Large diameter Type A020

- Only 43 mm clearance needed
- Hollow shaft diameter up to 42 mm
- Very easy mounting. The encoder is mounted directly on the drive shaft without couplings.
- Electronic temperature and ageing compensation
- RS 422, push-pull or sine wave output
- High scanning rate

Mechanical characteristics:

Speed:[1]	max. 3000 min^{-1}
Rotor moment of inertia:[3]	<150 x 10^{-6} kgm^2
Starting torque with sealing:	< 0.2 Nm
Weight:	app. 0.7 kg
Protection acc. to EN 60 529:	IP 65
EX approval for hazardous areas:	optional zone 2 and 22

Working temperature:	–20° C ... +70 °C[2] (optional up to -40 °C)
Shaft:	stainless steel H7
Shock resistance acc. to DIN-IEC 68-2-27:	1000 m/s^2, 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	100 m/s^2, 10...2000 Hz

[1] Short term (app. 15 min. range) up to 3500 min^{-1} [2] Non-condensing [3] Depending on shaft diameter

Electrical characteristics sine wave output:

Output circuit:	Sine U = 1 Vss	Sine U = 1 Vss
Supply voltage:	5 V (±5 %)	10 ... 30 V DC
Current consumption (no load) with inverted signals:	typ. 65 mA / max. 110 mA	typ. 65 mA / max. 110 mA
-3 dB frequency:	≤180 kHz	≤180 kHz
Signal level channels A/B:	1 Vss (±20%)	1 Vss (±20 %)
Signal level channel 0:	0.1 ... 1.2 V	0.1 .... 1.2 V
Short circuit proof outputs[1]:	yes	yes
Reverse connection protection at U_B:	no	yes
UL certified	File 224618	
Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3		
RoHS compliant acc. to EU guideline 2002/95/EG		

[1] If supply voltage correctly applied

Electrical characteristics RS 422 or push-pull output:

Output circuit:	RS 422 (TTL-compatible)	Push-pull	Push-pull (7272)[3]
Supply voltage:	5 V (±5 %) or 10 ... 30 V DC	10 ... 30 V DC	5 ... 30 V DC
Power consumption (no load) without inverted signal:	not available	typ. 55 mA / max. 125 mA	– –
Power consumption (no load) with inverted signal:	typ. 40 mA / max. 90 mA	typ. 80 mA/ max.150 mA	typ. 50 mA/ max.100 mA
Permissible load/channel:	max. ±20 mA	max. ±30 mA	max. ±20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz
Signal level high:	min. 2.5 V	min. U_B–3 V	min. U_B–2.0 V
Signal level low:	max. 0.5 V	max. 2.5 V	max. 0.5 V
Rise time tr	max. 200 ns	max. 1 µs	max. 1 µs
Fall time tf	max. 200 ns	max. 1 µs	max. 1 µs
Short circuit proof outputs[1]:	yes[2]	yes	yes
Reverse connection protection at U_B:	5 V: no, 10 ... 30 V: yes	yes	no
UL certified	File 224618		
Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3			
RoHS compliant acc. to EU guideline 2002/95/EG			

[1] If supply voltage correctly applied

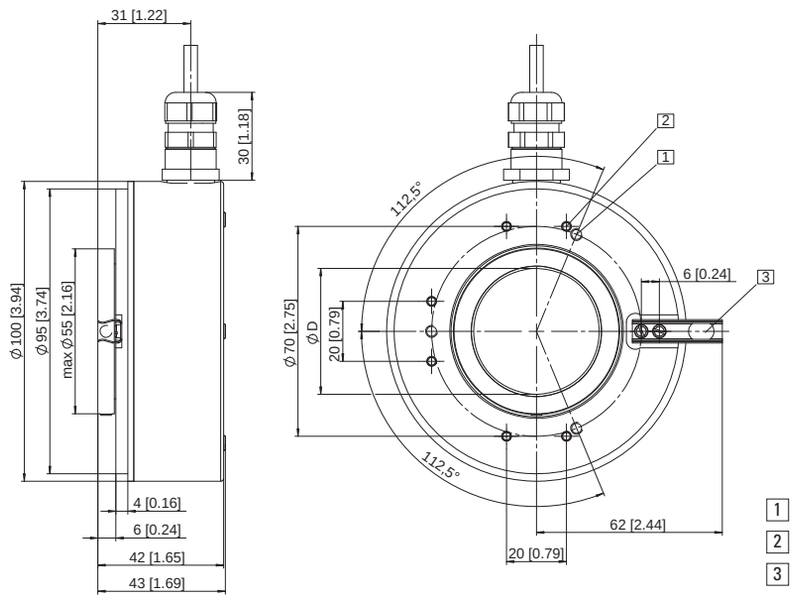
[2] Only one channel allowed to be shorted-out:
(If UB=5 V, short-circuit to channel, 0 V, or +UB is permitted)
(If UB=5-30 V, short-circuit to channel or 0 V is permitted)

