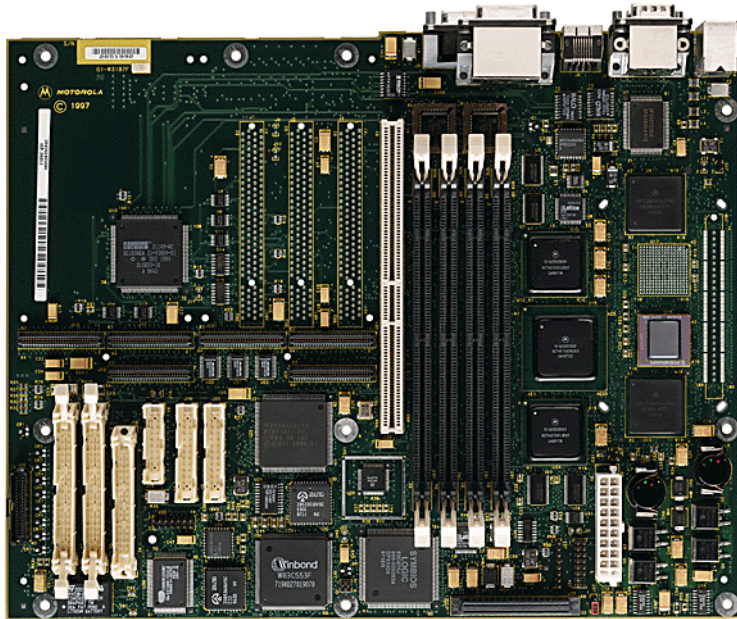


## MTX

### Embedded ATX Motherboard



#### *Standard Features*

- ◆ PowerPC 603e™ or PowerPC 604e microprocessor
- ◆ Up to 1GB of EDO DRAM
- ◆ 1MB Flash memory, socketed as two 32-pin PLCCs, for firmware storage
- ◆ 8KB NVRAM and RTC with replaceable battery, and watchdog timer
- ◆ Four 32-bit interval timers
- ◆ 10/100 Ethernet, EIDE, floppy interface, and PS/2 keyboard and mouse ports
- ◆ Two serial ports, one parallel port

