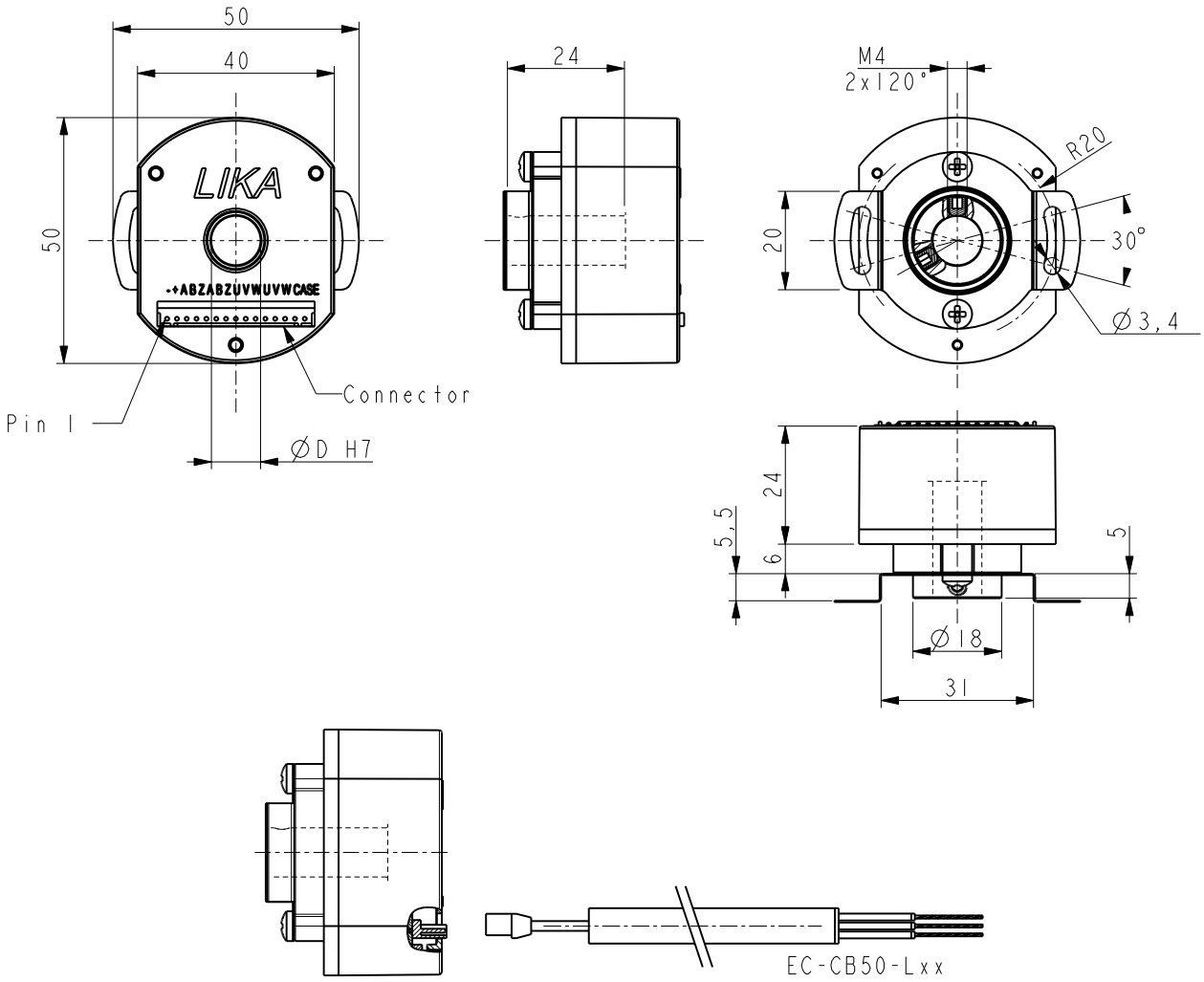
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP20
Operating temperature range:	-20°C +100°C (-4°F + 212°F)
Storage temperature range:	-20°C +100°C (-4°F + 212°F) (98% R.H. without condensation)

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 ⓐ	-	XXXX ⓑ	/	X ⓒ	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **OUTPUT CIRCUITS**
Y = Push Pull
L = Line Driver (RS422)

ⓑ **RESOLUTION (PPR)**
1000, 1024, 1250, 2000, 2048, 2500

ⓒ **N° POLES**
4 = 4 poles
6 = 6 poles
8 = 8 poles

ⓓ **SUPPLY VOLTAGE**
1 = +5V±5% (L output circuit)
2 = +10V÷ +30V (Y output circuit)

ⓔ **SHAFT DIAMETER**
6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm

ⓕ **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

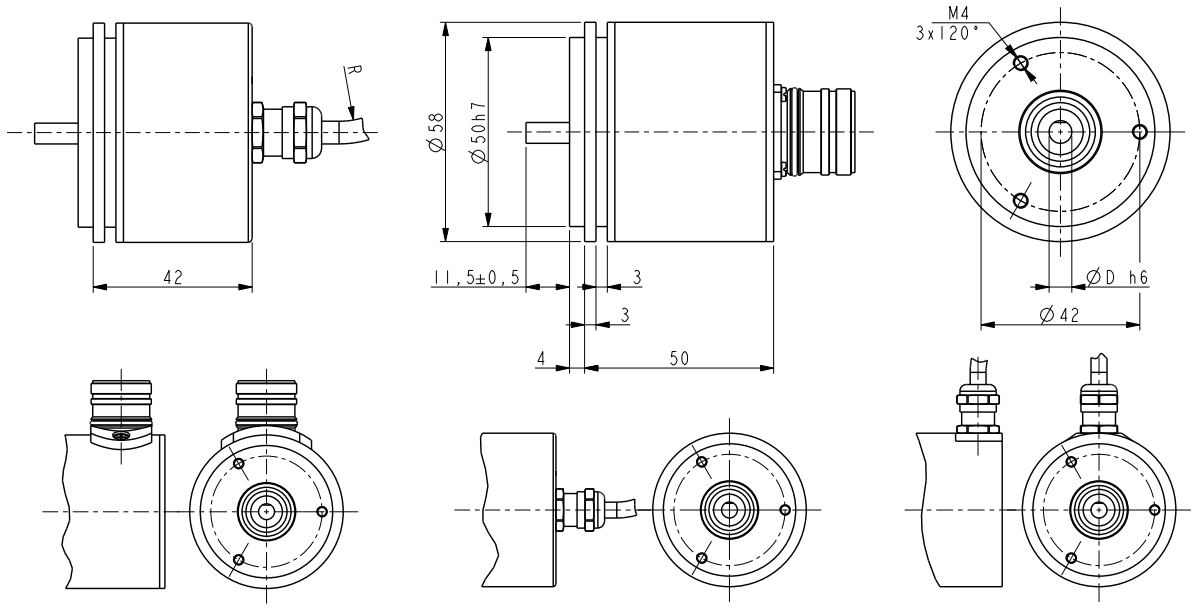
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	typ. 6000 rpm / 12000 temporary
Starting torque at 20°C:	I58: 0,15 Ncm / I58S: 0,4 Ncm (typical)
Bearings life:	400 x 10^6 rev. min. (10^9 rev. 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

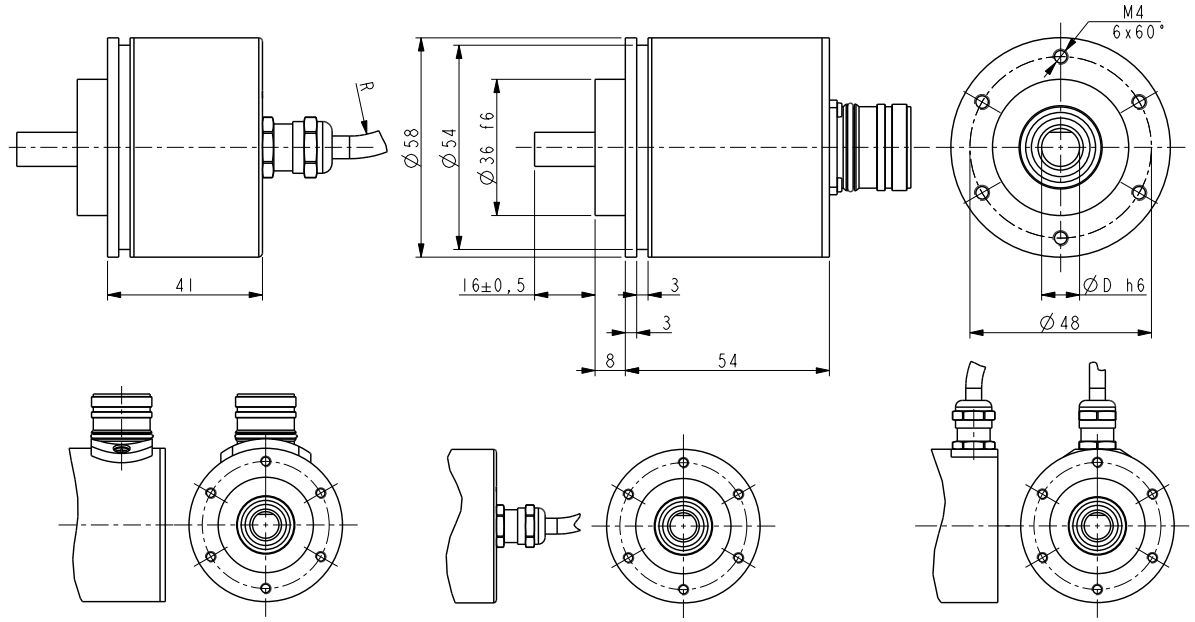
PREFERENTIAL MODELS	
I58-H-500ZCU46RL2	I58-H-500ZCZ46R
I58-H-1000ZCU46RL2	I58-H-1000ZCZ46R
I58-H-1024ZCU46RL2	I58-H-1024ZCZ46R
I58-H-2048ZCU46RL2	I58-H-2048ZCZ46R
I58-H-2500ZCU46RL2	I58-H-2500ZCZ46R
I58-H-500ZCZ46	I58S-H-500ZCZ410R
I58-H-1000ZCZ46	I58S-H-1000ZCZ410R
I58-H-1024ZCZ46	I58S-H-1024ZCZ410R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

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, M23 connector
EDE 9S:	9 pin DSub mating connector
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



I58



I58S

Order code

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

ⓐ **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

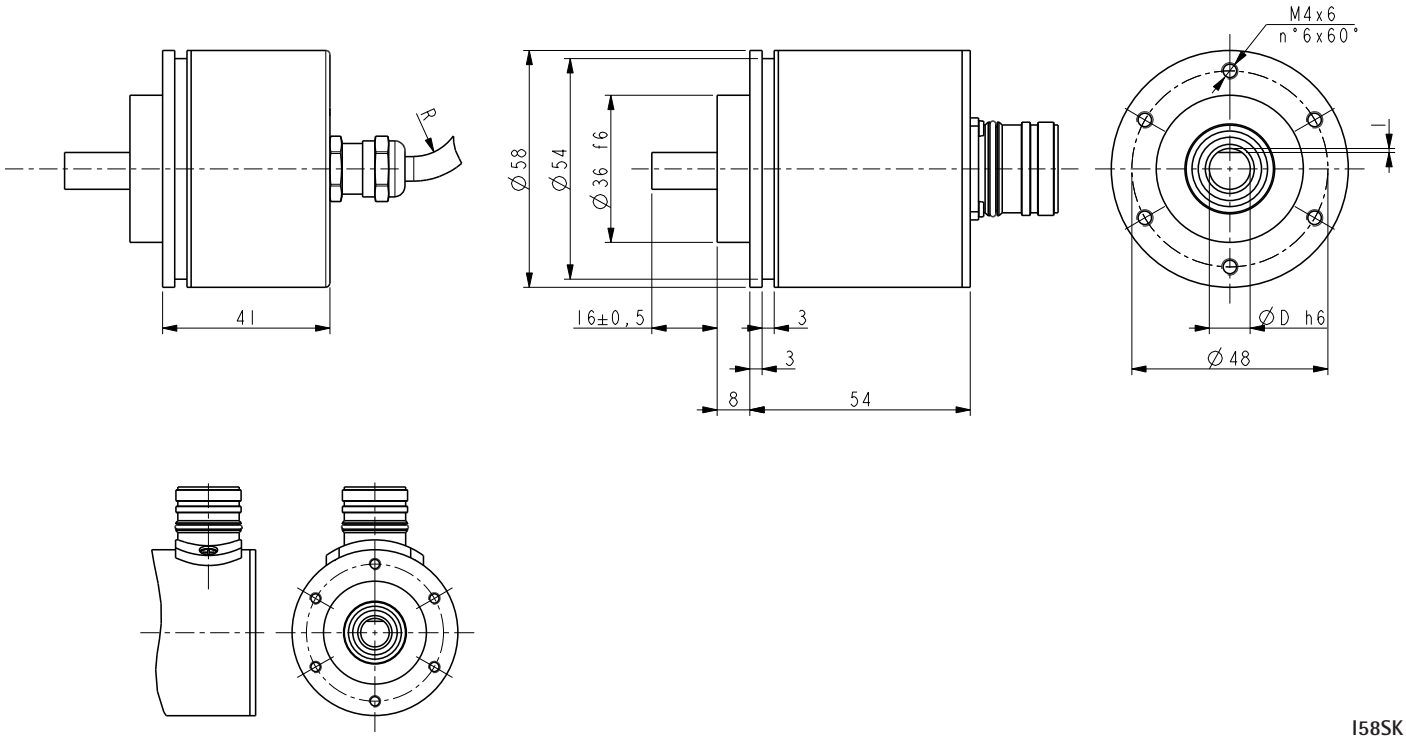
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

