



MEAU
Industrial Computers



MC Series

COMPUTER PRODUCTS

MC300 Workstation Computer

(Manual Part Number MAN-WKSTN-001)



WARNING!

Programmable control devices such as the MC300 Series Workstation must not be used as stand-alone protection in any application. Unless proper safeguards are used, unwanted start-ups could result in equipment damage or personal injury. The operator must be made aware of this hazard and appropriate precautions must be taken.

In addition, consideration must be given to the use of an emergency stop function that is independent of the programmable controller.

The diagrams and examples in this user manual are included for illustrative purposes only. The manufacturer cannot assume responsibility or liability for actual use based on the diagrams and examples.

CAUTION

Do not press the MC300 Series Workstation touchscreen with any sharp objects. This practice may damage the unit beyond repair.

Trademarks

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Manual P/N MAN-WKSTN-001

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Manual Organization

The table, below provides an overall description of the topics covered within this manual.

Chapters		
	Introduction	Provides Manual Organization, and lists what you need to get started. Discusses how to get help with questions or problems you might encounter through Technical Support.
<hr/>		
	Models and Equipment	Provides you with a list of the various models, their part numbers and features. Lists the optional equipment available.
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	Specifications	Specifications provide detailed information. Included are display size, connector and expansion card information, CPU type; service power requirements; operating and storage temperatures; available memory; serial communications specs; dimensions, weight, etc.
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	Installation	Shows the mounting and cutout dimensions for the workstation models.
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	External Components	Provides location and description of the available connectors and expansion card slots. Provides location and description of switches, push buttons, display brightness potentiometer, and LEDs. Discusses Communication Setup.
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	BIOS Setup	Consult PCA1623 Embedded Processor Board User Manual, Part Number MAN-P1623-001.
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	Maintenance and Upgrades	Step-by-step instructions to install an expansion card are provided. Provides basic maintenance tasks to preserve data. Describes cleaning of touch screen and housing. Lists chemicals that may or may not be compatible with the touchscreen.

1 INTRODUCTION

Introduction

The Mitsubishi Electric Automation MC300 Series Workstation Industrial Computer features an Intel Pentium III CPU on a single board computer, in various sizes to fit your application needs. An active matrix LCD with resistive-type touchscreen is mounted in a rugged steel enclosure, with Zinc plating for optimum noise immunity, along with a flat NEMA4/4X sealing bezel to form an aesthetically pleasing package.

The MC Series Computers are intended for applications requiring the highest reliability, as with all Mitsubishi electronic components. Operating systems are included as part of every package. Optional operating systems and application software can be installed upon request, providing an “Out of the Box” solution for your custom application. The computers are NEMA 4/4X, as well as CE, UL/CUL & FCC Class I compliant, and are rated to operate from 0 to 50 °C, at a non-condensing humidity of 10–95%.

The Workstation is a high-performance IBM® PC-compatible computer adapted for applications in harsh factory environments. The rugged, flat-panel TFT display is currently available in 2 sizes — 12-inch and 15-inch — and is designed to be protected from oil, dust or water damage (NEMA 4/4x approval rating). A 17-inch Display Model (MC350) will be available soon!

For all models there are 6 slots for expansion cards — 3 PCI, 2 ISA, and 1 PICMG. As an industrially hardened complete package, the Workstation is designed to withstand vibration, electrical noise interference, and a wide range of temperatures.

This manual will take you through the steps necessary to get your MC300 Series Workstation Computer installed and running in the shortest possible time. This manual covers Models MC300 and MC320.

What you need to get started:

Hardware

- Industrial Workstation 6 Slot Panel Computer
MC300 — 12-inch
MC320 — 15-inch

Software

- Windows XP Pro (standard)

Technical Support



If you are having difficulty with a particular aspect of installation or setup, technical support is available at **1-800-950-7781** or visit our website at **www.meauipc.com**.



1 INTRODUCTION



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Models

MC300 12-inch XP Pro Industrial Workstation 6 Slot Panel Computer

MC320 15-inch XP Pro Industrial Workstation 6 Slot Panel Computer



2 MODELS AND EQUIPMENT



Accessories and Optional Software

There are replacement parts and other optional equipment available to customize or upgrade the Workstation to fit your application. The tables, below, provides you with a list of this equipment.