[3] Max. recommended cable length 30 m

Large diameter Type A020

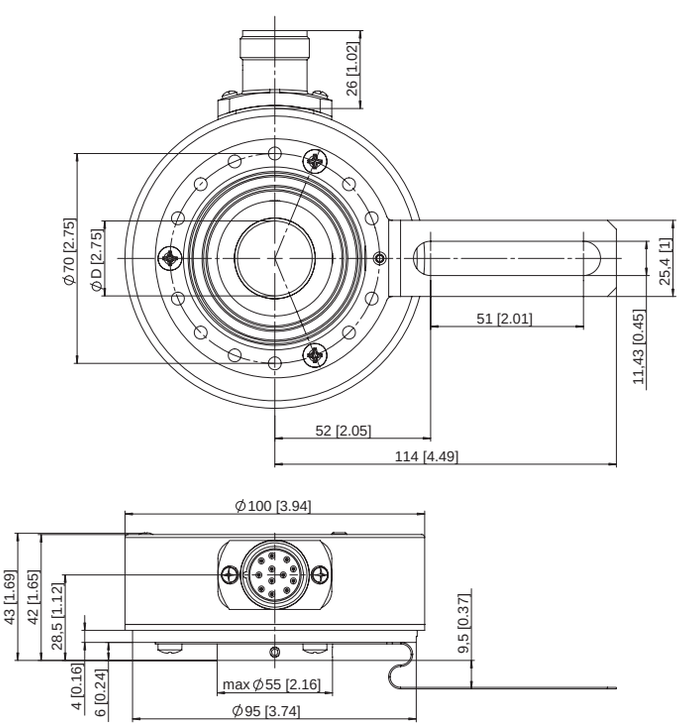
Dimensions

With spring element long (Flange type 3)



1 3 x M4, 7 [0,28] deep
2 6 x M3, 8 [0,31] deep
3 cylindrical pin DIN6325 ø6

With tether arm long (Flange type 5)



Recommended insertion depth min 31 mm

Large diameter Type A020

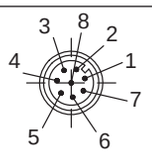
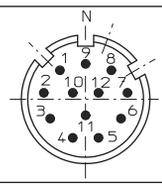
Terminal assignment:

Signal:	0 V GND	+U_B	0 V Sens	+Ub Sens	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	Shield
M23 , 12 pin connector, Pin:	10	12	11	2	5	6	8	1	3	4	–[1]
M12, 8 pin connector, Pin:	1	2			3	4	5	6	7	8	–[1]
Cable colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	Shield

1) Shield is attached to connector housing

Isolate unused outputs before initial startup

Top view of mating side, male contact base:

Type	8 pin M12 connector	12 pin M23 connector
View		
Corresponding mating connector:	05.CMB-8181-0	8.0000.5012.0000

Order code:

8.A020.XXXX.XXXX

Type

Flange
- 1 = without mounting aid
- 2 = with short spring element
- **3 = with long spring element**
- 5 = with tether arm long

Hollow shaft
- **1 = ø 42 mm**
- 2 = ø 38 mm
- 3 = ø 28 mm
- 4 = ø 25.4 mm (1")
- **5 = ø 25 mm**
- 6 = ø 24 mm
- **A = ø 30 mm**
- B = ø 40 mm
- C = ø 20 mm
- H = ø 35 mm
- M = ø 19 mm

Pulse rate
50*, 360*, 512*, 600*, 1000*, 1024, 1500, 2000, 2048, 2500, 4096, 5000
*not for SIN/COS version (SIN/COS version not available with pulses <1024)
(e.g. 360 pulses => 0360)
Other pulse rates on request

Type of connection
- 1 = Cable radial (1 m PVC-cable)
- **2 = radial 12 pin plug without mating connector**
- E = Connector M12 8pin, radial

Output circuit and voltage display
- **1 = RS 422 (with inverted signal) 5 V supply voltage**
- 2 = Push-pull (without inverted signal) 10 ... 30 V supply voltage
- **3 = Push-pull (with inverted signal) 10 ... 30 V supply voltage**
- 4 = RS 422 (with inverted signal) 10 ... 30 V supply voltage
- 5 = Push pull (with inverted signal) 5 ... 30 V supply voltage
- 8 = SIN/COS 1 Vpp (with inverted signal) 5 V supply voltage
- 9 = SIN/COS 1 Vpp (with inverted signal 10 .. 30 V supply voltage
- A = Line driver 7272 5 ... 30 V supply voltage

Preferred types are indicated in ***bold***

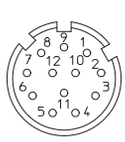
Accessories:
Cables and connectors, also pre-assembled, can be found in the chapter Connection Technology
Mounting attachments and couplings can be found in the chapter Accessories

Accessories

Corresponding mating connector to Type of connection 3 or 5,
12 pin: Order No. 8.0000.5012.0000
pin assignment cw

Corresponding mating connector with cable pre-assembled: Order No. 8.0000.6101.XXXX (XXXX = length [m])
Set includes connector type 8.0000.5012.0000 and cable type 8.0000.6100.XXXX
(Cable PUR 10 x 0.14 mm² + 2 x 0.5 mm²)

PIN allocation:



Dimensions: