

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

INVENSYS TRICONEX

3007

MAIN PROCESSOR MODULE

Used with the applicable Tricon v9-v10 system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official pages follow this cover with source pagination retained.

Invensys 9700077-012, February 2009

Main Processor Modules

A Tricon chassis houses three Main Processor Modules, each serving one channel (also referred to as a *leg*) of the controller. Each processor independently communicates with its I/O subsystem and executes the control program. The three MP Modules compare data and the control program at regular intervals. Each Main Processor operates autonomously with no shared clocks, power regulators, or circuitry. Processor specifications are listed in the specifications table for each MP.

A high-speed proprietary bus system called TriBus provides these functions: interprocessor communications, hardware majority voting of all digital input data, and comparison of control program variables. TriBus uses a fully isolated, serial communication channel operating at 4 megabits per second. A direct memory access controller manages the synchronization, transfer, voting and data correction independent of the control program or executive software.

DRAM (dynamic random-access memory) is used for control program, sequence-of-events data, I/O data, diagnostics, and communication buffers. SRAM (static random-access memory) is used for the defined program retentives and configuration of disabled points. Memory is regularly validated by the TriBus hardware-voting circuitry.

Sequence of Events Capability

Main Processors work with the communication modules to provide the Tricon controller with sequence-of-events (SOE) capability. During each scan, the Main Processors inspect designated discrete (Boolean) variables for changes of state known as events. When an event occurs, the Main Processors save the current state of the variable and includes a time stamp in an area of memory called a buffer which is a part of an SOE block. You can configure the SOE blocks using TriStation and retrieve the event data with software such as the Triconex SOE Recorder.

Compatible Modules

This table identifies the compatibility of Main Processor modules with Tricon versions. All the communication and I/O modules are compatible with v9–v10.x MPs.

Table 7 Compatibility of Main Processor Modules

Main Processor Model	Compatible Tricon Versions
3006 and 3007	v9.0 – v9.5.x, and v9.51.x
3008	v9.6 – v10.x

Main Processor Front Panel

This figure depicts the Main Processor front panels for models 3006, 3007, and 3008.

