

# ETB IP67 I/O modules



0RLFRQETB, EtherNet/IP.



0RLFRQETB, Modbus TCP/IP.

## Presentation

**0RLFRQETB** are IP67 rated I/O modules that directly connect to the Ethernet network. 0RLFRQETB range provide:

- Direct connection to the Ethernet network with models that support:
  - Ethernet Modbus TCP/IP Protocol
  - EtherNet/IP Protocol
- Direct mounting on equipment, eliminating need for enclosures
- IP67 rated modules suited for harsh environments
- Simplified setup and diagnostics with built-in display and Integrated Web Server
- Built-in Ethernet switch with 2 ports for daisy chain connection reduce installed cost

4 types of sixteen points digital modules are available:

### ■ 16 digital Inputs:

**ETB 1EI 16E PP0** (EtherNet/IP) and **ETB 1EM 16E PP0** (Modbus TCP).

■ **12 Inputs/ 4 Outputs**, 2 A max. output current per output, 8 A max. per module.

**ETB 1EI 12E 04S PP0** (EtherNet/IP) and **ETB 1EM 12E 04S PP0** (Modbus TCP).

■ **8 Inputs / 8 Outputs**, 2 A max. output current per output, 8 A max. per module.

**ETB 1EI 08E 08S PP0** (EtherNet/IP) and **ETB 1EM 08E 08S PP0** (Modbus TCP).

■ **16 digital Inputs/Outputs, configurable: ETB 1EI 16C P00** (EtherNet/IP) and **ETB 1EM 16C P00** (Modbus TCP).

The protection level is IP67 watertight. The devices can operate under extended operating temperature: - 25°C to + 70°C

0RLFRQETB Ethernet IP67 blocks are suitable when:

- I/O Modules must or can be mounted directly on equipment and subjected to water and oil mist spray
- Field devices are located near I/O Modules, no long wire runs
- There is no space available for I/O cabinets at location
- Need to reduce the cost and time for wiring, cables vs wire
- Sensors selected are available with M12 connectors
- Ethernet has been accepted as an industrial communication network
- In applications where the operating temperature range is from -25 to +70 °C

## Simple installation

□ Installation is simple as:

- I/O mounted directly on equipment eliminate the need for enclosures.
- Quick Release Connectors allow fast connection to power, communications, and field devices.
- Connection to Ethernet Network is direct, without the need for external switches.

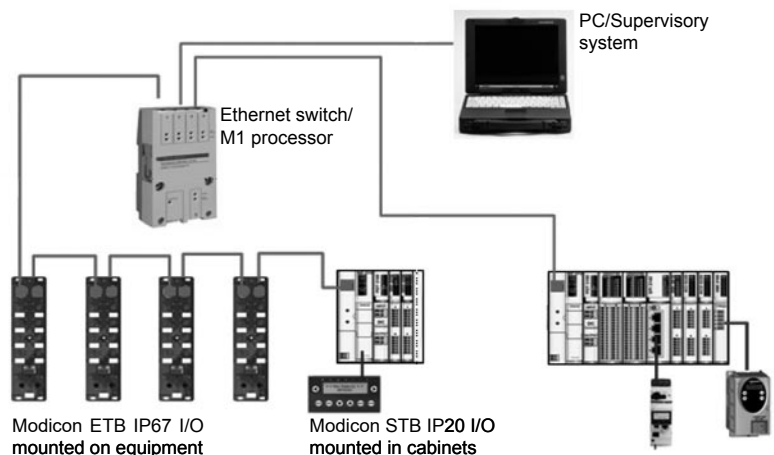
## Easy Configuration

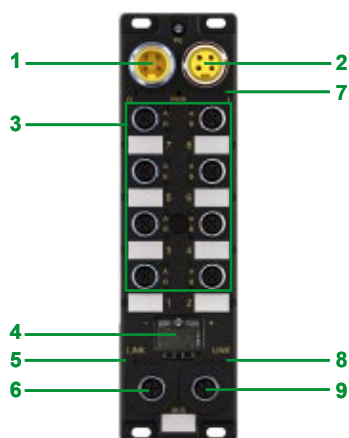
Configuration is easy thanks to:

- Built-in Ethernet switch for network connections.
- Web pages and display that simplify integration and commissioning.
- Supported Modbus functions for I/O Scanning.

