


TCW4 IO-LINK

IO-LINK ABSOLUTE MULTI-TURN MODULAR SENSOR

Introduction

The TCW4  **IO-Link** version provides a compact versatile multi-turn absolute position indication. The two-part construction keeps the profile low, delivering a high degree of flexibility for tight installations. By using the IO-Link protocol, integration and set-up of sensors is greatly simplified, supporting the move to factory 4.0 and IIOT initiatives. The TCW4 IO-Link is sealed to IP65 making it suitable for even the harshest industrial environments.



Features

- With its two-part design, the TCW4 IO-Link absolute multi-turn position sensor offers maximum flexibility during installation
- IO-Link with COM3 transmission rate
- Easy commissioning and configuration with IO-Link
- Simple device replacement with Data Storage capability
- Universal power supply by IO-Link Master
- Robust and excellent resistance to shock and vibration
- Robust magnetic technology
- Standard IP65 protection (IP69K option)
- Operating temperature range from -20°C to 85°C
- Resolution : programmable 12 bits per turn and 16 bits of turns counting
- Standard M12 connector

Applications

- Factory Automation
- Process Automation



SPECIFICATIONS

Mechanical

Terminations	PUR cable with M12 5 pin connector
Housing	Technomelt PA638 black
Weight	0,150 kg

Electrical

Electrical Angle	360°
Output Function	IO-Link V1.1, COM3 (230,4 kBaud)
Minimal Cycle Time	1ms
Resolution	Full programmable Resolution per turn : 1 to 12 bits Turn counter : 16 bits max
Accuracy	+/-0.3% on 360°
Repeatability	+/-0.1% on 360°
Supply Voltage	18 to 30 Vdc
Current Requirements	<40mA