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

ⓐ **OUTPUT CIRCUITS**
N = NPN 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**
ZCU = AB0 /AB0, cable output
ZCZ = AB0 /AB0, M23 12 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 (standard)
R = radial (only with M23 connector)

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

ⓙ **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

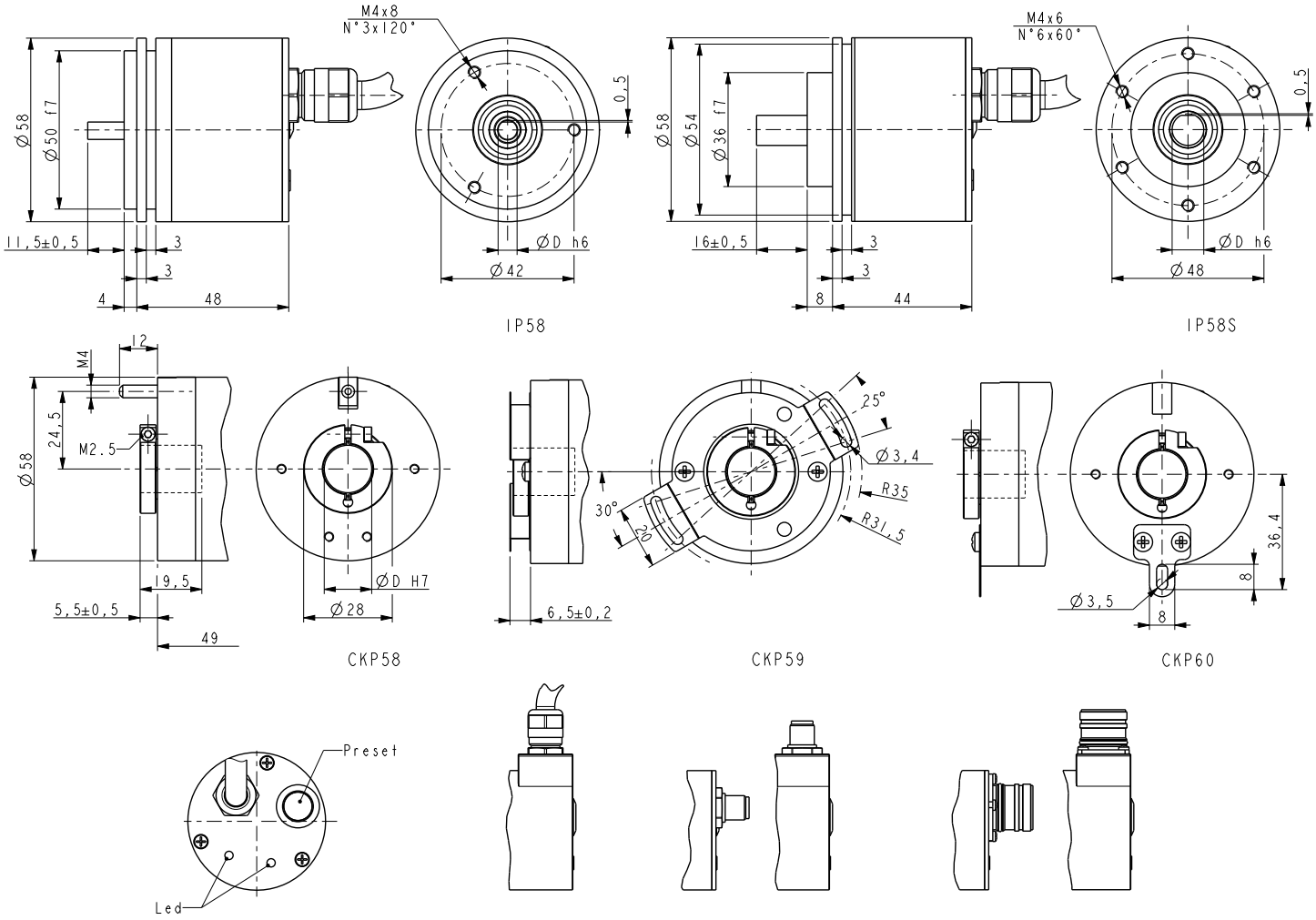
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

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

ⓐ **OUTPUT CIRCUITS**
H = PP/LD universal circuit

ⓑ **RESOLUTION (PPR)**
PROG = programmable

ⓒ **OUTPUT SIGNALS / CONNECTIONS**
ZCU = AB0 /AB0, cable output
ZCZ = AB0 /AB0, M23 12 pin plug
ZCM = AB0 /AB0, M12 8 pin plug

ⓓ **SUPPLY VOLTAGE**
4 = +5V ÷ +30V

ⓔ **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)

ⓕ **CONNECTION POSITION**
- = axial
R = radial

ⓖ **CABLE LENGTH**
- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓗ **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

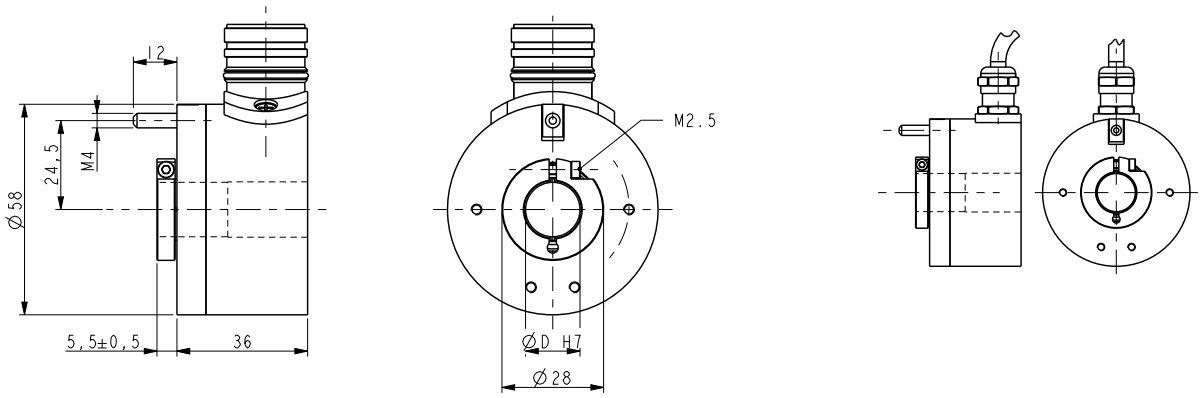
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F)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

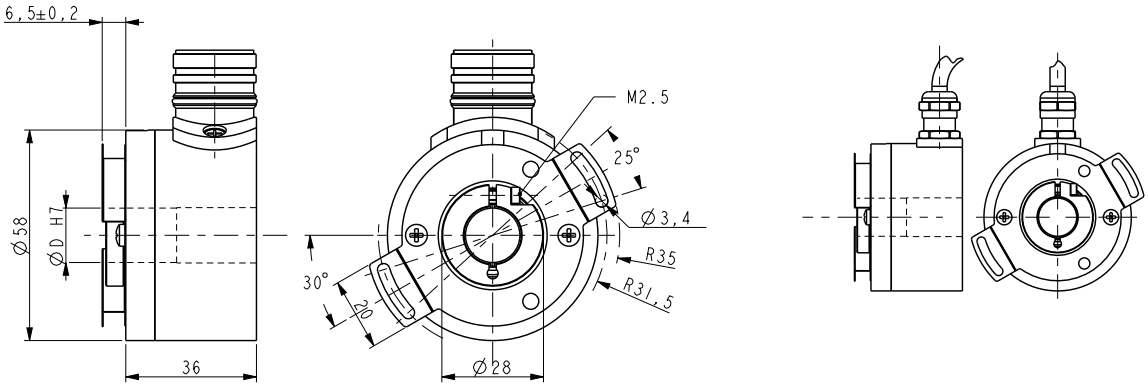
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	4-5-10-12-15-16-20-24-25-30-35-36-40-45-50-60-70 80-90-100-120-125-142-150-180-200-236-250-256 267-300-314-360-400-433-435-471-500-600-635-720 784-875-900-1000-1024-1250-1800-2000-2048-2500 3600-4000-4096-5000
Counting frequency:	100 kHz max.
Output circuits:	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

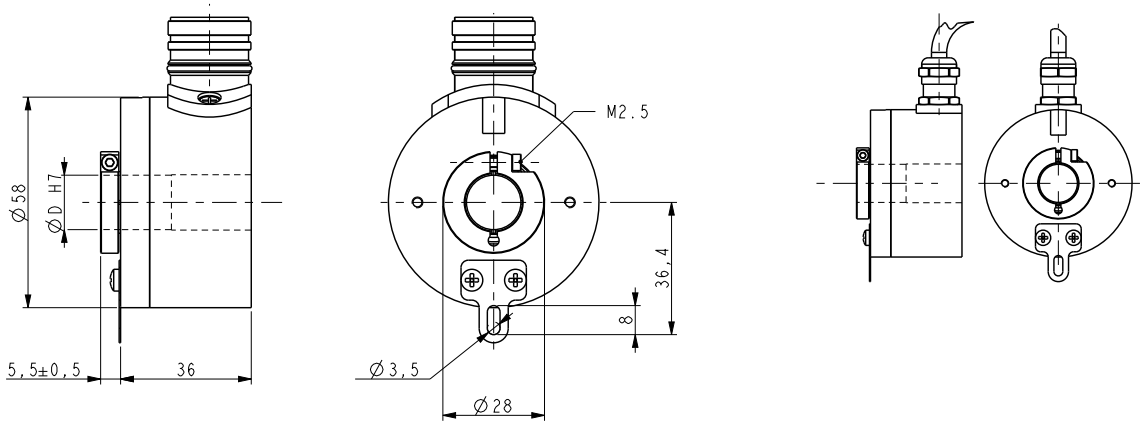
ACCESSORIES	
EPFL 121:	12 pin M23 mating connector
EC-C12F-LK-I8-x:	cordset x meter with M23 conn.
EC-M12F8-LK-M8-5:	cordset 5 meters with M12 conn.
EDE9S:	9 pin DSub mating connector
BR1:	Reducing sleeves



C58



C59



C60

Order code

C58 C59 C60	-	X ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	X ⓗ	XX ⓘ	/Sxxx ⓙ

ⓐ **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 = 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

ⓓ **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

ⓙ **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

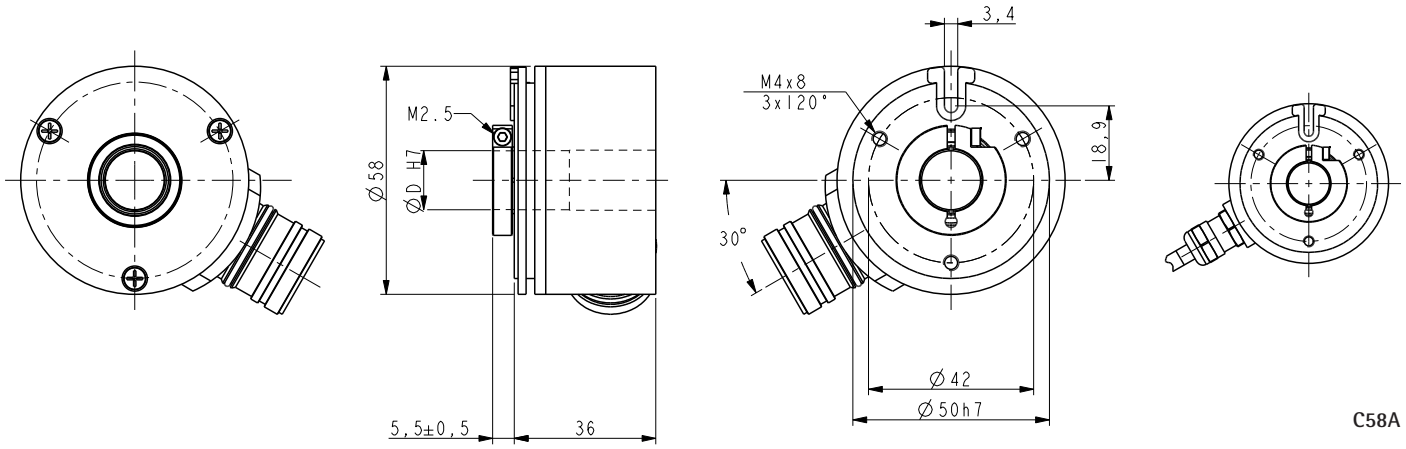
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)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

