

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



STANDARD CONNECTIONS

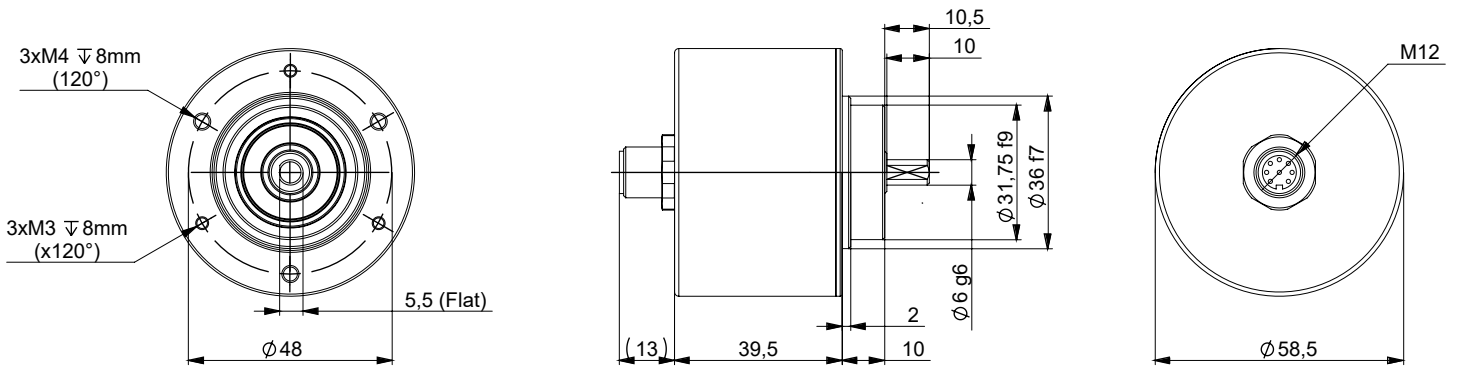
| | | L- | N.C | L+ | C/Q | N.C |
|-----------|--------------------------|---------------|-----|---------------|---------------|-----|
| BF | M12 - 5 Pins | 1 | 2 | 3 | 4 | 5 |
| BD | PUR Cable - M12 - 5 Pins | 1 | 2 | 3 | 4 | - |
| BJ | PVC Cable - 3 wires | WH (White) | - | BN (Brown) | GN (Green)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



