

| THM5 - THK5 SERIES

ABSOLUTE MULTI-TURN IO-LINK ENCODERS

Introduction

Built from a solid and reliable mechanical and electrical platform, this IO-Link Encoder series was built from the ground up for reliability and robustness. Electrical protection is built in to reduce "first installation" errors. Mechanically, the high precision sealed bearings mean long life, even in harsh conditions. The product is rated to perform from -40 to +85°C and is offered with a protection level up to IP67, making this the perfect solution in a 58mm package for heavy duty industrial use.



Features

- Absolute multi-turn 14 bits resolution until 16 bits in number of turns
- IO-Link COM3 with minimal cycle time of 1ms
- Easy programming with standard IO-Link tool
- Simple device replacement with Data Storage capability
- Universal power supply by IO-Link Master
- Robust and excellent resistance to shock and vibration
- High protection level IP65, IP67 option with a sealing flange
- Operating temperature range from -40°C to 85°C
- Standard M12 connector

Applications

- Factory automation
- Motor feedback
- Conveyors
- Automated warehousing
- General industrial system monitoring and feedback



SPECIFICATIONS

Mechanical

		THM5	THK5
Material		Cover : Coated steel Body : Aluminum Shaft : Stainless Steel	
Bearings		6000 Series	6803 Series
Maximum Loads	Axial	50 N	20 N
	Radial	100 N	50 N
Shaft inertia		$2,5 \cdot 10^{-6} \text{ kg.m}^2$ (10mm)	$2,9 \cdot 10^{-6} \text{ kg.m}^2$ (14mm)
Torque		$4 \cdot 10^{-3} \text{ N.m}$	$16 \cdot 10^{-3} \text{ N.m}$
Permissible Max. Speed		12 000 min ⁻¹	6 000 min ⁻¹
Continuous Max. Speed		10 000 min ⁻¹	6 000 min ⁻¹
Encoder Weight (Approx.)		0,500 Kg	
Theoretical Mechanical Lifetime 10⁹ turns (F _{axial} / F _{radial})		30 N / 60 N : 26	20 N / 40 N : >36

Electrical

Ver.	Output Signals	Operating Voltage	Supply Current (no loads)	Current per Channel Pair	Short Circuits Proof	Reverse Polarity Tolerant	Frequency Capability	Resolutions Category	Operating Temperature Range
ZIO	IO-Link	18-30V	<75mA	<40mA	Yes	Yes	Up to IO-Link COM3 (230,4 kbits/s)	Full Programmable (1 to 16 bits)	-40°C...+85°C

Environmental

Shocks (EN 60068-2-27)	≤ 500 m.s ⁻² (during 6 ms)
Vibrations (EN 60068-2-6)	≤ 200 m.s ⁻² (10...2 000Hz)
EMC	EN 61000-6-2, EN 61000-6-4
Isolation	1 000V eff
Operating Temperature	-40 ... + 85°C (encoder T°)
Storage Temperature	-40 ... + 85°C
Protection (EN 60529)	IP 65 (IP 67 option with a sealing flange)
Humidity	98% RH non-condensing at 20 °C



IO-LINK FEATURES

Process data

- Position : single turn 14 bits maximum
- Multiturn counter : number of rotations
- Rotation speed in RPM
- 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 14 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.
- Speed window calculation : time between each speed data update.

