XR SERIES
MODELS XR9109 AND XR9209

Advantages

The XR Series 900 and XR Series PowerPC® are a family of systems for high-reliability and high-performance applications like those found in telecom exchange offices worldwide.

The XR Series family offers a wide range of rugged system platforms designed to operate in telecom central offices. By embedding XR Series systems in their applications instead of producing their own computer platforms, OEMs can reduce their time to market and concentrate their resources on value-adding, revenue-generating activities.

The Model XR9209 is designed for telecom applications requiring dual, independent 9-slot VME systems. Model XR9109 is configured with one 9-slot VME system, but it may be upgraded to a dual XR9209 configuration.

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Features

- Designed to meet stringent telecom exchange office requirements
- Card cage with two independent 9-slot VME backplanes
- Processor performance ranging from 20 to 290 SPECint92 per system
- Memory capacity from 8MB to 1GB per system
- Integrated Ethernet and SCSI interfaces, four serial ports, and one parallel port per system
- Expandable disk capacity
- –36 to –72 VDC or 110/220 VAC (auto select) power module options
- Front access serviceability
- 19- or 23-inch telecom frame and industrial rackmounting options
- Designed to meet NEBS specifications

System Enclosure

XR9209

- Two VME systems in a front access card cage
- Two front access 9-slot VME backplanes
- Two rear access 10-slot transition module cable connection panels
- Two front access fan trays for front to back cooling
- Two front access power modules
- Dual power and temperature fault indicators and alarm output ports
- Dual power on/off and system reset key switches
- Translucent front bezel

XR9109

- One VME system in a front access card cage
- Two front access 9-slot VME backplanes
- Two rear access 10-slot transition module cable connection panels
- One front access fan tray for front to back cooling
- One front access power module
- Dual power and temperature fault indicators and alarm output ports
- Dual power on/off and system reset key switches
- Translucent front bezel

The Motorola Commitment

Motorola Computer Group is committed to providing best-in-class embedded computing solutions. The XR9109 and XR9209 reinforce this commitment by providing superior hardware, price performance, and faithfulness to the tenets of open computing: modularity, scalability, portability, and interoperability.

Both models are offered with a five-year limited warranty which reduces the cost of ownership and demonstrates our commitment to quality and reliability of products to our OEM partners.

Motorola Computer Group is ISO9001 registered, and provides world class quality in manufacturing, engineering, sales, and marketing.

XR Series Options

A wide variety of VME options are available from Motorola for the XR Series 900 and XR Series PowerPC.

VME Options:

Eight-port asynchronous communications controllers
Synchronous communications controllers for SS7 and X.25 communications
T1/E1 controllers for SS7 and ISDN
SCSI drive modules holding two 3.5-inch drives

PCI Mezzanine Card (PMC) Options for XR Series PowerPC:

10/100BaseTx PMC adapter
FDDI PMC adapter
Differential or single-ended SCSI PMC adapters

Enclosure Options:

Rackmount Kits: These rackmounting options are used for the base system chassis and the SCSI device storage module when the units are mounted in a 23-inch rack, or if the units are to be "mid-mounted" (a.k.a. "frame mounted"). The system will mount directly into a 19-inch equipment rack without additional mounting brackets.

Crown/pedestal/side-panel Kits: These options are used to provide freestanding, floor mounted operation for the XR9109 and XR9209.

SCSI Device Expansion Module:

Additional bays for SCSI devices may be provided by means of the XR Series SCSI Device Expansion Module. This module houses four half-height peripheral bays. Two bays accommodate 3.5-inch hard disks, and two bays accommodate either 3.5-inch disks or half-height removable devices such as streaming tape, CD-ROMs, or 4 mm DAT.

The following SCSI devices are supported in the expansion module:

2GB and 4GB Disks	QIC-525 Streaming Tape Drive
4 mm DDS2 DAT Drive	8 mm Tape Drive
CD-ROM Drive	Floppy Disk Drive

The external SCSI connector and power/thermal alarm connector are positioned on the rear of the XR Series enclosure to facilitate connection with the SCSI Device Expansion Module.

