



ETHERNET/MFC 010 **Technical Datasheet**

EtherNet/IP™ interface box in combination with MFC 010

- Seamless integration into EtherNet/IP™ environments
- Integrated web server for easy configuration, maintenance and diagnostics
- 2-port Ethernet switch enabling flexible network topologies

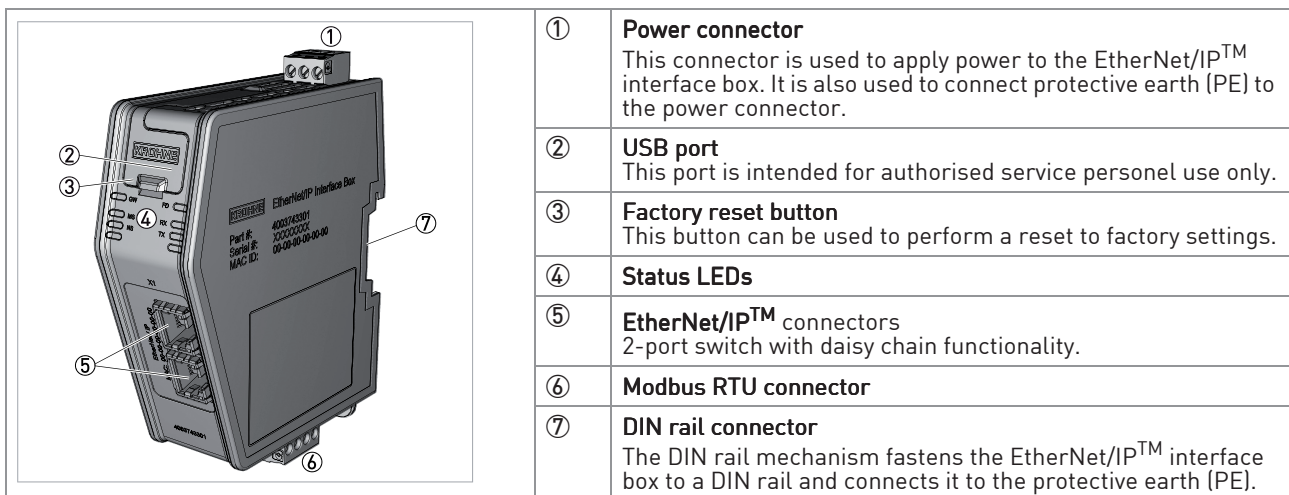
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1.1 Seamless EtherNet/IP™ integration for Coriolis mass flowmeters

The EtherNet/IP™ interface box is used to provide a seamless connection between a mass flowmeter and an EtherNet/IP™ network. The EtherNet/IP™ interface box enables the scanner of the EtherNet/IP™ network to control the field device.

No proprietary configuration software is needed. All necessary configuration can be made via the built-in web interface or engineering tool using the EDS.

EtherNet/IP™ is many times faster than most other established protocols used in process automation today. This allows unequalled fast exchange of process data and virtually instantaneous configuration of the field device.



Highlights

- Integrated switch for line and ring topology
- Support of Device Level Ring (DLR) for redundancy
- Password protected web server to facilitate configuration and diagnosis of the device
- Electronic Data Sheet (EDS) available for convenient deployment
- Add-On Instruction (AOI) available for use in Rockwell environments

Industries

- Food & Beverage

1.2 Features

The EtherNet/IP™ interface box supports the following features:

- 2 EtherNet/IP™ ports with
 - Support for Beacon-based DLR and linear network topology
 - Galvanically isolated bus electronics
 - 10/100 Mbit, full/half duplex operation
- Choice of two pre-defined sets of input data
- Modbus RTU port with configurable termination and polarisation
- Web server with field device specific user interface
 - Status information
 - Access to all parameters of the flowmeter
 - Calibration procedures
 - Settings page
 - Diagnostic information

1.3 Communication with the field device

The EtherNet/IP™ interface box communicates via Modbus RTU Protocol with the attached field device.

The following parameters can be configured:

- Modbus slave address of the field device
- Baud rate
- Parity
- Termination and polarization
- Write timeout
- Disconnect time

After power up, the EtherNet/IP™ interface box tries to connect with the field device until the connection can be established. As long as no connection is established LED FD is flashing green. If a compatible field device is connected, LED FD will switch to green. Otherwise LED FD will be flashing red.

The EtherNet/IP™ interface box can be used with the following field devices:

- OPTIMASS 1010 C
- OPTIMASS 3010 C
- OPTIMASS 7010 C
- OPTIGAS

If the connection is disturbed or interrupted longer than the specified disconnect time, the EtherNet/IP™ interface box will shut down the connection and try to reconnect.

When the baud rate, the parity or the Modbus slave address is changed and a device is connected, the change will be performed in the field device. Afterwards the connection will be re-established with the changed parameters.

