

## TECHNICAL DATASHEET

### Absolute Motor Feedback Encoder Series AD58 for Single Cable Solution - Functional Safety



- Singleturn and Multiturn Encoder for High Performance Motion Control
- Encoder for Functional Safety applications (SIL2, PLd or SIL3, PLe, category 3)
- Single Cable Solution with ACURO® link interface for 4 wire applications
- Input for motor winding temperature sensor
- Resolution: up to 24 Bit ST + 12 Bit MT
- Wide operating temperature range
- Speed up to 7,000 rpm
- Encoder data stored in "Electronic Data Sheet (EDS)" inside encoder
- Motor and drive data can be stored inside encoder

**ACURO®**  
drive



#### TECHNICAL DATA mechanical

Housing diameter	58 mm
Shaft	Shaft with integrated Double-Cardanic coupling hub
Mounting depth	37 mm
Mounting flange	Direct flange mount (fixing screws M3)
Protection class shaft input	IP40
Protection class housing	IP40 (with mating connector)
Shaft load incl. coupling: axial radial	27 N max. 8.4 N max.
Speed	≤ 7,000 rpm max. (see ambient temperature)
Starting torque typ.	≤ 3 Ncm
Moment of inertia	$5.15 \times 10^{-6} \text{ kgm}^2$
Angular acceleration	$1.0 \times 10^5 \text{ rad/sec}^2 \text{ max.}$
Vibration resistance (DIN EN 60068-2-6)	300 m/s <sup>2</sup> (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	≤ 1,000 m/s <sup>2</sup> (6 ms)
Material shaft	Stainless Steel
Material housing / cover	Aluminum / Plastic
Weight	approx. 230 g (ST or MT)
Connection (with cable guidance)	ECU Interface (axial) Temperature Sensor Interface (axial)

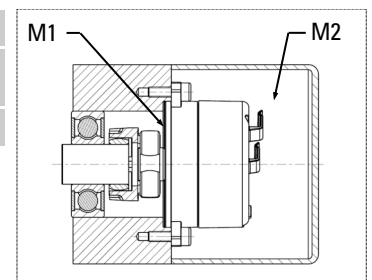
#### TECHNICAL DATA temperature characteristics

Operating temperature <sup>1</sup>	-20°C ... +115°C
Ambient temperature <sup>2</sup>	-20°C...+105°C @6,000 rpm -20°C...+100°C @7,000 rpm
Storage temperature <sup>3</sup>	-30°C ... +80°C

<sup>1</sup> see measuring point M1

<sup>2</sup> see measuring point M2

<sup>3</sup> due to packaging



Specifications subject to change without notice.

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#### TECHNICAL DATA electrical

General design	as per EN IEC 61010-1, protection class III, contamination level 2, overvoltage class II
Supply voltage	7 - 12 V DC
Current w/o load (typ.)	12 V DC: <130 mA 7 V DC: <190 mA
Resolution single-turn	24 Bit standard (others available on request)
Resolution multi-turn	12 Bit
Electrical Interface	4Wire: RS485
Data Protocol	ACURO <sup>®</sup> link for Single Cable Solution
Electronic Data Sheet (EDS)	512 bytes of storage for encoder data
OEM Memory	7.5 kbytes of storage for motor and drive data
Absolute accuracy (max.)	±20'' (at room temperature 23 °C)
Repeatability (max.)	±10'' (at room temperature 23 °C)

