

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

TRICONEX

4329

NETWORK COMMUNICATION MODULE

Used with the applicable Triconex safety system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Tricon Technical Product Guide

Network Communication Module

With a Model 4329 Network Communication Module (NCM) installed, the Tricon controller can communicate with other Tricon controllers and with external hosts over Ethernet (802.3) networks. The NCM supports a number of Triconex proprietary protocols and applications as well as user-written applications, including those that use the TSAA protocol.

The NCMG module has the same functionality as the NCM, as well as the ability to synchronize time based on a GPS system. For more information, see the *Communication Guide for Tricon Systems*.

The NCM provides two BNC connectors as ports: NET 1 supports Peer-to-Peer and Time Synchronization protocols for safety networks comprised of Tricon controllers only. NET 2 supports open networking to external systems using Triconex applications such as the TriStation 1131

software, SOE, OPC Server, and DDE Server or user-written applications. See “Communication Capabilities” on page 67 for more information about Triconex protocols and applications.

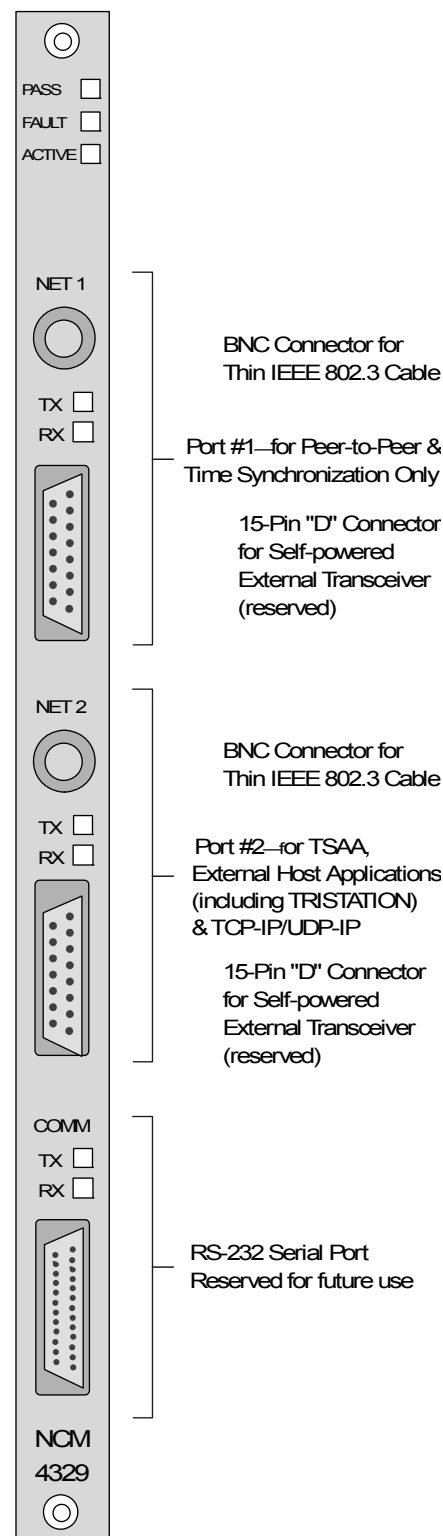
Two NCMs can reside in one logical slot of the Tricon chassis, but they function independently, not as hot-spare modules. External hosts can read or write data only to Tricon variables to which Alias numbers have been assigned. (See “Enhanced Intelligent Communication Module” on page 35 for more information about Aliases.)

The NCM is compatible with Ethernet (IEEE 802.3 electrical interface) and operates at 10 megabits per second. The NCM connects with external host computers by means of coaxial cable (RG58) at typical distances up to 607 feet (185 meters). Distances up to 2.5 miles (4,000 meters) are possible using repeaters and standard (thick-net or fiber-optic) cabling.

The Main Processors typically refresh data on the NCM once per scan.

NCM Specifications

Model Number	4329, 4329G
Ethernet (802.3) ports	2, BNC connectors, RG58 50-ohm thin cable
External Transceiver Ports	2, 15-pin D-connectors
Serial port	1, RS-232 compatible
Port Isolation	500 VDC
Protocol	TSAA (TCP(UDP)/IP/802.3)
Functions supported	TRICON_DATA (Frame Type 1) TRICON_DATA_REQ (Frame Type 2) WRITE_TRICON_DATA (Frame Type 3) WRITE_TRICON_DATA_RSP (Frame Type 4) READ_TRICON_CLOCK (Frame Type 5) READ_TRICON_CLOCK_RSP (Frame Type 6) SET_TRICON_CLOCK (Frame Type 7) SET_TRICON_CLOCK_RSP (Frame Type 8) READ_TRICON_DATA (Frame Type 11) READ_TRICON_RSP (Frame Type 12)
Communication speed	10 megabits per second (for Ethernet ports)
Status indicators	PASS, FAULT, ACTIVE TX (Transmit) — 1 per port RX (Receive) — 1 per port



