

Incremental encoders

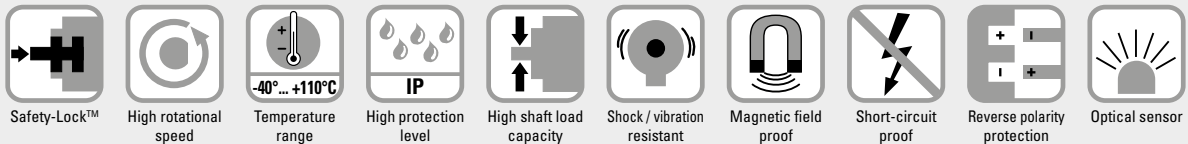
Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Highest performance and flexibility.

The new Sendix K58I Performance-Line encoder is particularly impressive due to the possibility of programming different parameters such as resolution, counting direction or zero pulse. The settings can be made before or after installation and enable a fast, direct response to changing or new requirements without having to replace the encoder with a new one.

Other optimized features include a higher temperature range and a resolution of up to 36,000 pulses per revolution.



Features and benefits

- Encoders can be customized quickly and easily at any time**
 Individually configurable parameters:
 - Pulse numbers up to 36,000 ppr
 - HTL or TTL output
 - Counting direction
 - Zero pulse settings (length, position, links)
- High accuracy and reliability**
 State-of-the-art sensor technology with resolutions up to 36,000 ppr.
- Prepared for the toughest operating conditions and a wide range of external influences**
 - Temperature range from -40 °C up to +110 °C
 - Protection class up to a maximum of IP67
 - Optimized EMC shielding concept
 - Advanced Safety Lock technology
- Seamless integration into modern, digital networks**
 Prepared for use with digital type plate and digital twin for monitoring and maintaining machines and for a wide range of documentation tasks.
 Optimizing processes and increasing efficiency.

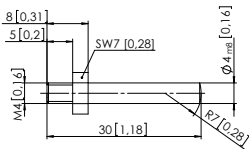
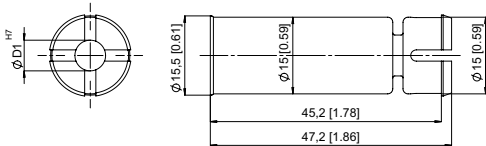
Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
Order code	K58I	.0PRXX.XXXXX.2XXXX.XX.XXX.XXX.XXX.XXX.XXX.XXX.XXX.XX
Shaft version	Type	a b c d e f g h i k l m
a Interface PP = push-pull RS = RS422	b Pulse rate (1 ... 36000 ppr) XXXXX = 00001 ... 36000	g Type of protection 65 = IP65 6A = IP66/IP67
c Supply voltage 2 = 5 ... 30 V DC	d Version S1 = Shaft, with flat (not in combination with shaft ø 11 mm i = 11) S3 = Shaft, with feather keyway and enclosed feather key (only in combination with shaft ø 11 mm i = 11)	h Position connection A = axial R = radial
e Flange C5 = clamping flange S5 = synchro flange Q5 = square flange, □ 63.5 mm [2.5"] E5 = Euro flange V5 = servo flange	f Shaft (ø x L), with flat (only in combination with version d = S1) 06 = ø 6 x 10 mm [0.24 x 0.39"] 08 = ø 8 x 15 mm [0.32 x 0.59"] 10 = ø 10 x 20 mm [0.39 x 0.79"] 12 = ø 12 x 20 mm [0.47 x 0.79"] 1A = ø 1/4 x 5/8" (6.35 x 15.875 mm) 1B = ø 1/4 x 7/8" (6.35 x 22.225 mm) 2A = ø 3/8 x 5/8" (9.525 x 15.875 mm) 2B = ø 3/8 x 7/8" (9.525 x 22.225 mm)	i Type of connection 2 = cable, TPE (only open-ended) C = connector on the housing
i Shaft (ø x L), with feather keyway and enclosed feather key (only in combination with version d = S3) 11 = ø 11 x 33 mm [0.43 x 1.30"]		k Cable / connector type 1 = cable, open ended 2 = M12 connector, 8-pin (only as connector on the housing) 3 = M12 connector, 5-pin (only as connector on the housing) 4 = M23 connector, 12-pin (only as connector on the housing)
		l Cable length (in dm) 0010 = 1 m [3.28'] 0020 = 2 m [6.56'] 0030 = 3 m [9.84'] 0050 = 5 m [13.12'] 0100 = 10 m [32.80']
		m Optional: special formats for output signals XX = see page 8 Optional on request - Surface protection salt spray tested - Other cable lengths
		Stock types: K58I.0PRPP.01024.2S1C510.65RC2

