HYDAC INTERNATIONAL

Angle encoders

HAT 1425 joint-integrated

CAN interface

Two-chamber design

Magnetic	Absolute	Singleturn, 14 bit

CANopen SAE J1939 E13

Features

- Non-contact, magnetic measurement method
- Especially for integration into joints and bolts
- Simple fixing of a flat lever without connection shaft
- IP 6K9K (two-chamber design)

Description

HAT 1400 is an absolute measuring singleturn angle encoder.

Thanks to its compact design and small diameter, the sensor is particularly suitable for integration into joints and bolts. A connection piece with two screwing bores enables the simple fixing of a flat lever without a connection shaft.

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 measured value is digitised and made available to the CAN field bus system via the CANopen protocol or the SAE J1939 protocol. The device parameters can be viewed and configured by the operator using standard CAN software.

Application fields

Thanks to its non-contact magnetic measuring method and its robust design, the HAT 1400 is ideally suited for the measurement of the rotational angle in mobile machines.

The sensor is therefore suitable for a large variety of applications in special vehicle engineering and in mobile machines.

Specially designed for use in vehicles used on public roads, HAT 1425 is approved for road vehicles according ECE type approval via the E13 approval.

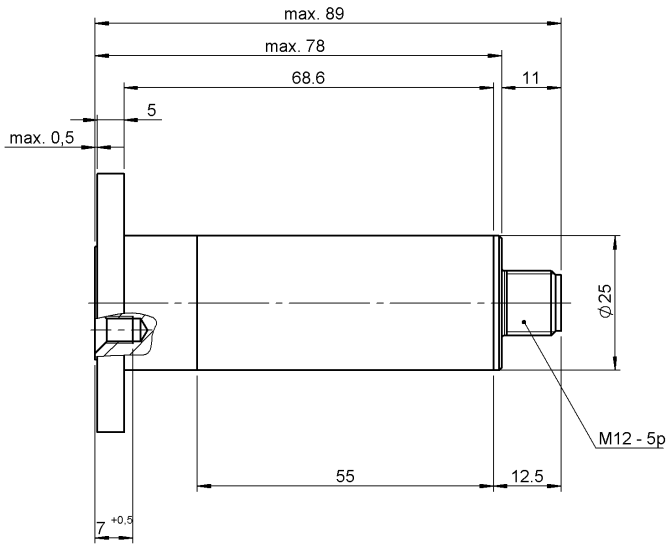
Technical data

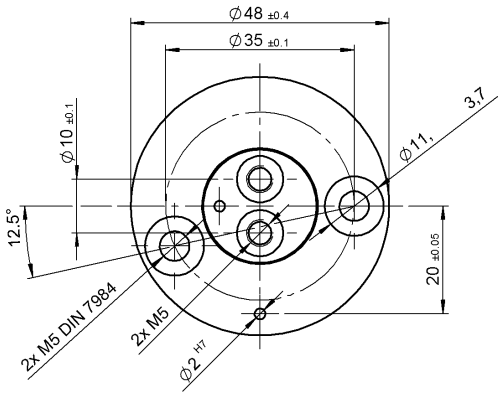
Input data		
Measuring range	0..360 °	
Rotational direction	Any	
Max. axial load	60 N	
Max. radial load	100 N	
Housing material	Stainless steel	
Material Rotatable fixing ring	Stainless steel	
Output data		
Output signal	CANopen protocol or SAE J1939 protocol, depending on version	
Resolution	14 bit	
Accuracy (at room temperature)	± 0.1° typ. ± 0.2° max.	
Accuracy (over the temperature range)	± 0.05 ° / 10 K typ. ± 0.1° / 10 K max.	
Repeatability	≤ ± 0.05 °	
Angle increase	cw / ccw (factory-set)	
Environmental conditions / Approvals / Tests		
Operating temperature range	-40..+85 °C	
Storage temperature range	-40..+85 °C	
EMC	EN 61000-6-1 / -2 / -3 / -4	
Vibration resistance	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	DIN EN 60068-2-27:2010	20 g (11 ms in 3 axes)
Protection type [1]	DIN EN 60529	IP 67, IP 6K9K (electronics)
CE conformity	Available	
E1 E approval	Available	
Protocol data for CANopen		
Communication Profile	CiA 301 V4.2	
Layer Setting Services and Protocol	CiA 305 V2.2	
Encoder Device Profile	CiA 406 V3.2	
Bit rates	10 kbit/s..1 Mbit/s according to DS305 V2.2	
Node Id/Bit rate	adjustable via Manufacturer Specific Profile & LSS	
Default settings	Bitrate: 500 kbit/s Node ID: 1	
Protocol data for SAE J1939		
Data link layer	SAE J1939-21	
Network Layer	SAE J1939-31	
Network Management	SAE J1939-81	
Default settings	Baudrate: 250 kbit/s; CAN Data Source Address: 1	
Other data		
Supply voltage	9..36 V DC	
Residual ripple of supply voltage	≤ 5 %	
Power consumption	< 1 W	
Weight	~ 188 g	