Accessories	
Product	Part Number
32MB Disk on Chip Flash Memory	MC600
64MB Disk on Chip Flash Memory	MC601
128MB Disk on Chip Flash Memory	MC602
256MB Disk on Chip Flash Memory	MC603
40GB HDD	MC610
256MB MEM	MC615
512MB MEM	MC616
Standard Keyboard	MC620
Keyboard with Trackball	MC621
Multimedia I/R board	MC622
19" R/M Industrial Membrane Keyboard	MC623
2 Button Mouse	MC624
Modem, PCI, 56K V.90	MC630
2-way Video Splitter/Repeater	MC635
Shielded Video Cable - 6'	MC640
Shielded Video Cable - 10'	MC641
Shielded Video Cable - 30'	MC644
Shielded Video Cable - 60'	MC646
RS-232 Serial Cable - 6'	MC651
RS-232 Serial Cable - 10'	MC652
RS-232 Serial Cable - 30'	MC655
RS-232 Serial Cable - 60'	MC656

Optional Software	
Product	Part Number
Windows NT 4.0 Workstation	MC701
Windows 2000 Server	MC702
Windows 2000 Pro	MC703
Windows XP Pro	MC704
Windows XP Server	MC705
MS DOS	MC706
LINUX Server	MC707
LINUX W/S	MC708
Windows NT/e (Embedded)	MC710
Windows XP/e (Embedded)	MC711
Windows CE 3.0 (Embedded)	MC712
VX Works	MC713
Microsoft Access	MC750
Microsoft Office	MC751
Microsoft Excel	MC752
Procomm	MC760
PC Anywhere	MC761
Norton Anti-Virus	MC762
MacAfee Anti-Virus	MC763

3 SPECIFICATIONS

COMPUTER SPECIFICATIONS

CPU Type:	Intel Pentium III (850 Mhz minimum)
Power Supply:	ATX 250 Watts
Memory:	256 MB (Expandable up to 1.5 GB)
Bios:	Flash ROM
Drive:	40 GB Hard Drive
Serial Ports:	1 dedicated RS-232 port, 1 RS-232/RS-422/RS-485 port
Parallel Port:	SPP/EPP/ECP supported (configurable to LPT1)
LAN:	10 Base-T/100 Base-TX, Ethernet
PS/2 Interfaces:	2 PS/2 ports (for Mouse and Keyboard)
USB Interface:	1 USB port (1.1)
Floppy DD:	1.44 MB
CD ROM:	48x type (minimum)
Operating System:	Windows XP Pro (standard)
Watchdog Timer:	12 Level Timer with timeout intervals from 0.5 – 30000 seconds

DISPLAY SPECIFICATIONS

MC300	12.1" TFT Flat Panel
Touch Screen:	Analog Resistive-type
View Angle:	U/D: 150, R/L: 120
Screen Pixels:	800 x 600
Display Brightness:	250 nits
Backlight Bulb Life:	40,000 hours (manufacturer's expected half-life rate)
VGA Output:	S-VGA output (60 ft. max.)
MC320	15.0" TFT Flat Panel
Touch Screen:	Analog Resistive-type
View Angle:	U/D: 150, R/L: 120
Screen Pixels:	1024 x 768
Display Brightness:	250 nits
Backlight Bulb Life:	35,000 hours (manufacturer's expected half-life rate)
VGA Output:	XGA output (60 ft. max.)

MECHANICAL SPECIFICATIONS

Housing Material	Stud Mounted Metal Bezel - MEAU Black
Connectors:	COM1 and COM2 D-SUB 9-pin male Serial Ports, LPT1 D-SUB 25-pin female Parallel Port, Two P/S 2 Ports, One RJ-45 for Ethernet, One D-SUB 15-pin female Video port, One USB port (1.1)
Dimensions:	12" and 15" Display Models: 17.250" Width x 12.700" Height x 7.750" Depth (438.150 x 322.580 x 196.850 mm)
Weight:	MC300 and MC320 Models: 11.2 kg
Expansion Slots:	6 open slots for I/O cards: 3 PCI slots, 2 ISA slots, 1 PICMG, PCMCIA: Optional (type 2) (uses one PCI Slot)
Power Supply:	115/230 VAC 50/60 Hz
Cooling Fan:	Two fans with filter
Environmental:	NEMA 4/4X (indoor use only) Temperature: Operating — 0 to 50° C; Non-operating –20 to +60° C Relative Humidity: 5 to 95% noncondensing Agency Approvals: UL/CUL, CE Mark, FCC compliant

INSTALLING THE WORKSTATION COMPUTER— OVERVIEW

Installing the WORKSTATION requires the following three major steps:

Mount the Workstation



Make Connections



Setup

The Workstation is a front-panel stud mount unit. Mounting of the unit requires a panel cutout, and drilling fourteen (14) holes in the mounting surface for the mounting studs. Please see the *Mounting* section beginning on page 14 for mounting diagrams and instructions.

