



## MHM510-MODB | SERIES

MODBUS/TCP ABSOLUTE MULTI-TURN ENCODERS



### MHM510-MODB, THE STANDARD Ø 58 MM ENCODER WITH MODBUS/TCP TRANSMISSION

- Compact and robust design
- Ø 10 mm shafted version
- Precision bearing with seal
- High performance at temperatures up to 60°C
- Encoder disc made of durable unbreakable material
- Mechanical count of the number of revolutions per gear
- Resolution: 13-bit = 8,192 ppr (max. 16-bit)
- Number of revolutions: 12-bit = 4,096 revolutions (max. 14-bit)
- Surge and reverse polarity protection
- Integrated SMC technology
- M12 connectors

## SPECIFICATIONS

### MECHANICAL SPECIFICATIONS

<b>Material (stainless steel option)</b>	Cover: Aluminum	<b>Vibrations (EN 60068-2-6)</b>	≤ 10 g (10 Hz...1,000 Hz)	
	Base: Aluminum			
	Shaft: Stainless steel			
<b>Maximum loads</b>	Axial: 40 N	<b>Weight (aluminum version)</b>	700 g	
	Radial: 110 N	<b>Operating temperature</b>	0...60 °C	
<b>Shaft inertia</b>	≤ 30 g.cm <sup>2</sup>	<b>Storage temperature</b>	-40...+85 °C	
		<b>Relative humidity</b>	98% non-condensing	
<b>Torque</b>	≤ 3 N.cm	<b>Degree of protection</b>	Cover: IP65	
			Base: IP64	
<b>Speed (max. continuous)</b>	6,000 rpm	<b>Theoretical mechanical life 10<sup>9</sup> revolutions (F<sub>axial</sub>/F<sub>radial</sub>)</b>		
<b>Shock resistance (EN 60068-2-27)</b>	≤ 100 g (half sine, 6 ms)	40 N/60 N	40 N/80 N	40 N/110 N
<b>Shock resistance (EN 60028-2-29)</b>	≤ 10 g (half sine, 16 ms)	25	10	4

## ELECTRICAL SPECIFICATIONS

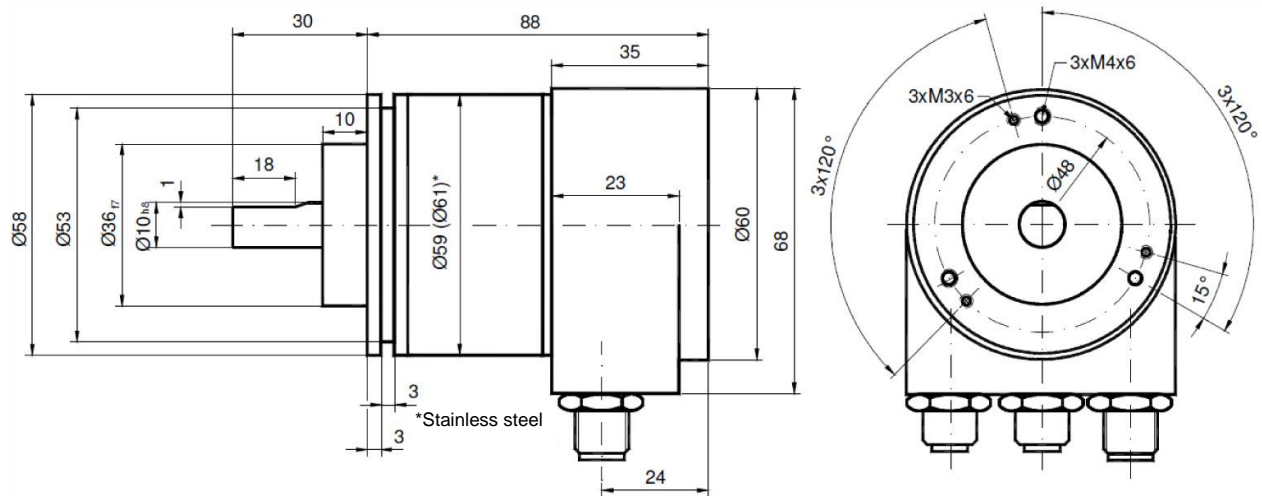
<b>Transmission</b>	10/100 Mbps	<b>Internal cycle time</b>	>1 ms (cyclic); 5 ms (change of state)
<b>IP addressing</b>	Via the master		>5 ms Modbus/TCP
<b>Power supply</b>	10 – 30 VDC	<b>Accuracy</b>	+ 1/2 LSB
<b>Consumption</b>	100 mA max. (24 VDC)	<b>EMC</b>	EN 61000-6-4, EN 61000-6-2
<b>Power</b>	4 W max.	<b>Electrical lifetime</b>	> 10 <sup>5</sup> h
<b>Frequency on the LSB</b>	800 kHz max. (valid code)		

## PROTOCOLS

<b>Modbus/TCP</b>	Data transmitted via TCP frames. For more information see manual or <a href="http://www.modbus.org">www.modbus.org</a> .
<b>IP</b>	Universal IP addressing significantly simplifies implementation of communication processes.
<b>TCP</b>	The TCP protocol ensures error-free data transmission.
<b>http</b>	With version A1, a web browser can be used for reading, configuring, and diagnosing the encoder.
<b>smtp</b>	With version A1, encoder messages can be transmitted by email via the SMTP protocol.

