*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) s*upport 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

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

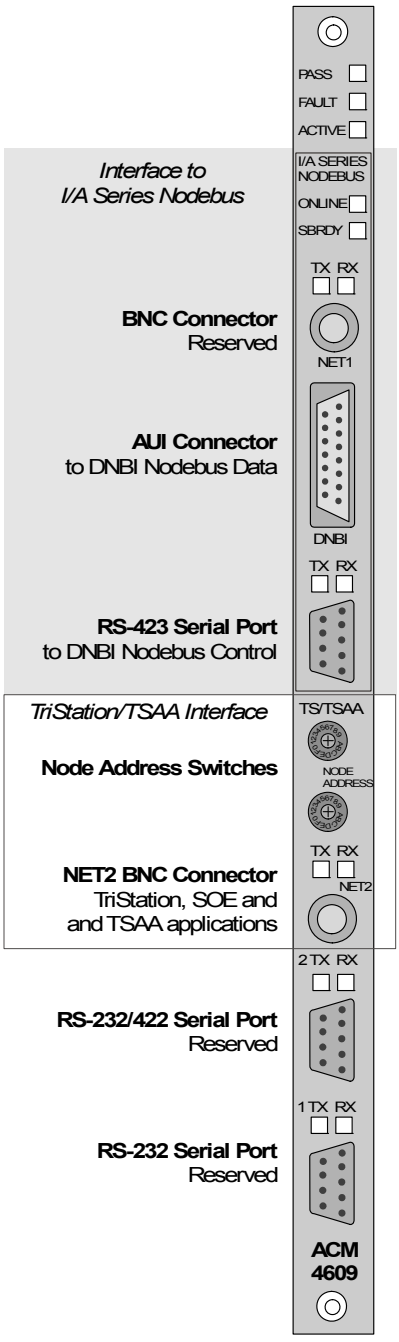
*Most* of the Tricon hardware models in the *Planning and Installation Guide for Tricon v9–v10 Systems* and the *Field Terminations Guide for Tricon v9–v10 Systems* can be ordered with conformal coating by adding the letter "C" to the end of the standard model number.

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.




## Advanced Communication Module (ACM)

The Model 4609 Advanced Communication Module (ACM) acts as an interface between a Tricon controller and a Foxboro Intelligent Automation (I/A) Series system, appearing to the Foxboro system as a safety node on the I/A Series Nodebus. The ACM communicates process information at full network data rates for use anywhere on the I/A Series system, transmitting all Tricon aliased data (including system variables and system aliases) and diagnostic information to operator workstations in display formats that are familiar to Foxboro operators. The ACM makes the following functions available to the I/A Series:

- Handles critical I/O points and passes results to the I/A Series using the Object Management Database (OMDB)
- Processes Tricon controller alarms and propagates them to user-defined I/A Series destinations (consoles, printers, and so on)
- Propagates Tricon controller alarms as I/A Series system messages
- Reads/writes aliased data to satisfy I/A Series requests
- Time synchronization from the I/A Series environment
- Reads Tricon controller diagnostics for display by the I/A Series workstation
- Write protection to lock out changes to the Tricon controller from all I/A Series sources
- Hot-spare capability for uninterrupted communication with the I/A Series Nodebus

The ACM also supports the following Triconex protocols and applications on external host PCs connected to a separate BNC port (labeled NET 2):

- TriStation protocol for the TriStation 1131 software
- TSAA protocol for Triconex applications
- TSAA/TCP (UDP/IP) for user-written applications on external hosts

### ACM Specifications

| Model Number | 4609 |
|---|---|
| Nodebus Ports | |
| BNC connector | 1 for RG58 50-ohm thin cable (reserved) |
| 15-pin D connector | 1 for AUI cable to DNBI |
| 9-pin RS-423 connector | 1 for Control Bus to DNBI |
| NET 2 port[a] | 1 BNC connector for RG58 50-ohm Thin cable to Ethernet network |
| 9-pin serial ports | RS-232/RS-485 protocol (reserved) |
| Port isolation | 500 VDC (Ethernet and RS-232 ports) |
| Communication speeds | |
| BNC and 15-pin D connectors | 10 megabits per second |
| 9-pin Nodebus connector | 2400 baud |
| Status indicators | |
| Module status | PASS, FAULT, ACTIVE |
| Nodebus/standby activity | ONLINE and SBRDY |
| Port activity | TX and RX—1 each per port |
| Power Module load | 20 watts |

a. The address for this port is set by the TS/TSAA Node Addresses switches.