1.4 Connections

1.4.1 Class 1

General details

Class 1 connections are used to transfer I/O data and can be established to instances in the assembly object. Each class 1 connection will establish two data transports - one consuming and one producing. The heartbeat instances can be used for connections that shall only access inputs. Class 1 connections use UDP transport.

- Total number of supported class 1 connections: 4
- Supported API: 2...3200 ms
- T → O connection type: Point-to-point, Multicast
- O → T connection type: Point-to-point
- Supported trigger types: Cyclic, CoS

Connection types

Exclusive-Owner connections

- Process values without configuration
- Process values with configuration
- Extended process values without configuration
- Extended process values with configuration

Input-Only connections

- Input Only
- Input Only Ext

Listen-Only connections

- Listen Only
- Listen Only Ext

1.4.2 Class 3

The EtherNet/IP™ interface also supports class 3 connections.

General details

Class 3 connections are used to establish connections towards the message router. Thereafter, the connection is used for explicit messaging. Class 3 connections use TCP transport.

- No. of simultaneous class 3 connections: 16
- Supported API: 2...10000 ms
- T → O Connection type: Point-to-point
- O → T Connection type: Point-to-point
- Supported trigger type: Application

2.1 Technical data

Measuring system

Description	<p>The EtherNet/IP™ interface box is used to provide a seamless connection between a mass flowmeter and an EtherNet/IP™ network. The EtherNet/IP™ interface box enables the scanner of the EtherNet/IP™ network to control the field device.</p> <p>No proprietary configuration software is needed. All necessary configuration can be made via the built-in web interface or engineering tool using the EDS.</p>
Network settings	DHCP: On
	Hostname: <none>
	Port 1 Ethernet link speed: Auto
	Port 2 Ethernet link speed: Auto

Operating conditions

Temperature	Operating temperature: -20...+70°C / -4...+158°F
	Storage temperature: -20...+85°C / -4...+185°F
Relative humidity	The product is designed for a relative humidity of 5% to 95% non-condensing.

Installation conditions

Mounting	The EtherNet/IP™ interface box can be physically installed by mounting it onto a DIN rail.
Dimensions	<p>L x w x h [mm]: 101 x 35 x 109.8 (without connector);</p> <p>L x w x h [inch]: 4 x 1.4 x 4.3 (without connector)</p>
Weight	144 g / 0.3 lb (with connector)

Electrical connection

Supply voltage	The EtherNet/IP™ interface box requires a 24 V [-60%/+25%] DC power source.
Power consumption	The typical power consumption is 150 mA at 24 V.
Protective earth (PE) requirements	<p>In order to achieve proper EMC behaviour, the product must be connected to protective earth (PE) via the DIN rail connector.</p> <p>If the DIN rail cannot be used, PE must be connected to the power connector. We cannot guarantee proper EMC behaviour unless these PE requirements are fulfilled.</p> <p>Note: According to the EtherNet/IP™ specification, the shield of each RJ-45 connector is not directly connected to PE. There shall however be a low impedance connection of infrastructure components, such as patch panels, to PE.</p>

2.2 Field device connector

The connector used to connect to the field device is located at the bottom of the EtherNet/IP™ interface box.

Terminal	Description
PE	PE/shield
A	RS-485 A line (+)
B	RS-485 B line (-)
GND	RS-485 signal ground

- *Proper grounding is mandatory for reliable operation of the device.*
- *Shield and signal ground shall not be interconnected.*

2.3 Power connector

Terminal	Description
+	+24 VDC
-	Supply ground
Earth symbol	PE (protective earth)

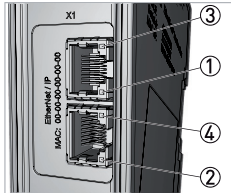
MFC 010 power supply with 12 VDC is needed!

The terminal tightening torque must be between 0.5...0.8 Nm / 5...7 lbs-in.

2.4 Ethernet connectors

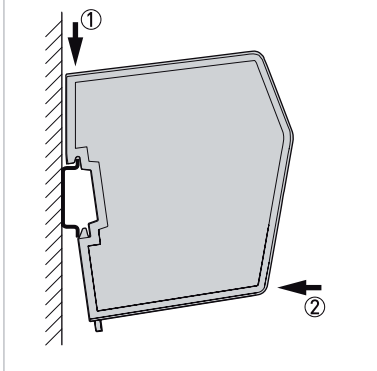
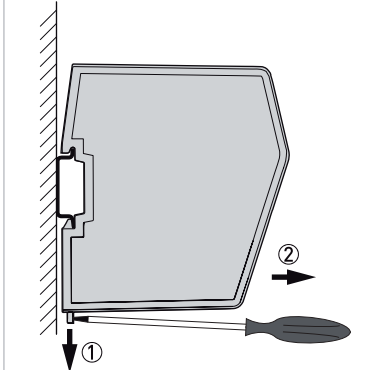
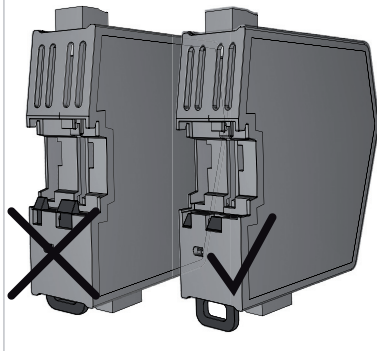
The two standard Ethernet connectors (RJ45) are marked as "X1" and are located on the front of the EtherNet/IP™ interface box.

