

## XR SERIES MODEL XR9120



### **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. With an extensive variety of totally modular and configurable memory, storage, and communications options, the XR Series allows OEMs to include just what they need in their systems. 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 XR9120 is designed for telecom applications requiring 20 VME slots and modular disk storage options.

## Features

- Designed to meet stringent telecom exchange office requirements
- 20-slot VME card cage with 21-slot transition module panel
- Processor performance ranging from 20 to 290 SPECint92
- Memory capacity from 8MB to 1GB
- Integrated Ethernet and SCSI interfaces, four serial ports, and one parallel port per system
- Expandable disk capacity
- Load sharing and hot-pluggable -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

- Front access 20-slot card cage
- Rear access 21-slot transition module cable connection panel
- Front access fan tray for front to back cooling
- One or two front access power modules
- Power and temperature fault indicators and alarm output port
- 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 XR Series reinforces this commitment by providing superior hardware, price performance, and faithfulness to the tenets of open computing: modularity, scalability, portability, and interoperability.

The model XR9120 is 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 XR9120.

### 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)	Maximum Transfer 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 XR9120 offers 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.

The XR9120 supports either single or dual power module configurations. When dual power modules are configured, they run in load sharing mode. In load sharing mode, the system will continue normal operation if a power module fails. The faulty power module can be replaced without interrupting normal operation of the system (hot pluggable).

### Transition Modules

The enclosure contains a 21-slot transition module panel 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
XR9120	Twenty-slot VME platform

### Related Products

MC1120F-FP	Front bezel for the XR9120
MC1120K-FM	Spare fan module for the XR9120
MC1000F-AC700A	700 watt, 110/220 VAC (auto select) power supply for XR9120, factory installed
MC1000K-AC700A	700 watt, 110/220 VAC (auto select) power supply for XR9120
MC1000F-DC700A	-36 to -72 VDC, 700 watt power supply for XR9120, factory installed
MC1000K-DC700A	-36 to -72 VDC, 700 watt power supply for XR9120
MC1120	20-slot chassis
MC1120F	Factory integrated 20-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 Model XR9120

#### 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 Backplane

20 VME slots

21 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	
Flammability 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 Model XR9120 is backed by a five-year limited warranty from Motorola.

For more information, visit our World Wide Web site at <http://www.mot.com/computer>  
For fax-back service dial 1-800-682-6128 in the U.S. and 602-438-4636 outside of the U.S.  
To call us dial 1-800-759-1107 in the U.S. and 512-434-1526 outside of the U.S.  
Corporate headquarters address: Motorola Computer Group, 2900 S. Diablo Way, Tempe, AZ 85282

Copyright 1997 Motorola, Inc.

Printed in USA

Data Sheet: X9120-D2

Motorola and the Motorola logo are registered trademarks of Motorola, Inc. AIX is a registered trademark of International Business Machines Corporation. PowerPC and the PowerPC logo are registered trademarks, and PowerPC 603, PowerPC 603e, PowerPC 604, and PowerPC 604e are trademarks of International Business Machines Corporation and are used by Motorola, Inc. under license from International Business Machines Corporation. All other names, products, and/or services mentioned may be trademarks or registered trademarks of their respective holders.

This data sheet identifies products, their specifications, and their characteristics, which may be suitable for certain applications. It does not constitute an offer to sell or a commitment of present or future availability, and should not be relied upon to state the terms and conditions, including warranties and disclaimers thereof, on which Motorola may sell products. A prospective buyer should exercise its own independent judgement to confirm the suitability of the products for particular applications. Motorola reserves the right to make changes, without notice, to any products or information herein which will, in its sole discretion, improve reliability, function, or design. Motorola does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent or other intellectual property rights or under others. This disclaimer extends to any prospective buyer, and it includes Motorola's licensee, licensee's transferees, and licensee's customers and users. Availability of some of the products and services described herein may be restricted in some locations.



**MOTOROLA**

Computer Group