

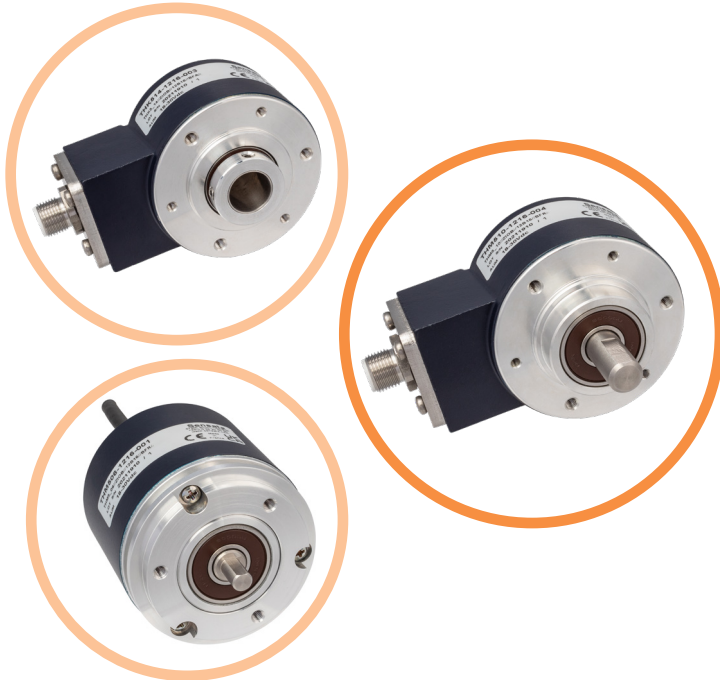


# THM5 - THK5 SERIES

## 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 12 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
<b>Material</b>		<b>Cover</b> : Coated steel <b>Body</b> : Aluminum <b>Shaft</b> : Stainless Steel	
<b>Bearings</b>		6000 Series	6803 Series
<b>Maximum Loads</b>	<b>Axial</b>	50 N	20 N
	<b>Radial</b>	100 N	50 N
<b>Shaft inertia</b>		2,5.10 <sup>-6</sup> kg.m <sup>2</sup> (10mm)	2,9.10 <sup>-6</sup> kg.m <sup>2</sup> (14mm)
<b>Torque</b>		4.10 <sup>-3</sup> N.m	16.10 <sup>-3</sup> N.m
<b>Permissible Max. Speed</b>		12 000 min <sup>-1</sup>	6 000 min <sup>-1</sup>
<b>Continuous Max. Speed</b>		10 000 min <sup>-1</sup>	6 000 min <sup>-1</sup>
<b>Encoder Weight (Approx.)</b>		0,500 Kg	
<b>Theoretical Mechanical Lifetime 10<sup>9</sup> turns</b> (F <sub>axial</sub> / F <sub>radial</sub> )		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
Z10	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

