
The Tricon supports a comprehensive range of modules to meet customers' needs.

Product Specifications

The Triconex product family includes a comprehensive range of modules. This section includes: a summary of the system components and their uses, a table that lists standard products and their model numbers, and a summary of specifications for each standard product in the Tricon family

See the *Tricon Planning and Installation Guide* for complete information.

Summary of Tricon Components

Chassis

- *Main Chassis*—houses Main Processors, memory back-up batteries, communication modules and I/O modules.
- *Expansion Chassis*—for additional I/O modules up to 100 feet (30 meters) away from the Main Chassis. In restricted applications, operation up to 1,000 feet (300 meters) is supported.
- *RXM Chassis*—for I/O modules up to 7.5 miles (12 kilometers) away from the Main Chassis.
- *Mechanical Keying*—Each slot in the Tricon is mechanically keyed to correspond with a specific type of module. This prevents the installation of modules into improper slots.

For chassis mounting and enclosure specifications, see [page 25](#).

Power Supply Modules

- Provide logic power to modules in the Main, Expansion or RXM Chassis. Available in 24 VDC, 115 VAC and 230 VAC versions. The power rating of each power supply is 175 watts at 140 ° F (60° C).

Main Processors

The Main Processors execute the system diagnostics and the user-written control program.

Communication Modules

- *Tricon Communication Modules (TCM)* support a number of Triconex protocols and applications and user-written applications on Ethernet (802.3) networks, including TriStation, Modbus TCP and OPC. It also supports RS-232 and RS-485 serial communication with Modbus devices, TriStation 1131, and GPS for time synchronization.
- *Enhanced Intelligent Communication Modules (EICM)* support RS-232, RS-422 and RS-485 serial communication with Modbus devices and TriStation 1131.
- *Network Communication Modules (NCM)* support a number of Triconex protocols and applications and user-written applications on Ethernet (802.3) networks, including TriStation 1131.
- *Safety Manager Modules (SMM)* act as an interface between a Tricon controller and a Honeywell Universal Control Network (UCN), one of three principal networks of the TDC-3000 DCS.
- *Hiway Interface Modules (HIM)* act as an interface between a Tricon controller and a Honeywell TDC-3000 Hiway Gateway and Local Control Network (LCN).
- *Advanced Communication Modules (ACM)* allow a Tricon controller to interface with a Foxboro Industrial

Automation (I/A) Series DCS and TriStation 1131.

Fiber-Optic Remote Extender Modules (RXM)

For operation of Expansion Chassis up to 7.5 miles (12 kilometers) away from the Main Chassis, with exceptional immunity against electro-static and electro-magnetic interference.

Interface Modules

- *HART Analog Input Interface Modules* act as an interface between 4-20 mA analog input points from HART smart devices in the field and HART Host software running on a PC.
- *HART Analog Output Interface Modules* act as an interface between 4-20 mA analog output points from HART smart devices in the field and HART Host software running on a PC.

I/O Modules

- *Digital Input Modules* receive discrete signals of these nominal voltages: 115 VAC/VDC, 48 VAC/VDC, and 24 VAC/VDC. All voltages are available in TMR modules. Non-TMR modules are available in 24 VDC and 48 VDC only. Speed input and totalization modules are also available.
- *Supervised Digital Output Modules* produce discrete output signals of these nominal voltages, with diagnostic coverage of the field circuit and load device: 115 VAC, 120 VDC, 48 VDC, and 24 VDC.
- *Digital Output Modules* produce discrete output signals of these nominal voltages: 115 VAC, 120

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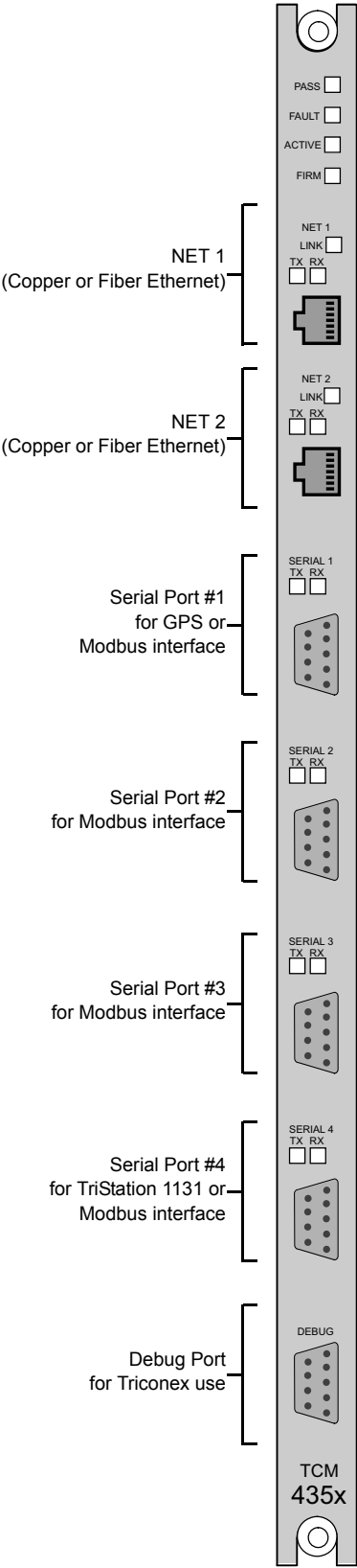
VDC, 24 VDC, and 48 VDC. Dual output modules are also available. • <i>Analog Input Modules</i> receive analog signals of these types: 0-5 VDC, -5 to +5 VDC, 0-10 VDC, and Thermocouple types J, K, T and E.	Available in both isolated and DC-coupled versions. • <i>Analog Output Modules</i> are available in these versions: eight output points at 4-20 mA; six output points at 4-20 mA and two at 20-320	mA; and four output points at -60 to 60 mA.
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Standard Tricon Products

