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

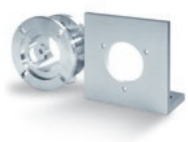
DRAW WIRE UNITS & Accessories

		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

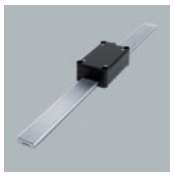
Metric wheels and Gears

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

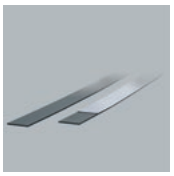
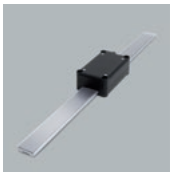
LINEPULS incremental magnetic sensors

		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

ROTAMAG
Magnetic absolute encoders

Series MS36 • MSC36

- Magnetic sensing
- Absolute single-turn encoder
- Resolution 8192 counts/rev, SSI interface
- Protection up to IP67 with sealed circuit
- MS36: solid shaft version
- MSC36: blind hollow shaft version, Ø 6mm

MS36 • MSC36

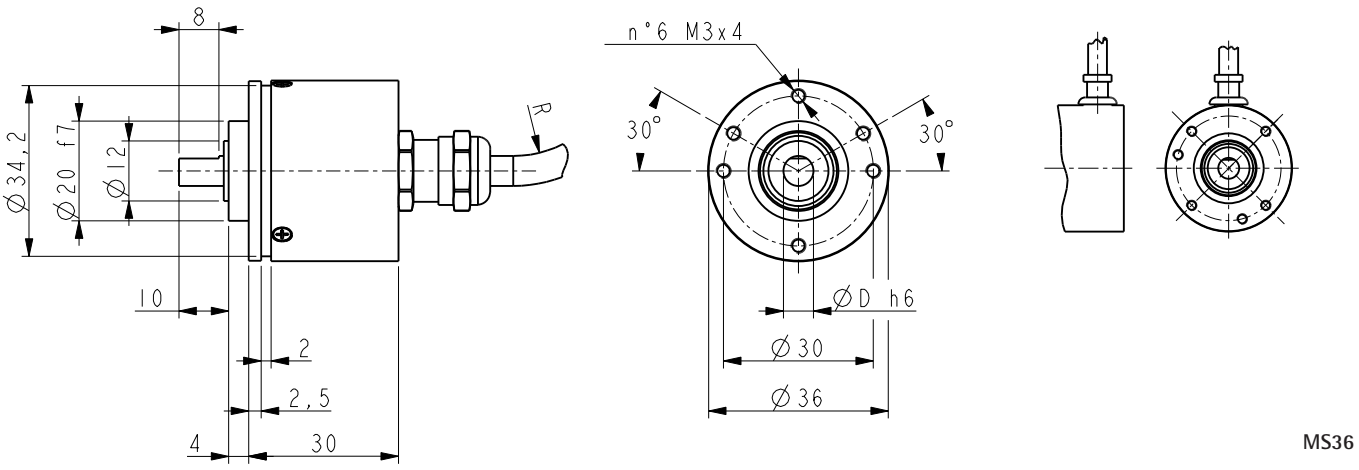
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibration:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-20°C +85°C (-4°F +185°F)
Storage temperature range:	-20°C +85°C (-4°F +185°F) (98% R.H. without condensation)
Option:	• Protection IP67

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
Bearings life:	10^9 rev. min.
Electrical connections:	M12 8 pin inline plug or cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cable

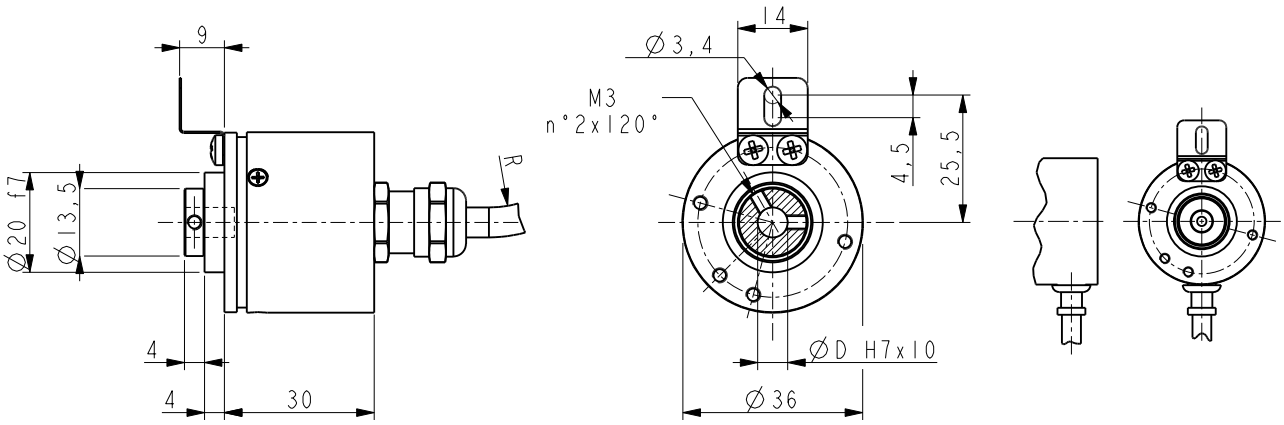
ELECTRICAL SPECIFICATIONS	
Resolution:	8192 counts/rev.
Accuracy:	± 0,9°
Output circuit:	SSI, 13 bit
Output code:	Binary
Power supply:	+10Vdc +30Vdc
Power consumption:	65 mA max.
Protection:	protected against inversion of polarity
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4

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/PGF:	Flexible couplings



MS36



MSC36

Order code

MS36 MSC36	XX ⓐ	/	XX ⓑ	-	X ⓒ	-	X ⓓ	X ⓔ	XXX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTIONS**
13 = 8192 counts/rev.

ⓑ **OUTPUT**
BR = Binary, SSI (tree format)

ⓒ **SHAFT DIAMETER**
6 = 6 mm

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

ⓒ **PROTECTION**
- = IP65 (standard)
J = IP67 (with sealed circuit)

ⓕ **CONNECTIONS**
L1 = cable output 1 m cable (standard)
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓖ **CUSTOM VERSION**

ROTAMAG
Magnetic absolute encoder

Series MM36 • MMC36

- Absolute multi-turn magnetic encoder
- Very compact and robust housing
- Outer diameter 36mm
- Resolution up to 4096 counts/rev and up to 32768 rev, SSI interface
- Zero setting and counting direction function
- Axial cable output
- MM36: solid shaft version
- MMC36: blind hollow shaft version, Ø 6mm

MMC36 • MM36

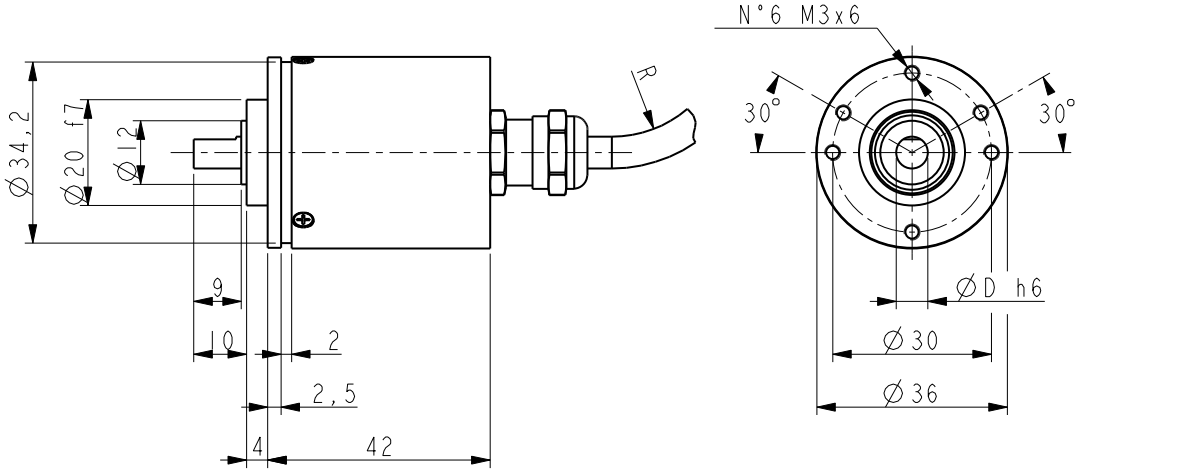
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-20°C +85°C (-4°F +185°F)
Storage temperature range:	-20°C +85°C (-4°F +185°F) (98% R.H. without condensation)
Option:	• protection IP67

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
Bearing life:	10^9 rev.min
Electrical connections:	M12 8 pin inline plug or cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cable

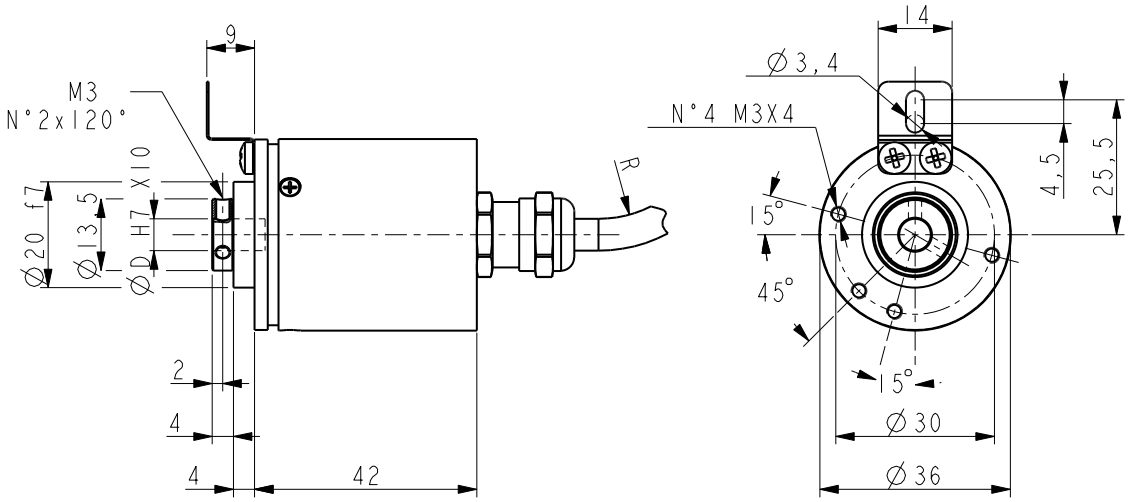
ELECTRICAL SPECIFICATIONS	
Resolution:	1024 counts/rev. x 32768 rev. 2048 cpr x 16384 rev. 4096 cpr x 8192 rev.
Accuracy:	± 1°
Output circuit:	SSI (25 bit, LSB aligned, clock 300 kHz max., Tp=64 µsec.)
Output codes:	Gray, Binary
Counting frequency:	10 kHz max.
Start-up time:	~ 200 msec.
Power supply:	+10Vdc +30Vdc
Power consumption:	25 mA max.
Protection:	protected against inversion of polarity
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Battery life:	10 years min.
Functions:	• Counting direction (input) • Electronic zero setting (input)

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/PGF:	Flexible couplings



MM36



MMC36

Order code

MM36 MMC36	XX/XXXXX ⓐ	XX ⓑ	-	X ⓒ	-	X ⓓ	X ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTIONS**
10/32768 = 1024 CPR x 32768 rev.
11/16384 = 2048 CPR x 16384 rev.
12/8192 = 4096 CPR x 8192 rev.

ⓑ **OUTPUT**
BB = Binary, SSI (LSB aligned)
GB = Gray, SSI (LSB aligned)

ⓒ **SHAFT DIAMETER**
6 = 6 mm

ⓓ **PROTECTION**
- = IP65 (standard)
J = IP67 (with sealed circuit)

ⓒ **CONNECTIONS**
L1 = cable output 1 m cable (standard)
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute single turn encoders

Series AS36 • ASC36

- Miniature optical single turn encoder for industrial applications
- Resolution up to 524288 cpr (19 bit)
- High degree of protection, IP67
- Cable output or M12 inline plug

ASC36 • AS36

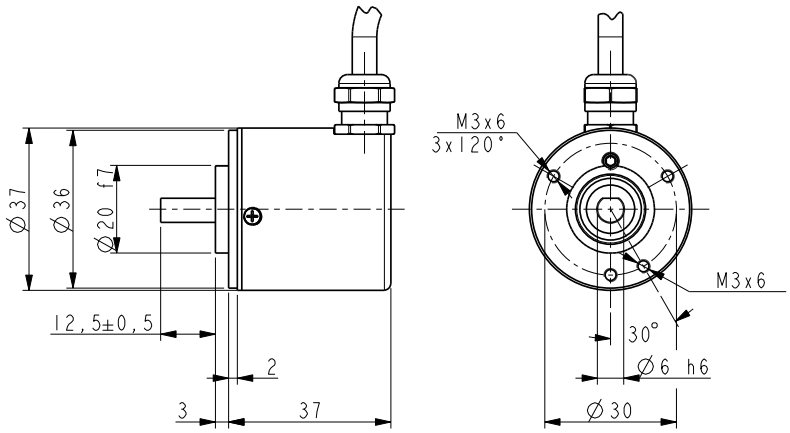
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)
Option:	• Operating temperature range: -40°C + 100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft:	Ø 6 mm
Hollow shaft:	Ø 6 mm
Shaft loading (axial and radial):	20 N max.
Shaft rotational speed:	6000 rpm
Starting torque (at 20°C):	0,1 Ncm
Bearing life:	10^9 rev. min.
Electrical connections:	M12 8 pin inline plug or cable 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cable

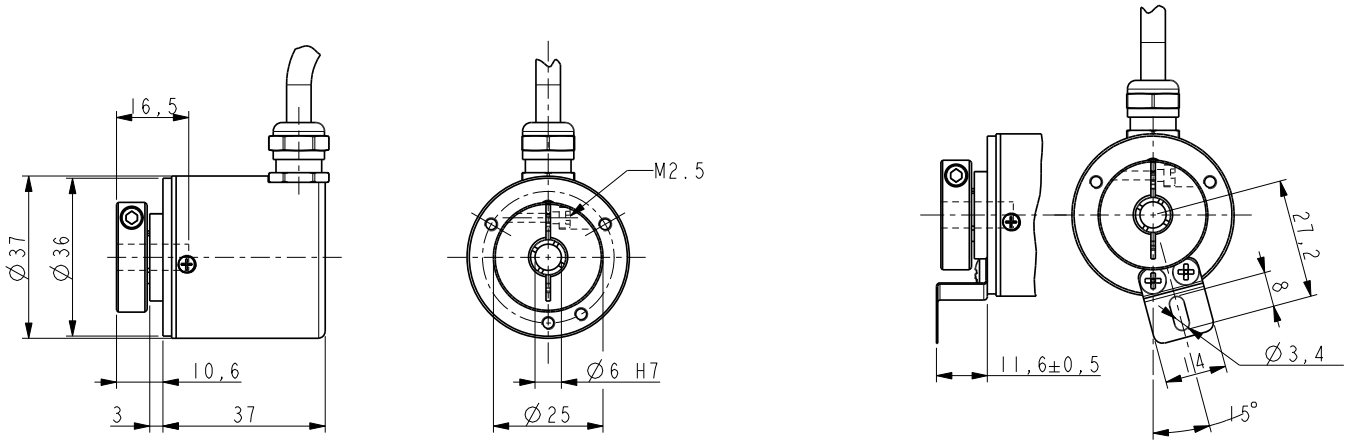
ELECTRICAL SPECIFICATIONS	
Resolution:	65536, 131072, 524288 cpr
Accuracy:	± 0,01° @ 16 bit resolution
Output circuits:	SSI (RS422), clock rate < 4 MHz BiSS-C, clock rate < 10 MHz
Output code:	Gray, Binary
Counting frequency:	> 100 kHz
Power supply:	+10V +30V
Power consumption:	0,5 W
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	> 100.000 h min.
Functions:	• Counting direction (input) • Zero setting/Preset (input)

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:	flexible couplings
EM12F8:	M12 8 pin mating connector



AS36



ASC36

Order code

AS36 ASC36	XX ⓐ	/	XX ⓑ	-	X ⓒ	-	X ⓓ	XXX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTIONS**
16 = 65536 cpr
17 = 131072 cpr
19 = 524288 cpr

ⓑ **OUTPUT**
BG = Binary, SSI MSB aligned
GG = Gray, SSI MSB aligned
I7 = BiSS C-mode

ⓒ **SHAFT DIAMETER**
6 = 6 mm

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

ⓔ **CONNECTIONS**
L1 = cable output 1 m
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute multi turn encoders

Series AM36 • AMC36

- Miniature optical multi turn encoder
- Resolution up to 524288 cpr (19 bit) x 4096 turns (12 bit)
- High degree of protection, IP67
- Cable output or M12 inline plug

AMC36 • AM36

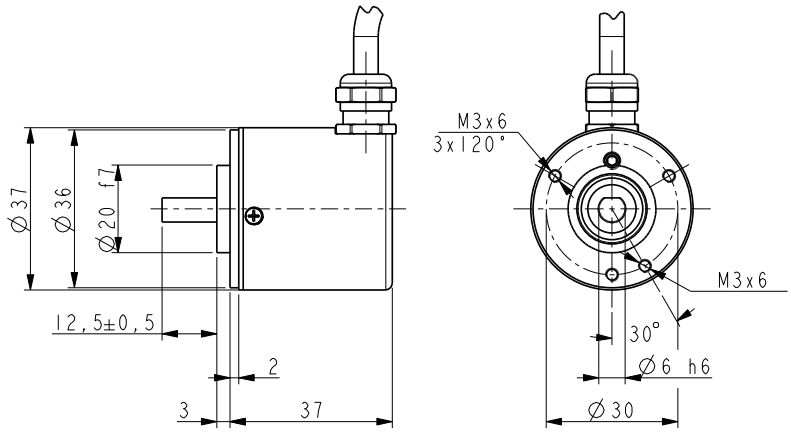
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)
Option:	• Operating temperature range: -40°C + 100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6 mm
Hollow shaft diameter:	Ø 6 mm
Shaft loading (axial, radial):	20 N max.
Shaft rotational speed:	6000 rpm
Starting torque (at 20°C):	0,1 Ncm
Bearings life:	10^9 rev. min.
Electrical connections:	M12 inline plug or cable output 1 m (3.3 ft)
Weight:	~ 100 g (3,5 oz)
Option:	• additional cable

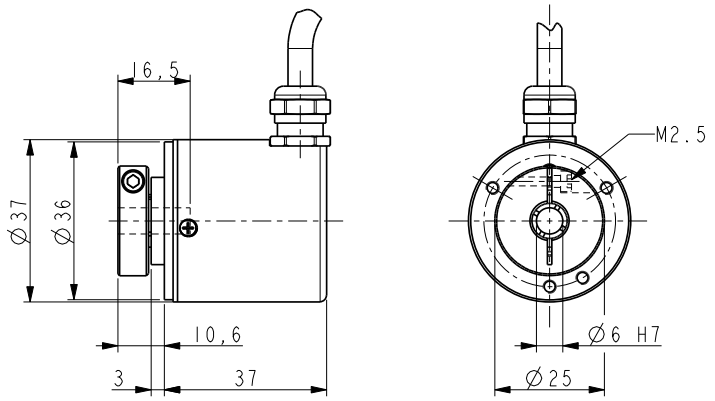
ELECTRICAL SPECIFICATIONS	
Resolution:	65536 cpr x 4096 turns, 524288 cpr x 4096 turns
Accuracy:	± 0,01° @ 16 bit resolution
Output circuits:	SSI (RS422), clock rate < 4 MHz BiSS-C, clock rate < 10 MHz
Output code:	Gray, Binary
Counting frequency:	> 100 kHz
Power supply:	+10V +30V
Power consumption:	0,5 W
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 h min.
Functions:	• Counting direction (input) • Zero setting/Preset (input)

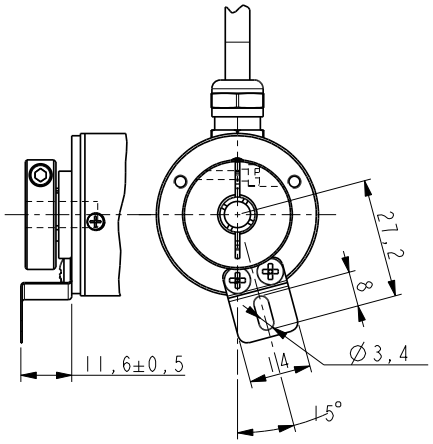
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305

ACCESSORIES	
PAN:	flexible couplings
EM12F8:	M12 8 pin mating connector



AM36





AMC36

Order code

AM36 AMC36	XX/XXXX ⓐ	XX ⓑ	-	X ⓒ	-	X ⓓ	XXX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTIONS**
16/4096 = 65536 cpr x 4096 turns
19/4096 = 524288 cpr x 4096 turns

ⓑ **OUTPUT**
BG = Binary, SSI MSB aligned
GG = Gray, SSI MSB aligned
I7 = BiSS C-mode

ⓒ **SHAFT DIAMETER**
6 = 6 mm

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

ⓔ **CONNECTIONS**
L1 = cable output 1 m
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute single turn encoders

Series **ES58 • ES58S • ESC58**

- Compact single turn encoder
- Precise and fast optical sensing
- Resolution up to 8192 cpr
- Additional incremental track with 1024 PPR
- High degree of protection, IP67

ES58 • ES58S • ESC58

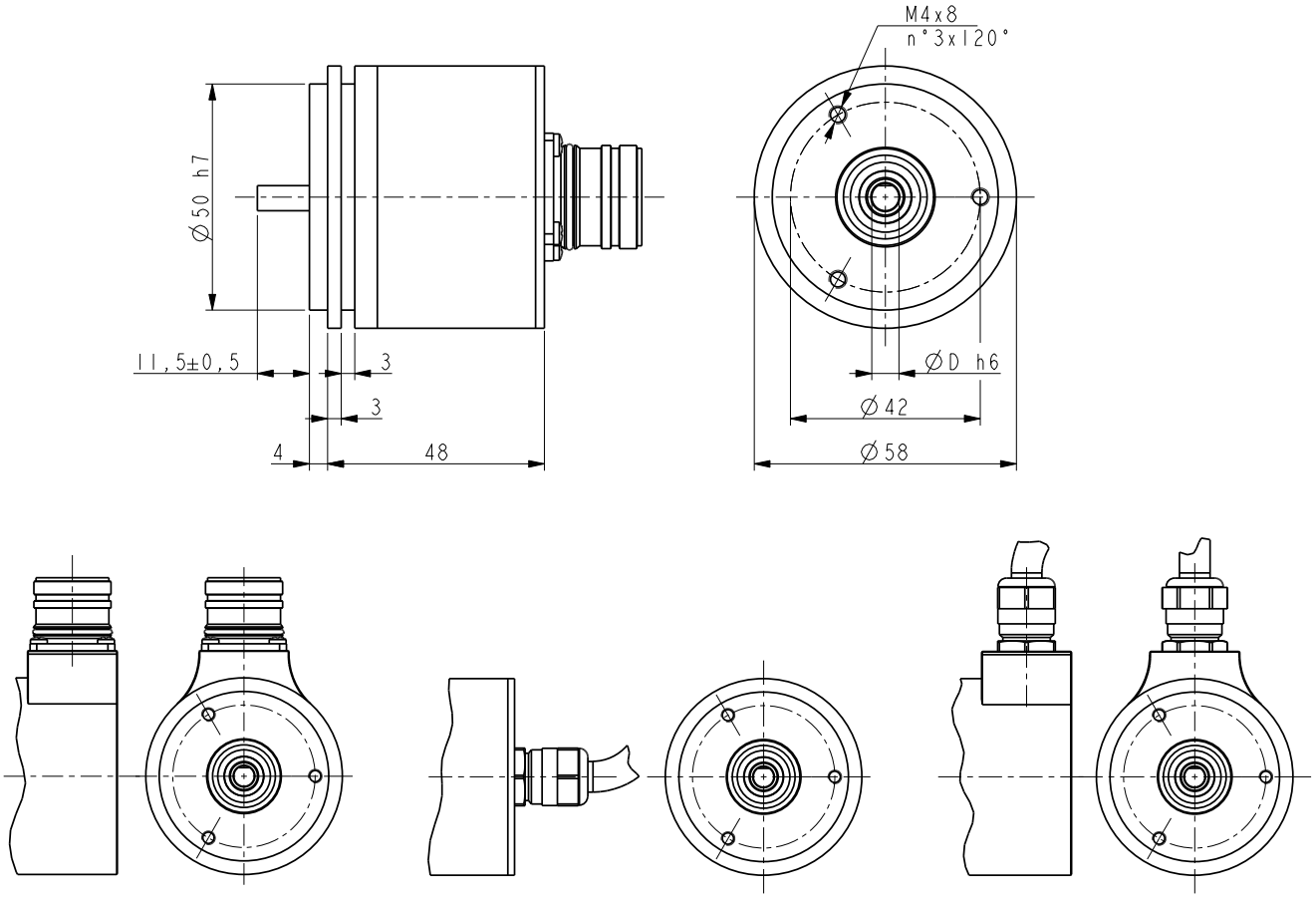
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft 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:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	ES58: 0,15 Ncm (typ.) ES58S, ESCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 2 m (6.56 ft)
Weight:	~ 200 g (7 oz)
Option:	• additional cable

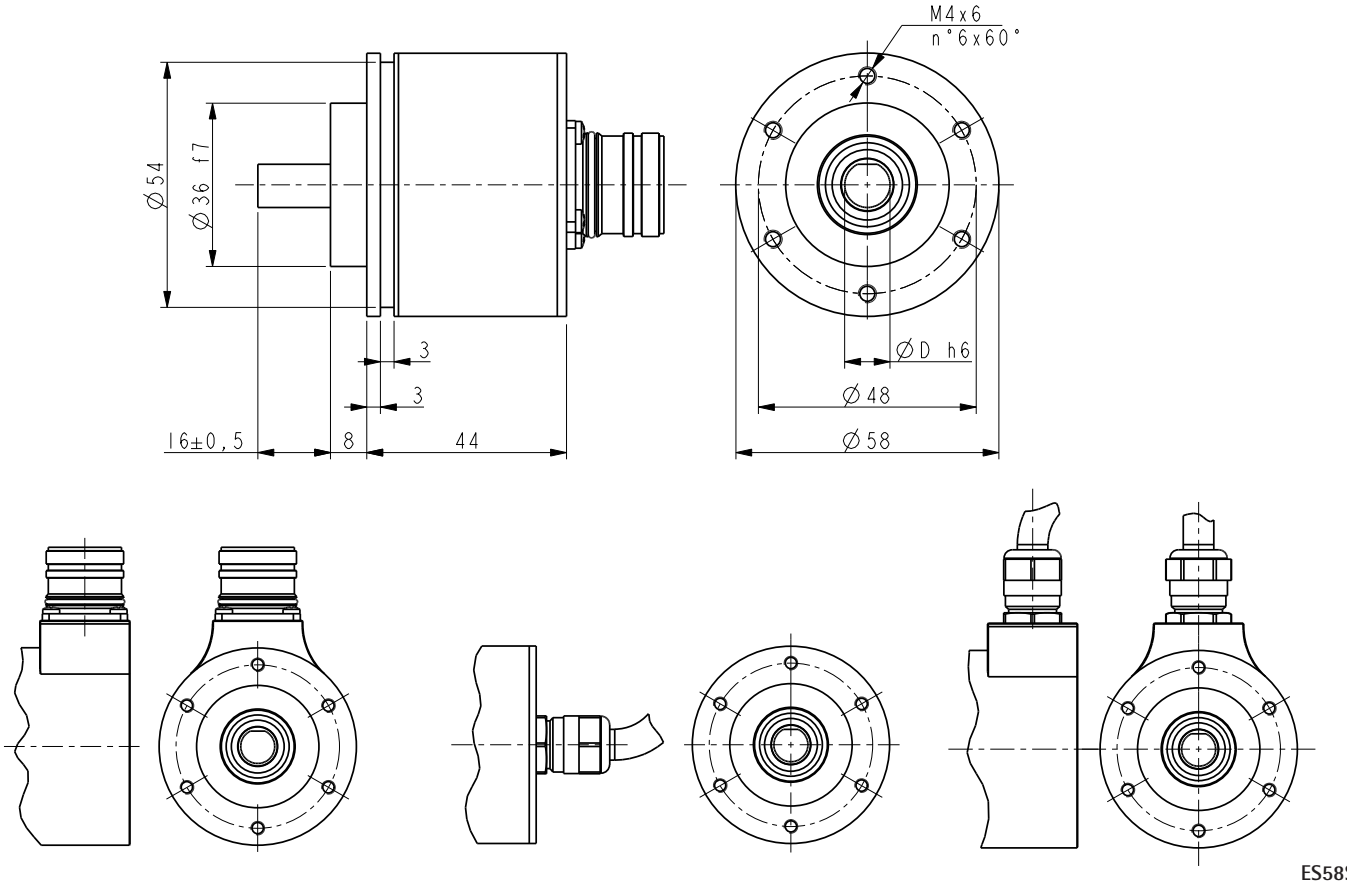
ELECTRICAL SPECIFICATIONS	
Resolution:	360, 720, 1024, 4096, 8192 cpr
Accuracy:	± 0,02°
Output circuits:	SSI (RS422), Bit parallel Push-Pull, NPN
Output code:	Gray, Binary
Counting frequency:	SSI: 150 kHz, Bit parallel: 50 kHz
Power supply:	+7,5Vdc ÷ 34Vdc
Power consumption:	SSI: 0,9 W Bit parallel: 1,6 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• counting direction (input) • Zero setting/Preset (input)

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

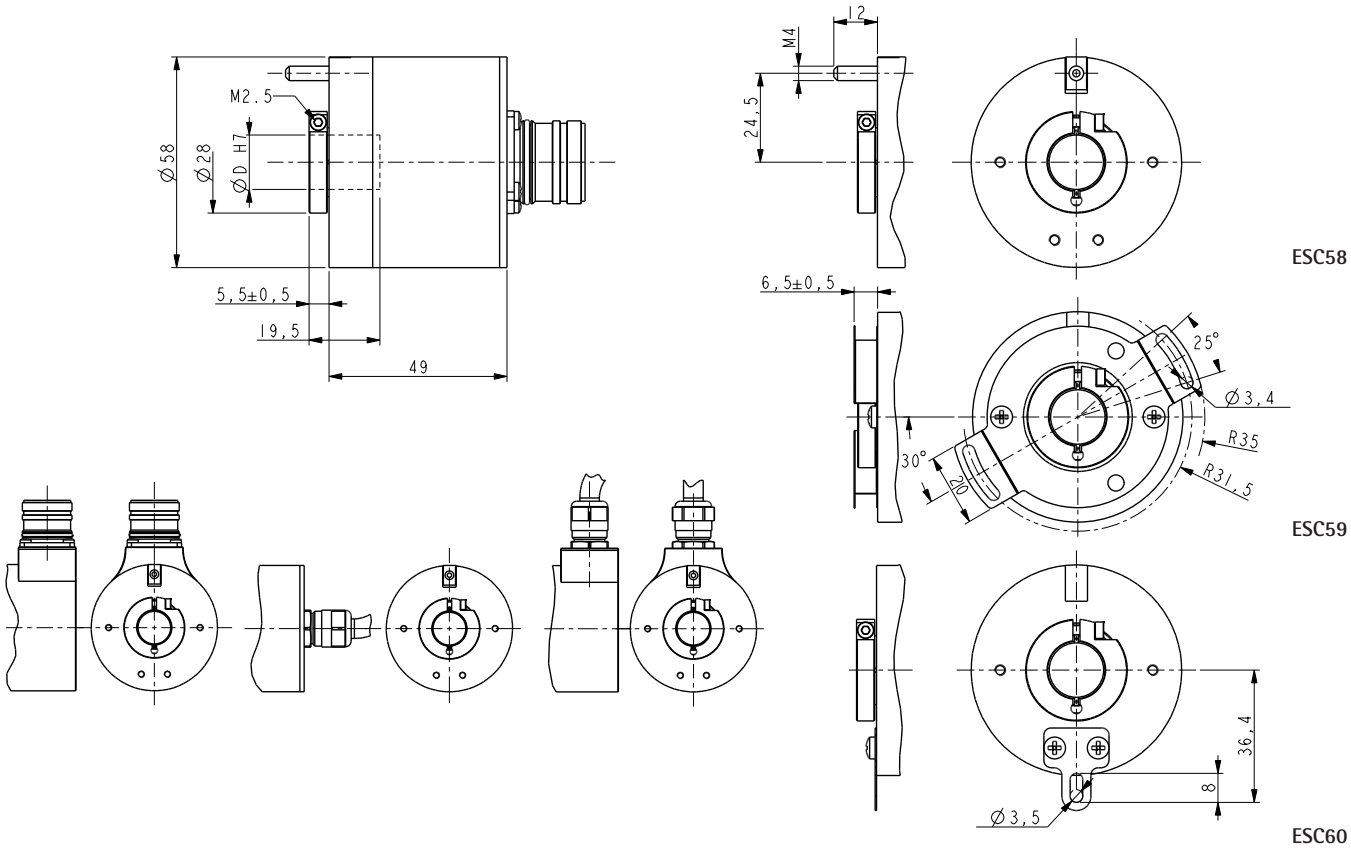
ACCESSORIES	
EPFL121H:	M23 12 pin mating connector
EM12F8:	M12 8 pin mating connector
EM12F12:	M12 12 pin mating connector
EPFL171H:	M23 17 pin mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-CR12F-S28-T12-xx:	cordset xx m, M23 connector
EC-M12F8-LK-M8-xx:	cordset xx m, M12 8 pin connector
EC-M12F12-LK-T12-xx:	cordset xx m, M12 12 pin conn.
LKM-386:	fixing clamps


M4x8
n°3x120°
Ø50 h7
11,5±0,5
3
3
4
48
ØD h6
Ø42
Ø58

ES58


M4x6
n°6x60°
Ø54
Ø36 f7
3
3
16±0,5
8
44
ØD h6
Ø48
Ø58

ES58S



Order code - Bit parallel output

ES58 ES58S ESC58 ESC59 ESC60	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	XXX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTION**
36 = 360 cpr
72 = 720 cpr
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT**
BY = Binary, Push-Pull
GY = Gray, Push-Pull
BN = Binary, NPN
GN = Gray, NPN

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (ESCxx)
15 = 15 mm (ESCxx)

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

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

ⓕ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
M2 = M23 17 pin plug

ⓖ **CUSTOM VERSION**

Order code - SSI output

ES58 ES58S ESC58 ESC59 ESC60	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	XXX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTION**
36 = 360 cpr
72 = 720 cpr
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT**
BS = Binary, SSI tree format
BA = Binary, SSI LSB aligned
GS = Gray, SSI tree format
GA = Gray, SSI LSB aligned
G5 = Gray, SSI tree format + 1024 PPR AB /AB Push-Pull

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (ESCxx)
15 = 15 mm (ESCxx)

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

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

ⓕ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
M2 = M23 12 pin plug
M = M12 8 pin plug
M1 = M12 12 pin plug (only with output G5)

ⓖ **CUSTOM VERSION**

ROTACOD

Absolute multi turn encoders

Series EM58 • EM58S • EMC58

- Compact multi turn encoder
- Precise and fast optical sensing
- Resolution up to 8192 cpr and 16384 turns
- Additional incremental track with 1024 PPR
- High degree of protection, IP67

EM58 • EM58S • EMC59

ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
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)

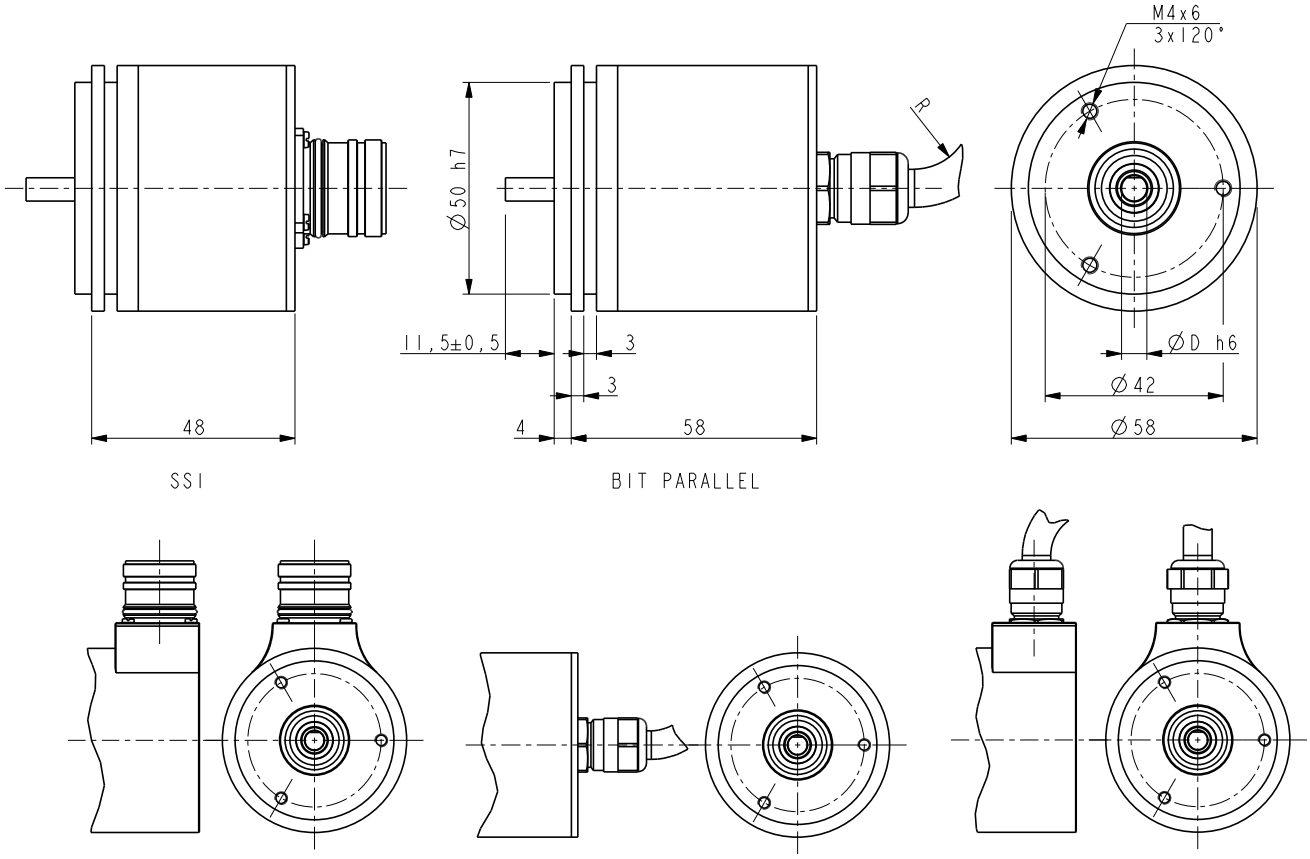
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	EM58: 0,15 Ncm (typ.) EM58S, EMCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable 2 m (6.56 ft), MIL 32 pin inline plug
Weight:	~ 250 g (8,8 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	single turn = 1024, 4096, 8192 cpr multi turn = 4096, 16384 turns
Accuracy:	± 0,02°
Output circuits:	SSI (RS422), Bit parallel Push-Pull, NPN
Output code:	Gray, Binary
Counting frequency:	SSI: 150 kHz, Bit Parallel: 30 kHz
Power supply:	+7,5Vdc ÷ 34Vdc
Power consumption:	SSI: 1 W Bit parallel: 1,7 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• counting direction (input) • Zero setting/Preset (input)