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



## 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



## STANDARD CONNECTIONS

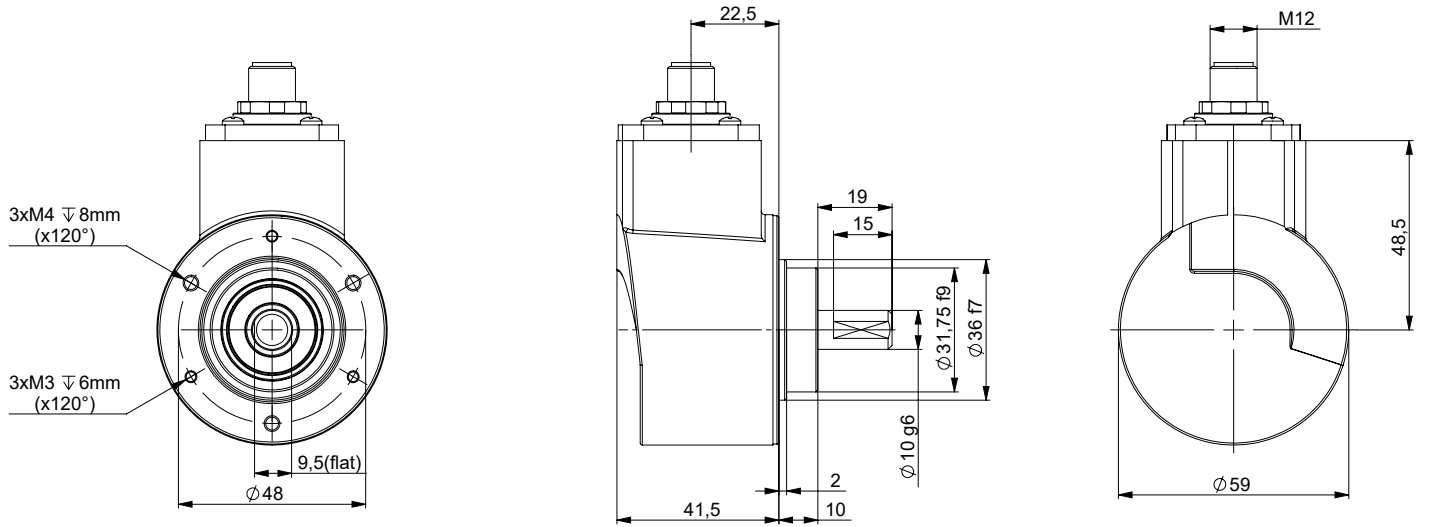
		L-	N.C	L+	C/Q	N.C
<b>BF</b>	M12 - 5 Pins	1	2	3	4	5
<b>BD</b>	PUR Cable - M12 - 5 Pins	1	2	3	4	-
<b>BJ</b>	PVC Cable - 3 wires	WH (White)	-	BN (Brown)	GN (Green)	-



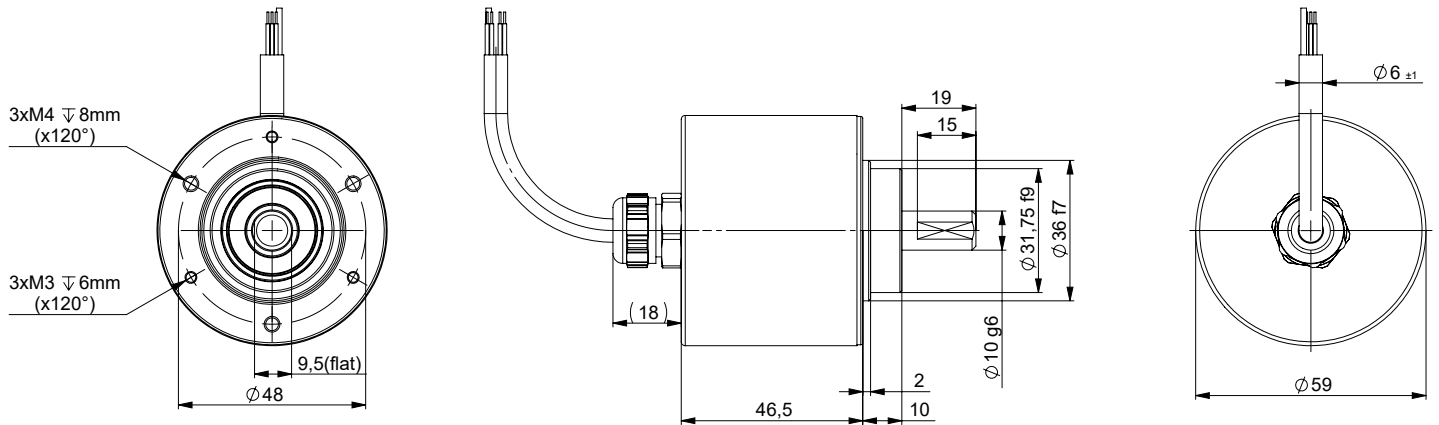
# DIMENSIONS

All dimensions are in millimeters.

