

# AHM5 - AHK5 - AH05 SERIES

## ABSOLUTE SINGLE-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 single-turn position with 16bits of resolution
- 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

		AHM5	AHK5	AH05
<b>Material</b>		<b>Cover:</b> Zinc Alloy <b>Body:</b> Aluminium <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)	3,2.10 <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	20.10 <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>		0,300 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 16 bits max
- Speed : calculated speed in rpm (signed)

### Programmable Parameters

- Resolution per turn: 1 to 16 bits
- Direction : clockwise or counter-clockwise, changes counting direction and speed sign.
- Speed window calculation : time between each speed data update.
- Reset/Preset value : The position process data is set to the preset parameter. The preset parameter shall be a valid position value according to the resolution chosen. Zero position shall be set using this parameter.

### Diagnostics

- Operating Hours : number of hours since factory reset
- Temperature : event triggers when temperature exceeds specifications

### Factory settings parameters

Name	Index	Factory Setting	Comment
Position Preset value	65	0	Value of the position preset
Rotation direction	72	false : CW	Set the rotation direction
Enter in Factory setup mode	75	0: Encoder mode	Do not use
Speed calculation window	80	1 : 200ms	Time between each speed data update
Absolute Position Resolution	90	16	Resolution of the turn counter (in bits)
Operating-hours	110	0	Number of hours with device on

## STANDARD CONNECTIONS

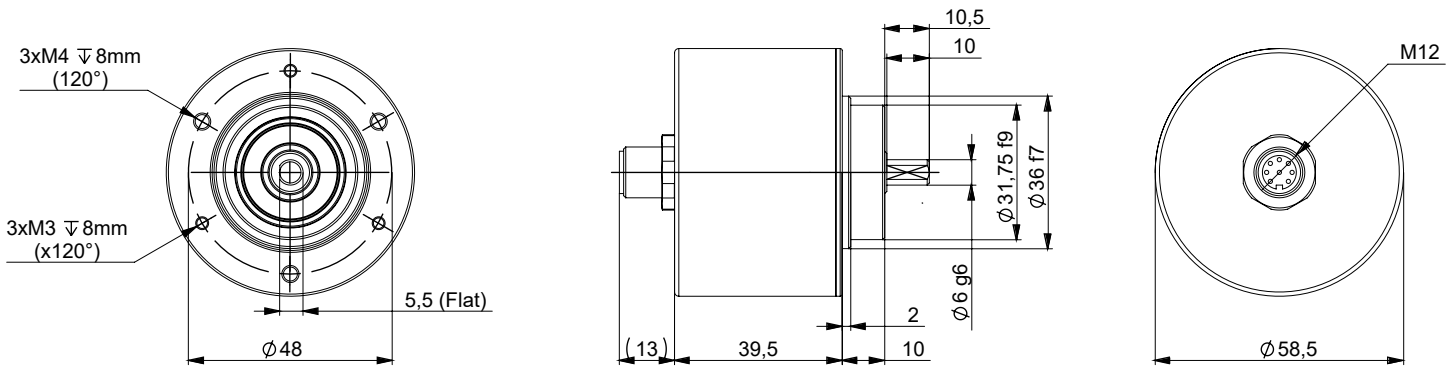
		L-	N.C	L+	C/Q	N.C
BF	M12 - 5 Pins	1	2	3	4	5



