

# Sine encoders

Through hollow shaft  $\varnothing 10$  to  $\varnothing 14$  mm

1024, 2048 sinewave cycles per turn

## ITD22H00 SIL



ITD22H00 SIL with through hollow shaft

### Features

- Encoders for functional safety
- SIL 2 / Category 3, PLd (up to SIL 3 / Category 4, PLe)
- Max. 1024 or 2048 sinewaves cycles per turn
- Incremental encoder with SinCos interface
- High LowHarmonics® signal quality
- Detachable cable – tangential outlet
- Suitable as motor feedback system for safe drives

### Technical data - electrical ratings

Voltage supply	5 VDC $\pm 10$ %
Reverse polarity protection	Yes
Consumption w/o load	$\leq 100$ mA
Sinewave cycles per turn	1024...2048
Sensing method	Optical
Output frequency	$\leq 180$ kHz (-3 dB)
Output signals	A, B, 0
Output stages	SinCos 1 Vpp
Safety operating figures	(at +40 °C): MTTF: $\leq 100$ years PFH: $1.2E-09$ 1/h SFF: 96.9 % DC: 93.4 (medium) PFDavg: $1.05E-04$ 1/h Service life/proof test intervall: 10 a
Protection class	III (DIN EN 61140)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	SIL2 (DIN EN IEC 61508-1:2010 / IEC 61800-5-2:2016 Category 3, PLd EN ISO 13849-1:2015)  With a redundant use: SIL3 (DIN EN IEC 61508-1:2010 / IEC 61800-5-2:2016 Category 4, PLe EN ISO 13849-1:2015)

### Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 10$ mm (through hollow shaft) $\varnothing 12$ mm (through hollow shaft) $\varnothing 14$ mm (through hollow shaft)
Motor shaft tolerance	$\pm 0.25$ mm axial $\pm 0.1$ mm radial
Mounting kit	019 (required for SIL approval) 021 (required for SIL approval)
Protection DIN EN 60529	IP 65
Degree of soiling	2 (DIN EN 61010)
Operating speed	$\leq 6000$ rpm
Starting torque	$\leq 0.015$ Nm (+20 °C)
Materials	Housing: aluminium Shaft: stainless steel
Operating temperature	-30...+100 °C
Relative humidity	90 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 20 g, 60-2000 Hz DIN EN 60068-2-27 Shock 100 g, 6 ms
Connection	Board connector, 8-pin
Weight approx.	200 g

# Sine encoders

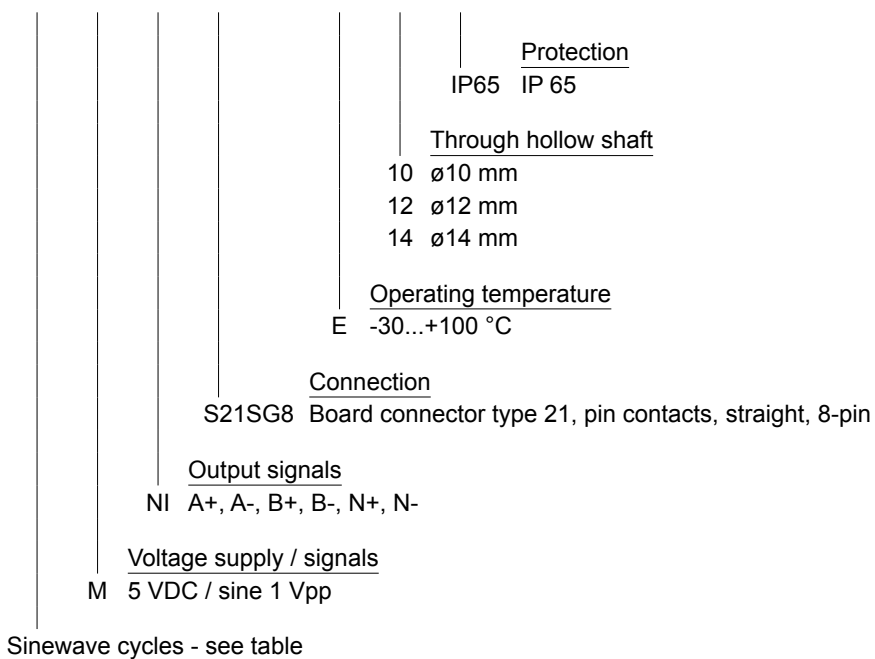
Through hollow shaft  $\varnothing 10$  to  $\varnothing 14$  mm  
1024, 2048 sinewave cycles per turn