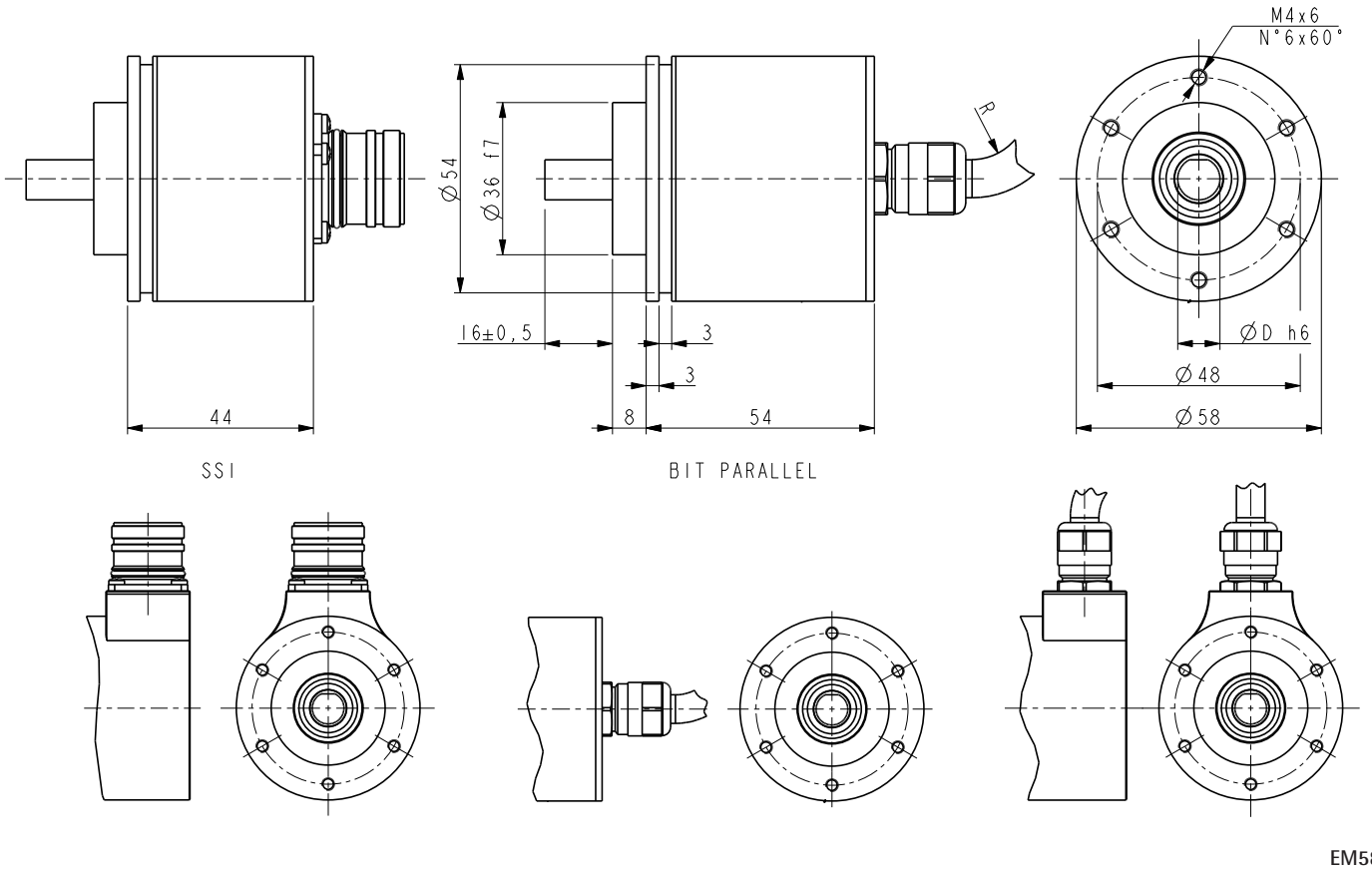
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305

PREFERENTIAL MODELS	
EM5812/4096GS-6-RM2	SSI, 24 Bit
EM58S12/4096GS-10-RM2	SSI, 24 Bit

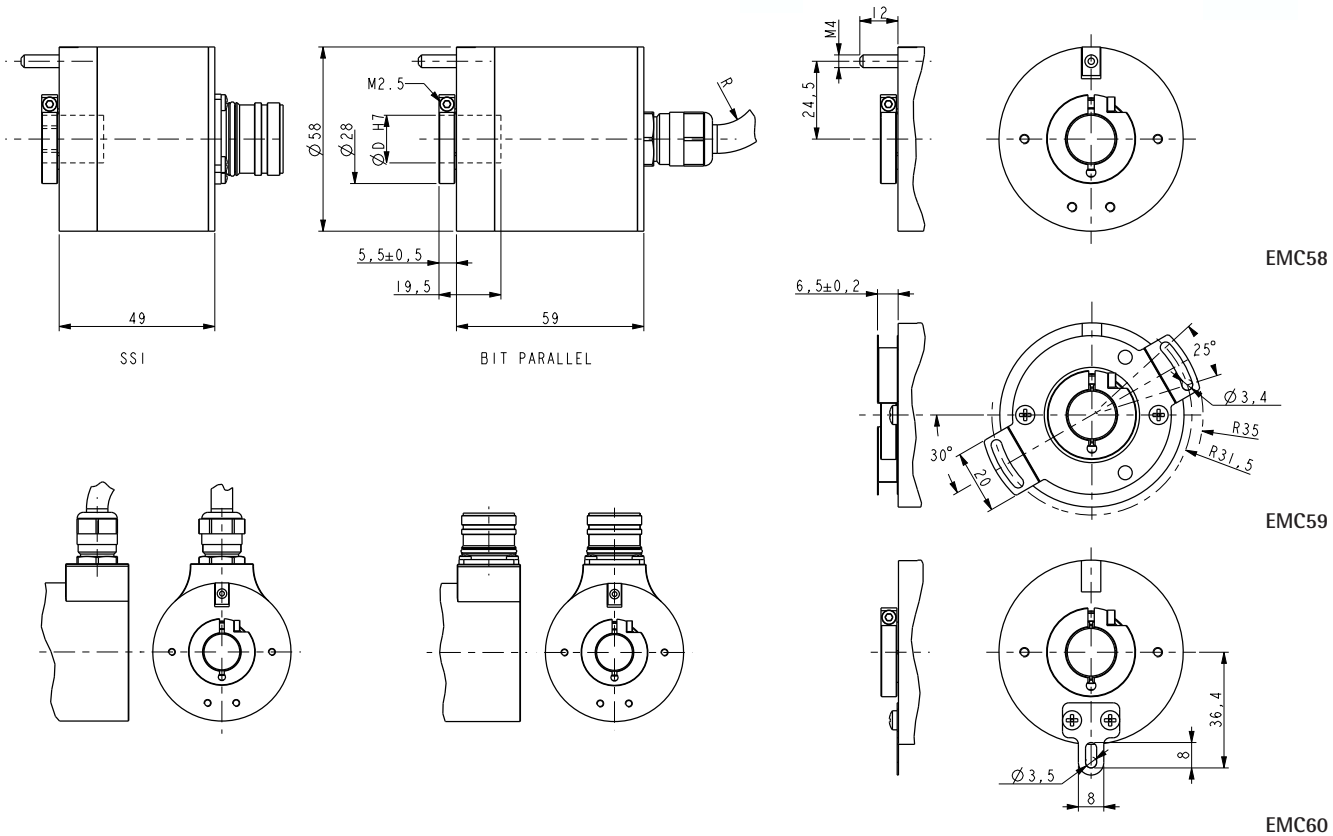
ACCESSORIES	
EPFL121H:	M23 12 pin connector
EM12F8:	M12 8 pin mating connector
EM12F12:	M12 12 pin mating connector
E32MLS:	32 pin MIL mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-CR12F-S28-T12-xx:	cordset xx m, M23 connector
EC-M12F8-LK-M8-xx:	cordset xx m, M12 8 pin connector
EC-M12F12-LK-T12-xx:	cordset xx m, M12 12 pin conn.
LKM-386:	fixing clamps


M4x6
3x120°
R
Ø50 h7
11,5±0,5
3
3
4
58
48
ØD h6
Ø42
Ø58
SSI
BIT PARALLEL

EM58


M4x6
N°6x60°
R
Ø54
Ø36 f7
16±0,5
3
3
8
54
44
ØD h6
Ø48
Ø58
SSI
BIT PARALLEL

EM58S



Order code - Bit parallel output

EM58 EM58S EMC58 EMC59 EMC60	XX ⓐ	/	XXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	XXX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
4096 = 4096 turns
16384 = 16384 turns

ⓒ **OUTPUT**
BY = Binary, Push-Pull
GY = Gray, Push-Pull
BN = Binary, NPN
GN = Gray, NPN

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx)
15 = 15 mm (EMCxx)

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

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

ⓖ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
V1 = 1 m cable + MIL inline plug

ⓗ **CUSTOM VERSION**

Order code - SSI output

EM58 EM58S EMC58 EMC59 EMC60	XX ⓐ	/	XXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	XXX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
4096 = 4096 turns
16384 = 16384 turns
(16384 only with SSI LSB aligned)

ⓒ **OUTPUT**
BS = Binary, SSI tree format
BA = Binary, SSI LSB aligned
GS = Gray, SSI tree format
GA = Gray, SSI LSB aligned
G5 = Gray, SSI tree format + 1024 PPR AB /AB Push-Pull

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx)
15 = 15 mm (EMCxx)

ⓔ **OPERATING TEMP. RANGE**
- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

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

ⓖ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
M2 = M23 plug
M = M12 8 pin plug
M1 = M12 12 pin plug
(only with output G5)

ⓗ **CUSTOM VERSION**

ROTACOD

Absolute multi turn encoders with RS485 Modbus interface

Series EM58 • EM58S • EMC58

- Compact optical multi turn encoder
- Modbus RTU RS485 protocol
- Resolution 4096 cpr x 16384 turns
- Freely programmable via RS485
- Diagnostic LEDs
- High degree of protection, IP67

EM58 • EM58S • EMC59

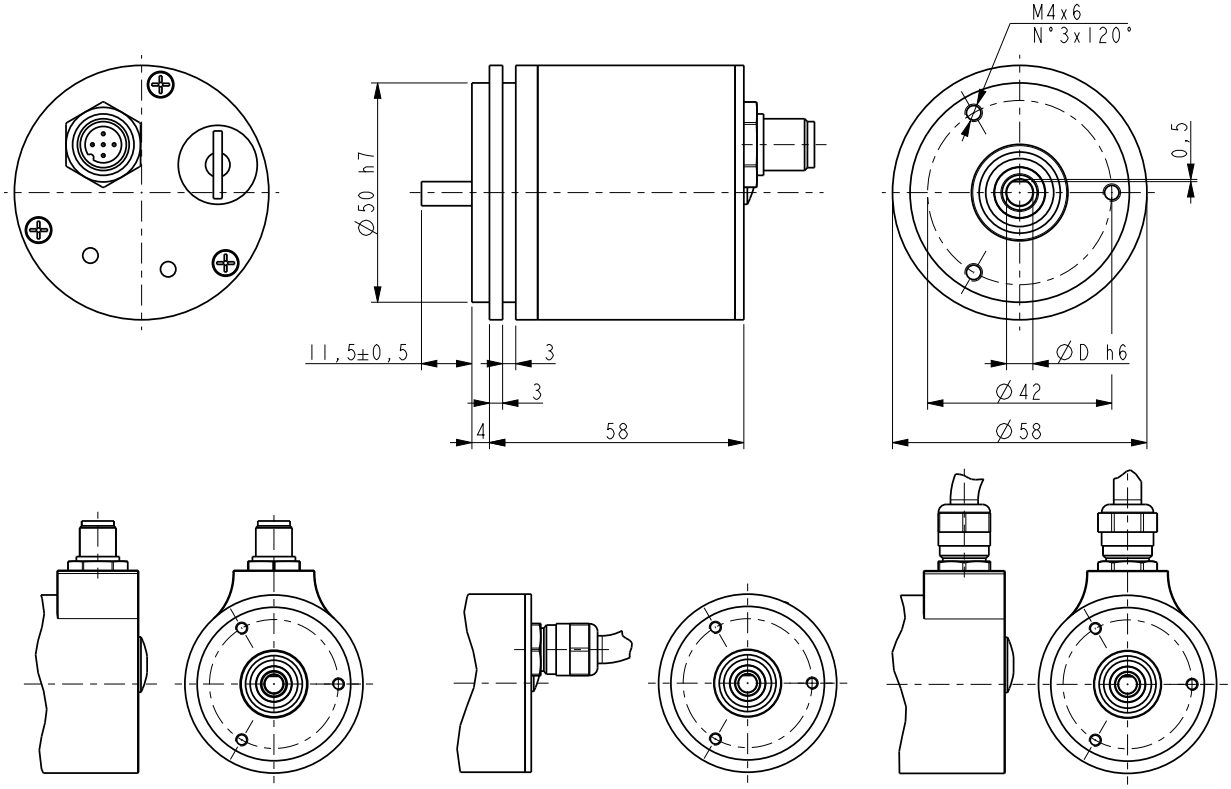
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	EM58: 0,15 Ncm (typ.) EM58S, EMCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12 plug or cable output 2 m (6.56 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

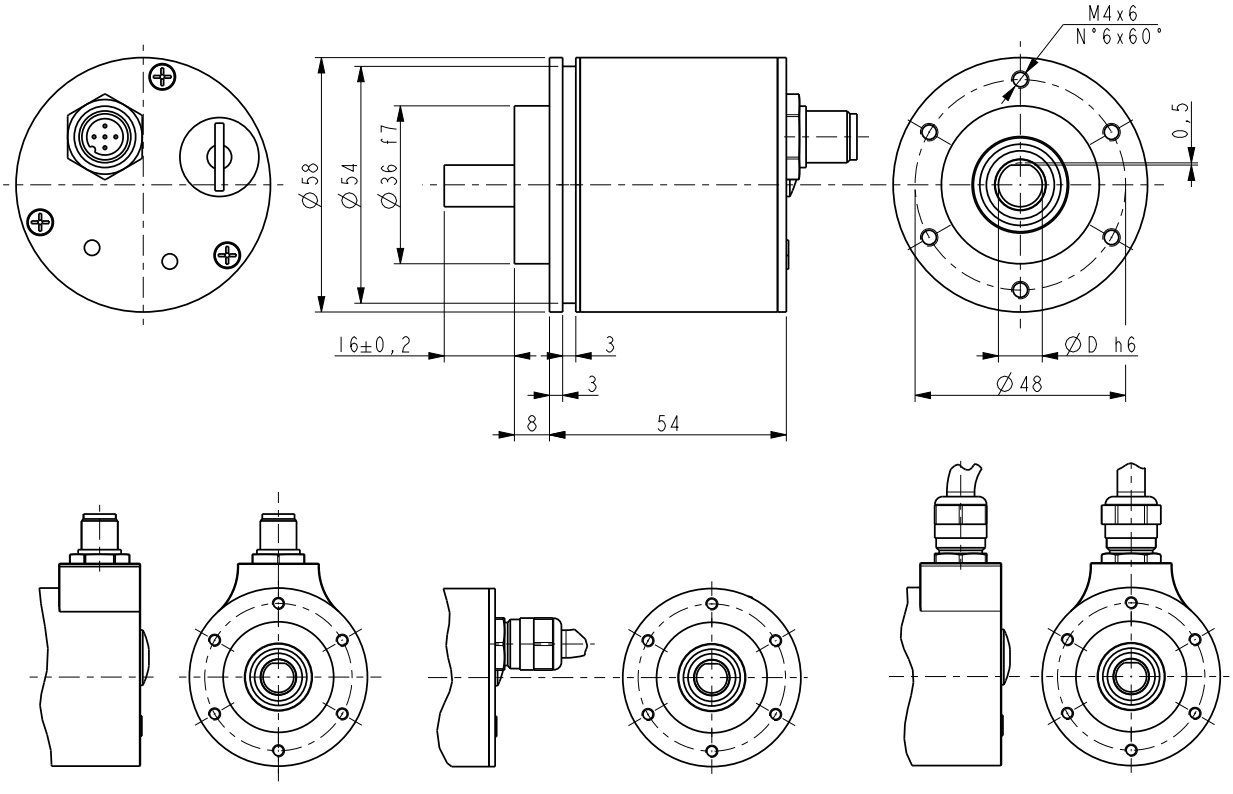
ELECTRICAL SPECIFICATIONS	
Resolution:	4096 cpr x 16384 turns
Accuracy:	± 0,02°
Output circuits:	Modbus RTU RS485
Output code:	according to: Modbus RTU specifications
Counting frequency:	> 150 kHz
Power supply:	+7,5Vdc ÷ 34Vdc
Power consumption:	1,7 W
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• Counting direction • Zero setting/Preset • Resolution • Reset to default parameters • Firmware update • Saving parameters

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

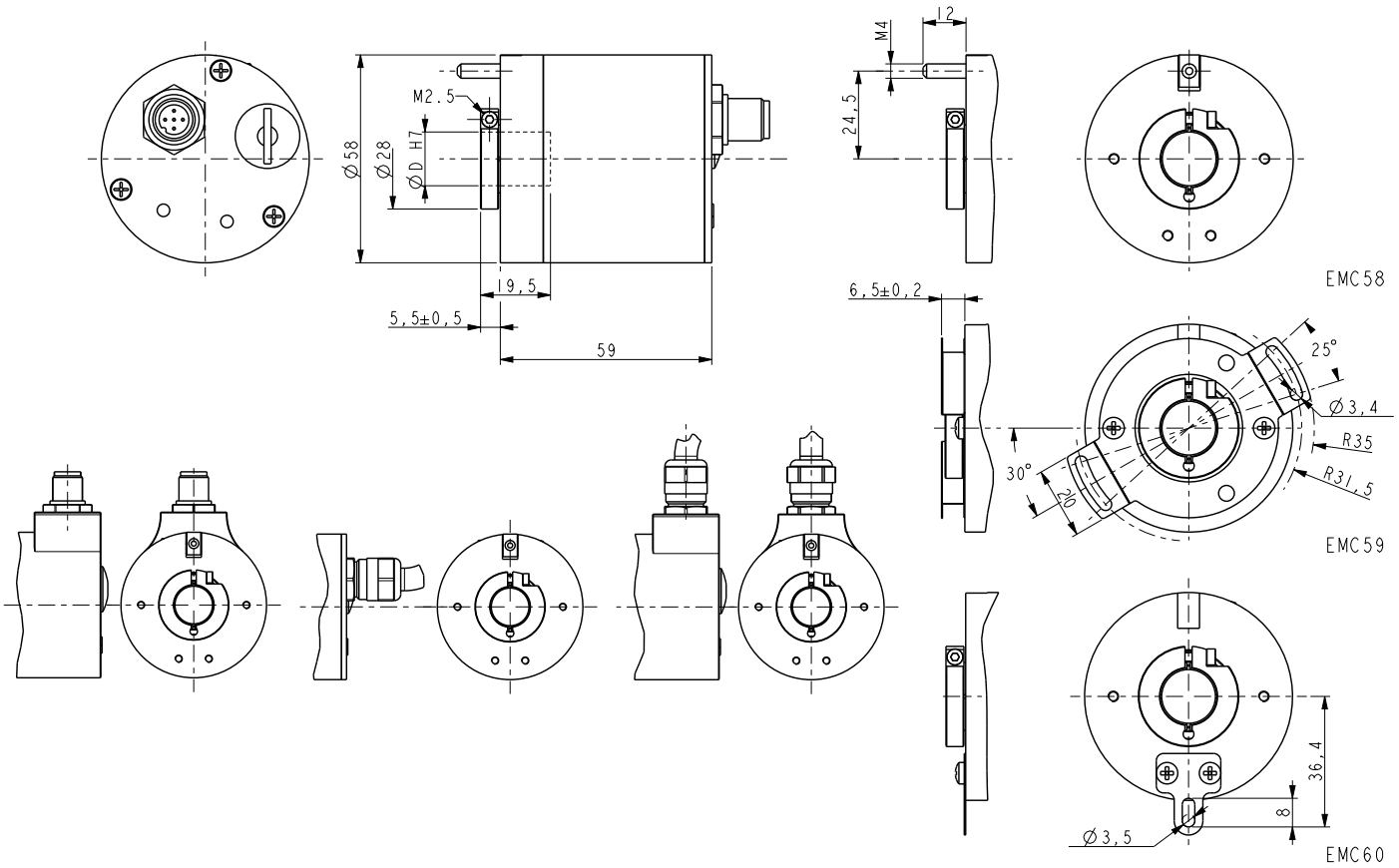
ACCESSORIES	
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
E-M12FC:	5 pin M12 mating connector
EC-M12FC-LK-CB-xx:	pre-assembled cable xx m
LKM-386:	fixing clamps
KIT EM58 MB:	M12 to USB programming cable


M4x6
N°3x120°
0,5
Ø50 h7
11,5±0,5
3
3
4
58
ØD h6
Ø42
Ø58

EM58


M4x6
N°6x60°
0,5
Ø58
Ø54
Ø36 f7
16±0,2
3
3
8
54
ØD h6
Ø48

EM58S



Order code

EM58 EM58S EMC58 EMC59 EMC60	XX ⓐ	/	XXXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	XX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTION**
12 = 4096 cpr

ⓑ **REVOLUTIONS**
16384 = 16384 turns

ⓒ **OUTPUT**
MB = Modbus RTU

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx)
15 = 15 mm (EMCxx)

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

ⓕ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
Lx = cable output x m
M = M12, 5 pin plug

ⓖ **CUSTOM VERSION**

ROTACOD

Absolute single turn encoders

Series HS58 • HS58S • HSC58

- Compact single turn encoders for feedback applications
- High resolution up to 262144 cpr
- Additional incremental track, 2048 PPR sin/cos
- Precise and fast optical sensing

HS58 • HS58S • HSC58

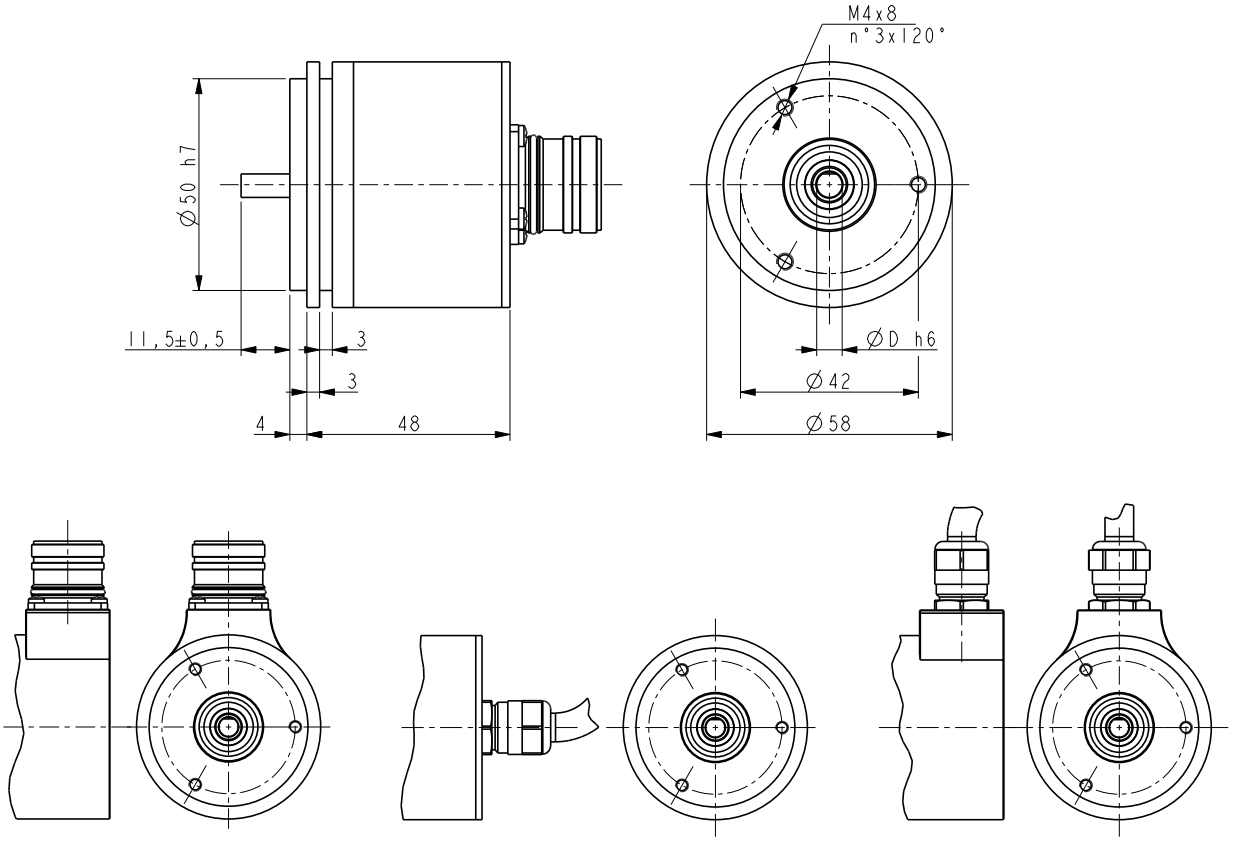
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	HS58: 0,15 Ncm (typ.) HS58S, HSCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 2 m (6.56 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

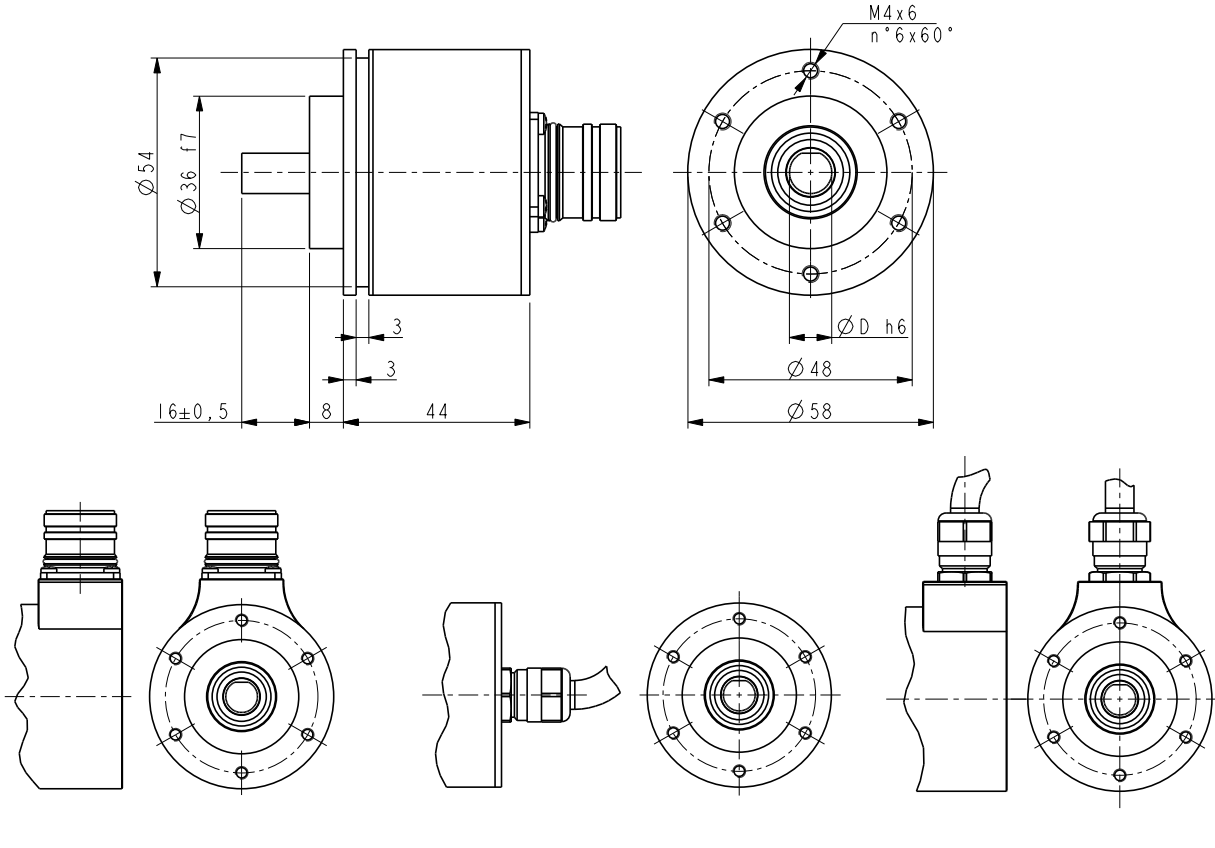
ELECTRICAL SPECIFICATIONS	
Resolution:	SSI, BiSS: 18 bit max. sin/cos: 2048 PPR AB, /AB: 2048, 4096, 8192
Accuracy:	± 0,007°
Output circuits:	SSI, SSI + 1Vpp, SSI + Line Driver 5V, BiSS (B-mode, C-mode) + 1Vpp
Output code:	Gray, Binary
Counting frequency:	220 kHz max.
Power supply:	+10V +30V
Power consumption:	0,9 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• Counting direction (input) • Zero setting/Preset (input)

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

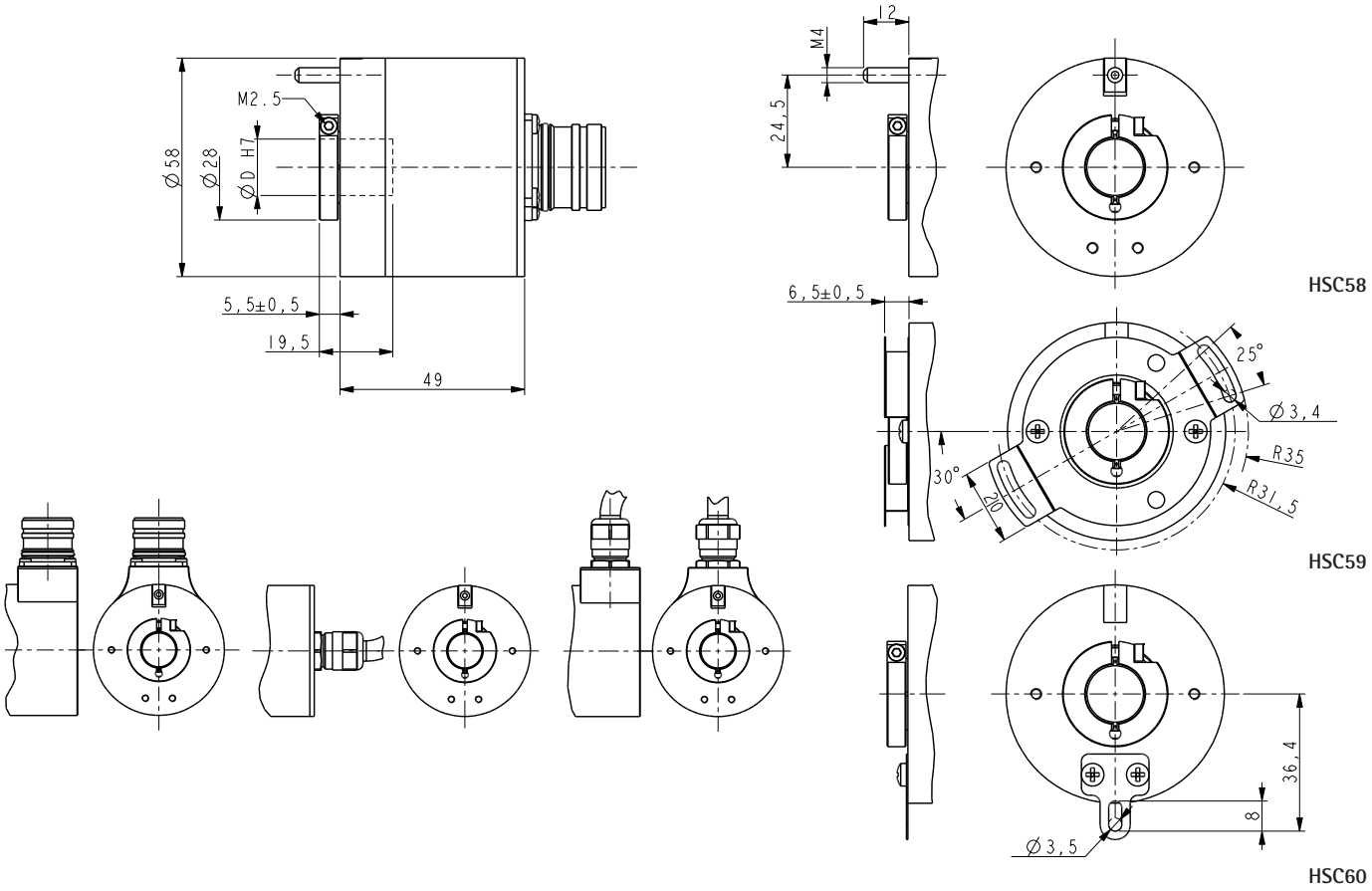
ACCESSORIES	
EPFL121H:	M23 12 pin connector
EM12F8:	M12 8 pin mating connector
EM12F12:	M12 12 pin mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-CR12F-S28-T12-xx:	cordset xx m, M23 connector
EC-M12F8-LK-M8-xx:	cordset xx m, M12 8 pin connector
EC-M12F12-LK-T12-xx:	cordset xx m, M12 12 pin conn.
LKM-386:	fixing clamps


M4x8
n°3x120°
Ø50 h7
11,5±0,5
3
3
4
48
ØD h6
Ø42
Ø58

HS58


M4x6
n°6x60°
Ø54
Ø36 f7
3
3
16±0,5
8
44
ØD h6
Ø48
Ø58

HS58S



Order code

HS58 HS58S HSC58 HSC59 HSC60	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ RESOLUTION
13 = 8192 cpr
16 = 65536 cpr
18 = 262144 cpr

ⓑ OUTPUT CIRCUITS
GV = SSI, LSB aligned, Gray code + 2048 PPR sin/cos
BV = SSI, LSB aligned, Binary code + 2048 PPR sin/cos
GA = SSI, LSB aligned, Gray code
BA = SSI, LSB aligned, Binary code
I7 = BiSS C-mode + 2048 PPR sin/cos
I8 = BiSS B-mode + 2048 PPR sin/cos
G1 = SSI, Gray code + 2048 PPR AB, /AB
G2 = SSI, Gray code + 4096 PPR AB, /AB
G3 = SSI, Gray code + 8192 PPR AB, /AB
B1 = SSI, Binary code + 2048 PPR AB, /AB
B2 = SSI, Binary code + 4096 PPR AB, /AB
B3 = SSI, Binary code + 8192 PPR AB, /AB

ⓒ SHAFT DIAMETER
6 = 10 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HSCxx)
15 = 15 mm (HSCxx)

ⓓ CONNECTION POSITION
- = axial
R = radial

ⓔ CONNECTIONS
L2 = cable output 2 m
L5 = cable output 5 m
L10 = cable output 10 m
M2 = M23 12 pin plug
M = M12 8 pin plug
(only for GV, BV, GA, BA)
M1 = M12 12 pin plug
(except with GV, BV, GA, BA)

ⓕ CUSTOM VERSION

ROTACOD

Absolute multi-turn encoders

Series HM58 • HM58S • HMC58

- Compact single turn encoders for feedback applications
- High resolution up to 65536 cpr and 16384 turns
- Additional incremental track, 2048 PPR sin/cos
- Precise and fast optical sensing

HM58 • HM58S • HMC58

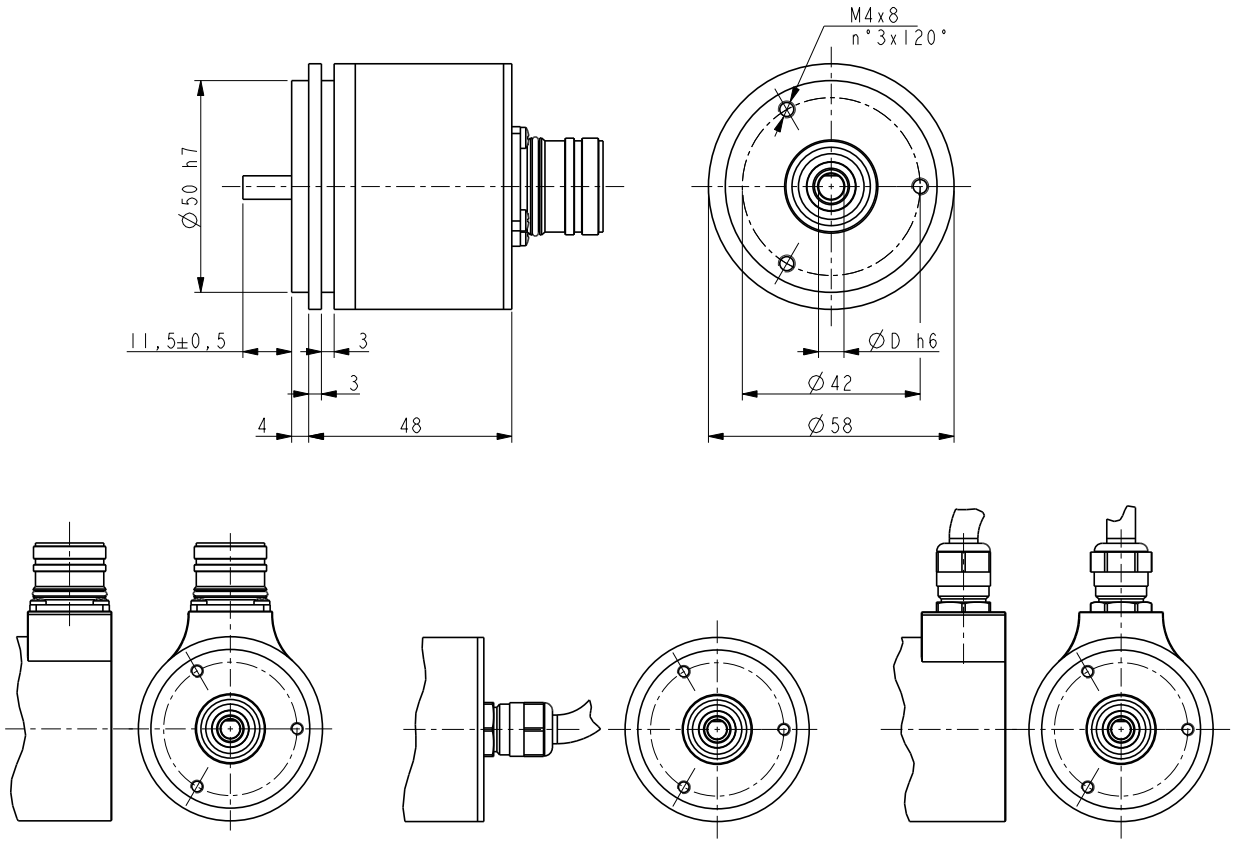
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	HM58: 0,15 Ncm (typ.) HM58S, HMCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 2 m (6.56 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

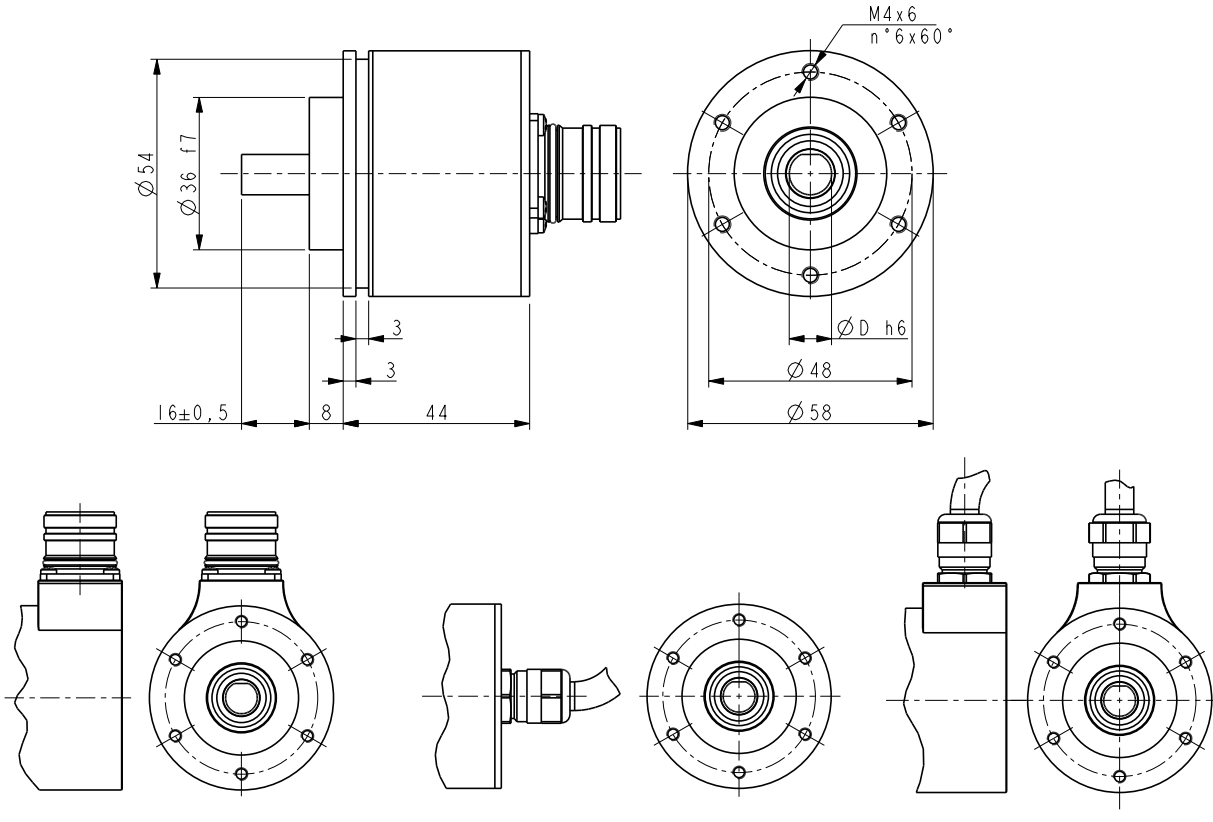
ELECTRICAL SPECIFICATIONS	
Resolution:	SSI, BiSS, 16x14 bit max. sin/cos: 2048 PPR AB, /AB: 2048, 4096, 8192
Accuracy:	± 0,007°
Output circuits:	SSI, SSI + 1Vpp, SSI + Push-Pull, SSI + Line Driver 5V, BiSS + 1Vpp
Output code:	Gray, Binary
Counting frequency:	220 kHz max.
Power supply:	+10V +30V
Power consumption:	1 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• Counting direction (input) • Zero setting/Preset (input)