Incremental encoders

Standard optical, programmable		Sendix K58I-PR (shaft / hollow shaft)										Push-pull / RS422											
Order code Hollow shaft		K58I		.	0	PR	XX	.	XXXXX	.	2	XX	XX	XX	.	XX	R	X	X	.	XXXX	.	XX
		Type					a		b		c	d	e	f		g	h	i	k		l		m
aInterface PP = push-pull RS = RS422 bPulse rate (1 ... 36000 ppr) XXXXX = 00001 ... 36000 cSupply voltage 2 = 5 ... 30 V DC dVersion H1 = through hollow shaft, clamping on flange side H2 = through hollow shaft, clamping on flange side with pre-assembled Insulation / reduction insert (only for hollow shafts < ø 14 mm) C1 = through hollow shaft, clamping on the cover side C2 = through hollow shaft, clamping on the cover side with pre-assembled Insulation / reduction insert (only for hollow shafts < ø 14 mm) eMounting type 15 = spring element, long R 35.5 ... 37,9 mm [1.40 ... 1.49"] 25 = stator coupling ø 63 mm [2.48"] 35 = stator coupling ø 65 mm [2.56"] 45 = torque stop R 40 ... 75 mm [1.57 ... 2.95"] iThrough hollow shaft 06 = ø 6 mm [0.24"] 08 = ø 8 mm [0.32"] 10 = ø 10 mm [0.39"] 12 = ø 12 mm [0.47"] 14 = ø 14 mm [0.55"] 15 = ø 15 mm [0.59"] 1A = ø 1/4" (6.35 mm) 2A = ø 3/8" (9.525 mm) 3A = ø 1/2" (12.7 mm) gType of protection 65 = IP65 6A = IP66/IP67 hPosition connection R = radial iType of connection 2 = cable, TPE (only open-ended) C = connector on the housing kCable / connector type 1 = cable, open-ended 2 = M12 connector, 8-pin (only as connector on the housing) 3 = M12 connector, 5-pin (only as connector on the housing) 4 = M23 connector, 12-pin (only as connector on the housing) lCable length (in dm) 0010 = 1 m [3.28'] 0020 = 2 m [6.56'] 0030 = 3 m [9.84'] 0050 = 5 m [13.12'] 0100 = 10 m [32.80'] mOptional: special formats for output signals XX = see page 8 Optional on request - Surface protection salt spray tested - Other cable lengths Stock types: K58I.0PRPP.01024.2H12515.65RC2																							

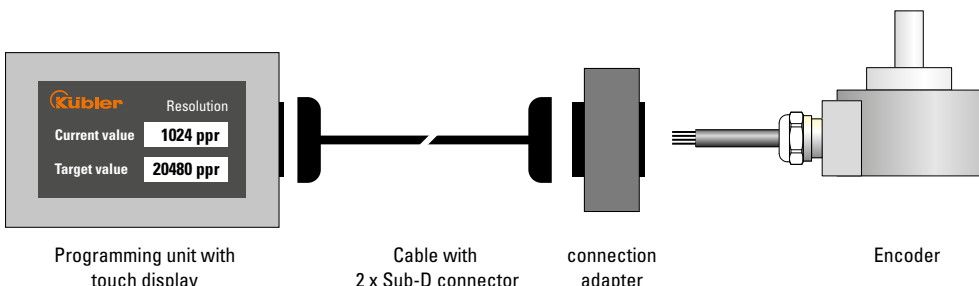
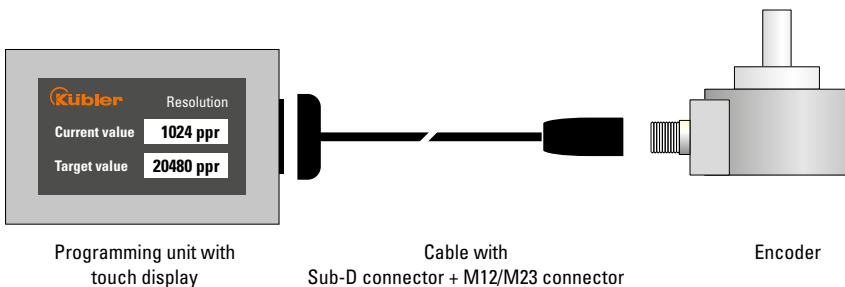
Incremental encoders