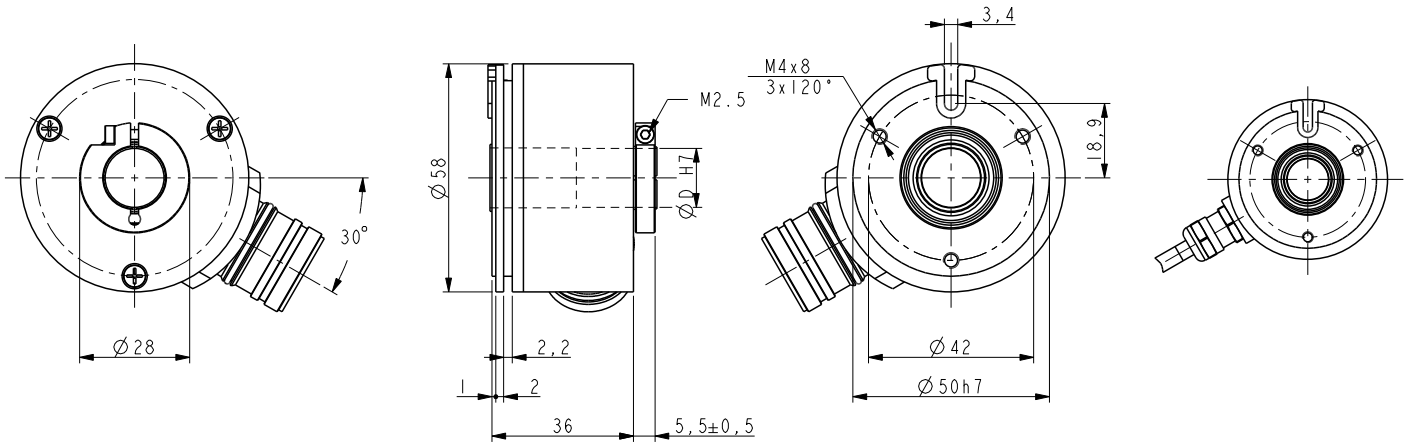
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	4-5-10-12-15-16-20-24-25-30-35-36-40-45-50-60-70 80-90-100-120-125-142-150-180-200-236-250-256 267-300-314-360-400-433-435-471-500-600-635-720 784-875-900-1000-1024-1250-1800-2000-2048-2500 3600-4000-4096-5000
Counting frequency:	100 kHz max.
Output circuits:	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 C58R	-	X ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	X ⓗ	XX ⓘ	/Sxxx ⓙ

ⓐ 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 = 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

ⓓ 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

ⓙ 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
- AB0 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)

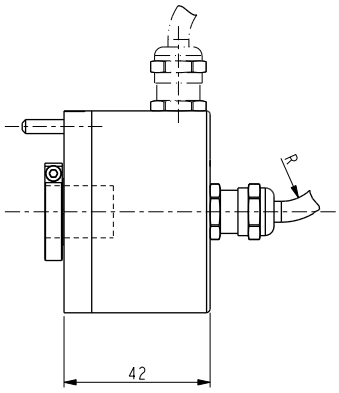
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	14, 15 mm
Reducing sleeves from ø 15 mm to:	ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	50 N max.
Shaft rotational speed:	typ. 6000 rpm / 12000 temporary
Starting torque (at 20°C):	0,4 Ncm (typical)
Bearings life:	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

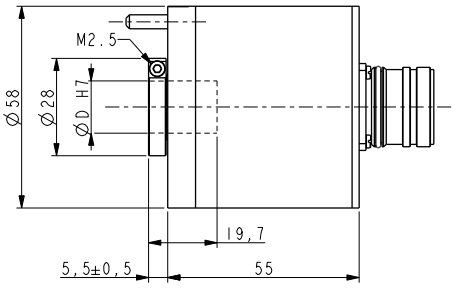
ELECTRICAL SPECIFICATIONS	
Resolution (PPR): (output circuit N, P, Y, L, H)	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435471-500-512 600-635-720-750-800-900-1000-1024-1068-1200-1250-1270 1400-1440-1500-1800-2000-2048-2250-2400-2500-3000-3600 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

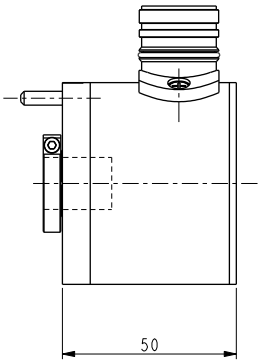
PREFERENTIAL MODELS	
CK58-H-500ZCU415R	500 PPR, HTL/TTL output
CK58-H-1000ZCU415R	1000 PPR, HTL/TTL output
CK58-H-1024ZCU415R	1024 PPR, HTL/TTL output
CK58-H-2048ZCU415R	2048 PPR, HTL/TTL output

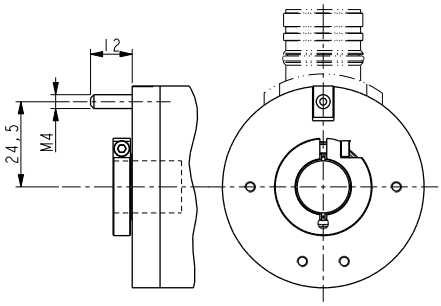
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305
Light source:	GaAl diodes

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

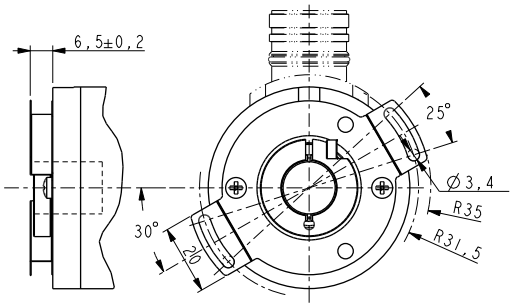




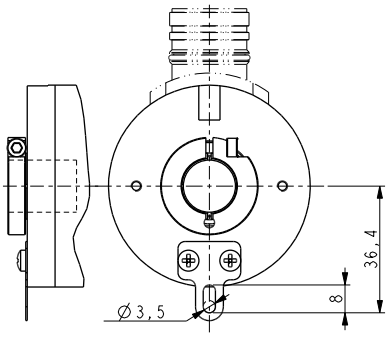




CK58



CK59



CK60

Order code

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

ⓐ 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

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

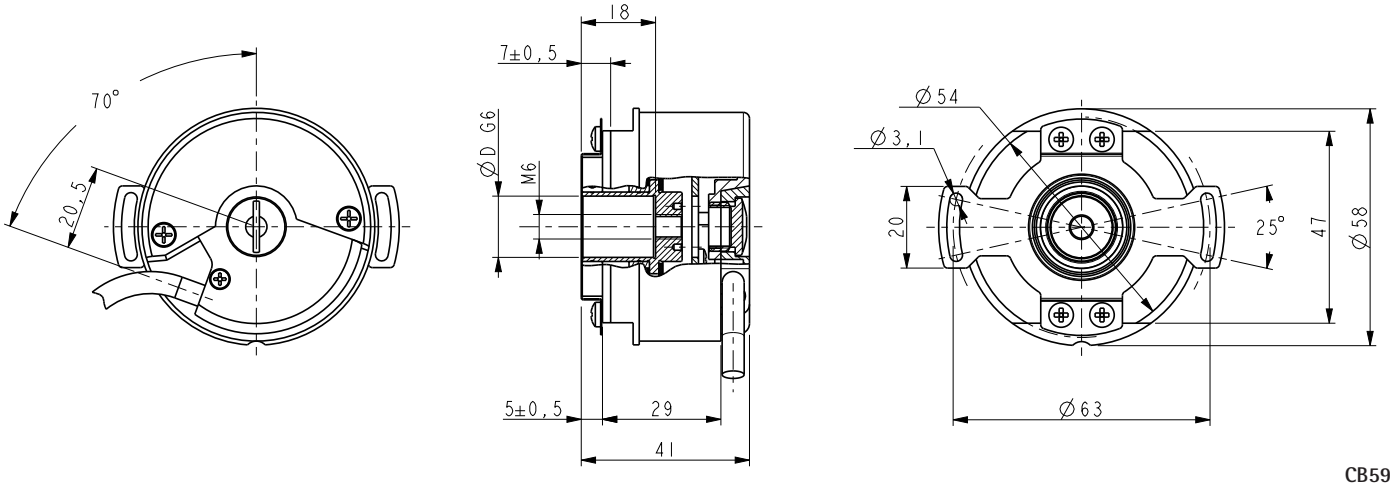
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP40
Operating temperature range:	-20°C+100°C (-4°F +212°F)
Storage temperature range:	-20°C+100°C (-4°F +212°F) (98% R.H. without condensation)

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)

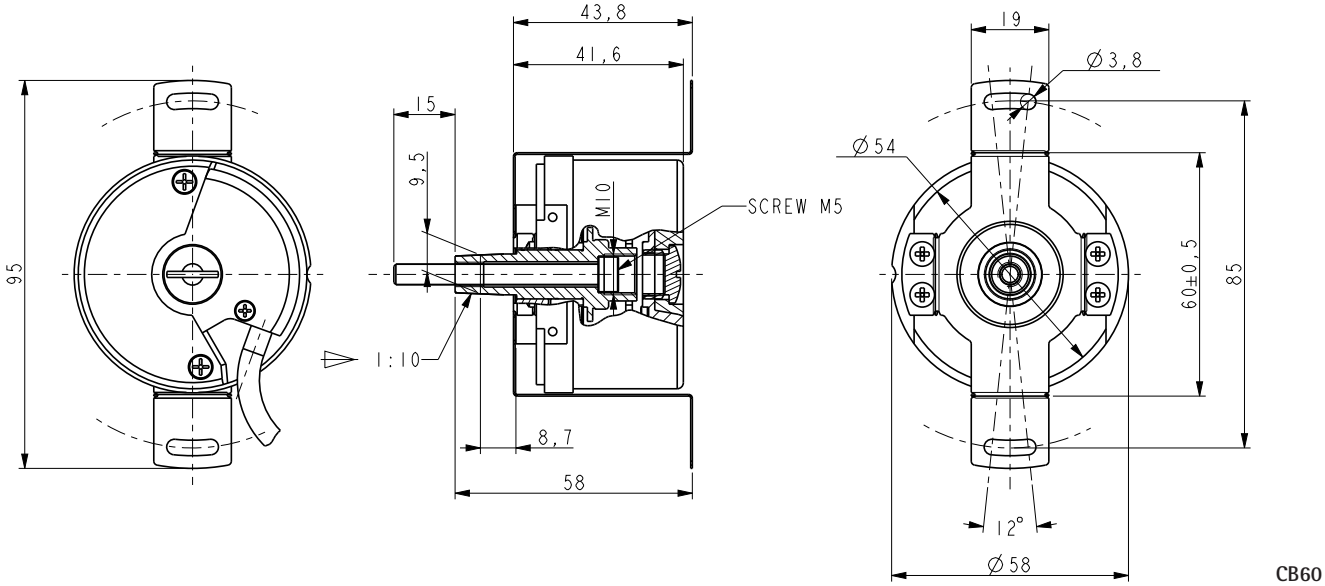
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	2048 + absolute Z-track
Counting frequency:	300 kHz max.
Output circuits:	1Vpp
Power supply:	+5V±5%
Consumption:	130 mA max.
Output current (each channel):	40 mA max.
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	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 ⓐ	-	XXXX/X ⓑ	X ⓒ	XXX ⓓ	/Sxxx ⓔ

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

ⓑ **RESOLUTION (PPR)**
2048/1

ⓒ **SUPPLY VOLTAGE**
1 = +5V ±5%

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

ⓔ **CUSTOM VERSION**

Accessories order code

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

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

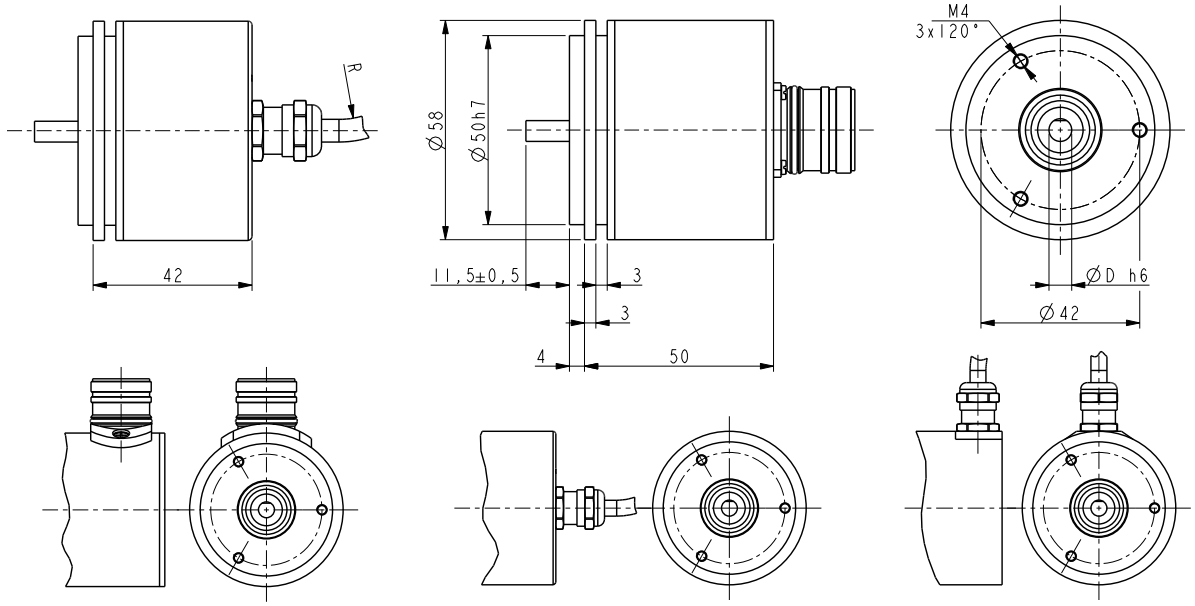
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• IP67 protection (with sealed circuits)