Now that your Workstation is mounted, you are ready to connect your unit to the power source and peripheral devices. The Workstation has 2 Serial Ports. COM 1 is a dedicated RS-232 port and COM2 is a selectable RS-232/RS-422/RS-485 port. (Default is RS-232, if RS-422 or RS-485 is required, refer to the PCA1623 Embedded Processor Board Manual, MAN-P1623-001.) The Parallel Port supports SPP/EPP/ECP. The Workstation also has one USB (1.1) port (a second USB port is used internally for the touch panel interface). Note that the Workstation is a 115/230 VAC powered unit. See the section on *External Components*, beginning on page 16 for further information.

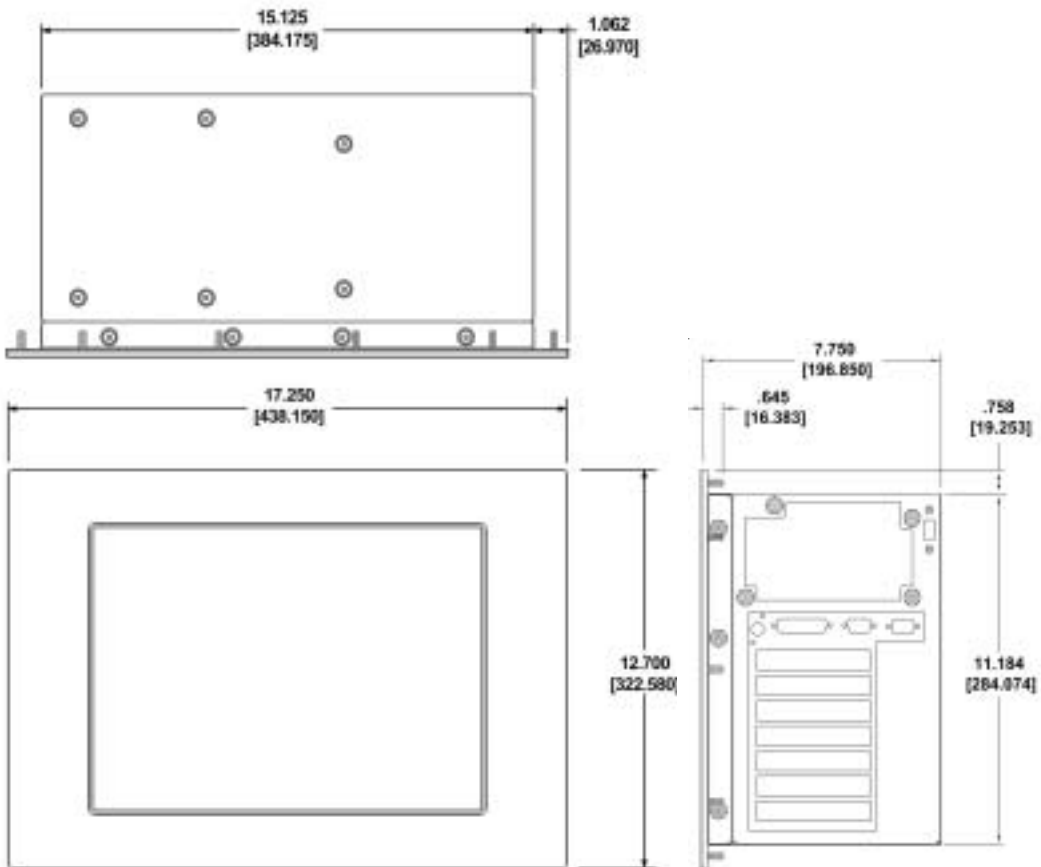
The Workstation has some adjustable features and selectable options. To make adjustments or select from available options, enter the SETUP MODE on powerup and follow the procedures provided in the *Communications Setup* section beginning on page 20.