Standard optical, programmable		Sendix K58I-PR (shaft / hollow shaft)		Push-pull / RS422		
Mounting accessory for shaft encoders				Order no.		
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]			8.0000.1102.0606		
	bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]			8.0000.1102.1010		
Mounting accessory for hollow shaft encoders Dimensions in mm [inch]				Order no.		
Torque pin, ø 4 mm		with fixing thread		8.0010.4700.0000		
for flange with spring element (mounting type P = 15 and 75)						
Insulation / reduction insert for hollow shaft encoders with ø 15 mm I = 15		Thermal and electrical isolation of the encoders (Temperature range -40 °C ... +115 °C [-40 °F ... +239 °F]) Insulation inserts prevent currents from passing through the encoder bearings. These currents can occur when using inverter controlled three-phase or AC vector motors and considerably shorten the service life of the encoder bearings. In addition the encoder is thermally isolated as the plastic does not transfer the heat to the encoder.		D1		Insulation insert
				6 mm		8.0010.4021.0000
				8 mm		8.0010.4020.0000
				10 mm		8.0010.4023.0000
				12 mm		8.0010.4025.0000
				1/4" (6.35 mm)		8.0010.4022.0000
				3/8" (9.525 mm)		8.0010.4024.0000
1/2" (12.7 mm)		8.0010.4026.0000				
				Also available pre-assembled as version I = H2 or C2		
Cables and connectors				Order no.		
Preassembled cables		M23 female connector with coupling nut, 12-pin,cw single ended 2 m TPE Kabel		8.0000.6E01.0002		
		M12 female connector with coupling nut, 5-pin, A coded, straight single ended 2 m [6.56'] PVC cable (only suitable up to max. +85°C)		05.00.6081.2211.002M		
		M12 female connector with coupling nut,8-pin,A coded, straight single ended 2 m [6.56'] PVC cable (only suitable up to max. +85°C)		05.00.6041.8211.002M		
Connectors		M12 female connector with coupling nut, 5-pin, A coded, straight (plastic)		05.B-8151-0/9		
		M12 female connector with coupling nut,8-pin,A coded, straight (metal)		05.CMB 8181-0		
		M23 female connector with coupling nut, 12-pin,cw		8.0000.5012.0000		

Further Kübler accessories can be found at: kuebler.com/accessories

Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

Incremental encoders

Standard optical, programmable		Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422	
Programming unit			Order no.	
Programming unit with touch display EP1000 	Programming device for PC-independent use, even in the field		8.0010.9000.1000 ¹⁾	
	Dimensions	136 x 84 x 38 mm		
	Connection	Sub-D female connector		
	Scope of delivery	Programming unit, plug-in power supply unit		
Accessories for programming - for encoders with cable connection			Order no.	
				
	Programming unit with touch display	Cable with 2 x Sub-D connector	connection adapter	Encoder
Connection cable	For connecting programming unit with the connection adapter Sub-D male connector, 15-pin Sub-D female connector, 15-pin 2 m [6.56'] PVC cable		05.00.60J1.L7L8.002M	
Connection adapter	For connecting the encoder Sub-D male connector, 15-pin Spring terminal, 3-pin		8.0010.9000.0100	
Accessories for programming - for encoders with connector			Order no.	
				