## Architecture

Can be combined with Schneider Electric PLC's, sensors, and IP 20 I/O for a total control system package





## Description

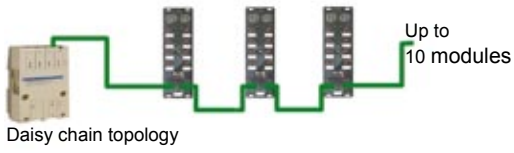
Modicon ETB IP67 I/O modules comprise:

- 1 Power connector
- 2 Power connector
- 3 8 x M12 Quick Release connectors (2 input/output points per connector)
- 4 4 character display with control buttons providing real time Ethernet and diagnostic information without additional tool (see below).
  - Shows Current IP Address
  - Displays IP Address Configuration Mode
  - Control Buttons for Setting IP Address in Static Mode
  - Displays Errors
  - Network functions are displayed (e.g. ping)
- 5 LED, network activity, in.
- 6 Network daisy chain connector, in.
- 7 LED, power indicator.
- 8 LED, network activity, out.
- 9 Network daisy chain connector, out.

## Module Diagnosis

Each Modicon ETB IP67 I/O module provides internal diagnosis thru its 4 character display:

- Output Power:** Present / Not connected.
- Module and Input Power:** Present / Not connected.
- Input / Output:** On / Off / Failed.
- Ethernet Link:** at 100MBit without activity / at 100MBit with activity / at 10MBit without activity / at 10MBit with activity



## Functions

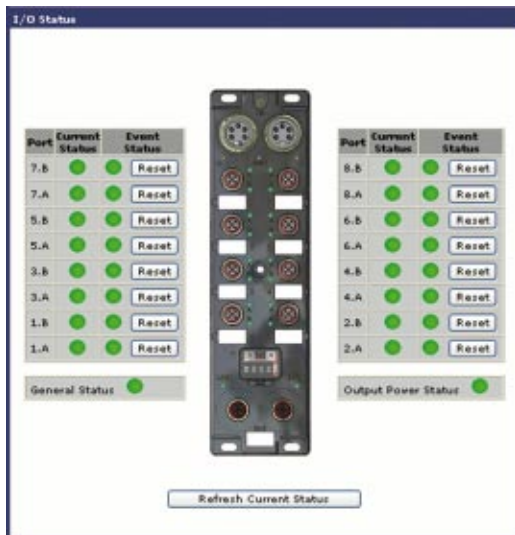
### Ethernet switch

Each Modicon ETB IP67 I/O module has a built-in 2 port unmanaged Ethernet switch with cross-over capability. This results in less costs through reduced cable length, no need for external switches.

### M12 Quick Release Connector

Installed cost are reduced with M12-Quick Release connectors that are faster and easier to connect than standard threaded M12, even when difficult to access. Snap on guarantees IP67 sealing of connections.

Standard M12-connectors can also be used on modules.



### Integrated Web Server

Integrated Web Server provides the following capabilities:

- Password Protection for Security
- Module Configuration - IP Address, Module Parameters, and WDT Error behavior
- Module Status Information
- Remote Access and Diagnosis via Web – Interface.

No additional software tool is needed for configuration and diagnosis

Characteristics of Modicon ETB IP67 I/O modules						
Type of module		ETB 1E●	16C P00	16E PP0	12E 04S PP0	08E 08S PP0
<b>Channels</b>			16			
<b>Input points</b>			1...16, configurable	16	12	8
<b>Output points</b>			1...16, configurable	–	4	8
<b>Points per connector</b>			2			
<b>Environment</b>						
<b>Protection</b>			IP67 according to IEC 60529			
<b>Operating Temperature</b>		°C	-25...70			
<b>Storage Temperature</b>		°C	-40...85			
<b>Vibration</b>			IEC 60068-2-8			
<b>Mechanical Shock</b>			10gn, 11 ms, 3 axis			
<b>MTBF</b>		Hours	100,000			
<b>Power Connectors</b>			7/8 Connectors - 5 pin for Modbus TCP/IP - 4 pin for EtherNet/IP			
<b>Ethernet Connections</b>			M12 Connectors, D coded, 4 pin			
<b>I/O Connectors</b>			M12 Connectors, 5 pin			
<b>Inputs</b>						
<b>Input Type</b>			- Contact - 3 wire PNP - NPN	- Contact - 3 wire PNP		
<b>Input Delay</b>		ms	2.5, configurable			
<b>Outputs</b>						
<b>Output Current</b>	Per output	<b>A</b>	2 max.			
	Per module		8 max.			
<b>Output Protection</b>			Electronic short circuit protection			
<b>Switching frequency</b>		Hz	200 max.			
<b>Short Circuit Current</b>		<b>A</b>	6.5 typical			
<b>Power requirements</b>						
<b>Voltage</b>	Module and inputs	<b>V</b> ∴	24			
	Outputs		13...28, 8 A max. outputs.			