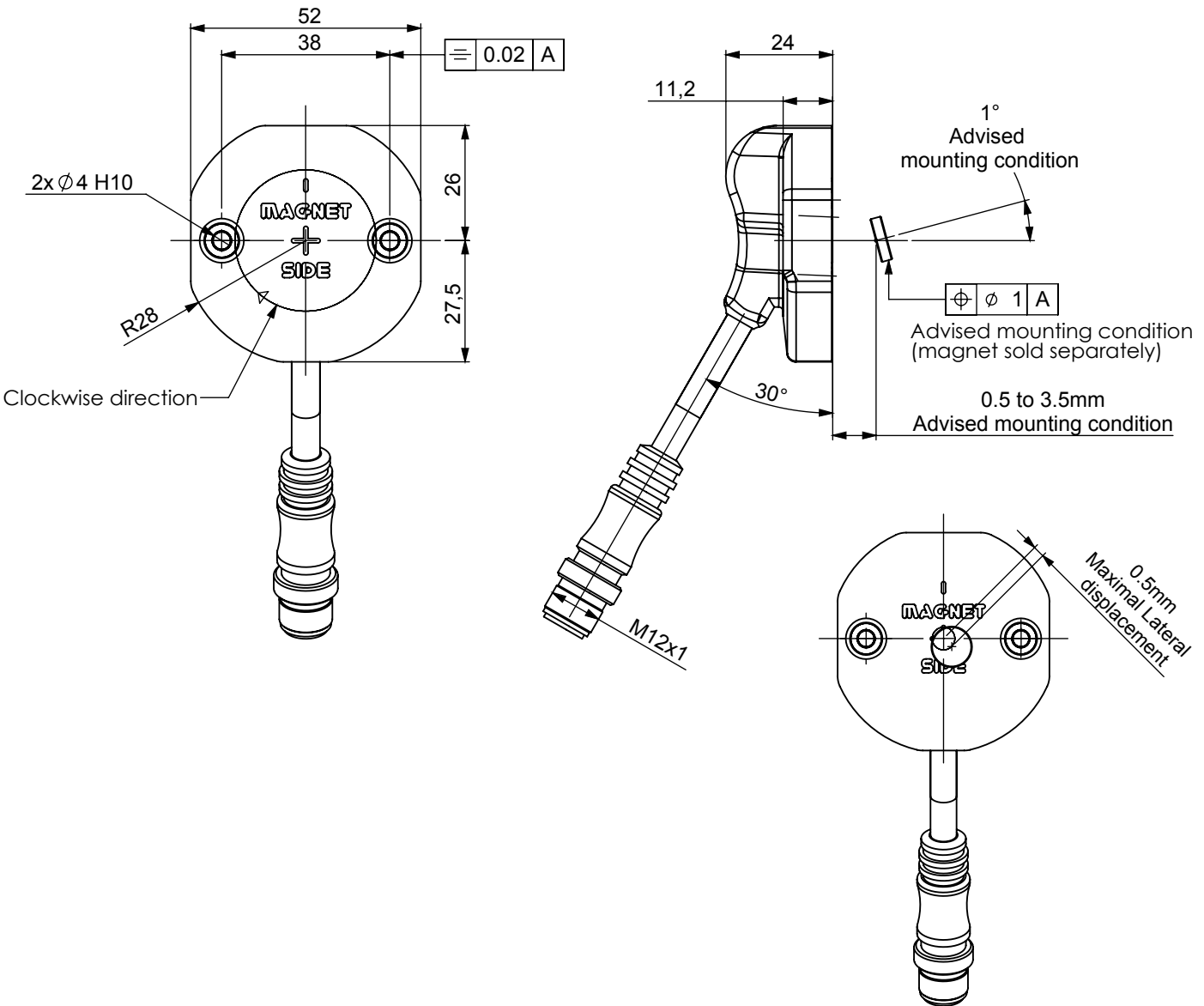
Protection	Overvoltage Protection: Yes Reverse Polarity Protection: Yes Short Circuit Protection: Yes
EMC	IEC 61000-4-2 Electrostatic discharge (ESD) 4 kV, 8 kV IEC 61000-4-3 Electromagnetic fields 10 V/m (80MHz - 1GHz), 3V/m (1.4GHz - 2GHz), 1V/m (2GHz - 2.7GHz) IEC 61000-4-4 Electrical fast transients (burst) 1 kV IEC 61000-4-6 Conducted disturbances, induced by RF-fields 10 VEMF.

Environmental

Protection Class (Sealing)	IP65
Temperature Range	Operating -20°C to 85°C Storage -20°C to 85°C
Shock	≤ 2000 m.s ⁻² (6ms half-sine)
Vibration	≤ 200 m.s ⁻² (55 ... 2000 Hz)

DIMENSIONS

All Dimensions are in millimeters.
Shaft system with magnet to be ordered separately (See Accessories).



IO-LINK FEATURES

Process data

- Position : single turn 12 bits maximum
- Multiturn counter : number of rotations
- Absolute position error : flag triggered if multiturn position lost
- Magnetic field issue : flag triggered if problem with magnet detection

Programmable Parameters

- Resolution per turn: 1 to 12 bits
- Direction : clockwise or counter-clockwise, changes counting direction.
- Multiturn counter resolution: 1 to 16 bits.
- Set zero point : reset position to zero
- Preset value : The position process data is set to the preset parameters. The preset parameter shall be a valid position value according to the resolutions chosen.

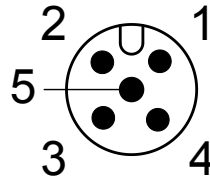
Diagnostics

- Operating Hours : number of hours since factory reset

CONNECTOR PIN OUT

IO-link device class B (Male M12 5 pin)

Pin	Color	Signal
1	Brown	L+
2	White	N.C
3	Blue	L-
4	Black	IO-Link
5	Grey	N.C



NOTES

Stray magnetic fields can interfere with accuracy and repeatability of the signal.
For multi-turn devices, stray magnetic fields during power-off condition can cause the loss of the multi-turn position.



