



| 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
Material		Cover: Zinc Alloy Body: Aluminium Shaft: Stainless Steel		
Bearings		6000 Series	6803 Series	
Maximum Loads	Axial	50 N	20 N	
	Radial	100 N	50 N	
Shaft inertia		2,5.10 ⁻⁶ kg.m ² (10mm)	2,9.10 ⁻⁶ kg.m ² (14mm)	3,2.10 ⁻⁶ kg.m ² (14mm)
Torque		4.10 ⁻³ N.m	16.10 ⁻³ N.m	20.10 ⁻³ 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.)		0,300 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
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

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 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

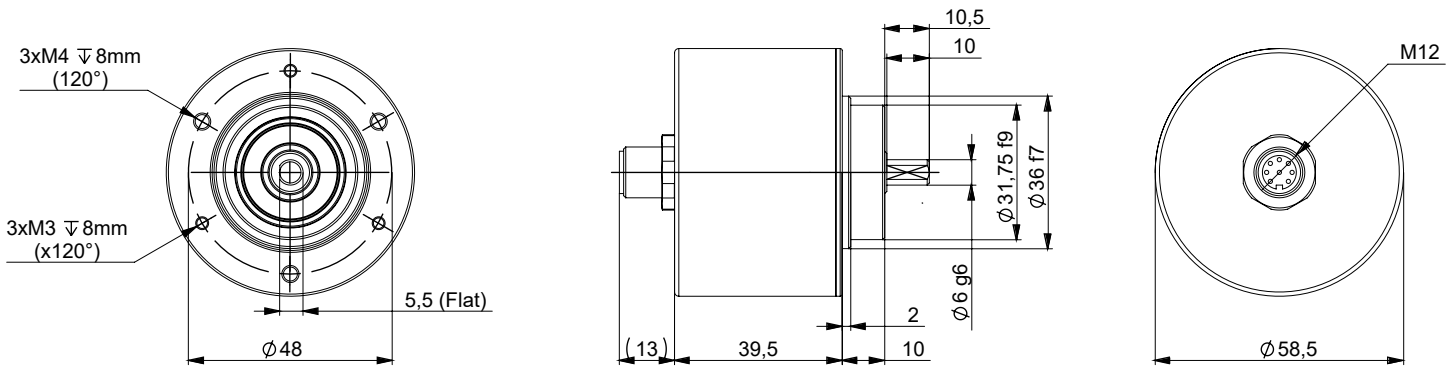
		L-	N.C	L+	C/Q	N.C
BF	M12 - 5 Pins	1	2	3	4	5



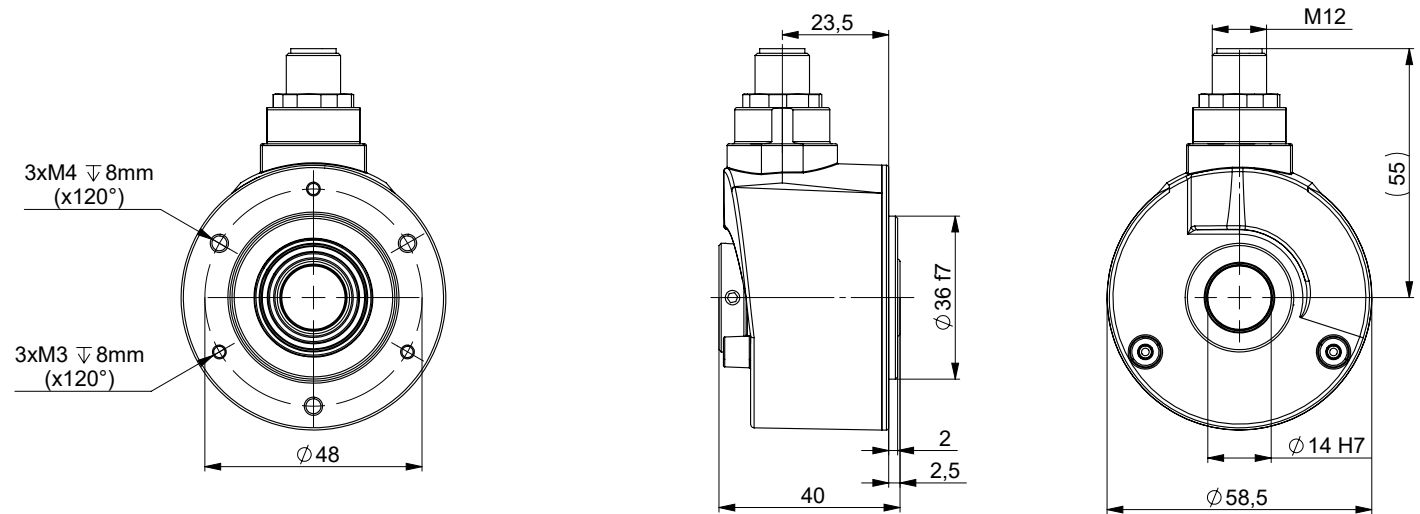
DIMENSIONS

All dimensions are in millimeters.