Diagnostics

- Operating Hours : number of hours since factory reset



STANDARD CONNECTIONS

		L-	N.C	L+	C/Q	N.C
BF	M12 - 5 Pins	1	2	3	4	5



FACTORY SETTINGS PARAMETERS

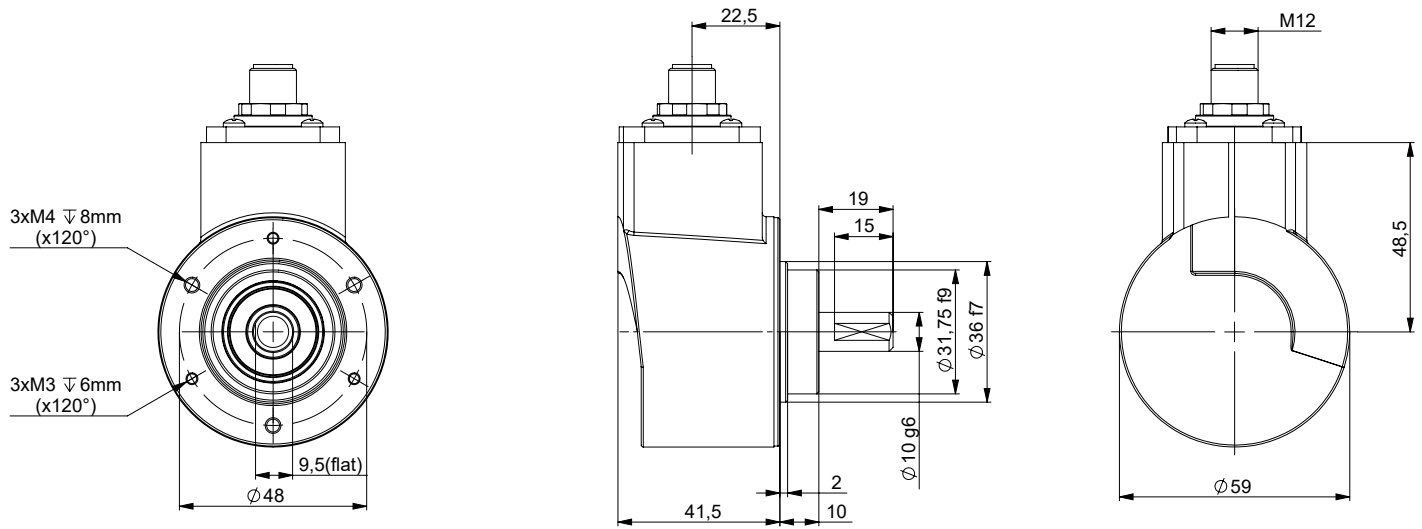
Name	Index	Factory Setting	Comment
Application Specific Tag	24	***	Customer text tag (string 32 characters)
Rotation direction	72	0 : CW	Set the rotation direction
Singleturn Resolution	90	12 bits	Resolution of the single-turn counter (in bits)
Multiturn Resolution	91	16 bits	Resolution of the multi-turn counter (in bits)
Speed calculation window	80	1 : 200ms	Time between each speed data update
Preset singleturn	67	0	Preset value for position inside the turn
Preset multiturn	68	0	Preset value for the number of turns
Operating-hours	110	0	Number of hours with device on



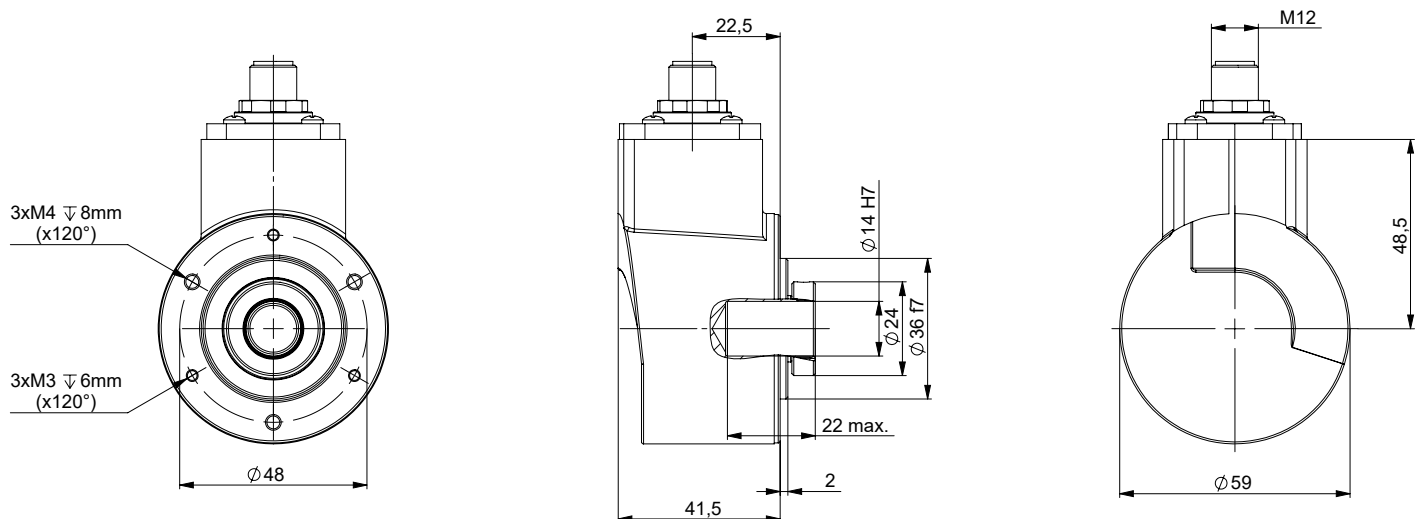
DIMENSIONS

All dimensions are in millimeters.