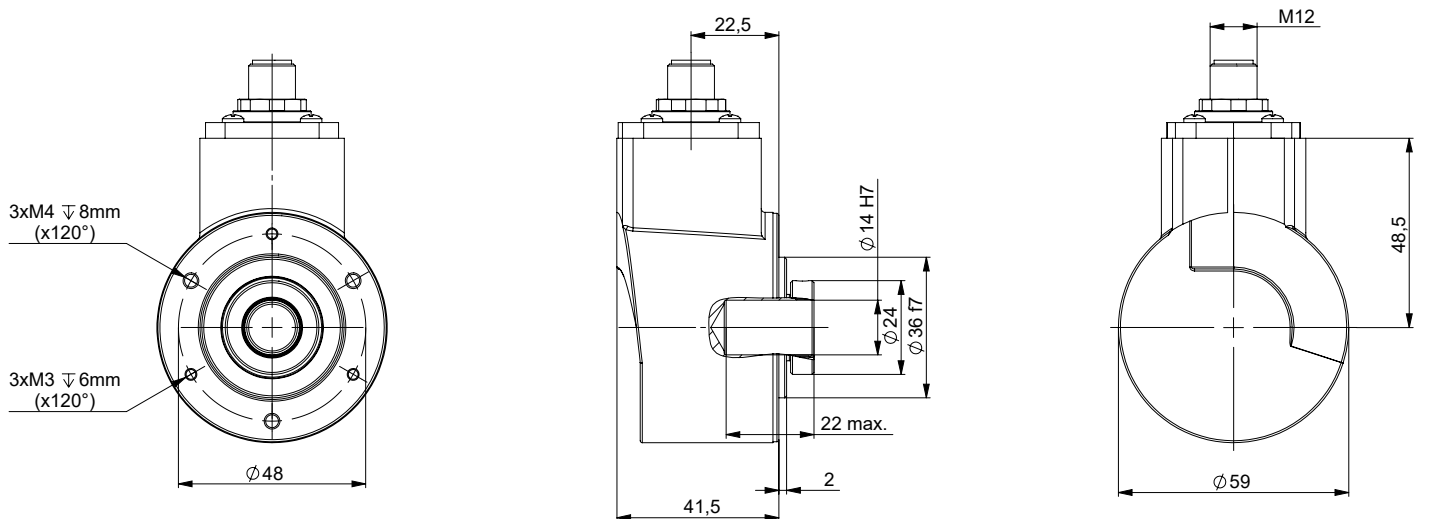
## THM5\_10, Connection BFR (Radial M12)