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## Part number

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	M	NI	S21SG8	E		IP65
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## Sinewave cycles

1024 | 2048

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### Accessories

#### Connectors and cables

11072169	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 1 m
11093848	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 2 m
11092928	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 3 m
11077007	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 5 m
11080879	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 10 m
11079089	Connection cable with rear mount socket M23, 12-pin, 1 m
11106562	Connection cable with FCI, 8-pin / D-SUB, 9-pin, 0.3 m
11079111	Connection cable with FCI, 8-pin / D-SUB, 9-pin, 1 m
11079113	Connection cable with coupling M12, 8-pin, 1 m
11079112	Connection cable with crimp contacts (UL/CSA), 0.2 m

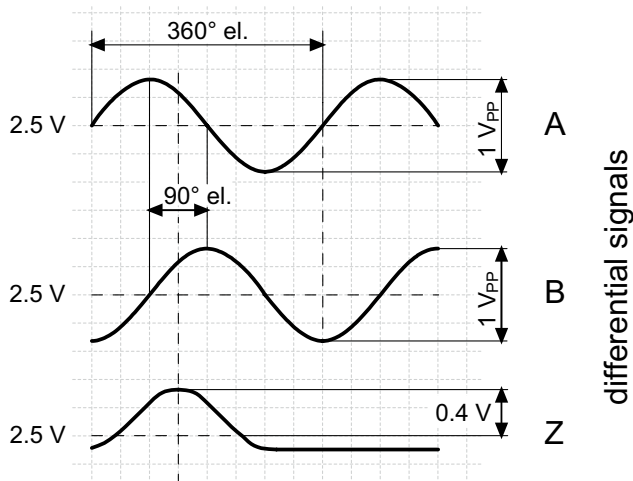
#### Mounting accessories

11073114	Torque arm, 3-armed, bolt circle $\varnothing 76$ mm, mounting M3 (mounting kit 019)
11073119	Torque arm, 1-arm, bolt circle $\varnothing 65.5 \dots 281$ mm, mounting M4, can be cut to length (mounting kit 021)

Further connection cable lengths see accessories.  
Only with the specified mounting accessories the SIL approval is achieved.

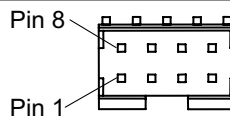
### Output signals

Clockwise rotation when looking at the mounting side.



### Terminal assignment

Connector	Assignment
Pin 1	UB
Pin 2	GND
Pin 3	Track A +
Pin 4	Track A -
Pin 5	Track B +
Pin 6	Track B -
Pin 7	Track N +
Pin 8	Track N -