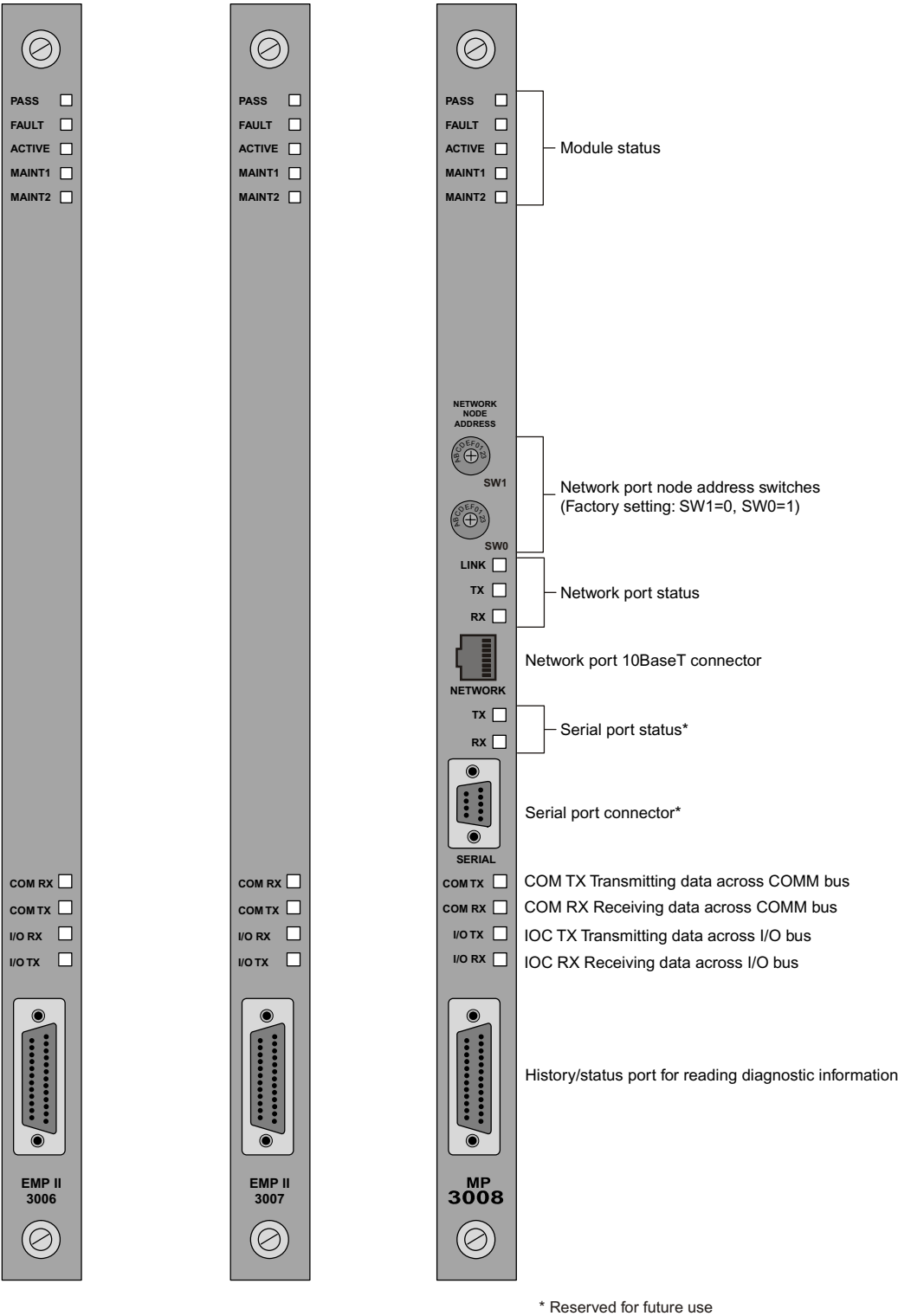


Figure 14 3006, 3007, and 3008 Main Processor Front Panels

3006 and 3007 Specifications

This table lists the specifications for the 3006 and 3007 Main Processors, which can be used with Tricon v9.0 – v9.5 systems.

Table 9 3006 and 3007 Main Processor Specifications

Feature	Specification
Central processor	National NS32GX32, 32 bits, 25 MHz
Math co-processor	National NS32381, 32 bits, 25 MHz
EPROM memory	512KB
SRAM	Model 3006: 2 MB Model 3007: 1 MB
Clock calendar	Time and date Battery backup Typical drift: ± 2 seconds per day Maximum drift: ± 8.6 seconds per day
TriBus	4 megabits per second, 16-bit DMA
Serial port	For Diagread diagnostic analysis Optically isolated RS-232 interface on one 25-pin connector 500 VDC isolation
Communication processor	Intel 80C152 32 KB EPROM, 64K shared memory interface 16 MHz
Communication Interface	
Protocol	RS-485
Baud rate	2 megabits per second
I/O processor	Intel 80C31 12 MHz 32 KB EPROM 64K Shared Memory Interface
I/O interface	
Protocol	RS-485
Baud Rate	375 kilobits per second
Logic power	15 W

Replacing Main Processor Modules

This procedure explains how to replace a Main Processor Module.



- If a controller has two faults, one in an MP and one in another type of module, replace the MP first. Wait until the Active indicator of the replacement module goes on, then replace the second faulty module.
- Do not install more than one module at the same time. You must push the first module in and wait until the Active indicator goes on, then install the next module.

To determine whether an MP has a fault, see [Main Processor Status Indicators on page 233](#).

Procedure

- 1 If the controlled process is online, verify that at least one MP has an Active indicator with a blinking yellow light.
- 2 Undo the retractable fasteners on the faulty MP, grasp the module by its fasteners, and slide the module out of the chassis.
- 3 Insert the replacement MP and seat it firmly. The Pass indicator should go on and stay on within 1 to 10 minutes.
- 4 Tighten the retractable fasteners to 10 inch-pounds.
If the module is not properly seated and its fasteners adequately tightened, the module may not operate properly.
- 5 The Active indicator on the replacement MP should go on and begin blinking at the same rate as the other MPs within 1 to 10 minutes.
- 6 For the faulty module, identify the model and serial numbers. Contact the IPS Global Client Support (GCS) center to obtain a Returned Material Authorization (RMA) number. Then return the module to Triconex for repair.