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

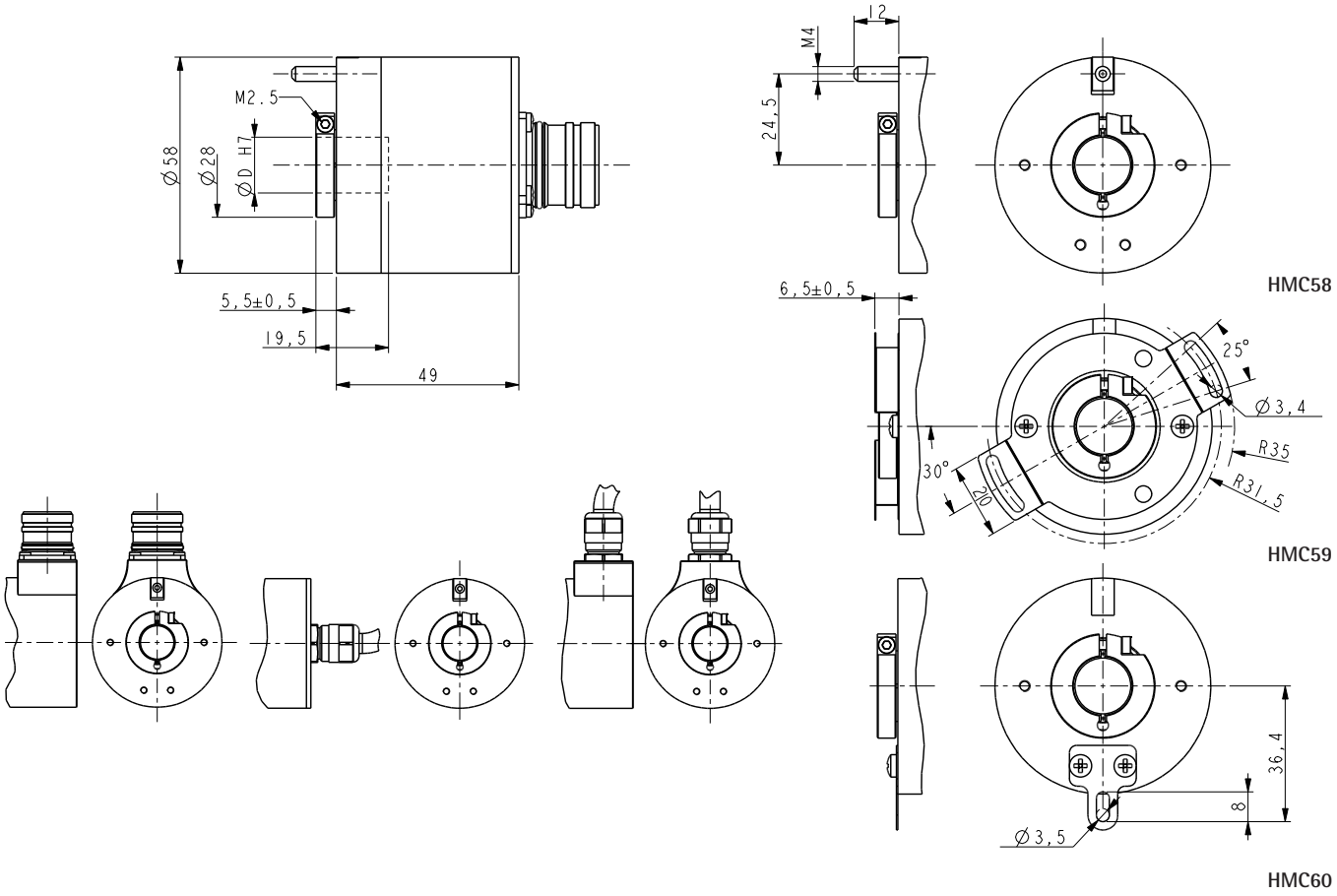
ACCESSORIES	
EPFL121H:	M23 12 pin connector
EM12F8:	M12 8 pin mating connector
EM12F12:	M12 12 pin mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-CR12F-S28-T12-xx:	cordset xx m, M23 connector
EC-M12F8-LK-M8-xx:	cordset xx m, M12 8 pin connector
EC-M12F12-LK-T12-xx:	cordset xx m, M12 12 pin conn.
LKM-386:	fixing clamps


M4x8
n°3x120°
Ø50 h7
11,5±0,5
3
3
4
48
ØD h6
Ø42
Ø58

HM58


M4x6
n°6x60°
Ø54
Ø36 f7
3
3
16±0,5
8
44
ØD h6
Ø48
Ø58

HM58S



Order code

HM58 HM58S HMC58 HMC59 HMC60	XX / XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
13/4096 = 8192 cpr x 4096 turns
16/16384 = 65536 cpr x 16384 turns

ⓑ **OUTPUT CIRCUITS**
GV = SSI, LSB aligned, Gray code + 2048 PPR sin/cos
BV = SSI, LSB aligned, Binary code + 2048 PPR sin/cos
GA = SSI, LSB aligned, Gray code
BA = SSI, LSB aligned, Binary code
I7 = BiSS C-mode + 2048 PPR sin/cos
I8 = BiSS B-mode + 2048 PPR sin/cos
G1 = SSI, Gray code + 2048 PPR AB, /AB Line Driver
G2 = SSI, Gray code + 4096 PPR AB, /AB Line Driver
G3 = SSI, Gray code + 8192 PPR AB, /AB Line Driver
G6 = SSI, Gray code + 2048 PPR AB, /AB Push-Pull
G7 = SSI, Gray code + 4096 PPR AB, /AB Push-Pull
G8 = SSI, Gray code + 8192 PPR AB, /AB Push-Pull

ⓒ **SHAFT DIAMETER**
6 = 10 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HMCxx)
15 = 15 mm (HMCxx)

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

ⓔ **CONNECTIONS**
L2 = cable output 2 m
L5 = cable output 5 m
L10 = cable output 10 m
M2 = M23 12 pin plug
M = M12 8 pin plug
(only for GV, BV, GA, BA)
M1 = M12 12 pin plug
(except with GV, BV, GA, BA)

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute single turn and multi turn encoder

Series HSCT • HMCT

- Compact design, through hollow shaft
- Industrial & feedback applications
- Single turn version up to 18 bits
- Multi turn version, 16 x 12 bits
- Incremental resolution up to 8192 PPR or 2048 sin/cos

HSCT • HMCT

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)

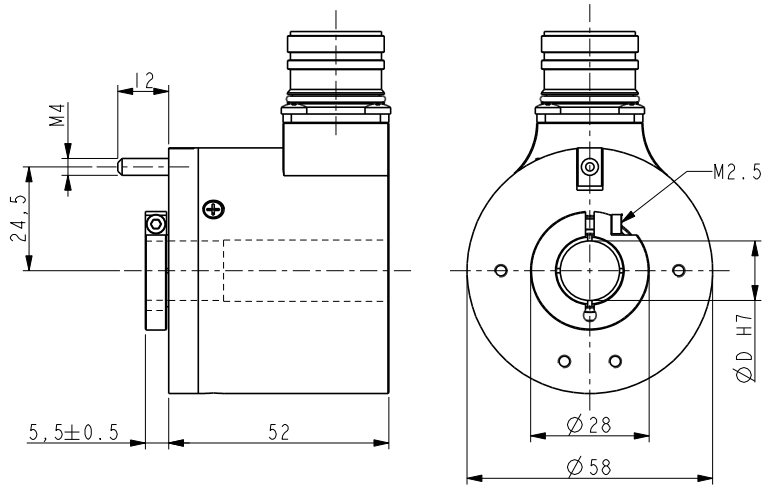
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx: from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	1 Ncm (typ.)
Bearings life:	400 x10^6 rev. 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:	SSI, BiSS: HSCT 18 bit max., HMCT 16 x 12 bit sin/cos: 2048 PPR AB /AB: 2048, 4096, 8192 PPR
Accuracy:	± 0,007°
Output circuits:	SSI, SSI + 1Vpp sin/cos, SSI + Line Driver 5Vdc, SSI + Push-Pull 10-30Vdc, BiSS + 1Vpp sin/cos
Output code:	Gray, Binary
Counting frequency:	220 kHz max.
Power supply:	+10V +30V
Power consumption:	1 W
Protection:	against inversion of polarity
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• Counting direction (input) • Electronic zero setting (input)

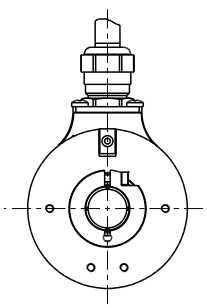
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305
Light source:	GaAl diodes

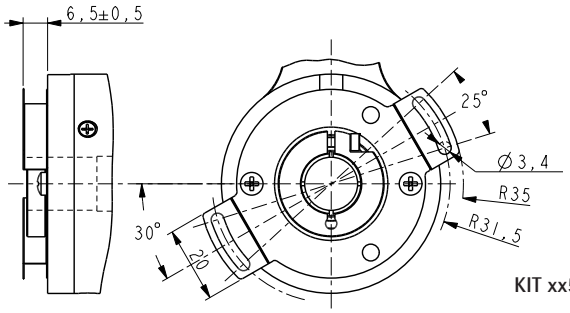
ACCESSORIES	
EPFL121H:	M23 12 pin connector
EM12F8:	M12 8 pin mating connector
EM12F12:	M12 12 pin mating connector
BR1:	reducing sleeves
EC-CR12F-S28-T12-xx:	cordset xx m, M23 connector
EC-M12F8-LK-M8-xx:	cordset xx m, M12 8 pin connector
EC-M12F12-LK-T12-xx:	cordset xx m, M12 12 pin conn.
KIT xx59:	fixing plate

Specifications subject to changes without prior notice

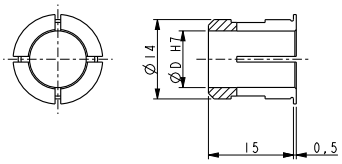


HSCT • HMCT





KIT xx59



BR1-xx

Order code - Single turn

HSCT	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
Counts x rev.
16 = 65536 cpr
18 = 262144 cpr

ⓑ **OUTPUT CIRCUITS**
GV = SSI, Gray code + 2048 PPR sin/cos
BV = SSI, Binary code + 2048 PPR sin/cos
GA = SSI, Gray code
BA = SSI, Binary code
I7 = BiSS C-mode + 2048 PPR sin/cos
I8 = BiSS B-mode + 2048 PPR sin/cos
G1 = SSI, Gray code + 2048 PPR AB, /AB Line Driver
G2 = SSI, Gray code + 4096 PPR AB, /AB Line Driver
G3 = SSI, Gray code + 8192 PPR AB, /AB Line Driver
G6 = SSI, Gray code + 2048 PPR AB, /AB Push-Pull
G7 = SSI, Gray code + 4096 PPR AB, /AB Push-Pull
G8 = SSI, Gray code + 8192 PPR AB, /AB Push-Pull

ⓒ **SHAFT DIAMETER**
14 = 14 mm
15 = 15 mm

ⓓ **CONNECTOR POSITION**
R = radial

ⓔ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M2 = M23 connector
M = M12 8 pin plug
(only for GV, BV, GA, BA)
M1 = M12 12 pin plug
(except with GV, BV, GA, BA)

ⓕ **CUSTOM VERSION**

Order code - Multi turn

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

ⓐ **RESOLUTION**
Counts x rev./rev.
13/4096 = 8192 x 4096
16/4096 = 65536 x 4096

ⓑ **OUTPUT CIRCUITS**
GV = SSI, Gray code + 2048 PPR sin/cos
BV = SSI, Binary code + 2048 PPR sin/cos
GA = SSI, Gray code
BA = SSI, Binary code
I7 = BiSS C-mode + 2048 PPR sin/cos
I8 = BiSS B-mode + 2048 PPR sin/cos
G1 = SSI, Gray code + 2048 PPR AB, /AB Line Driver
G2 = SSI, Gray code + 4096 PPR AB, /AB Line Driver
G3 = SSI, Gray code + 8192 PPR AB, /AB Line Driver
G6 = SSI, Gray code + 2048 PPR AB, /AB Push-Pull
G7 = SSI, Gray code + 4096 PPR AB, /AB Push-Pull
G8 = SSI, Gray code + 8192 PPR AB, /AB Push-Pull

ⓒ **SHAFT DIAMETER**
14 = 14 mm
15 = 15 mm

ⓓ **CONNECTOR POSITION**
R = radial

ⓔ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M2 = M23 connector
M = M12 8 pin plug
(only for GV, BV, GA, BA)
M1 = M12 12 pin plug
(except with GV, BV, GA, BA)

ⓕ **CUSTOM VERSION**

ROTACOD
Absolute encoders

Series AS58 • AS58S • ASC58

- Standard absolute single turn encoder
- Resolution up to 8192 counts/rev.
- Cable and connector output

AS58S • AS58 • ASC59

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)

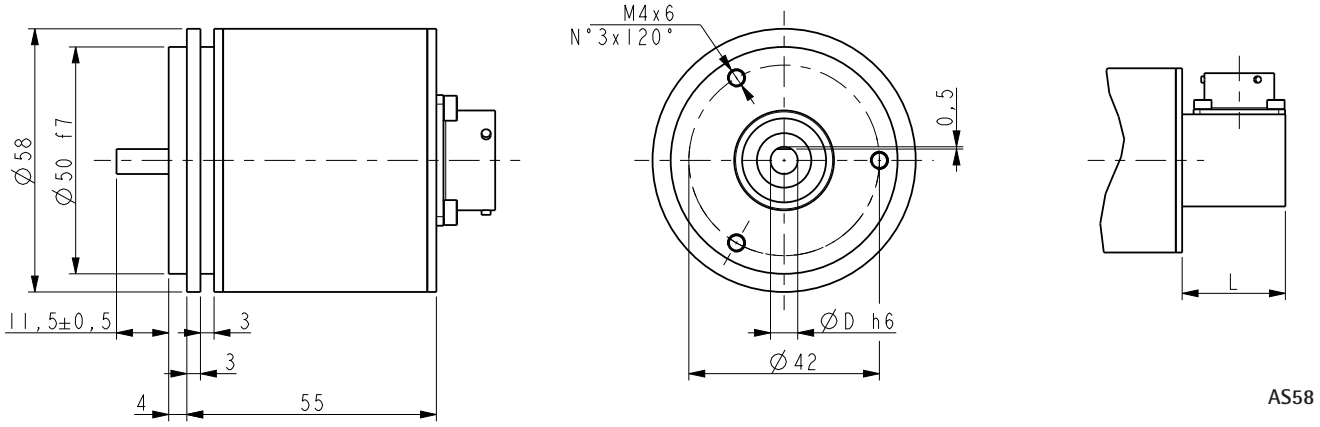
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	AS58: 0,15 Ncm (typ.) AS58S, ASCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	SSI: MIL 7 pin plug (10 pin plug with zero setting) Bit parallel: MIL 19 pin plug
Weight:	~ 250 g (8,8 oz)
Options:	• DSub 15 pin plug • DSub 25 pin plug • MIL 19 pin plug • cable output 1 m (3.3 ft)

ELECTRICAL SPECIFICATIONS	
Resolution:	256, 360, 512, 720, 1024, 2048, 4096, 8192 cpr
Output circuits:	SSI (RS422), Bit parallel, NPN, PNP, Push-Pull
Output code:	Gray, Binary
Counting frequency:	50 kHz max.
Power supply:	+10V +30V
Power consumption:	SSI: 1 W Bit parallel: 1,2 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• Counting direction (input)
Options:	• Zero setting / Preset (input) • LATCH output • TRI-STATE output • Electronic parity bit (on request)

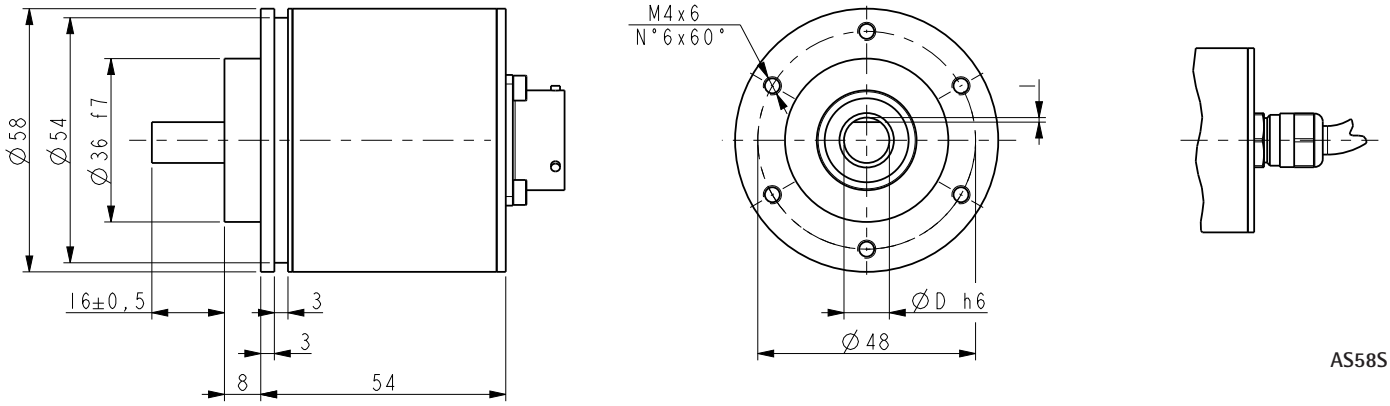
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES	
E19MLS:	19 pin MIL mating connector
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
EDA 15S:	15 pin DSub mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

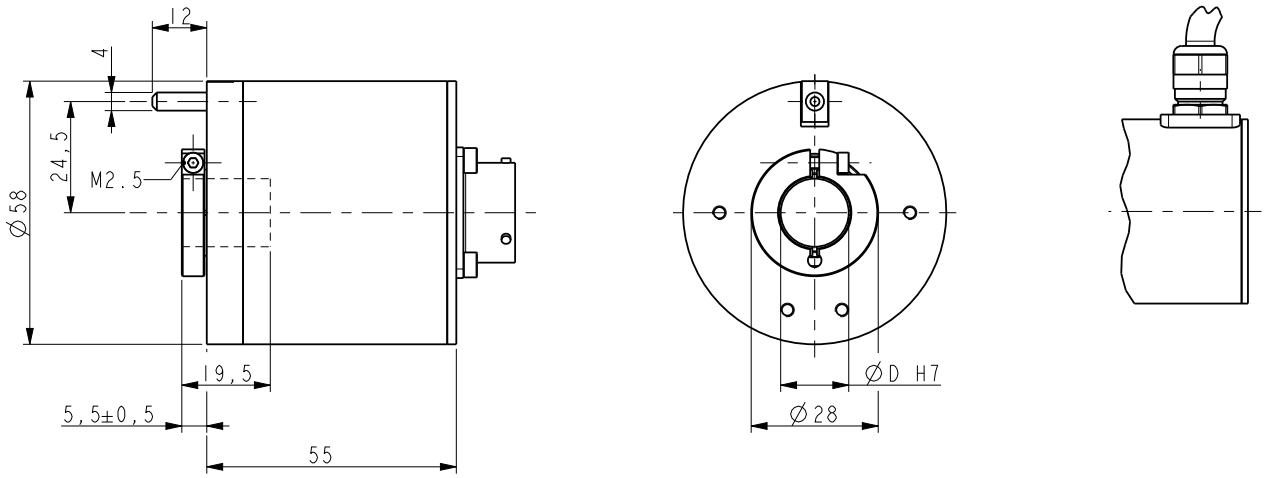
Specifications subject to changes without prior notice



AS58



AS58S



ASC58

Order code - Bit parallel output

Additional code (optional)

AS58 AS58S ASC58 ASC59 ASC60	X ⓐ	/	X ⓑ	X ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	X ⓖ	X ⓗ	X ⓘ	/Sxxx ⓙ

ⓐ **RESOLUTION**
08 = 256 cpr
36 = 360 cpr
09 = 512 cpr
72 = 720 cpr
10 = 1024 cpr
11 = 2048 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT CODE**
B = Binary
G = Gray

ⓒ **OUTPUT CIRCUITS**
N = NPN o.c.
P = PNP o.c.
Y = Push-Pull

on request:
L = LATCH (NPN)
M = LATCH (PNP)
H = LATCH (Push-Pull)
T = TRI-STATE (NPN)
U = TRI-STATE (PNP)
E = LATCH+TRI-STATE (PNP)
F = LATCH+TRI-STATE (NPN)

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (ASCxx)
15 = 15 mm (ASCxx)

ⓔ **E** = Zero setting (option)

ⓕ **B** = Parity bit (option)

ⓖ **OPERATING TEMPERATURE RANGE**
K = -40°C +100°C (-40°F +212°F)

ⓗ **R** = radial connection

ⓘ **CONNECTIONS**
L1 = cable output 1 m
Lx = cable output x m
Z = DSub 15 pin plug
W = DSub 25 pin plug

ⓙ **CUSTOM VERSION**

Order code - SSI output

Additional code (optional)

AS58 AS58S ASC58 ASC59 ASC60	X ⓐ	/	X ⓑ	X ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	X ⓖ	X ⓗ	X ⓘ	/Sxxx ⓙ

ⓐ **RESOLUTION**
08 = 256 cpr
36 = 360 cpr
09 = 512 cpr
72 = 720 cpr
10 = 1024 cpr
11 = 2048 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT CODE**
B = Binary
G = Gray

ⓒ **OUTPUT CIRCUITS**
S = SSI, tree format (connector)
R = SSI, tree format (cable)
A = SSI, LSB aligned (connector)
B = SSI, LSB aligned (cable)

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (ASCxx)
15 = 15 mm (ASCxx)

ⓔ **E** = Zero setting (option)

ⓕ **B** = Parity bit (option)

ⓖ **OPERATING TEMPERATURE RANGE**
K = -40°C +100°C (-40°F +212°F)

ⓗ **R** = radial connection

ⓘ **CONNECTIONS**
L1 = cable output 1 m
Lx = cable output x m

ⓙ **CUSTOM VERSION**

ROTACOD
Absolute multi turn encoders

Series AM58 • AM58S • AMC58

- Standard absolute multi-turn encoder
- Resolution up to 8192 cpr x 4096 turns
- Cable and connector output

AM58 • AM58S • AMC59

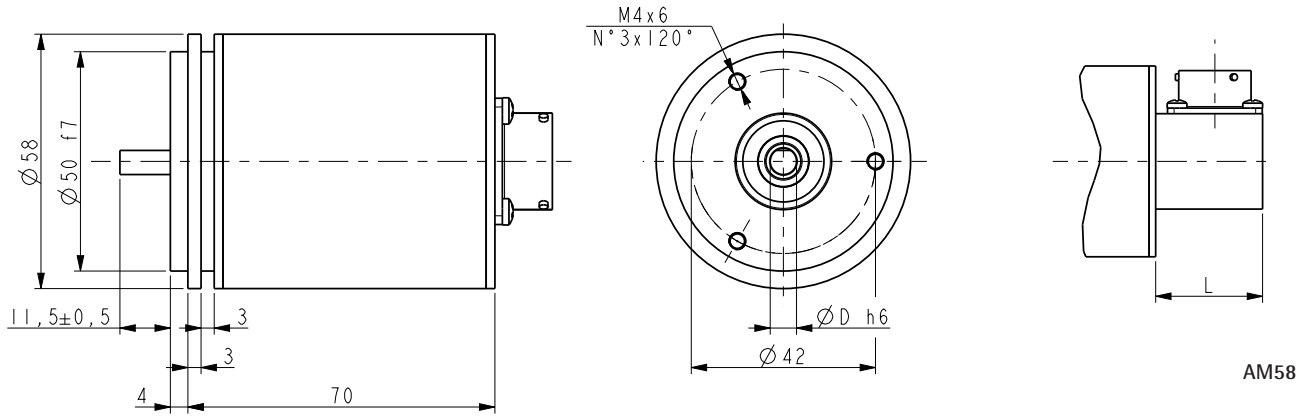
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

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 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	AM58: 0,15 Ncm (typ.) AM58S, AMCxx: 0,4 Ncm (typ.)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	SSI: MIL 7 pin plug (10 pin plug with zero setting) Bit parallel: MIL 32 pin plug
Weight:	~ 250 g (8,8 oz)
Options:	• DSub 25 pin plug • cable output 1 m (3.3 ft)

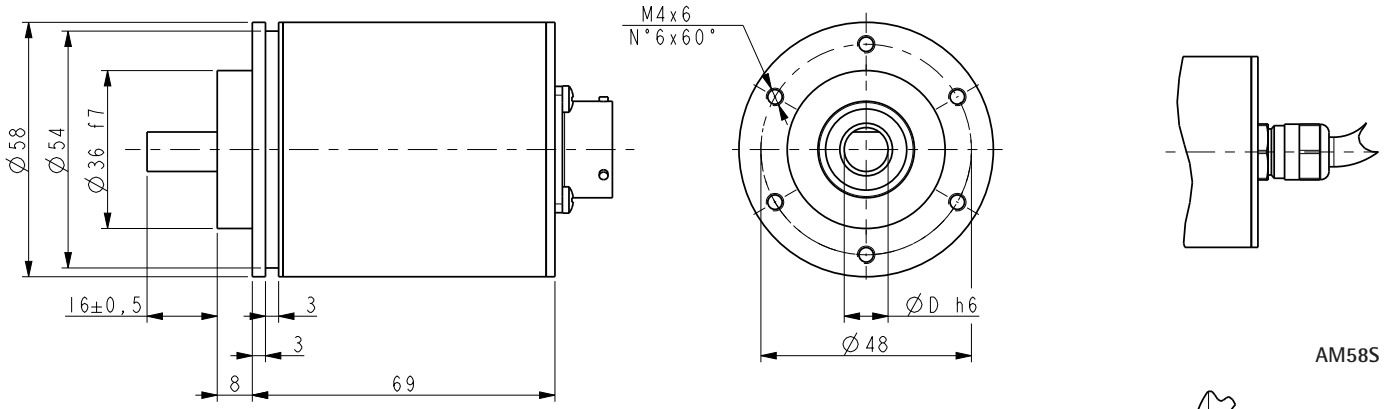
ELECTRICAL SPECIFICATIONS	
Resolution:	256, 512, 1024, 2048, 4096, 8192 cpr 16, 256, 4096 turns
Output circuits:	SSI (RS422), Bit parallel, NPN, PNP, Push-Pull
Output code:	Gray, Binary
Counting frequency:	50 kHz max.
Power supply:	+10V +30V
Power consumption:	SSI: 1 W Bit parallel: 2 W
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• counting direction (input)
Options:	• Zero setting / Preset (input) • LATCH output • TRI-STATE output • Electronic parity bit (on request)

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

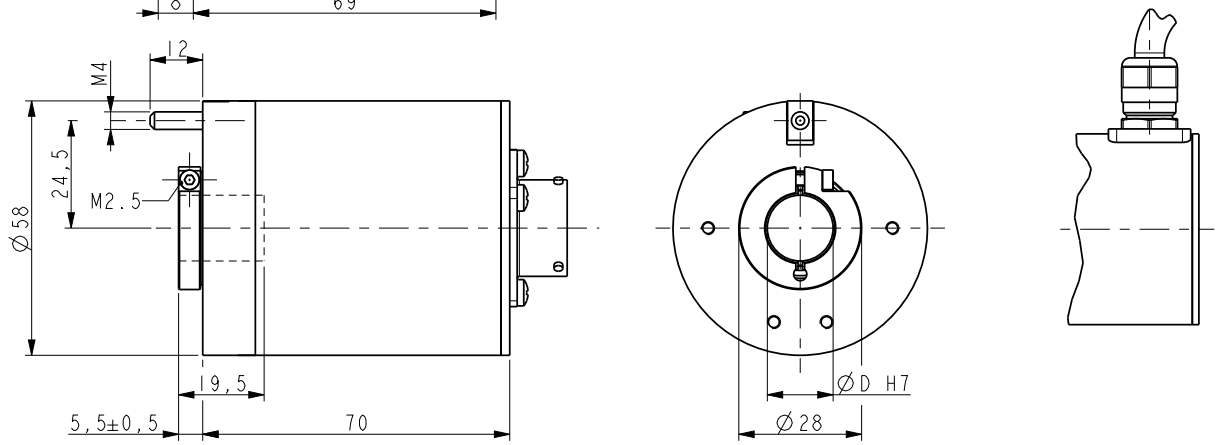
ACCESSORIES	
E32MLS:	32 pin MIL mating connector
E7MLS:	7 pin MIL mating connector
E10MLS:	10 pin MIL mating connector
EDB 25S:	25 pin DSub mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



AM58



AM58S



AMC58

Order code - Bit parallel output

Additional code (optional)

AM58 AM58S AMC58 AMC59 AMC60	XX ⓐ	/	XXXX ⓑ	X ⓒ	X ⓓ	-	XX ⓔ	-	X ⓕ	X ⓖ	X ⓗ	X ⓘ	X ⓙ	/Sxxx ⓚ

ⓐ **RESOLUTION**
08 = 256 cpr
09 = 512 cpr
10 = 1024 cpr
11 = 2048 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
16 = 16 turns
256 = 256 turns
4096 = 4096 turns

ⓒ **OUTPUT CODE**
B = Binary
G = Gray

ⓓ **OUTPUT CIRCUITS**
N = NPN o.c.
P = PNP o.c.
Y = Push-Pull

on request:
L = LATCH (NPN)
M = LATCH (PNP)
H = LATCH (Push-Pull)
T = TRI-STATE (NPN)
U = TRI-STATE (PNP)
E = LATCH+TRI-STATE (PNP)
F = LATCH+TRI-STATE (NPN)

ⓔ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (AMCxx)
15 = 15 mm (AMCxx)

ⓕ **E** = Zero setting (option)

ⓖ **B** = Parity bit (option)

ⓗ **OPERATING TEMPERATURE RANGE**
K = -40°C +100°C (-40°F +212°F)

ⓘ **R** = radial connection

ⓙ **CONNECTIONS**
L1 = cable output 1 m
Lx = cable output x m
W = DSub 25 pin plug

ⓚ **CUSTOM VERSION**

Order code - SSI output

Additional code (optional)

AM58 AM58S AMC58 AMC59 AMC60	XX ⓐ	/	XXXX ⓑ	X ⓒ	X ⓓ	-	XX ⓔ	-	X ⓕ	X ⓖ	X ⓗ	X ⓘ	X ⓙ	/Sxxx ⓚ

ⓐ **RESOLUTION**
08 = 256 cpr
09 = 512 cpr
10 = 1024 cpr
11 = 2048 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
16 = 16 turns
256 = 256 turns
4096 = 4096 turns

ⓒ **OUTPUT CODE**
B = Binary
G = Gray

ⓓ **OUTPUT CIRCUITS**
S = SSI, tree format (connector)
R = SSI, tree format (cable)
A = SSI, LSB aligned (connector)
B = SSI, LSB aligned (cable)

ⓔ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm - 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (AMCxx)
15 = 15 mm (AMCxx)

ⓕ **E** = Zero setting (option)

ⓖ **B** = Parity bit (option)

ⓗ **OPERATING TEMPERATURE RANGE**
K = -40°C +100°C (-40°F +212°F)

ⓘ **R** = radial connection

ⓙ **CONNECTIONS**
L1 = cable output 1 m
Lx = cable output x m

ⓚ **CUSTOM VERSION**

ROTAMAG
Magnetic absolute encoder

Series **MH58S**

- Compact heavy-duty encoder
- IP67 protection & extended temperature range
- High shaft load
- Confortable presetting by push-button
- Suitable for outdoor and offshore installations
- SSI or analogue output
- IP69K protection on request

MH58S

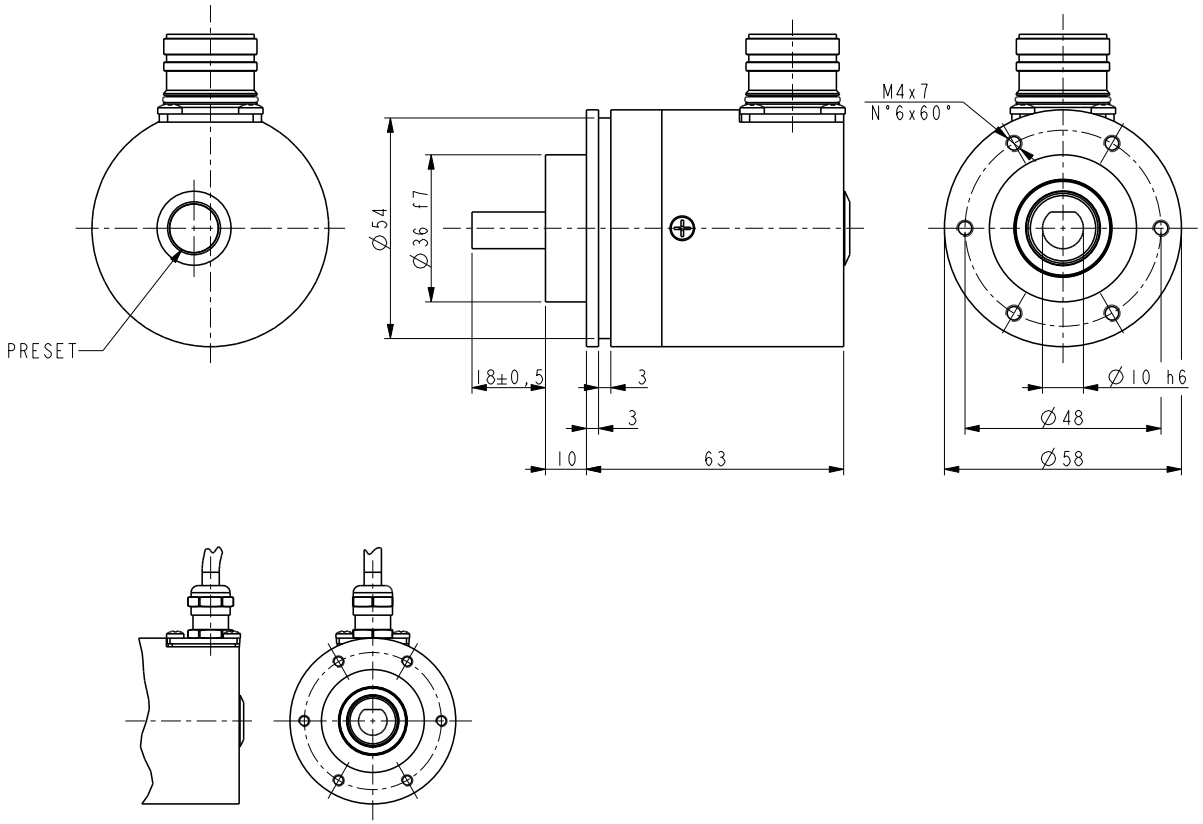
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67
Operating temperature range:	-40°C +85°C (-40°F +185°F)
Storage temperature range:	-40°C +85°C (-40°F +185°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 10 mm
Shaft loading:	axial: 270 N max. radial: 150 N max.
Shaft rotational speed:	6000 rpm max.
Starting torque (at 20°C):	1 Ncm (typical)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M23 12 pin plug, cable output 1 m (3.3 ft)
Weight:	~ 350 g (12,3 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	single turn: 4096 cpr multi turn: 4096 x 4096 bit
Start-up time:	200 msec
Accuracy:	± 0,9°
Output circuits:	SSI: SSI, Gray, Clock 1 MHz max. Analogue: 0-5V, 0-10V, -5/+5V, -10/+10V, 0-20mA, 0-24mA
Counting frequency:	100 kHz max.
Power supply:	SSI: +10Vdc +30Vdc Analogue: +13Vdc +30Vdc
Protection:	protected against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Battery life:	10 years min.
Functions:	• Counting direction (input) • Zero setting button (input)

MATERIALS	
Flange:	anticorodal, EN AW-6082 (UNI EN 573)
Housing:	anticorodal, EN AW-6082 (UNI EN 573)
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic - UNI EN 4305

ACCESSORIES	
PAN/PGF:	flexible couplings
EPFL121H:	M23 12 pin mating connector



MH58S

Order code - Analogue output

MH58S	XX/X	XXX	-	XX	-	X	X	/Sxxx
	ⓐ	ⓑ		ⓒ		ⓓ	ⓔ	ⓕ

ⓐ **RESOLUTION**
12/1 = 4096 cpr

ⓑ **OUTPUT**
AI1 = 4-20mA
AI2 = 0-20mA
AI3 = 0-24mA
AV1 = 0-5V
AV2 = 0-10V
AV3 = -5/+5V
AV4 = -10/+10V

ⓒ **SHAFT DIAMETER**
10 = 10 mm

ⓓ **CONNECTOR POSITION**
R = radial

ⓔ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M2 = M23 12 pin plug

ⓕ **CUSTOM VERSION**

Order code - SSI output

MH58S	XX/XXXX	XX	-	XX	-	XX	X	/Sxxx
	ⓐ	ⓑ		ⓒ		ⓓ	ⓔ	ⓕ

ⓐ **RESOLUTION**
12/1 = 4096 cpr
12/4096 = 4096 cpr x 4096 rev

ⓑ **OUTPUT CODE**
GS = Gray, SSI tree format

ⓒ **SHAFT DIAMETER**
10 = 10 mm

ⓓ **CONNECTOR POSITION**
R = radial

ⓔ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M2 = M23 12 pin plug

ⓕ **CUSTOM VERSION**

ROTAMAG
Magnetic absolute encoders

Series MM58 • MM58S • MMC58

- Rugged & compact multi turn encoder
- Stainless steel housing
- Magnetic sensing
- Through hollow shaft version available
- Up to 32768 turns (65536 on request)

MM58S • MM58 • MMC58

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)
Option:	• protection IP67

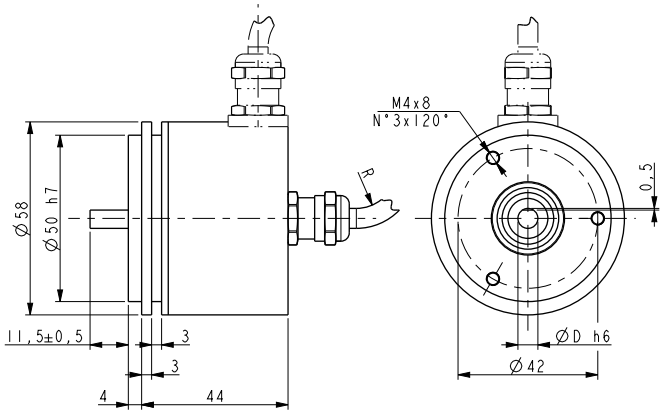
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	12000 rpm max.
Starting torque (at 20°C):	MM58: 0,15 Ncm (typical) MM58S: 0,40 Ncm (typical) MMCxx: 1 Ncm (typical)
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 450 g (15,8 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	1024 cpr x 32768 turns 2048 cpr x 16384 turns 4096 cpr x 8192 turns
Accuracy:	± 1°
Output circuits:	SSI (clock 500 kHz, Tp=64 µsec.)
Output code:	Gray, Binary
Counting frequency:	20 kHz max.
Start-up time:	200 msec.
Power supply:	+10Vdc +30Vdc
Output current:	20 mA max.
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Battery life:	10 years min.
Functions:	• Counting direction (input) • Electronic zero setting (input)

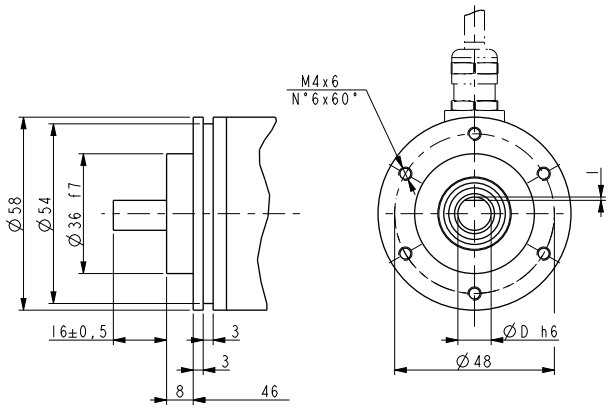
PREFERENTIAL MODEL	
MMC5812/8192GB-15-L1	SSI, 24 bit

MATERIALS	
Flange:	AISI 420, UNI EN 4021
Housing:	AISI 420, UNI EN 4021
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305