Properly shielded cables shall be used for reliable operation of the device.

	LED	Description
	1	Not connected
	2	Not connected
	3	Link/Activity LED (port 1)
	4	Link/Activity LED (port 2)

3.1 Mounting the EtherNet/IP™ interface box

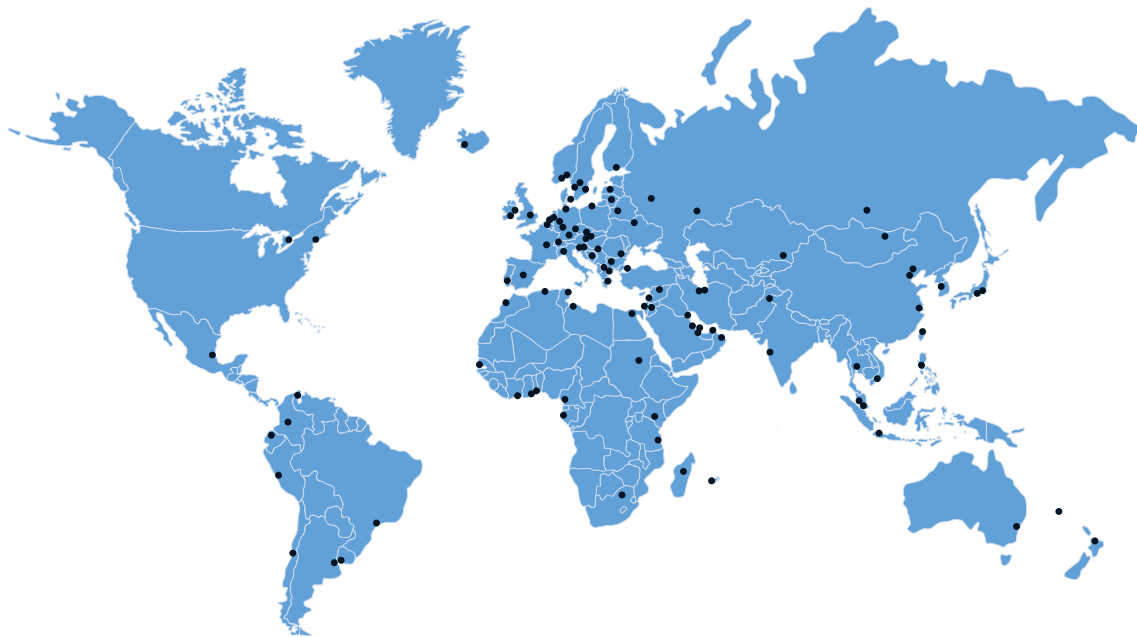
The EtherNet/IP™ interface box can be physically installed by mounting it onto a DIN rail.

	<p>DIN rail mounting</p> <p>Make sure the DIN rail fastening mechanism on the back of the module is in a fixed and closed position, i.e. pushed all the way up.</p> <p>To mount the module, first hook it on to the DIN rail (①), then push it against the DIN rail to make it snap on (②).</p>
	<p>DIN rail unmounting</p> <p>To unmount the module, a screwdriver is needed. Use the screwdriver to push the fastening bracket on the back of the module down until it locks in a fixed and open position (①).</p> <p>Then unhook the module from the DIN rail (②)</p>
	<p>Fixed and closed position</p> <p>Do not leave the module with the DIN rail fastening mechanism in a fixed and open position. This may eventually wear the fastening mechanism out so it cannot be used efficiently.</p> <p>Be sure to push the DIN rail fastening mechanism back into the fixed and closed position after unmounting the module.</p>









KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature assemblies
- Pressure transmitters
- Analysis products
- Products and systems for the oil & gas industry
- Measuring systems for the marine industry

Head Office KROHNE Messtechnik GmbH
Ludwig-Krohne-Str. 5
47058 Duisburg (Germany)
Tel.: +49 203 301 0
Fax: +49 203 301 103 89
info@krohne.com

The current list of all KROHNE contacts and addresses can be found at:
www.krohne.com

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