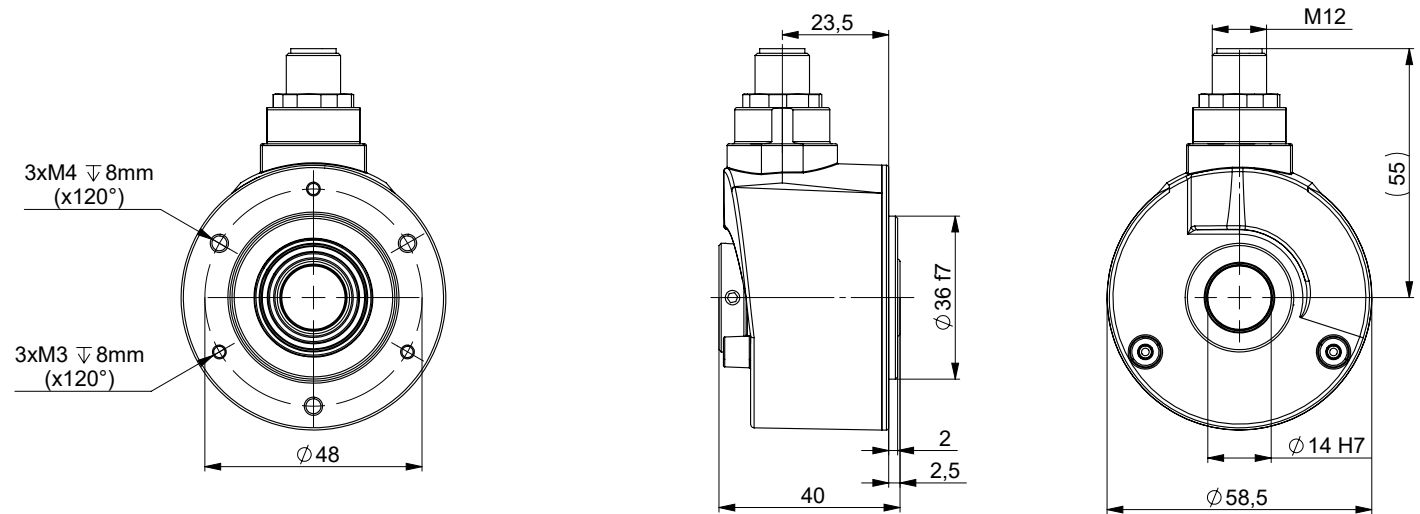
# DIMENSIONS

All dimensions are in millimeters.

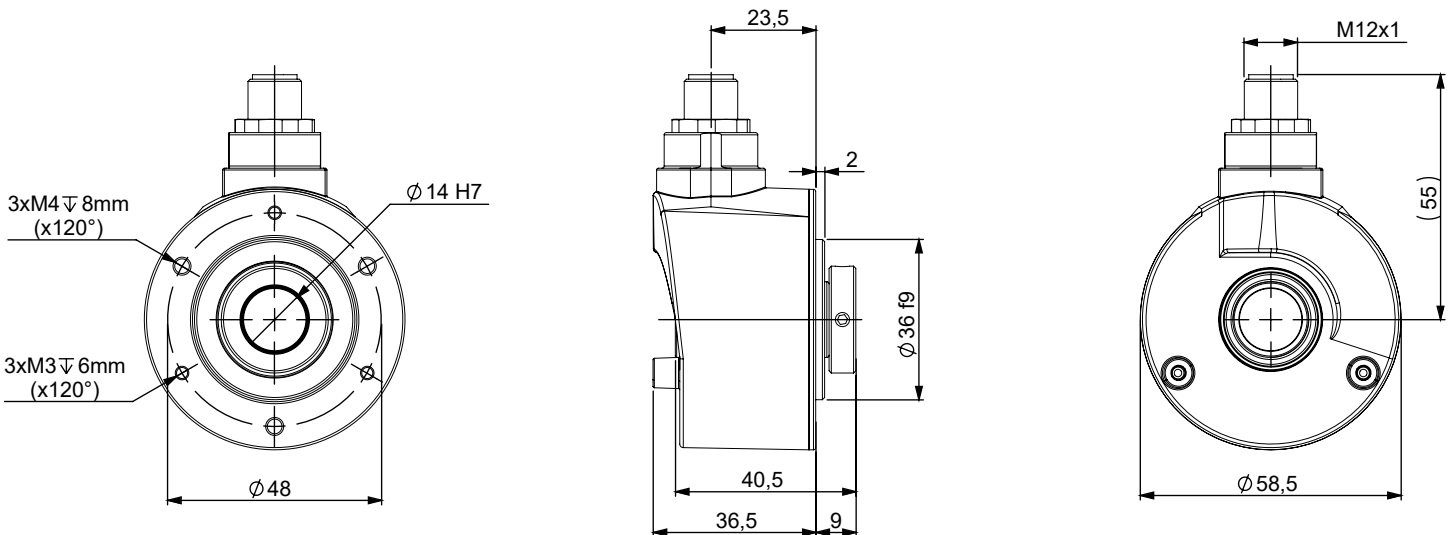
## AHM5\_06 Connection BFA (Axial M12)



## AH05\_14 Connection BFR (Radial M12)



## AH05S14/OM/ Flange side clamping, Connection BFR (Radial M12)





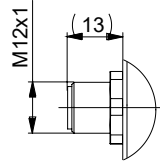
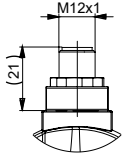
## CONNECTION DIMENSIONS

