



## 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

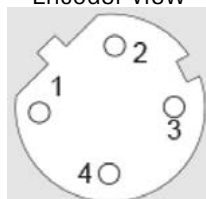
## CONNECTION

### Ethernet Connector

4 pinouts, female, D coded

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

Encoder view

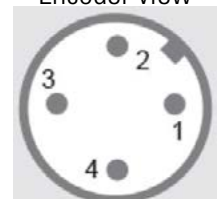


### Power Supply Connector

4 pinouts male, A coded

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

Encoder view

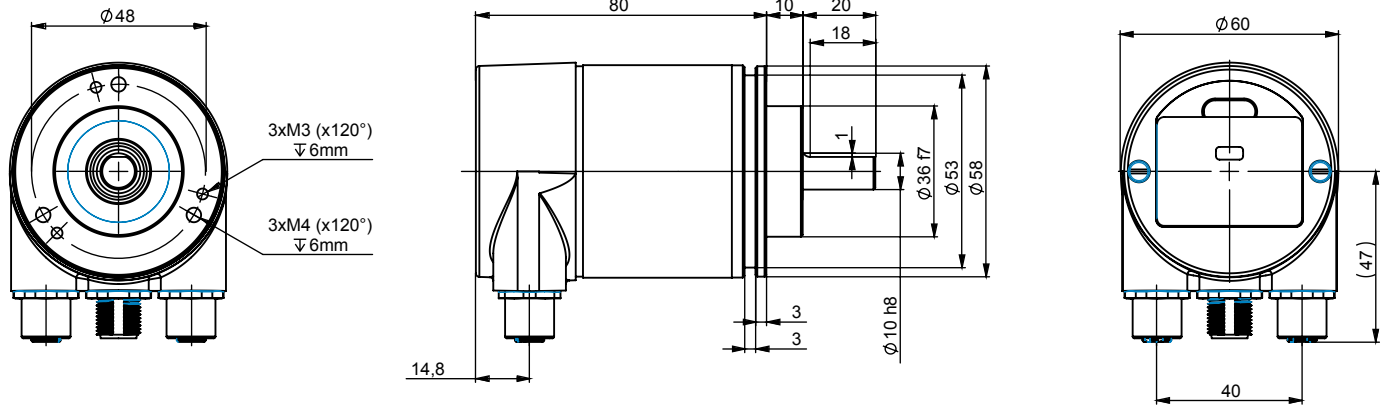




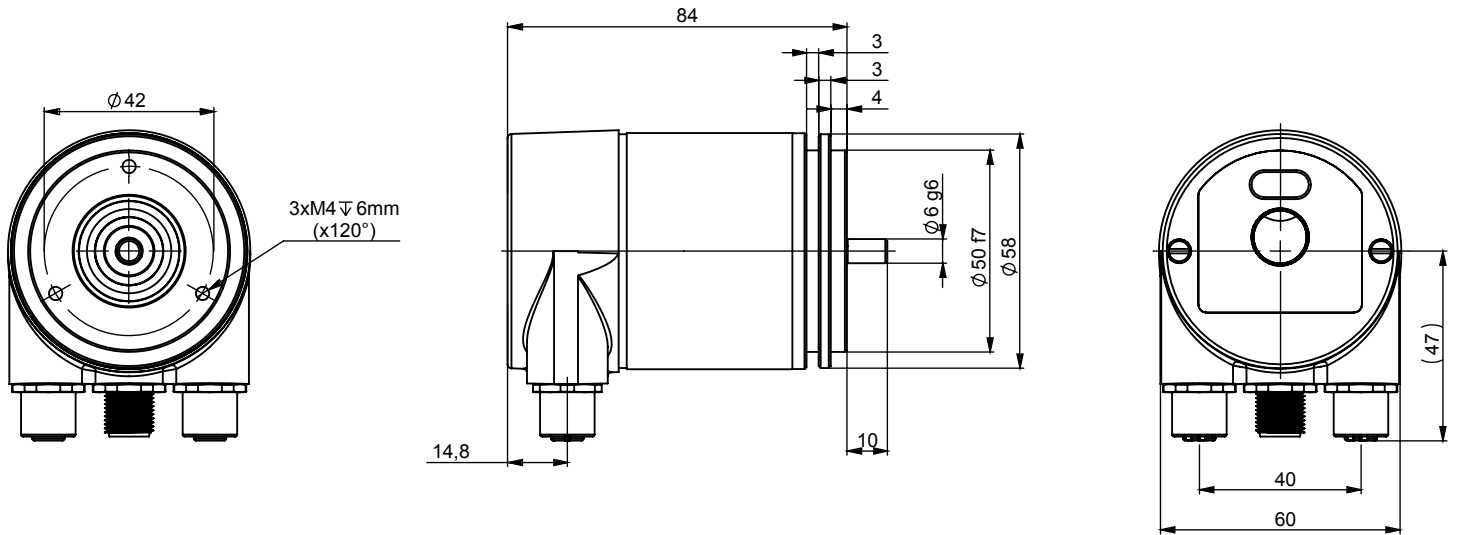
# DIMENSIONS

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

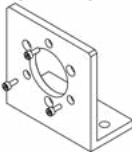

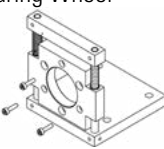


Example : MHM5-EEA1B-1213-C100-PRM

	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>

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