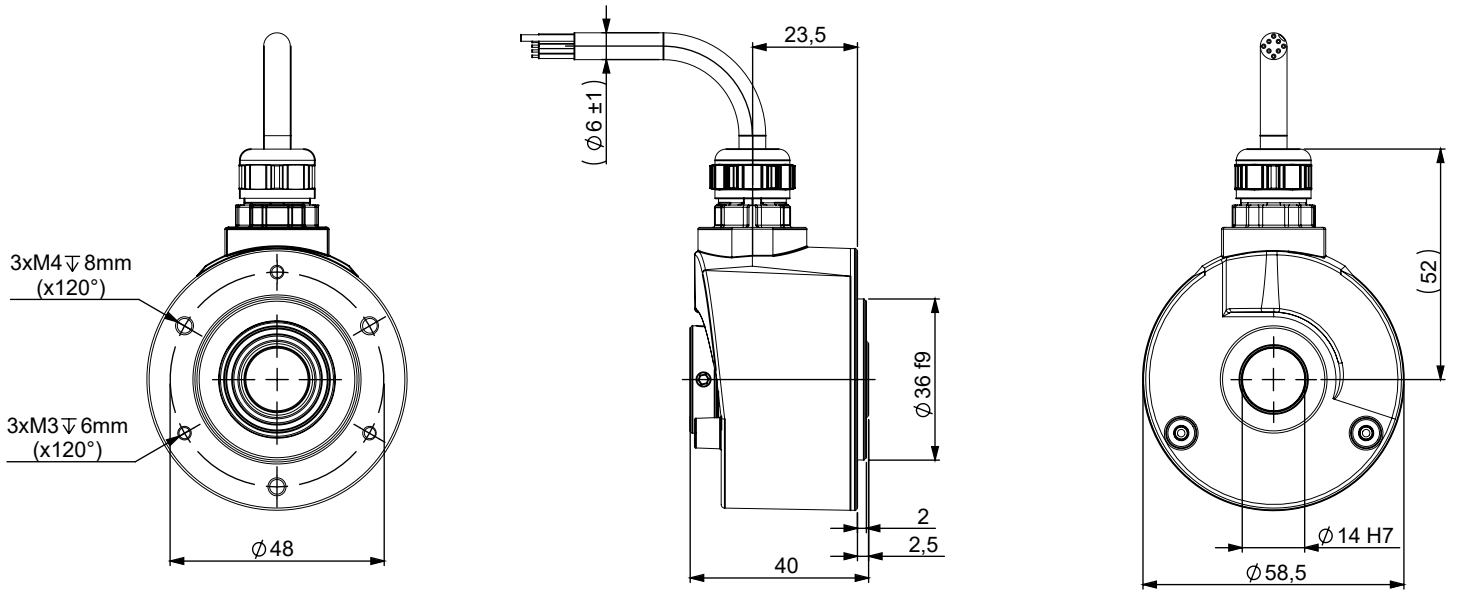
DIMENSIONS

All dimensions are in millimeters.

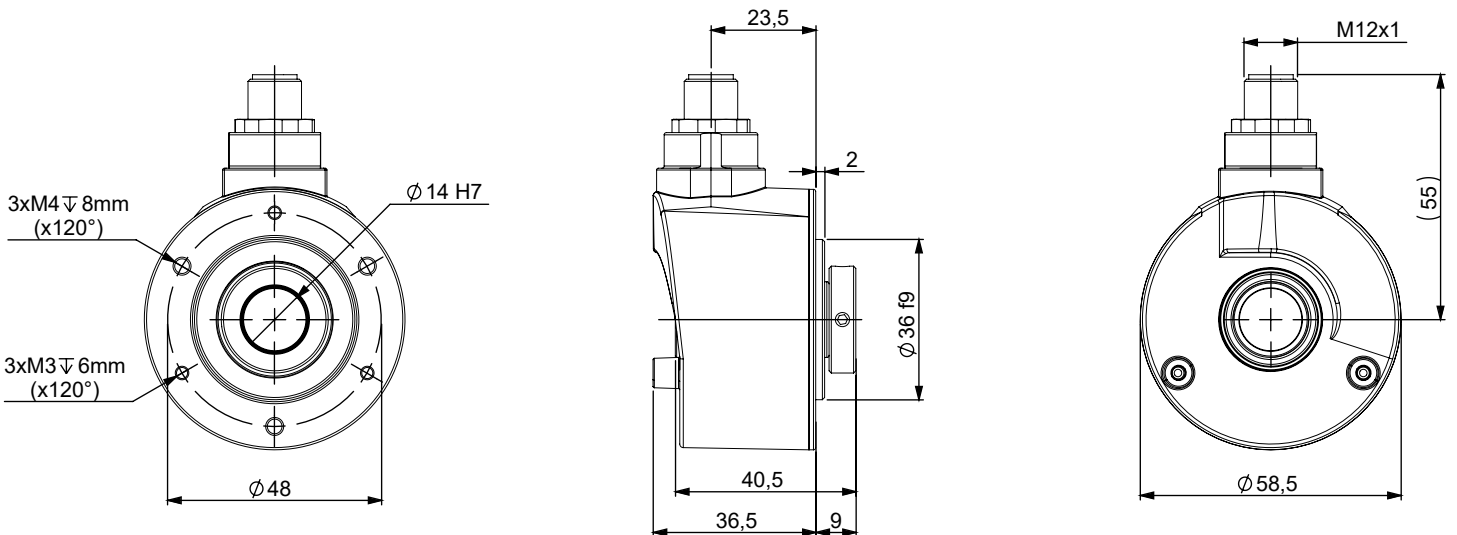
AHM5_06 Connection BFA (Axial M12)



AH05_14 Standard clamping, Connection BJR (Radial Cable)



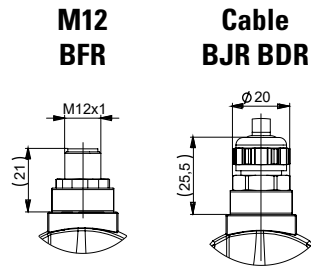
AH05S14/OM/ Flange side clamping, Connection BFR (Radial M12)