# Modicon ETB IP67 I/O modules



Modicon ETB, Modbus TCP/IP models



Modicon ETB, EtherNet/IP models

## Modicon ETB I/O modules

### Modbus TCP/IP models

Description	Reference	Weight kg
16 point module, configurable as inputs or outputs	ETB 1EM 16C P00	–
16 point input module	ETB 1EM 16E PP0	–
12 point input/4 point output module	ETB 1EM 12E 04S PP0	–
8 point input/8 point output module	ETB 1EM 08E 08S PP0	–

### EtherNet/IP models

Description	Reference	Weight kg
16 point module, configurable as inputs or outputs	ETB 1EI 16C P00	–
16 point input module	ETB 1EI 16E PP0	–
12 point input/4 point output module	ETB 1EI 12E 04S PP0	–
8 point input/8 point output module	ETB 1EI 08E 08S PP0	–

## Cables and connectors

Description	Length m	Reference	Weight kg
<b>I/O cables</b>			
I/O cable, M12 connector	1	ETX SC412 M1M3 010	–
	2	ETX SC412 M1M3 020	–
	5	ETX SC412 M1M3 050	–
I/O cable, Ultra Lock connector	1	ETX SC412 U1M3 010	–
	2	ETX SC412 U1M3 020	–
	5	ETX SC412 U1M3 050	–
I/O cable, 90° Ultra Lock connector	1	ETX SC412 U2M3 010	–
	2	ETX SC412 U2M3 020	–
	5	ETX SC412 U2M3 050	–
I/O splitter cable, Ultra Lock at 1 end, 2 x M12s at other end	0.3	ETX SC413 U1M3 003	–

### Sealing plugs

Description	Sold in lots of	Reference	Weight kg
Sealing plug for M12 connectors	10	ETX SA12B	–
Sealing plug for 7/8 external thread connector	1	ETX PA78BE	–
Sealing plug for 7/8 internal thread connector	1	ETX PA78BI	–

<b>Cables and connectors (continued)</b>			
Description	Length m	Reference	Weight kg
<b>Power cables for Modbus TCP/IP models</b>			
5 pin power cable, 90° female connector, single ended	2	ETX PC511 M400 020	–
	4	ETX PC511 M400 040	–
5 pin power cable, female straight connector, single ended	4	ETX PC511 M300 040	–
5 pin power cable, female straight connectors	1	ETX PC512 M1M3 010	–
	2	ETX PC512 M1M3 020	–
	5	ETX PC512 M1M3 050	–
5 pin power cable, 90° connectors	0.6	ETX PC512 M2M4 006	–
	1	ETX PC512 M2M4 010	–
	2	ETX PC512 M2M4 020	–
<b>Power cables for EtherNet/IP models</b>			
4 pin power cable, 90° female connector, single ended	2	ETX PC411 M400 020	–
	4	ETX PC411 M400 040	–
4 pin power cable, female straight connector, single ended	4	ETX PC411 M300 040	–
4 pin power cable, straight connectors	1	ETX PC412 M1M3 010	–
	2	ETX PC412 M1M3 020	–
	5	ETX PC412 M1M3 050	–
4 pin power cable, 90° connectors	0.6	ETX PC412 M2M4 006	–
	1	ETX PC412 M2M4 010	–
	2	ETX PC412 M2M4 020	–
	5	ETX PC412 M2M4 050	–
<b>Power tees</b>			
Description		Reference	Weight kg
Auxiliary power tee, 5 pins for Modbus TCP/IP		ETX PA 513M	–
Auxiliary power tee, 4 pins for EtherNet/IP		ETX PA 413M	–
<b>Power receptacles</b>			
Description		Reference	Weight kg
Auxiliary power receptacle, 5 pins for Modbus TCP/IP		ETX PA 511M3	–
Auxiliary power receptacle, 4 pins for EtherNet/IP		ETX PA 411M3	–
<b>Field attachable power connectors</b>			
Description	Type	Reference	Weight kg
Field attachable power connector for Modbus TCP/IP	5 pin male	ETX PA5 M1	–
	5 pin female	ETX PA5 M3	–
Field attachable power connector for EtherNet/IP	4 pin male	ETX PA4 M1	–
	4 pin female	ETX PA4 M3	–
<b>Ethernet cables and accessories</b>			
<b>Ethernet cables</b>			
Description	Length m	Reference	Weight kg
Ethernet cable, 2 x M12 connectors.	0.6	TSE CL2M2M06S2	–
	1	TSE CL2M2M1S2	–
	2	TSE CL2M2M2S2	–
<b>Ethernet adapter</b>			
Description		Reference	Weight kg
Adapter RJ45 to M12 for panel mounting		ETX ADR JM12	–