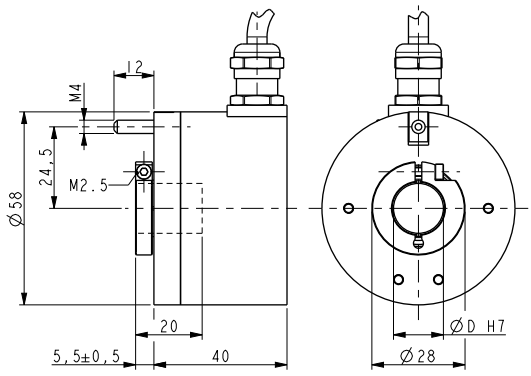
ACCESSORIES	
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



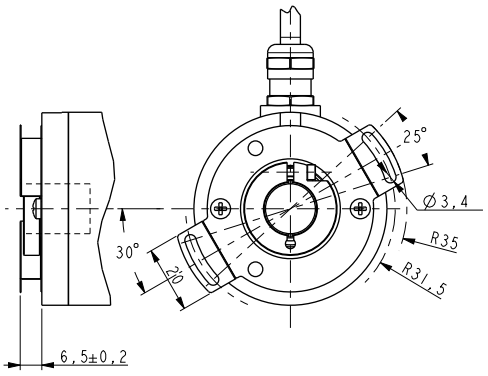
MM58



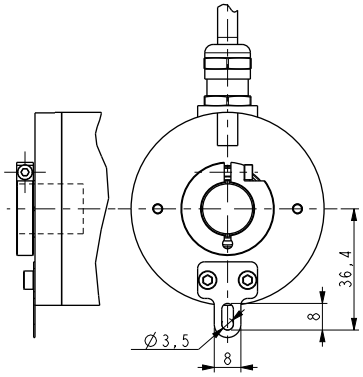
MM58S



MMC58



MMC59



MMC60

Order code

MM58 MM58S MMC58 MMC59 MMC60	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	XX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTION**
10/32768 = 1024 cpr x 32768 turns
11/16384 = 2048 cpr x 16384 turns
12/8192 = 4096 cpr x 8192 turns

ⓑ **OUTPUT**
BB = Binary, SSI LSB aligned
GB = Gray, SSI LSB aligned

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only for MMCxx)
15 = 15 mm (only for MMCxx)

ⓓ **CONNECTOR POSITION**
- = axial (standard)
R = radial
(mandatory on MMCxx series)

ⓔ **PROTECTION**
- = IP65 (standard)
J = IP67 with sealed circuit

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

ⓖ **CUSTOM VERSION**

ROTACOD
Absolute encoders

Series HM58 P • HM58S P • HMC58 P

- Programmable absolute encoder (via USB cable)
- Compact housing
- Max. resolution 262144 cpr x 16384 turns
- Programmable scaling factor & Teach-in function
- Free SSI parameters setting
- Roundloop function
- Bit parallel output available

HM58 P • HM58S P • HMC59 P

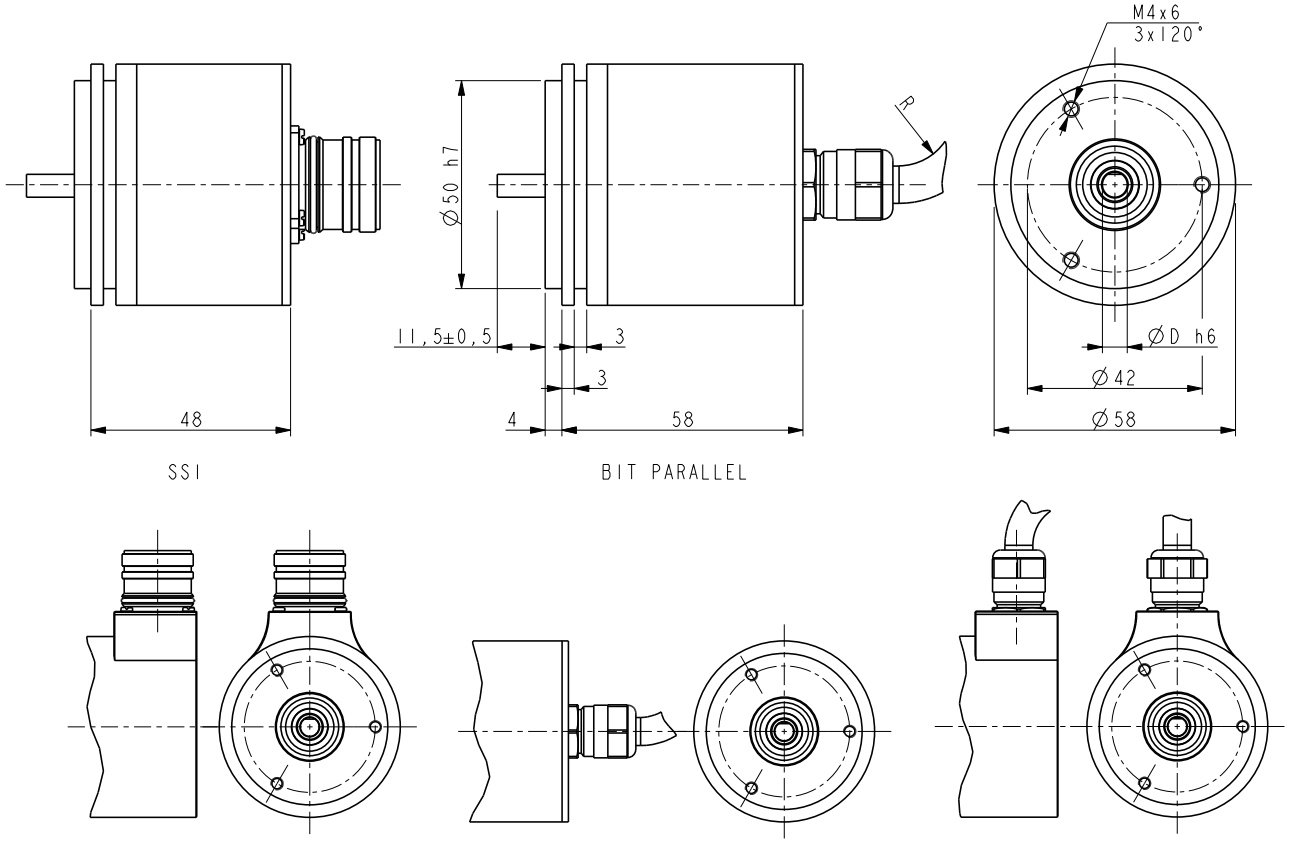
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Operating temperature range:	-40°C +85°C (-40°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Protection:	IP67, IP65 shaft side

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Solid shaft:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial and radial):	100 N max.
Shaft rotational speed:	12000 rpm, 9000 rpm continuous operation
Starting torque (at 20°C):	HM58: 0,15 Ncm (typical) HM58S, HMCxx: 0,40 Ncm (typical)
Bearing life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Weight:	~ 300 g (10,6 oz)
Electrical connections:	SSI: M12, M23 plug, MIL inline plug or cable output 1 m (3.3 ft) Bit parallel: MIL, DSub inline plug or cable output 1 m (3.3 ft)
Option:	• additional cable

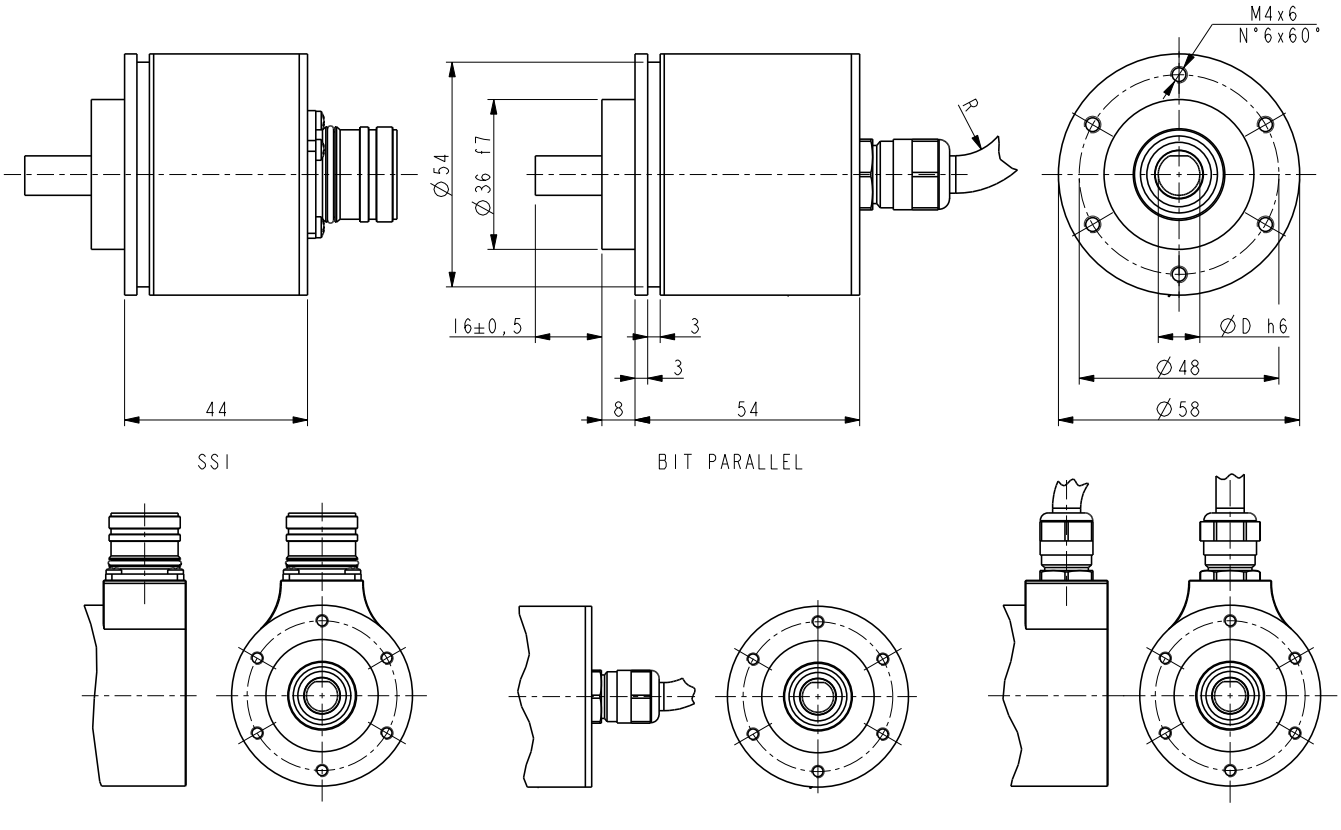
ELECTRICAL SPECIFICATIONS	
Resolution:	262144 cpr x 16384 turns programmable
Accuracy:	± 0,007°
Output code:	Gray, Binary, BCD
Power supply:	+10Vdc ÷ 30Vdc
Power consumption:	SSI: 1 W Bit parallel: 2,2 W
Output circuits:	SSI (RS422), Bit parallel Push-Pull, NPN
Counting frequency:	SSI: 150 kHz, Bit parallel: 30 kHz
Protection:	against inversion of polarity, short-circuit
EMC:	electro-magnetic immunity, according to: EN-61000-4-2 EN-61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• Programmable resolution • Teach-in of resolution • Counting direction (programmable + input) • Zero setting / Preset (programmable + input) • Parity bit (even/odd) • SSI protocol (alignment, clock, timing) • Latch, Tristate inputs

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

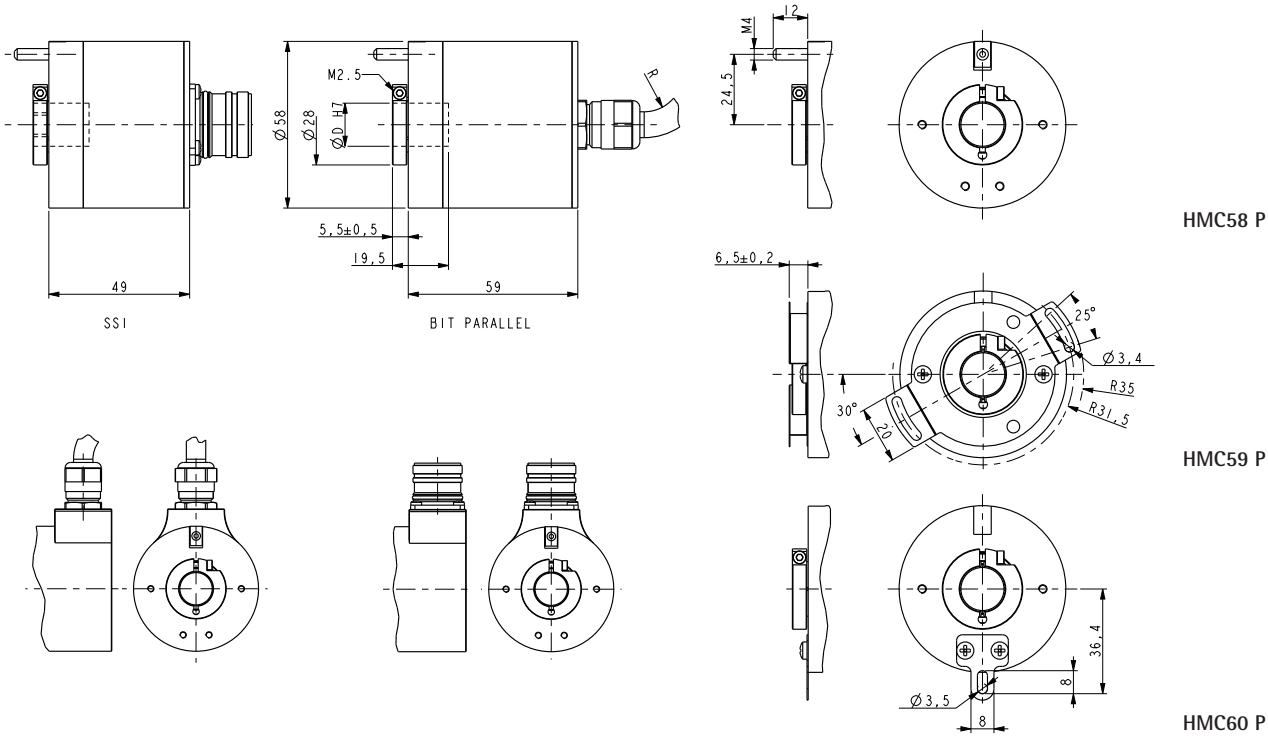
ACCESSORIES	
EPFL121H:	M23 12 pin mating connector
EM12F12:	M12 12 pin mating connector
E41MLS:	MIL 41 pin mating connector
E32MLS:	MIL 32 pin mating connector
E19MLS:	MIL 19 pin mating connector
E10MLS:	MIL 10 pin mating connector
E7MLS:	MIL 7pin mating connector
EDA 15S:	DSub 15 pin mating connector
EDB 25S:	DSub 25 pin mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



HM58 P



HM58S P



Order code - Bit parallel output

HM58 HM58S HMC58 HMC59 HMC60	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx - /Pxxx ⓕ

ⓐ **RESOLUTION**
18/16384 = 262144 cpr x 16384 turns

ⓑ **OUTPUT**
PY = programmable, Push-Pull
PN = programmable, NPN

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HMCxx)
15 = 15 mm (HMCxx)

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

ⓔ **CONNECTIONS**
Lx = cable output x m
Y1 = 1 m cable + MIL 41 pin inline plug

with ⓕ = **/Pxxx**
Z1 = 1 m cable + DSub 15 pin inline plug
W1 = 1 m cable + DSub 25 pin inline plug
X1 = 1 m cable + MIL 19 pin inline plug
V1 = 1 m cable + MIL 32 pin inline plug
Ax = A19 cable x m
Bx = A32 cable x m

ⓕ
/Sxxx: Custom version
/Pxxx: Factory programmed encoder on customer request

Order code - SSI output

HM58 HM58S HMC58 HMC59 HMC60	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx - /Pxxx ⓕ

ⓐ **RESOLUTION**
18/16384 = 262144 cpr x 16384 turns

ⓑ **OUTPUT**
PS = programmable, SSI

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HMCxx)
15 = 15 mm (HMCxx)

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

ⓔ **CONNECTIONS**
Lx = cable output x m
M2 = M23 12 pin plug
M = M12 12 pin plug

with ⓕ = **/Pxxx**
D1 = 1 m cable + MIL 7 pin inline plug
P1 = 1 m cable + MIL 10 pin inline plug
Cx = A8 cable x m

ⓕ
/Sxxx: Custom version
/Pxxx: Factory programmed encoder on customer request

ROTACOD
Absolute multi turn encoders

Series EM58 TA • EM58S TA • EMC58 TA

- Accurate analogue conversion
- Multiple voltage and current outputs
- Teach-in of travel length by push buttons
- Overrun function
- M12 or cable connection

EM58 TA • EM58S TA • EMC58 TA

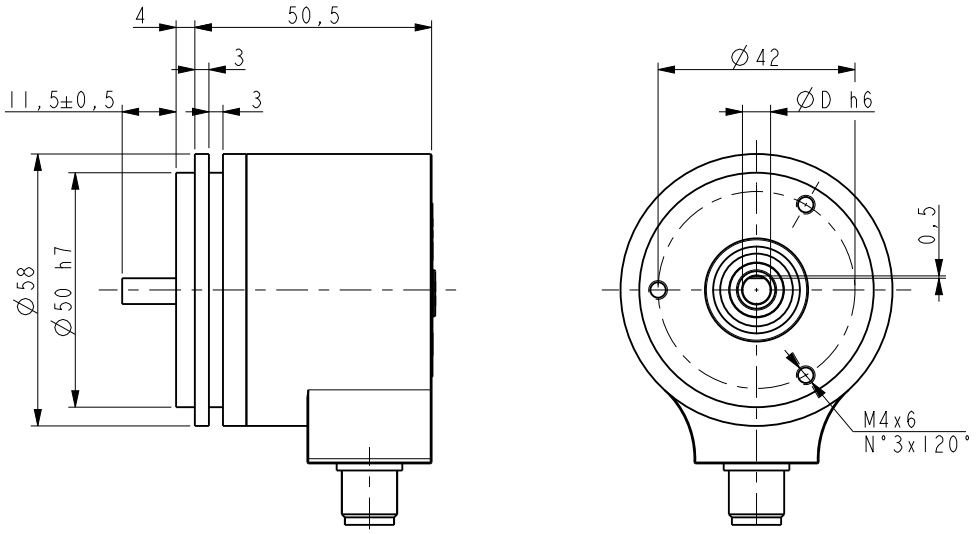
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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:	12000 rpm, 9000 rpm continuous operation
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12 plug or cable output 2 m (6.56 ft)
Weight:	~ 250 g (8,8 oz)
Option:	• additional cable

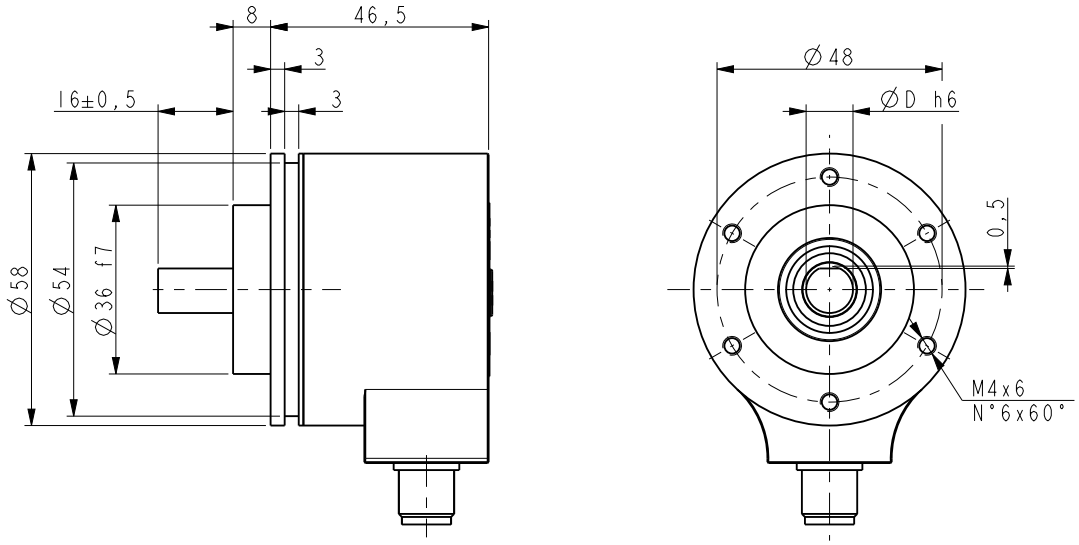
ELECTRICAL SPECIFICATIONS	
Resolution:	4096 cpr x 16384 turns max. (programmable with Teach-in)
Accuracy:	± 0,04° - D/A 16 bit conversion
Output:	0-5V, 0-10V, +/-5V, +/-10V, 4-20mA, 0-20mA, 0-24mA
Counting frequency:	> 150 kHz
Power supply:	+13Vdc ÷ 30Vdc
Power consumption:	1.3 W max.
Start-up time:	~ 40 ms
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 h
Functions:	• Teach-in of travel length • Overrun

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

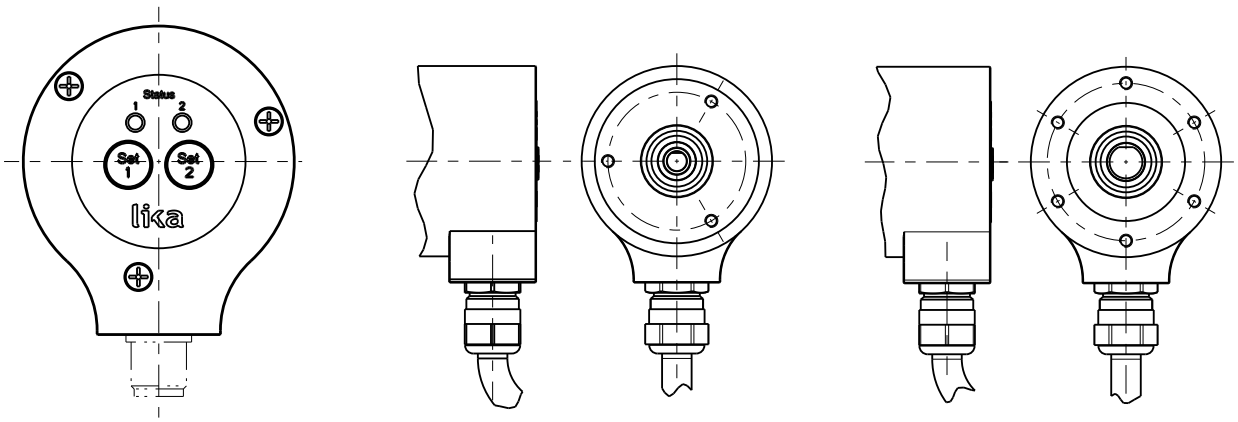
ACCESSORIES	
E-M12FC:	M12 5 pin connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

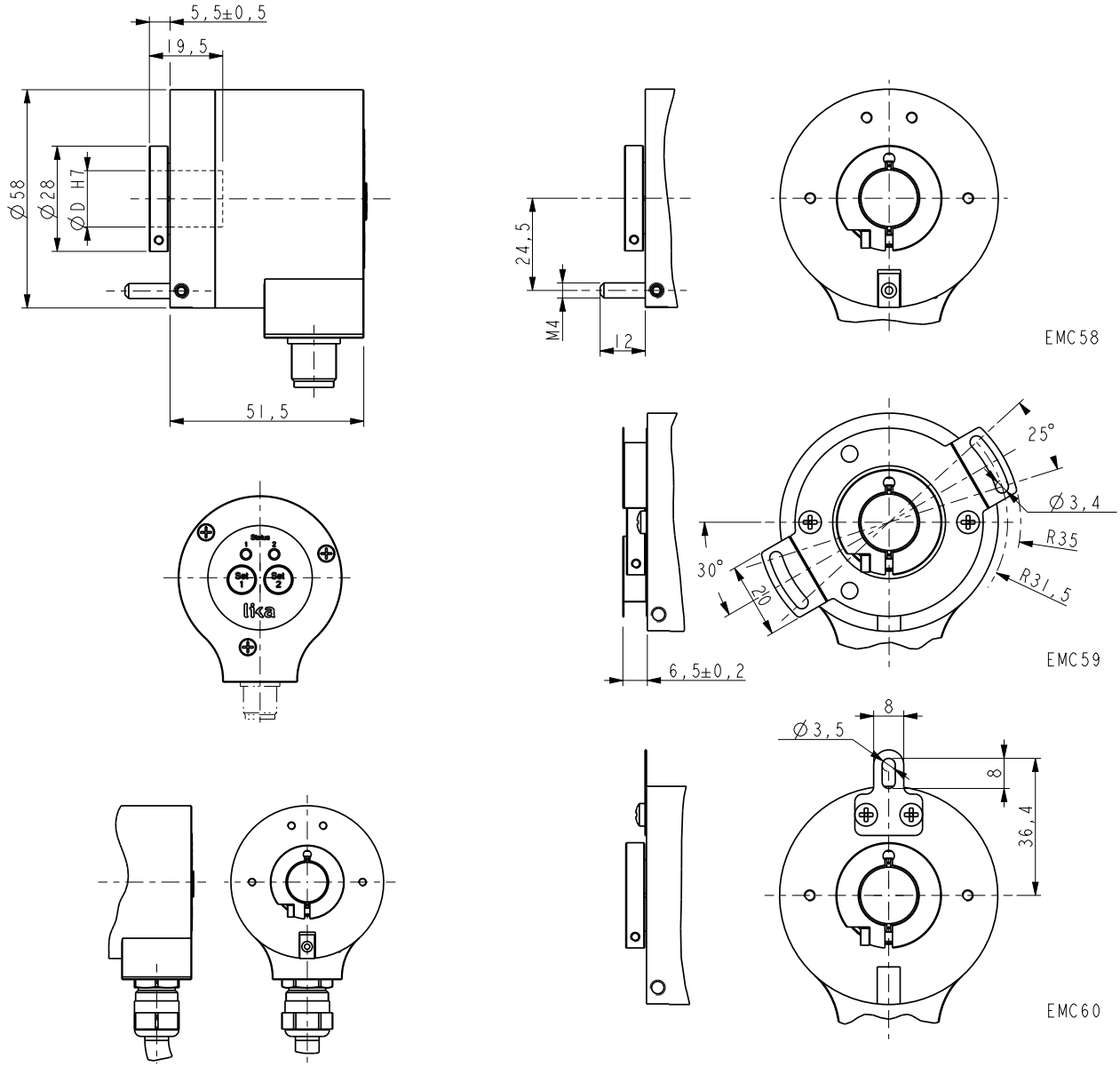


EM58 TA



EM58S TA





Order code

EM58 EM58S EMC58 EMC59 EMC60	XX ⓐ	/	XXXXX ⓑ	XXX ⓒ	-	XX ⓓ	-	X ⓔ	XX ⓕ	/Sxxx ⓖ

ⓐ **RESOLUTION**
12 = 4096 cpr

ⓑ **REVOLUTIONS**
16384 = 16384 turns

ⓒ **OUTPUT**
TI1 = 4-20 mA
TI2 = 0-20 mA
TI3 = 0-24 mA
TV1 = 0-5V
TV2 = 0-10V
TV3 = +/- 5V
TV4 = +/- 10V

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only EMCxx)
15 = 15 mm (only EMCxx)

ⓔ **CONNECTION POSITION**
R = radial

ⓕ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
M = M12 5 pin plug

ⓖ **CUSTOM VERSION**

ROTACOD

Absolute encoder with analogue output

Series AS58 A • AM58 A

- Optical encoder with analogue output
- Accurate sensing and D/A conversion
- 0-5/10V, ±5/10V, 0-20mA, 4-20mA, 0-24mA
- Compact dimensions
- Cable, M12 or M23 connections

AS58 A • AM58S A

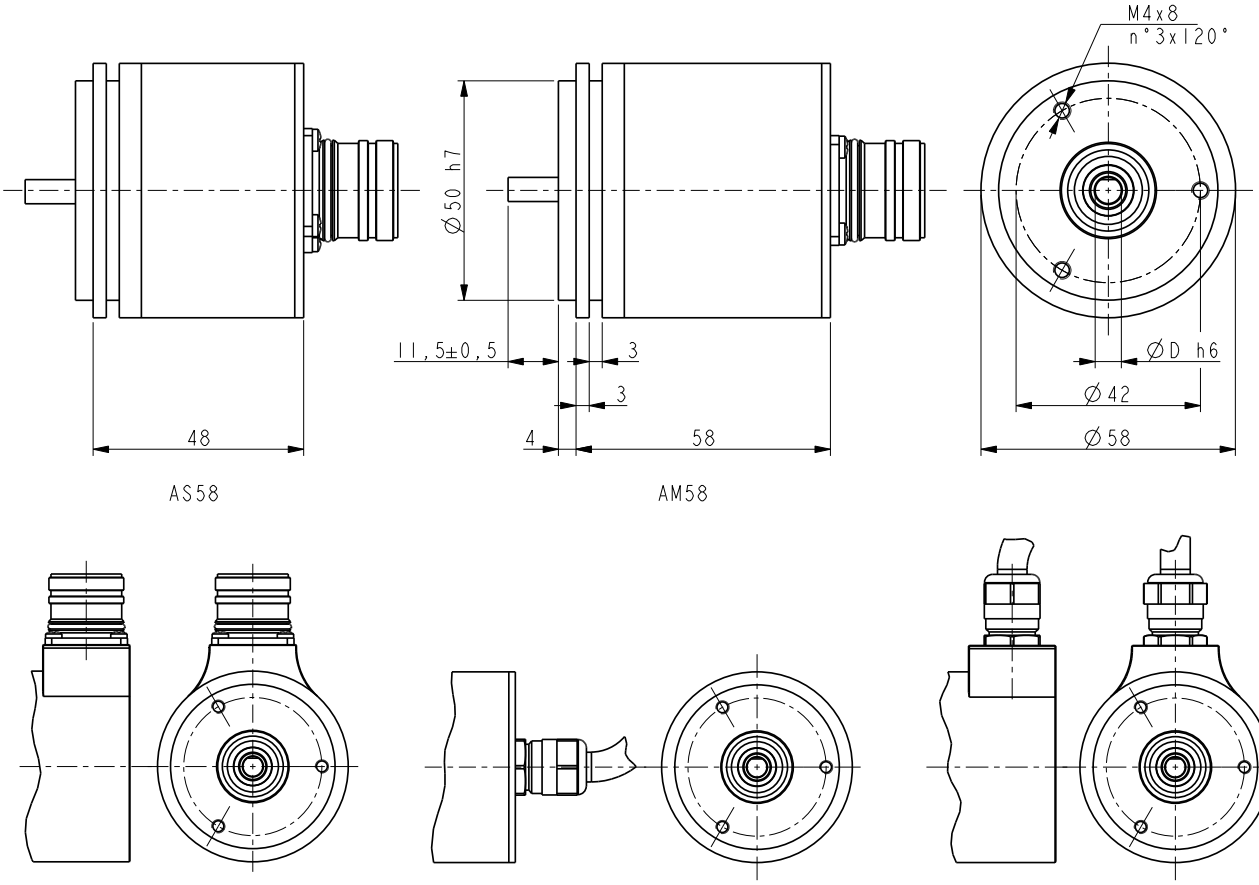
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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 15mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	100 N max.
Shaft rotational speed:	12000 rpm, 9000 rpm continuous operation
Bearing life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 2 m (6.56 ft)
Weight:	~ 250 g (8,8 oz)
Option:	• additional cable

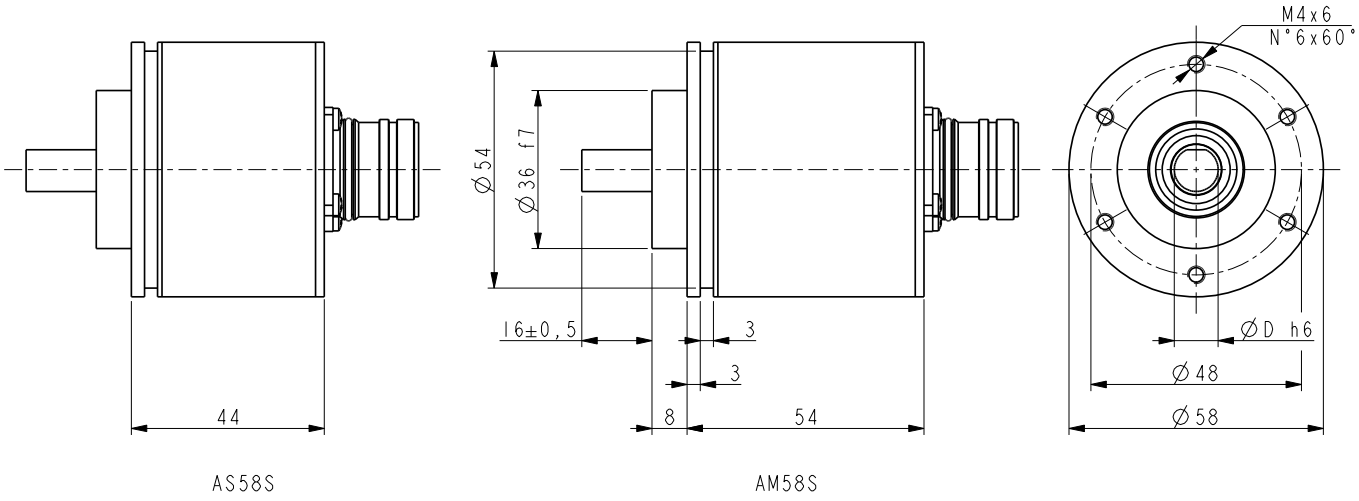
ELECTRICAL SPECIFICATIONS	
Resolution:	AS: 12 bit AM: 16 bit
Accuracy:	± 0,04°
Output circuits:	0-5V, 0-10V, -5/+5V, -10/+10V, 0-20mA, 4-20mA, 0-24mA
Counting frequency:	> 150 kHz
Power supply:	+13Vdc ÷ 30Vdc
Power consumption:	1, 3 W max.
Start-up time:	~ 40 ms
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• Counting direction (input) • Zero setting (input)

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

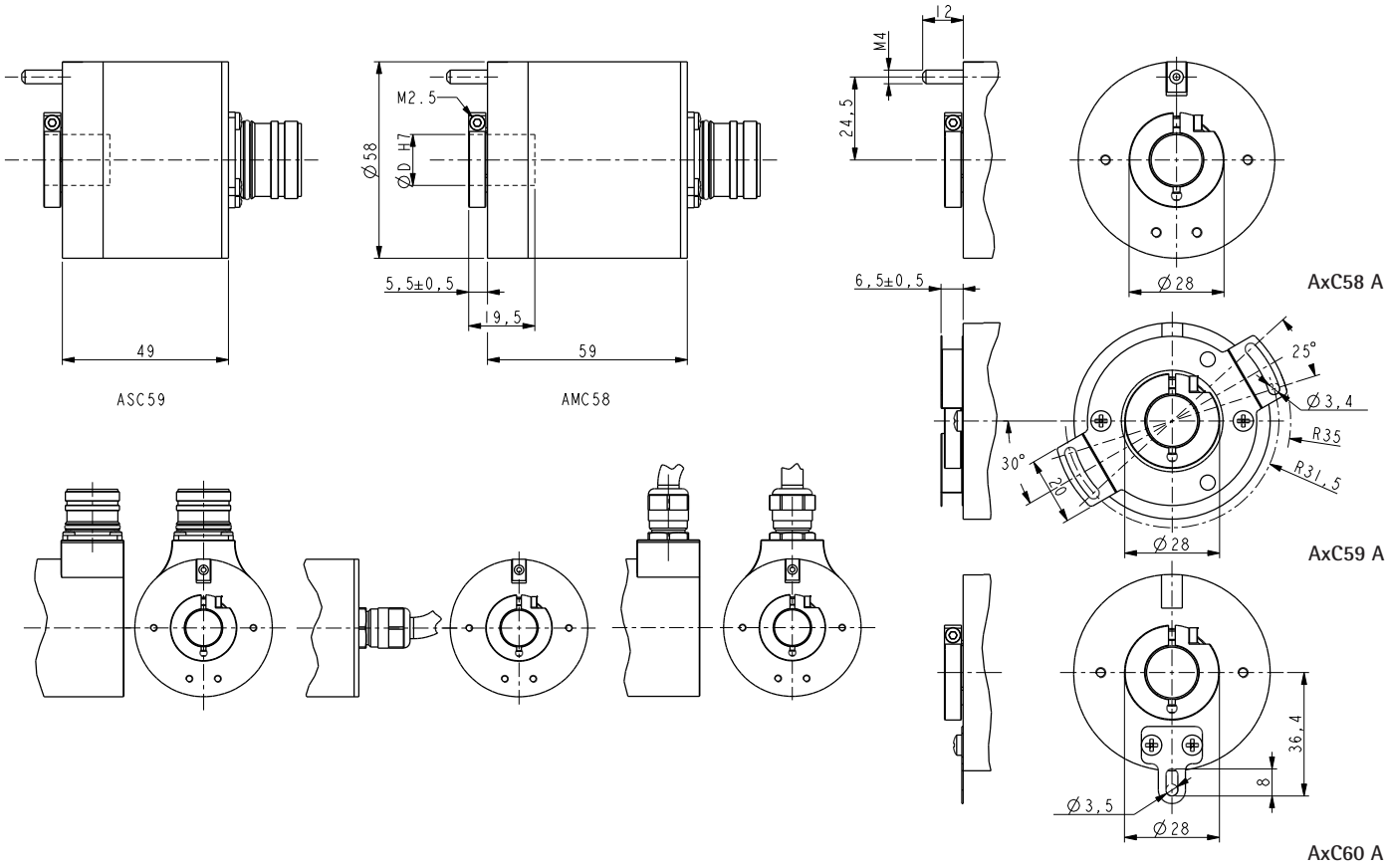
ACCESSORIES	
EPFL121H:	12 pin M23 mating connector
EM12F8:	8 pin M12 mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-M12F8-LK-M8-xx:	M12 cordset with xx m cable
EC-CR12F-S28-T12-xx:	M23 cordset with xx m cable
LKM-386:	fixing clamps



AS58 A - AM58 A



AS58S A - AM58S A



Order code - Single turn

AS58 AS58S ASC58 ASC59 ASC60	12 ⓐ	/	XXX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ RESOLUTION
12 = 12 bit

ⓑ OUTPUT
AI1 = 4-20mA
AI2 = 0-20mA
AI3 = 0-24mA
AV1 = 0-5V
AV2 = 0-10V
AV3 = -5/+5V
AV4 = -10/+10V

ⓒ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only ASCxx)
15 = 15 mm (only ASCxx)

ⓓ CONNECTION POSITION
- = axial
R = radial

ⓔ CONNECTIONS
L2 = cable output 2 m (standard)
Lx = cable output x m
M = M12, 8 pin plug
M2 = M23, 12 pin plug

ⓕ CUSTOM VERSION

Order code - Multi turn

AM58 AM58S AMC58 AMC59 AMC60	XX/XXXX ⓐ	XXX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ RESOLUTION
12/2 = 2 turns
12/4 = 4 turns
12/16 = 16 turns
10/64 = 64 turns
8/256 = 256 turns
6/1024 = 1024 turns
4/4096 = 4096 turns

ⓑ OUTPUT
AI1 = 4-20mA
AI2 = 0-20mA
AI3 = 0-24mA
AV1 = 0-5V
AV2 = 0-10V
AV3 = -5/+5V
AV4 = -10/+10V

ⓒ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14* = 14 mm (only AMCxx)
15* = 15 mm (only ACxx)

ⓓ CONNECTION POSITION
- = axial
R = radial

ⓔ CONNECTIONS
L2 = cable output 2 m
Lx = cable output x m
M = M12, 8 pin plug
M2 = M23, 12 pin plug

ⓕ CUSTOM VERSION

ROTACOD

Absolute multi turn encoders

Series EM58 PA • EM58S PA • EMC58 PA

- Programmable analogue output
- 0-5V, 0-10V, -5/+5V, -10/+10V, 4-20mA, 0-20mA, 0-24mA
- Multi turn up to 16384 rev.
- Programmable overrun mode
- RS232 service interface
- Programmable via USB cable

