



## MHM5 SERIES

### PROFINET ABSOLUTE MULTI-TURN ENCODER



#### Features

- Robust and compact design
- Solid shaft version Ø 10mm standard, with Ø 6mm optional
- Precision ball bearings with sealing flange
- High temperature performance -40° to +85°C
- Code disc made of unbreakable and durable plastic
- Precision, robust, gear train for turns counting - immune to stray magnetics or electrical interference
- Resolution: 13 bits = 8192 steps/turn (Optional 16 bits)
- Number of turns: 12 bits = 4096 turns (Optional 14 bits)
- Polarity inversion and short circuit protection
- Highly integrated circuit in SMD-technology
- Available in Stainless Steel



## SPECIFICATIONS

### Mechanical

<b>Housing Diameter</b>	<b>Housing Diameter:</b> 58mm
	<b>Shaft Diameter:</b> 10mm standard, 6mm optional
	<b>Flat on shaft:</b> 18mm long
<b>Max. Shaft Loading</b>	<b>Axial:</b> 40 N
	<b>Radial:</b> 110 N
<b>Starting Torque</b>	≤ 3 N•cm
<b>Material</b>	<b>Shaft Material:</b> Stainless Steel
	<b>Bearing Housing:</b> Aluminum (stainless steel option, consult factory)
	<b>Cover:</b> Coated Steel (Stainless Steel option)
<b>Bearing Life @ Load (Axial/Radial)</b>	40 N / 60 N = 150 X 10 <sup>9</sup>
	40 N / 80 N = 100 X 10 <sup>9</sup>
	40 N / 110 N = 55 X 10 <sup>9</sup>
<b>Maximum RPM (Continuous)</b>	12,000 RPM
<b>Moment of Inertia</b>	< 30 g•cm <sup>2</sup>
<b>Weight</b>	370 g

## Electrical

<b>Code</b>	Binary
<b>Output Profile</b>	Profidrive Profile 4.X, Encoder Profile 4.X
<b>Counts per Revolution</b>	13 Bits Standard, 16 Bits Optional
<b>Revolution Counter</b>	12 Bits Standard, 14 Bits Optional
<b>Accuracy</b>	$\pm 0.0220^\circ$ (14-16bit), $\pm 0.0439$ ( $\leq 13$ bit)
<b>Supply Voltage</b>	10 – 30 Vdc (for power supplies that comply with EN 50178)
<b>Current consumption</b>	$\leq 230\text{mA}$ @ 10Vdc, $\leq 100\text{mA}$ @ 24 Vdc
<b>Power Consumption</b>	$\leq 2.5\text{ W}$
<b>Protection Level</b>	Reverse Polarity and Short Circuit Protection
<b>Transmission Rate</b>	10 / 100 Mbits
<b>EMC: Emitted Interference</b>	DIN EN61000-6-4
<b>EMC: Noise Immunity</b>	DIN EN 61000-6-2

## Environmental

<b>Protection Class</b>	IP65 (EN 60529)
<b>Temperature Range (Operation and Storage)</b>	-40 to +85°C
<b>Mechanical Resistance</b>	<b>Shock:</b> $\leq 100\text{ g}$ half-sine, 6ms (EN 60068-2-27); $\leq 10\text{ g}$ half-sine, 16ms (EN 60068-2-29) <b>Vibration:</b> $\leq 10\text{ g}$ (10 Hz to 1 kHz) (EN 60068-2-6)
<b>Humidity</b>	98% Non-Condensing

## Technology and Interface

<b>Sensor</b>	Optical
<b>Turns Counting</b>	Mechanical gearing
<b>Diagnostics</b>	Memory
<b>Programming Functions</b>	Resolution, time base, velocity filter, preset, count direction, IP address
<b>Features</b>	Boot loader, Round axis, LED Indicator lights
<b>Interface Cycle Time</b>	$\geq 1\text{ ms}$
<b>Start-up time</b>	$< 250\text{ ms}$
<b>MTTF</b>	65 years @ 60°C

## CONNECTION

### Profinet Connector

4 pinouts, female, D coded

Pinout	Signal
1	Tx+
2	Rx+
3	Tx-
4	Rx-

Encoder view

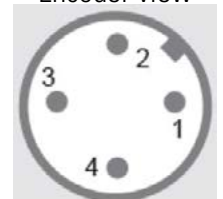


### Power Supply Connector

4 pinouts male, A coded

Pinout	Signal
1	VS (10-30Vdc)
2	N.C.
3	GND (0V)
4	N.C.