Storage Options:

Disk Drives:

Formatted Capacity	Average Access Time (Read/Write)	Internal Transfer Rates (Sustained)	MaximumTransfer Rates (Burst) Narrow/Wide
2.1GB*	10.5/12.0 ms	9.375 to 15.0MB/s	20.0/40.0MB/s
4.3GB*	10.5/12.0 ms	9.375 to 15.0MB/s	20.4/40.0MB/s

*Also available with wide differential interface.

Tape Drives:

Type	Capacity	Form Factor	Transfer Rate
QIC-525	525MB	HH 5.25 in.	200KB/s
4 mm DDS/2	8GB**	HH 3.5 in. or HH 5.25 in.	800KB/s**
8 mm Helical Scan	14GB**	HH 5.25 in.	1000KB/s**

**Capacities and transfer rates for compressed data formats. These will vary depending upon media and data types.

Diskette and CD-ROM Drives:

Drive Type	Formatted Capacity	Form Factor	Average Access Time	Transfer Rate
Diskette Drive	1.44MB	HH 3.5 in.	94 ms	125KB/s
8X CD-ROM Drive	600MB	HH 5.25 in.	150 ms	1200KB/s
12X CD-ROM Drive	600MB	HH 5.25 in.	125 ms	1800KB/s

The VME Standard

The modular design of the Motorola XR Series family is based on the VMEbus, the leading 32/64-bit bus standard in the world. As an industry standard, it increases the options available to OEMs and system integrators for controllers and other system components.

Power Modules

The XR Series XR9109 and XR9209 offer a –36 to –72 VDC power module for telecom exchange office applications as well as a 110/220 VAC power module for industrial and commercial environments.

Transition Modules

The enclosure contains two 10-slot transition module panels for supporting a variety of connectivity and expansion options such as additional communications interfaces. Each transition module slot is associated with its respective VME backplane slot. VME Slot 1 accommodates two transition module slots.

Application Processors

The XR Series offers a wide choice of MC68000 (MVME147, MVME167), and PowerPC (603, 603e, 604, 604e) processor modules.

In general, the MVME147 and MVME167 processor modules are used for embedded real-time applications and the PowerPC processor modules are used for applications with relatively high compute and control requirements.

Main Memory

Application processors support memory with single- and double-bit error checking and single-bit error correction (ECC).

Memory sizes range from 8MB to 1GB depending on the processor module used.

Serviceability

The XR Series is easily serviceable with front access to all active components such as VME modules, I/O devices, fans, and power modules. Only cables are serviced from the rear of the system. After removal of the front bezel, all components are quickly replaceable with use of minimal fasteners.

The Motorola XR Series system diagnostics include:

- Hardware integrity verification at system power-up and reset.

- On-line diagnostics for use while the system is running the AIX® operating system.

Software Overview

AIX Operating System

The XR Series PowerPC is supported by releases 4.1 and 4.2 of the AIX operating system. AIX is available directly from Motorola and is supported by Motorola.

Real-Time Embedded Environments

The XR Series systems based on the MC68000 and PowerPC processor modules are also supported by a wide range of third-party real-time kernels and real-time operating systems.

Ordering Information

Part Number	Description
XR9109	Dual 9-slot VME platform with two independent 9-slot systems and factory integration of the right side of the chassis, leaving the left side for custom product integration and future upgrades
XR9209	Dual 9-slot VME platform with two independent 9-slot systems and factory integration of both sides

Related Products

MC1209F-FP	Front bezel for the XR9109/XR9209
MC1209K-FM	Spare fan module for the XR9109/XR9209
MC1000F-AC700A	700 watt, 110/220 VAC (auto select) power supply for XR9109/XR9209, factory installed
MC1000K-AC700A	700 watt, 110/220 VAC (auto select) power supply for XR9109/XR9209
MC1000F-DC700A	–36 to –72 VDC, 700 watt power supply for XR9109/XR9209, factory installed
MC1000K-DC700A	–36 to –72 VDC, 700 watt power supply for XR9109/XR9209
MC1209	Dual 9-slot chassis
MC1209F	Factory integrated dual 9-slot chassis

For additional components common to all XR Series models, consult the XR Series Common Components Ordering Information.