4 INSTALLATION

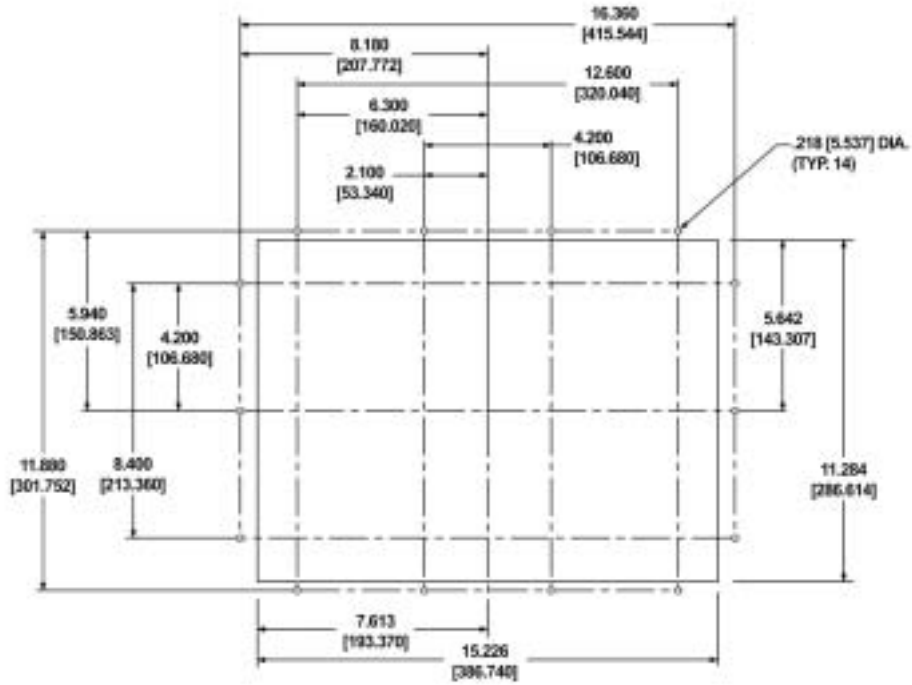
Mounting

The Industrial Workstation is a panel-mount unit. The following diagrams show the outline and cutout dimensions necessary to mount the Workstation using the studs.

