HYDAC INTERNATIONAL

Angle Sensor
HAT 1200

Analogue output
Two-chamber design
Enhanced functional safety

Magnetic	Absolute	Singleturn, 12 bit

E13

Functional Safety
PL d
SIL 2

Features

- Contactless, magnetic measurement method
- Robust design
- IP 6K9K (two-chamber design)
- Functional safety acc. to
  EN 61508 SIL 2
  ISO 13849 PL d

Description

HAT 1200 is an absolute measuring singleturn angle sensor.

Due to its two-chamber design, the electronic unit is completely encapsulated which means it meets IP 6K9K if the electrical connection is carried out accordingly.

The sensors meet the safety requirements according to SIL2 (IEC 61508) and PL d (ISO 13849).

Application fields

Thanks to its non-contact magnetic measuring method and its robust design, the HAT 1200 is ideally suited for the measurement of the rotational angle in mobile machines.

The sensor is therefore particularly suitable for a large variety of applications in the automobile industry and in mobile work machines, especially for applications with increased safety requirements.

Especially for the use in public traffic vehicles, HAT 1200 is approved for road vehicles according ECE type approval via the E13 approval.

Technical Data

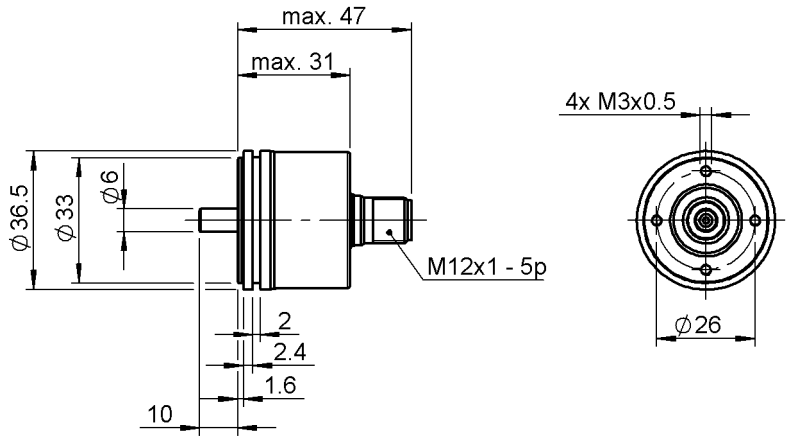
Input data		
Measurement range		0 .. 360 °
Direction of rotation		No orientation restrictions
Max. axial load		60 N
Max. radial load		100 N
Material, housing		Stainless steel
Material, shaft		Stainless steel
Output data		
Output signal, permitted load resistance		4 .. 20 mA, load max. 500 Ω
Resolution		12 bit
Accuracy (at room temperature)		± 0.15° typ. ± 0.3° max.
Accuracy (over the temperature range)		± 0.075° / 10 K typ. ± 0.15° / 10 K max.
Repeatability		≤ ± 0.05 °
Angle increase		Linear cw / ccw (factory-set)
Environmental conditions		
Operating temperature range		-40 .. +85 °C
Storage temperature range		-40 .. +85 °C
CE mark		EN 61000-6-1 / -2 / -3 / -4
E1 mark		E13*10R00*10R05*14136*00
Vibration resistance acc. to DIN EN 60068-2-6: 2008		7.5 mm (5 Hz ≤ f < 8.2 Hz) 2 g (8.2 Hz ≤ f < 2000 Hz)
Shock resistance acc. to DIN EN 60068-2-27: 2010		20 g (11 ms in 3 axes)
Protection type to DIN EN 60529 [1)]		IP 67, IP 6K9K (electronics)
Safety-related data		
Performance Level	Based on PL	DIN EN ISO 13849-1:2008
	PL	d
	Architecture	Category 2
Safety Integrity Level	Based on SIL	DIN EN 61508:2010
	SIL	2
	Architecture	1oo1 / 1oo2
Other data		
Supply voltage		9 .. 36 V DC
Residual ripple of supply voltage		≤ 5 %
Power consumption		< 1.4 W
Weight		~ 186 g

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

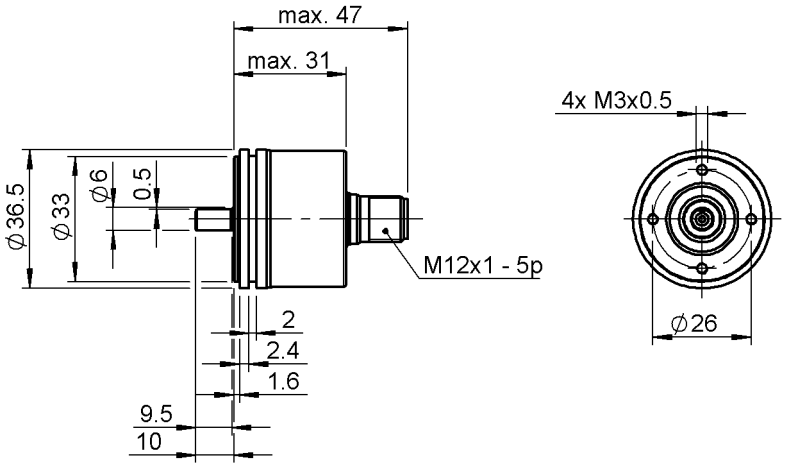
[1)] With mating connector of corresponding protection type fitted

Dimensions

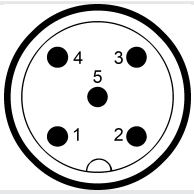
Mechanical connection: solid shaft



Mechanical connection: D-shape:



Pin connections

M12x1, 5 pole	Pin	Output signal: C01
	1	$+U_B$
	2	n.c.
	3	0 V
	4	Signal
	5	d.n.c.

Model code

HAT 1 2 36 - C01 - XXXX - P01 - XXXX - M01 - S2PD - 000

Resolution
2 = 12 Bit

Housing diameter
36 = 36 mm

Output signal
C01 = analogue 4 .. 20 mA, 3 conductor

Measuring range in ° and rotational direction [1)]
360R = 360°, clockwise rotation
360L = 360 °, anti-clockwise

Electrical connection
P01 = Installation plug M12x1; 5 pole, axial

Mechanical connection
V106 = Solid shaft, length 10 mm, diameter 6 mm
D106 = D-shape, length 10 mm, diameter 6 mm

Fixing type
M01 = Synchro flange with 4 threaded bores

Functional Safety
S2PD = SIL2 to IEC 61508 and PLd to DIN EN 13849-1

Modification number
000 = Standard

Accessories:
Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

Note:
Special models on request
[1)] Viewed from the side of the shaft

Note

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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