	Programming unit with touch display	Cable with Sub-D connector + M12/M23 connector	Encoder	
Connection cable	For encoders with M12 connector, 8-pin Sub-D male connector, 15-pin M12 female connector with coupling nut, 8-pin, A coded, straight 2 m [6.56'] PVC cable		8.0000.6000.0002.0112	
	For encoders with M12 connector, 5-pin Sub-D male connector, 15-pin M12 female connector with coupling nut, 5-pin, A coded, straight 2 m [6.56'] PVC cable		8.0000.6000.0002.0113	
	For encoders with M23 connector, 12-pin Sub-D male connector, 15-pin M23 female connector with coupling nut, 12-pin, straight 2 m [6.56'] PVC cable		8.0000.6000.0002.0114	

1) Stock types

Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Technical data

Mechanical characteristics		
Maximum speed	IP65	12000 min ⁻¹ 6000 min ⁻¹ (continuous)
	IP66/IP67	6000 min ⁻¹ 3000 min ⁻¹ (continuous)
Mass moment of inertia	shaft	approx. 4.0 ... 4.3 x 10 ⁻⁶ kgm ² (depending on shaft version)
	hollow shaft	approx. 4.3 ... 5.8 x 10 ⁻⁶ kgm ² (depending on hollow shaft version)
Starting torque at 20 °C [68 °F]		
	IP65	< 0.01 Nm with IP65
	IP66/IP67	< 0.02 Nm with IP66/IP67
Shaft load capacity	radial	100 N
	axial	50 N
Weight		approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529		
	without shaft seal	IP65
	with shaft seal	IP66/IP67
Working temperature range		-40 °C ¹⁾ ... +110 °C [-40 °F ¹⁾ ... +230 °F]
Material	shaft	stainless steel
Shock resistance acc. to EN 60068-2-27		3000 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6		
	5 ... 8.7 Hz	±0.35 mm
	8.7 ... 200 Hz	30 m/s ²
	200 ... 2000 Hz	300 m/s ²

Approvals		
UL compliant in accordance with	File no. E224618	
CE compliant in accordance with		
	EMC Directive	2014/30/EU
	RoHS Directive	2011/65/EU

Electrical characteristics				
Output circuit	RS422 (TTL compatible)		Push-pull (HTL/TTL universal)	
	Order code a	RS	PP	
Supply voltage		5 ... 30 V DC		5 ... 30 V DC
Power consumption (no load)		typ. 40 mA / max. 90 mA		typ. 40 mA / max. 90 mA
Permissible load / channel		max. +/- 20 mA		max. +/- 20 mA
Pulse frequency		max. 300 kHz		max. 300 kHz ²⁾
Signal level	HIGH	min. 2.5 V		min. 2.5 V
	LOW	max. 0.5 V		max. 0.5 V
Rising edge time t_r		max. 200 ns		max. 200 ns
Falling edge time t_f		max. 200 ns		max. 200 ns
Short circuit proof outputs ³⁾		yes ⁴⁾		yes ⁴⁾
Reverse polarity protection of the supply voltage		yes		yes

1) With connector: -40 °C [-40 °F], cable fixed: -30 °C [-22 °F], cable moved: -20 °C [-4 °F].

2) Max. recommended cable length 30 m [98.43'].

3) If supply voltage correctly applied.

4) Only one channel allowed to be shorted-out:
at +V= 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
at +V= 5 ... 30 V DC, short-circuit to channel or 0 V is permitted.

Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Terminal assignment

Interface	Cable / connector type	Cable (isolate unused cores individually before initial start-up)											
PP, RS	1	Signal:	0 V	+V	0 V _{sens}	+V _{sens}	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
		Core color:	WH	BN	QY/PK	RD/BU	GN	YE	GY	PK	BU	RD	shield

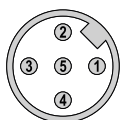
Interface	Cable / connector type	M12 connector, 5-pin						
PP, RS	3	Signal:	0 V	+V	A	B	0	$\perp$
		Pin:	1	2	3	4	5	PH

Interface	Cable / connector type	M12 connector, 8-pin										
PP, RS	2	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$	
		Pin:	1	2	3	4	5	6	7	8	PH	

