



## MHM5 SERIES

### ETHERNET/IP 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



## 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>8</sup>
	40 N / 80 N = 100 X 10 <sup>8</sup>
	40 N / 110 N = 55 X 10 <sup>8</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 Format</b>	Ethernet IP, CIP (Common Industrial Protocol)
<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 @ 40°C

## CONNECTION

### Ethernet Connector

4 pinouts, female, D coded

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

Encoder view

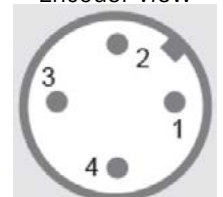


### Power Supply Connector

4 pinouts male, A coded

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

Encoder view

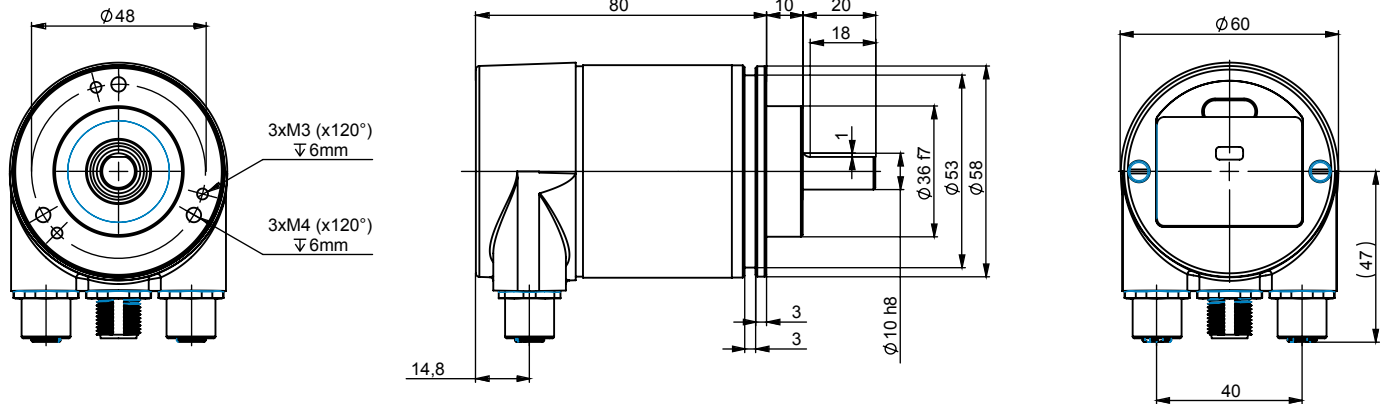




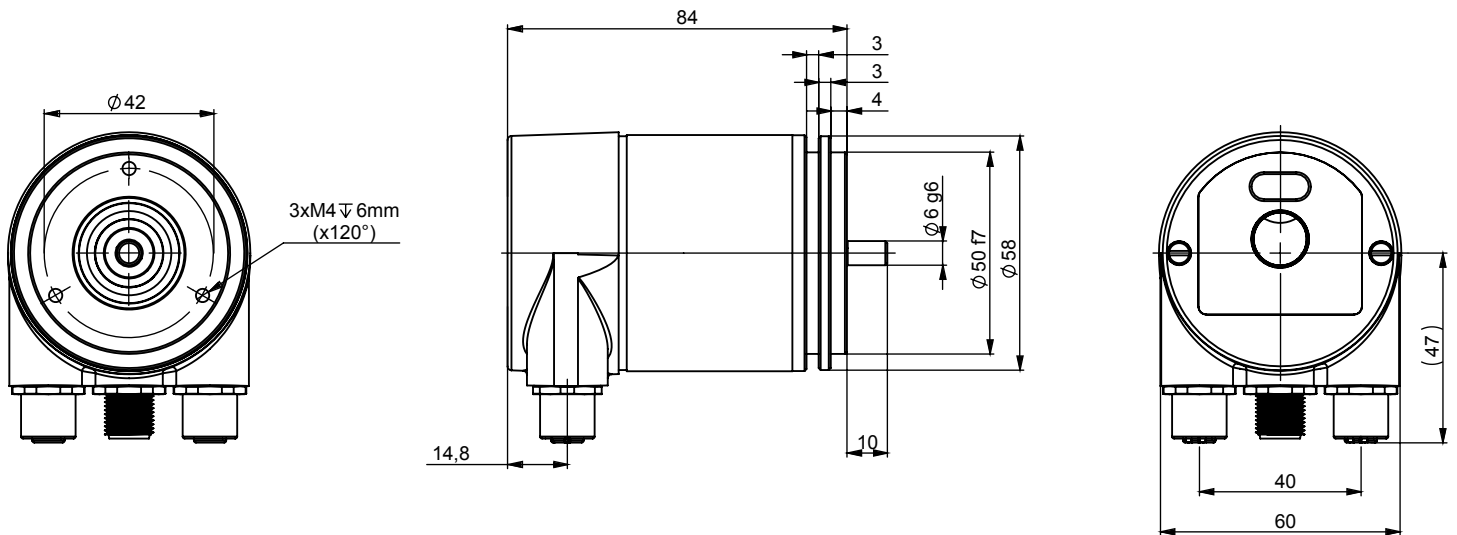
# DIMENSIONS

All dimensions are in millimeters

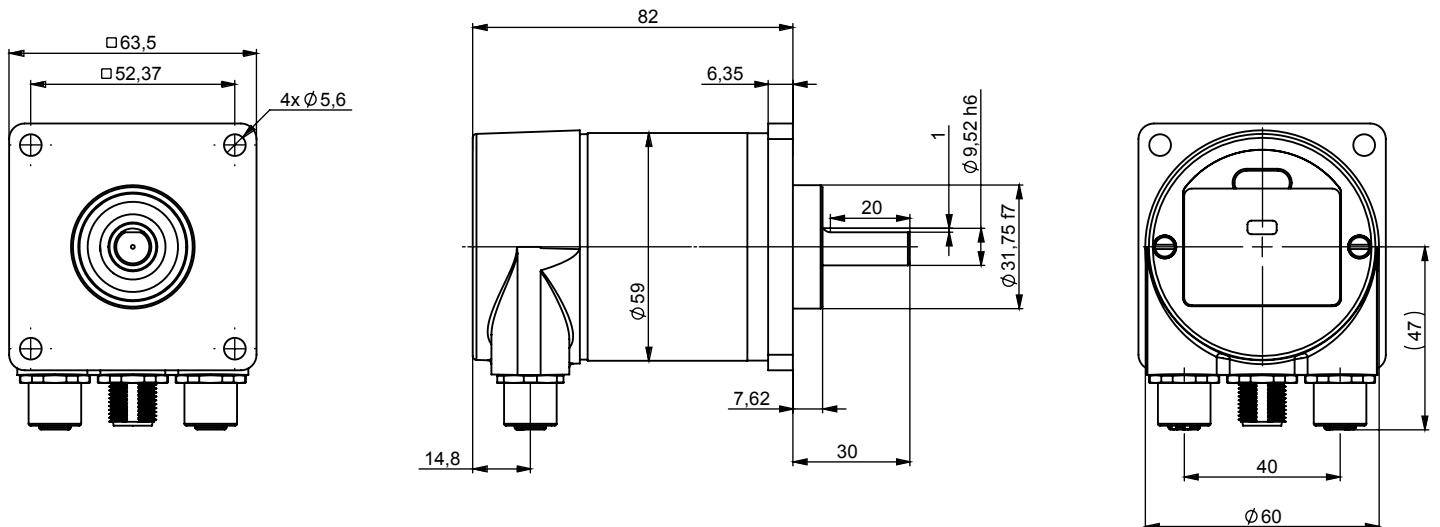
## MHM5 - 10 mm Shaft and facemount



## MHM5 - 06 mm Shaft and servomount



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





## ORDERING OPTIONS

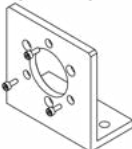

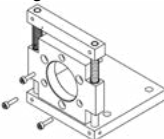


Example : MHM5-EEA1B-1213-C100-PRM

	MHM5	EEA1B	1213	C100	PRM
<b>Family</b>	58 mm diameter, Absolute Geared Multi-Turn. MHM5 = Aluminum, Shafted Encoder MXM5 = Stainless steel Shafted some specifications may change, consult factory				
<b>Electronics</b>	EEA1B = Ethernet IP				
<b>Resolution</b>	12 13 12 16 14 13 14 16 First number is the turns counter Second number is the single turn resolution				
<b>Mechanics</b>	MHM5 C100 = Aluminum version & 10mm shaft & clamping flange & IP65 S060 = Aluminum version & 6 mm shaft & servo flange & IP65 C10S = Aluminum version & 10mm shaft & clamping flange & IP67 9A70 = Aluminum version & 9.52 mm (3/8") shaft & 2.5" (63.5mm) square flange & IP65 MXM5 C10V = Stainless steel version & 10mm shaft & clamping flange & IP67				
<b>Connection</b>	PRM = 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](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

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А