



8120E

Enhanced Performance Main Chassis

Product scope

- Accepts two power modules, three main processors and two chassis batteries.
- Runs the TriBus at 1000 Mbps when fitted with 3009 main processors.
- Provides five logical I/O slots plus dedicated COM1 and COM2 positions.

Manufacturer source

Tricon v9–v11 Systems Planning and Installation Guide 9700077-019.

This web-optimized copy retains only product-relevant manufacturer information.

Request a fast quote	Product reference	
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8120E verified technical reference

Enhanced Performance Main Chassis

Exact product identity

Triconex 8120E is the enhanced-performance Tricon v11 main chassis with 1000 Mbps TriBus operation for 3009 processors, UCM support and five logical I/O slots.

Manufacturer	Triconex
Model	8120E
Product family	Tricon v11 Enhanced Performance Chassis
Product type	High-Density Main Chassis
Chassis type	Enhanced Performance Main Chassis
Compatible system	Tricon v11.x
Power modules	2
Main processors	3
Batteries	2
COM1	1 module position
COM2	2 module positions
Logical I/O/communication slots	5
TriBus speed	1000 Mbps with 3009 MPs
Designed main processor	3009
UCM location	COM2 only
Conformal coating	Standard

Manufacturer source

Tricon v9–v11 Systems Planning and Installation Guide 9700077-019.

Only facts that can be matched to the exact ordering code are included in this product reference.

Cable Flame Test Ratings

All standard Triconex interface cables and I/O bus cables shipped after April 1, 2009 meet flame test ratings as described in this table.

Cable	Rating
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 ^a
I/O bus cables (connect chassis)	FT6 Horizontal Flame & Smoke Test-per C.S.A. C22.2 No. 0.3-92 Appendix B ^b

- Cables will be marked with FT4 or CMG rating, but they all actually meet the more stringent FT4 rating.
- Cables will be marked with FT6 or CMR rating, but they all actually meet the more stringent FT6 rating.

Ground Systems

The Tricon controller includes three separate ground systems:

- Protective earth $\oplus$ — an AC safety or chassis ground
- Signal or instrument ground $\oplus$ — a functional earth
- Shield ground $\oplus$ — a functional earth

The digital and analog portions of each module use separate and isolated signal return paths which are connected together to form the Tricon controller signal ground. The chassis ground (sheet metal) of the Tricon controller acts as an electrostatic shield for the digital and analog circuitry. (All communication cable shields are terminated to the chassis ground.)

For installation procedures, see [Controller Grounding](#) on page 264.

Conformal Coating

Most of the Tricon hardware models in the *Planning and Installation Guide for Tricon v9-v11 Systems* and the *Field Terminations Guide for Tricon v9-v11 Systems* can be ordered with conformal coating by adding the letter “C” to the end of the standard model number. Note that the Model 3009 MP, the Model 4610 UCM, and the Model 8120E Enhanced Performance Main Chassis always have conformal coating.

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

Planning and Installation Guide for Tricon v9-v11 Systems

Main Chassis

This section describes the Main Chassis available for use with Tricon v9-v11 systems. For installation information, see [Chassis and Module Installation](#) on page 230.

Table 7 Main Chassis

Model ^a	Description	Compatible System Versions
8110	Main Chassis	9.0-11.x
8120E	Enhanced Performance Main Chassis	11.x

a. The Model 8100-1 Low-Density Main Chassis is also available for use with Tricon v9-v11 systems.

Model 8110 Main Chassis

A Tricon Model 8110 Main Chassis accepts two Power Modules, three Main Processors, two batteries, one communication (COM) slot with no hot-spare slot, and six logical slots for I/O and communication modules. Each logical slot provides two physical spaces for modules.

The TriBus in the Model 8110 Main Chassis operates at a speed of 25 Mbps when the Model 3008 MP or the Model 3009 MP is installed in the system. The TriBus operates at a speed of 4 Mbps when the Model 3006 MP or the Model 3007 MP is installed in the system.

Note For applications in the European Union or other jurisdictions requiring compliance with the ATEX Directive No. 94/9/EC for Zone 2, Group IIB hazardous locations, use the Model 8110ATEX Main Chassis.

Model 8120E Enhanced Performance Main Chassis

A Tricon Model 8120E Enhanced Performance Main Chassis accepts two Power Modules, three Main Processors, and two batteries. It contains one communication slot (COM 1) with one module position, one communication slot (COM 2) with two module positions, and five logical slots for I/O and communication modules. Each logical slot, other than COM 1, provides two physical positions for modules. UCMs can be installed only in the COM 2 slot of this chassis.

The TriBus on the Tricon Model 8120E Enhanced Performance Main Chassis operates at a speed of 1000 Mbps when used with Model 3009 MPs. You should use the Model 8120E Enhanced Performance Main Chassis if you need fast response times and/or you are using UCMs.

CAUTION

The Model 8120E Enhanced Performance Main Chassis is designed for use with Model 3009 MPs. If you install other MP models, do so carefully because there is a risk of damage to the backplane of the chassis if you insert the modules too forcefully.

System Configuration

This section includes specifications for a Tricon system, which includes a Main Chassis and additional Expansion or Remote Expansion (RXM) Chassis, as required.

Topics include:

- Configuration Specifications on page 210
- Communication Configuration on page 212
- Planning Power for a Tricon System on page 213

Configuration Specifications

This table includes specifications for determining the number and types of components that can be installed in a Tricon high-density and low-density system. A low-density system uses a pre-v9 chassis, which means fewer I/O modules can be included in a system.