EM58 PA • EM58S PA • EMC59 PA

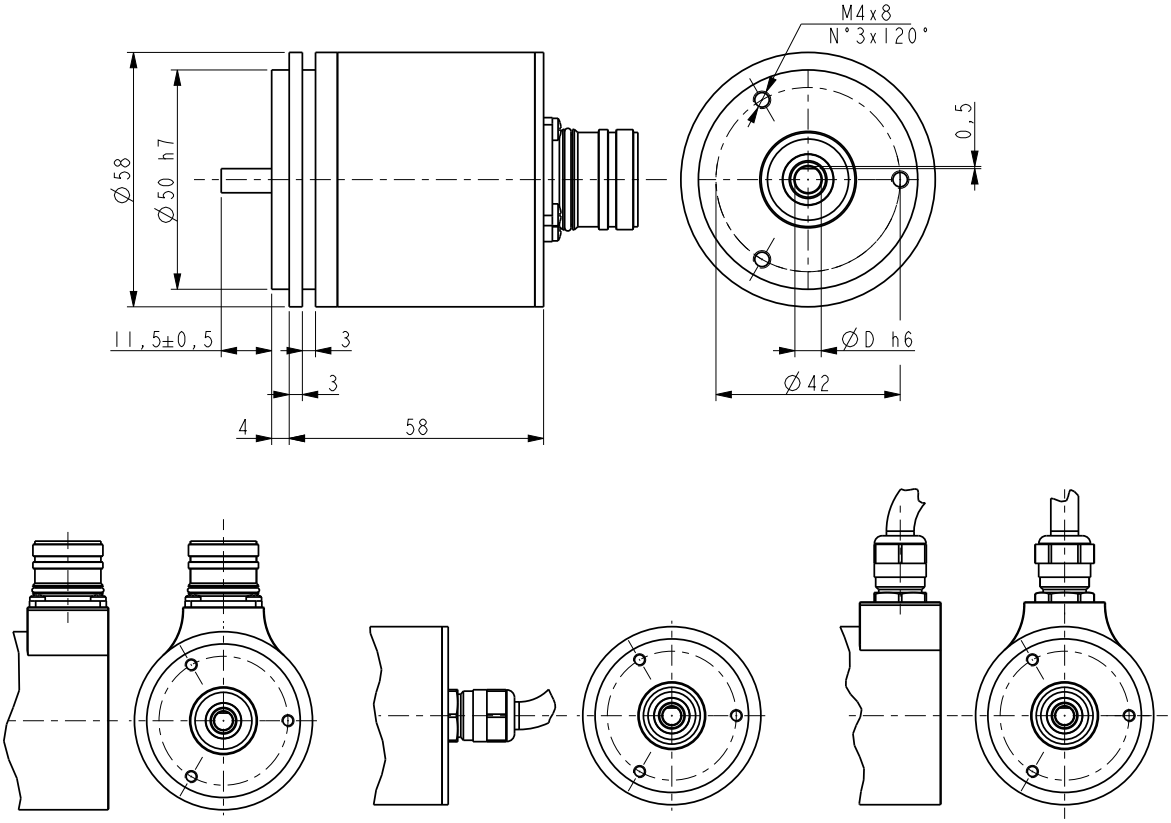
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
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:	12000 rpm, 9000 rpm continuous operation
Bearing life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	M12, M23 plug or cable output 2 m (6.56 ft)
Weight:	~ 300 g (10,6 oz)
Option:	• additional cable

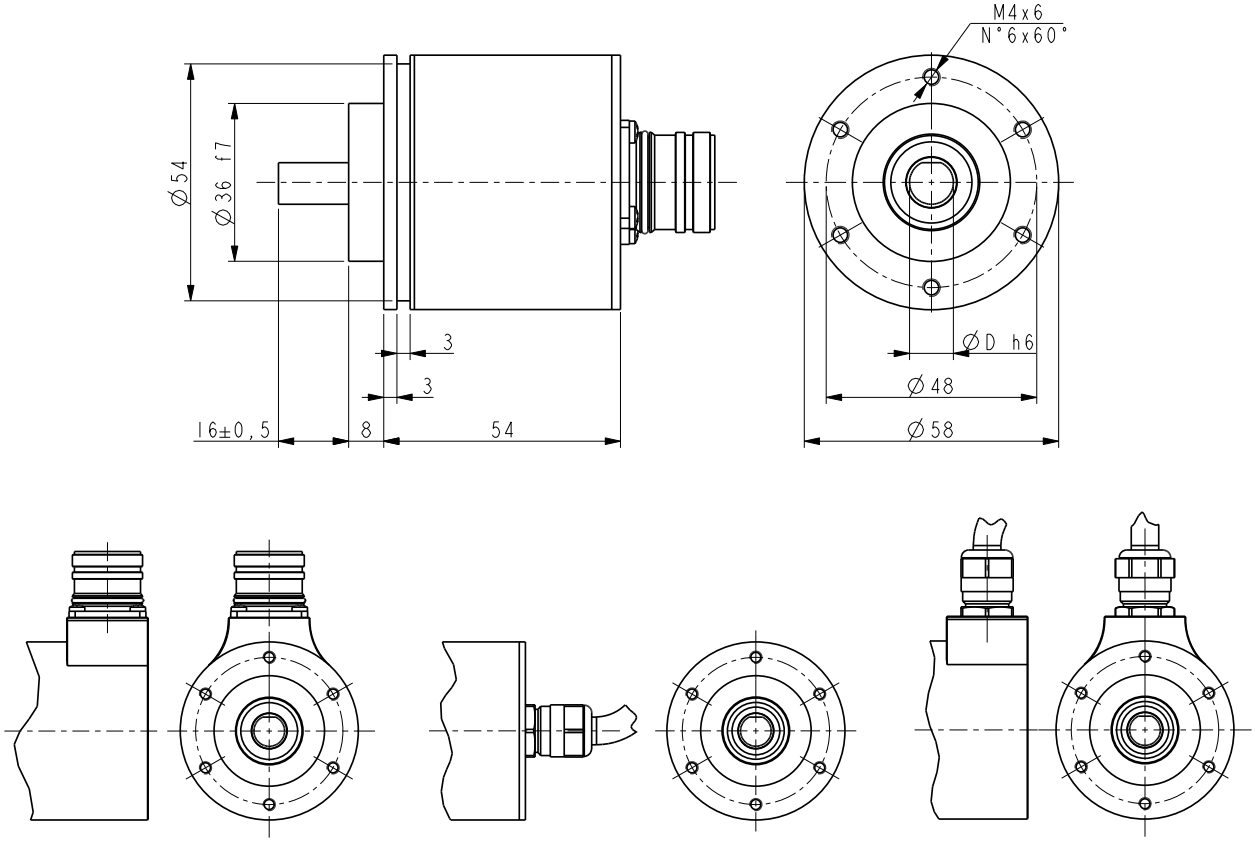
ELECTRICAL SPECIFICATIONS	
Resolution:	4096 cpr x 16384 turns
Accuracy:	± 0,04°
Output circuits:	programmable 0-5V, 0-10V, -5/+5V, -10/+10V, 4-20mA, 0-20mA, 0-24mA
Counting frequency:	> 150 kHz
Power supply:	+13Vdc ÷ 30Vdc
Power consumption:	1,3 W max.
Start-up time:	~ 40 ms
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	> 100.000 h
Functions:	• Programmable resolution • Teach-in of resolution • Counting direction (programmable + input) • Zero setting (programmable + input) • Programmable overrun

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

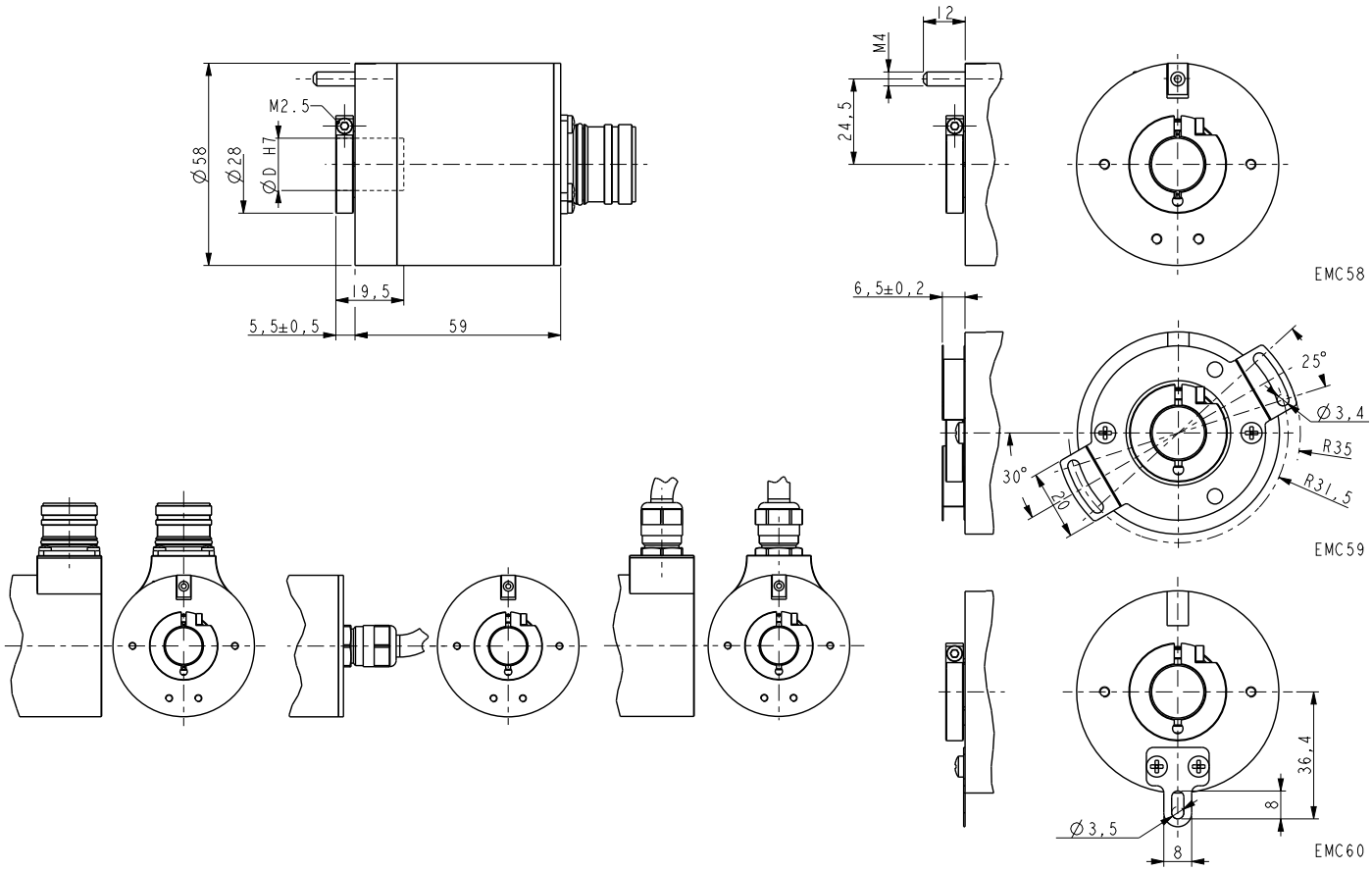
ACCESSORIES	
EPFL121H:	M23 12 pin connector
E-M12F12:	M12 12 pin connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
EC-M12F12-LK-T12-xx:	M12 cordset with xx m cable
EC-CR12F-S28-T12-xx:	M23 cordset with xx m cable
LKM-386:	fixing clamps



EM58 PA



EM58S PA



Order code

EM58 EM58S EMC58 EMC59 EMC60	XX ⓐ	/	XXXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	XX ⓕ	/Sxxx - /Pxxx ⓖ

ⓐ **RESOLUTION**
12 = 4096 cpr

ⓑ **REVOLUTIONS**
16384 = 16384 turns

ⓒ **OUTPUT**
PA = Programmable analogue

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx)
15 = 15 mm (EMCxx)

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

ⓕ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
L10 = cable output 10 m
M = M12, 12 pin plug
M2 = M23, 12 pin plug

ⓖ
/Sxxx: Custom version
/Pxxx: Factory programmed encoder on customer request

ROTACAM

Encoder with integrated cam programmer

Series ASR58 • AMR58

- Absolute encoder with integrated cam switch programmer
- Single- and multiturn version
- Up to 16 digital real-time outputs
- Allows to store up to 16 programs/recipes
- SSI position output, Profibus on request
- Optional programmable analogue output

ASR58 • AMR58

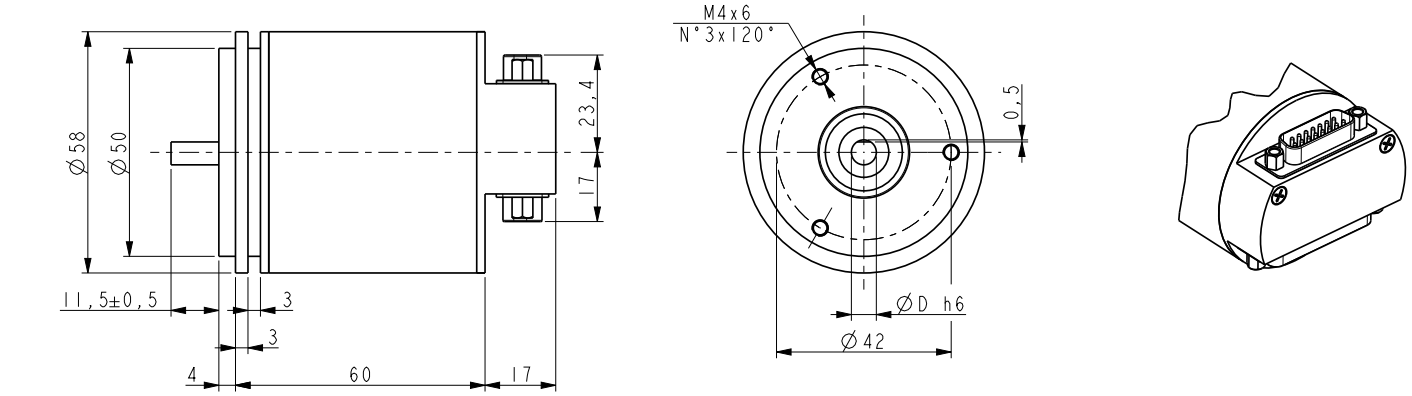
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H.without condensation)

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:	6000 rpm max.
Bearings life:	400 x10^6 rev. min. (10^9 rev. min. with 20 N shaft loading max.)
Electrical connections:	ASR58: DSub 15 + 25 pin plug or cable 1 m (3.3 ft) AMR58: MIL 32 pin plug or cable 1 m (3.3 ft)
Weight:	~ 250 g (8,8 oz)
Option:	• additional cable

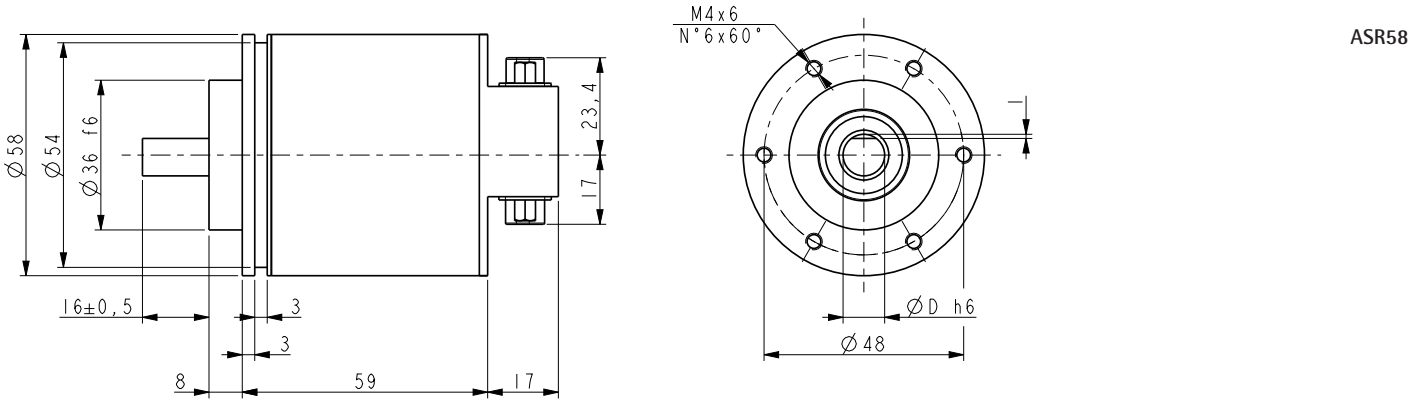
ELECTRICAL SPECIFICATIONS	
Resolution:	ASR58: 3600 cpr / 0.1° AMR58: 4096 cpr x 256 turns / 0,09°
Nr. of cams per program:	120
Nr. of selectable programs/recipes:	16
Outputs:	ASR: 16 x Push-Pull outputs (100 mA), analogue (see option) AMR: 8 x Push-Pull outputs (80 mA), SSI MSB aligned
Diagnostics:	Error signal indicating output status
Cam switching time:	ASR ~1 µs, AMR ~10 µs
Power supply:	+10V +30V
Power consumption:	ASR: 2 W, AMR: 2,5 W
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 h min.
Option:	ASR58: analogue output (freely programmable on OUT1)

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

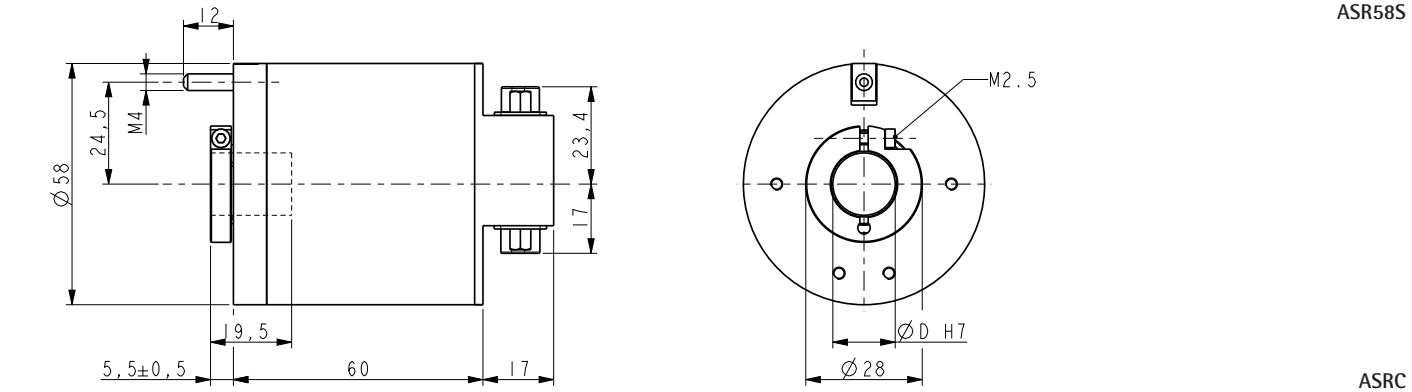
ACCESSORIES	
EDB 25S:	25 pin DSub mating connector
EDA 15S:	15 pin DSub mating connector
E32MLS:	32 pin MIL mating connecor
KIT xx59:	fixing plate for ASRC, AMRC
KIT xx60:	fixing plate for ASRC, AMRC
KIT-ASR58:	connection Kit ASR > PC
KIT-AMR58:	connection Kit AMR > PC
PAN/PGF:	flexible couplings
LKM-386:	fixing clamps



ASR58



ASR58S



ASRC

Order code - Single turn

ASR58 ASR58S ASRC	XX ⓐ	-	XX ⓑ	XX ⓒ	XX ⓓ	/Sxxx ⓔ

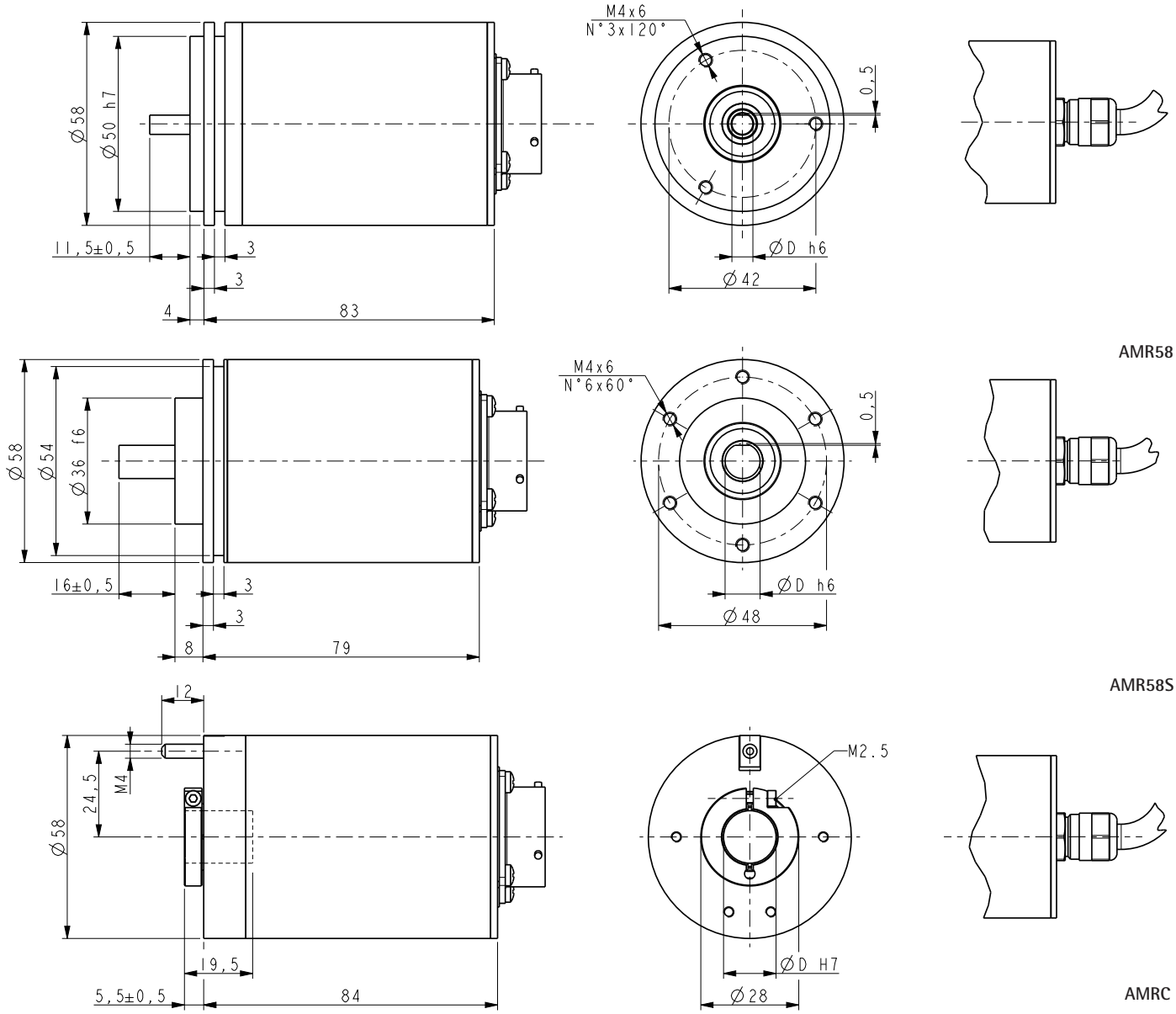
ⓐ RESOLUTION
81 = 3600 cpr

ⓑ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only ASRC)
15 = 15 mm (only ASRC)

ⓒ CONNECTIONS
- = DSub plugs
L1 = cable output 1 m
Lx = cable output x m

ⓓ ANALOGUE OUTPUT
- = no analogue output (standard)
A1 = analogue output 0-10V
A2 = analogue output 0-5V
A3 = analogue output -5V +5V

ⓔ CUSTOM VERSION



Order code - Multi turn

AMR58 AMR58S AMRC	XX/XXX ⓐ	XX ⓑ	-	XX ⓒ	XX ⓓ	/Sxxx ⓔ

ⓐ **TOTAL RESOLUTION**
12/256 = 4096 cpr x 256 turns

ⓑ **OUTPUT**
CS = Cam switch + SSI

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only AMRC)
15 = 15 mm (only AMRC)

ⓓ **CONNECTIONS**
V = MIL 32 pin plug
L1 = cable output 1 m
Lx = cable output x m

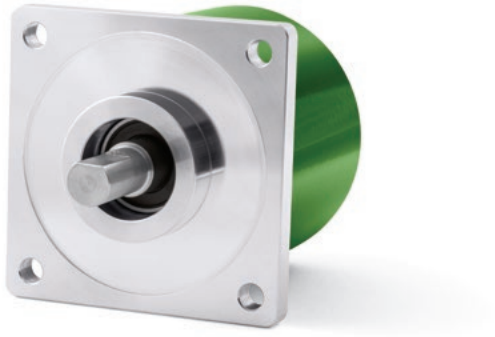
ⓔ **CUSTOM VERSION**

ROTACOD

Absolute multi turn encoders

Series AST6 • AMT6

- US standard optical encoders
- Single turn up to 13 bit (8192 cpr) and multi turn up to 13x14 bit (8192 x 16384)
- Additional incremental track
- High degree of protection, IP67
- BCD output code on request



AST6 • AMT6

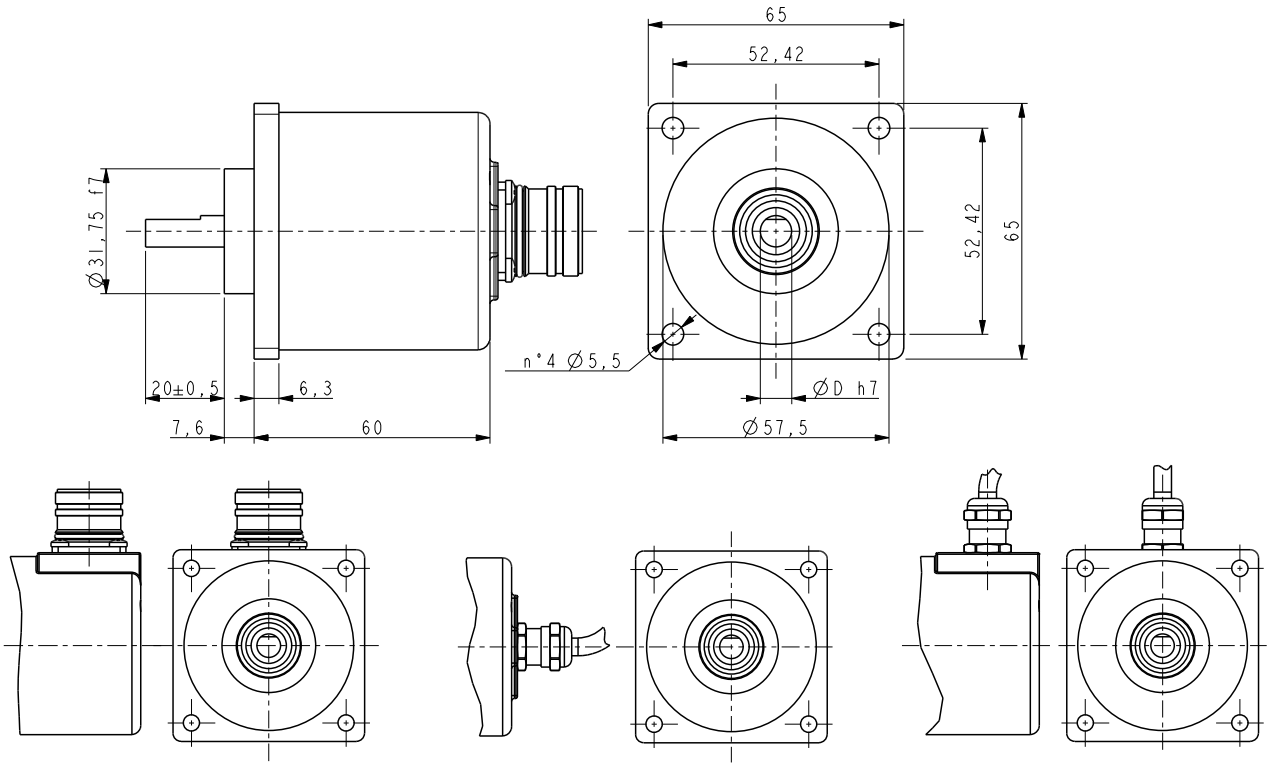
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H. without condensation)
Options:	• Operating temperature range: -40°C +100°C (-40°F +212°F) • IP66 protection shaft side

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):	≤ 1,5 Ncm (typical)
Bearings life:	400x10^{6}rev. min. (10^{9}rev. min. with shaft loading of 20 N max.)
Electrical connections:	M23 or MIL plug, MIL 32 pin inline plug or cable output 1 m (3.3 ft)
Weight:	~ 400 g (14,1 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	single turn = 1024, 4096, 8192 cpr multi turn = 4096, 16384 turns
Accuracy:	± 0,04°
Output circuits:	SSI (RS422), Bit parallel Push-Pull, NPN
Output code:	Gray, Binary
Counting frequency:	> 150 kHz
Power supply:	+7,5Vdc ÷ 34Vdc
Power consumption:	SSI: 1 W max., Bit parallel: 1,7 W 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 h
Functions:	• counting direction (input) • Zero setting/Preset (input)

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

ACCESSORIES	
EPFL121H:	M23 12 pin connector
EPFL171H:	M23 17 pin connector
E10MLS:	MIL 10 pin connector
E19MLS:	MIL 19 pin connector
E32MLS:	MIL 32 pin connector
PAN/PGF:	flexible couplings
EC-CR12F-S28-T12-xx:	M23 cordset with xx m cable



AST6

Order code - Bit parallel output

AST6	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	X ⓕ	XXX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT**
BY = Binary, Push-Pull
GY = Gray, Push-Pull
BN = Binary, NPN
GN = Gray, NPN
(BCD on request)

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm

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

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

ⓕ **PROTECTION**
- = IP65 shaft side
Q = IP66 shaft side

ⓖ **CONNECTIONS**
L1 = cable output 1 m (standard)
L5 = cable output 5 m
Lx = cable output x m
M2 = M23 17 pin plug
X = MIL 19 pin plug
Z1 = 1 m cable + DSub 15 pin plug

ⓗ **CUSTOM VERSION**

Order code - SSI output

AST6	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	X ⓕ	XX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **OUTPUT**
BS = Binary, SSI tree format
BA = Binary, SSI LSB aligned
GS = Gray, SSI tree format
GA = Gray, SSI LSB aligned
G5 = Gray, SSI tree format + 1024 PPR AB /AB Push-Pull

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm

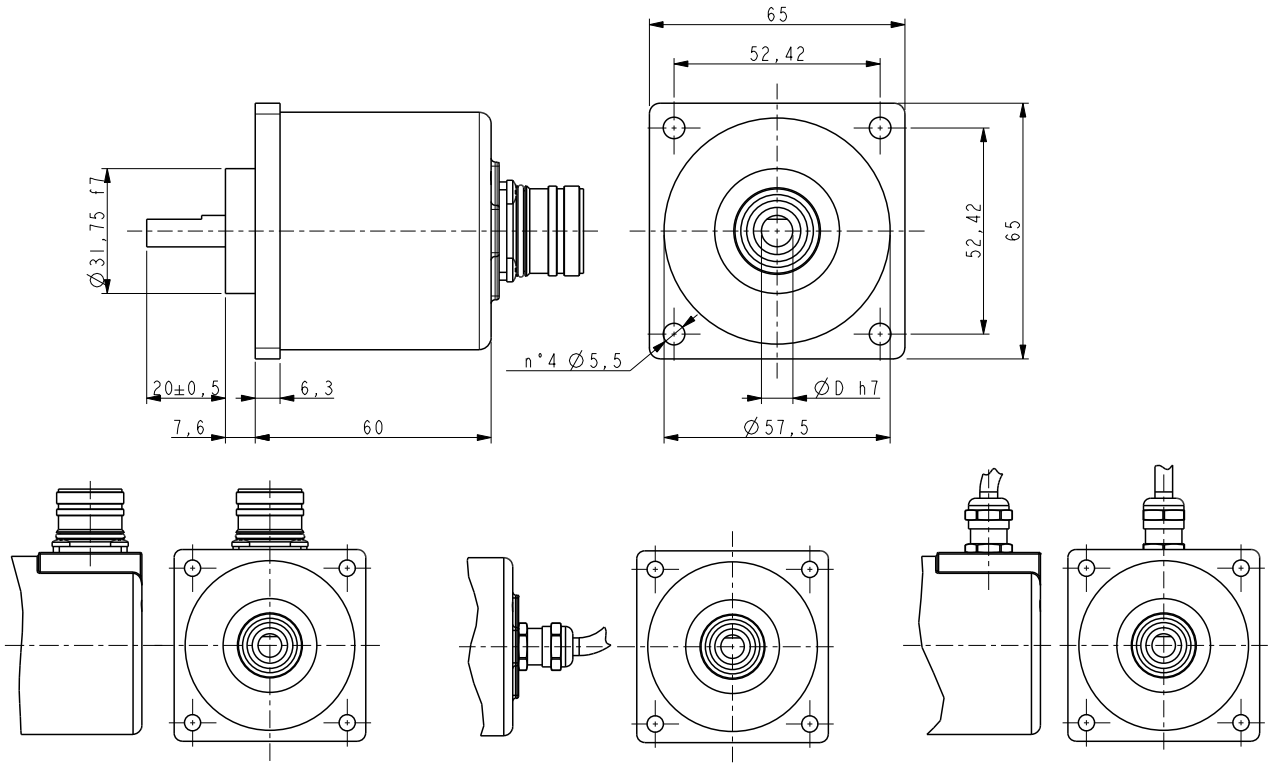
ⓓ **OPERATING TEMPERATURE RANGE**
- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

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

ⓕ **PROTECTION**
- = IP65 shaft side
Q = IP66 shaft side

ⓖ **CONNECTIONS**
L1 = cable output 1 m (standard)
L5 = cable output 5 m
Lx = cable output x m
CP = MIL 10 pin plug
M2 = M23 12 pin plug

ⓗ **CUSTOM VERSION**



AMT6

Order code - Bit parallel output

AMT6	XX ⓐ	/	XXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	X ⓖ	XXX ⓗ	/Sxxx ⓘ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
4096 = 4096 turns
16384 = 16384 turns

ⓒ **OUTPUT**
BY = Binary, Push-Pull
GY = Gray, Push-Pull
BN = Binary, NPN
GN = Gray, NPN
BCD on request

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm

ⓔ **OPERATING TEMP. RANGE**
- = -25°C +85°C (-13°F +185°F)
K = -40°C +100°C (-40°F +212°F)

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

ⓖ **PROTECTION**
- = IP65 shaft side
Q = IP66 shaft side

ⓗ **CONNECTIONS**
L1 = cable output 1 m
L5 = cable output 5 m
L10 = cable output 10 m
Lx = cable output x m
V = MIL 32 pin plug

ⓘ **CUSTOM VERSION**

Order code - SSI output

AMT6	XX ⓐ	/	XXXX ⓑ	XX ⓒ	-	XX ⓓ	-	X ⓔ	X ⓕ	X ⓖ	XX ⓗ	/Sxxx ⓘ

ⓐ **RESOLUTION**
10 = 1024 cpr
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
4096 = 4096 turns
16384 = 16384 turns
(16384 only with SSI LSB aligned)

ⓒ **OUTPUT**
BS = Binary, SSI tree format
BA = Binary, SSI LSB aligned
GS = Gray, SSI tree format
GA = Gray, SSI LSB aligned
G5 = Gray, SSI tree format + 1024 PPR AB /AB Push-Pull

ⓓ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52mm / 3/8"
10 = 10 mm
12 = 12 mm

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

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

ⓖ **PROTECTION**
- = IP65 shaft side
Q = IP66 shaft side

ⓗ **CONNECTIONS**
L1 = cable output 1 m
L5 = cable output 5 m
Lx = cable output x m
CP = MIL 10 pin plug
M2 = M23 12 pin plug

ⓘ **CUSTOM VERSION**

ROTACOD
ATEX absolute encoder

Series **XAC77**

- Encoder with ATEX II 2GD Ex d IIC T6 certification
- For use in zones 1, 2, 21 and 22
- Resolution up to 30 bit
- SSI, Profibus, CANopen and parallel output

XAC77

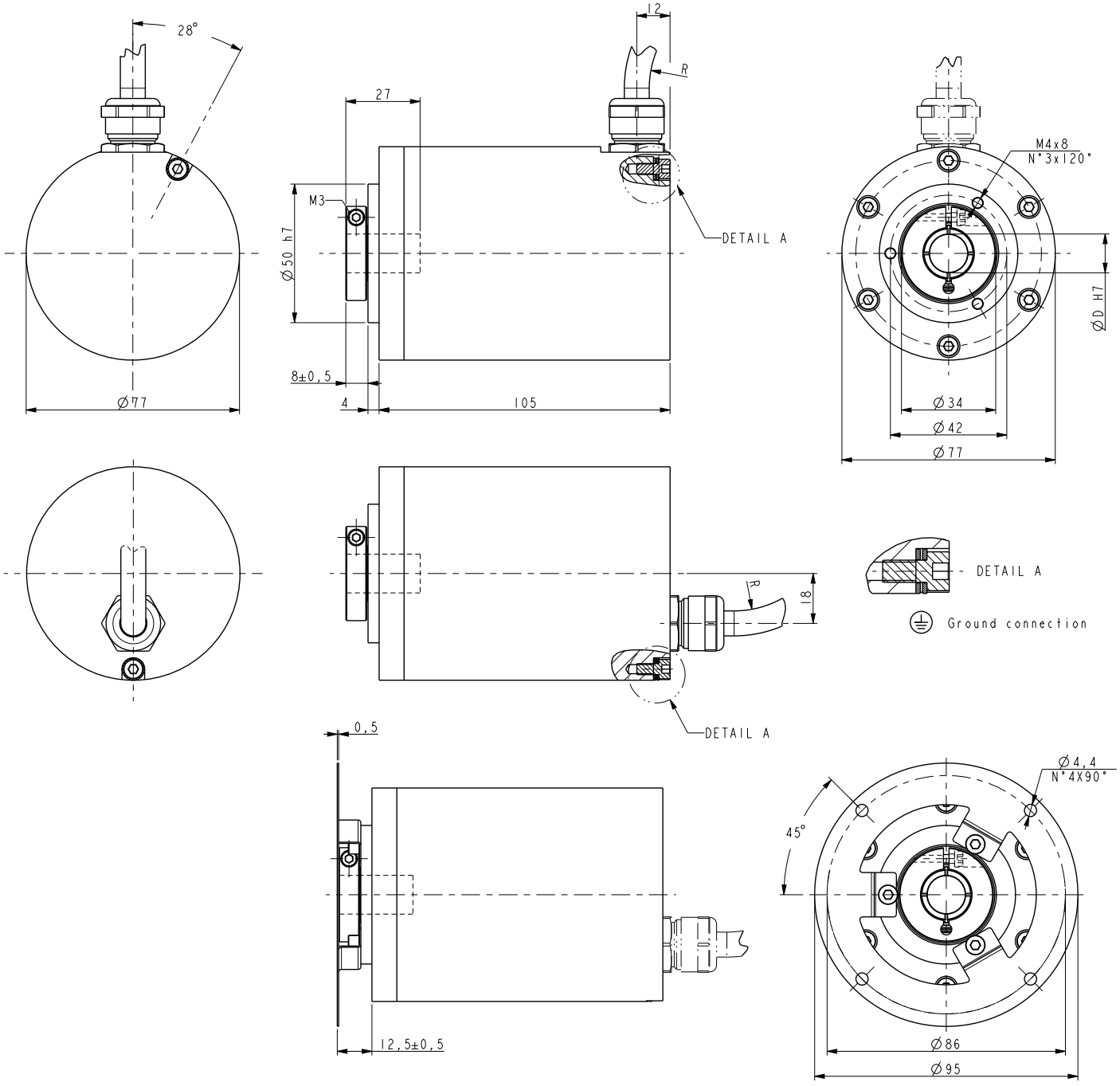
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 10-2000 Hz
Protection:	IP65
Environmental temperature at max. speed:	40°C max.
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
Protection mode:	EEx d IIC T6
Dimensions:	see drawing
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:	$400x10^6$ rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	cable output 1 m (3.3 ft)
Weight:	~ 1 kg (35,2 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	SSI, Bit Parallel: 8192 cpr max. or 8192 cpr x 4096 turns max. Analogue output: 12 bit or 13 x 14 bit Profibus, CANopen: 262144 cpr or 65536 cpr x 16384 turns
Accuracy:	± 0,04°
Output circuits:	SSI (RS422), Bit Parallel NPN, Push Pull Profibus-DP, CANopen 0-5V, 0-10V, -5/+5V, -10/+10V 4-20mA, 0-20mA, 0-24mA
Output code:	Gray, Binary
Counting frequency:	> 150 kHz
Power supply:	+10Vdc +30Vdc
Power consumption:	2,2 W max.
Protection:	against inversion of polarity and short circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Functions:	• Counting direction (input) • Zero setting / Preset (input) *Profibus, CANopen functions refer to HM58 FB series on page 186* *Analogue functions refer to EM58 PA series on page 168*
Optoelectronic life:	100.000 hrs min.