Radial

Axial

**M12  
BFR**

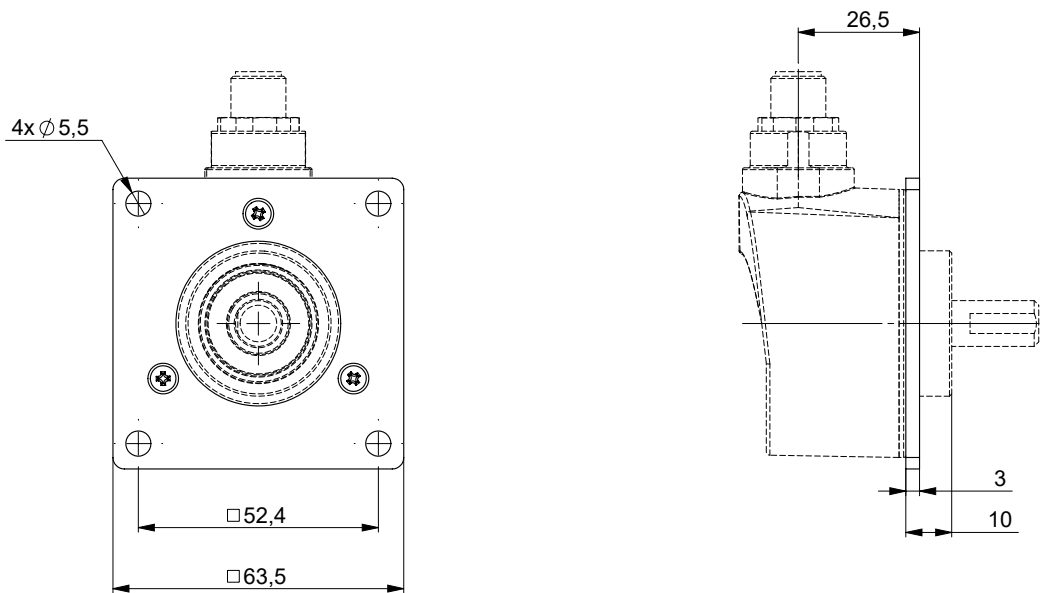
**M12  
BFA**



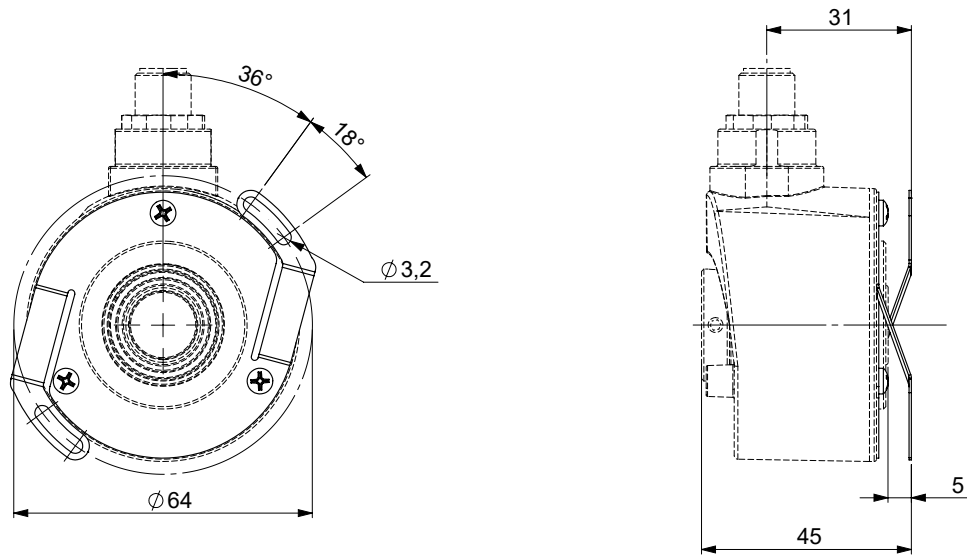
## FLANGE AND COUPLING INTERFACES

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

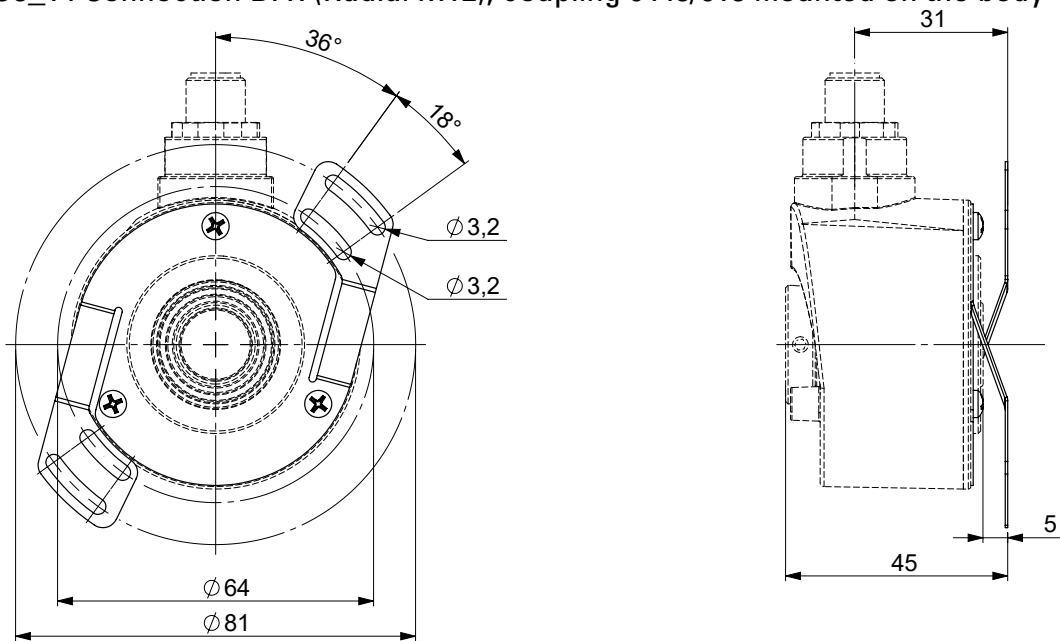
AHM5\_10 Connection BFR (Radial M12), flange 9500/005 mounted on the body



