



Modicon ETB, EtherNet/IP.



Modicon ETB, Modbus TCP/IP.

Presentation

Modicon ETB are IP67 rated I/O modules that directly connect to the Ethernet network. Modicon ETB 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

Modicon ETB 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.

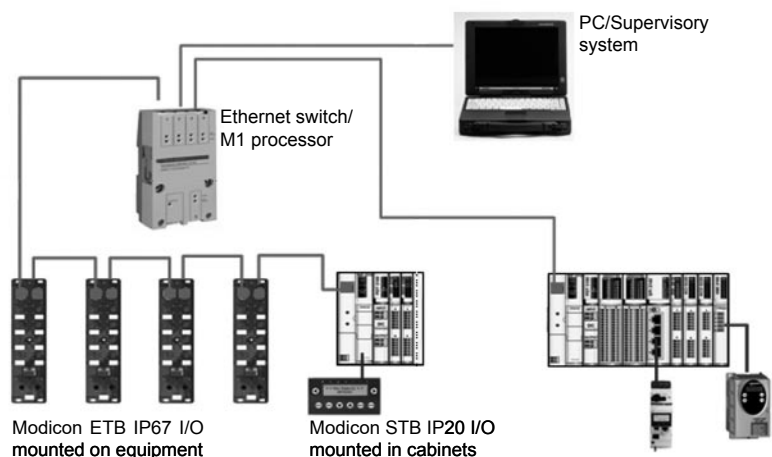
Easy Configuration

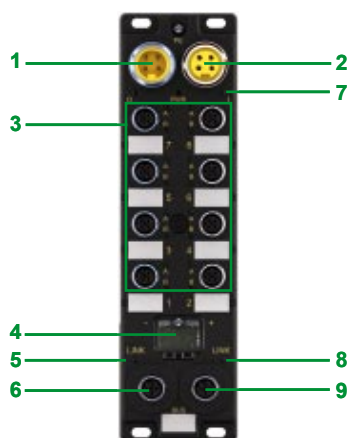
Configuration is easy thanks to:

- 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

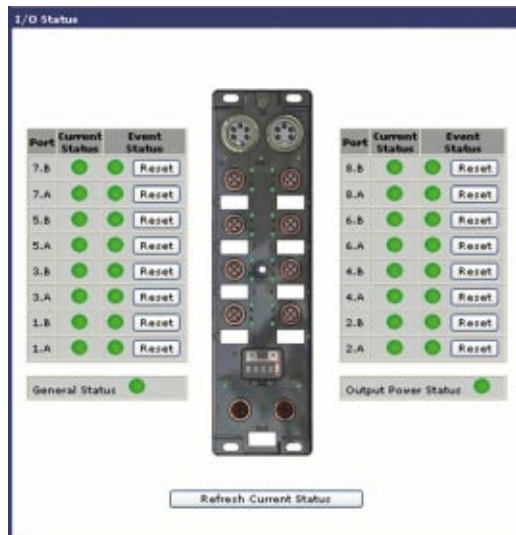
Ethernet switch

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

Cables and connectors (continued)

Description	Length m	Reference	Weight kg
Power cables for Modbus TCP/IP models			
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	—

Power cables for EtherNet/IP models

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	—

Power tees

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	—

Power receptacles

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	—

Field attachable power connectors

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	—

Ethernet cables and accessories

Ethernet cables

Description	Length m	Reference	Weight kg
Ethernet cable, 2 x M12 connectors.	0.6	TSE CL2M2M06S2	—
	1	TSE CL2M2M1S2	—
	2	TSE CL2M2M2S2	—

Ethernet adapter

Description	Reference	Weight kg
Adapter RJ45 to M12 for panel mounting	ETX ADR JM12	—