

TECHNICAL DATASHEET

**Absolute Motor Feedback Encoder Series AD37
for Single Cable Solution - Functional Safety**



- Singleturn and Multiturn Encoder for high performance motion control
- Encoder for Functional Safety applications (SIL2 PLd, SIL3 PLe, category 3)
- Single Cable Solution with ACURO® link interface for 2 and 4 wire applications
- Most compact absolute multiturn encoder of its class (Mounting depth: 28 mm)
- Motor winding temperature sensor input
- Resolution: up to 20 Bit ST + 12 Bit MT
- Wide operating temperature range
- Up to 12,000 rpm continuous operation
- 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	39.3 mm max.
Shaft	Shaft with integrated Double-Cardanic coupling hub
Mounting depth	28.0 mm
Mounting flange	Direct flange mount (fixing screws M3)
Protection class shaft input	IP40
Protection class housing	IP40
Shaft load axial/radial	20 N / 55 N
Axial endplay of mating shaft	+1 mm / -0.5 mm max.
Radial runout of mating shaft	±0.1 mm max.
Max. speed	6,000 - 12,000 rpm (continuous duty)
Starting torque typ.	≤ 1 Ncm
Moment of inertia	1.05 x 10 ⁻⁶ kgm ²
Vibration resistance (DIN EN 60068-2-6)	300 m/s ² (10 ... 2000 Hz)
Max. angular acceleration	2.5 x 10 ⁵ rad/sec ²
Shock resistance (DIN EN 60068-2-27)	1,000 m/s ² (6 ms)
Material shaft	Stainless Steel (non-magnetic)
Material housing / cover	Aluminum / Plastic
Weight	approx. 70 g (ST or MT)
Connection (with strain relief)	ECU Interface - PCB connector (axial) Motor winding temperature sensor input (axial)

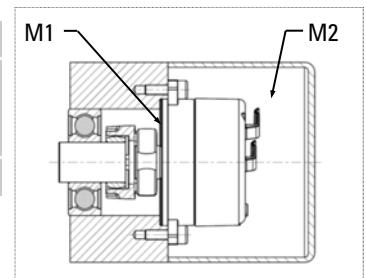
TECHNICAL DATA
temperature characteristics

Operating temperature ¹	-40°C ... +115°C
Ambient temperature ²	-40°C...+105°C @6,000 rpm -40°C...+95°C @9,000 rpm -40°C...+85°C @12,000 rpm
Storage temperature ³	-30°C ... +80°C

¹ see measuring point M1

² see measuring point M2

³ 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: 60 mA
Resolution single-turn	20 Bit standard (others available on request)
Resolution multi-turn	12 Bit (magnetic)
Electrical Interface	4Wire: RS485 2Wire: modulated upon supply voltage
Data Protocol	ACURO® 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 (typ.)	±36"
Repeatability (typ.)	±10"
Data retention in non-volatile MT memory (without power supply)	1 year at 120°C 14 year at 35°C

**TECHNICAL DATA
safety**

Design Functional Safety AD37S	SIL2 according to EN IEC 61508, 62061, 61800-5-2, PLd according to EN ISO 13849-1
Design Functional Safety AD37E	SIL3 according to EN IEC 61508, 62061, 61800-5-2, PLe according to EN ISO 13849-1
Resolution for save position	9 Bit Singleturn
PFH-value	1.22 x 10 ⁻⁹ per hour
MTTFd	482 years
DCavg	90.93%
Realizable safety function according to EN 61800-5-2	SS1 (Safe Stop 1) ¹ SS2 (Safe Stop 2) ¹ 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)

¹ deceleration controlled (-d) or ramp monitored (-r)

ELECTRICAL CONNECTIONS

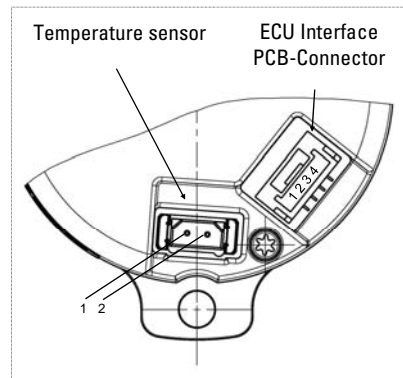
PCB-Connector, 4 pole, with strain relief

PIN	Signal 4Wire	Signal 2Wire
1	UB+	UB+ & DATA+
2	DATA+	
3	DATA-	
4	UB-	UB- & DATA-

