

HMI Control Unit for Human- Machine Communication

Industrial Panel PCs

IPC Terminals

Users Manual

IPC-VP1151, IPC-VP1171

About This Manual

The texts, illustration, diagrams and examples in this manual are provided for information purposes only. They are intended as aids to help explain the installation, operation, programming and use of the IPC-Terminals IPC-VP1151, IPC-VP1171.

If you have any questions about the installation and operation of any of the products described in this manual please contact your local sales office or distributor (see back cover). You can find the latest information and answers to frequently asked questions on our website at www.mitsubishi-automation.com.

MITSUBISHI ELECTRIC EUROPE BV reserves the right to make changes to this manual or the technical specifications of its products at any time without notice.

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Safety Guidelines

General safety information and precautions

For use by qualified staff only

This manual is only intended for use by properly trained and qualified electrical technicians who are fully acquainted with the relevant automation technology safety standards. All work with the hardware described, including system design, installation, configuration, maintenance, service and testing of the equipment, may only be performed by trained electrical technicians with approved qualifications who are fully acquainted with all the applicable automation technology safety standards and regulations. Any operations or modifications to the hardware and/or software of our products not specifically described in this manual may only be performed by authorised Mitsubishi Electric staff.

Proper use of the products

The IPC-Terminals IPC-VP1151, IPC-VP1171 are only intended for the specific applications explicitly described in this manual. All parameters and settings specified in this manual must be observed. The products described have all been designed, manufactured, tested and documented in strict compliance with the relevant safety standards. Unqualified modification of the hardware or software or failure to observe the warnings on the products and in this manual may result in serious personal injury and/or damage to property. Only peripherals and expansion equipment specifically recommended and approved by Mitsubishi Electric may be used with the IPC-Terminals IPC-VP1151, IPC-VP1171.

All and any other uses or application of the products shall be deemed to be improper.

Relevant safety regulations

All safety and accident prevention regulations relevant to your specific application must be observed in the system design, installation, configuration, maintenance, servicing and testing of these products. The regulations listed below are particularly important in this regard. This list does not claim to be complete, however; you are responsible for being familiar with and conforming to the regulations applicable to you in your location.

- VDE Standards
 - VDE 0100
Regulations for the erection of power installations with rated voltages below 1000 V
 - VDE 0105
Operation of power installations
 - VDE 0113
Electrical installations with electronic equipment
 - VDE 0160
Electronic equipment for use in power installations
 - VDE 0550/0551
Regulations for transformers
 - VDE 0700
Safety of electrical appliances for household use and similar applications
 - VDE 0860
Safety regulations for mains-powered electronic appliances and their accessories for household use and similar applications.

- Fire safety regulations
- Accident prevention regulations
 - VBG Nr.4
Electrical systems and equipment

Safety warnings in this manual

In this manual warnings that are relevant for safety are identified as follows:



DANGER:

Failure to observe the safety warnings identified with this symbol can result in health and injury hazards for the user.



WARNING:

Failure to observe the safety warnings identified with this symbol can result in damage to the equipment or other property.

REMARK

| This indicates general information about the product and the user manual.

| This indicates detail information about the specific product configuration.

| This precedes helpful hints and tips for daily use.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Electromagnetic Compatibility

This product has been designed for industrial, commercial and office use, including small business use. The most recent version of the EMC guidelines (2004/108/EC) and/or the German EMC laws apply. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards), the prerequisites for the CE conformity declaration (safety requirements) may no longer apply.

Specific safety information and precautions

The chapter also contains information on approval and interference suppression of your device. Observe the warnings and instructions on the device and in the manual. The device has been built and tested in accordance to EN 60950-1 and left the company in a perfectly safe condition. In order to maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in this manual.