ORDERING OPTIONS

Example : TCW4_00//ZIOB//12B16//BD003

(Contact the factory for special versions, ex : dimensions, connections...)

Family	TCW4	-	00	//	Z		IO		B	//	12B16	//	BD		D003
TCW4: Absolute Multi-Turn Sensor															
Shaft Ø															
00: Modular															
Supply															
Z: 18 to 30Vdc															
Output Stage															
IO: IO-Link															
Code															
B: Binary															
Resolution															
12B16: Programmable 12 bits single turn resolution and 16bits multi-turn counter															
Connection															
BD: PUR Cable + M12 5 pin connector															
Connection Orientation															
D003: Diagonal Cable 30cm															

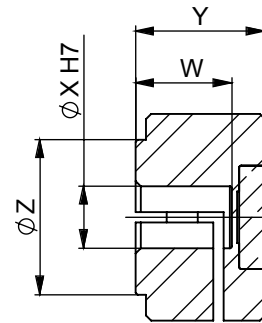
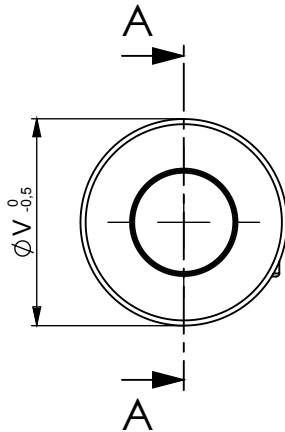
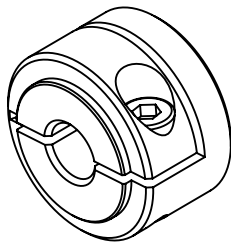


ACCESSORIES

Female magnet support + Magnet 8810/013

Ordering p/n : M9105/Kxx

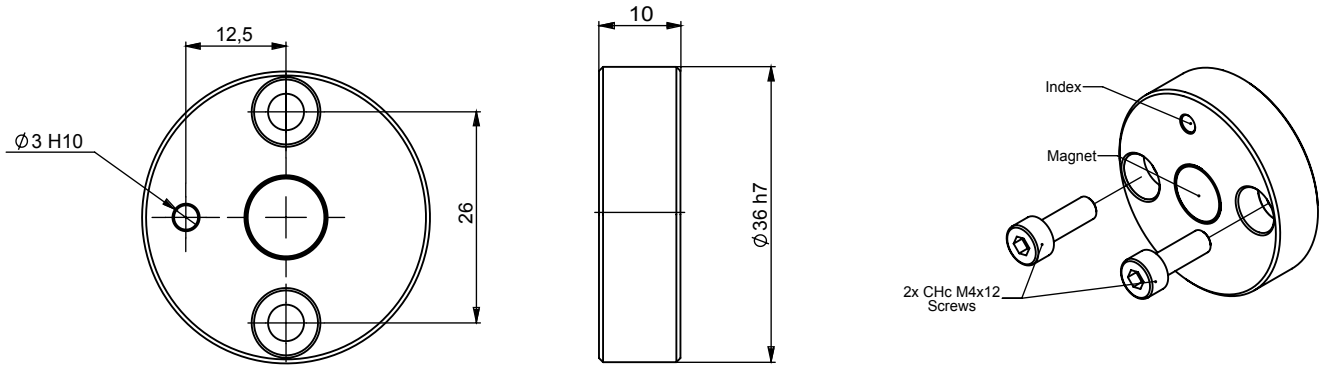
KXX: Where XX is the shaft mounting diameter in mm. Standards are 06, 08, 10, 11, and 14 mm. i.e M9105/K10 mounts to a 10 mm shaft.