12" and 15" Industrial Workstation Models MC300 and MC320 Outline Dimensions

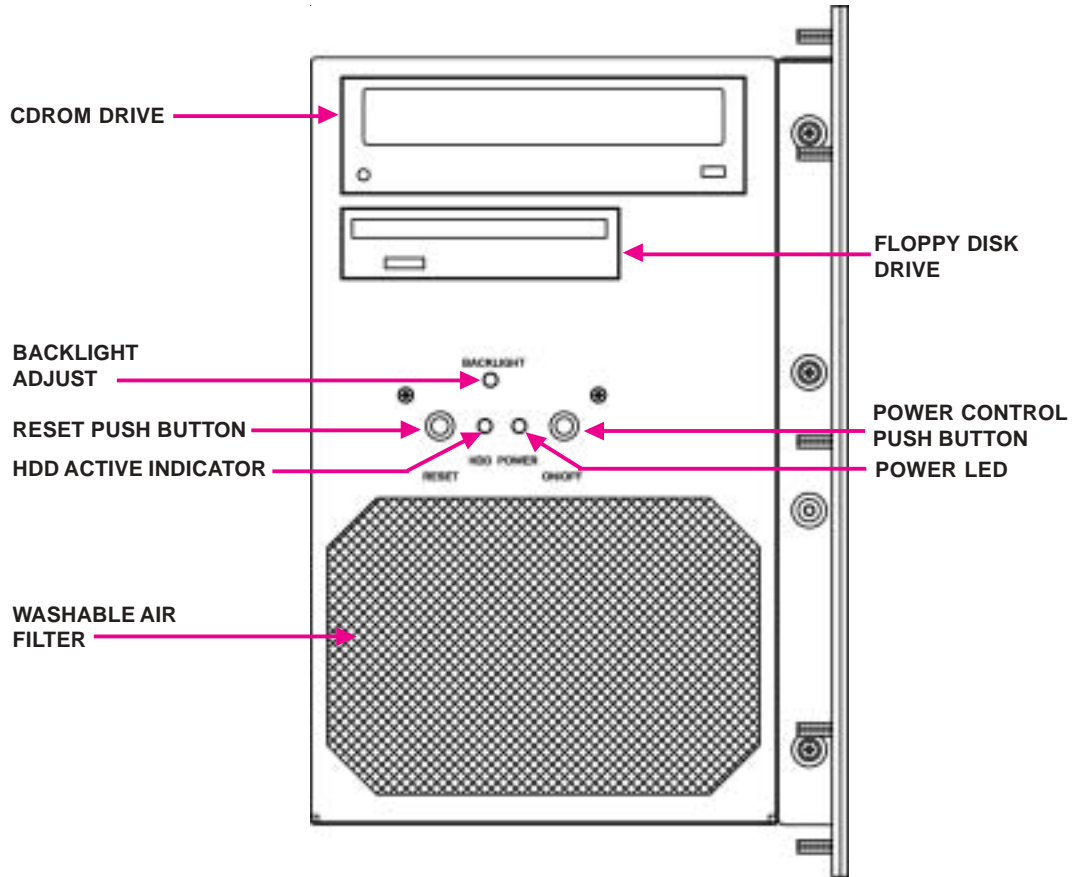


**12" and 15" Industrial Workstation
 Models MC300 and MC320
 Cutout Dimensions**



5 EXTERNAL COMPONENTS

CDROM DRIVE SIDE VIEW



Located on one side of the Workstations are the following components:

CDROM Drive

The computer is equipped with a 48x (or faster) type CD ROM Drive.

Floppy Disk Drive

The computer is also equipped with a 1.44 MB Floppy Disk Drive.

Backlight Adjust (not available on the 12" model)

There is also a recessed **BACKLIGHT** potentiometer to adjust the display brightness. Use a small flat blade screwdriver to adjust the BACKLIGHT pot.

Reset Push Button

Push the **RESET** button to restart the system.

Power Control Push Button

Push the Power Control **ON/OFF** button to turn on the computer. When the button is held for 4 seconds, it will turn power OFF.

Power LED

Next to the **ON/OFF** push button is a green **POWER** LED indicator. It will illuminate when the computer is on.

HDD Active Indicator

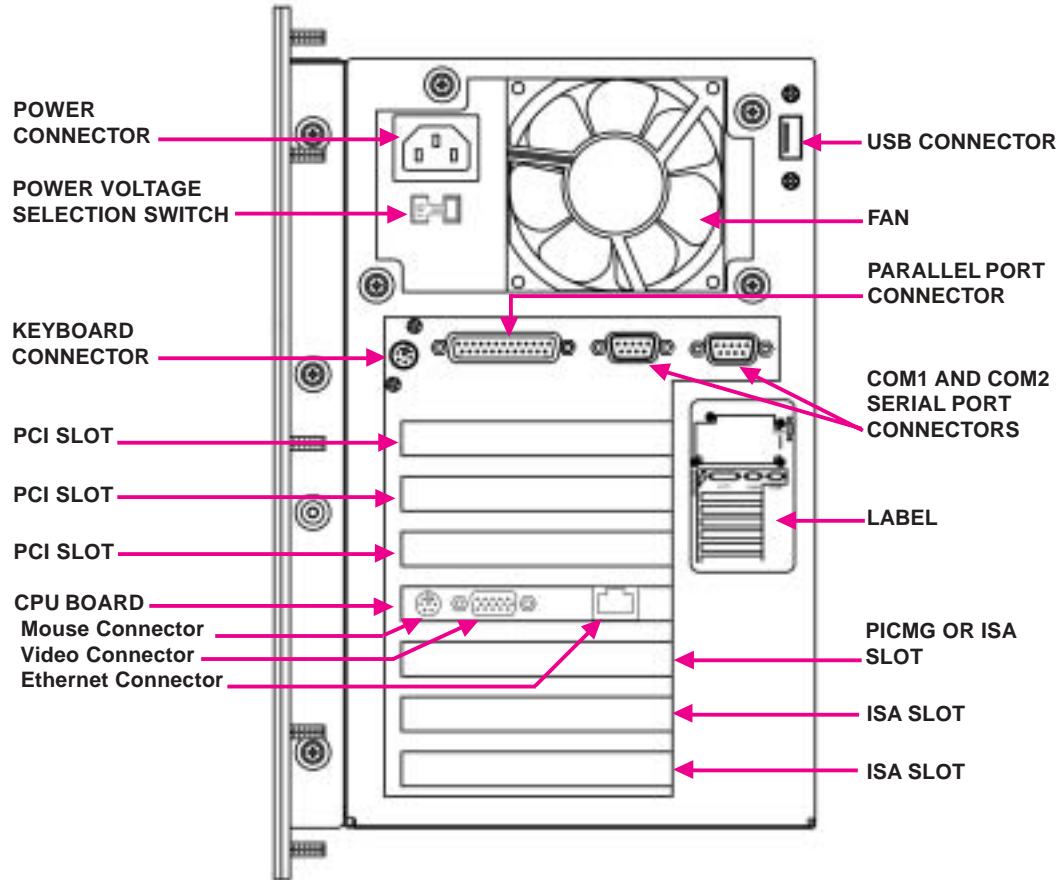
Next to the **RESET** push button is a green **HDD** LED indicator that will illuminate when the Hard disk drive is being accessed (is active).