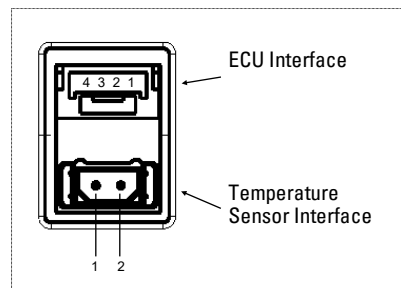
#### TECHNICAL DATA safety

Design Functional Safety AD58S	SIL2 according to EN IEC 61508, 62061, 61800-5-2, 61800-5-3 PLd according to EN ISO 13849-1
Design Functional Safety AD58E	SIL3 according to EN IEC 61508, 62061, 61800-5-2, 61800-5-3 PLe according to EN ISO 13849-1
Resolution for save position	9 Bit Singleturn
PFH-value	1,05 x 10 <sup>-9</sup> per hour
MTTFd	846 years
DCavg	94,70%
Realizable safety function according to EN 61800-5-2	SS1 (Safe Stop 1) <sup>1</sup> SS2 (Safe Stop 2) <sup>1</sup> SOS (Safe Operating Stop) SDI (Safe direction) SLS (Safe limited speed) SLI (Safe limited increment) SLA (Safe limited acceleration) SSR (Safe speed range) SAR (Safe acceleration range)

<sup>1</sup> deceleration controlled (-d) or ramp monitored (-r)

#### ELECTRICAL CONNECTIONS

ECU Interface, 4 pole, with mechanical lock	
PIN	Signal 4Wire
1	UB+
2	DATA+
3	DATA-
4	UB-
Temperature Sensor Interface <sup>2</sup> , 2 pole with mechanical lock	
PIN	Signal
1	Sensor+ (KTY, PT1000)
2	Sensor- (KTY, PT1000)



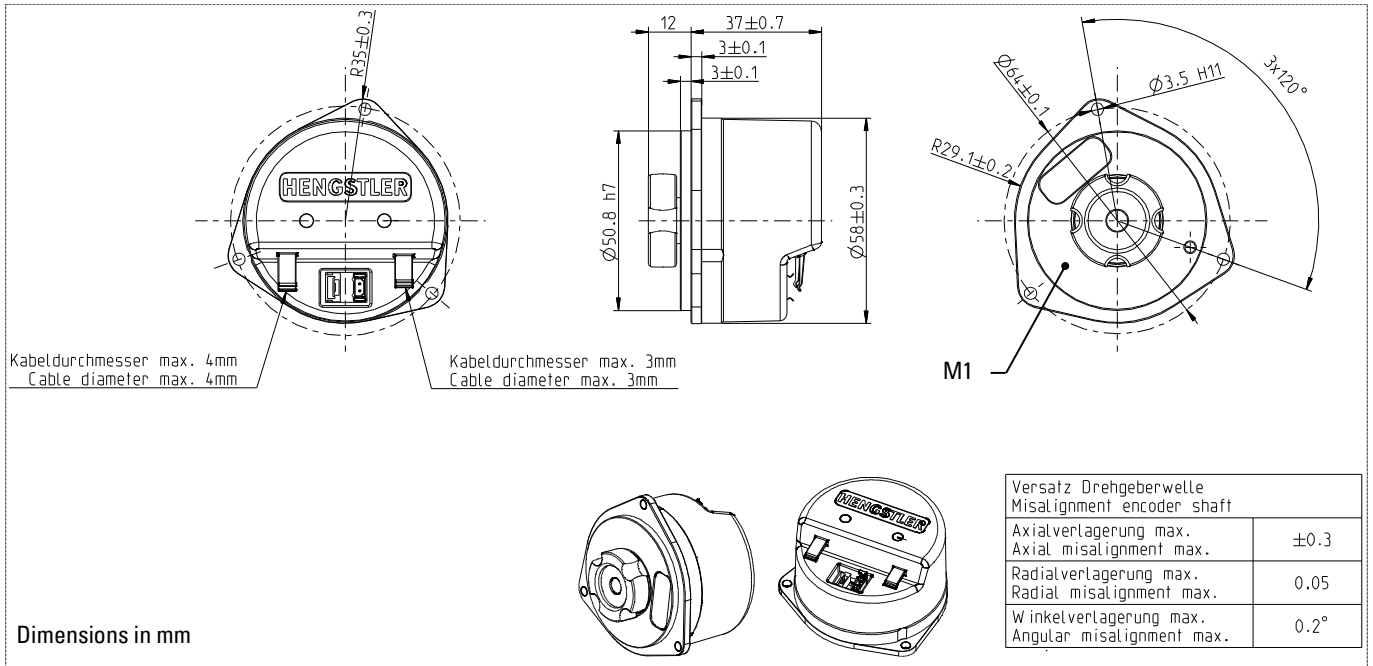
<sup>2</sup> Insulation resistance according to EN IEC 60204-1 PELV/SELV