Interface	Cable / connector type	M23 connector, 12-pin											
PP, RS	4	Signal:	0 V	+V	0 V _{sens}	+V _{sens}	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
		Pin:	10	12	11	2	5	6	8	1	3	4	PH

+V : Supply voltage encoder +V DC
 0 V : Supply voltage encoder ground GND (0 V)
 0 V_{sens} / +V_{sens} : Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly..
 A, $\bar{A}$: Incremental output channel A
 B, $\bar{B}$: Incremental output channel B
 0, $\bar{0}$: Reference signal
 PH $\perp$: Shield is connected to the connector housing

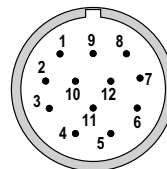
Top view of mating side, male contact base



M12 connector, 5-pin



M12 connector, 8-pin



M23 connector, 12-pin

Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Special formats for output signals

A leading B when the shaft is rotated clockwise with the flange side facing you.			B leading A when the shaft is rotated clockwise with the flange side facing you.		
Order code			Order code		
Standard No specification in the order code	Z at A / B = 1 / 1 Z is 90° wide		B0	Z at A / B = 1 / 1 Z is 90° wide	
A1	Z at A / B = 1 / 0 Z is 90° wide		B1	Z at A / B = 1 / 0 Z is 90° wide	
A2	Z at A / B = 0 / 1 Z is 90° wide		B2	Z at A / B = 0 / 1 Z is 90° wide	
A3	Z at A / B = 0 / 0 Z is 90° wide		B3	Z at A / B = 0 / 0 Z is 90° wide	
A4	Z at A = 1 Z is 180° wide		B4	Z at A = 1 Z is 180° wide	
A5	Z at A = 0 Z is 180° wide		B5	Z at A = 0 Z is 180° wide	
A6	Z at B = 1 Z is 180° wide		B6	Z at B = 1 Z is 180° wide	
A7	Z at B = 0 Z is 180° wide		B7	Z at B = 0 Z is 180° wide	
A8	Z at A Z is 360° wide		B8	Z at A Z is 360° wide	
A9	Z at B Z is 360° wide		B9	Z at B Z is 360° wide	

Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]

Connection, axial
Connector on the housing
M12 connector, 5- or 8-pin

flange type **e** = C5

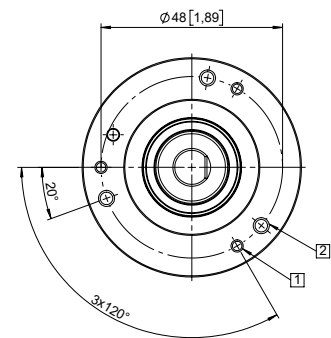
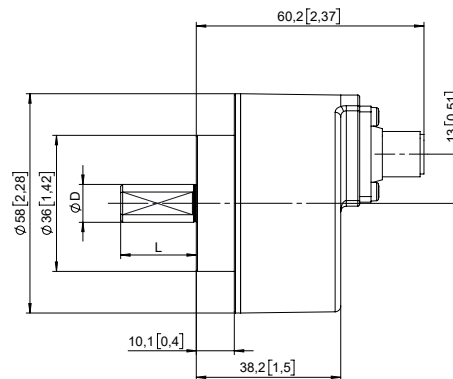
position connection **h** = A

type of connection **i** = C

connector type **k** = 2 or 3

1 3 x M3, 6 [0.24] deep

2 3 x M4, 6 [0.24] deep



D	Fit	L
6 [0.24]	f7	10 [0.39]
8 [0.32]	f7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	f7	20 [0.79]
1/4"	f7	5/8"
3/8"	f7	5/8"
1/4"	f7	7/8"
3/8"	f7	7/8"

Servo flange, ø 58 [2.28]