Washable Air Filter

The air filter can easily be removed, washed to remove contaminants, and then replaced.

5 EXTERNAL COMPONENTS

EXPANSION CARD SLOTS SIDE VIEW



Power Connector

Power In connector to be connected to 115 or 230 VAC power source.

Power Voltage Selector Slide Switch

Switches computer power to 115 or 230 VAC — *must match power source.*

Fan

This is the power supply fan.

One USB (Universal Serial Bus) Connectors

There is one USB connector located on the side of the unit. Many devices now use this type of connector (i.e., scanner, printer, mouse, etc.).

Parallel Port Connector

Parallel Port Connector (LPT1) is used to connect to a printer.

Serial Port Connectors

The serial ports are 9-pin D-Sub male connectors. COM1 is a dedicated RS-232 port. COM2 is a RS-232/RS-422/RS-485 selectable port.

One KEYBOARD Connector

A personal system/2 (PS/2)-style keyboard port

Expansion Card Slots**PCI Slot 1, PCI Slot 2, PCI Slot 3**

The Workstation will support the addition of three 32-bit PCI (Peripheral Component Interconnect) Cards if you want to upgrade your system.

CPU Board Slot 4

This slot is used by the CPU board. There are 3 connectors on this board, they are:

One MOUSE Connector

A personal system/2 (PS/2)-compatible mouse port

10/100 ETHERNET

This is an RJ-45 connector. 10/100-megabit-per-second (Mbps) network interface controller (NIC) provides all the functions of a separate network card with Wakeup on LAN technology. The NIC supports both the 10BASE-T and 100BASE-TX Ethernet standards.

Video Connector

A 15-pin D-sub female connector for attaching an external monitor to the Panel Computer. SVGA for 12" Models and XGA for 15" Models.

PICMG or ISA Slot 5

This slot will support the addition of one PICMG (PCI Industrial Computer Manufacturers Group) Card or one ISA Card.

ISA Slot 6, ISA Slot 7

The Workstation Computer will support the addition of two ISA (Industry-Standard Architecture) Cards if you want to upgrade your system.

6 COMMUNICATIONS SETUP

BIOS Setup




Once you have the Workstation installed and the peripheral devices connected, you are ready to power up the computer.

1. Plug the Power cable into the Power plug and the Power source. Ensure that the Power Voltage Selector Switch is set for the correct power source being supplied.
2. Press the POWER ON push button located on the rear panel of the computer (as described on page 18).

Consult the PCA1623 Embedded Processor Board Manual, part number MAN-P1623-001 to set up your Industrial Workstation's BIOS.

COM2 Serial Port Setup

The default setting is RS-232. For RS-422 or RS-485 communications, install the JP2 jumpers as shown below. For more information, see the PCA1623 Embedded Process Board Manual, part number MAN-P1623-001.