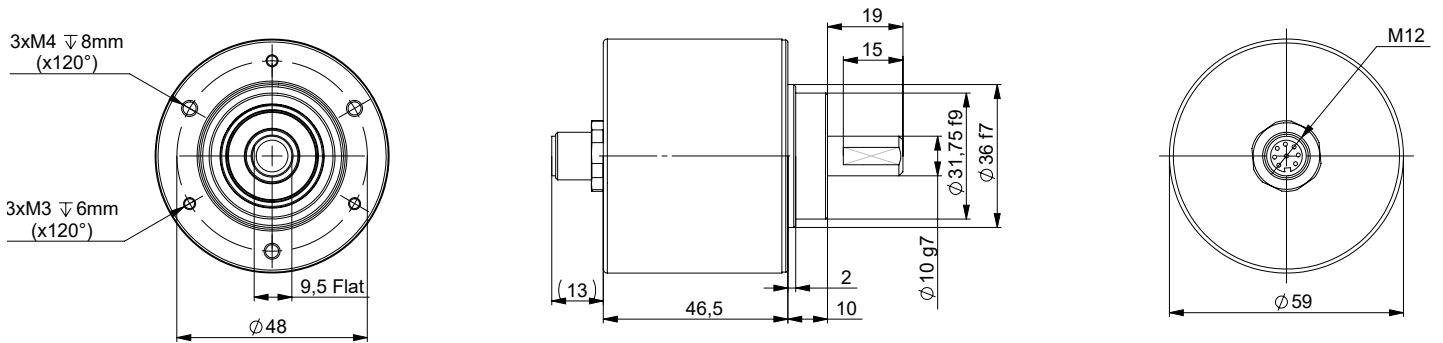
THM5_10, Connection BFR (Radial M12)



THK5_14, Connection BFR (Radial M12)



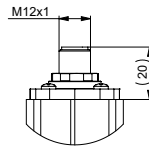
THM5_10, Connection BFA (axial M12)