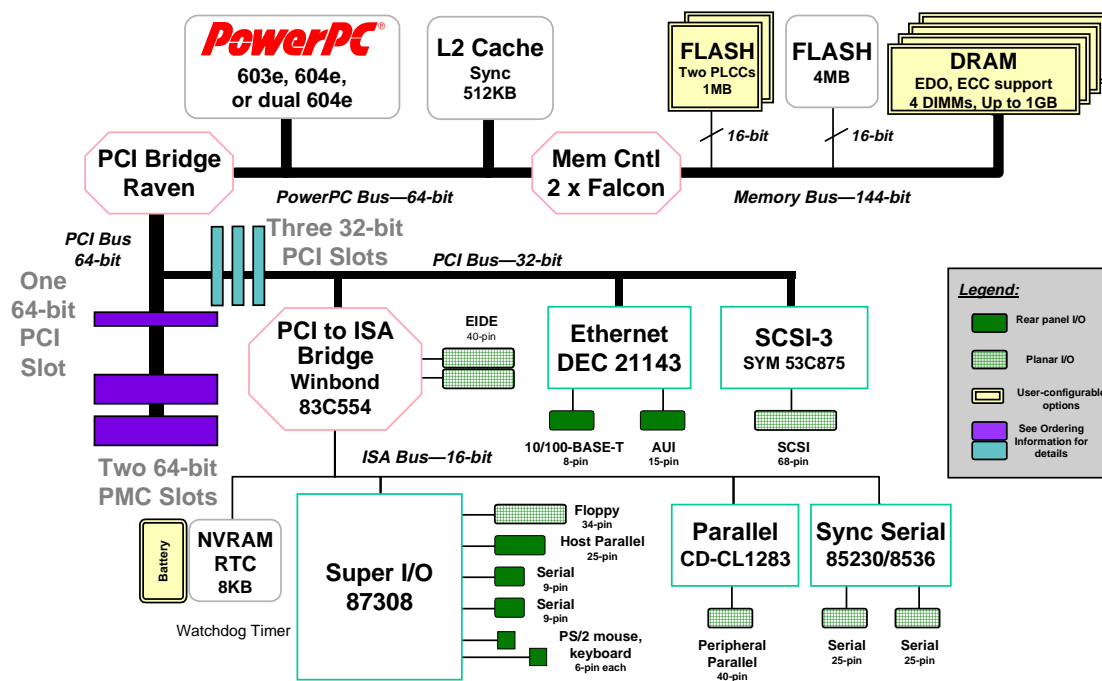
#### *Configuration Options*

- ◆ Up to three 32-bit PCI slots (ATX compatible), or one 64-bit PCI slot with two 64-bit PMC sites (not ATX compatible)
- ◆ Twin PowerPC 604e processors
- ◆ 512KB L2 cache
- ◆ 4MB Flash for user storage
- ◆ SCSI-3 fast/wide/ultra interface
- ◆ Two additional sync/async serial ports
- ◆ One additional peripheral parallel port

#### **Easily expandable processor module supported with industry-leading embedded operating environments**

MTX combines the industry-standard ATX form factor with the performance of PowerPlus Architecture.

MTX targets communications, industrial automation, and electronic imaging applications with an exciting combination of processor power and connectivity including 10/100Mb/s Ethernet, EIDE, and SCSI. Expanding MTX is easily done by adding either standard PCI adapters or low-profile PMC modules. MTX is supported with industry-leading embedded operating environments to help get OEM applications to market quickly. Plus, Motorola's OEM support policies for MTX help maintain those applications for years into the future. All these combine to make MTX the right choice for high-end embedded processing, and Motorola the right partner for the long term.



## MTX Details

### PowerPlus Architecture

MTX PowerPlus Architecture includes:

- PowerPC 603e, 604e, or twin 604e processor
- 512KB synchronous L2 cache optional
- Four DIMM sockets, 8MB to 1GB of DRAM, 144-bit data width (two DIMMs minimum)
- 1MB of boot Flash
- 4MB Flash for user storage optional
- 8KB NVRAM/RTC, watchdog timer function

### PCI Interface

MTX provides a 64-bit, 33 MHz PCI bus.

The MTX motherboard can optionally be configured with various slot payloads. A configuration with three 32-bit PCI slots is fully ATX compatible. Alternative configurations include one 64-bit PCI slot with two 64-bit PMC sites, which is not ATX compatible. Total slot count of 64-bit PCI, 32-bit PCI, and 64-bit PMC cannot exceed three in any combination. Refer to the Ordering Information for selected configurations, or consult your Motorola representative about additional requirements.

### On-Board PCI Peripherals

PCI peripherals available include:

- 10/100Mb/s Ethernet controller (DEC™ 21143)
- EIDE (Winbond 83C554)
- SCSI-3 fast/wide/ultra (Symbios Logic™ 53C875)

### Super I/O Functions

The National 87308 provides a highly integrated set of functions: two asynchronous serial ports, IEEE-1284 host parallel port, floppy port, and keyboard and mouse ports.

### Other Peripherals

Also available are two synchronous/asynchronous serial ports and an IEEE-1284 peripheral parallel port.

### Software Support

Firmware—providing basics of device initialization, diagnostics, disk boot, and network boot—is provided in Flash with each board.

Industry leading real-time kernels and commercial operating systems are available for embedded computing missions on MTX, including the following products which may be purchased from the companies listed:

- Integrated Systems, Inc.:** pSOSystem™
- Lynx Real-Time Systems, Inc.:** LynxOS™
- Microware Systems Corporation:** OS-9®
- Motorola Computer Group:** AIX®
- Wind River Systems, Inc.:** VxWorks®

### Warranty

MTX carries a five-year warranty.