### Output signal level

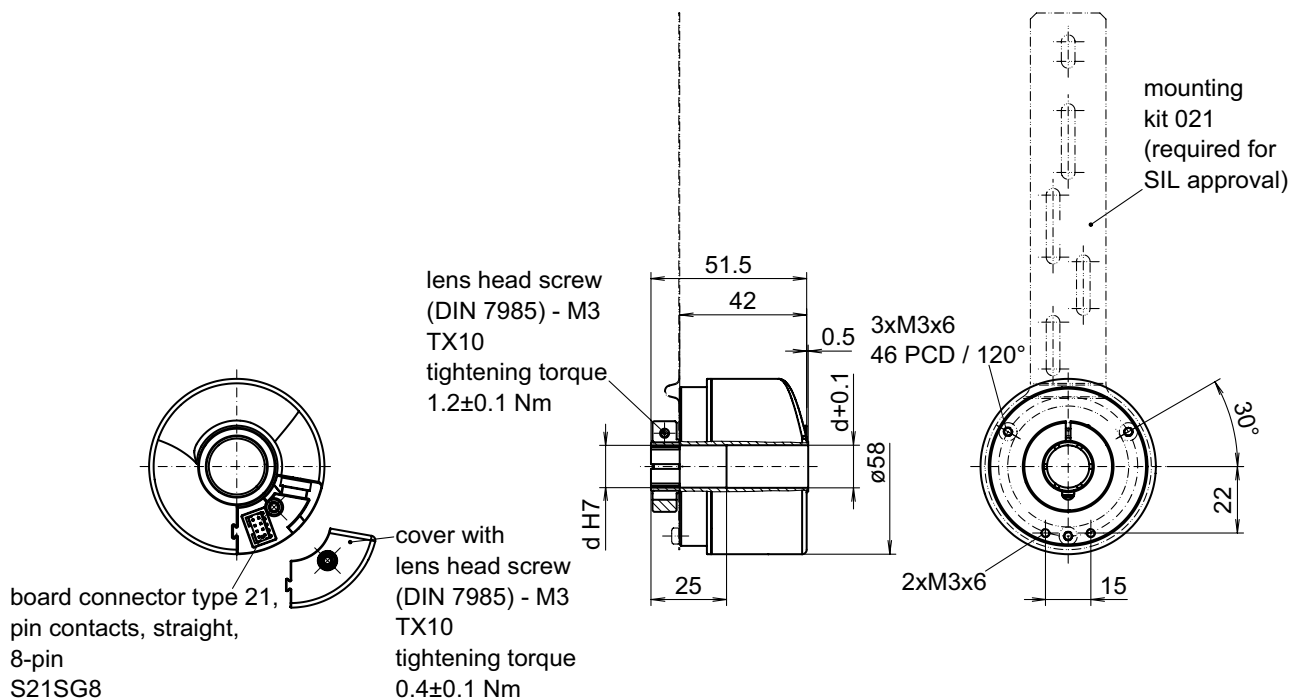
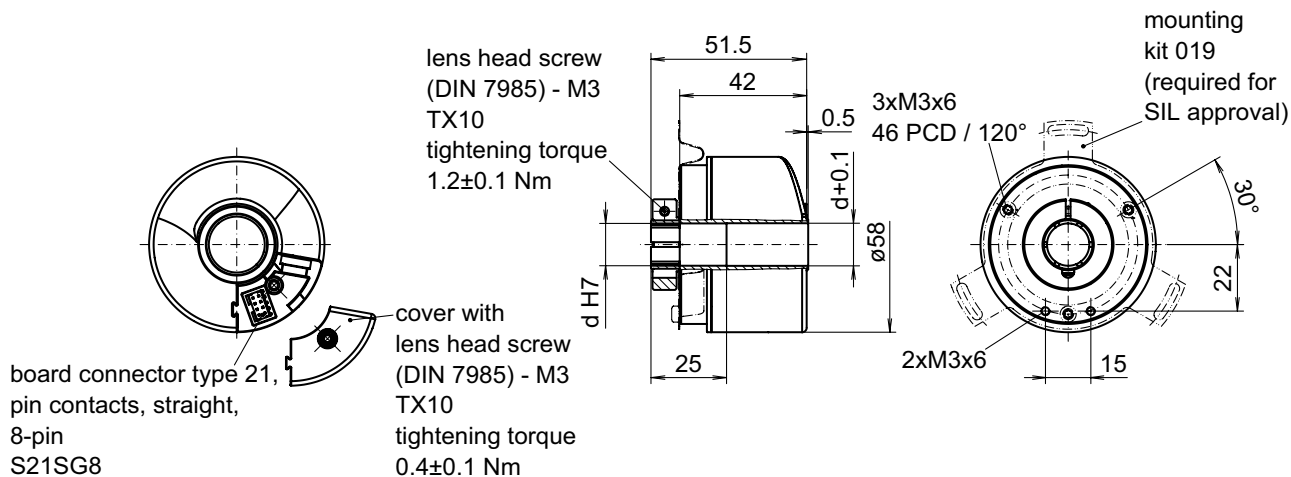
Outputs	Sine
Output amplitude A + B	1 V <sub>PP</sub> at Z <sub>0</sub> = 120 Ω
Output amplitude N	approx. 0.4 V (useable part) at Z <sub>0</sub> = 120 Ω

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## Dimensions



· Subject to modification in technic and design. Errors and omissions excepted.