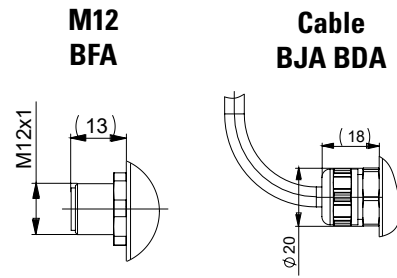


CONNECTION DIMENSIONS

Radial



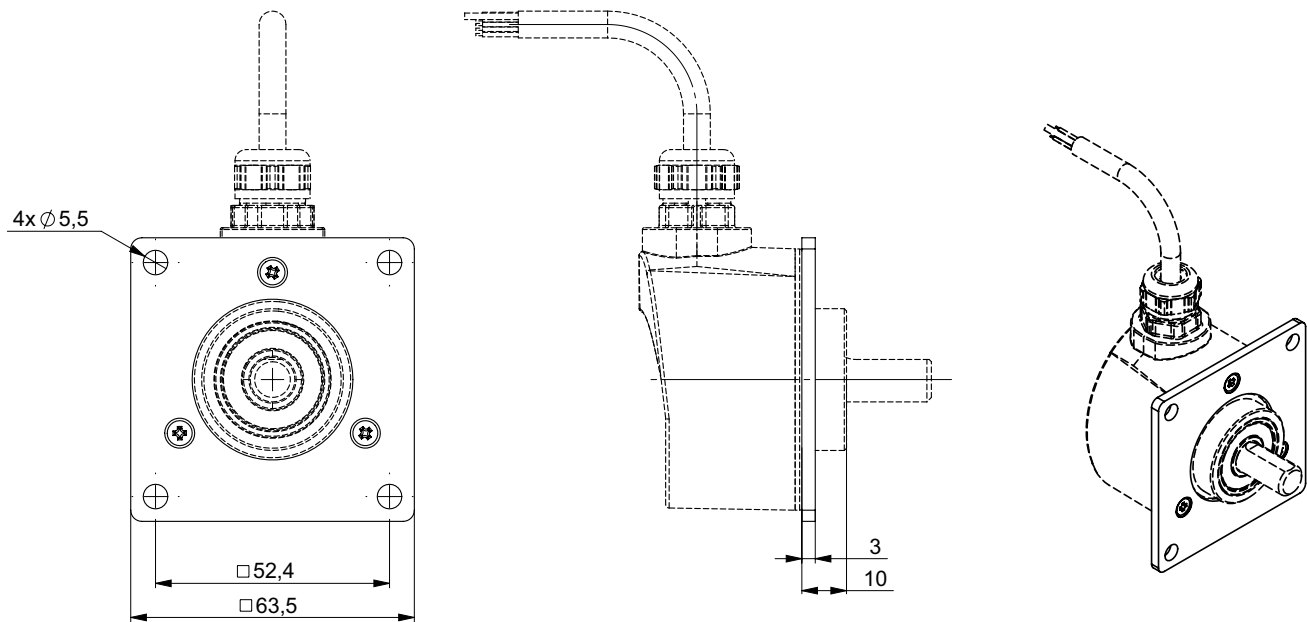
Axial



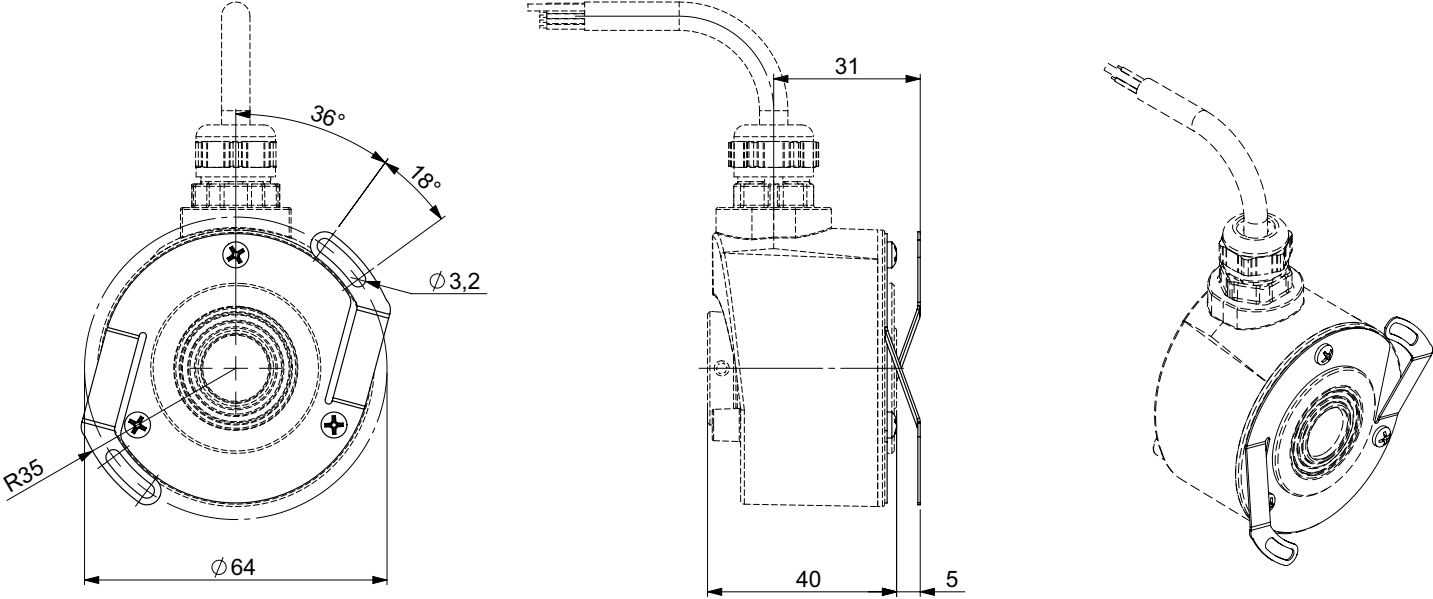
FLANGE AND COUPLING INTERFACES