AH05\_14 Connection BFR (Radial M12), coupling 9445/012 mounted on the body



AH05\_14 Connection BFR (Radial M12), coupling 9445/015 mounted on the body





## ORDERING OPTIONS

Example: AHM5\_06/ZIOB//16//BFR

	AHM5	06	/	ZIO	B	//	16	//	BF	R
<b>Family</b>	[Line connecting AHM5 to Family]									
<b>AHM5:</b> Solid Shaft Encoder <b>AHK5:</b> Blind Shaft Encoder <b>AH05:</b> Hollow Shaft Encoder										
<b>Shaft Size</b>	[Line connecting 06 to Shaft Size]									
<b>AHM5</b> <b>06:</b> 6 mm <b>10:</b> 10 mm <b>AHK5 or AH05:</b> <b>14:</b> 14 mm										
<b>Voltage Output</b>	[Line connecting ZIO to Voltage Output]									
<b>ZIO:</b> 18-30V IO-Link										
<b>Code</b>	[Line connecting B to Code]									
<b>B:</b> Binary										
<b>Resolution</b>	[Line connecting 16 to Resolution]									
<b>16:</b> 16bits single turn position										
<b>Output Termination</b>	[Line connecting BF to Output Termination]									
<b>BF:</b> M12 5 Pins										
<b>Output orientation</b>	[Line connecting R to Output orientation]									
<b>R:</b> Radial (All configurations) <b>A:</b> Axial (AHM5 and AHK5 only)										



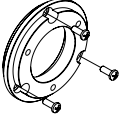
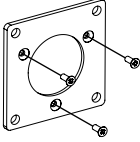
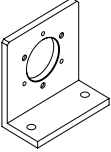
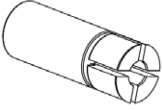
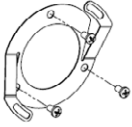
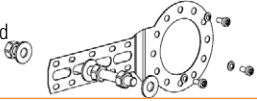
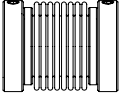
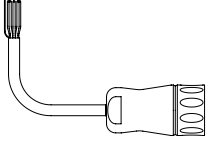
## GENERAL NOTES

**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		
<b>Synchro flange kit</b> Hardware included 	M9500/003 Other synchro flanges dimensions available on request		
<b>Square flange kit</b> Hardware included 	M9500/005 Other square flanges dimensions available on request		
<b>Mounting bracket</b> Hardware included 	M9202 (Compatible with all models)		
<b>Reduction sleeve</b> 	Insulated (PEEK) AH05 9431/106 9431/108 9431/110 9431/112	Non insulated (Aluminum) AH05    AHK5 9431/A06    9431/K06 9431/A08    9431/K08 9431/A10    9431/K10 9431/A12    9431/K12	Bore size (H7)  6 mm 8 mm 10 mm 12 mm
<b>Stator coupling kit</b> Hardware included 	P/N M9445/012 M9445/015 M9445/016	Recommended use/Compatibility AH05 AHK5 & AH05 AHK5	Fixing points 2 4 2
Other stator coupling configurations available on request			
<b>Tether arm kit</b> Hardware included 	M9445/047 (Compatible with DHK5 and DH05 models)		
<b>Bellow coupling</b> 	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		
<b>Standard Mating Connector</b> 2m, 5m, 10m Mating Cable Assembly 	Extension cords compatible with BF connection option: 8230/375 = M12 overmolded, PUR cable, 2m		

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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](mailto:sensors@sensata.com)

### Europe, Middle East & Africa

+33 (3) 88 20 8080

[position-info.eu@sensata.com](mailto:position-info.eu@sensata.com)

### Asia Pacific

[sales.isasia@list.sensata.com](mailto: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