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

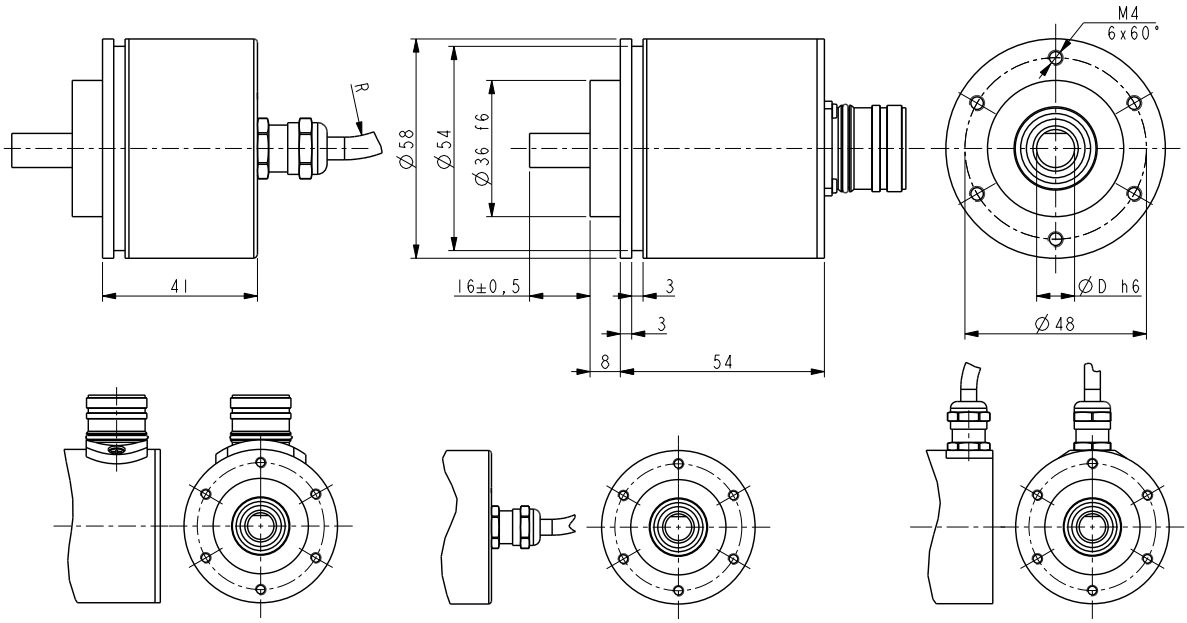
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	20-40-80-160-200-320-400-500-640-800-1000 1280-1600-2000-2500-2560-5000-10000
Accuracy:	± 0,5°
Counting frequency:	500 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V±5%, +10V +30V,+5V +30V
Consumption:	60 mA max.
Output 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 MI58S	-	X ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	X ⓗ	/Sxxx ⓘ

ⓐ 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)

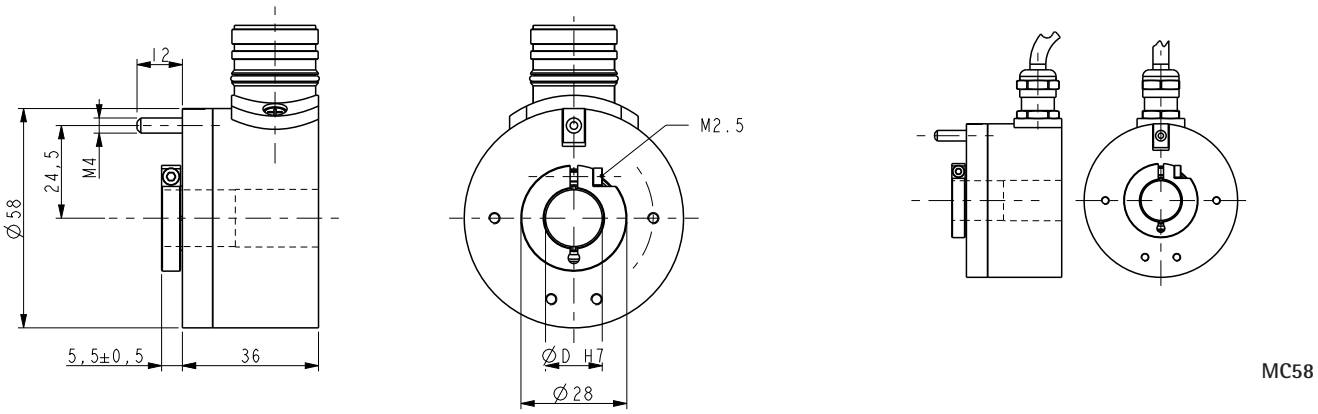
ⓔ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm

ⓕ CONNECTION POSITION
- = axial
R = radial

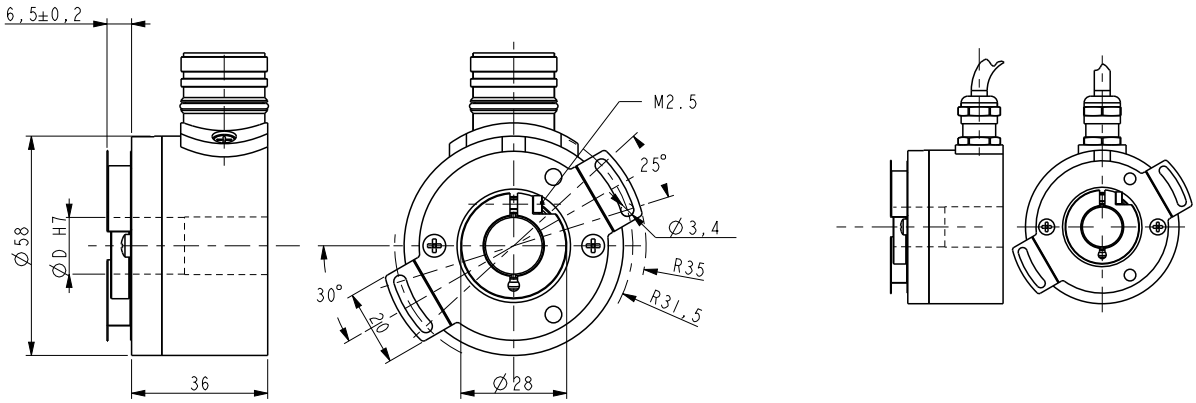
ⓖ PROTECTION
- = IP65 (standard)
J = IP67 (only with cable output)

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

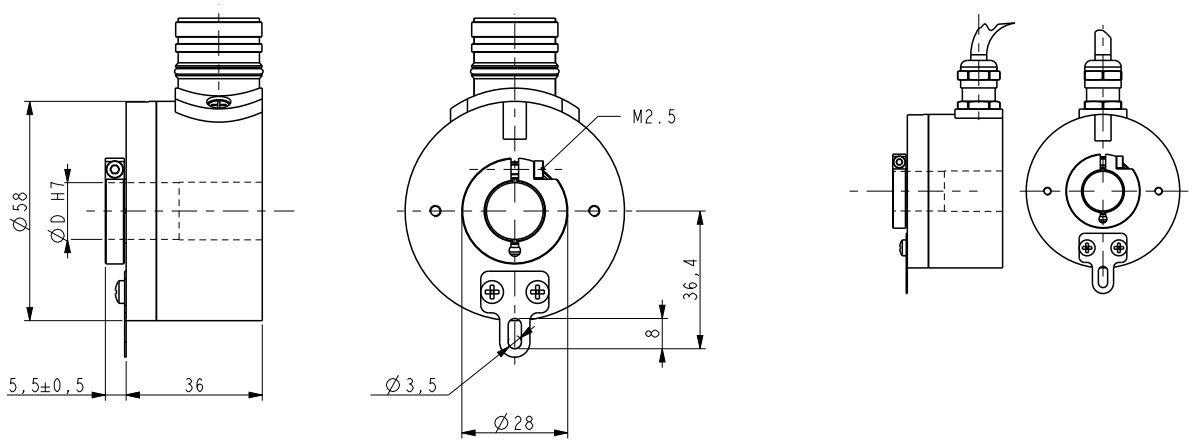
ⓘ CUSTOM VERSION



MC58



MC59



MC60

Order code

MC58 MC59 MC60	-	X ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	X ⓗ	/Sxxx ⓘ

ⓐ 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)

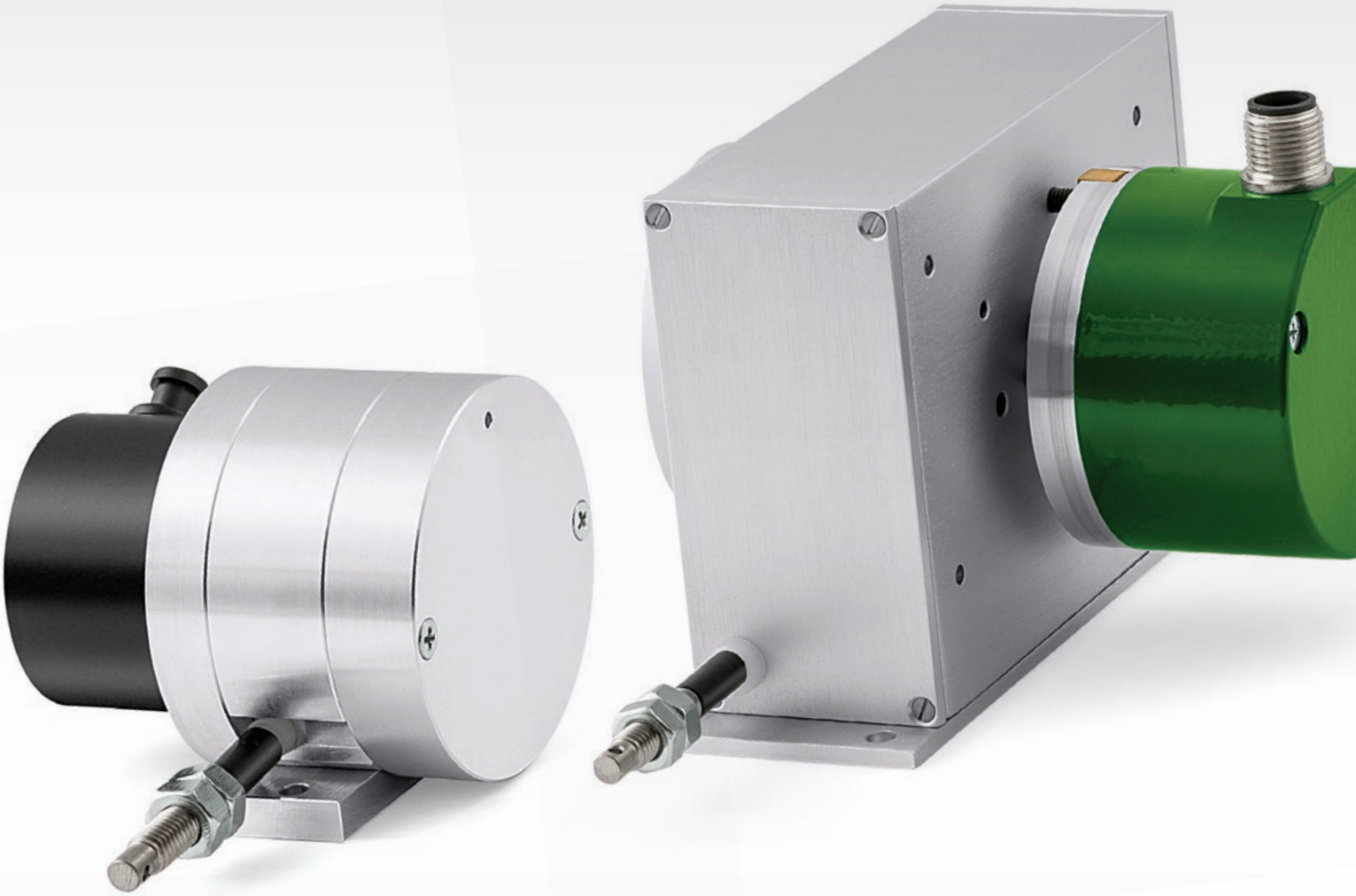
ⓔ SHAFT DIAMETER
14 = 14 mm
15 = 15 mm

ⓕ 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



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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.)

