
The Tricon controller 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 controller family.

See the *Planning and Installation Guide for Tricon v9-v10 Systems* for complete information.

Summary of Tricon System Components

Chassis

- *Main Chassis*—houses Main Processors, memory back-up batteries, communication modules and I/O modules.
- *Expansion Chassis*—for additional I/O modules with up to 100 feet (30 meters) total cable length between the Main Chassis and the last Expansion Chassis.
- *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 controller 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 31.

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 applications.
- *Network Communication Modules (NCM)* support a number of Triconex protocols and applications and user-written applications on Ethernet (802.3) networks, including the TriStation 1131 software.
- *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 a TriStation 1131 application.

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

Product Specifications

VDC, 24 VDC, and 48 VDC. Dual output modules are also available.

- *Analog Input Modules* 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.
- *Analog Output Modules* 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.

Conformal Coating

Most of the Tricon hardware models in the *Planning and Installation Guide for Tricon v9-v10 Systems* and the *Field Terminations Guide for Tricon v9-v10 Systems* can be ordered with conformal coating by adding the letter “C” to the end of the standard model number.

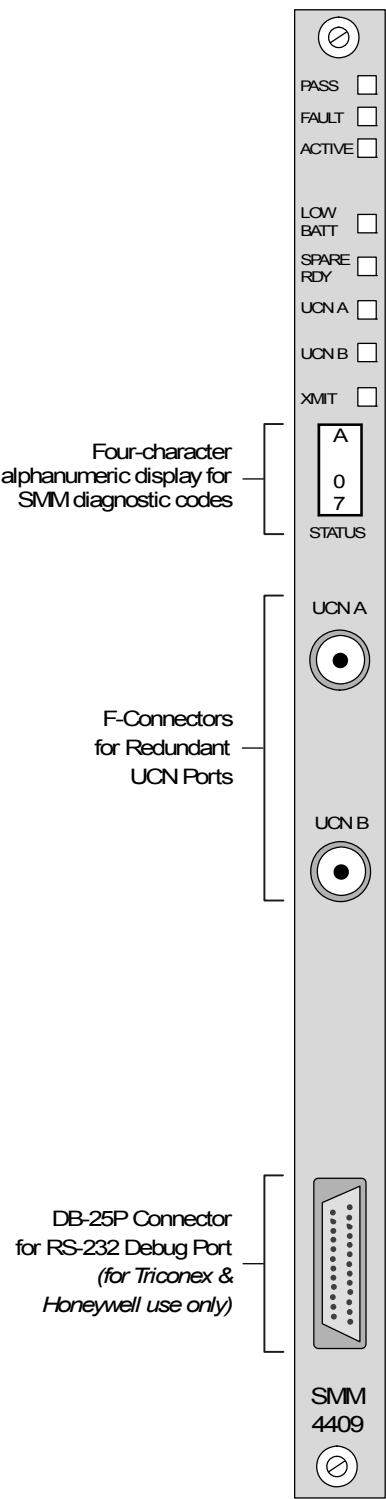
The following equipment *cannot* be ordered with conformal coating:

- Equipment certified for use in nuclear 1E applications
- All types of cables; including interface cables, I/O bus cables, and fanned-out cables

- Blank slot covers

Neoprene dust covers are provided with external termination panels and chassis that are conformal coated. You can install the dust covers on unused external termination panel connectors and unused backplane connectors, at your discretion.

Some of the Tricon hardware with conformal coating has been certified for use in marine environments. For more information, see “Tricon Equipment Certified for Use in Marine Environments” on page 21.



Safety Manager Module

The Model 4409 Safety Manager Module (SMM) acts as an interface between a Tricon controller and a Honeywell Universal Control Network (UCN), one of three principal networks of the TDC-3000 Distributed Control System. Appearing to the Honeywell system as a safety node on the UCN, the SMM communicates process information at full network data rates for use anywhere on the TDC-3000. The SMM transmits Tricon aliased data (including system variables) and diagnostic information to operator workstations in display formats that are familiar to Honeywell operators.

The SMM makes the following functions available to the TDC-3000:

- Handles critical I/O points and passes results to the DCS
- Processes Tricon controller alarms and propagates them to user-defined DCS destinations (consoles, printers, etc.)
- Reads/writes aliased data to satisfy DCS requests

- Reads Tricon controller diagnostics for display by the DCS
- Write protection to lock out changes to the Tricon controller from all TDC-3000 sources
- *Time synchronization* from the DCS master clock
- *Peer-to-Peer communication* for plants with many Tricon controllers, each containing an SMM—the DCS can use shared data to alert downstream Tricon controllers of significant process changes
- *Sequence of Events*—transmits Tricon controller event data to Universal Stations for display or History Modules for recording, to help determine the cause of plant trips and increase process up-time
- Hot-spare capability for uninterrupted communication with Honeywell networks

SMM Specifications

Model Number	4409
UCN ports	2 isolated (AC coupled)
UCN data rate	5 MBytes per second
Status indicators	PASS (Module Status) FAULT (Module Status) ACTIVE (Module Status) LOW BATT (Low Battery) SPARE RDY (Hot Spare Ready) UCN A (UCN Port A Active) UCN B (UCN Port B Active) XMIT (SMM Transmitting) STATUS (Module Node and Diagnostic Info.)
Power Module load	< 20 watts
Isolation	500 VDC