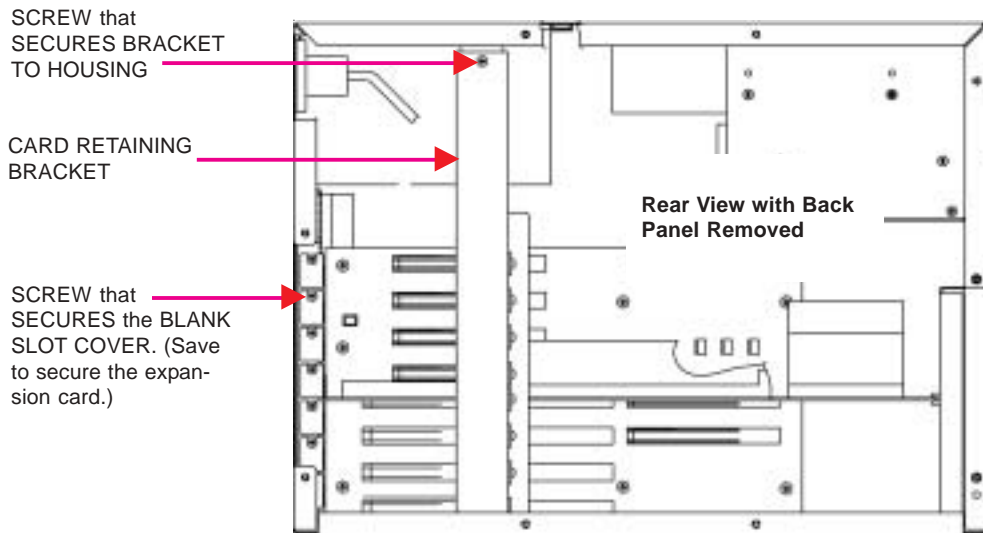
COM 2 Function	Jumper Settings (pin closed)	Jumper Illustrations
RS-232	Open	
RS-422	1-2, 5-6, 7-8, 9-10 11-12, 13-14, 15-16 17-18, 19-20	
RS-485	1-3, 4-6, 7-8, 9-10 11-12, 13-14, 15-16 17-18, 19-20	

UPGRADES

Expansion Card Installation

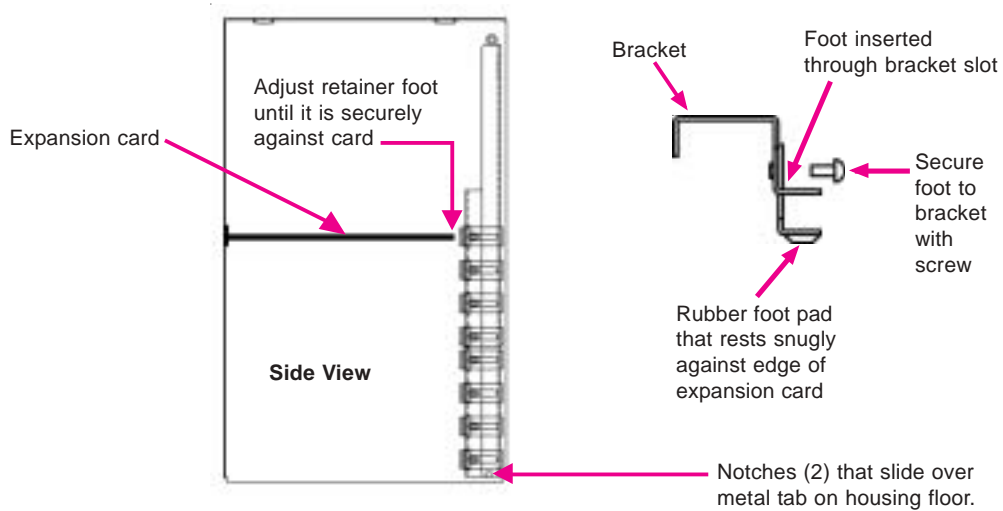
The Workstation can accommodate up to 3 PCI and 3 ISA (or 2 ISA and 1 PICMG) expansion cards. To install an expansion card:

1. Disconnect the power source from the Workstation.
2. To open the rear of the enclosure, remove 9 screws from back of captive panel. Panel is still supported by 2 tabs on the bottom. Just lift panel away from housing.



3. Remove and set aside the screw that secures the Blank slot cover where the expansion card will be installed. Discard cover.
4. Remove the "card retaining bracket" from housing by removing screw from metal tab that extends from top of housing. Lift bracket up off of the tab located just inside the housing floor and remove from housing.
5. Insert the expansion card into the backplane connector and reinstall the screw to secure the card's end plate to the enclosure.