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

ACCESSORIES	
LKM-1758:	Ø 10 mm solid shaft extension


28°
Ø77
12
R
27
M3
Ø50 h7
8±0,5
4
105
DETAIL A
M4x8
N°3x120°
ØD H7
Ø34
Ø42
Ø77
DETAIL A
Ground connection
18
DETAIL A
0,5
12,5±0,5
45°
Ø4,4
N°4X90°
Ø86
Ø95

XAC77

Order code - Profibus and CANopen

XAC77	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
18/1 = 262144 cpr single turn
16/16384 = 65536 cpr x 16384 turns

ⓑ **OUTPUT**
PB = Profibus-DP V1
CB = CANopen DS301, DS406

ⓒ **SHAFT DIAMETER**
14 = 14 mm

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

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

ⓕ **CUSTOM VERSION**

Order code - SSI and Bit Parallel

XAC77	XX ⓐ	/	XXXXX ⓑ	X ⓒ	XX ⓓ	-	XX ⓔ	-	X ⓕ	XX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTION**
12 = 4096 cpr
13 = 8192 cpr

ⓑ **REVOLUTIONS**
1 = single turn
4096 = 4096 turns
16384 = 16384 turns

ⓒ **OUTPUT CODE**
B = Binary
G = Gray

ⓓ **OUTPUT CIRCUITS**
N = NPN o.c.
Y = Push-Pull
R = SSI, tree format
B = SSI, LSB aligned

ⓔ **SHAFT DIAMETER**
14 = 14 mm

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

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

ⓗ **CUSTOM VERSION**

Order code - Analogue output

XAC77	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
12/1 = 12 bit single turn
12/16384 = 12 x 14 bit

ⓑ **OUTPUT**
PA = Programmable analogue

ⓒ **SHAFT DIAMETER**
14 = 14 mm

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

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

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute multi turn encoders

Series AM9 • AMC9

- Compact & flat multi turn encoder
- Resolution up to 8192 cpr x 4096 turns
- Radial M23 connector output
- AM9 with Ø 10 mm solid shaft
- AMC9 with Ø 15 mm through hollow shaft

AMC9 • AM9

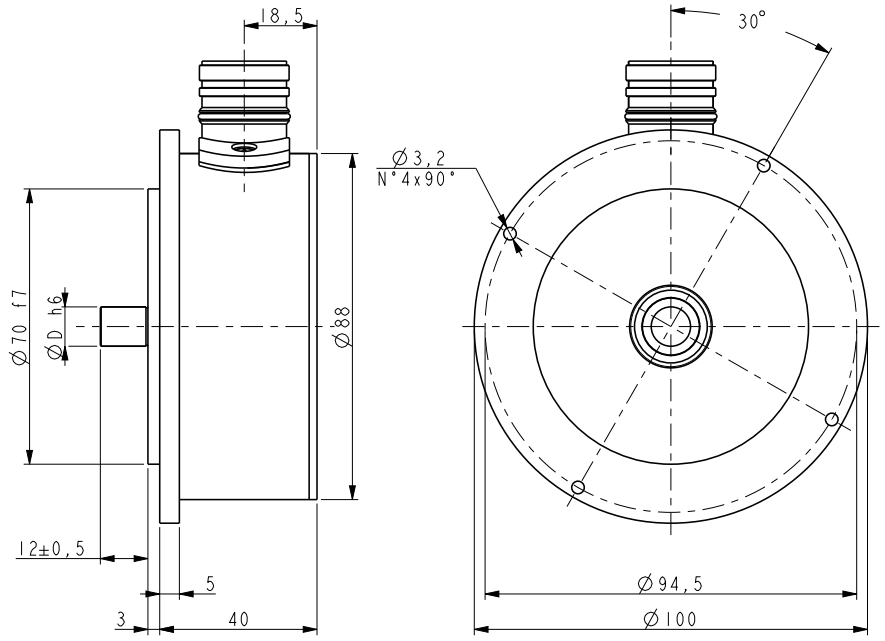
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H. without condensation)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 10 mm
Hollow shaft diameter:	Ø 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:	6000 rpm max.
Bearings life:	$400x10^6$ rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	M23, 12 pin plug
Weight:	~ 400 g (14,1 oz)

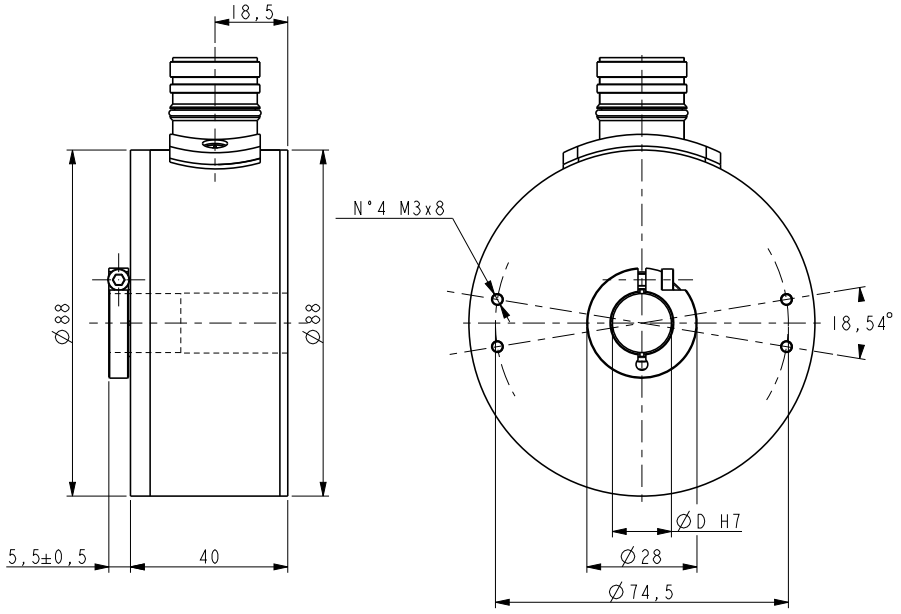
ELECTRICAL SPECIFICATIONS	
Resolution:	8192 cpr x 4096 turns max.
Accuracy:	± 0,04°
Output circuit:	SSI
Counting frequency:	100 kHz max.
Power supply:	+10V +30V
Power consumption:	1,5 W
Protection:	against inversion of polarity and short circuit
EMC:	electro-magnetic immunity, according to: EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 h min.
Functions:	• Counting direction (input)
Option:	• Zero setting (input)

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	
EPFL121H:	12 pin M23 mating connector
EC-CR12F-S27-A8-xx:	M23 cordset with xx m cable
PAN/PGF:	flexible couplings
BR1:	reducing sleeves



AM9



AMC9

Order code

Additional code (optional)

AM9 AMC9	XX/XXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	/Sxxx ⓔ

ⓐ **RESOLUTION**	ⓑ **OUTPUT**	ⓒ **SHAFT DIAMETER**	ⓓ **E** = Zero setting
12/4096 = 4096 cpr x 4096 turns 13/4096 = 8192 cpr x 4096 turns	**BS** = SSI tree format, Binary code **GS** = SSI tree format, Gray code **BA** = SSI LSB aligned, Binary code **GA** = SSI LSB aligned, Gray code	**10** = 10 mm (only AM9) **15** = 15 mm (only AMC9)	ⓔ **CUSTOM VERSION**

ROTACOD

Absolute encoder with Profibus DP output

Series | **Ax58 PB • Ax58S PB • AxC58 PB**

- Standard Profibus encoder
- Single & multi turn versions
- Connection via M12 or PG outlet
- Roundloop function
- Resistant against magnetic fields

Ax58 PB • AxC58 PB

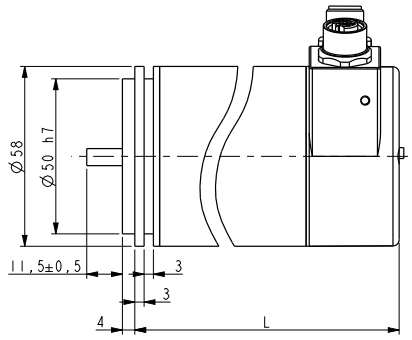
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65 (with assembled connection cap)
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H.without condensation)

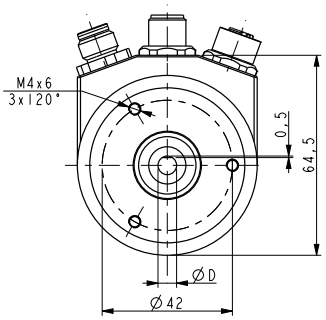
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15 mm
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, radial):	40 N max.
Shaft rotational speed:	6000 rpm max.
Bearings life:	400 x 10^6 rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	PG outlet or M12 plugs
Weight:	~ 350 g (12,3 oz)

ELECTRICAL SPECIFICATIONS	
Resolution:	8192 cpr x 4096 turns max.
Accuracy:	± 0,04°
Counting frequency:	100 kHz max.
Power supply:	+10V +30V
Power consumption:	2,6 W max.
Interface:	Profibus-DP V0, Class 2 (RS485)
Programmable parameters:	• counting direction • scaling factor • preset value • offset value
Baudrate:	12 Mbit/sec. max.
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplers
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 h min.

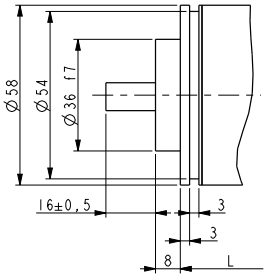
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305
Light source:	GaAl diodes

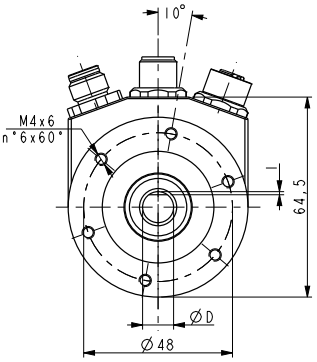
ACCESSORIES	
CC-PB:	connection cap with PG outlet
CC-PB-C:	connection cap with M12 plugs
EC-M12MP-LK-PB-xx:	M12 plug cordset with xx m cable
EC-M12FP-LK-PB-xx:	M12 conn. cordset with xx m cable
EC-M12PP-LK-PBS-xx:	M12 power supply cordset with xx m cable
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps





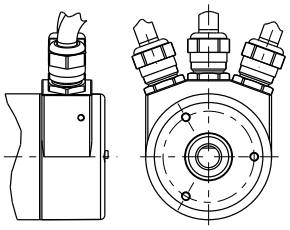
AS58-AM58

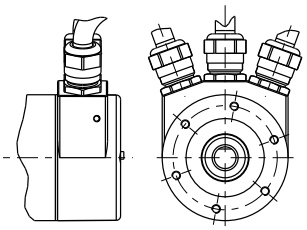


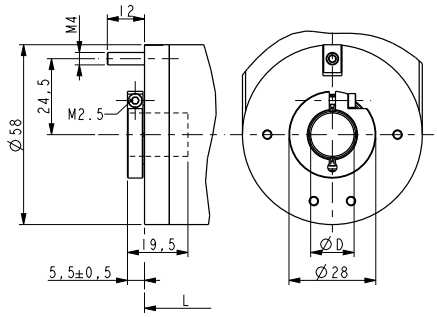


AS58S-AM58S

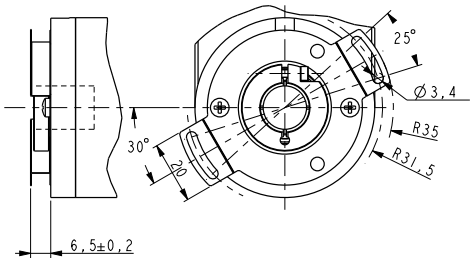
SERIES	L	D
AS58	83	6-10h6 8-12g6
AM58	98	
AS58S	82	6-8-10h6 12g6
AM58S	97	
ASCXX	88	14-15H7
AMCXX	98	



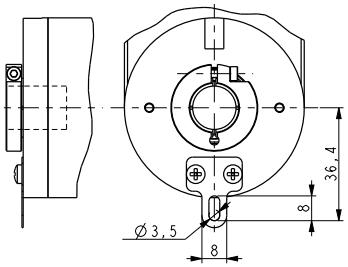




ASC58-AMC58



ASC59-AMC59



ASC60-AMC60

Order code - Single turn

AS58 AS58S ASC58 ASC59 ASC60	XX ⓐ	/	PB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
12 = 4096 cpr
13 = 8192 cpr

10 = 10 mm
12 = 12 mm
14 = 14 mm (ASCxx)
15 = 15 mm (ASCxx)

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

ⓒ **CUSTOM VERSION**

Order code - Multi turn

AM58 AM58S AMC58 AMC59 AMC60	XX/XXXX ⓐ	PB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
12/4096 = 4096 cpr x 4096 turns
13/4096 = 8192 cpr x 4096 turns

10 = 10 mm
12 = 12 mm
14 = 14 mm (AMCxx)
15 = 15 mm (AMCxx)

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

ⓒ **CUSTOM VERSION**

CONNECTION CAP
(to be ordered separately)

CC-PB:	Connection cap with PG outlet
CC-PB-C:	Connection cap with M12 connectors

Cordsets
(standard lengths, other on request)

EC-M12MP-LK-PB-5:	M12 plug cordset with 5 m cable
EC-M12FP-LK-PB-5:	M12 connector cordset with 5 m cable
EC-M12PP-LK-PBS-5:	M12 power supply cordset with 5 m cable
EC-M12MP-LK-PB-10:	M12 plug cordset with 10 m cable
EC-M12FP-LK-PB-10:	M12 connector cordset with 10 m cable
EC-M12PP-LK-PBS-10:	M12 power supply cordset with 10 m cable

ROTACOD

Absolute encoders with CANopen output

Series | **Ax58 CB • Ax58S CB • AxC58 CB**

- Standard CANopen encoder
- Single & multi turn versions
- Connection via M12 or PG outlet
- Roundloop function & velocity output
- Resistant against magnetic fields

CANopen

Ax58 CB • AxC58 CB

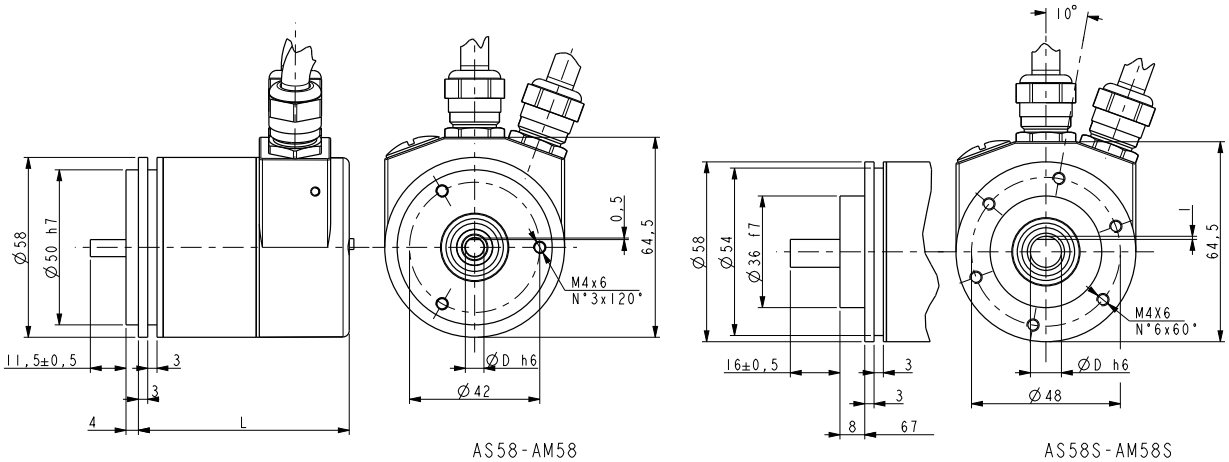
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65 (with assembled connection cap)
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-25°C +85°C (-13°F +185°F) (98% R.H.without condensation)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 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):	40 N max.
Shaft rotational speed:	6000 rpm max.
Bearings life:	400 x 10^6 rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	PG outlet or M12 plugs
Weight:	~ 350 g (12,3 oz)

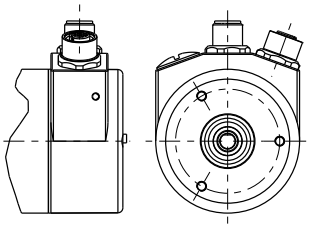
ELECTRICAL SPECIFICATIONS	
Resolution:	8192 cpr x 4096 turns max.
Accuracy:	± 0,04°
Counting frequency:	100 kHz max.
Power supply:	+10V +30V
Power consumption:	2,6 W max.
Interface:	CANopen DS301, DS406, Class 2 (RS485)
Programmable parameters:	• counting direction • scaling factor • preset value • two software limit switches
Baudrate:	programmable by Dip-switches
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplers
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 h min.

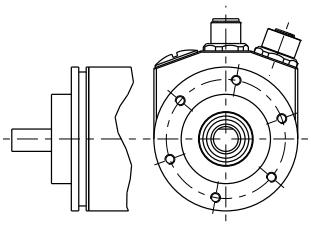
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305
Light source:	GaAl diodes

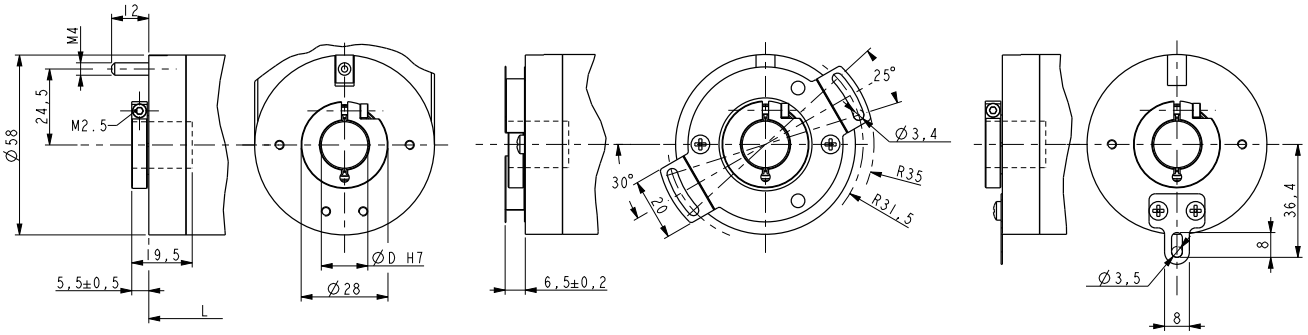
ACCESSORIES	
CC-CB:	connection cap with PG outlet
CC-CB-C:	connection cap with M12 plugs
EC-M12MC-LK-CB-xx:	M12 plug cordset with xx m cable
EC-M12FC-LK-CB-xx:	M12 conn. cordset with xx m cable
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



SERIES	L	D
AS58	83	6-10h6 8-12g6
AM58	98	
AS58S	82	6-8-10h6 12g6
AM58S	97	
ASCXX	88	14-15H7
AMCXX	98	







Order code - Single turn

AS58 AS58S ASC58 ASC59 ASC60	XX ⓐ	/	CB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
12 = 4096 cpr
13 = 8192 cpr

10 = 10 mm
12 = 12 mm
14 = 14 mm (ASCxx)
15 = 15 mm (ASCxx)

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

ⓒ **CUSTOM VERSION**

Order code - Multi turn

AM58 AM58S AMC58 AMC59 AMC60	XX/XXXX ⓐ	CB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
12/4096 = 4096 cpr x 4096 turns
13/4096 = 8192 cpr x 4096 turns

10 = 10 mm
12 = 12 mm
14 = 14 mm (AMCxx)
15 = 15 mm (AMCxx)

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

ⓒ **CUSTOM VERSION**

CONNECTION CAP
(to be ordered separately)

CC-CB:	Connection cap with PG outlet
CC-CB-C:	Connection cap with M12 connectors

Cordsets
(standard lengths, other on request)

EC-M12MC-LK-CB-5:	M12 plug cordset with 5 m cable
EC-M12FC-LK-CB-5:	M12 connector cordset with 5 m cable
EC-M12MC-LK-CB-10:	M12 plug cordset with 10 m cable
EC-M12FC-LK-CB-10:	M12 connector cordset with 10 m cable

ROTACOD

Absolute encoders with Fieldbus interface

Series **Hx58 FB • Hx58S FB • HxC58 FB**

- High resolution Fieldbus encoders
- Single turn resolution 262144 cpr
- Multi turn resolution 65536 cpr x 16384 turns
- Roundloop function & velocity output
- Bus cover with M12 or PG outlet
- Precise & fast optical sensing
- Resistant against magnetic fields

HxC58 FB •Hx58S FB

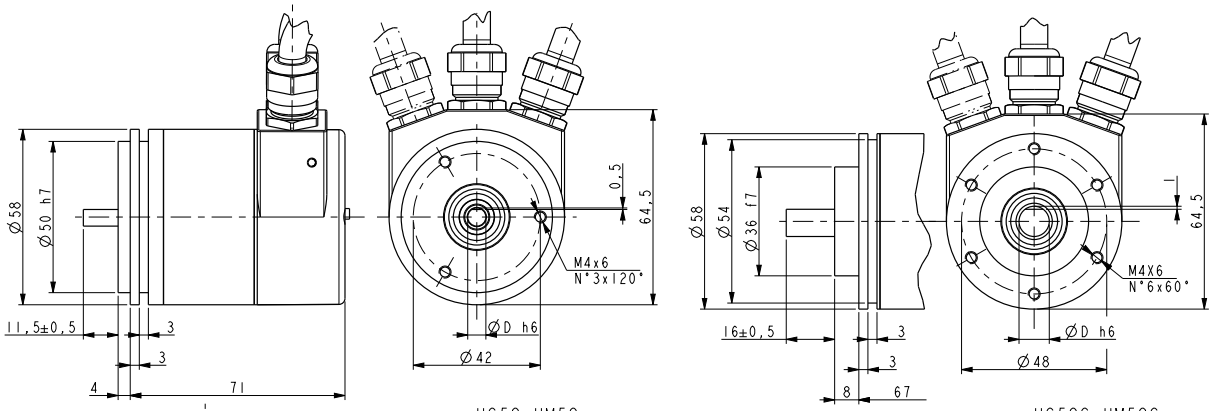
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65 (with assembled connection cap)
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

MECHANICAL SPECIFICATIONS	
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):	40 N max.
Shaft rotational speed:	6000 rpm max.
Bearings life:	$400x10^6$ rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	PG outlet or M12 plugs
Weight:	~ 300 g (10,5 oz)

ELECTRICAL SPECIFICATIONS	
Resolution:	262144 cpr or 65536 cpr x 16384 turns
Accuracy:	± 0,007°
Counting frequency:	150 kHz max.
Power supply:	+10V +30V
Power consumption:	2,2 W
Interface:	Profibus-DP V0 CANopen DS301, DS406 CANlift DS301, DSP417 DeviceNet
Programmable parameters:	standard functions see user manual for each fieldbus • velocity output • round loop function
Baudrate:	programmable by Dip-switches
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplers
Protection:	against inversion of polarity and short-circuit
EMC:	electro-magnetic immunity, EN 61000-4-2 EN 61000-4-4
Optoelectronic life:	100.000 h min.

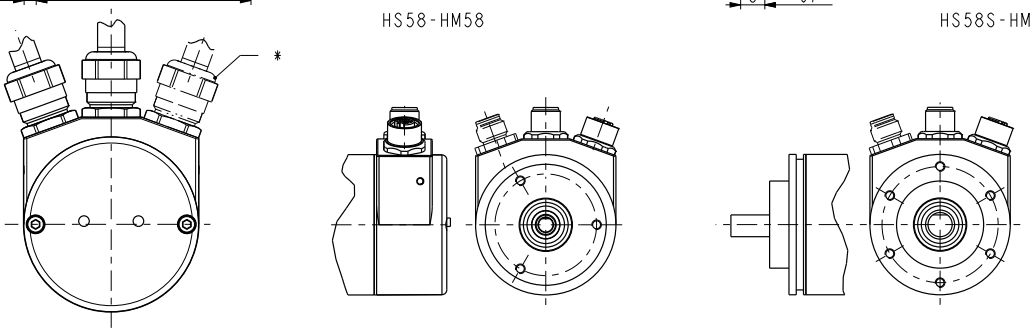
MATERIALS	
Flange:	anticorodal, UNI EN AW-6082
Housing:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, UNI EN 4305
Light source:	GaAl diodes

ACCESSORIES	
BC-PB:	Profibus conn. cap with PG outlet
BC-PB-C:	Profibus conn. cap with M12 plugs
BC-CB:	CANopen conn. cap with PG outlet
BC-CB-C:	CANopen conn. cap with M12 plugs
BC-FDV:	DeviceNet conn. cap with PG outlet
BC-FDV-C:	DeviceNet conn. cap with M12 plugs
BC-I6:	CANlift conn. cap with PG outlet
BC-I6-C:	CANlift conn. cap with M12 plugs
EC-M12xx-LK-xx-xx:	M12 cordset with xx m cable
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps

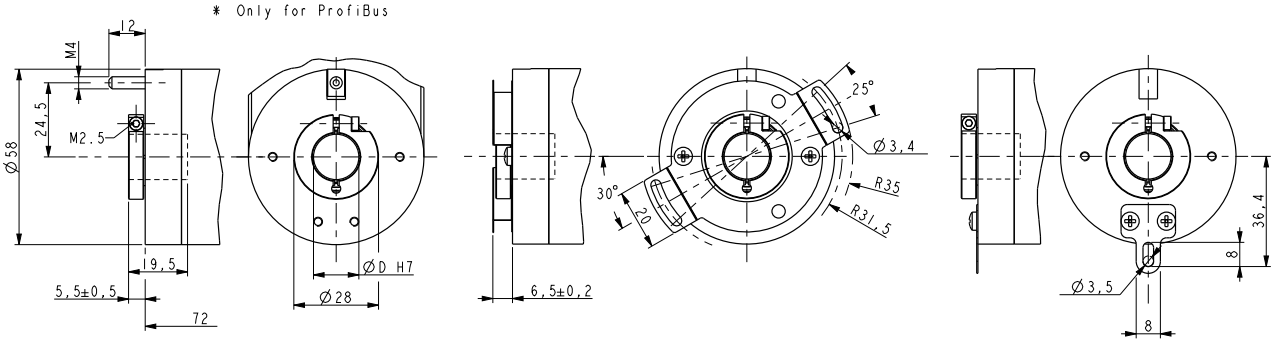


HS58-HM58

HS58S-HM58S



* Only for ProfiBus



HSC58-HMC58

HSC59-HMC59

HSC60-HMC60

Order code - Single turn

HS58 HS58S HSC58 HSC59 HSC60	XX ⓐ	/	FB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
18 = 262144 cpr

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

10 = 10 mm
12 = 12 mm
14 = 14 mm (only HSCxx)
15 = 15 mm (only HSCxx)

ⓒ **CUSTOM VERSION**

Order code - Multi turn

HM58 HM58S HMC58 HMC59 HMC60	XX/XXXXX ⓐ	/	FB	-	XX ⓑ	/Sxxx ⓒ

ⓐ **RESOLUTION**
16/16384 = 65536 cpr x 16384 turns

ⓑ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"

10 = 10 mm
12 = 12 mm
14 = 14 mm (only HMCxx)
15 = 15 mm (only HMCxx)

ⓒ **CUSTOM VERSION**

CONNECTION CAP (to be ordered separately)

BC	-	XX ⓐ	-	X ⓑ

ⓐ **INTERFACE**
PB = Profibus-DP V1
CB = CANopen DS301, DS406
FDV = DeviceNet
I6 = CANlift DS301, DSP417

ⓑ **CONNECTIONS**
- = PG output
C = M12 connector output

Cordsets
(standard lengths, other on request)

EC-M12MC-LK-CB-5:	CAN/DeviceNet M12 plug cordset with 5 m cable
EC-M12FC-LK-CB-5:	CAN/DeviceNet M12 conn. cordset with 5 m cable
EC-M12MC-LK-CB-10:	CAN/DeviceNet M12 plug cordset with 10 m cable
EC-M12FC-LK-CB-10:	CAN/DeviceNet M12 conn. cordset with 10 m cable
EC-M12MP-LK-PB-5:	Profibus M12 plug cordset with 5 m cable
EC-M12FP-LK-PB-5:	Profibus M12 connector cordset with 5 m cable
EC-M12PP-LK-PBS-5:	Profibus M12 power supply cordset with 5 m cable
EC-M12MP-LK-PB-10:	Profibus M12 plug cordset with 10 m cable
EC-M12FP-LK-PB-10:	Profibus M12 connector cordset with 10 m cable
EC-M12PP-LK-PBS-10:	Profibus M12 pwr supply cordset with 10 m cable

ROTACOD
Absolute encoder

Series AM58K

- Profibus and CANopen encoder
- Stainless steel housing suitable for food industry
- IP67 washdown protection
- Bus cover with M12 connectors
- Roundloop function
- Position & velocity output (CANopen)

AM58K

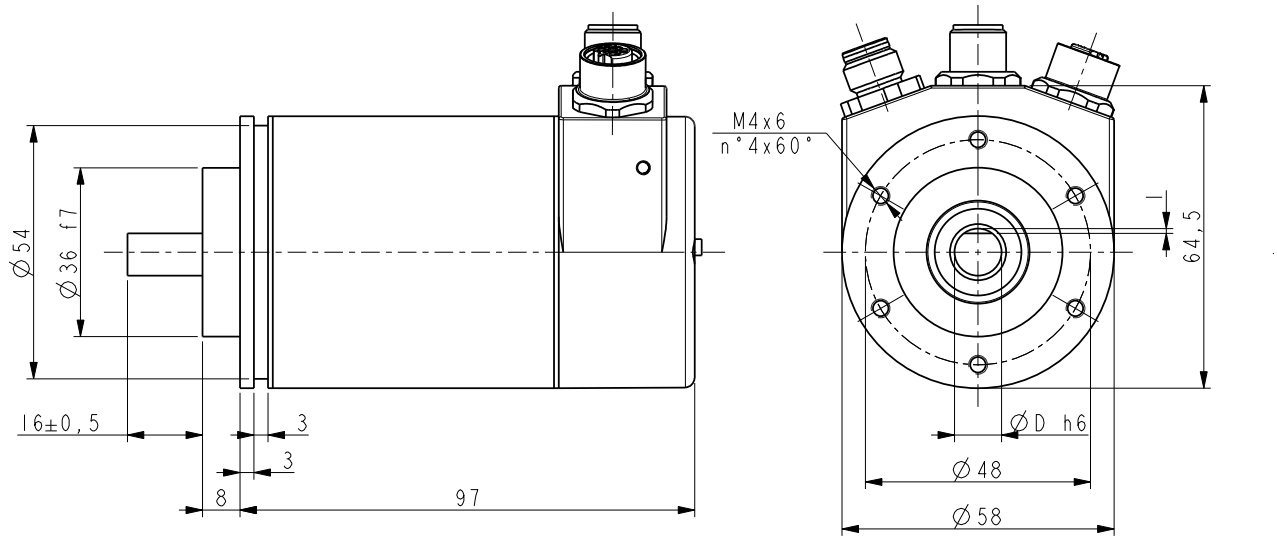
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67 (with assembled connection cap)
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

MECHANICAL SPECIFICATIONS	
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.
Bearings life:	$400x10^6$ rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connection:	connection cap with M12 connectors
Weight:	~ 800 g (28,2 oz)

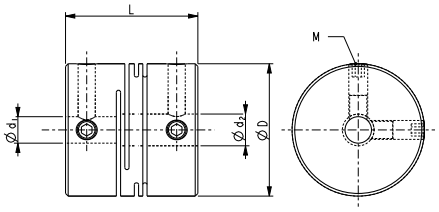
ELECTRICAL SPECIFICATIONS	
Resolution:	13 + 12 bit (8192 cpr x 4096 turns)
Accuracy:	± 0,04°
Counting frequency:	150 kHz max.
Power supply:	+10V +30V
Power consumption:	~ 2,2 W
Interface:	Profibus-DP V0 CANopen DS301, DS406
Programmable parameters:	• counting direction • resolution up to 8192 counts/rev. and 4096 rev. • preset value • offset value • position/velocity output other parameters see manual
Baudrate:	CANopen: 1 MHz max. (programmable by Dip-switches) Profibus: max 12 Mbit/sec.
Device address:	programmable by Dip-switches
Bus connection:	galvanically separated by opto-couplers
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 h min.

MATERIALS	
Flange:	AISI 410 stainless steel
Housing:	AISI 410 stainless steel
Bearings:	ABEC 5
Shaft:	stainless steel, non magnetic, AISI 303

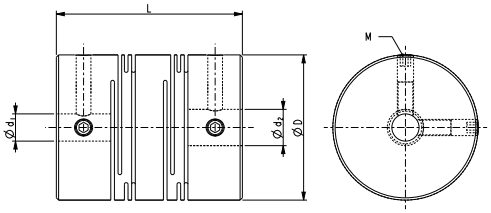
ACCESSORIES	
MWSS, MSTS:	stainless steel flexible couplings
EC-M12MP-LK-PB-x:	PB M12 plug cordset x m cable
EC-M12FP-LK-PB-x:	PB M12 conn. cordset x m cable
EC-M12PP-LK-PBS-x:	PB M12 cordset power supply x m cable
EC-M12MC-LK-CB-x:	CB M12 plug cordset x m cable
EC-M12FC-LK-CB-x:	CB M12 conn. cordset x m cable



AM58K



MWSS



MSTS

Order code

AM58K	XX/XXXX ⓐ	XX ⓑ	-	XX ⓒ	/Sxxx ⓓ

ⓐ RESOLUTION	ⓑ SHAFT DIAMETER	ⓒ SHAFT DIAMETER	ⓓ CUSTOM VERSION
13/4096 = 8192 cpr x 4096 turns	**PB** = Profibus DP **CB**= CANopen	**6** = 6 mm **8** = 8 mm **P9** = 9.52 mm, 3/8" **10** = 10 mm **12** = 12 mm	

ROTACOD

Absolute encoders with CANopen output

Series | **Ax58 • Ax58S • AxC58 EasyCAN**

- Compact CAN single and multi turn encoders
- High resolution, 18 bits or 30 bits
- CANopen and CANlift protocols
- Point-to-point connection
- Velocity output & roundloop function
- Resistant against magnetic fields

AS58 EasyCan

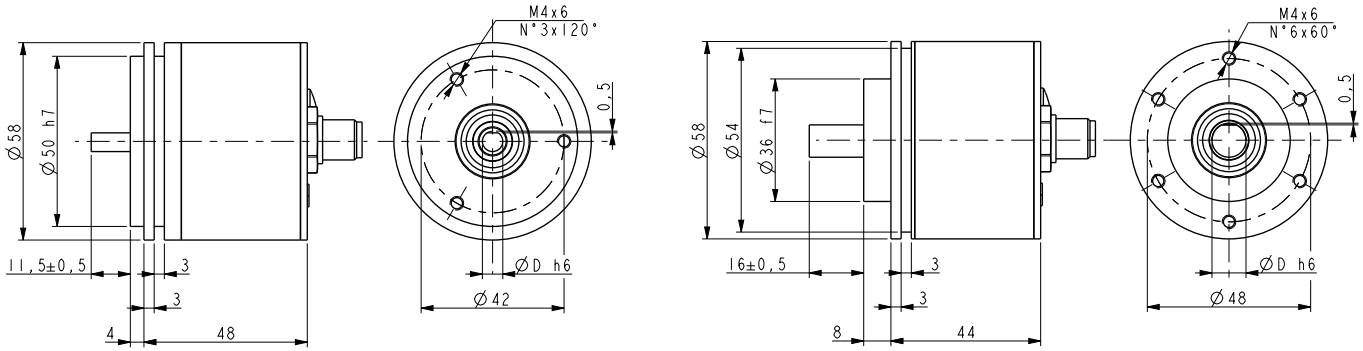
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000Hz
Protection:	IP67, IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 9.52, 10, 12 mm
Hollow shaft diameter:	Ø 14, 15
Reducing sleeves BR1-xx from Ø 15 mm to:	Ø 6, 8, 9.52, 10, 11, 12 mm
Shaft loading (axial, 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 shaft loading of 20 N max.)
Electrical connections:	M12 plug or cable output 2 m (6,56 ft)
Weight:	~ 250 g (8,8 oz)
Option:	• additional cable

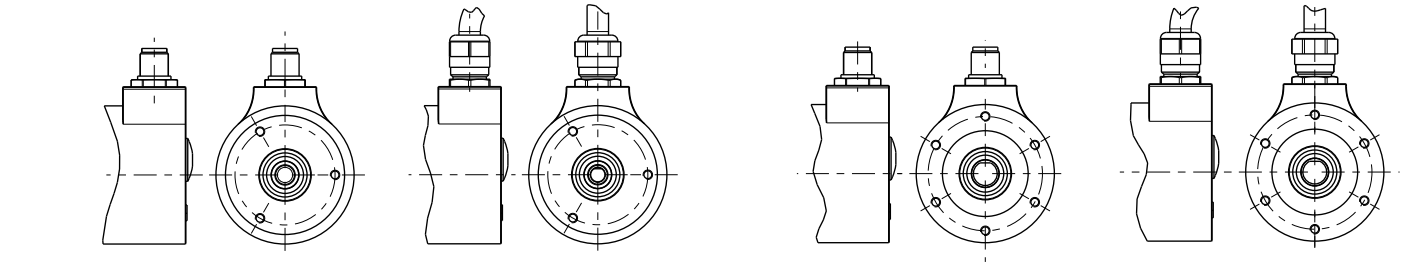
ELECTRICAL SPECIFICATIONS	
Resolution:	single turn = 4096, 65536, 262144 cpr multi turn = 65536 cpr x 16384 turns
Accuracy:	± 0,007°
Counting frequency:	220 kHz max.
Power supply:	+10V +30V
Power consumption:	AS = 1.2 W, AM = 3 W
Interface:	CANopen DS301, DS406, Class 2 (RS485) CANlift DS301, DSP417, Class 2 (RS485)
Programmable parameters:	• Baudrate • Device address (Node ID) • Scaling function • Counting direction • Preset value • Two software limit switches • Transmission mode: Cyclic, Sync • Velocity output • Round loop function
Bus termination:	programmable by Dip-switches
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 h min.