## Specifications

### Processor

Microprocessor:	MPC603e	MPC604e
Clock Frequency:	200 MHz	300 MHz
On-chip Cache (I/D):	16K/16K	32K/32K
SPECint95, estimated (50ns EDO):	5.3	12.4

### Memory and Bus Interfaces

<b>DRAM:</b>	Four 168-pin gold-plated DIMM sockets, 3.3VDC, unbuffered, x64 or x72 ECC devices, EDO or fast page mode, 60ns access or faster
<b>Capacity:</b>	8MB to 1GB; DIMMs must be installed in pairs
<b>Single Cycle:</b>	8 Read, 4 Write (50ns EDO)
<b>Read Burst Mode:</b>	8-1-1-1 (50ns EDO)
<b>Write Burst Mode:</b>	4-1-1-1 (50ns EDO)
<b>Firmware Storage:</b>	Flash, 1MB, two 32-pin PLCC sockets
<b>User-Defined Storage:</b>	Flash, 4MB surface mount
<b>L2 Cache:</b>	Synchronous SRAM, 512KB, 2-1-1-1 access
<b>NVRAM/RTC:</b>	8KB; contained in MK48T59
<b>PCI Local Bus:</b>	64-bit, 33 MHz, 5V signaling; PCI 2.1 compliant (except for host bridge target latency and AD32-63 V-I characteristic) One 64-bit PCI slot and two IEEE 1386.1 PMC sites, three 32-bit PCI slots, or other combinations up to three slot count

### 10/100Mb/s Ethernet Interface

<b>Controller:</b>	DEC 21143, with automatic carrier speed detection
<b>PCI Local Bus DMA:</b>	Yes, with PCI burst
<b>Connectors:</b>	RJ-45 for 10/100BaseT, 15-pin D for AUI

### EIDE Interface

<b>Controller:</b>	Winbond 83C554
<b>PCI Local Bus DMA:</b>	Yes, with PCI burst
<b>Connector:</b>	Two 40-pin headers on planar surface

### SCSI-3 Fast/Wide/Ultra Interface

<b>Controller:</b>	Symbios Logic 53C875
<b>PCI Local Bus DMA:</b>	Yes, with PCI burst
<b>Connector:</b>	68-pin D connector on planar surface

### Sync Serial Interfaces

<b>Controller:</b>	85230/8536, provides two ports
<b>Configuration:</b>	EIA-232, DTE
<b>Baud Rate:</b>	38.4Kbps max.
<b>Oscillator Clock Rate (PCLK):</b>	10 MHz/5 MHz
<b>Connector:</b>	Two 25-pin headers on planar surface

### IEEE-1284 Peripheral Parallel Port

<b>Controller:</b>	Cirrus Logic® CD-CL1283
<b>Compatibility:</b>	Centronics®, EPP and ECP
<b>Connector:</b>	40-pin header on planar surface

### Counters/Timers

<b>TOD Clock Device:</b>	MK48T59
<b>Real-Time Timers/Counters:</b>	Four 32-bit in PCI bridge; watchdog in MK48T59

### Super I/O Interfaces

<b>Controller:</b>	National Semiconductor® 87308
<b>Asynchronous Serial Interface:</b>	Two ports, EIA-232 DTE
<b>Maximum Baud Rate:</b>	38.4Kbps EIA-232, 115 Kbps raw
<b>Connectors:</b>	9-pin
<b>Parallel Interface:</b>	One port, IEEE-1284 host
<b>Compatibility:</b>	Centronics, EPP, ECP
<b>Connector:</b>	25-pin IEEE-1284 "A"
<b>Floppy Interface:</b>	DP8473, 765A, N82077 compatible
<b>Devices:</b>	3.5 in., 1.44MB and 2.88MB; 5.25 in., 1.2MB
<b>Connector:</b>	34-pin headers on planar surface
<b>Keyboard and Mouse Interface:</b>	One port each
<b>Connectors:</b>	PS/2 style, 6-pin mini-DIN socket