## DIMENSIONS

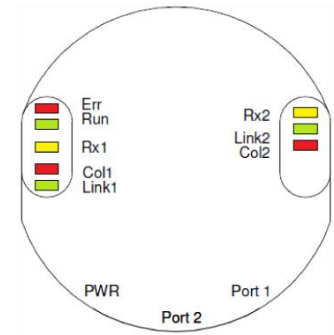
MHM510-MODB — M12 connectors



## DIAGNOSTICS VIA LEDS

LED	Color	Description of LED on
Rx1	Yellow	Inbound and outbound traffic – port 1
Link 1*	Green	Connected to another Ethernet component – port 1
Collision 1*	Red	Ethernet collision - port 1
Rx2+	Yellow	Inbound and outbound traffic – port 2
Link 2*	Green	Connected to another Ethernet component – port 2
Collision 2*	Red	Ethernet collision - port 2
Error*	Red	-
Run*	Green	-

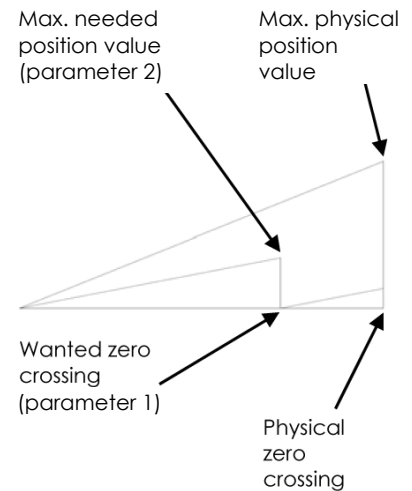
\* Not available



## PROGRAMMABLE SETTINGS

The encoder is capable of providing three different types of data: position, speed, and time stamp. The following parameters can be set:

<b>Used scope of physical resolution (parameter 1)</b>	Specifies the part of the physical resolution used. For example, if 16,384 is set for an encoder with a resolution of 8,192 pulses per revolution, the encoder will count 8,192 steps per revolution (if "total scaled value" is set to the same value as "used scope of physical resolution") and start again at 0 after 2 revolutions. If this value is not set to a multiple of the physical resolution, the encoder value will change to zero when the physical zero point is crossed.
<b>Total scaled value (parameter 2)</b>	Specifies the scaled resolution used over the range defined by "used scope of physical resolution". For example, if the encoder is set as described above and "total scaled value" is set to 10, the encoder will count 10 steps over the physical steps of the "used scope physical resolution", i.e. 5 steps per revolution.
<b>Direction of code change</b>	Used to set whether the code increases with a clockwise turn and decreases with a counterclockwise turn, or vice versa.
<b>Preset: Reset to value (X)</b>	The preset value represents the desired position value at any position on the axis. This parameter is used to set the desired value at the desired location.
<b>Offset value</b>	This parameter is used to directly change the offset value calculated and defined by the preset function.



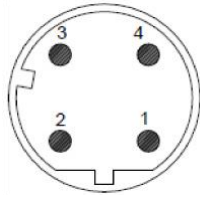
## INTERFACE

### Ethernet Modbus/TCP

4-pin female, D-coded

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

Encoder view

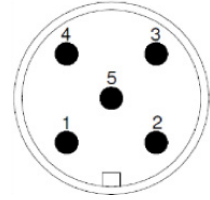


### Power supply

5-pin male, A-coded

Pin	Signal
1	VS (10-30 VDC)
2	VS (10-30 VDC)
3	0 V
4	0 V
5	PE

Encoder view



## REFERENCE

(Special versions available on request, e.g. special flange/electronics/connections, etc.)

MHK5	EM	00	B	12	13	C	100	0	PRM
Absolute multi-turn encoder	Modbus/TCP	Version	Code: Binary	Number of revolutions: $2^{12}$ (4,096)	Resolution in the revolution: $2^{13}$ (8,192)	Standard flange	Shaft diameter: 10 mm	Without mechanical option	M12 connector

Made in France

Page 4

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