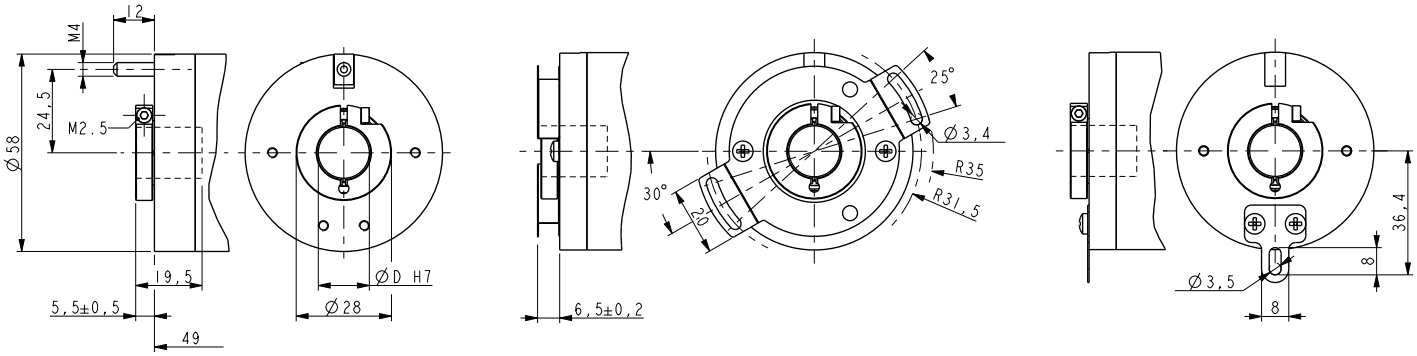
MATERIALS	
Housing:	anticorodal, UNI EN AW-6082
Flange:	anticorodal, UNI EN AW-6082
Bearings:	ABEC 5
Shaft:	stainless steel, non-magnetic, UNI EN 4305

ACCESSORIES	
EM12FC:	M12 5 pin mating connector
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps



AS58 AS58S





ASC58 ASC59 ASC60

Order code - Single turn

AS58 AS58S ASC58 ASC59 ASC60	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
12 = 4096 cpr
16 = 65536 cpr
18 = 262144 cpr

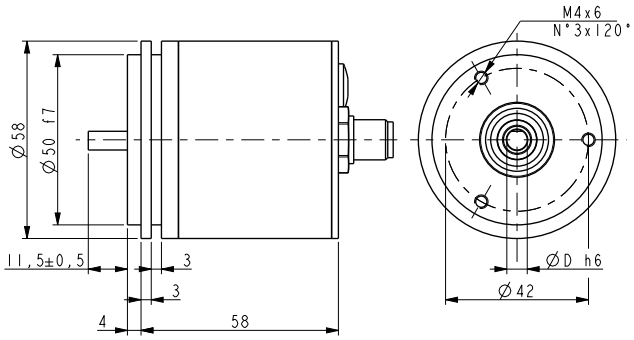
ⓑ **INTERFACE**
CB = CANopen (DS301, DS406)
I6 = CANlift (DS301, DSP417)

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only ASCxx)
15 = 15 mm (only ASCxx)

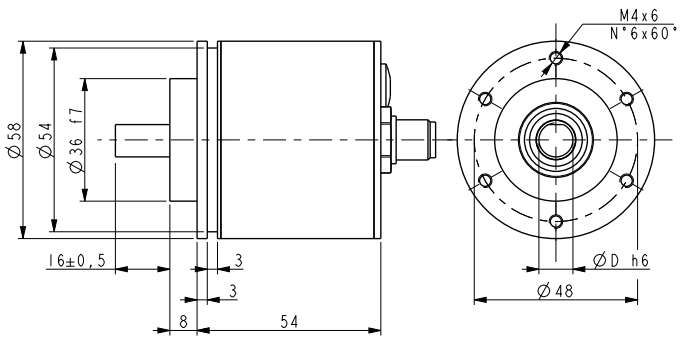
ⓓ **CONNECTION POSITION**
- = axial
R = radial

ⓔ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
M = M12 5 pin plug

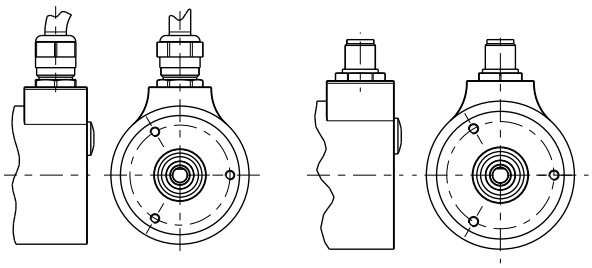
ⓕ **CUSTOM VERSION**

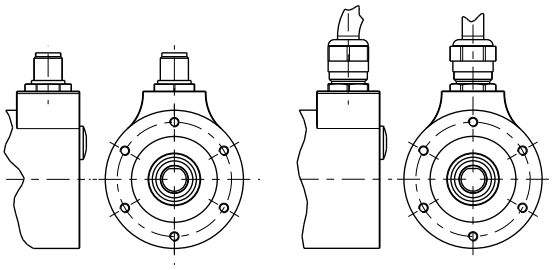


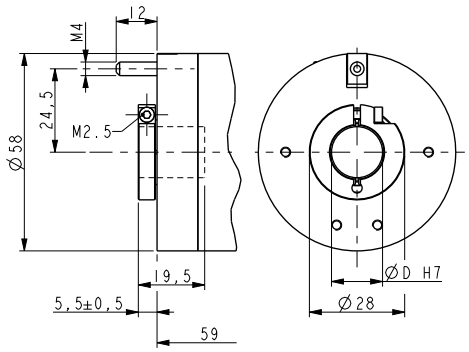
AM58



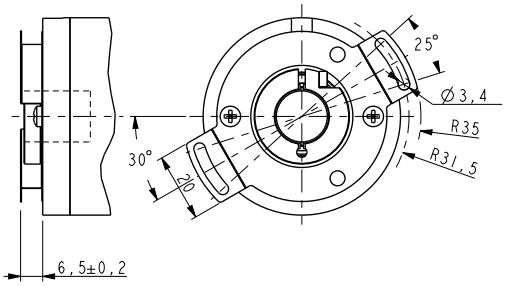
AM58S



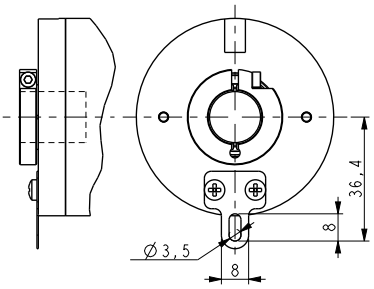




AMC58



AMC59



AMC60

Order code - Multi turn

AM58 AM58S AMC58 AMC59 AMC60	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	-	X ⓓ	XX ⓔ	/Sxxx ⓕ

ⓐ **RESOLUTION**
16/16384 = 65536 cpr x 16384 turns

ⓑ **INTERFACE**
CB = CANopen (DS301, DS406)
I6 = CANlift (DS301, DSP417)

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (only AMCxx)
15 = 15 mm (only AMCxx)

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

ⓔ **CONNECTIONS**
L2 = cable output 2 m (standard)
L5 = cable output 5 m
M = M12 5 pin plug

ⓕ **CUSTOM VERSION**

ROTACOD

Absolute encoders with Ethercat interface

Series EM58 • HS58 • HM58 EC

- Single & multi turn EtherCAT encoders
- Cycle time only 62,5 µs (position refresh)
- Fast and precise optical sensing
- Resistant against magnetic fields

EM58 • HS58 • HM58 EC

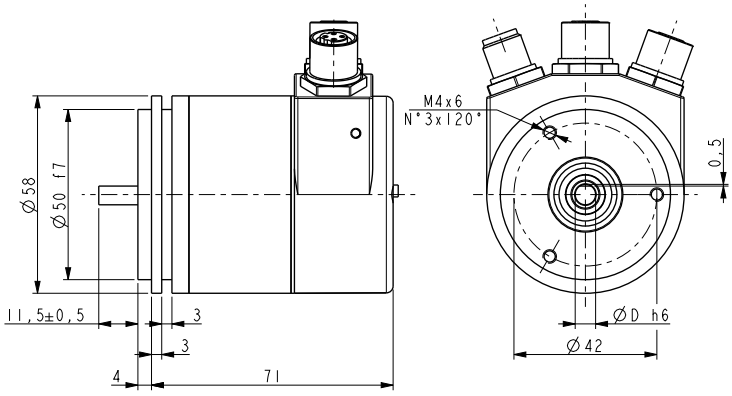
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

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):	40 N max.
Shaft rotational speed:	6000 rpm max.
Bearings life:	400 x 10^6 rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Weight:	~ 350 g (12,3 oz)

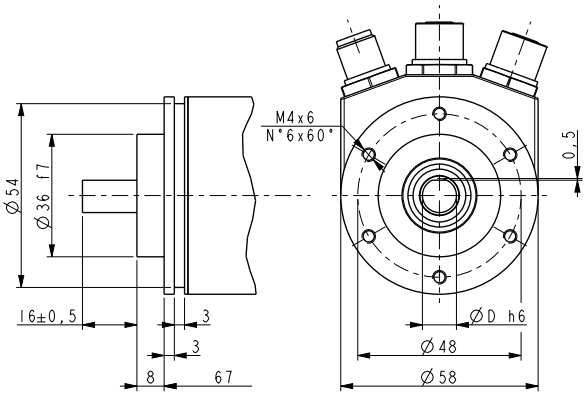
ELECTRICAL SPECIFICATIONS	
Resolution:	HS: 262144 cpr EM: 4096 cpr x 16384 turns HM: 65536 cpr x 16384 turns
Accuracy:	HS, HM: ± 0,007° - EM: ± 0,5°
Counting frequency:	150 kHz max.
Power supply:	+10V +30V
Power consumption:	2,2 W max.
Interface:	EtherCAT, CoE (CANopen over EtherCAT)
Programmable parameters:	see user manual
Communication modes:	Freerun, Sync-mode, Distributed clock
Cycle time:	≥ 62,5 µs
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 h 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

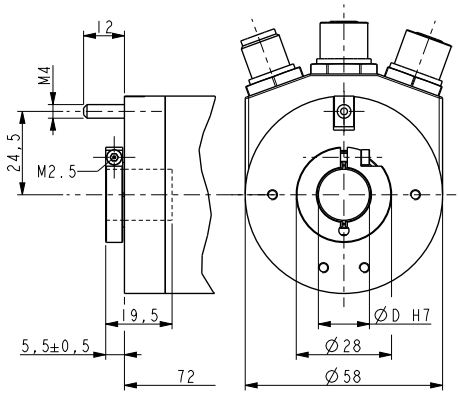
ACCESSORIES	
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps
EC-M12ME-GN-EC-xx:	M12 cordset with x m cable
EC-M12PP-LK-PBS-xx:	M12 power supply cordset with x m cable



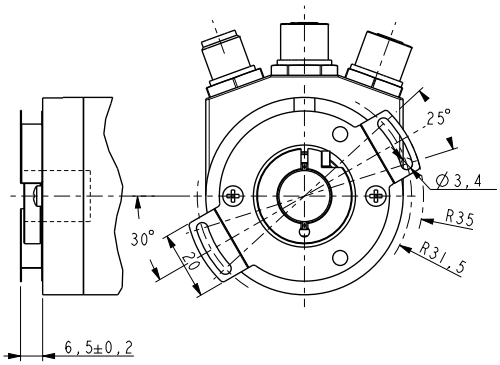
EM58 • HS58 • HM58 EC



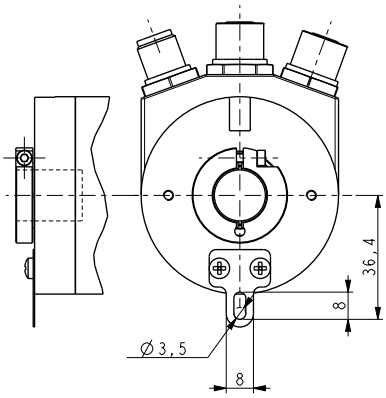
EM58 • HS58S • HM58S EC



EM58 • HSC58 • HMC58 EC



EM58 • HSC59 • HMC59 EC



EM58 • HSC60 • HMC60 EC

Order code - Single turn

HS58 HS58S HSC58 HSC59 HSC60	XX ⓐ	/	EC	-	XX ⓑ	/Sxxx ⓒ

ⓐ RESOLUTION
18 = 262144 cpr

ⓑ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HSCxx)
15 = 15 mm (HSCxx)

ⓒ CUSTOM VERSION

Order code - Multi turn

HM58 HM58S HMC58 HMC59 HMC60	EM58 EM58S EMC58 EMC59 EMC60	XX/XXXXX ⓐ	EC	-	XX ⓑ	/Sxxx ⓒ

ⓐ RESOLUTION
12/16384 = 4096 cpr x 16384 turns (EMxx)
16/16384 = 65536 cpr x 16384 turns (HMxx)

ⓑ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx, HMCxx)
15 = 15 mm (EMCxx, HMCxx)

ⓒ CUSTOM VERSION

ROTACOD

Absolute encoders with Profinet interface

Series EM58 • HS58 • HM58 PT

- Single & multi turn Profinet encoders
- Fast and precise optical sensing
- Encoder profile PNO No 3.162 V4.1
- Dynamically assigned IP address via DCP

EM58 • HS58 • HM58 PT

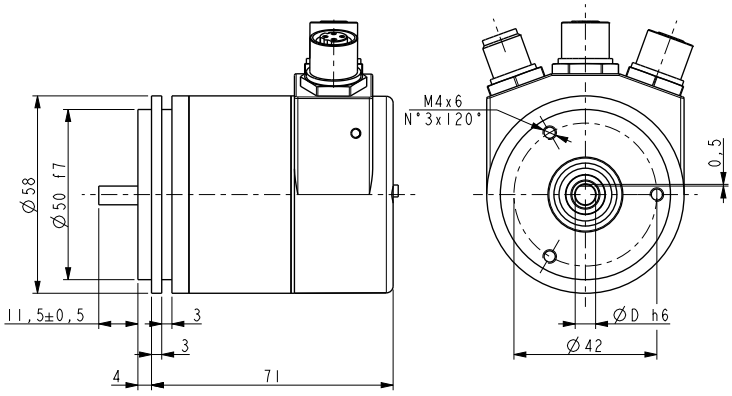
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP65
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

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):	40 N max.
Shaft rotational speed:	6000 rpm max.
Bearings life:	400 x 10^6 rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Weight:	~ 350 g (12,3 oz)

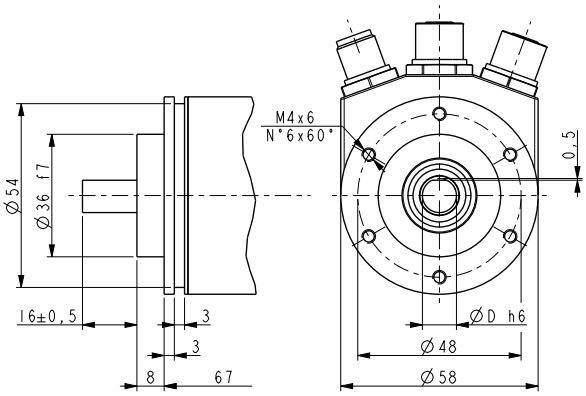
ELECTRICAL SPECIFICATIONS	
Resolution:	HS: 262144 cpr EM: 4096 cpr x 16384 turns HM: 65536 cpr x 16384 turns
Accuracy:	HS, HM: ± 0,007° - EM: ± 0,5°
Counting frequency:	150 kHz max.
Power supply:	+10V +30V
Power consumption:	1,7 W max.
Interface:	Profinet IO
Programmable parameters:	see user manual
Communication modes:	RT2, RT3 (Isochronous)
Cycle time:	≥ 1ms
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 h 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

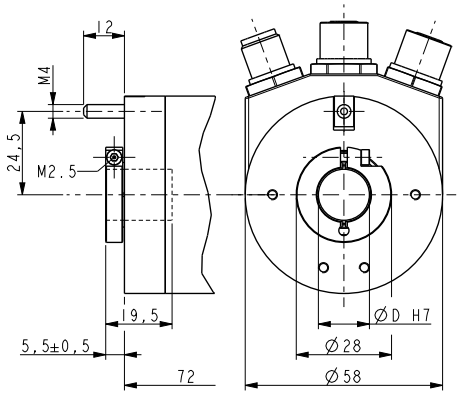
ACCESSORIES	
PAN/PGF:	flexible couplings
BR1:	reducing sleeves
LKM-386:	fixing clamps
EC-M12ME-GN-EC-xx:	M12 cordset with x m cable
EC-M12PP-LK-PBS-xx:	M12 power supply cordset with x m cable



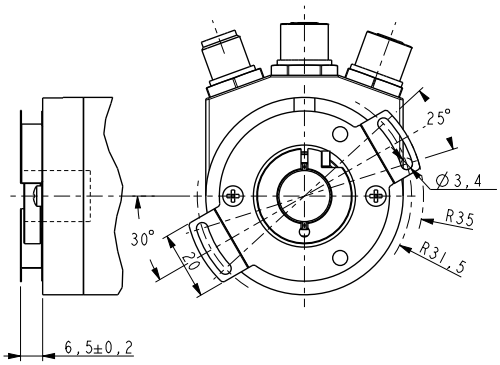
EM58 • HS58 • HM58 PT



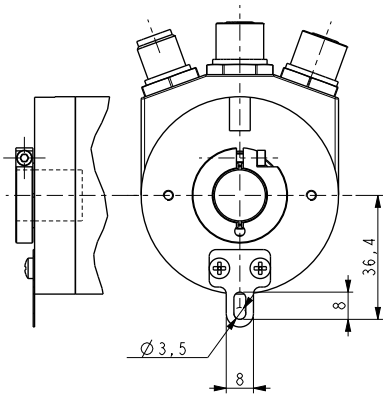
EM58 • HS58S • HM58S PT



EM58 • HSC58 • HMC58 PT



EM58 • HSC59 • HMC59 PT



EM58 • HSC60 • HMC60 PT

Order code - Single turn

HS58 HS58S HSC58 HSC59 HSC60	XX ⓐ	/	PT	-	XX ⓑ	/Sxxx ⓒ

ⓐ RESOLUTION
18 = 262144 cpr

ⓑ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (HSCxx)
15 = 15 mm (HSCxx)

ⓒ CUSTOM VERSION

Order code - Multi turn

HM58 HM58S HMC58 HMC59 HMC60	EM58 EM58S EMC58 EMC59 EMC60	XX/XXXXX ⓐ	PT	-	XX ⓑ	/Sxxx ⓒ

ⓐ RESOLUTION
12/16384 = 4096 cpr x 16384 turns (EMxx)
16/16384 = 65536 cpr x 16384 turns (HMxx)

ⓑ SHAFT DIAMETER
6 = 6 mm
8 = 8 mm
P9 = 9.52 mm, 3/8"
10 = 10 mm
12 = 12 mm
14 = 14 mm (EMCxx, HMCxx)
15 = 15 mm (EMCxx, HMCxx)

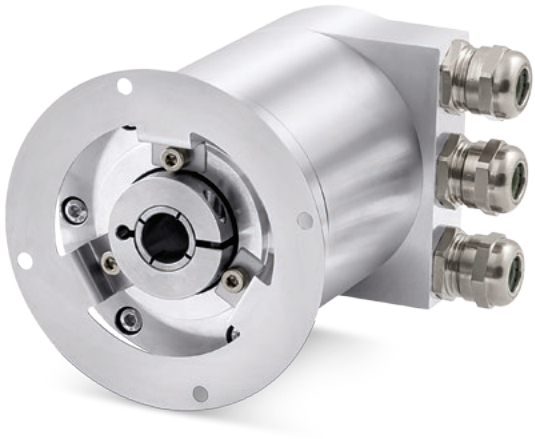
ⓒ CUSTOM VERSION

ROTACOD

Heavy-duty Fieldbus encoder

Series **XAC77 FB**

- Heavy-duty fieldbus encoder
- Single turn (18 bits) and multi turn (30 bits)
- Easy access by removable connection cap
- Profibus, CANopen, DeviceNet interfaces
- Velocity output, roundloop function (CANopen)
- For harsh environment such as steel mills, mobile equipment, construction machinery



XAC77

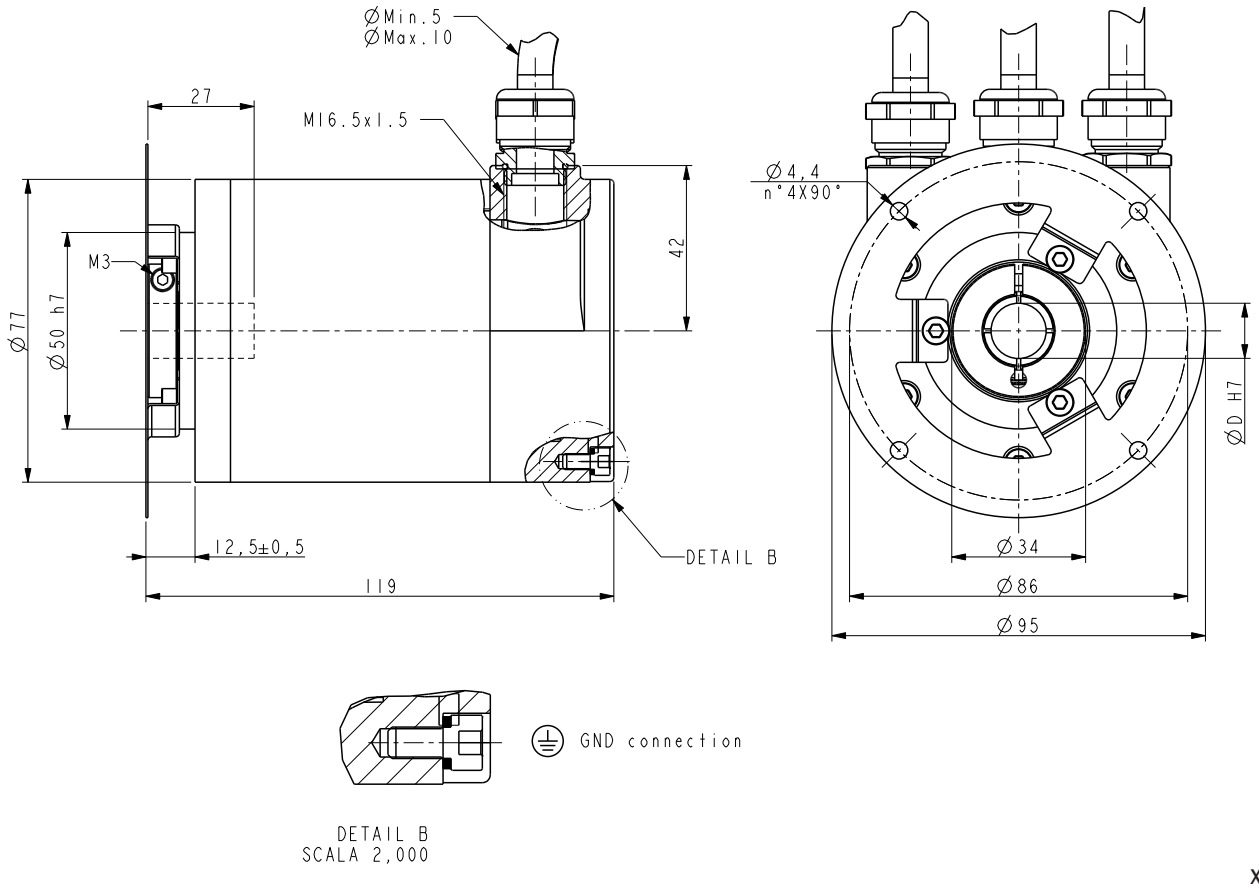
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP66 (with connection cap assembled), IP65 shaft side
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F) (98% R.H.without condensation)

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 14 mm
Shaft loading (axial, radial):	150 N max.
Shaft rotational speed:	6000 rpm max.
Bearing life:	$400x10^6$ rev. min. (10^9 rev. min. with shaft loading of 20 N max.)
Electrical connections:	PG outlet
Weight:	~1,3 kg (45,8 oz)

ELECTRICAL SPECIFICATIONS	
Resolution:	262144 cpr or 65536 cpr x 16384 turns
Accuracy:	± 0,007°
Counting frequency:	150 kHz max.
Power supply:	+10V +30V
Power consumption:	2,2 W
Programmable parameters:	see user manual for each Fieldbus
Baudrate:	programmable by Dip-switches
Device address:	programmable by Dip-switches
Interface:	Profibus-DP V0 CANopen® DS301, DS406 DeviceNet
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 h 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	
LKM-1758:	ø 10 mm shaft extension



XAC77

Order code

XAC77	XX/XXXXX ⓐ	XX ⓑ	-	XX ⓒ	/Sxxx ⓓ

ⓐ RESOLUTION	ⓑ INTERFACE	ⓒ SHAFT DIAMETER
18/1 = 262144 cpr **16/16384** = 65536 cpr x 16384 turns	**PX** = Profibus-DP **CX** = CANopen **DX** = DeviceNet	**14** = 14 mm ⓓ CUSTOM VERSION

ROTAPULS
Incremental encoder modules

Series IM30 • IM31 • IM56

- Low cost encoder modules
- Easy assembly and disc alignment
- Bearingless design

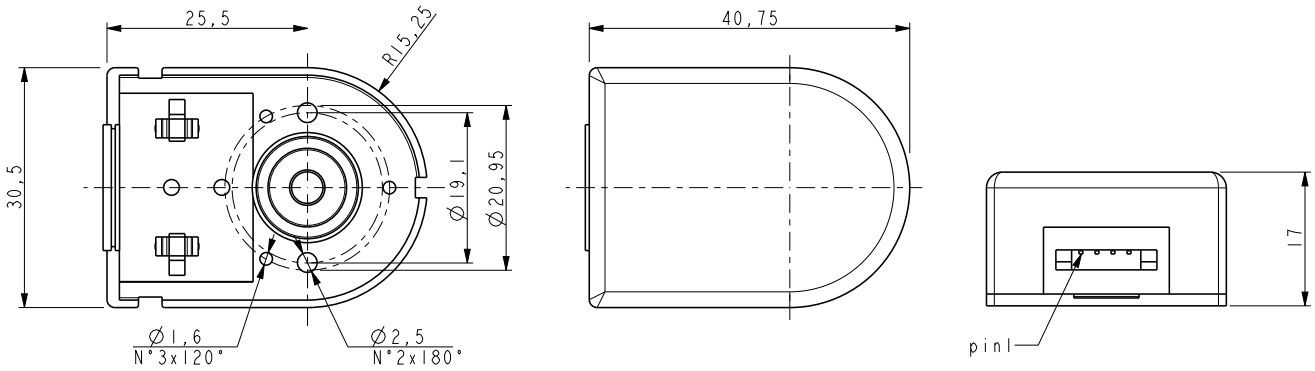
IM56 • IM31

ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range:	-40°C +85°C (-40°F +185°F)
Storage temperature range:	-40°C +85°C (-40°F +185°F)
Option:	• Operating temperature range: -40°C +100°C (-40°F +212°F)

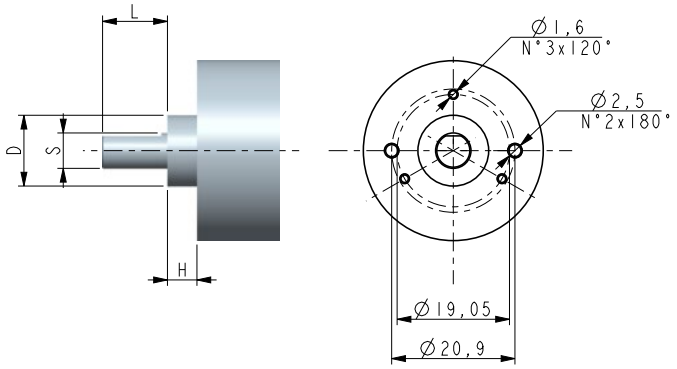
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hub:	Ø 3, 4, 5, 6, 6.35, 8 mm
Electrical connections:	pin or 15 cm flat cable

ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	**IM30:** 96, 100, 192, 200, 256, 300, 360, 400, 500, 512 1000, 1024, 1200, 1250 **IM31:** 50, 100, 200, 256, 360, 400, 500, 512, 1000, 1024 **IM56:** 1000, 1024, 2000, 2048
Output signals:	IM30: AB 90° ± 8° IM31, IM56: AB0 90° ± 8° (1000, 1024 PPR only AB)
Output circuit:	TTL
Power supply:	+5V ±10%
Output current (per channel):	5 mA max.
Counting frequency:	IM30: 20 kHz IM31, IM56: 100 kHz max.
Consumption:	60 mA (typical)
Option:	• Line Driver output circuit

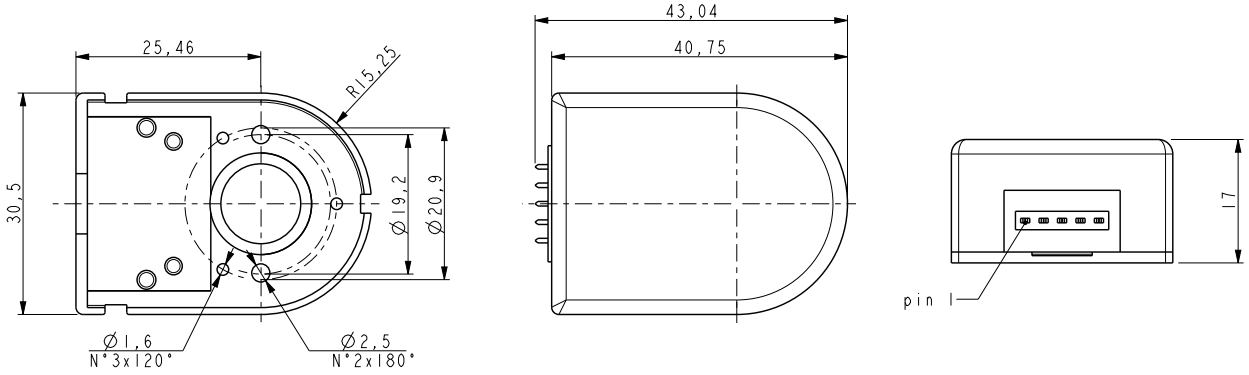
MATERIALS	
Housing:	Polyethylene
Hub:	Aluminium or plastic
Disk:	Mylar



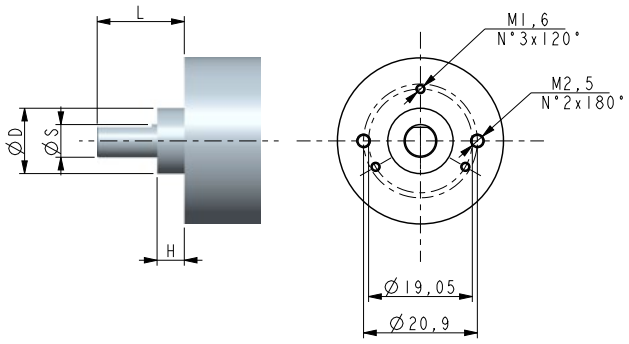
TOP VIEW (BASE PLATE ONLY) TOP VIEW SIDE VIEW

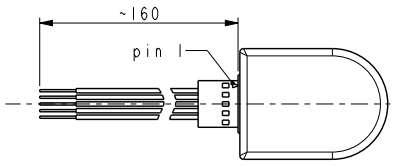


IM30



TOP VIEW (BASE PLATE ONLY) TOP VIEW SIDE VIEW

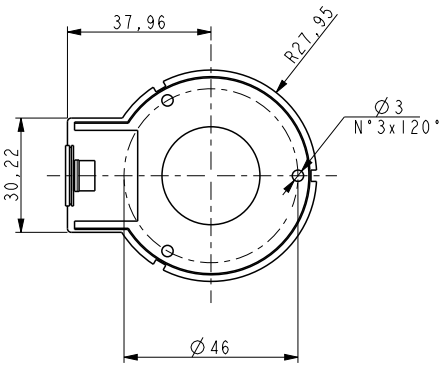




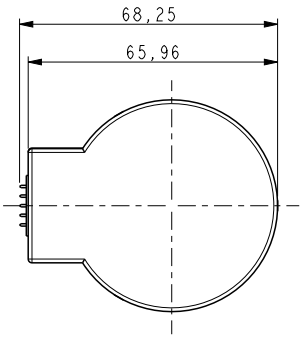
Cable: ~160mm length UL1007/AWG26
Connector: AMP 103686-4, MOLEX 2695+2759

Voltage (5 pin)		
Pin	Color	Description
1	Black	Ground
2	Yellow	Index
3	White	Channel A
4	Red	DC +5V
5	Green	Channel B

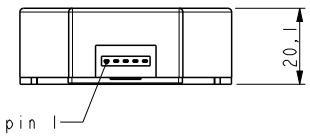
IM31



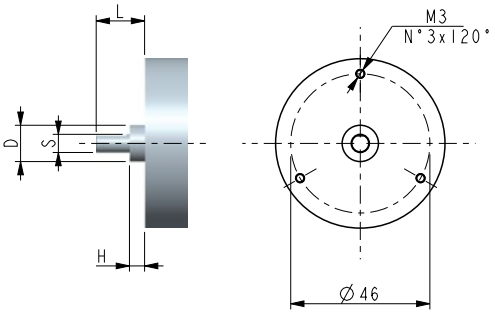
TOP VIEW (BASE PLATE ONLY)

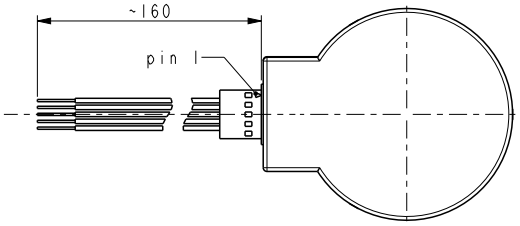


TOP VIEW



SIDE VIEW





Cable: ~160mm length UL1007/AWG26
Connector: AMP 103686-4, MOLEX 2695+2759

Voltage (5 pin)		
Pin	Color	Description
1	Black	Ground
2	Yellow	Index
3	White	Channel A
4	Red	DC +5V
5	Green	Channel B

Order code

IM30	-	X ⓐ	-	XXXX ⓑ	X ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	/Sxxx ⓗ

ⓐ **OUTPUT CIRCUITS**
N = TTL

ⓑ **RESOLUTION**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
B = AB

ⓓ **POWER SUPPLY**
1 = +5Vdc ±5%

ⓔ **SHAFT DIAMETER**
3 = 3 mm
4 = 4 mm
5 = 5 mm
6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm

ⓕ **HUB STYLE**
A = Aluminium hub (standard)
P = Push on hub

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

ⓗ **CUSTOM VERSION**

Order code

IM31	-	X ⓐ	-	XXXX ⓑ	X ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	/Sxxx ⓗ

ⓐ **OUTPUT CIRCUITS**
N = TTL (AB0)
L = Line Driver (AB0 /AB0)

ⓑ **RESOLUTION**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
Z = AB0

ⓓ **POWER SUPPLY**
1 = +5Vdc ±5%

ⓔ **SHAFT DIAMETER**
3 = 3 mm
4 = 4 mm
5 = 5 mm
6 = 6 mm
P6 = 6.35 mm - 1/4"
8 = 8 mm

ⓕ **HUB STYLE**
A = Aluminium hub (standard)
P = Push on hub

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

ⓗ **CUSTOM VERSION**

Order code

IM56	-	X ⓐ	-	XXXX ⓑ	X ⓒ	X ⓓ	XX ⓔ	X ⓕ	X ⓖ	/Sxxx ⓗ

ⓐ **OUTPUT CIRCUITS**
N = TTL (AB0)
L = Line Driver (AB0 /AB0)

ⓑ **RESOLUTION**
See electrical specifications

ⓒ **OUTPUT SIGNALS**
Z = AB0

ⓓ **POWER SUPPLY**
1 = +5Vdc ±5%

ⓔ **SHAFT DIAMETER**
8 = 8 mm

ⓕ **HUB STYLE**
A = Aluminium hub (standard)
P = Push on hub

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

ⓗ **CUSTOM VERSION**

ROTAPULS

The low-cost heavy duty solution

Series SGSM • SGSD

- Low-cost heavy duty solution
- Sealed housing, IP68
- Redundant version SGSD
- Up to 50 mm hollow shaft
- Outdoor & mobile equipment applications

SGSM • SGSD

ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range:	-40°C ÷ +85°C (-40°F +185°F)
Storage temperature range:	-40°C ÷ +100°C (-40°F +212°F)
Protection:	IP68

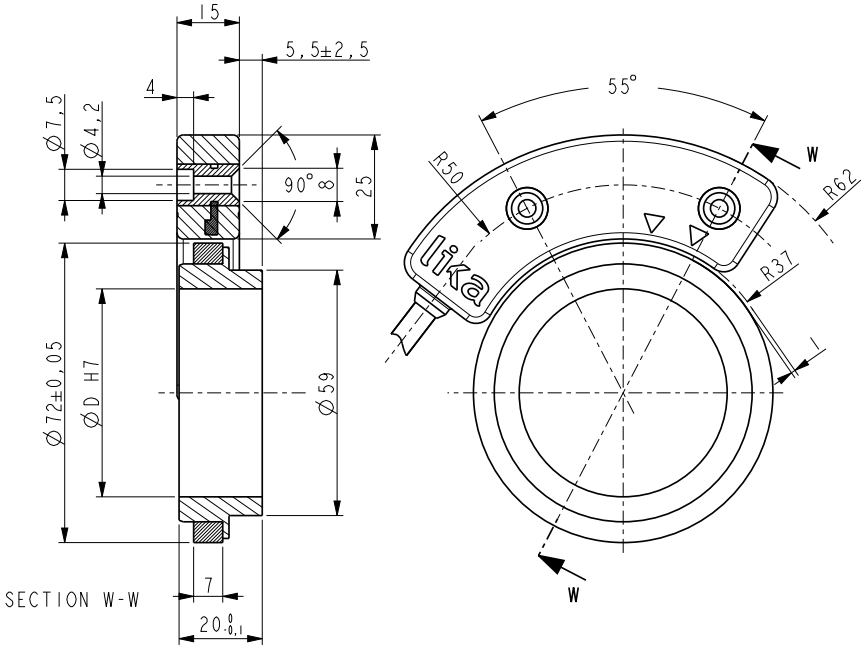
MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	Ø 30, 50 mm
Shaft rotational speed:	10000 rpm max. (mechanical)
Gap sensor-ring:	0,1 ÷ 1,5 mm
Electrical connections:	M12 8 pin inline plug or Lika Hi-flex cable 2,0 m (6.56 ft)
Weight:	~ 200 g (7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	256, 512, 1024
Accuracy:	± 0,05°
Counting frequency:	100 kHz max.
Output circuits:	Line Driver, Push-Pull
Power supply:	+5Vdc ±5%, +10Vdc ÷ +30Vdc
Consumption:	70 mA max.
Output signals:	AB, /AB
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, EN 61000-4-2 EN 61000-4-4

MATERIALS	
Housing:	Macromelt OM 646-EN
Hub:	Anticorodal, UNI EN AW-6082
Ring:	Plastoferrite

ACCESSORIES	
EM12F8:	M12 8 pin mating connector

Specifications subject to changes without prior notice



SGSM • SGSD

Order code - Sensor

SGSM SGSD	-	X ⓐ	-	X ⓑ	-	XX ⓒ	-	X ⓓ	-	XX ⓔ	/Sxxx ⓕ

ⓐ **OUTPUT CIRCUITS**
Y = Push Pull (AB, /AB)
L = Line Driver (AB, /AB)

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

ⓒ **RESOLUTION**
16 = 256 PPR
32 = 512 PPR
64 = 1024 PPR

ⓓ **INDEX**
N = without Index

ⓔ **CONNECTIONS**
1 = cable output 1 m
x = cable output x m
M2 = 2 m cable + M12 8 pin inline plug (only SGSM)

ⓕ **CUSTOM VERSION**

Order code - Magnetic ring

MRI	/	XX ⓐ	-	XX-X ⓑ	-	XX ⓒ	/Sxxx ⓓ

ⓐ **RING TYPE**
72 = size 72 with grub screw fixing

ⓑ **MAGNETIC CODING**
64-3 = 64 poles

ⓒ **SHAFT DIAMETER**
30 = 30 mm
50 = 50 mm

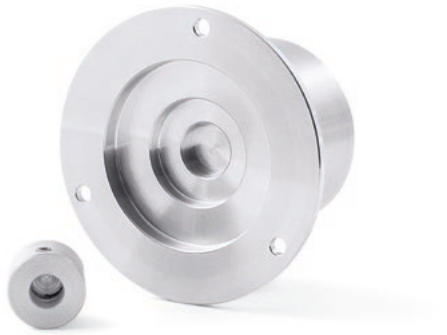
ⓓ **CUSTOM VERSION**

ROTAMAG

Magnetic bearingless encoder

Series **MIK36 • MSK36**

- High speed rotary encoder
- Bearingless, non contact design
- IP67 or IP68 protection with sealed circuits
- Incremental and absolute version



MIK36 • MSK36

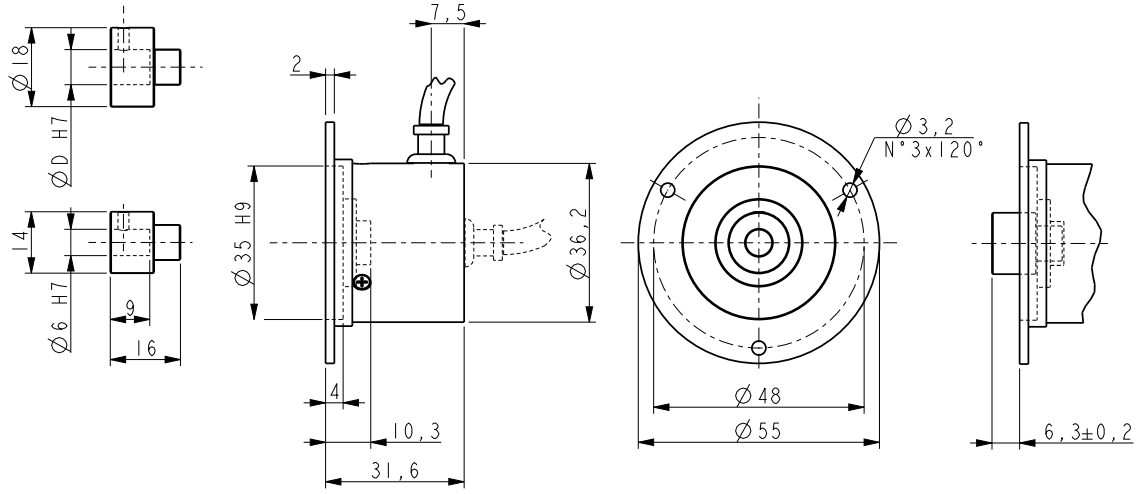
ENVIRONMENTAL SPECIFICATIONS	
Shock:	100 g, 6 ms
Vibrations:	10 g, 5-2000 Hz
Protection:	IP67
Operating temperature range:	-20°C +85°C (-4°F +185°F)
Storage temperature range:	-20°C +85°C (-4°F +185°F) (98% R.H. without condensation)
Option:	• IP68 protection with sealed circuits

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Shaft diameter:	Ø 6, 8, 10 mm
Shaft rotational speed:	30000 rpm max.
Electrical connections:	M12 8 pin inline plug or cable output 1 m (3.3 ft)
Weight:	~ 50 g (1,7 oz)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution:	**MIK36 (PPR):** 4-8-10-16-20-25-32-40-50-64-80-100 125-128-200-250-256-400-500-512-1024-2048 **MSK36 (cpr):** 8192
Accuracy:	± 0,9°
Counting frequency:	300 kHz max. (MIK36)
Output circuits:	MIK36: NPN, Push-Pull, Line Driver MSK36: SSI, 13 clock max. 1 MHz
Power supply:	5Vdc ±5%, +10Vdc +30Vdc
Consumption:	MIK36 50 mA max. MSK36 65 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
Shaft:	anticorodal, UNI EN AW-6082

Specifications subject to changes without prior notice



MIK36 • MSK36

MIK36 Resolution	Rpm max.
> 128	30000
> 256	20000
> 512	10000
1024	5100
2048	2550

Order code - Incremental encoder

MIK36	-	X ⓐ	-	XXXX ⓑ	XXX ⓒ	X ⓓ	XX ⓔ	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
8 = 8 mm
10 = 10 mm

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

ⓖ **PROTECTION**
- = IP67
J = IP68 with sealed circuits

ⓗ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓘ **CUSTOM VERSION**

Order code - Absolute encoder

MSK36	XX ⓐ	/	XX ⓑ	-	XX ⓒ	-	X ⓓ	X ⓔ	X ⓕ	XX ⓖ	/Sxxx ⓗ

ⓐ **RESOLUTIONS**
13 = 8192 counts/rev.