Encoder view

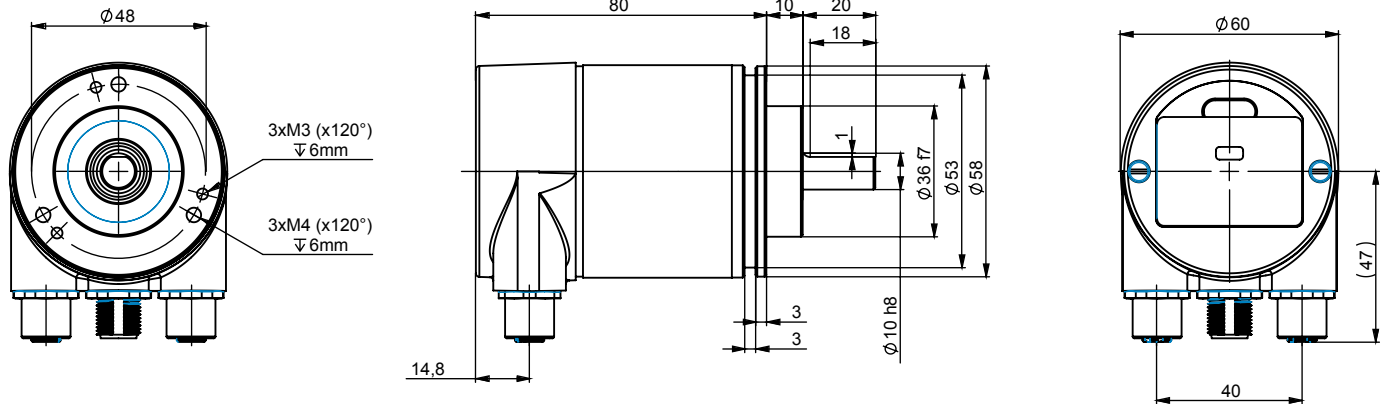




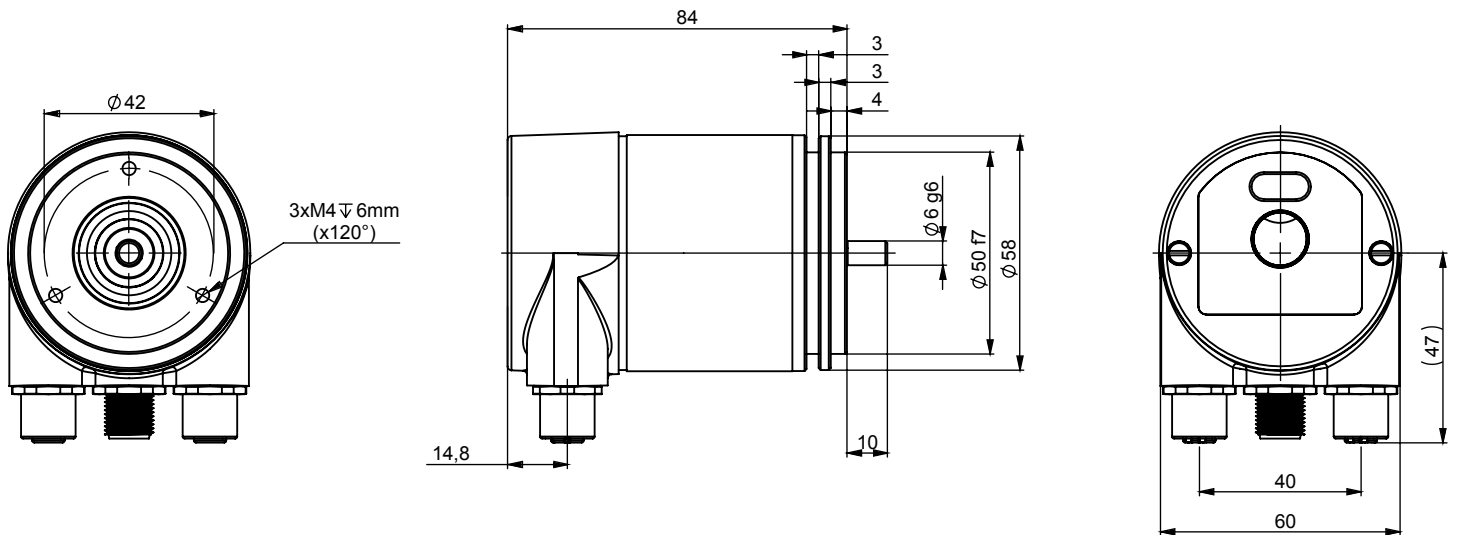
# DIMENSIONS

All dimensions are in millimeters

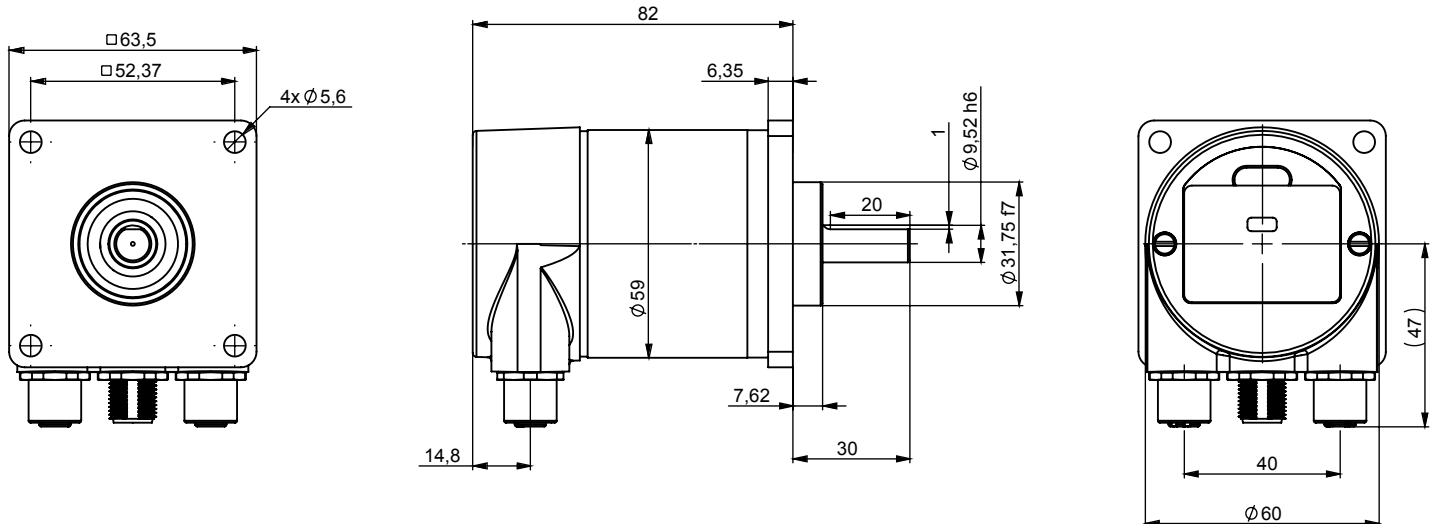
## MHM5 - 10 mm Shaft and facemount



## MHM5 - 06 mm Shaft and servomount



## MHM5 - 9.58 mm (3/8") Shaft and square flange mount





## ORDERING OPTIONS

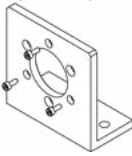

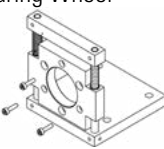

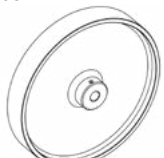
Example : **MHM5-EIB1B-1213-C100-PRM**

	<b>MHM5</b>	<b>EIB1B</b>	<b>1213</b>	<b>C100</b>	<b>PRM</b>
<b>Family</b>	58 mm diameter, Absolute Geared Multi-Turn. <b>MHM5</b> = Aluminum, Shafted Encoder <b>MXM5</b> = Stainless Steel Shafted some specifications may change, consult factory.				
<b>Electronics</b>	<b>EIB1B</b> = Profinet Note: the profinet option is now designated as EIBAB everywhere it appears. This is a global change.				
<b>Resolution</b>	<b>12 13</b> <b>12 16</b> <b>14 13</b> <b>14 16</b> First number is the turns counter Second number is the single turn resolution				