Connection, axial
Connector on the housing
M23 connector, 12-pin

flange type **e** = V5

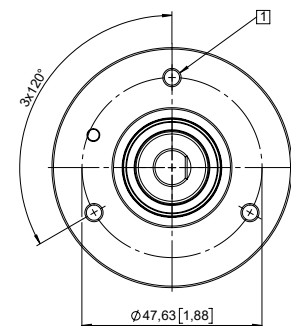
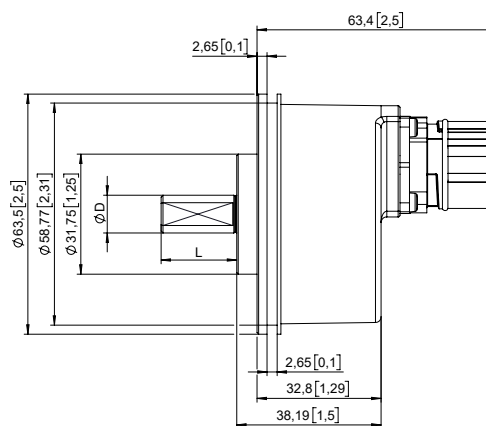
position connection **h** = A

type of connection **i** = C

connector type **k** = 4

1 3 x M3, 6 [0.24] deep

2 3 x M4, 6 [0.24] deep



D	Fit	L
6 [0.24]	f7	10 [0.39]
8 [0.32]	f7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	f7	20 [0.79]
1/4"	f7	5/8"
3/8"	f7	5/8"
1/4"	f7	7/8"
3/8"	f7	7/8"

Incremental encoders

Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Dimensions hollow shaft version

Dimensions in mm [inch]

Spring element, long

R 35.5 ... 37,9 [1.40 ... 1.49]

Connection, radial

Connector on the housing

M12 connector, 5- or 8-pin

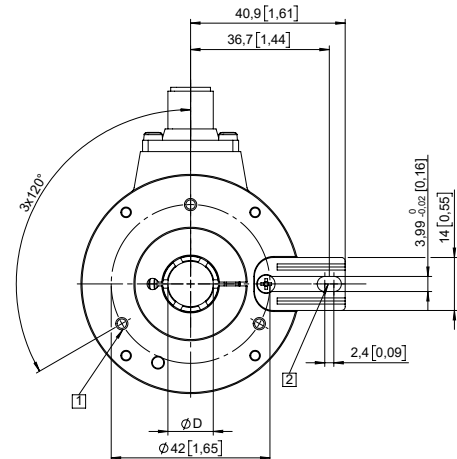
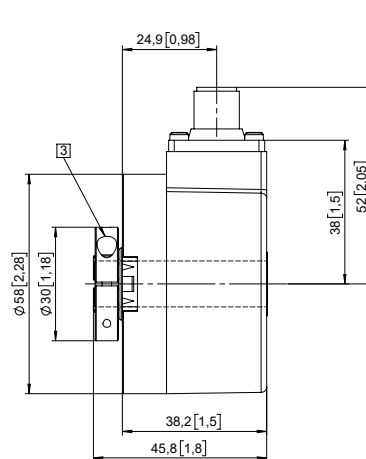
mounting type **e** = 15

position connection **h** = R

type of connection **i** = C

connector type **k** = 2 or 3

- 1 3 x M3, 6 [0.24] deep
- 2 Slot spring element, recommendation: torque pin DIN 7, ϕ 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7

Recommended fit for shaft on customer side is g6.

Spring element, long

R 35.5 ... 37,9 [1.40 ... 1.49]

Connection, tangential

Cable connection

Open-ended cable

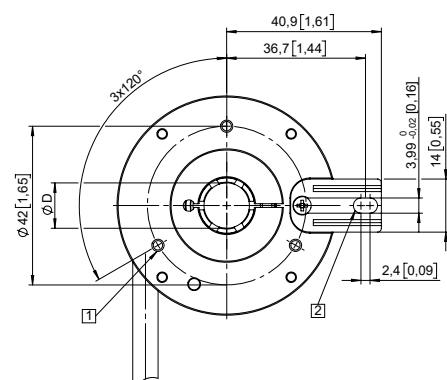
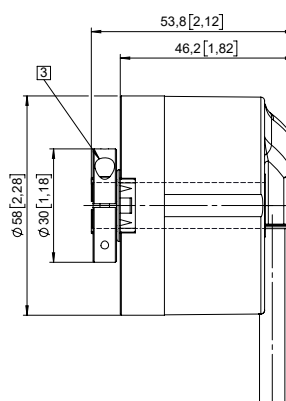
mounting type **e** = 15

position connection **h** = T

type of connection **i** = 1

connector type **k** = 1

- 1 3 x M3, 6 [0.24] deep
- 2 Slot spring element, recommendation: torque pin DIN 7, ϕ 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7

Recommended fit for shaft on customer side is g6.