Description	Model No.	See
Chassis Assemblies		
Main Chassis, High-Density Configuration, includes the Tricon printed manuals	8110	page 13, page 23
Expansion Chassis, High-Density Configuration	8111	page 13, page 23
Expansion Chassis, Enhanced Low-Density Configuration	8121	page 13, page 23
Remote Expansion Chassis, High-Density Configuration	8112	page 13, page 23
I/O Bus Expansion Cables (Set of 3)	9000 ¹	page 12
I/O-COMM Bus Expansion Cables (Set of 3)	9001	page 12, page 23
Blank I/O Slot Panel	8105	page 24
Power Modules		
120 VAC/VDC – 175-Watt Power Module	8310	page 26
24 VDC – 175-Watt Power Module	8311	page 26
230 VAC – 175-Watt Power Module	8312	page 26
Main Processor Modules		
3008 Main Processor, 16 megabytes DRAM	3008	page 27
Communication Hardware and Software		
Tricon Communication Module (TCM), Ethernet (802.3) and serial (RS-232/RS-485) ports	4351A, 4352A, 4351B, 4352B 4353, 4354	page 28
Enhanced Intelligent Communication Module (EICM), serial (RS-232/RS-422/RS-485) ports	4119, 4119A	page 29
Safety Manager Module (SMM), Honeywell UCN Interface	4409	page 30
Network Communication Module (NCM), Ethernet (802.3) ports	4329, 4329G	page 31
Advanced Communication Module (ACM), Foxboro I/A Series Nodebus Interface	4609	page 32
Hiway Interface Module (HIM), Honeywell Data Hiway Interface	4509	page 33
Triconex DDE Server Software	7523-2	page 63
Network Accessory Kit (Ethernet thin cable, connectors and terminators)	7600-3	n/a
Remote Extender Modules		
Primary RXM, Multi-Mode Fiber Optics, Set of 3 Modules	4200-3	page 34
Remote RXM, Multi-Mode Fiber Optics, Set of 3 Modules	4201-3	page 34
Primary SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4210-3	page 34
Remote SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4211-3	page 34
Interface Modules		
HART Analog Input Interface Module with 2071H HART Multiplexer	2770H	page 48
HART Analog Input Interface Module with 2071H HART Multiplexer and Amp-Elco Adapter Cable	2750-2H	page 48
HART Analog Output Interface Module with 2071H HART Multiplexer	2870H	page 48
HART Multiplexer	2071H	page 48

1. I/O Bus Expansion Cables are available in custom lengths. Please contact Triconex for more information.

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computers access the Tricon through other communication modules. See [“Communication Capabilities” on page 61](#) for more information.

TCM Models 4353 and 4354 have an embedded OPC server on NET 2, which allows up to 10 OPC clients to subscribe to data collected by the OPC Server. The embedded OPC Server supports the Data Access 2.05 standard and the Alarms and Events 1.10 standard.

Each TCM contains two network ports—NET 1 and NET 2. Models 4351A, 4351B, and 4353 have two copper Ethernet (802.3) ports and Models 4352A, 4352B, and 4354 have two fiber-optic Ethernet ports.

On TCM Models 4351A, 4351B, 4352A, and 4352B, NET 1 and NET 2 support the TCP/IP, Modbus TCP/IP Slave/Master, TSAA, TriStation, SNTP, and Jet Direct (for network printing) protocols. NET 1 also supports the Peer-to-Peer (UDP/IP) and

Peer-to-Peer Time Synchronization protocols.

On TCM Models 4353 and 4354, NET 2 supports only the embedded OPC server, TriStation, and SNTP protocols, while NET 1 supports all of the listed protocols except the embedded OPC server.

A single Tricon system supports a maximum of four TCMs, which must reside in two logical slots. Different TCM Models cannot be mixed in one logical slot. Each Tricon system supports a total of 32 Modbus masters or slaves—this total includes network and serial ports. The hot-spare feature is not available for the TCM, though you *can* replace a faulty TCM while the controller is online.

TCM Specifications

Model Number	4351A, 4351B, 4352A, 4352B, 4353, 4354
Serial ports	4, RS-232/RS-485 ports, DB-9 connectors
Network ports	2, 10/100BaseT Ethernet ports, RJ-45 connectors (Models 4351A, 4351B, 4353) 2, fiber-optic mode Ethernet ports, MT-RJ connectors with 62.5/125 um fiber cables (Models 4352A, 4352B, 4354)
Port isolation	500 VDC
Protocols	TriStation, Modbus, TCP/IP, ICMP, SNTP, TSAA (with support for IP Multicast), Trimble GPS, Embedded OPC Server (Models 4353 and 4354), Peer-to-Peer (UDP/IP), Peer-to-Peer Time Synchronization, Jet Direct (network printing)
Modbus functions supported	01 — Read Coil Status 02 — Read Input Status 03 — Read Holding Registers 04 — Read Input Registers 05 — Modify Coil Status 06 — Modify Register Content 07 — Read Exception Status 08 — Loopback Diagnostic Test 15 — Force Multiple Coils 16 — Preset Multiple Registers
Communication speed	Copper Ethernet ports: 10/100 Mbps (Model 4353 supports only 100 Mbps) Fiber Ethernet ports: 100 Mbps Serial ports: up to 115.2 Kbps per port
Status Indicators	PASS, FAULT, ACTIVE, FIRM LINK— 1 per network port, TX (Transmit) — 1 per port, RX (Receive) — 1 per port