### Power Requirements (motherboard only)

Processor:	MPC603e	MPC604e	Dual MPC604e
<b>Total Consumption:</b>	34 watts	37 watts	45 watts
<b>+5V ± 5%</b>	5.3 A typ. 6.7 A max.	5.8 A typ. 7.3 A max.	7.1 A typ. 8.9 A max.
<b>+12V ± 10%</b>	Not required by on-board components; available for PCI and PMC		
<b>-12V ± 10%</b>	Not required by on-board components; available for PCI and PMC		

### Board Size (ATX Specification)

<b>Width:</b>	304.8 mm (12.0 in.)
<b>Length:</b>	243.84 mm (9.6 in.)
<b>Height:</b>	31.75 mm (1.25 in.), excluding PCI card

### Demonstrated MTBF

(based on a sample of eight boards in accelerated stress environment)	<b>Mean:</b> 190,509
	<b>95% Confidence:</b> 107,681

### Environmental

	Operating	Nonoperating
<b>Temperature:</b>	0° C to +55° C, forced air cooling	-40° C to +85° C
<b>Altitude:</b>	5,000 m	15,000 m
<b>Humidity (NC):</b>	10% to 80%	10% to 90%
<b>Vibration:</b>	1 G RMS, 20-2000 Hz random	2 Gs RMS, 20-2000 Hz random

## Electromagnetic Compatibility (EMC)

Intended for use in systems meeting the following regulations:

**U.S.:** FCC Part 15, Subpart B, Class A or B

**Canada:** ICES-003, Class A or B

This product was tested in a representative system to the following standards:

CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions:  
EN55022 Class B; Immunity: EN55024

## Safety

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

## Ordering Information

Part Number	Description
<b>3-PCI-slot PowerPC® ATX products</b>	
<b>MTX603-023</b>	200 MHz MPC603e, three 32-bit PCI slots, Ethernet, Super I/O, EIDE, 512KB L2 cache, 4MB Flash, SCSI, sync serial, peripheral parallel
<b>MTX604-023</b>	300 MHz MPC604e, three 32-bit PCI slots, Ethernet, Super I/O, EIDE, 512KB L2 cache, 4MB Flash, SCSI, sync serial, peripheral parallel
<b>MTX604-024</b>	300 MHz MPC604e, three 32-bit PCI slots, Ethernet, Super I/O, EIDE
<b>MTX604-030</b>	Twin 300 MHz MPC604e, three 32-bit PCI slots, Ethernet, Super I/O, EIDE, 512KB L2 cache, 4MB Flash
<b>PowerPC ATX products with single 64-bit PCI slot and PMC</b>	
The PMC and 64-bit PCI slots on these products are not compatible with standard ATX chassis.	
<b>MTX603-022</b>	200 MHz MPC603e, one 64-bit PCI slot and two PMC sites, Ethernet, Super I/O, EIDE, 512KB L2 cache, 4MB Flash, SCSI, sync serial, peripheral parallel
<b>MTX604-022</b>	300 MHz MPC604e, one 64-bit PCI slot and two PMC sites, Ethernet, Super I/O, EIDE, 512KB L2 cache, 4MB Flash, SCSI, sync serial, peripheral parallel
<b>Documentation</b>	
<b>MTXA/IH3</b>	MTX Installation and Use Manual
<b>MTXA/PG3</b>	MTX Programmer's Reference Guide
Documentation is available for on-line viewing and ordering at <a href="http://www.motorola.com/computer/literature">http://www.motorola.com/computer/literature</a> .	



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[www.motorola.com/computer](http://www.motorola.com/computer)  
**1-800-759-1107**

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L5R 3M1 Canada  
905-507-7200

### Eastern Pan America

120 Turnpike Rd, 1st Floor  
Southborough, MA 01772  
508-357-8260

### Western Pan America

1150 Kifer Road, Suite 100  
Sunnyvale, CA 94086  
408-991-8634

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