## THM5\_10, Connection BJA (Axial cable)



## THK5\_14, Connection BFR (Radial M12)

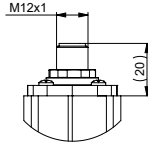




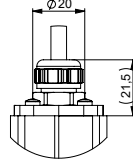
## CONNECTION DIMENSIONS

### Radial

**M12  
BFR**

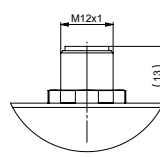


**Cable  
BJR BDR**

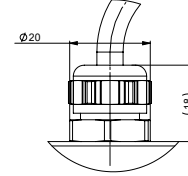


### Axial

**M12  
BFA**



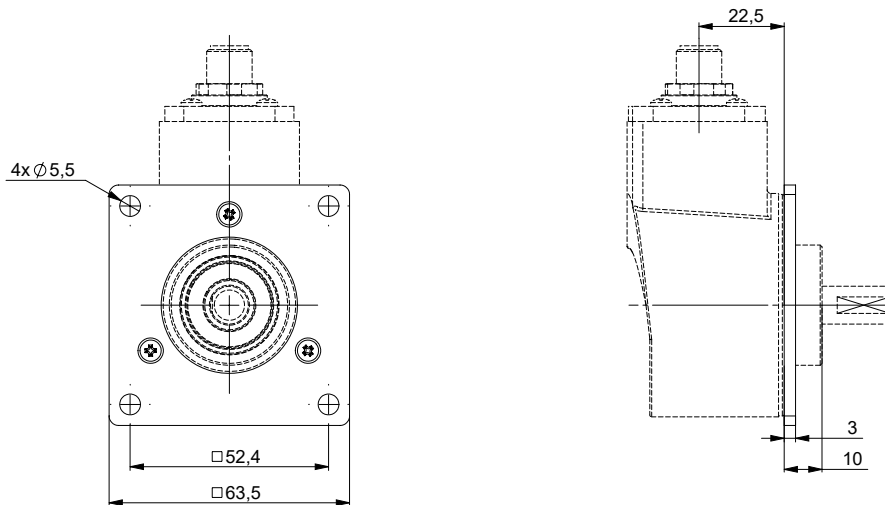
**Cable  
BJA BDA**



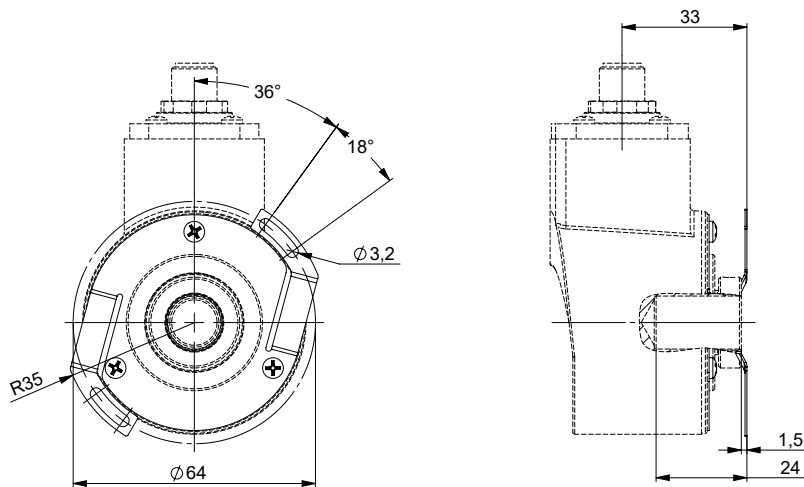
## FLANGE AND COUPLING INTERFACES

The flange or coupling configurations can be defined in the ordering options for being installed on encoder in factory. All flange or coupling kits can also 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\_10//ZIOB//12B16//BDR020//\*\*03\*\*

	THM5	06	/	ZIO	B	//	12B16	//	BD	R	020	//	**03**
<b>Family</b>	[Diagram showing lines connecting THM5 to Family, 06 to Shaft Size, ZIO to Voltage Output, B to Code, 12B16 to Resolution, BD to Output Termination, R to Output orientation, 020 to Cable Length, and **03** to Accessories]												
<b>THM5:</b> Solid Shaft Encoder <b>THK5:</b> Blind Shaft Encoder													
<b>Shaft Size</b>													
<b>THM5</b> 06: 6 mm 09: 9.52 mm 10: 10 mm 08: 8mm (Option)	<b>THK5:</b> 10: 10 mm 12: 12 mm 14: 14 mm 15: 15mm (Option)												
Contact factory for other configurations													
<b>Mechanical Option</b>													
<b>Blank:</b> No option <b>OM:</b> Flange side clamping													
<b>Voltage Output</b>													
<b>ZIO:</b> 18-30V IO-Link													
<b>Code</b>													
<b>B:</b> Binary													
<b>Resolution</b>													
<b>12B16:</b> Programmable 12 bits single turn resolution and 16bits multi-turn counter													
<b>Output Termination</b>													
<b>BF:</b> M12 5 Pins <b>BD:</b> PUR Cable with M12 - 5 Pins <b>BJ:</b> PVC Cable - 3 wires													
<b>Output orientation</b>													
<b>R:</b> Radial <b>A:</b> Axial													
<b>Cable Length</b>													
<b>xxx:</b> Cable Length (ex.: 020 = 2 Meters) <b>Blank:</b> No Cable													
<b>Accessories</b>													
<b>D2****:</b> THM5 with aluminum reduction sleeve <b>**DK**:</b> 9445/016 THK5 <b>**03**:</b> 9500/003 Synchro flange <b>**05**:</b> 9500/005 Square flange													



## 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