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#### DIMENSIONAL DRAWINGS



#### ORDERING INFORMATION

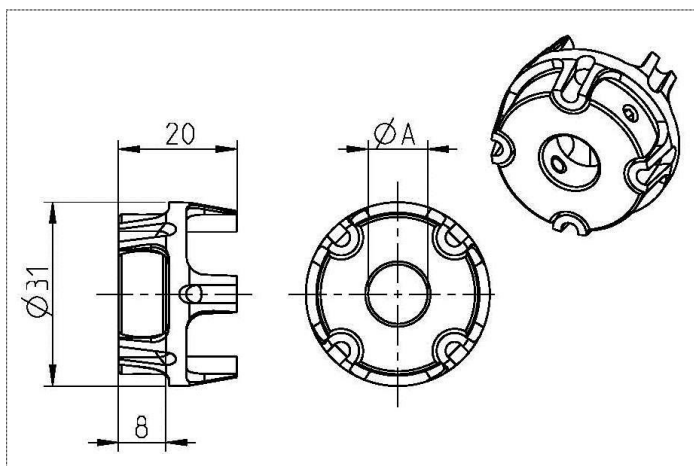
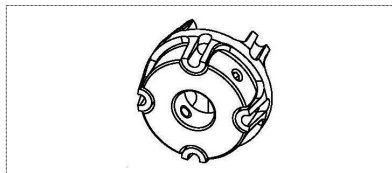
Type	Resolution	Supply voltage	Flange, Protection, Shaft	Interface	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AD58/</b> non safety <b>AD58S</b> SIL2, PLd <b>AD58E</b> SIL3, PLe	<b>0024</b> 24 Bit ST <b>1224</b> 24 Bit ST + 12 Bit MT	<b>G</b> 7 - 12 VDC	<b>Y.0V</b> Three-eared flange, IP40, Shaft with integrated coupling hub	<b>4W</b> ACURO® link 4 Wire	<b>9</b> ECU Interface, axial, 4 pole + Temperature Sensor Interface, axial, 2 pole

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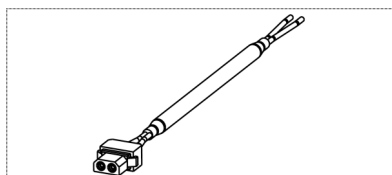
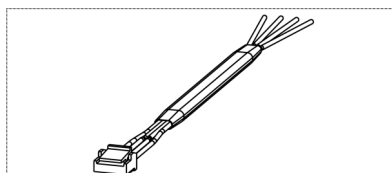
#### ACCESSORIES Shaft Coupling



Coupling to mate with AD58 encoder series	Part Nr.
For shaft size 6 mm	on request
For shaft size 12 mm	on request
For shaft size 14 mm	on request

\*Other sizes available upon request

#### ACCESSORIES Motor Connection Cables



Motor Connection Cable with Connector	Part Nr.
Encoder power/interface harness assembly, 30 cm, 4-pin AD58-Series connector on one end with cut wires on the opposite end	1 572 019

Motor Connection Cable with Connector	Part Nr.
Temperature sensor harness assembly, 30 cm, 2-pin AD58-Series connector on one end and cut wires on the opposite end (for connection of motor winding temperature sensors (KTY, PT1000))	1 572 020

#### TECHNICAL MANUALS

	Ordering code
Implementation Guide and User Manual, English	0 581 914
Protocol description ACURO link, English	2 572 040

#### SOFTWARE

	Ordering code
IP Core VHDL - ACURO link (for incorporation into drive)	on request

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