7 MAINTENANCE AND UPGRADES



6. Reinstall card retainer bracket. Insert bottom of bracket onto the tab on the housing floor — there are notches at the bottom of the bracket that slide over the tab. Reinstall the screw to secure bracket to the top tab.
7. Adjust card retainer foot until it is securely against the edge of the card that you have just installed. Tighten the screw to ensure that the card will remain properly seated in the backplane connector.
8. Replace the rear panel and reconnect the power source.

Maintenance

Preserving Data

Viruses can corrupt files; files can be inadvertently deleted; and hard-disk drives can fail after extended use. To avoid data loss, regularly back up the data files on the hard-disk drive. If you lose the contents of your hard-disk drive, you can reinstall programs, but your data files will be lost if you don't have a backup. We recommend you back up the hard-disk drive at least once a week, with a daily backup of those files that have been changed.

External Components

To clean the exterior computer cabinet, perform the following steps:

1. Place a grounding strap around your wrist to reduce the effects of electrostatic discharge (ESD).
2. Turn off the computer and any attached devices.
3. Use a small vacuum cleaner to remove any dust from the slots and holes on the computer.
4. Moisten a soft cleaning cloth with water and liquid dishwashing detergent.



DO NOT SOAK the cloth in the solution—you must not let the solution drip inside the computer.

5. Use the damp cloth to wipe the computer housing.

Touchscreen/Display

To ensure the longevity and effectiveness of the touchscreen please take note of the following precautions:

- Do not press sharp objects against the screen.
- Do not strike the panel with hard objects.
- Do not press the screen with excessive force.
- Once the panel is mounted and has power applied, do not place any objects over the ventilation slots. This will result in heat buildup and may damage the unit.

Touchscreen/Chemical Compatibility

The touchscreen has a polyester surface. The following list is provided to make you aware of the general compatibility between chemicals that may be present in your work environment and the polyester surface of the touchscreen. Use the chart to determine those chemicals that are safe to use around your Panel Computer and those that may harm the touchscreen. The list rates these chemicals as **E—Excellent**, **G—Good**, **F—Fair**, and **N—Not Recommended**. Because the ratings are for ideal conditions at 57°C, consider all factors when evaluating your application.

<u>Chemical</u>	<u>Rating</u>	<u>Chemical</u>	<u>Rating</u>
Acetone	G	Aniline	G
Auto fuel	E	Auto lubricants	E
Auto Hydraulics	E	Bromine (wet)	N
Butyl Cellosolve	E	Butyl Ether	G
Chloroform	G	Clorox	E
Coffee	E	Cupric Sulfate	E
Cyclohexanone	N	Cyclohexanol	E
Downy	E	Diethyl Ether	G
Diethyl Phthalate	G	Ethyl Acetate	E
Ethanol	E	Ethylene Chloride	G
Fantastic	E	Formula 409	E
Grape Juice	E	Heptane	E
Hexane	E	Hydrogen Peroxide	N
Isopropyl Alcohol	E	Ketchup	E
Lemon Juice	E	MEK	F
Methylene Chloride	N	Mineral Acids (dilute)	E
Mineral Acids (strong)	G	Mr. Clean	E
Mustard	G	Naphtha	G
Phenol	N	Sodium Hydroxide (dilute)	G
Sodium Hydroxide (strong)	F	Sodium Hypochlorite	E
Spray 'N Wash	E	Tea	E
Toluene	E	Tomato Juice	E
Top Job	E	Trichloroacetic acid	F
Triethanolamine	G	Vinegar	E
Wisk	F	Xylene	E
Zinc Chloride	E		

Touchscreen Cleaning

The touchscreen has a scratch resistant coating. This adds a slight chemical barrier to the screen, but the coating's primary purpose is to protect the screen from abrasion. The touchscreen should be cleaned as needed with a soft cloth dampened with warm, soapy water.



Error / Improvement Report

Fill in this form and fax or mail to:

Mitsubishi Electric Automation, Inc.
Attn: HMI Marketing
500 Corporate Woods Parkway
Vernon Hills, IL. 60061
Fax: (847) 478-2253

For Mitsubishi use only:

Date Received:
Date Responded:
Status:

Name	Company	Phone Number
_____	_____	_____
Manual / Product / Brochure		Version
_____		_____

Description of request **Error** **Improvement**
(Please describe in detail the reported error(s). Use additional paper, or attachments (if needed).)

Suggested Solution

(Please print clearly in order to insure a prompt response)

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