

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

TRICONEX

8100-8

VERSION 8 MAIN CHASSIS

Used with the applicable Triconex safety system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Tricon Technical Product Guide

Chassis Options

A Tricon system is made up of one or more chassis assemblies which contain I/O and communication modules. The first chassis of a system is called the Main Chassis (Model 8110). To enlarge a system, Expansion Chassis (Model 8111 or 8121) and/or RXM Chassis (Model 8112) can be added. (See “System Configuration” on page 11 for details.)

I/O Expansion Bus

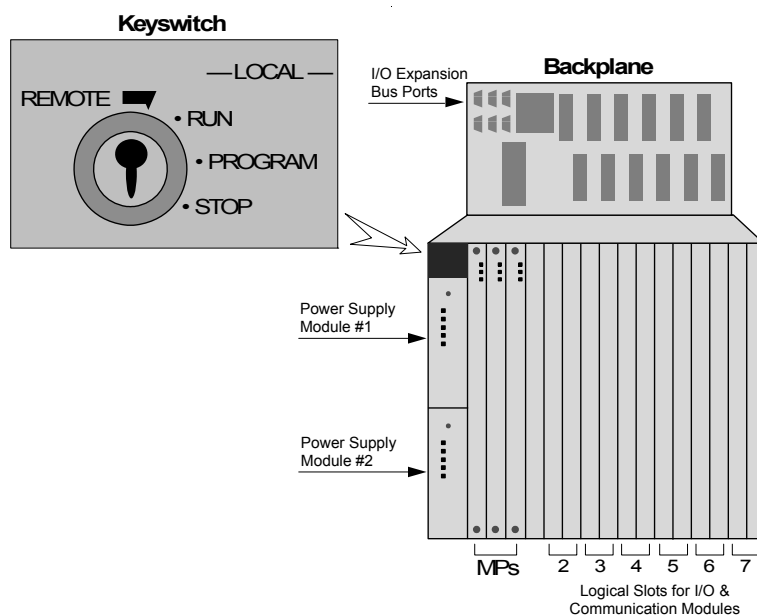
Each chassis has six RS-485 I/O expansion bus ports at the top left corner of the backplane. There are two sets of ports for channels A, B, and C, providing for two triplicated serial communications paths between chassis. One set of cables is required for each Expansion Chassis and for the RXM Chassis which houses the primary RXM Module set. The standard length of a cable set (Model 9000) is 6 feet—longer cables are available if needed.

The triplicated I/O bus transfers data between the I/O modules and the Main Processors at 375 kilobits per second. The communication bus runs between the Main Processors and the communication modules at 2 megabits per second.

Mechanical Specifications

These specifications apply to Main, Expansion, and RXM Chassis; Power Supply Modules; and other modules where indicated.

Overall Dimensions	19 in wide by 22.75 in high by 17.75 in deep (48.3 cm by 57.8 cm by 45.1 cm)
Chassis Fabrication	Black zinc-plated and welded cold-rolled steel
Approximate Weights	
Main or Expansion Chassis	54.0 lbs. (24.5 kg.)
Power Module	7.2 lbs. (3.3 kg.)
Main Processor	4.7 lbs. (2.1 kg.)
I/O Module	4.7 to 6.0 lbs. (2.1 kg. to 2.7 kg.)
HART Interface Module	4.8 lbs. (2.2 kg.)
Communication Module	5.0 lbs. (2.3 kg.)
16-point Termination Panel	.09 lbs. (.04 kg.)
32-point Termination Panel	2.1 lbs. (.95 kg.)



Keyswitch for System Control

The Main Chassis has a four-position keyswitch which controls all the chassis in the system. The keyswitch setting is readable by Tricon controllers, TriStation 1131 software, and the control programs. Switch settings are:

RUN—Normal operation with read-only capability. The Main Processors execute the previously-loaded control

program. Attempts to modify program variables by a TriStation 1131 application, Modbus masters, or external hosts are rejected. However, a control program may call gated access functions to enable external host writes during a designated window of time.

PROGRAM—For program loading and checkout. Allows control of the Tricon system from the TriStation 1131 platform, including Download All and Download Changes. Also allows writes to program variables by external hosts.

STOP—Stops reading inputs, forces non-retentive digital and analog outputs to 0, and halts the control program. (Retentive outputs retain the value they had before the keyswitch was turned to Stop.) The Stop setting can be used for installation and service of process-related equipment, *but is not required for service of the Tricon controller.*

REMOTE—Allows writes to program variables by TriStation 1131 application and external hosts. (Download All and Download Changes by the TriStation 1131 software are not allowed.) Modification of program logic is not allowed.

Product Specifications

HART Interface Modules

Highway Addressable Remote Transducer (HART) is an industry standard field bus protocol that superimposes a Frequency Key Shifted (FSK) signal onto the 4-20 mA loop. The Tricon Model 2071H HART Multiplexer Module that is incorporated into each of the HART Interface Modules capacitively couples the HART signal to the AI or AO signals. The HART signals are approximately ± 0.5 mA at 1,200

and 2,200 Hz. These frequencies are high enough that the low-bandwidth loop is unaffected and the HART electronics can impose and extract the HART signals easily.

HART communication through the HART multiplexer is separate from the Tricon system and is certified not to interfere with the 4-20 mA safety signals of the Analog Input and Analog Output Modules.

Only Tricon v10.4.x and later systems can use HART Interface Modules; earlier Tricon systems must upgrade to Tricon v10.4.x. The chassis requirements for using HART Interface Modules in a system upgraded to Tricon v10.4.x differ depending on the original system version, as described in the Tricon Chassis Usage for HART Communication table.

HART Interface Module Specifications

Model Number	2770H	2870H
Type	HART Analog Input Interface	HART Analog Output Interface
Compatible Modules	3700A, 3721	3805E, 3805H
Number of signals	32 input	8 output
Input/Output type	4-20 mA, 0-5 VDC input	4-20 mA, 0-5 VDC output
HART MUX module	2071H (includes the Triconex 4850 HART Multiplexer)	2071H (includes the Triconex 4850 HART Multiplexer)
Status indicator: HART MUX module	PWR, FAULT, HOST, HART	PWR, FAULT, HOST, HART
HART protocol	HART Field Communication Protocol, Revision 5.0–7.0	HART Field Communication Protocol, Revision 5.0–7.0
Logic power	< 5 Watts	< 5 Watts

Tricon Chassis Usage for HART Communication

If Your Original System Version is...	Upgrade to...	Install HART Interface Modules in Chassis...
Tricon v10.4.x or later (High-Density)	n/a	Model 8121 Enhanced Low-Density Expansion Chassis
Tricon v10.0.x – 10.3.x (High-Density)	Tricon v10.4.x	Model 8121 Enhanced Low-Density Expansion Chassis
Tricon v9.x (High-Density)	Tricon v10.4.x	Model 8121 Enhanced Low-Density Expansion Chassis
Tricon v6.x – v10.x (Low-Density)	Tricon v10.4.x	- Model 8100-x Main Chassis - Model 8101 Low-Density Expansion Chassis - Model 8102 Low-Density RXM Chassis - Model 8121 Enhanced Low-Density Expansion Chassis

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