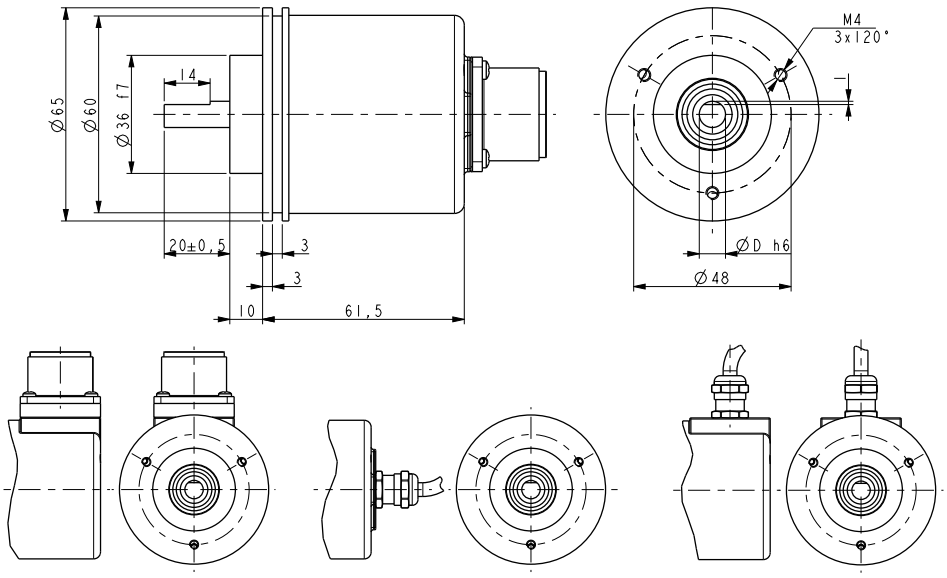
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	0,4 Ncm (typical)
Bearings life:	400 x 10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical 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

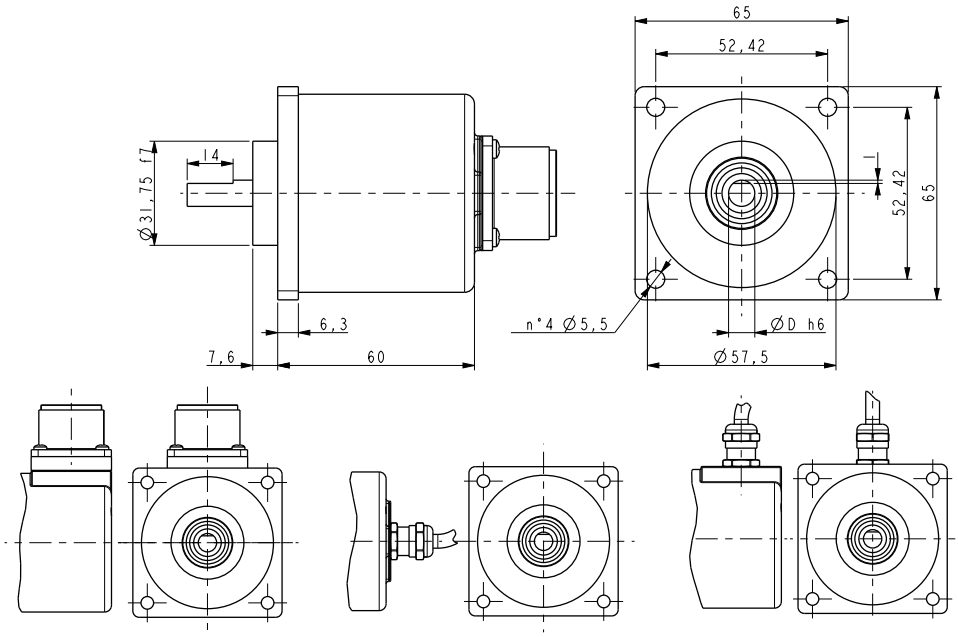
PREFERENTIAL MODELS	
IT65-H-100ZCP4CR	100 PPR, HTL/TTL output
IT65-H-500ZCP4CR	500 PPR, HTL/TTL output
IT65-H-1000ZCP4CR	1000 PPR, HTL/TTL output
IT65-H-1024ZCP4CR	1024 PPR, HTL/TTL output
IT65-H-2500ZCP4CR	2500 PPR, HTL/TTL output
IT65-H-5000ZCP4CR	5000 PPR, HTL/TTL output

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

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **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

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

ⓔ **SHAFT DIAMETER**
B = 6 mm
C = 8 mm
D = 9.52 mm - 3/8"
E = 10 mm
F = 12 mm

ⓕ **CONNECTION POSITION**
- = axial
R = radial

ⓖ **PROTECTION**
- = IP65 (standard)
Q = IP66 protection shaft side

ⓗ **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)

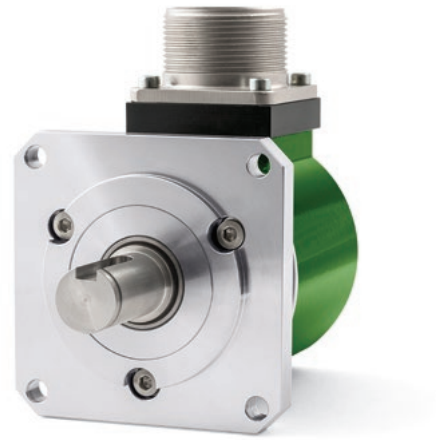
ⓙ **CABLE LENGTH**
- = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓚ **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

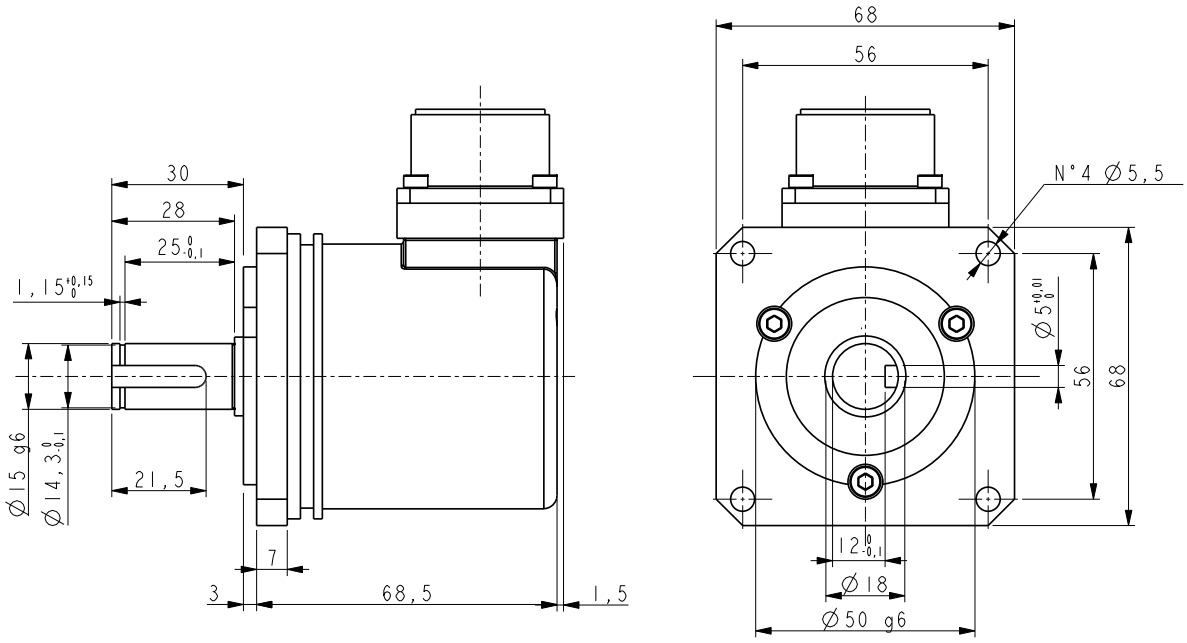
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• IP66 Protection shaft end (torque 2,5 Ncm and 3000 rpm 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 ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	G ⓔ	X ⓕ	X ⓖ	X ⓗ	K ⓘ	XX ⓙ	/Sxxx ⓚ

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

ⓑ RESOLUTION (PPR)
See electrical specifications

ⓒ OUTPUT SIGNALS / CONNECTIONS
ZCU = AB0 /AB0, cable output
ZCP = AB0 /AB0, MIL 10 pin plug
ZCQ = AB0 /AB0, MIL 17 pin plug

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

ⓔ SHAFT DIAMETER
G = 15 mm

ⓕ CONNECTION POSITION
- = axial
R = radial

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

ⓗ COUNTING FREQUENCY
- = 100 kHz (standard)
W = 300 kHz

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

ⓙ CABLE LENGTH (only with ZCU)
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m

ⓚ 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

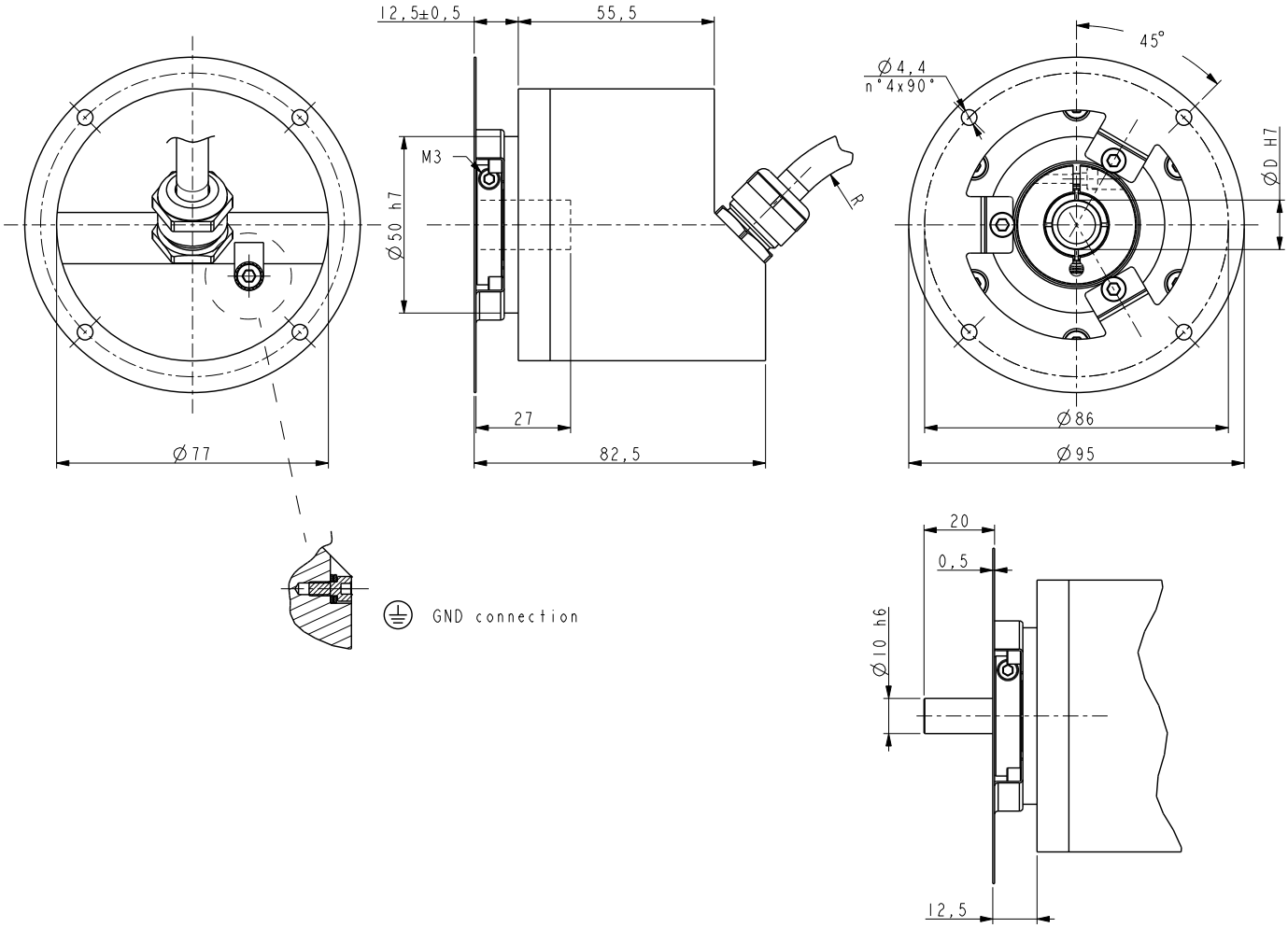
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Environmental temperature at max. speed:	40°C max
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

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 ⓖ

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS / CONNECTION**
ZCU = AB0 /AB0, cable output

ⓓ **SUPPLY VOLTAGE**
1 = +5Vdc ±5% (L output circuit)
2 = +10Vdc÷ +30Vdc (N and Y output circuits)
4 = +5Vdc÷ +30Vdc (H output circuit)

ⓔ **SHAFT DIAMETER**
14 = 14 mm

ⓕ **CABLE LENGTH**
- = cable output 1 m cable
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m

ⓖ **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)

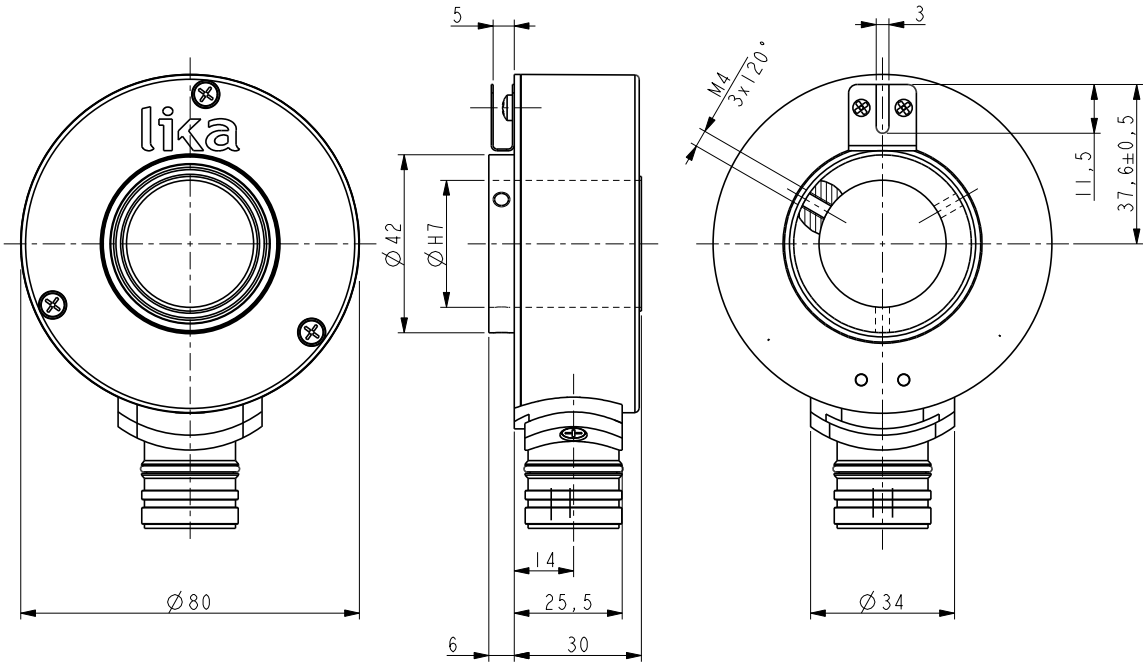
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	Ø 25, 30 mm
Reducing sleeves, BR2-xx from Ø 30 mm to:	Ø 15, 5/8' (15,875), 16, 17, 18, 19, 20 22, 23, 24, 1'' (25,4), 28 mm
Shaft loading (axial and radial):	30 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque at 20°C:	≤ 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.