Table 77 Configuration Guidelines

Component	High-Density Configuration	Low-Density Configuration
Maximum number of chassis	15	15
Maximum number of I/O and communication modules	118 • Model 8110 Main Chassis = 6 modules with hot-spares and 1 communication module • Model 8120E Enhanced Performance Main Chassis = 5 modules with hot-spares and 2 communication modules (one with hot-spare and one without hot-spare) • Expansion Chassis = 8 modules with hot-spares • RXM Chassis = 6 modules with hot-spares	76 • Main Chassis = 4 modules with hot-spares • Expansion Chassis = 5 modules with hot-spares • RXM Chassis = 4 modules with hot-spares
Communication modules	Must be installed in the Main Chassis or Chassis 2, except for UCMs, which must be installed in the Model 8120E Enhanced Performance Main Chassis. Chassis 2 must be an Expansion or primary RXM Chassis.	
Maximum I/O Bus length	100 feet (30 meters)	100 feet (30 meters)
Analog Input points (includes Thermocouple Input and Pulse Totalizer Input points)	1,024	1,024
Analog Output points	512	512
Digital Input points	2,048	2,048

Planning and Installation Guide for Tricon v9-v11 Systems

Communication Configuration

This table describes rules and guidelines for using communication modules. For more information, including installation and configuration instructions, see the *Communication Guide for Tricon v9–v11 Systems*.

Table 78 Communication Rules

Component	Description
Chassis	At least one communication module (TCM, UCM, ACM, EICM, or NCM) must be included in the Main Chassis or in Chassis 2, because these modules enable the TriStation PC to communicate with the Tricon controller. However, UCMs can be installed only in the Main Chassis. • If communication modules are housed in Chassis 2, this chassis must be an I/O Expansion Chassis or a primary RXM Chassis that is connected directly to the Main Chassis using I/O communication cables (Model 9001) rather than standard I/O bus cables. • You cannot install an NCM in a Tricon system that also has a TCM and/or a UCM. • You cannot install an EICM in a Tricon system that also has a TCM and/or a UCM. • You cannot install an ACM in a Tricon system that also has a UCM. • You cannot install more than four communication modules in a Tricon system.
COM Slot	In a Model 8110 Main Chassis, the COM 1 slot can be used only for a TCM, EICM, or NCM. In a Model 8120E Enhanced Performance Main Chassis, the COM 1 slot can be used only for a TCM, and the COM 2 slot can be used only for UCMs.
TCM	Up to two logical slots can be configured for TCMs. Matched pairs of TCMs can be installed in the left and right positions of each logical slot, and they can be located in the Main Chassis or Chassis 2. Model 4351A, 4351B, 4352A, and 4352B TCMs cannot be installed into a system with Model 4351 or 4352 TCMs, even if they are installed in different chassis.
UCM	One logical slot is available for UCMs. Matched pairs of UCMs can be installed in the left and right positions of the COM 2 slot in only the Model 8120E Enhanced Performance Main Chassis. Up to one additional slot is available for TCMs, so you will be limited to one TCM if you install it in the COM 1 slot.
NCM	Up to two logical slots can be configured for NCMs. Matched pairs of NCMs can be installed in the left and right positions of each logical slot. If only one logical slot is used, the slot can be in the Main Chassis or Chassis 2. If two logical slots are used, they must be Slots 6 and 7 in the Main Chassis, and Peer-to-Peer cannot be used.
EICM and ACM	One logical slot is available for EICMs or ACMs, respectively. Matched pairs of these modules can be installed in both the left and right positions of one logical slot.
HIM	Up to two logical slots can be configured for HIMs. Both slots must be in the Main Chassis.
SMM	Up to three logical slots can be configured for SMMs. A matched pair of SMMs can be installed in the left and right positions of each logical slot. All three slots must be in the Main Chassis or Chassis 2.



8120E engineering review

Enhanced Performance Main Chassis

Configuration and integration

Triconex 8120E is the conformally coated enhanced-performance main chassis for Tricon v11 systems. It accepts two power modules, three main processors and two batteries, then adds dedicated COM1 and COM2 communication positions.

With 3009 main processors, the chassis operates its TriBus at 1000 Mbps for faster controller response. Five logical I/O or communication slots provide paired physical positions, while COM2 is reserved for supported UCM installations.

The backplane is designed around the 3009 processor. If another MP type is considered, installation requires special care because excessive insertion force can damage the chassis backplane.

Installation attention

8120E is designed for 3009 main processors; forcing another MP model into the backplane can cause physical damage.

Verified functional points

Applications

- Forms the main hardware frame for high-density Tricon v11 safety and critical-control systems.
- Supports UCM-based integration with compatible control and communication architectures.
- Provides the processor and I/O platform for projects requiring the 1000 Mbps TriBus response.

Chassis Layout

- Two power-module positions and three main-processor positions occupy the core chassis structure.
- COM1 provides one module position, while COM2 provides left and right physical positions.
- Five logical I/O or communication slots each provide paired module positions outside COM1.

TriBus

- The backplane operates at 1000 Mbps when the chassis is used with 3009 main processors.
- High-speed TriBus operation supports projects that require improved controller response time.
- Processor selection must be checked because the enhanced backplane is designed around the 3009 family.

Compatibility

- The chassis is documented for Tricon system version 11.x.
- Unified Communication Modules are permitted only in the COM2 position of this chassis type.
- Conformal coating is standard rather than an optional suffix for the enhanced-performance chassis.

Source record

Tricon v9–v11 Systems Planning and Installation Guide 9700077-019.



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