**DANGER:**

- *The device must be used in accordance with the instructions for use.*
- *The electrical installations in the room must correspond to the requirements of the respective regulations.*
- *Take care that there are no cables, particularly power cables, in areas where persons can trip over them.*
- *Take care that there are no cables, particularly power cables, in areas where persons can trip over them.*
- *Only use the power cord supplied.*
- *Only devices and components which fulfill the requirements of an SELV circuit (safety extra low voltage) in accordance with EN60950 may be connected to the interfaces of the system.*
- *All plugs on the connection cables must be screwed or locked to the housing.*
- *The device is designed to be used in vertical position with the interfaces downwards.*
- *Repairs may only be carried out by a person authorized by Mitsubishi Electric.*
- *Maintenance or repair on the open device may only be done out by qualified personnel authorized by Mitsubishi Electric which is aware of with the associated dangers.*
- *The device may only be opened for the installation and removal of PCI cards in accordance with the description in this manual. These procedures have to be carried-out only by qualified specialist personnel.*
- *If extensions are made to the device the legal stipulations and the device specifications must be observed.*
- *The device must be switched off before installation and removal of any PCI and CompactFlash™ cards.*
- *Only original accessories approved by Mitsubishi Electric may be used.*
- *It must be assumed that safe operation is no longer possible, if the device has visible damage or if the device no longer functions. In these cases the device must be shut down and secured against unintentional operation.*
- *The DC-input must fulfill SELV requirements of EN60950-1 standard.*
- *DC/DC-supplies do not fulfill the requirements for centralized DC power systems as required for use in the USA.*



Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:



WARNING:

- *Transport boards in ESD-safe containers such as boxes or bags.*
- *Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.*
- *Always be properly grounded when touching a sensitive board, component, or assembly.*
- *Store electrostatic-sensitive boards in protective packaging or on antistatic mats.*

Grounding Methods

The following measures help to avoid electrostatic damages to the device:



WARNING:

- *Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.*
- *Use antistatic mats, heel straps, or air ionizers for more protection.*
- *Always handle electrostatic sensitive components by their edge or by their casing.*
- *Avoid contact with pins, leads, or circuitry.*
- *Turn off power and input signals before inserting and removing connectors or connecting test equipment.*
- *Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.*
- *Use field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.*
- *Always place drives and boards PCB-assembly-side down on the foam.*

Instructions for the Lithium Battery

The installed board is equipped with a lithium battery. To replace this battery refer to the instructions described in section 3.1.

"Replacing the Lithium Battery"



WARNING:

There is a danger of explosion if the wrong type of battery is used for replacement. Replace only with the same or equivalent type of battery as recommended by the manufacturer. Dispose of used batteries according to the manufacturers instructions.

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1 Introduction

1.1 Scope of Delivery and Product Identification

1.1.1 Standard Parts

- IPC Terminal
- IPC Terminals - User's Manual

1.1.2 Optional Parts

- CF Card
- DC Power Cable

1.2 Product Description

The IPC Terminal is a Human-Machine-Interface (HMI) System designed for high industrial application. The IPC Terminal is a workstation system with integrated touch screen display. The system is designed for:

- Installation in an instrument panel or other cabinets
- Installation by VESA 75/100 compliant mounting system

The hardware of the IPC Terminal system can be flexibly configured corresponding to customized requirements. The rugged design offers excellent mechanical stability. The IPC Terminal provides the demanding characteristics required for a computer that is very suitable for using in harsh industrial environment.

The system accommodates a baseboard with an ETXexpress® module.

Depending on the ordered system configuration, the built-in display can be a 15" or 17" TFT-LCD display. In front of the display there is installed a glass protection pane with antireflection properties. In front of the display is available a resistive touch screen. This protects the display surface from dirt and scratches also.

The IPC Terminal accommodates two rear side accessible drive bays:

- drive bay (removable) for 2.5" SATA (I or II) HDD and
- Compact Flash™-drive for CF card, type I.