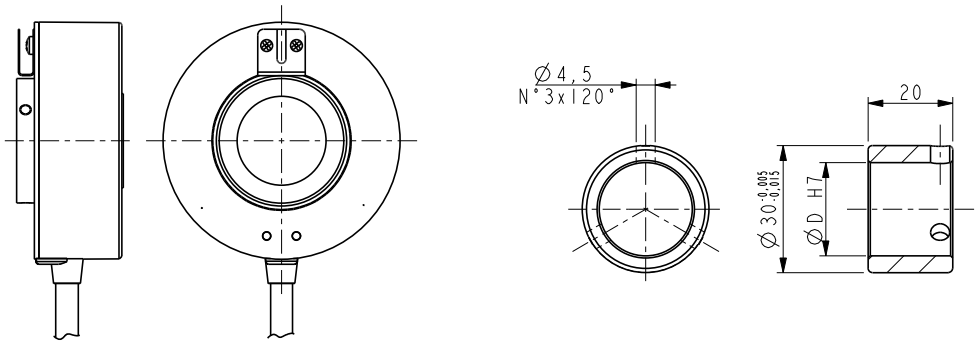
PREFERENTIAL MODELS	
C80-H-1024ZCU430L2	1024 PPR, HTL/TTL output
C80-H-2048ZCU430L2	2048 PPR, HTL/TTL output

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

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 ⓘ

ⓐ **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
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

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

ⓔ **SHAFT DIAMETER**
25 = 25 mm
30 = 30 mm

ⓕ **PROTECTION**
- = IP64 (standard)
P = IP65

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

ⓗ **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 **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

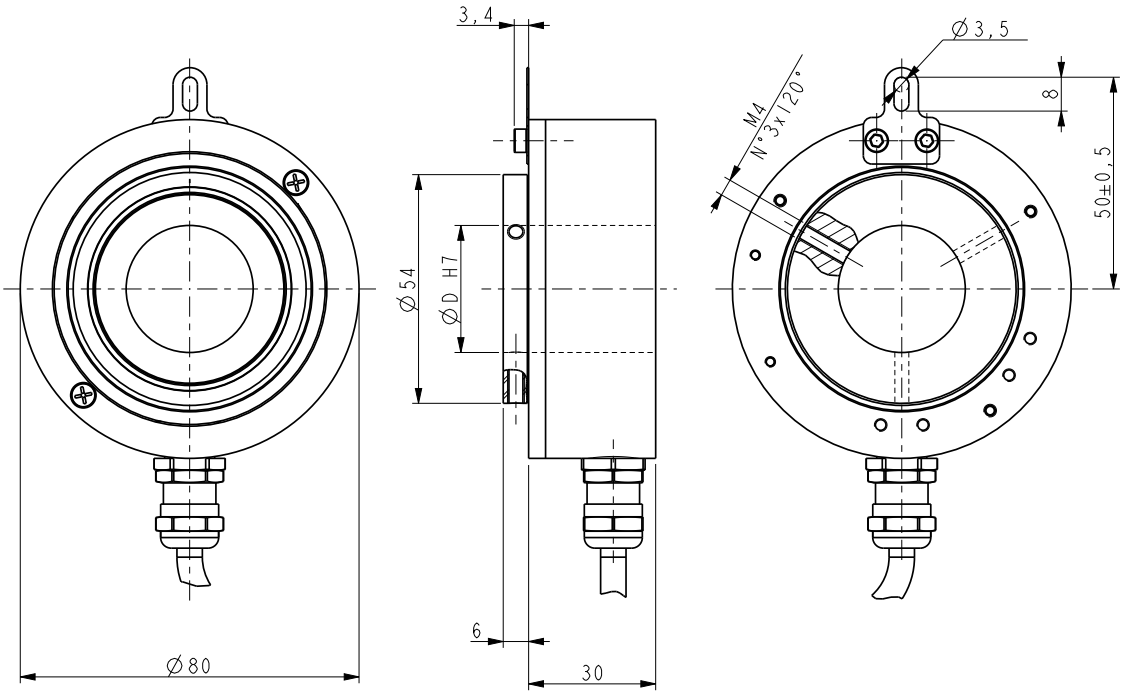
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F)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

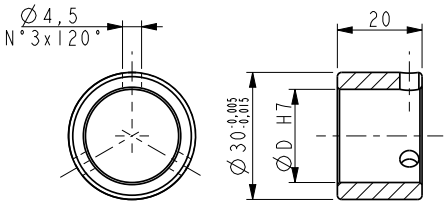
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	12-100-300-400-500-1024-2000-2048-2500-4096
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V ±5%, +10V +30V,+5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	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 ⓙ

ⓐ **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
ZNF = AB0, cable output
BCU = AB /AB, cable output
ZCU = AB0 /AB0, cable output

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

ⓔ **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)

ⓕ **PROTECTION**
- = IP64 (standard)
P = IP65

ⓖ **COUNTING FREQUENCY**
- = 100 kHz standard
W = 200 kHz

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

ⓘ **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
Inremental encoder

Series C82

- Encoder for elevator motors
- Precise optical sensing
- Operating temperature up to -40°C +100°C
- Resolution from 12 to 4096 PPR
- Hollow shaft from Ø 30 to Ø 44 mm

C82

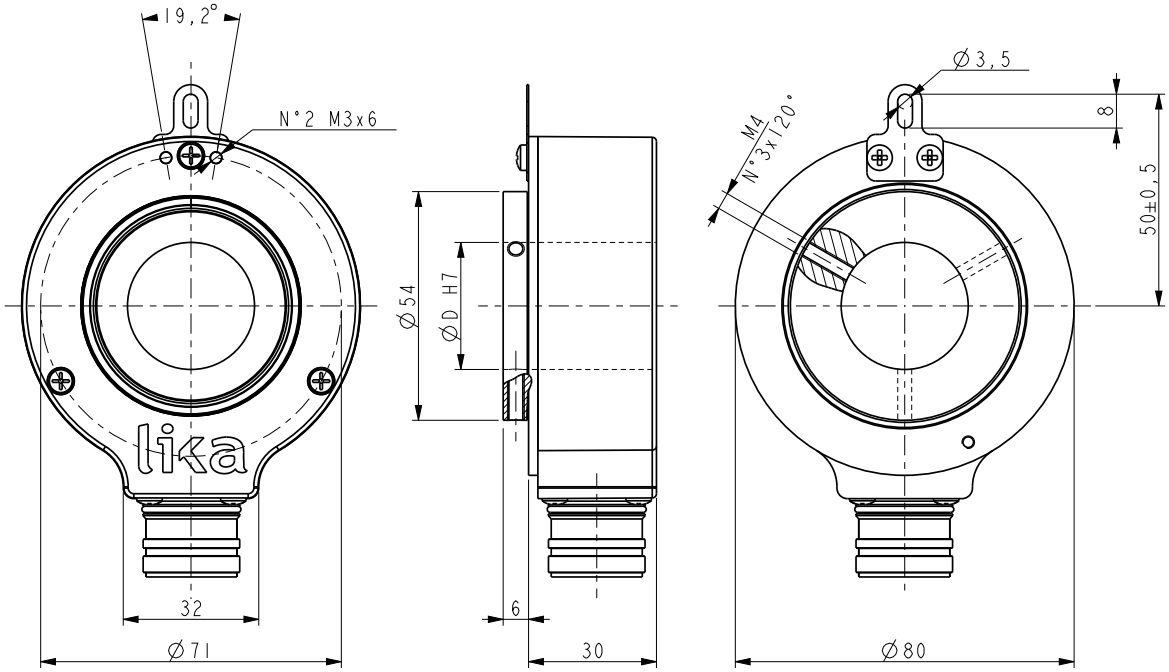
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F)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

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft hollow:	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: 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:	± 0,3 mm radial ± 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

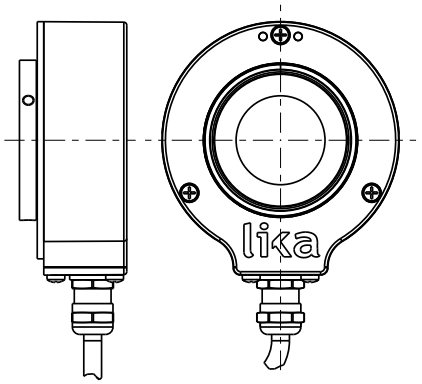
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	12-100-300-400-500-1024-2000-2048-2500-4096
Counting frequency:	100 kHz max.
Output circuits:	Push-Pull, Line Driver, Universal circuit
Power supply:	+5V ±5%, +10V +30V,+5V +30V
Consumption:	70 mA (typical)
Output current (each channel):	40 mA max.
Protection:	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.

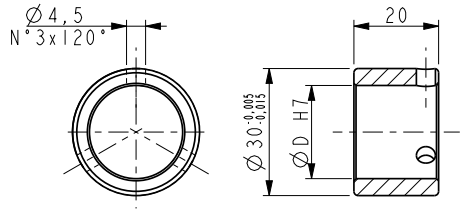
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	die cast alluminium, UNI EN AC-46100
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305
Light source:	GaAl diodes

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 ⓙ

ⓐ **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
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

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

ⓔ **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)

ⓕ **PROTECTION**
- = IP64 protection (standard)
P = IP65 protection

ⓖ **COUNTING FREQUENCY**
- = 100 kHz (standard)
W = 200 kHz

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

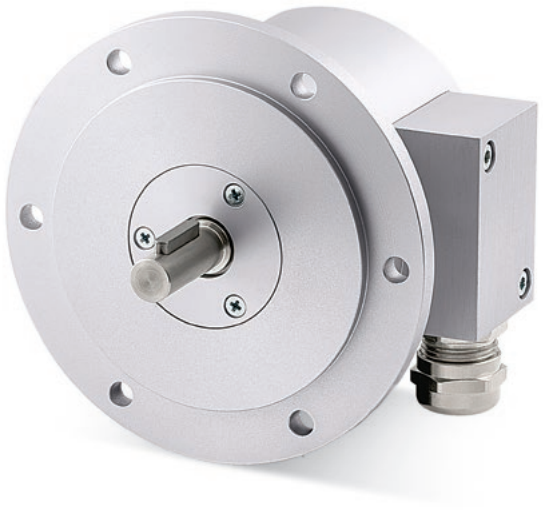
ⓘ **CABLE LENGTH**
- = cable output 1 m
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m
CLx = x m cable with DSub 9 pin inline plug

