

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
- 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 ± 10 %
Reverse polarity protection	Yes
Consumption w/o load	≤ 100 mA
Sinewave cycles per turn	1024...2048
Sensing method	Optical
Output frequency	≤ 180 kHz (-3 dB)
Output signals	A, B, 0
Output stages	SinCos 1 Vpp
Safety operating figures	(at +40 °C): MTTF: ≤ 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	SIL 2 (DIN EN IEC 61508-1:2010 / DIN EN 61800-5-2:2007 Category 3, PLd EN ISO 13849-1:2006) With a redundant use: SIL 3 (DIN EN IEC 61508-1:2010 / DIN EN 61800-5-2:2007 Category 4, PLe EN ISO 13849-1:2006)

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	0.25 mm axial 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	≤ 6000 rpm
Starting torque	≤ 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.	150 g

Sine encoders

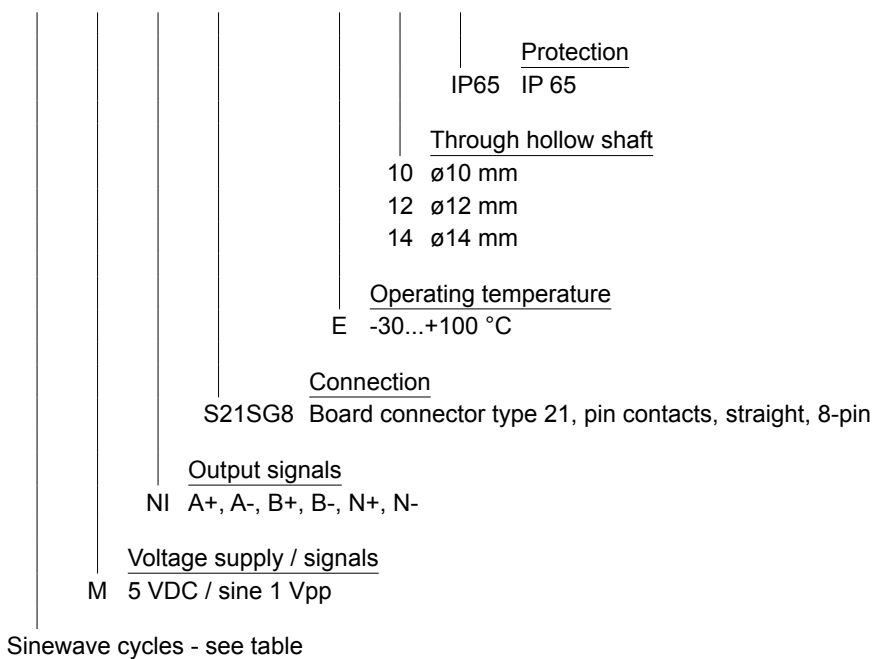
Through hollow shaft $\varnothing 10$ to $\varnothing 14$ mm
1024, 2048 sinewave cycles per turn

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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

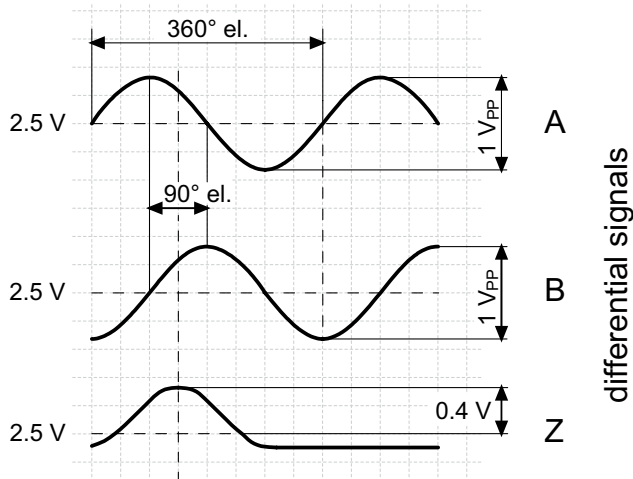
Mounting accessories

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.

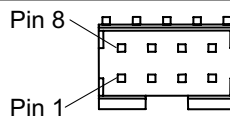
Output signals

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 _{PP} at Z ₀ = 120 Ω
Output amplitude N	approx. 0,4 V (useable part) at Z ₀ = 120 Ω

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Dimensions