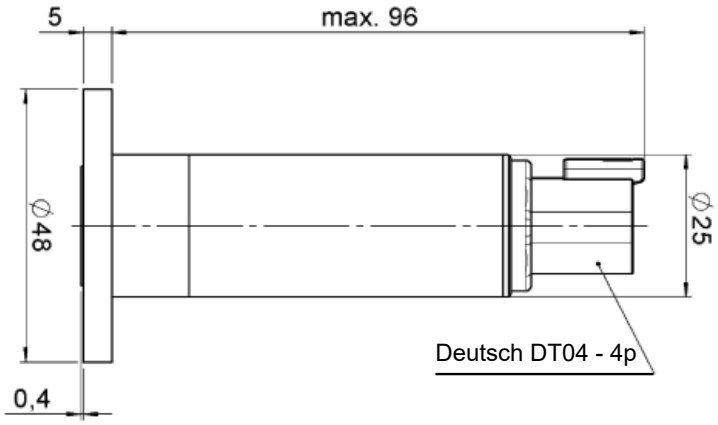
Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.

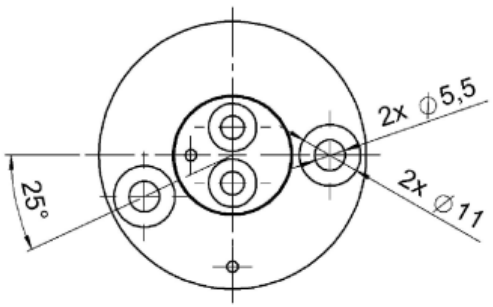
[1] With mounted mating connector in corresponding protection type

Dimensions

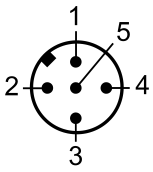


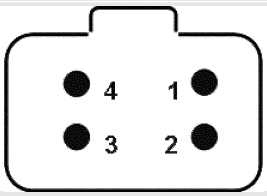






Pin connections

M12x1, 5 pole	Pin	Output signal: F1X	
		Signal	Description
	1	CAN_SHLD	Shield/housing
	2	CAN_V+	External supply +
	3	CAN_GND	Ground / 0 V / V -
	4	CAN_H	Bus line dominant high
	5	CAN_L	Bus line dominant low

Deutsch DT 04, 4 pole	Pin	Output signal: F1X	
		Signal	Description
	1	$+U_B$	Supply +
	2	0 V	supply -
	3	CAN_H	Bus line dominant high
	4	CAN_L	Bus line dominant low

Model code

HAT 1 4 25 - F1X - XXXX - XXX - DK21 - M05 - 000

Resolution
4 = 14 Bit

Housing diameter
25 = 25 mm

Output signal
F11 = CANopen
F12 = SAE J1939

Measuring range in ° and rotational direction [1)]
360R = 360 °, rotational direction right
360L = 360 °, rotational direction left

Electrical connection
P01 = Installation plug M12x1; 5 pole, axial
V01 = Plug connector Deutsch DT04, 4 pole

Mechanical connection
DK21 = Rotatable fixing ring Ø 21 with 2 x M5 bores

Fixing type
M05 = Mounting flange

Modification number
000 = Standard

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

Note:
Special versions on request
[1)] When looking at the mounting side

Note

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

HYDAC ELECTRONIC GMBH
Hauptstrasse 27
D-66128 Saarbruecken
Phone: +49 (0)6897 509-1
Fax: +49 (0)6897 509-1726
Email: electronic@hydac.com
Website: www.hydac.com