ⓙ **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

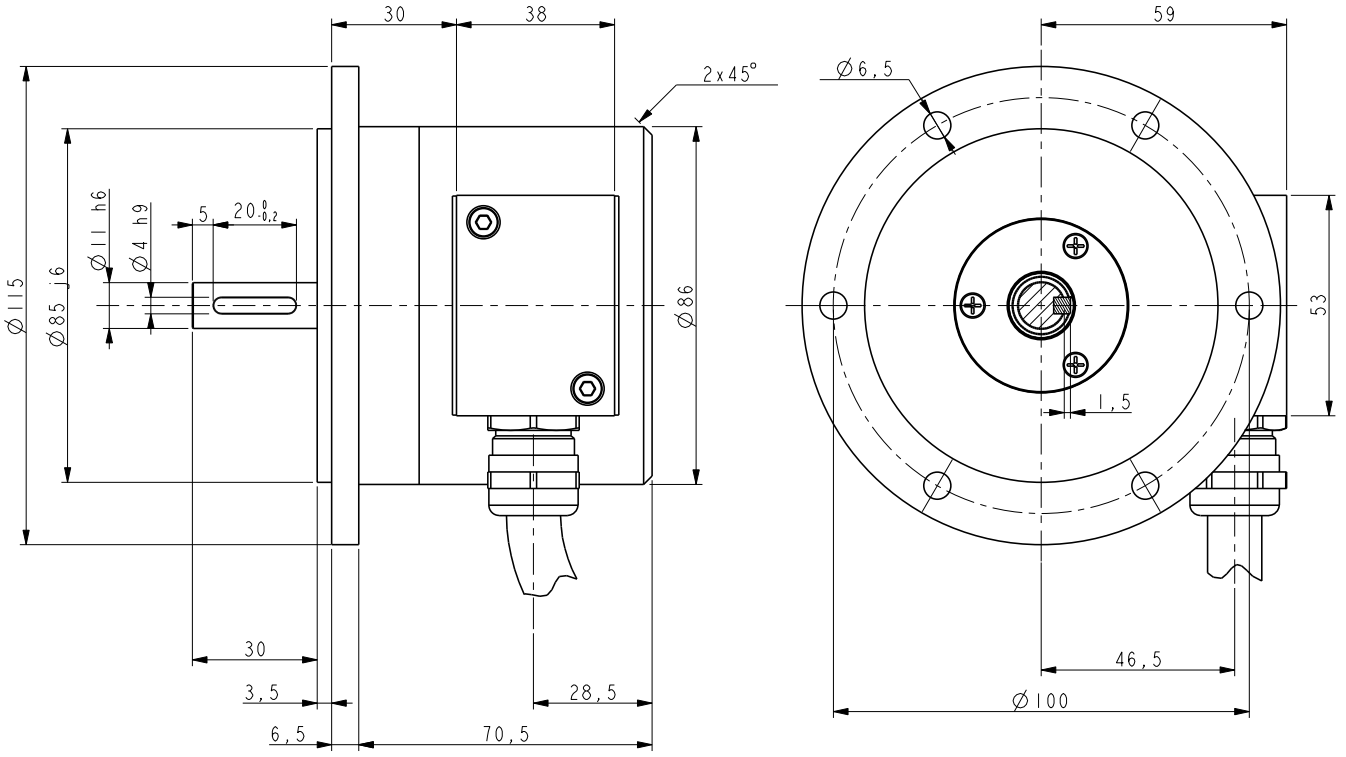
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

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.
MSTS-32K-11-11:	stainless steel coupling
MDW-25C-11K-11K:	disk coupling



I115

Order code

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

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNAL / CONNECTION**
ZCT = AB0 /AB0, terminal blocks

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

ⓔ **SHAFT DIAMETER**
11 = 11 mm

ⓕ **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

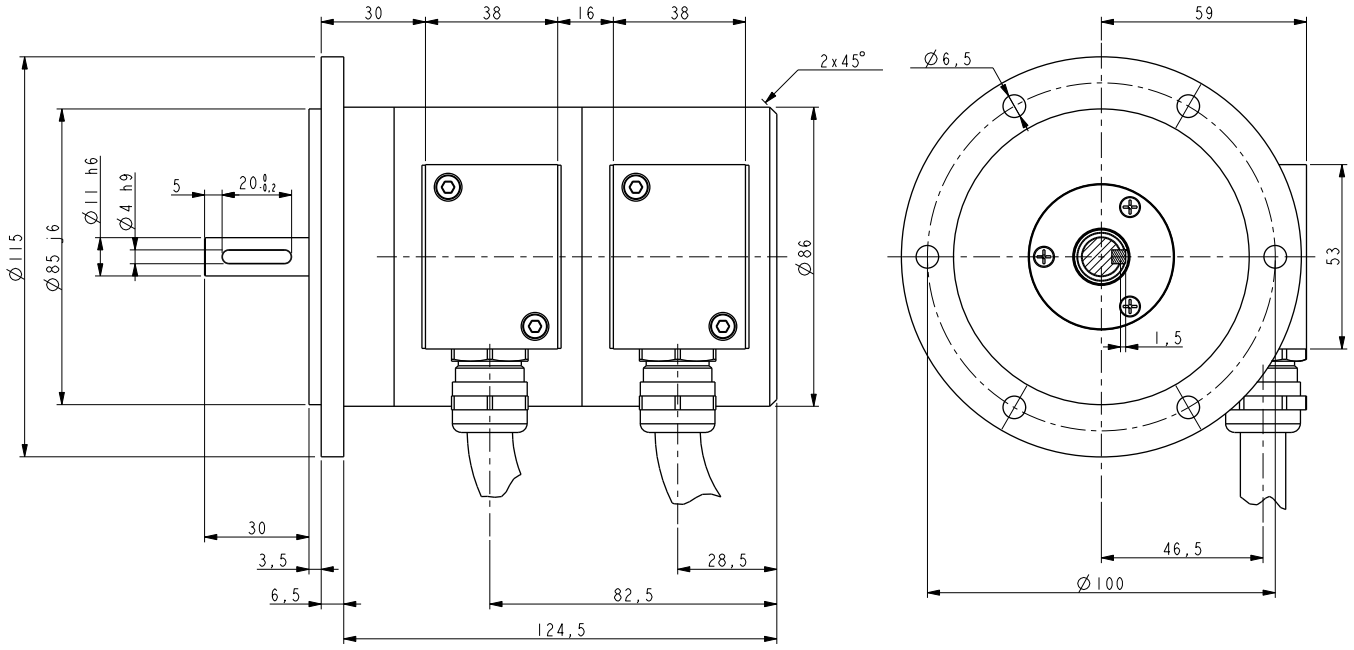
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66
Operating temperature range:	-40°C +100°C (-40°F +212°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

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.
MSTS-32K-11-11:	stainless steel coupling
MDW-25C-11K-11K:	disk coupling



I116

Order code

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

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNAL / CONNECTION**
ZCT = AB0 /AB0, terminal blocks

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

ⓔ **SHAFT DIAMETER**
11 = 11 mm

ⓕ **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 trasmission
- M23 connector or screw terminals
- Electrical shaft insulation

C100

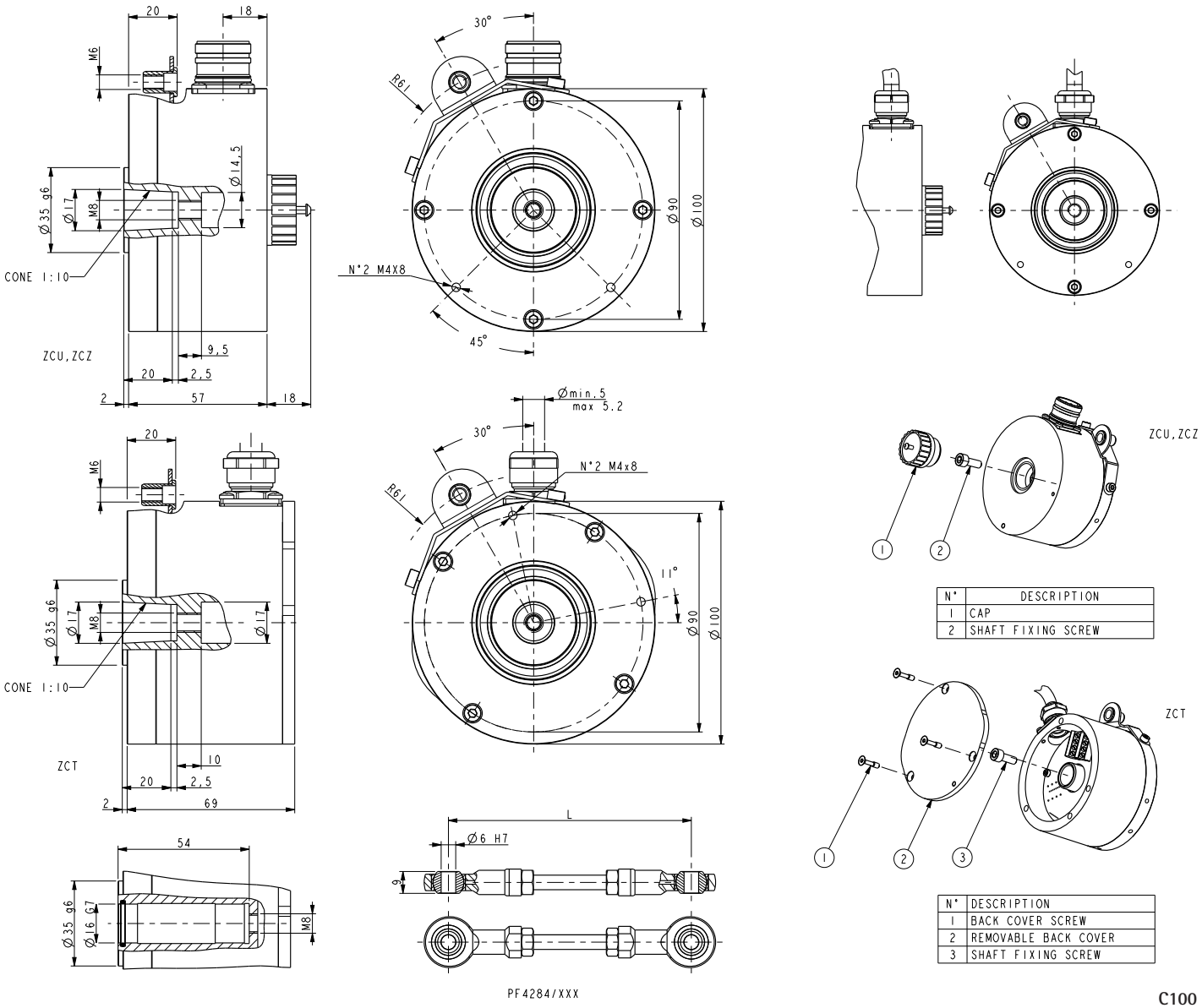
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

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



Order code

C100	-	X ⓐ	-	XXXX ⓑ	XXX ⓒ	X ⓓ	XXX ⓔ	X ⓕ	XX ⓖ	/Sxxx ⓗ

ⓐ **OUTPUT CIRCUITS**
L = Line Driver (RS422)
H = PP/LD universal circuit
K = Power Line Driver
T = Power Push Pull

ⓑ **RESOLUTION (PPR)**
1024, 2048, 2500

ⓒ **OUTPUT SIGNALS / CONNECTIONS**
ZCZ = AB0 /AB0, M23 12 pin plug
ZCT = AB0 /AB0, screw terminals
ZCU = AB0 /AB0, cable output

ⓓ **SUPPLY VOLTAGE**
1 = +5V±5% (L, K output circuit)
2 = +10V÷ +30V (T output circuit)
4 = +5V÷ +30V (H output circuit)

ⓔ **SHAFT DIAMETER**
C17 = 17 mm tapered 1:10
16 = 16 mm

ⓕ **OPERATING TEMPERATURE RANGE**
- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

ⓖ **CABLE LENGTH (only with ZCU)**
L1 = cable output 1 m
Lx = cable output x m

ⓗ **CUSTOM VERSION**

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

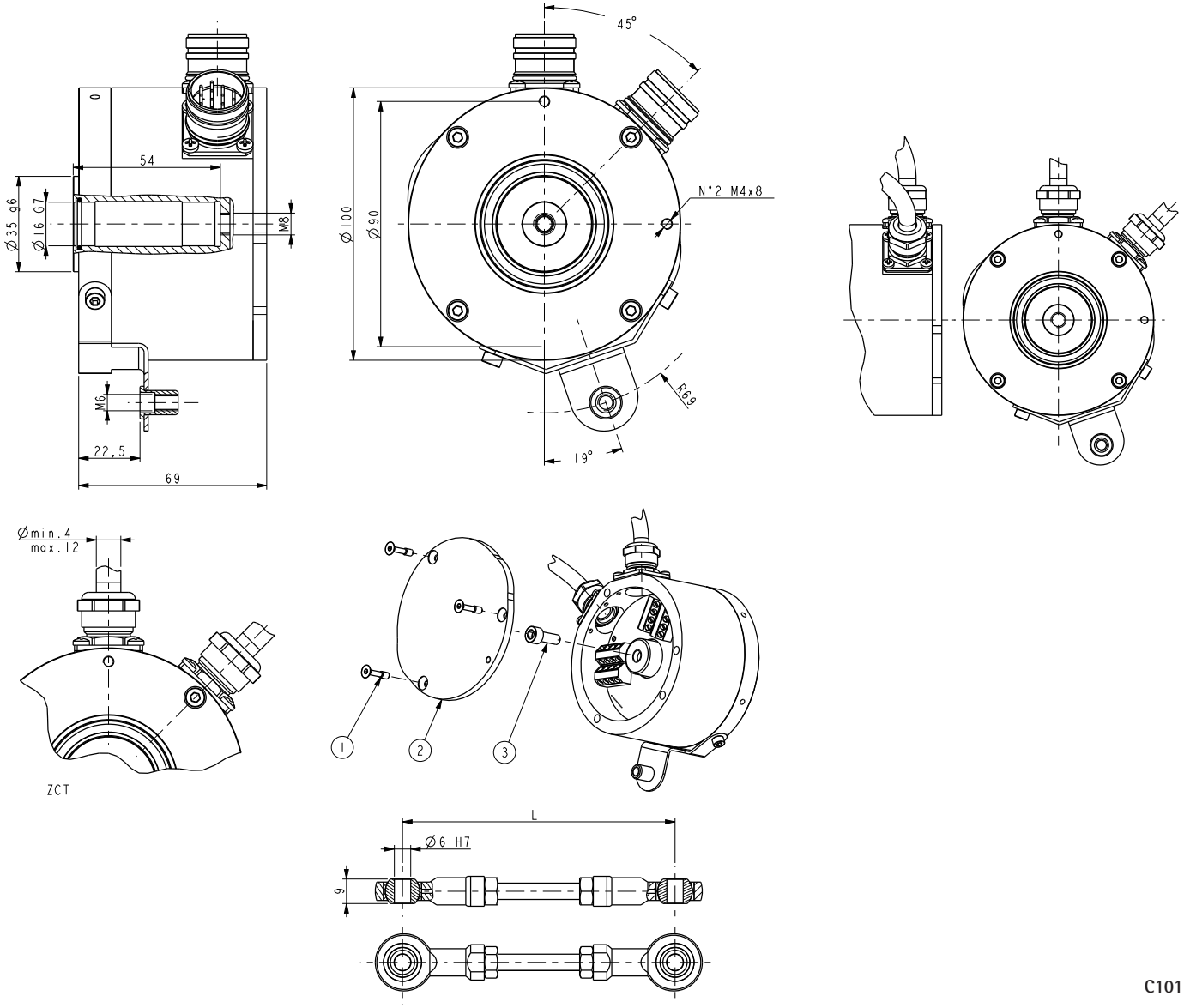
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP54
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