Documentation

XRCHASA/IHx	XR Series System Chassis Reference Guide, revision x
XRPPCA/IHx	XR PPC VMEmodule Reference Guide, revision x
XR900A/IHx	XR 900 VMEmodule Reference Guide, revision x

Specifications

XR Series Models XR9109 and XR9209

Processor Modules

MVME147
One 32 MHz MC68030 microprocessor
On-chip 256-byte instruction cache
On-chip demand paged memory management
Floating point coprocessor

MVME167
One 33 MHz MC68040 microprocessor
On-chip 4KB instruction and 4KB data cache
On-chip demand paged memory management

PowerPC 603™
One 66 MHz MPC603 microprocessor
On-chip 8KB instruction and 8KB data cache
On-chip demand paged memory management
On-chip floating point
256KB secondary cache

PowerPC 603e™
One 100 MHz or 200 MHz MPC603e microprocessor
On-chip 16KB instruction and 16KB data cache
On-chip demand paged memory management
On-chip floating point
256KB secondary cache

PowerPC 604™
One 100 MHz or 133 MHz MPC604 microprocessor
On-chip 16KB instruction and 16KB data cache
On-chip demand paged memory management
On-chip floating point
256KB secondary cache

PowerPC 604e™
One or two 167 MHz or 200 MHz MPC604e microprocessors
On-chip 32KB instruction and 32KB data cache
On-chip demand paged memory management
On-chip floating point
256KB secondary cache

VMEbus Backplanes
Nine VME slots

10 transition module slots (two for VME Slot 1)

32-bit address and data (J1 and J2)

Automatic IACK and BUS GRANT configuration

Cableless VME to transition module connection

Optional SCSI Device Expansion Modules
Four half-height drive bays per module

Two bays available for removable media devices

AC or DC power options

Single-ended or differential Wide SCSI

Optional VME SCSI Device Modules
Two 3.5-inch drive bays per module

One bay available for removable media device

Occupy three VME slots and one transition module slot—connectivity in the rear of the chassis

Power Characteristics

System Chassis

Input Voltage (DC):	−36 to −72 VDC
Input Voltage (AC):	90 to 132 and 180 to 264 VAC (auto select), 47 to 63 Hz
Output Voltages:	+5 VDC 100A, +12 VDC 20A, −12 VDC 10A
Output Power:	700 watts (max.)

Optional SCSI Device Expansion Module

Input Voltage (DC):	−36 to −72 VDC
Input Voltage (AC):	90 to 264 VAC (wide ranging), 47 to 63 Hz
AC Input Power:	1.5 amps @ 115 volts, 3.0 amps @ 230 volts
Output Power:	100 watts

Physical Dimensions

Height:	531.9 mm (20.94 in.)
Width:	481.8 mm (18.97 in.)
Depth:	342.9 mm (13.5 in.)
Weight (fully loaded):	27.3 kg (60.0 lb.)

Environmental

	Operating	Nonoperating
Temperature:	0° C to 50° C, (32° F to 122° F)	−40° C to 70° C (−40° F to 158° F)
Altitude:	3,048 m (10,000 ft.)	9,144 m (30,000 ft.)
Humidity (NC):	20% to 80%	10% to 95%
Acoustic Noise Level:	50 dBA max. @ 1 meter	
Earthquake:	Tested to NEBS zone 4, 4.4.1	
Flammabilty and Flame Spread:	Tested to NEBS GR-63-CORE; 4.2	
Office Vibration:	Tested to NEBS GR-63-CORE, Section 4.4.3 (5-100-5Hz @ 0.1G, 0.1 octave/minute)	
Transportation:	Packaging and shipping containers comply with ASTM 4169 Level 1	
ESD:	IEC 801-2: 1991	

Safety
Meets UL 1950, CSA 22.2-950, VDE 0805 EN 60-950/IEC 950, CE Mark compliant (low voltage directive)

EMC Compliance

US:	FCC Part 15, Sub-Part B Class A
Canada:	ICES-003, Class A
Europe:	CE Mark Class A

Warranty
The XR Series Models XR9109 and XR9209 are each backed by a five-year limited warranty from Motorola.

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