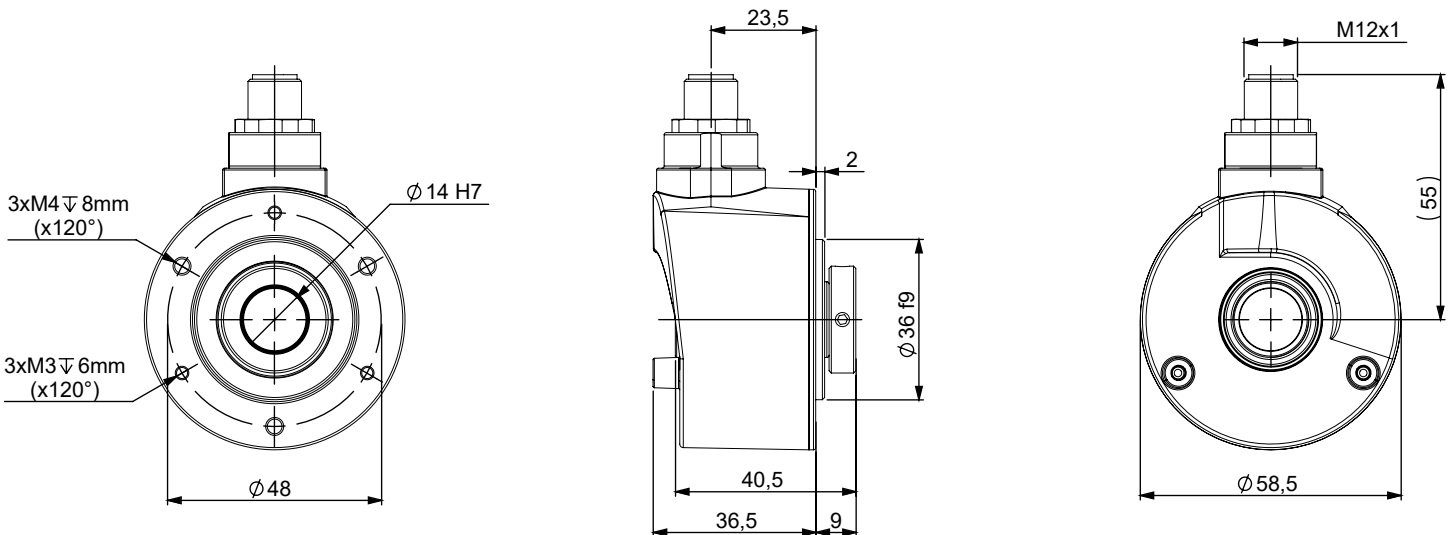
AHM5_06 Connection BFA (Axial M12)



AH05_14 Connection BFR (Radial M12)



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





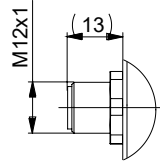
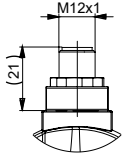
CONNECTION DIMENSIONS