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 ⓕ

ⓐ **OUTPUT CIRCUITS**
K = Power Line Driver
T = Power Push Pull

ⓑ **RESOLUTION (PPR)**
1024, 2048

ⓒ **OUTPUT SIGNALS / CONNECTIONS**
ZCZ = AB0 /AB0, M23 12 pin plug
ZCT = AB0 /AB0, screw terminals
ZCU = AB0 /AB0, cable output

ⓓ **SUPPLY VOLTAGE**
1 = +5V±5% (T output circuit)
2 = +10V÷ +30V (K output circuit)

ⓔ **SHAFT DIAMETER**
16 = 16 mm

ⓕ **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

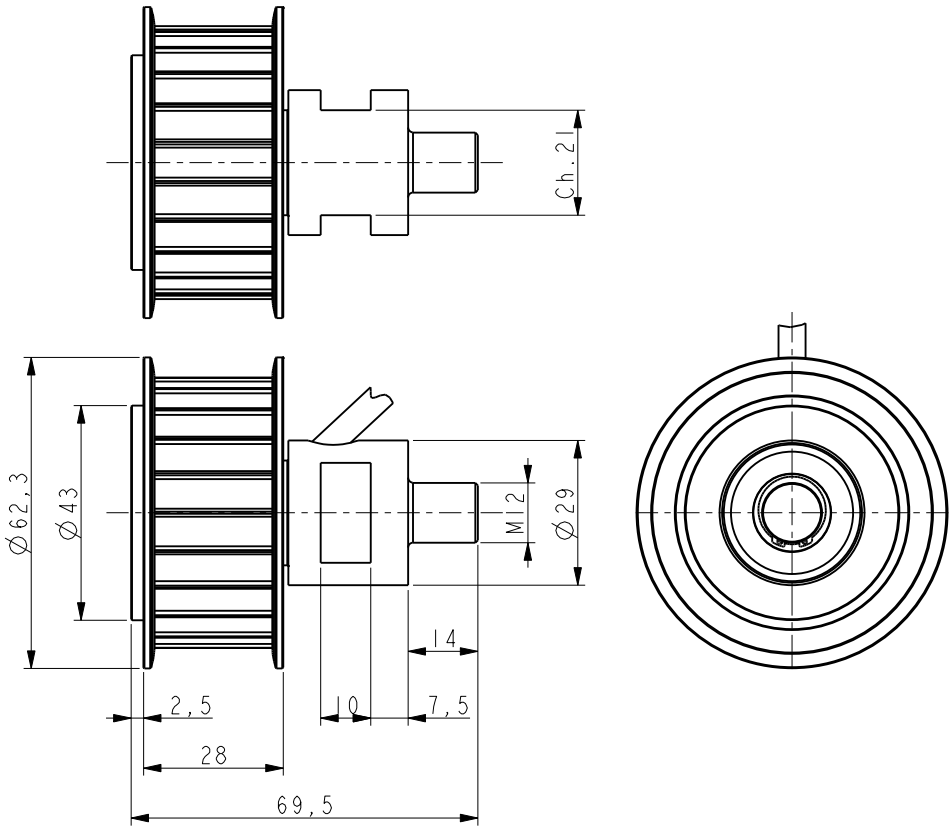
I70

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



I70

Order code

I70	-	X ⓐ	-	XXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	XX ⓕ	/Sxxx ⓖ

ⓐ **OUTPUT CIRCUITS**
Y = Push Pull

ⓑ **RESOLUTION (PPR)**
500

ⓒ **OUTPUT SIGNALS**
BNF = AB

ⓓ **SUPPLY VOLTAGE**
2 = +10V÷ +30V

ⓔ **SHAFT FIXING**
12 = M12

ⓕ **CABLE LENGTH**
L1 = cable output 1 m
Lx = cable output x m

ⓖ **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

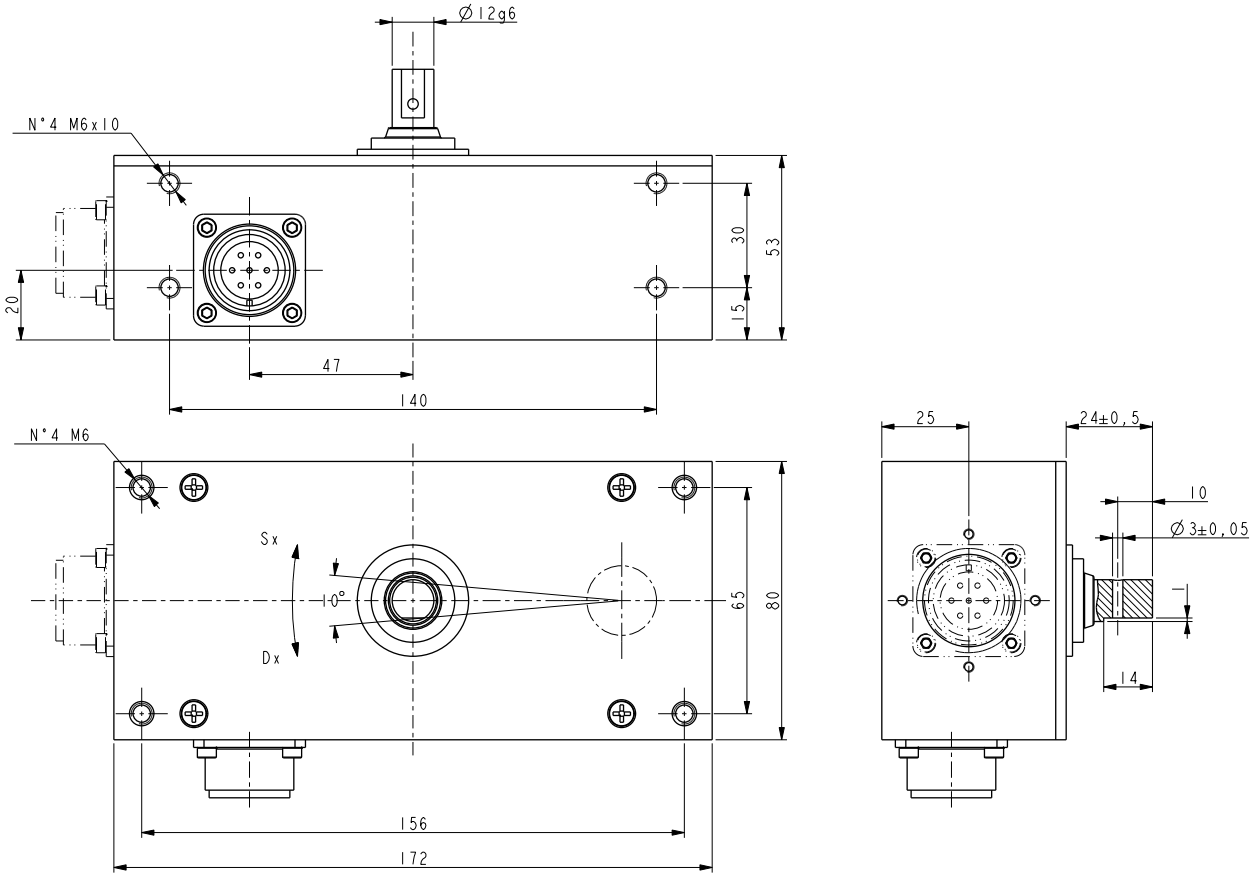
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H.without condensation)
Protection:	IP67, connector IP65

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)

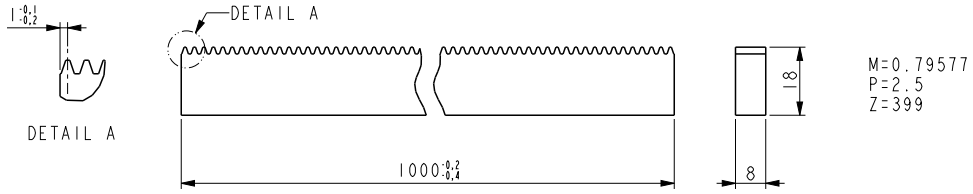
ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	2-4-5-8-10-12-15-16-20-24-25-30-35-36-40-50-60-64-70-80 90-100-120-127-142-150-160-180-200-216-230-236-240-250 254-256-267-270-300-314-360-375-400-410-435-471-500 512-600-635-720-750-800-900-1000-1024-1068-1200-1250 1270-1400-1440-1500-1800-2000-2048-2250-2400-2500
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 ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	X ⓔ	XX ⓕ	X ⓖ	/Sxxx ⓗ

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **OUTPUT SIGNALS / CONNECTIONS**
BND = AB, MIL 7 pin plug
BCP = AB /AB, MIL 10 pin plug (only radial)
ZND = AB0, MIL 7 pin plug
ZCP = AB0 /AB0, MIL 10 pin plug (only radial)

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

ⓔ **SHAFT DIAMETER**
F = 12 mm

ⓕ **SHAFT REST POSITION**
DX = right (see drawing)
SX = left (see drawing)

ⓖ **CONNECTION POSITION**
- = axial
R = radial (with BCP, ZCP)

ⓗ **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

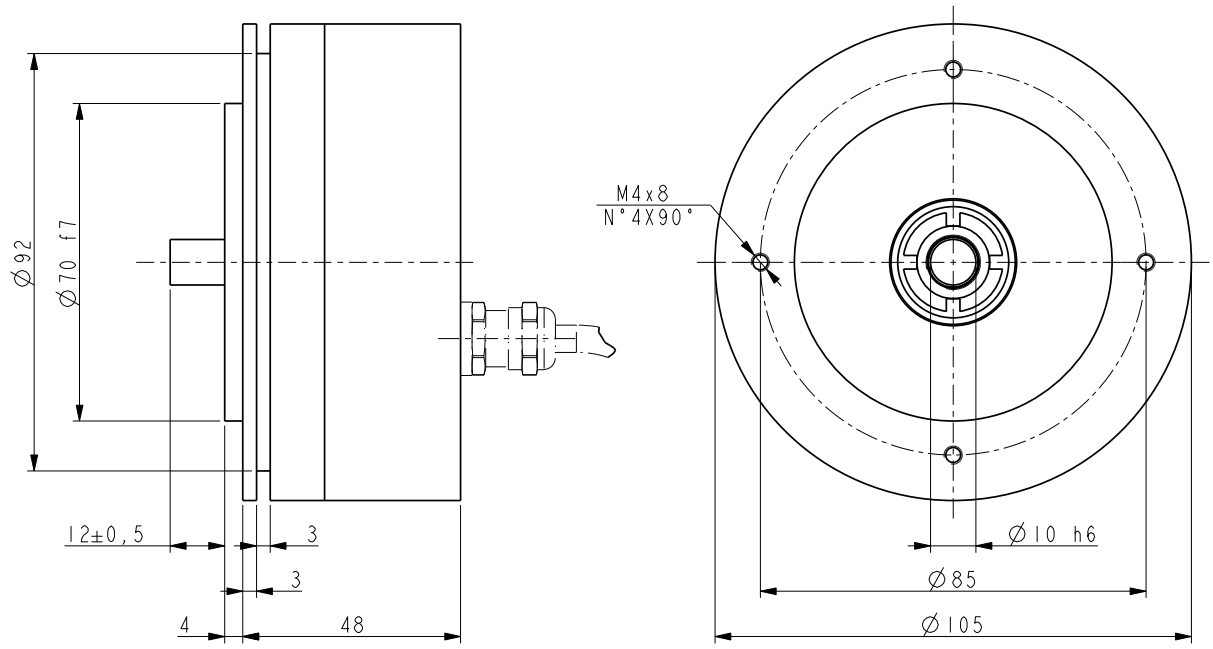
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP64
Operating temperature range:	-20°C+70°C (-4°F +158°F) - only for 16384 PPR +10°C +60°C (50°F +140°F) - only for 18000 PPR
Storage temperature range:	-20°C+80°C (-4°F +176°F) (98% R.H. without condensation)
Options:	• 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 ⓐ	-	XXXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	X ⓗ	XX ⓘ	/Sxxx ⓙ

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

ⓑ **RESOLUTION (PPR)**
See electrical specifications

ⓒ **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

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

ⓔ **SHAFT DIAMETER**
10 = 10 mm

ⓕ **PROTECTION**
- = IP64 (standard)
P = IP65

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

ⓗ **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)

ⓘ **CABLE LENGTH**
L2 = cable output 2 m
L7 = cable output 7 m
Lx = cable output x m

ⓙ **CUSTOM VERSION**