Standard Tricon System Products

Description	Model No.	See
Chassis Assemblies		
Main Chassis, High-Density Configuration, includes the Tricon printed manuals	8110	page 13, page 29
Expansion Chassis, High-Density Configuration	8111	page 13, page 29
Expansion Chassis, Enhanced Low-Density Configuration	8121	page 13, page 29
Remote Expansion Chassis, High-Density Configuration	8112	page 13, page 29
I/O Bus Expansion Cables (Set of 3)	9000 ^a	page 12
I/O-COMM Bus Expansion Cables (Set of 3)	9001	page 12, page 29
Blank I/O Slot Panel	8105	page 30
Power Modules		
120 VAC/VDC – 175-Watt Power Module	8310	page 32
24 VDC – 175-Watt Power Module	8311	page 32
230 VAC – 175-Watt Power Module	8312	page 32
Main Processor Modules		
3008 Main Processor, 16 megabytes DRAM	3008	page 33
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 34
Enhanced Intelligent Communication Module (EICM), serial (RS-232/RS-422/RS-485) ports	4119, 4119A	page 35
Safety Manager Module (SMM), Honeywell UCN Interface	4409	page 36
Network Communication Module (NCM), Ethernet (802.3) ports	4329, 4329G	page 37
Advanced Communication Module (ACM), Foxboro I/A Series Nodebus Interface	4609	page 38
Hiway Interface Module (HIM), Honeywell Data Hiway Interface	4509	page 39
Triconex DDE Server Software	Contact Invensys	page 69
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 40
Remote RXM, Multi-Mode Fiber Optics, Set of 3 Modules	4201-3	page 40
Primary SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4210-3	page 40
Remote SRXM, Single-Mode Fiber Optics, Set of 3 Modules	4211-3	page 40
Interface Modules		
HART Analog Input Interface Module with 2071H HART Multiplexer	2770H	page 54
HART Analog Input Interface Module with 2071H HART Multiplexer and Amp-Elco Adapter Cable	2750-2H	page 54
HART Analog Output Interface Module with 2071H HART Multiplexer	2870H	page 54
HART Multiplexer	2071H	page 54
TriStation 1131 and Diagnostic Software		
TriStation 1131 v4.x Software License with printed manuals	Contact Invensys	page 71
Enhanced Diagnostic Monitor v2.x	Contact Invensys	page 72

General Environmental and EMC Specifications

Other than the optional conformal coating of all PCB assemblies, the Tricon controller is not explicitly protected against dust or falling debris. Atmospheric and airborne-particle protection must be provided by housing the Tricon controller in an appropriate NEMA-rated enclosure.

Operating Temperature	32° to 140° F (0° to 60° C), ambient, as measured at the bottom of the chassis, per IEC 60068-2-1 Test Nb
Storage Temperature	-40° to 167° F (-40° to 75° C), per IEC 60068-2-14, Test Na
Relative Humidity	5% to 95%, non-condensing, per IEC 60068-2-2, Test Bb, and IEC 60068-2-3 test Db
Corrosive Environment	Class G3 Level as defined in ISA Standard S71.04, based on exposure testing according to EIA Standard 364-65A, Class IIIA
Sinusoidal Vibrations per Axis	2 G @ 10 to 150 Hz, per IEC 60068-2-6, Test Fc
Shock	15 G for 6-11 ms in each axis, per IEC 60068-2-27
Electrostatic Discharge	IEC 61000-4-2, 8 kV air, 4 kV contact
Conducted Susceptibility	IEC 61000-4-4, Fast Transient/Burst, 2 kV power, 1 kV signal lines and IEC 61000-4-5, Surge Withstand, 2 kV CM AC power lines, etc. IEC 61000-4-6, RFI, 0.15-80 MHz, 10V
Radiated Susceptibility	IEC 61000-4-3, 26-1000 MHz, 10 V/m and IEC 61000-4-8, 50-60 Hz, 30 A/m
Conducted Emissions	CISPR 16, Class A, 0.15-30 MHz, 73-79 db when installed per the guidelines of the <i>P&I Guide</i>
Radiated Emissions	CISPR 11, Class A, 30-1000 MHz @ 10 m, 4-47 db when installed per the guidelines of the <i>P&I Guide</i>
Cable Flame Test Rating ^a	Interface cables (connect external termination panels to I/O modules): FT4 Vertical Flame Test-Cables in Cable Trays per C.S.A. C22.2 No. 0.3-92 Para 4.11.4 ^b I/O bus cables (connect chassis): FT6 Horizontal Flame & Smoke Test-per C.S.A. C22.2 No. 0.3-92 Appendix B ^c

a. Applies to cables shipped after April 1, 2009.

b. Cables will be marked with FT4 or CMG rating, but they all actually meet the more stringent FT4 rating.

c. Cables will be marked with FT6 or CMR rating, but they all actually meet the more stringent FT6 rating.