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).

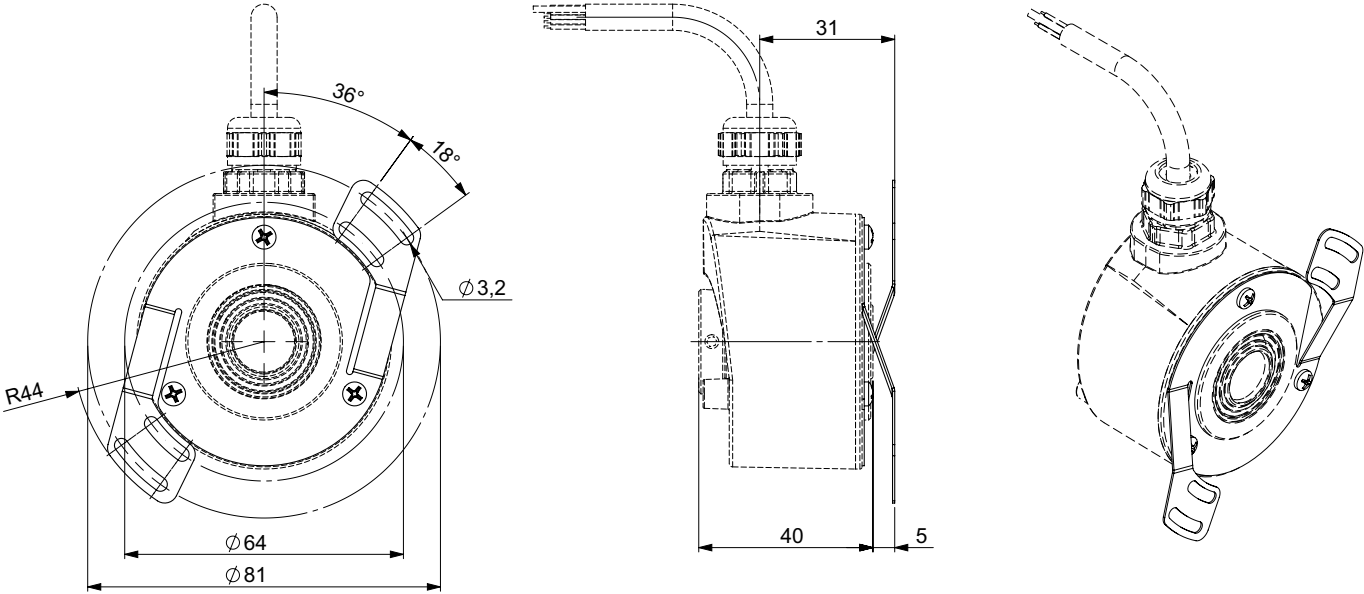
AHM5_10 Connection BJR (Radial cable), flange 9500/005 mounted on the body