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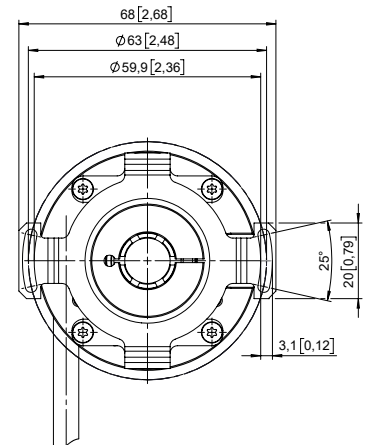
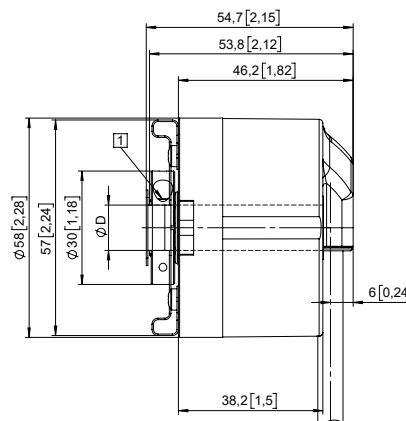
Standard optical, programmable	Sendix K58I-PR (shaft / hollow shaft)	Push-pull / RS422
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Dimensions hollow shaft version

Dimensions in mm [inch]

Stator coupling ø 63 [2.48] mounting type **Ⓔ** = 25
 Connection, tangential position connection **Ⓛ** = T
 Cable connection type of connection **Ⓢ** = 1
 Open-ended cable connector type **Ⓚ** = 1

1 Recommended torque for the clamping ring 0.6 Nm

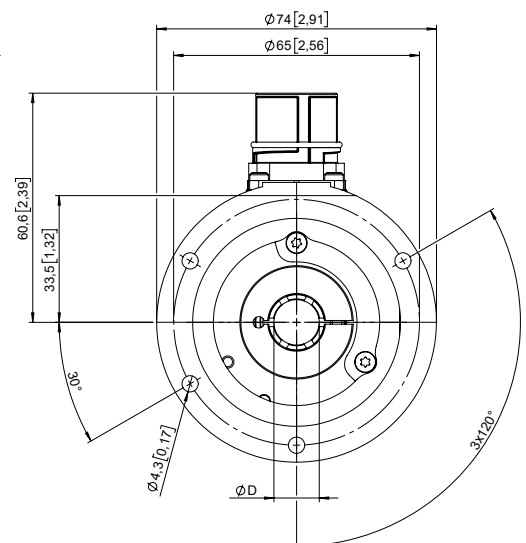
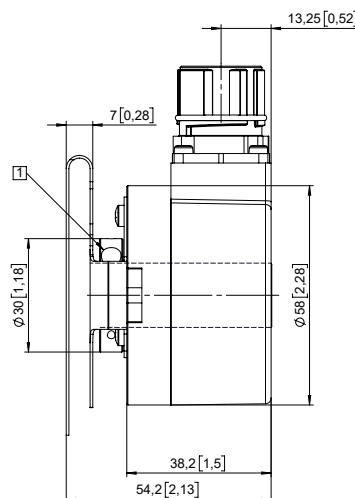


D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7

Recommended fit for shaft on customer side is g6.

Stator coupling, ø 65 [2.56] mounting type **Ⓔ** = 35
 Connection, radial position connection **Ⓛ** = R
 Connector on the housing type of connection **Ⓢ** = C
 M23 connector, 12-pin connector type **Ⓚ** = 4

1 Recommended torque for the clamping ring 0.6 Nm



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7

Recommended fit for shaft on customer side is g6.