<b>Mechanics</b>	<b>MHM5</b> <b>C100</b> = Aluminum version & 10mm shaft & clamping flange & IP65 <b>S060</b> = Aluminum version & 6 mm shaft & servo flange & IP65 <b>C10S</b> = Aluminum version & 10mm shaft & clamping flange & IP67 <b>9A70</b> = Aluminum version & 9.52 mm (3/8") shaft & 2.5" (63.5mm) square flange & IP65 <b>MXM5</b> <b>C10V</b> = Stainless steel version & 10mm shaft & clamping flange & IP67				
<b>Connection</b>	<b>PRM</b> = Radial M12				



## AGENCY APPROVALS & CERTIFICATIONS



<p><b>Mounting Bracket Right Angle</b></p> 	<p>M9202 Note: for mounting aluminum version</p>
<p><b>Bellows Type Coupling</b></p> 	<p>9403/6-6 = 6mm x 6mm 9403/6-10 = 6mm x 10mm 9403/10-9 = 10mm x 10mm</p>
<p><b>Mounting Bracket Spring Loaded</b> For Use with Measuring Wheel</p> 	<p>M9212</p>
<p><b>Measuring Wheel</b> 200mm Circumference</p> 	<p>9108/10 = Smooth, Polyurethane 9109/10 = Studded, Rubber 9110/10 = Knurled, Aluminum Uses 10mm shaft diameter</p>
<p><b>Measuring Wheel</b> 500mm Circumference</p> 	<p>9101/10 = Smooth, Polyurethane 9102/10 = Studded, Rubber 9103/10 = Knurled, Aluminum Uses 10mm shaft diameter</p>

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](http://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