AH05_14 Standard clamping, Connection BJR (Radial Cable), coupling 9445/012 mounted on the body



AH05_14 Standard clamping, Connection BJR (Radial Cable), coupling 9445/015 mounted on the body





ORDERING OPTIONS

Example: AHM5_06//ZIOB//16//BD R 020 // **03**

| Option | Description |
|---------------------------|---|
| Family | <p>AHM5: Solid Shaft Encoder AHK5: Blind Shaft Encoder AH05: Hollow Shaft Encoder</p> |
| Shaft Size | <p>AHM5 06: 6 mm 09: 9.52 mm 10: 10 mm 08: 8mm (Option)</p> <p>AHK5 or AH05: 10: 10 mm 12: 12 mm 14: 14 mm 15: 15mm (Option)</p> <p>Contact factory for other configurations</p> |
| Mechanical Option | <p>Blank: No option OM: Flange side clamping</p> |
| Voltage Output | <p>ZIO: 18-30V IO-Link</p> |
| Code | <p>B: Binary</p> |
| Resolution | <p>16: 16bits single turn position</p> |
| Output Termination | <p>BF: M12 5 Pins BD: PUR Cable with M12 - 5 Pins BJ: PVC Cable - 3 wires</p> |
| Output orientation | <p>R: Radial (All configurations) A: Axial (AHM5 and AHK5 only)</p> |
| Cable Length | <p>xxx: Cable Length (ex.: 020 = 2 Meters) Blank: No Cable</p> |
| Accessories | <p>D0****: AH05 with aluminum reduction sleeve D1****: AH05 with insulated reduction sleeve D2****: AHK5 with aluminum reduction sleeve **D2**: 9445/012 AH05 Stator coupling **D4**: 9445/015 AH05 Stator coupling **DK**: 9445/016 AHK5 & AH05.../OM/ Stator coupling **03**: 9500/003 Synchro flange **05**: 9500/005 Square flange</p> |



GENERAL NOTES

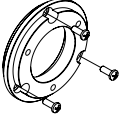
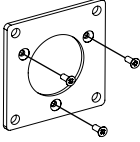
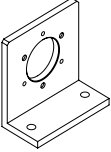
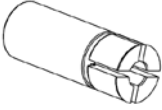
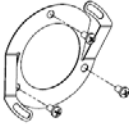
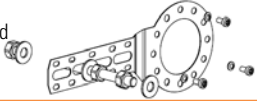
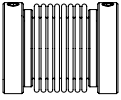
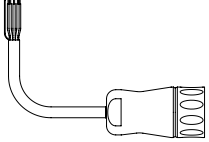
For an optimized installation meeting industrial standards, refer to the Instructions Manual. The Instructions Manual provides the technical information (drawings, electrical data, etc...) for a proper integration.



AGENCY APPROVALS & CERTIFICATIONS



IO-Link

| 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 & AH05 with /OM/ option | 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 G6 connection option: RAL-020-001 = M23, PVC cable, 2m RAL-050-001 = M23, PVC cable, 5m RAL-100-001 = M23, PVC cable, 10m | Extension cords compatible with G8 connection option: RAL-020-xxx = M23, PUR cable, 2m RAL-050-xxx = M23, PUR cable, 5m RAL-100-xxx = M23, PUR cable, 10m | Extension cords compatible with GM connection option: 8230/366 = M12 overmolded, PUR cable, 2m 8230/370 = M12 overmolded, PUR cable, 5m 8230/368 = M12 overmolded, PUR cable, 10m |

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, 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

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