Radial

Axial

**M12
BFR**

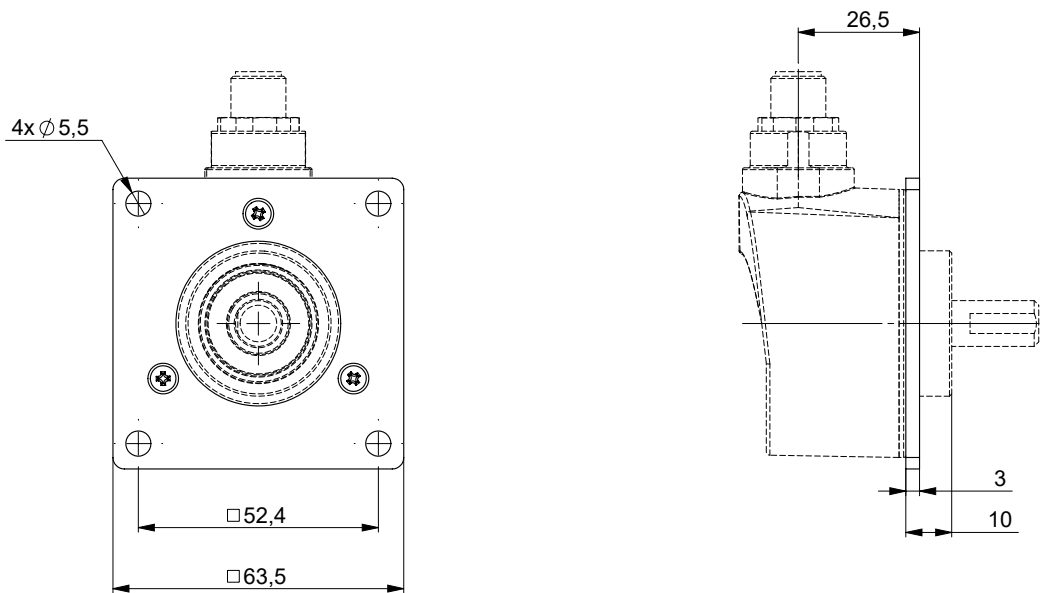
**M12
BFA**



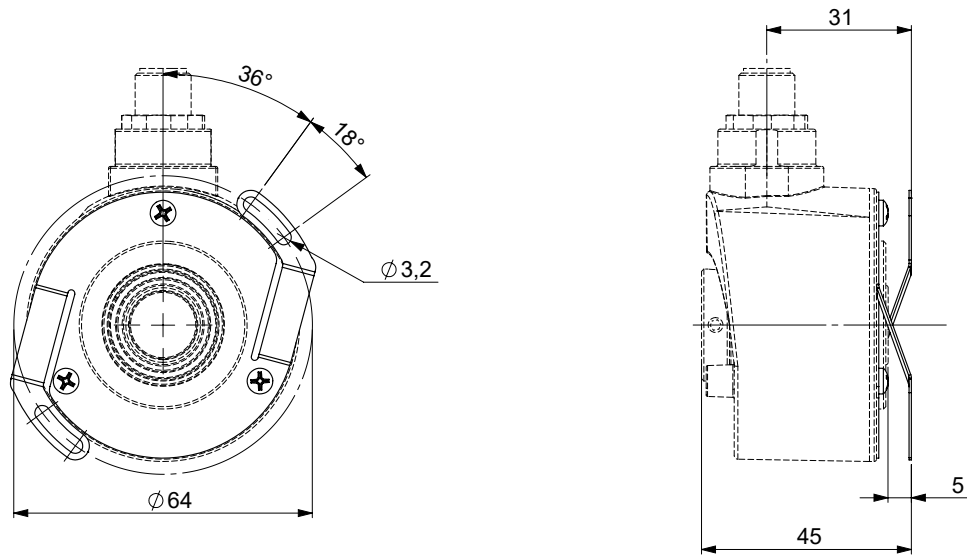
FLANGE AND COUPLING INTERFACES

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

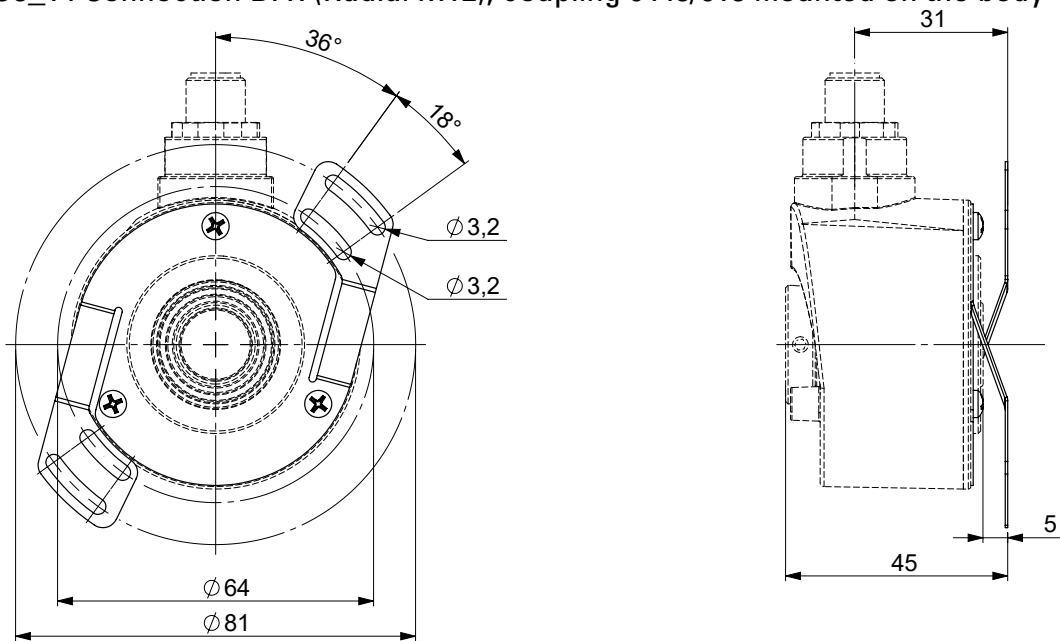
AHM5_10 Connection BFR (Radial M12), flange 9500/005 mounted on the body



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



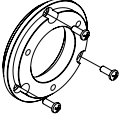
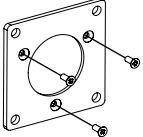
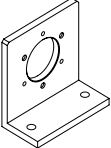
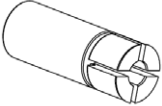
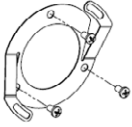
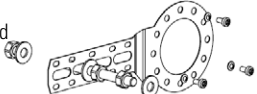
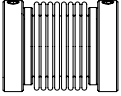
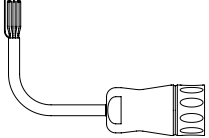
GENERAL NOTES

**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		
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)		
Reduction sleeve 	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
Stator coupling kit 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			
Tether arm kit Hardware included 	M9445/047 (Compatible with DHK5 and DH05 models)		
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: 8230/375 = M12 overmolded, PUR cable, 2m		

Made in France

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, valuation, 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 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

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