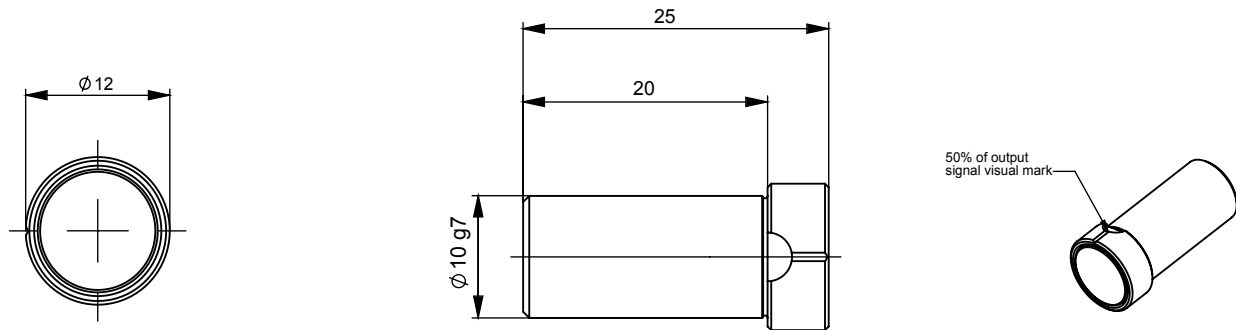
SECTION A-A

	M9105/K06	M9105/K08	M9105/K10	M9105/K11	M9105/K14
X	06 H7	08 H7	10 H7	11 H7	14 H7
V	20	20	26	26	29
W	9,3	9,3	10	10	10
Y	12,5	12,5	14	14	14
Z	15	15	15	15	18

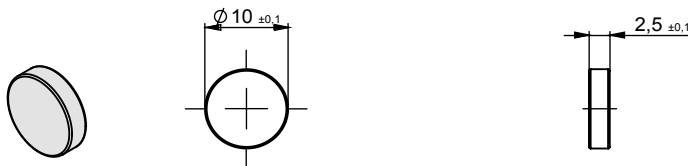
Frontal magnet support + Magnet 8810/013
 Ordering p/n : **M9105/F26**



Male magnet support + Magnet 8810/013
 Ordering p/n : **M9105/M10-01**



Magnet
 Ordering p/n : **8810/013**



Sensata Technologies, Inc. ("Sensata") data sheets are solely intended to assist designers ("Buyers") who are developing systems that incorporate Sensata products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products. Sensata data sheets have been created using standard laboratory conditions and engineering practices. Sensata has not conducted any testing other than that specifically described in the published documentation for a particular data sheet. Sensata may make corrections, enhancements, improvements and other changes to its data sheets or components without notice.

Buyers are authorized to use Sensata data sheets with the Sensata component(s) identified in each particular data sheet. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER SENSATA INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN. SENSATA DATA SHEETS ARE PROVIDED "AS IS". SENSATA MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE DATA SHEETS OR USE OF THE DATA SHEETS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. SENSATA DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO SENSATA DATA SHEETS OR USE THEREOF.

All products are sold subject to Sensata's terms and conditions of sale supplied at www.sensata.com SENSATA ASSUMES NO LIABILITY FOR APPLICATIONS ASSISTANCE OR THE DESIGN OF BUYERS' PRODUCTS. BUYER ACKNOWLEDGES AND AGREES THAT IT IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH ALL LEGAL, REGULATORY AND SAFETY-RELATED REQUIREMENTS CONCERNING ITS PRODUCTS, AND ANY USE OF SENSATA COMPONENTS IN ITS APPLICATIONS, NOTWITHSTANDING ANY APPLICATIONS-RELATED INFORMATION OR SUPPORT THAT MAY BE PROVIDED BY SENSATA.

Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

CONTACT US

Americas
 +1 (800) 350 2727
sales.beisensors@sensata.com
EMEA
position-info.eu@sensata.com
 +33 (3) 88 20 8080
Asia Pacific
sales.isasia@list.sensata.com
 China +86 (21) 2306 1500
 Japan +81 (45) 277 7117
 Korea +82 (31) 601 2004
 India +91 (80) 67920890
 Rest of Asia +886 (2) 27602006
 ext 2808