CONNECTION DIMENSIONS

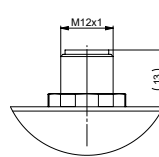
Radial

M12 BFR



Axial

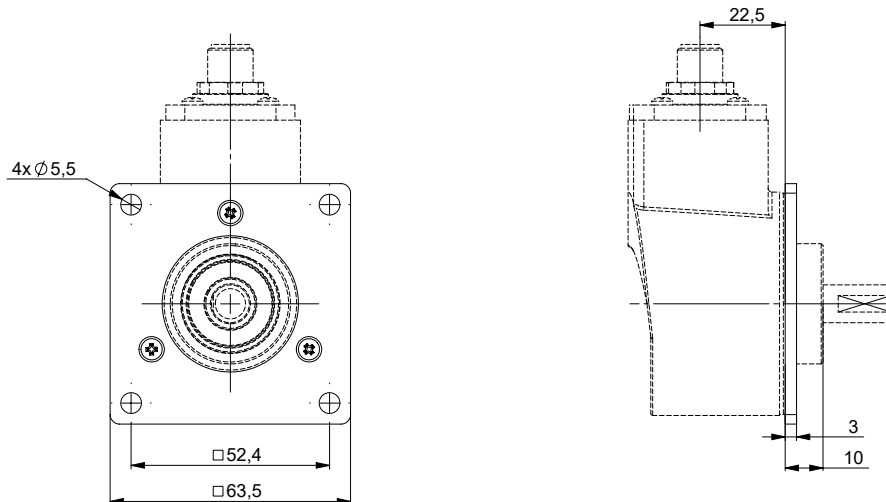
M12 BFA



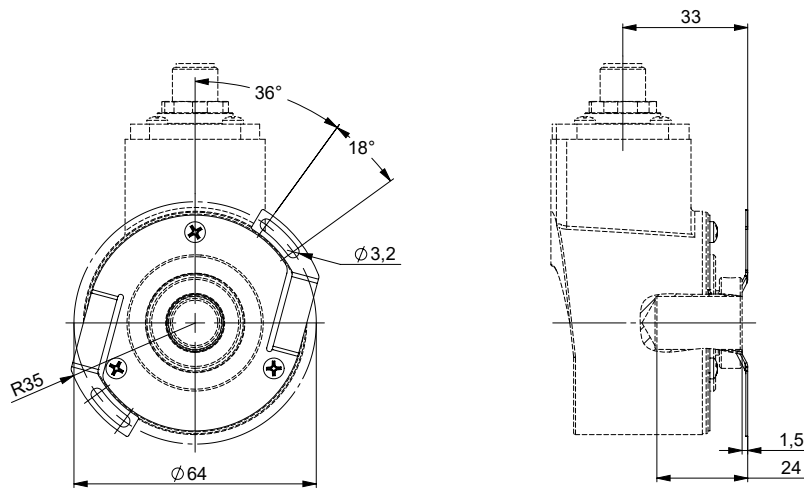
FLANGE AND COUPLING INTERFACES

All flange or coupling kits shall be ordered separately (see accessories section).

THM5_10, Connection BFR (Radial M12), flange 9500/005 mounted on body



THK5_14 Standard clamping, Connection BFR (M12), coupling 9445/016 mounted on the body



ORDERING OPTIONS

Example: THM5_06/ZIOB//12B16//BFR

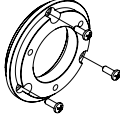
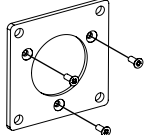
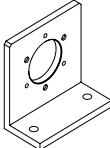
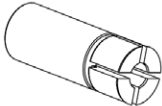
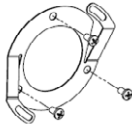
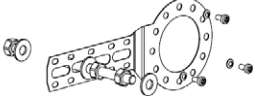
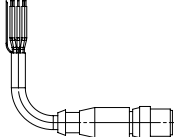
Family	THM5	06	/	ZIO	B	//	12B16	//	BF	R
THM5: Solid Shaft Encoder THK5: Blind Shaft Encoder										
Shaft Size										
THM5 06: 6 mm 10: 10 mm										
THK5: 14: 14 mm										
Voltage Output										
ZIO: 18-30V IO-Link										
Code										
B: Binary										
Resolution										
12B16: Programmable 12 bits single-turn resolution and 16 bits multi-turn counter										
Output Termination										
BF: M12 5 Pins										
Output orientation										
R: Radial A: Axial										

GENERAL NOTES

*For an optimized installation meeting industrial standards, refer to the Instructions Manual.
The Instructions Manual provides the technical information (drawings, electrical data, etc...) for a proper integration.*

AGENCY APPROVALS & CERTIFICATIONS



Description	Part Number		
Synchro flange kit Hardware included 	M9500/003 Other synchro flanges dimensions available on request		
Square flange kit Hardware included 	M9500/005 Other square flanges dimensions available on request		
Mounting bracket Hardware included 	M9202 (Compatible with all models) Non insulated (Aluminum)		
Reduction sleeve 	THK5 9431/K06 9431/K08 9431/K10 9431/K12	Bore size (H7) 6 mm 8 mm 10 mm 12 mm	
Stator coupling kit Hardware included 	P/N M9445/016	Compatible with THK5 model	Fixing points 2
	Other stator coupling configurations available on request		
Tether arm kit Hardware included 	M9445/047 (Compatible with THK5 model)		
Bellow coupling 	9403/xx-yy with: xx = 06 to 12 (side 1 bore diameter in mm) yy = 06 to 12 (side 2 bore diameter in mm) + Imperial sizes available: 6.35, 9.52, 12.7 (mm) Installation: Refer to Instruction Manual		
Standard Mating Connector 2m, 5m, 10m Mating Cable Assembly 	Extension cords compatible with BF connection option: 8230/360 = M12 overmolded, PVC cable, 2m 8230/357 = M12 overmolded, PVC cable, 5m 8230/364 = M12 overmolded, PVC cable, 10m		

Made in France

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

CONTACT US

Americas

+1 (800) 350 2727

sensors@sensata.com

Europe, Middle East & Africa

+33 (3) 88 20 8080

position-info.eu@sensata.com

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