Motor Winding Temperature Sensor Input, 2 pole, with strain relief ²

PIN	Signal
1	KTY+
2	KTY-

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

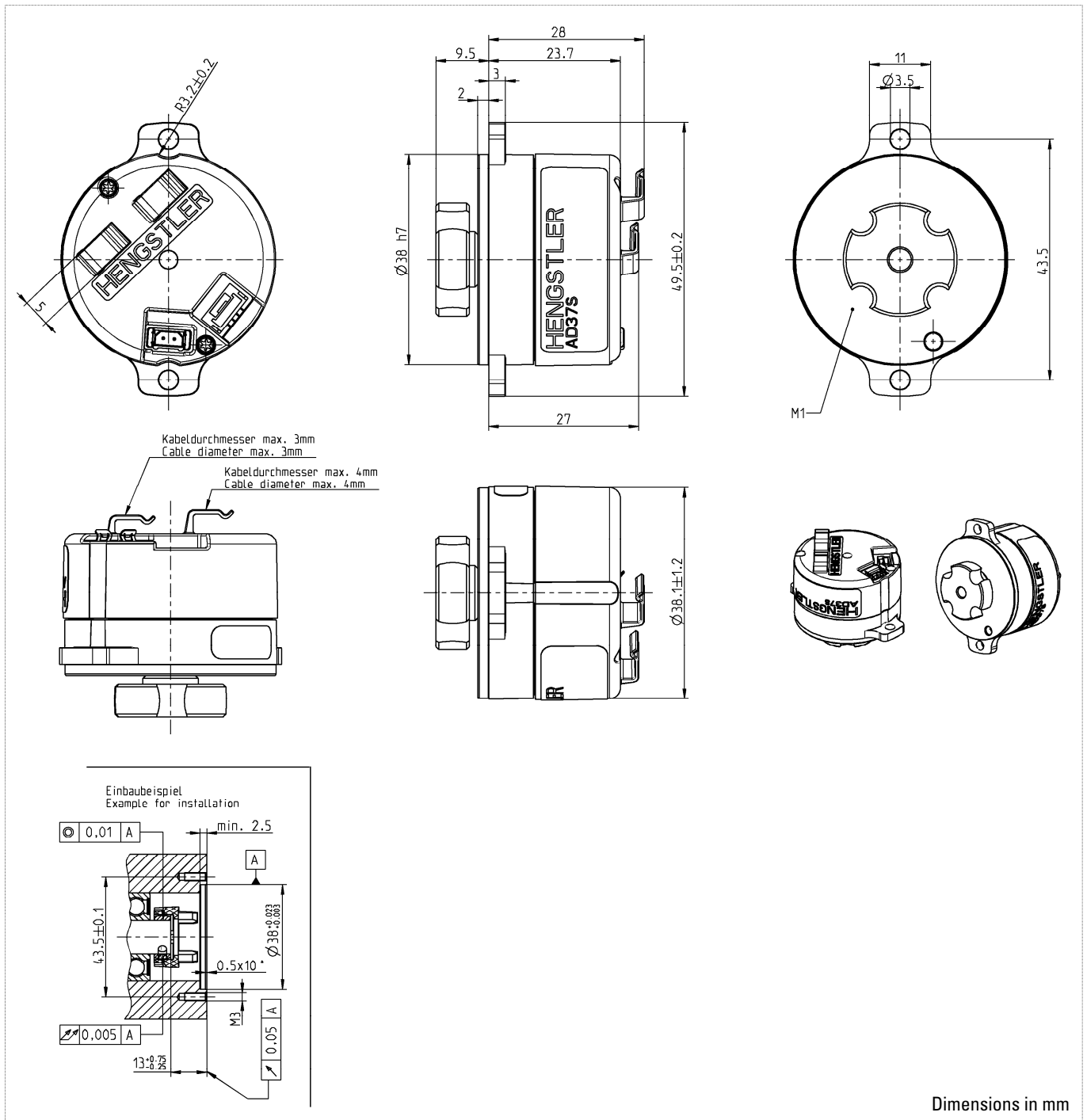


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DIMENSIONAL DRAWINGS



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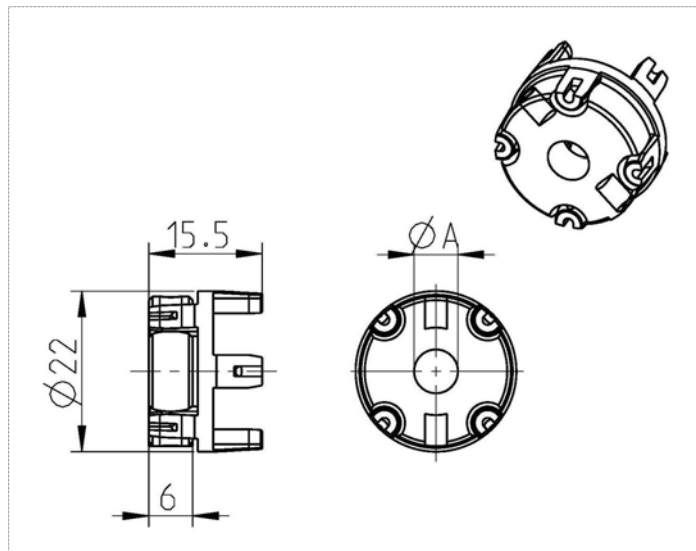
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ORDERING INFORMATION

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Interface	Connection
AD37 AD37S SIL2 PLd AD37E SIL3 PLe	0017 17 Bit ST 0019 19 Bit ST 0020 20 Bit ST 1217 17 Bit ST + 12 Bit MT 1219 19 Bit ST + 12 Bit MT 1220 20 Bit ST + 12 Bit MT	G 7 - 12 VDC	Z.0W Two-eared flange, IP40, Shaft with integrated coupling hub	4W ACURO® link 4 Wire 2W ACURO® link 2 Wire	9 Data & power supply connector, axial, 4 pole + motor temperature sensor, axial, 2 pole

ACCESSORIES
Shaft Coupling



Coupling to mate with AD37 encoder series	Part Nr.
For shaft size 8 mm	3 XXX XXX
For shaft size 10 mm	3 XXX XXX
For shaft size 12 mm	3 XXX XXX

*Other sizes available upon request

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ACCESSORIES
Motor Connection Cables

Motor Connection Cable with Connector	Part Nr.
Encoder power/interface harness assembly, 30 cm, 4-pin AD37-Series connector on one end with cut wires on the opposite end	1 572 019
Encoder KTY motor winding temperature sensor harness assembly, 30 cm, 2-pin AD37-Series connector on one end and cut wires on the opposite end	1 572 020

TECHNICAL MANUALS

	Ordering code
Implementation Guide and User Manual, English	2 572 032 (or Home page)
Protocol description, English	2 572 040 (or Home page)

SOFTWARE

	Ordering code
IP Core code (for incorporation into drive, if needed)	on request

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