ⓑ **OUTPUT CODE**
BS = Binary, SSI
GS = Gray, SSI

ⓒ **SHAFT DIAMETER**
6 = 6 mm
8 = 8 mm
10 = 10 mm

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

ⓔ **ZERO SETTING**
- = without (standard)
E = zero setting

ⓕ **PROTECTION**
- = IP67
J = IP68 with sealed circuits

ⓖ **CONNECTIONS**
L1 = cable output 1 m (standard)
L2 = cable output 2 m
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓗ **CUSTOM VERSION**

ROTAPULS

Modular magnetic encoder for Heavy-Duty applications

Series SMRI5 - MRI

- Bearingless encoder
- Non contact magnetic sensing
- Sensor/ring clearance up to 1.5 mm
- IP67 washdown protection (IP69K on request)

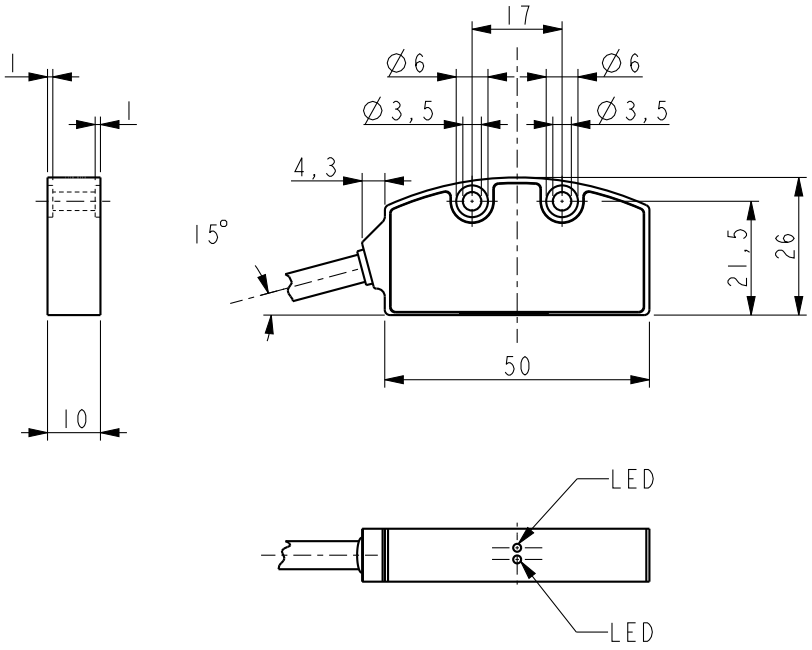
SMRI5 • MRI

ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range:	-25°C +85°C (-13°F +185°F)
Storage temperature range:	-40°C +100°C (-40°F +212°F)
Protection:	IP67

MECHANICAL SPECIFICATIONS	
Dimensions:	see drawing
Hollow shaft diameter:	see drawing (from Ø 6 to 250 mm)
Shaft rotational speed:	MRI/31, MRI/48: 25000 rpm max. (mechanical) MRI/57: 22000 rpm max. (mechanical) MRI/114, MRI/141: 15000 rpm max. (mechanical) MRI/284: 9000 rpm max. (mechanical)
Gap sensor-ring:	0,1 ÷ 1,5 mm (typical)
Electrical connections:	M12 8 pin inline plug or Lika Hi-flex cable 2,0 m (6.56 ft)
Option:	• additional cable

ELECTRICAL SPECIFICATIONS	
Resolution (PPR):	see specifications
Accuracy:	± 0,05° (± 0,1° typical)
Output circuits:	Line Driver, Push-Pull
Power supply:	+5Vdc ±5%, +10Vdc ÷ +30Vdc
Consumption:	70 mA max.
Output signals:	AB /AB, AB0 /AB0
Output current (per channel):	40 mA max.
Protection:	against inversion of polarity and short-circuit (except L circuit)
EMC:	electro-magnetic immunity, EN 61000-4-2 EN 61000-4-4

MATERIALS	
Housing:	anticorodal, UNI EN AW-6082
Hub:	anticorodal, UNI EN AW-6082 or stainless steel
Ring:	ferrite or plastoferrite



SMRI5

Order code

SMRI5	-	XX ⓐ	-	X ⓑ	-	XXX ⓒ	-	XX ⓓ	-	X ⓔ	-	X ⓕ	/Sxxx ⓖ

ⓐ **OUTPUT CIRCUITS**
Y = Push Pull (AB)
YC = Push Pull (AB, /AB)
L = Line Driver (AB, /AB)

ⓑ **POWER SUPPLY**
1 = +5Vdc ±5% (L)
2 = +10Vdc÷ +30Vdc (Y and L)

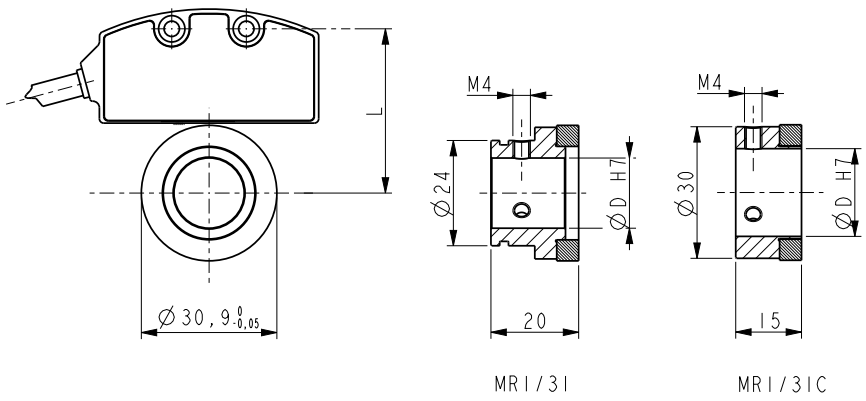
ⓒ **RESOLUTION**
see Resolution vs rpm combinations
(other resolutions on request)

ⓓ **INDEX**
N = without
R = with reference signal

ⓔ **CONNECTIONS**
Lx = cable output x m
M0,5 = 0,5 m cable + M12 8 pin inline plug
M2 = 2 m cable + M12 8 pin inline plug

ⓕ **MIN. EDGE DISTANCE**
J = 0,5 µs (2 MHz)

ⓖ **CUSTOM VERSION**



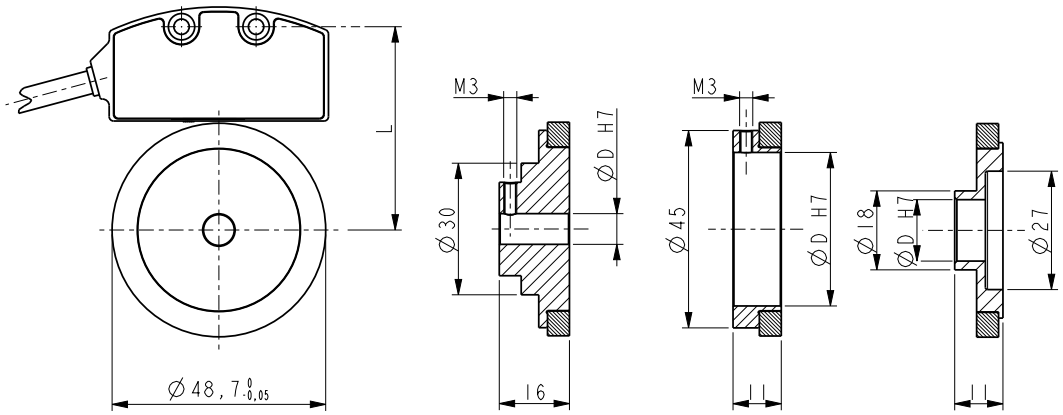
MRI/31 MRI/31C

Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
100	500	21000 rpm
200	1000	21000 rpm
400	2000	11000 rpm
1K	5000	4000 rpm

Order code magnetic ring	D H7
MRI/31-20-5-16	Ø 16 mm
MRI/31-20-5-19	Ø 19 mm
MRI/31C-20-5-20	Ø 20 mm

All rings without reference



MRI/48 MRI/48C MRI/48D

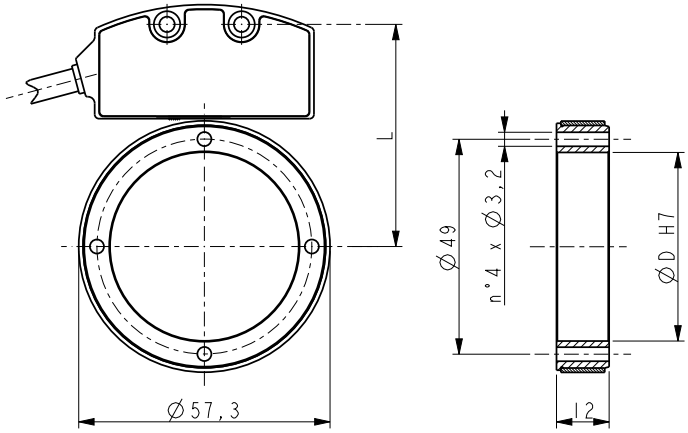
Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
32	256	82000 rpm (a)
64	512	41000 rpm (a)
128	1024	20000 rpm
256	2048	10000 rpm
512	4096	5000 rpm

(a) limited by mechanical speed

Order code magnetic ring	D H7
MRI/48-32-5-6	Ø 6 mm
MRI/48C-32-5-35	Ø 35 mm
MRI/48D-32-5-14	Ø 14 mm

All rings without reference

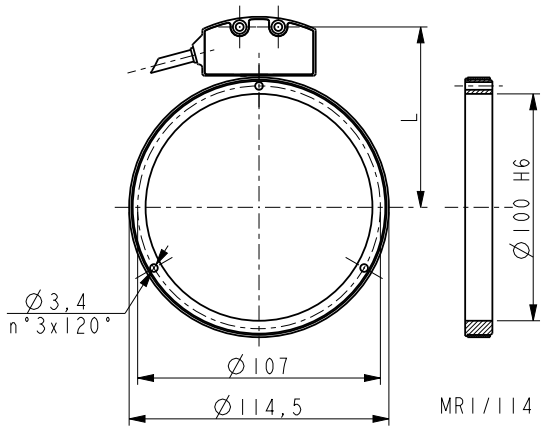


MRI/57
MRI/57Z

Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
80	760	7000 rpm
100	950	11000 rpm
128	1216	17000 rpm
800	7600	3000 rpm

Order code magnetic ring	D H7
MRI/57-38-5-43 (without reference)	Ø 43 mm
MRI/57Z-38-5-43 (with reference)	Ø 43 mm

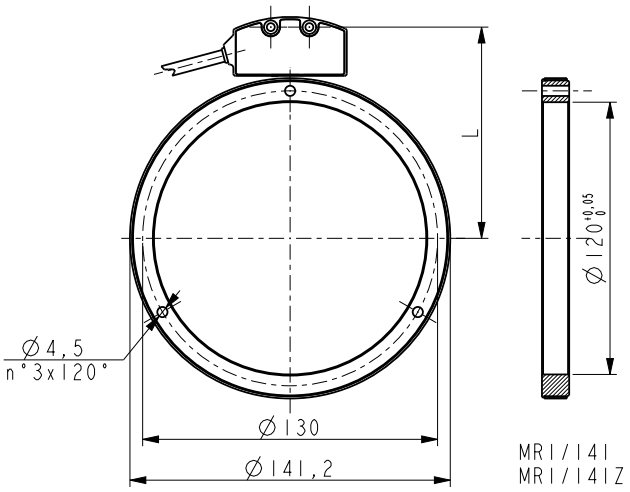


Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
100	1800	6000 rpm
200	3600	6000 rpm
400	7200	3000 rpm
500	9000	2500 rpm
1K	18000	1200 rpm

Order code magnetic ring	D H6
MRI/114-72-5-100	Ø 100 mm

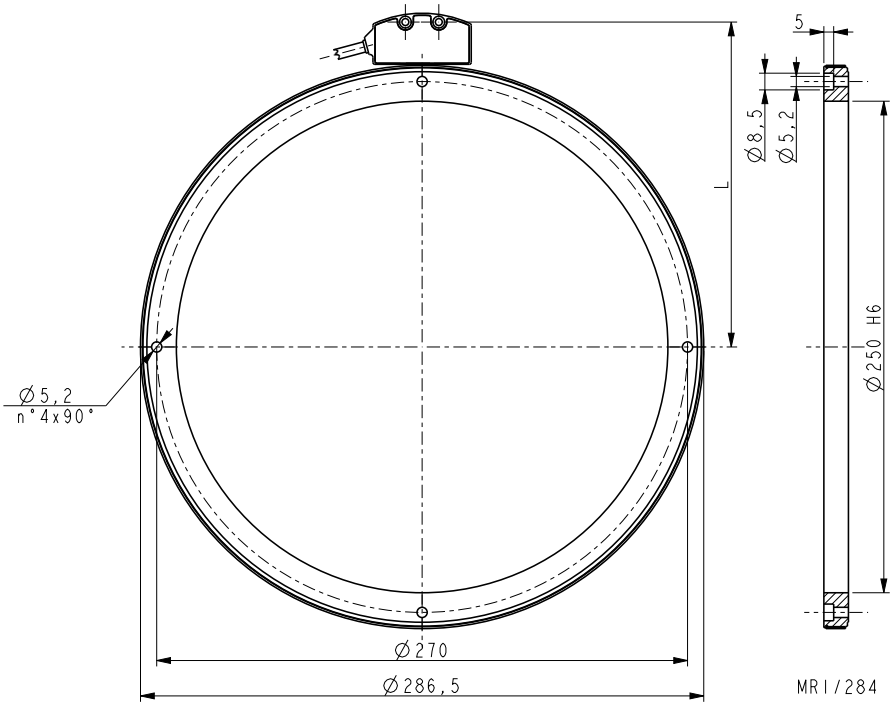
Ring without reference



Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
40	900	3000 rpm
80	1800	3000 rpm
160	3600	3000 rpm
200	4500	5000 rpm
320	7200	3000 rpm
400	9000	2500 rpm

Order code magnetic ring	D
MRI/141-90-5-120 (without ref.)	Ø 120 mm
MRI/141Z-90-5-120 (with reference)	Ø 120 mm



Resolution vs rpm combinations

Order code Resolution	PPR	Max. counting speed
8	360	58000 rpm (a)
32	1440	14000 rpm (a)
40	1800	1500 rpm
80	3600	1500 rpm
100	4500	2500 rpm
200	9000	2500 rpm

(a) limited by mechanical speed

Order code magnetic ring	D H6
MRI/284-180-5-250	Ø 250 mm

Ring without reference

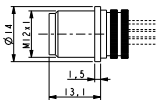
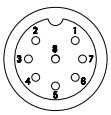
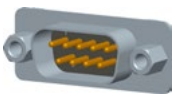
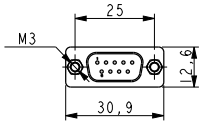
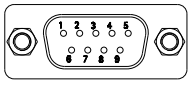
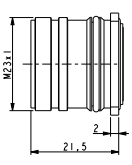
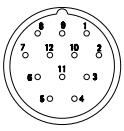
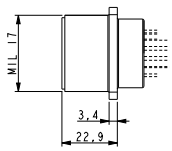
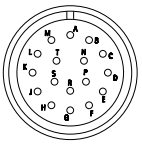
Electrical connections

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

(1) All models except C100 and C101
(2) Only C100 and C101

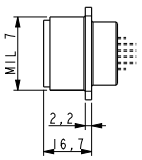
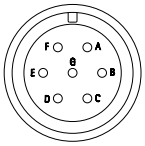
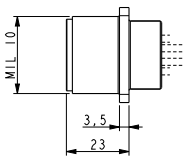
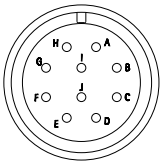
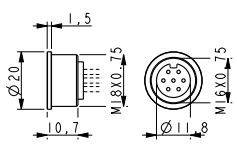
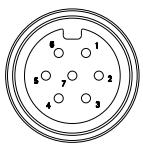
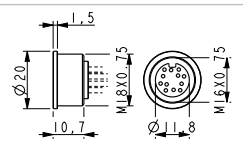
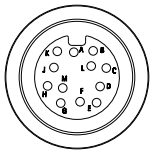
Picture (example)	Cable type	Order code
	I5 5 x 0,22 mm² (24/7 AWG) PVC	**Lika encoder cable type I5**
	I8 8 x 0,22 mm² (24/7 AWG) PVC	**Lika encoder cable type I8**

All cable specifications on page 222-223

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

Electrical connections

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

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

ROTACOD

Absolute encoders standard connection schemes, SSI and BiSS interfaces

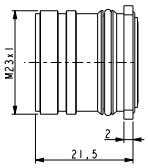
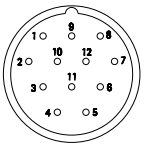
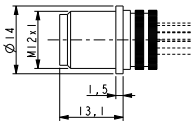
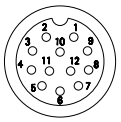
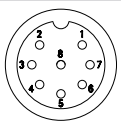
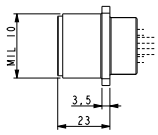
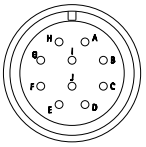
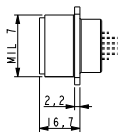
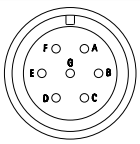
AS-AM, ES-EM, HS-HM (*), AST-AMT, HSCT-HMCT, AM9-AMC9, AS-AM36, MS-MM36, MH58S

Connection / Signal	A8 type cable	M8 type cable	T12 type cable	M23 12-pin	M12 8-pin	M12 12-pin	MIL 10-pin	MIL 7-pin
Clock IN +	White	Yellow	Violet	2	3	3	A	A
Clock IN -	Brown	Blue	Yellow	1	4	4	B	B
Data OUT +	Green	Green	Grey	3	5	5	C	C
Data OUT -	Yellow	Orange	Pink	4	6	6	D	D
A, cos +	-	-	Green	5	-	9	-	-
A, cos -	-	-	Brown	6	-	10	-	-
B, sin +	-	-	Red	7	-	11	-	-
B, sin -	-	-	Black	10	-	12	-	-
Counting dir.	Blue	Grey	Blue	8	8	8	F	E
Zero setting	Pink	White	White	9	7	7	H	-
+Vdc	Red	Red	Brown/Green	11	2	2	J	G
0Vdc	Black	Black	White/Green	12	1	1	I	F
Shield	Shield	Shield	Shield	Case	Case	Case	Case	Case

* except for HMx58x P programmable encoders

Picture (example)	Cable type	Order code
	A8 4 x 2 x 0,25 mm² (24 AWG), PVC	Lika SSI encoder cable A8
	M8 2 x 0,22 + 6 x 0,14 mm² (24/26 AWG), TPU	Lika Hi Flex sensor cable M8
	T12 4 x 0,25 + 4 x 2 x 0,14 mm² (24/26 AWG), TPU	Lika encoder cable type T12

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		M23 12-pin plug EML 121H		EPFL 121H
		M12 12-pin plug		E-M12F12
		M12 8-pin plug		E-M12F8
		MIL 10-pin plug E10MLP		E10MLS
		MIL 7-pin plug E7MLP		E7MLS

Programmable

HM58 P, HM58S P, HMC58 P

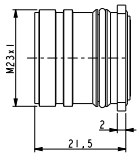
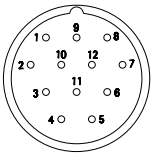
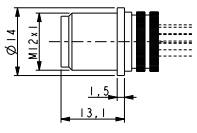
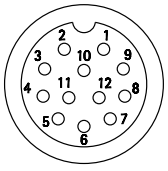
Signal \ Cable / Connector	T12 type cable	M23 12-pin	M12 8-pin
Clock IN +	Violet	2	3
Clock IN -	Yellow	1	4
Data OUT +	Grey	3	5
Data OUT -	Pink	4	6
RD RS232	Green	5	9
0Vdc RS232	Brown	6	10
TD RS232	Red	7	11
Complementary	Blue	8	8
Zero setting	White	9	7
+Vdc	Brown/Green	11	2
0Vdc	White/Green	12	1
Shield	Shield	Case	Case

PC connection

Encoder side	PC side DSub 9 pin female
TD RS-232	2
RD RS-232	3
0Vdc RS-232	5

Picture (example)	Cable type	Order code
	T12 4 x 0,25 + 4 x 2 x 0,14 mm² (24/26 AWG) TPU	**Lika encoder cable type T12**

All cable specifications on page 222-223

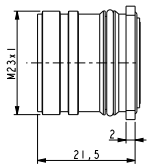
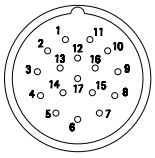
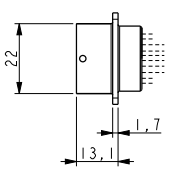
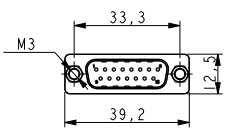
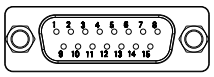
Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		M23 12-pin plug EML 121H		EPFL 121H
		M12 12-pin plug		E-M12F12

AS58, ES58, AST6 series

Signal \ Cable / Connector	A16 type cable	A19 type cable	MIL 19-pin	DSub 15-pin	M23 17-pin
Bit 1	Brown	Brown	A	1	1
Bit 2	Red	Red	B	2	2
Bit 3	Pink	Pink	C	3	3
Bit 4	Yellow	Yellow	D	4	4
Bit 5	Green	Green	E	5	5
Bit 6	Blue	Blue	F	6	6
Bit 7	Violet	Violet	G	7	7
Bit 8	Grey	Grey	H	8	8
Bit 9	White	White	J	9	9
Bit 10	Black	Black	K	10	10
Bit 11	White/Green	White/Green	L	11	11
Bit 12	Brown/Green	Brown/Green	M	12	12
Bit 13	Red/Blue optional only one function available	Red/Blue	N	-	13
Zero setting		White/Pink	P	-	14
Latch		-	R	-	-
Tri-state		-	S	-	-
Counting direction	Grey/Pink	Grey/Pink	U	13	15
+Vdc	White/Yellow	White/Yellow	V	14	16
0Vdc	Yellow/Brown	Yellow/Brown	T	15	17
Shield	Shield	Shield	Case	Case	Case

Picture (example)	Cable type	Order code
	A16 16 x 0,14 mm² PVC	**Lika encoder cable type A16**
	A19 19 x 0,14 mm² PVC	**Lika encoder cable type A19**

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		**M23 17-pin plug**		**EPFL 171H**
		**MIL 19-pin plug** **E19MLP**		**E19MLS**
		**DSub 15-pin plug** **EDA 15P**		**EDA 15S**

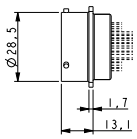
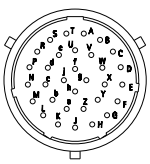
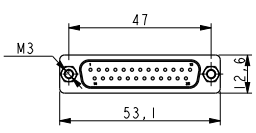
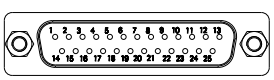
AM36, AM58, EM58 series

Cable / Connector / Signal	A32 type cable	MIL 32-pin	DSub 25-pin*
Bit 1	Brown	A	1
Bit 2	Red	B	2
Bit 3	Pink	C	3
Bit 4	Yellow	D	4
Bit 5	Green	E	5
Bit 6	Blue	F	6
Bit 7	Violet	G	7
Bit 8	Grey	H	8
Bit 9	White	J	9
Bit 10	Black	K	10
Bit 11	Brown/Red	L	11
Bit 12	White/Red	M	12
Bit 13	Blue/Red	N	13
Bit 14	Pink/Grey	P	14
Bit 15	White/Yellow	R	15
Bit 16	Brown/Green	S	16
Bit 17	White/Green	T	17

Cable / Connector / Signal	A32 type cable	MIL 32-pin	DSub 25-pin*
Bit 18	Yellow/Brown	U	18
Bit 19	White/Blue	V	19
Bit 20	Brown/Blue	W	20
Bit 21	White/Pink	X	-
Bit 22	White/Grey	Y	-
Bit 23	Pink/Brown	Z	-
Bit 24	Grey/Brown	a	-
Bit 25	Brown/Black	b	-
Parity bit	White/Black	c	-
Zero setting	Grey/Green	d	-
Latch	Yellow/Grey	e	21
Tri-state	Pink/Green	f	22
Counting direction	Yellow/Pink	g	23
+Vdc	Green/Blue	h	24
0Vdc	Yellow/Blue	i	25
Shield	Shield	Case	Case

Picture (example)	Cable type	Order code
	A32 PVC	**Lika encoder cable type A32**

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		**MIL 32-pin plug** **E32MLP**		**E32MLS**
		**DSub 25-pin plug** **EDB 25P**	*AMx-series only 	**EDB 25S**

HM58 P, HM58S P, HMC58 P

Cable / Connector / Signal	A40 type cable	MIL 41-pin	Cable / Connector / Signal	A40 type cable	MIL 41-pin
Bit 1 LSB	Brown	A	**Bit 22**	White/Grey	Y
Bit 2	Red	B	**Bit 23**	Pink/Brown	Z
Bit 3	Pink	C	**Bit 24**	Grey/Brown	a
Bit 4	Yellow	D	**Bit 25**	Brown/Black	b
Bit 5	Green	E	**Parity bit / Bit 28 MSB**	White/Black	c
Bit 6	Blue	F	**Preset**	Grey/Green	d
Bit 7	Violet	G	**Latch**	Yellow/Grey	e
Bit 8	Grey	H	**TD RS-232**	Pink/Green	f
Bit 9	White	J	**RD RS-232**	Yellow/Pink	g
Bit 10	Black	K	**0Vdc RS-232**	Green/Blue	h
Bit 11	Brown/Red	L	**Tri-state**	Yellow/Blue	i
Bit 12	White/Red	M	**-**	Green/Red	j
Bit 13	Blue/Red	N	**-**	Yellow/Red	k
Bit 14	Pink/Grey	P	**-**	Green/Black	m
Bit 15	White/Yellow	R	**Bit 26**	Yellow/Black	n
Bit 16	Brown/Green	S	**Bit 27**	Pink/Blue	p
Bit 17	White/Green	T	**-**	-	q
Bit 18	Yellow/Brown	U	**Counting direction**	Grey/Red	r
Bit 19	White/Blue	V	**+Vdc**	Pink/Red	s
Bit 20	Brown/Blue	W	**0Vdc**	Grey/Blue	t
Bit 21	White/Pink	X	**Shield**	Shield	Case

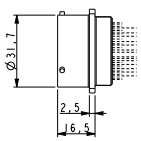
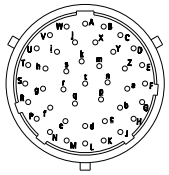
PC connection

Encoder side	PC side DSub 9 pin female
TD RS-232	2
RD RS-232	3
0Vdc RS-232	5

MIL 41-pin to USB connection cable available on request.
Order code: KIT HM58 PY

Picture (example)	Cable type	Order code
	A40 PVC	**Lika encoder cable type A40**

All cable specifications on page 222-223

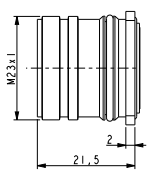
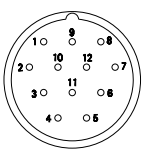
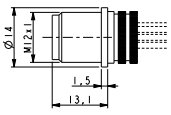
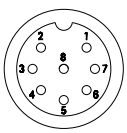
Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		MIL 41-pin plug		E41MLS

AS58 A, AM58 A - AI1, AI2, AI3 current outputs			
Cable / Connector / Signal	A8 type cable	M23 12-pin	M12 8-pin
+Iout	Brown	5	5
Analogue 0Vdc	White	6	3
Counting direction	Green	8	6
Zero setting	Pink	9	4
+Vdc	Red	11	2
0Vdc	Black	12	1
Fault	Blue	3	8
Shield	Shield	Case	Case

AS58 A, AM58 A - AV1, AV2, AV3, AV4 voltage outputs			
Cable / Connector / Signal	A8 type cable	M23 12-pin	M12 8-pin
+Vout	Brown	7	5
Analogue 0Vdc	White	6	3
Counting direction	Green	8	6
Zero setting	Pink	9	4
+Vdc	Red	11	2
0Vdc	Black	12	1
Shield	Shield	Case	Case

Picture (example)	Cable type	Order code
	A8 4 x 2 x 0,25 mm² (24 AWG) PVC	**Lika SSI encoder cable A8**

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		**M23 12-pin plug** **EML 121H**		**EPFL 121H**
		**M12 8-pin plug**		**E-M12F8**

EM58 PA, EM58 TA series

Cable / Connector / Signal	T12 type cable	M23 12-pin	M12 12-pin	A8 type cable	M12 5-pin
TD RS-232	Brown	1	11	-	-
RD RS-232	Green	2	9	-	-
0Vdc RS-232	Red	4	10	-	-
Fault	Yellow	3	4	Blue	-
+Vout	Pink	7	6	Brown	1
+Iout	Grey	5	5		
Analogue 0VDC	Violet	6	3	White	-
Complementary	Blue	8	8	-	-
Zero setting	White	9	7	-	-
+Vdc	Brown/Green	11	2	Red	2
0Vdc	White/Green	12	1	Black	3
Shield	Shield	Case	Case	Shield	Case
SET 1	-	-	-	Pink	4
SET 2	-	-	-	Green	5

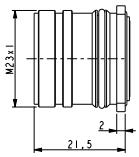
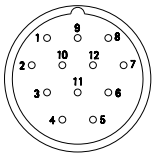
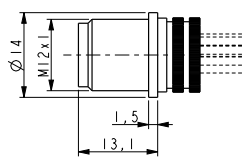
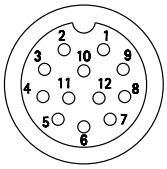
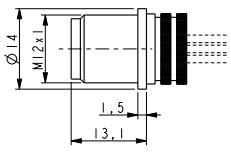
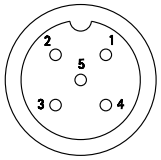
PC connection

Encoder side	PC side Sub-D 9 pin female
TD RS-232	2
RD RS-232	3
0Vdc RS-232	5

M23 to USB and M12 to USB connection cables available on request.
Order codes:
KIT EM58 PA M23
KIT EM58 PA M12

Picture (example)	Cable type	Order code
	A8 4 x 2 x 0,25 mm² (24 AWG), PVC	Lika SSI encoder cable A8
	T12 4 x 0,25 + 4 x 2 x 0,14 mm² (24/26 AWG), TPU	Lika encoder cable type T12

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		M23 12-pin plug EML 121H		EPFL 121H
		M12 12-pin plug		E-M12F12
		M12 5-pin plug		E-M12FC

EM58 MB series

Cable / Connector / Signal	CB type cable	M12 5-pin
Shield	-	1
+Vdc	Red	2
0Vdc	Black	3
Modbus A (RS-485)	White	4
Modbus B (RS-485)	Blue	5
Shield	Shield	Case

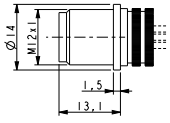
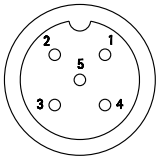
M12 to USB connection cable available on request.
Order code:
KIT EM58 MB

AS58, AM58 series CB

Cable / Connector / Signal	CB type cable	M12 5-pin
CAN Shield	Shield	Case
		1
+Vdc	Red	2
0Vdc	Black	3
CAN High	White	4
CAN Low	Blue	5

Picture	Cable type	Order code
	CB 2 x 2 x 0,24 mm² + 1 x 0,22 mm² PUR/TMPU	**2 x 4 twisted wires cable**

All cable specifications on page 222-223

Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		**M12 5-pin plug**		**E-M12FC**

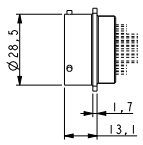
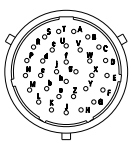
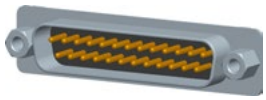
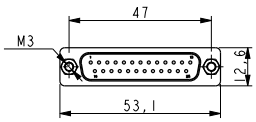
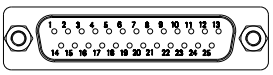
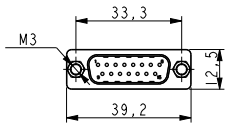
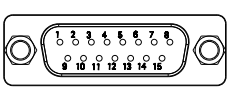
ASR58 & AMR58 series

Function	DSub 15 pin	DSub 25 pin	Cable A32 pin	MIL 32-pin
OUT 1		1	Brown	A
OUT 2		2	Red	B
OUT 3		3	Pink	C
OUT 4		4	Yellow	D
OUT 5		5	Green	E
OUT 6		6	Blue	F
OUT 7		7	Violet	G
OUT 8		8	Grey	H
OUT 9		9		
OUT 10		10		
OUT 11		11		
OUT 12		12		
OUT 13		13		
OUT 14		14		
OUT 15		15		
OUT 16		16		
Load Program		17	White/Green	T
Select Program 2^0		18	Yellow/Brown	U

Function	DSub 15 pin	DSub 25 pin	Cable A32 pin	MIL 32-pin
Select Program 2^1		19	White/Blue	V
Select Program 2^2		20	Brown/Blue	W
Select Program 2^3		21	White/Pink	X
Zero setting		22	Grey/Green	d
Counting direction		23	Yellow/Pink	g
+10Vdc +30Vdc	14	24	Green/Blue + Pink/Green	h
0Vdc	15	25	Yellow/Blue + Yellow/Grey	j
Data OUT +			Blue/Red	N
Data OUT -			Pink/Grey	P
Clock IN +			White/Yellow	R
Clock IN -			Brown/Green	S
Fault	7		White/Grey	Y
RD RS-232	12		Pink/Brown	Z
TD RS-232	13		Grey/Brown	a
0Vdc	6, 11		Brown/Black	b
0Vdc RS-232	8		White/Black	c
Shield			Shield	Case
Analogue output	4			
Speed	5			

Picture	Cable type	Order code
	A32	**Lika encoder cable type A32**

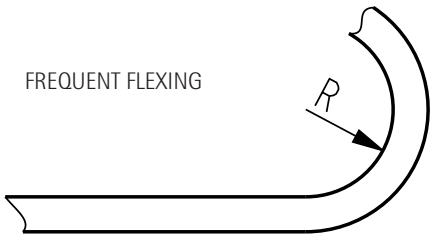
All cable specifications on page 222-223

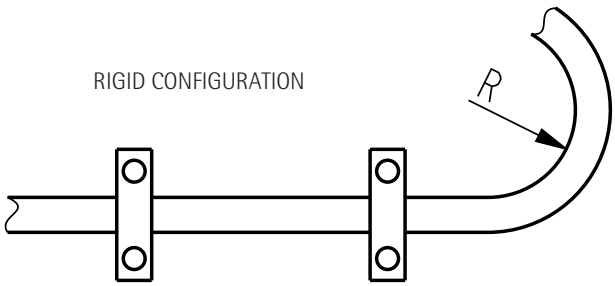
Picture	Dimensions	Description Connector order code	Frontal view	Mating connector order code
		**MIL 32-pin plug** **E32MLP**		**E32MLS**
		**DSub 25-pin plug** **EDB 25P**		**EDB 25S**
		**DSub 15-pin plug** **EDA 15P**		**EDA 15S**

Order code Cable type	Description	Notes
I5 **Incremental encoders** **AB0**	Cross section: 5 x 0,22mm² (24/7 AWG) Jacket: PVC, flame retardant Shield: AL/PET foil + copper conductor External-Ø: 4,5 ±0,1 mm Min. bending radius: fix min. 23 mm / flexible min. 45 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <90 Ω/km	RoHS Ref. standard UL1581
I8 **Incremental encoders** **AB0 /AB0**	Cross section: 8 x 0,22mm² (24/7 AWG) Jacket: PVC, flame retardant Shield: AL/PET foil + copper conductor External-Ø: 5,1 ±0,1 mm Min. bending radius: fix min. 25 mm / flexible min. 50 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <90 Ω/km	RoHS Ref. standard UL1581
A8 **Absolute encoders** **SSI, Analogue output**	Cross section: 4 x 2 x 0,25mm² (24 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >75% External-Ø: 7,0 ±0,15 mm Min. bending radius: fix min. 40 mm / flexible min. 75 mm Operating temperature: fix -20 +80°C / flexible -5 +80°C Conductor resistance: <80 Ω/km	RoHS Ref. standard UL1581
T12 **Absolute encoders** **BiSS/SSI + AB /AB output**	Cross section: 4x0,25 + 4x2x0,14mm² (24/26 AWG) Jacket: TPU, extraflexible Shield: tinned copper braid, coverage >85% External-Ø: 6,1 ±0,1 mm Min. bending radius: fix min. 25 mm / dynamic min. 45 mm Operating temperature: fix -40 +90°C / dynamic -50 +90°C Conductor resistance: <90 Ω/km - <148 Ω/km	RoHS Ref. standard UL1581 Halogen free Oil, hydrolisys, abrasion resistant Cable chain capable 10 m/s max, 6 m/s2 >1000000 cycles
M8 **Absolute encoders** **SSI**	Cross section: 2x0,22 + 6x0,14mm² (24/26 AWG) Jacket: TPU, extraflexible Shield: tinned copper braid, coverage >85% External-Ø: 5,5 ±0,1 mm Min. bending radius: min 25 mm / dynamic min. 45 mm Operating temperature: fix -40 +90°C / dynamic -50 +90°C Conductor resistance: <90 Ω/km - <148 Ω/km	RoHS Ref. standard UL1581 Halogen free Oil, hydrolisys, abrasion resistant Cable chain capable 10 m/s max, 6 m/s2 >1000000 cycles
CB **CAN,** **Modbus encoders**	Cross section: 2x2x0,24 + 1x0,22mm² Jacket: PUR/TMPU Shield: tinned copper braid, coverage >85% External-Ø: 6,6 ±0,5 mm Min. bending radius: fix 50 mm / dynamic 70 mm Operating temperature: fix -50 +80°C Characteristic impedance at 1 MHz: 120 Ω ±10%	RoHS Ref. standard UL758, UL1581 CSA/UL approval (AWM style 20417 60°C 30V)
A16 **Absolute single turn encoder cable** **(bit parallel)**	Cross section: 16 x 0,14mm² Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 7,2 ±0,3 mm Bending radius: fix min. 45 mm / flexible min. 75 mm Conductor resistance: <148 Ω/km Operating temperature: fix min. -30 +70°C / -5 +70°C	RoHS

Order code Cable type	Description	Notes
A19 **Absolute single turn encoder cable** **(bit parallel)**	Cross section: 19 x 0,14mm² Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 7,2 ±0,3 mm Bending radius: fix min. 45 mm / flexible min. 75 mm Conductor resistance: <148 Ω/km Operating temperature: fix -20 +80°C / -5 +80°C	RoHS
A32 **Absolute multi turn encoder cable** **(bit parallel)**	Cross section: 32 x 0,14mm² (26 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid External-Ø: 9,1 ±0,4 mm Bending radius: fix min. 45 mm / flexible min. 90 mm Conductor resistance: <150 Ω/km Operating temperature: fix min. -30 +70°C / -5 +70°C	RoHS
A40 **HM58 P** **Programmable encoder cable** **(bit parallel)**	Cross section: 40 x 0,14mm² (26 AWG) Jacket: PVC, flame retardant Shield: tinned copper braid, coverage >85% External-Ø: 10,2 ±0,1 mm Bending radius: fix min. 50 mm / flexible min. 100 mm Conductor resistance: <250 Ω/km Operating temperature: fix -40 +80°C / -5 +80°C	RoHS

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





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Flexible couplings

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

○ = excellent ● = good ✓ = available