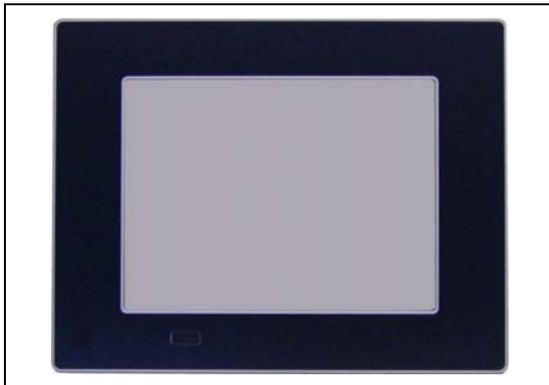


Fig. 1-1: IPC Terminal (front side)

image020.jpg



Fig. 1-2: IPC Terminal (interface side)

image022.jpg

The power button, the RESET button, the LED control indicators and user interfaces such as DVI-I/VGA, USB (2.0) LANs (10/100Mbps or 1Gbps) and serial ports (RS232) are accessible on the rear side of the system. At the front side is available a USB (2.0) port.

The IPC Terminal is designed to be powered from a DC high voltage external power sources.

The IPC Terminal system ensures at the front side the IP65 (NEMA 250 Type 12 and 13) protection class.

The IPC Terminal I is a fan less system. The cooling of the IPC Terminal is performed by the heat sink surface of the chassis (rear side).



WARNING:

When powering on the IPC Terminal, make sure that the air intake and exhaust openings are not obstructed.

1.3 Front Side View

At the front side are located:

- Panel Mount front plate
- Display (15"/17") with corresponding resistive touch screen
- USB (2.0) connector (covered)

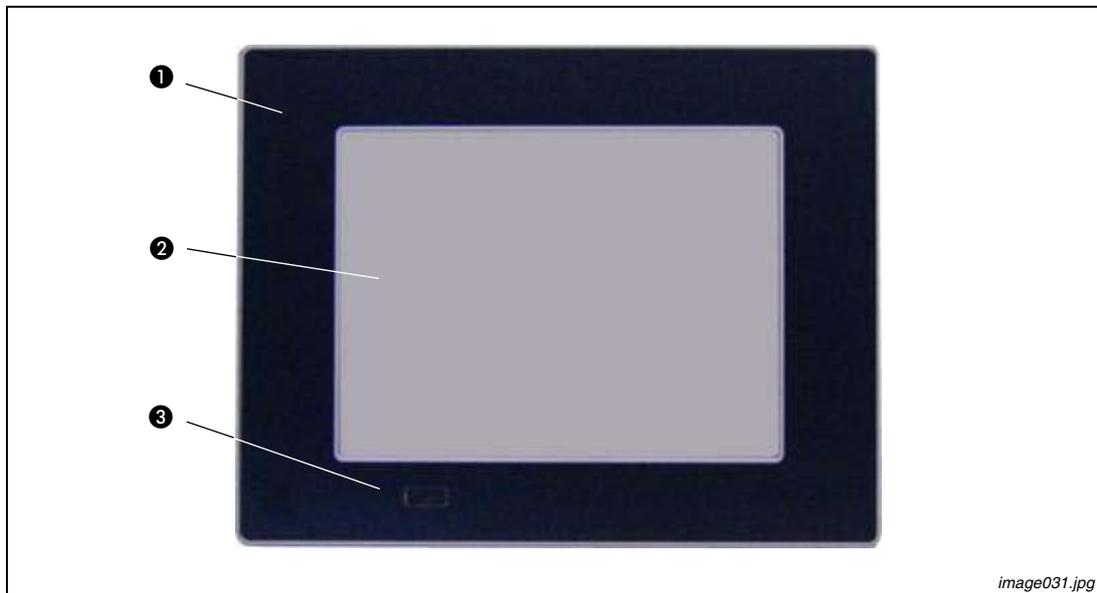


Fig. 1-3: FPC Terminal (shown with a 15" display)

- ❶ Front plate (panel mount)
- ❷ TFT display (15"/17")
- ❸ USB (2.0) connector (covered)

1.3.1 Panel mount Front Plate

This version of front plate is suitable for the installation in an instrument panel or other cabinets. Therefore at the rear side of the front plate are twelve threaded M4 metric studs refer to section 1.4.

1.3.2 Display

Depending on the ordered system configuration, the built-in TFT display has 15" or 17". Depending on the ordered system configuration, the built-in TFT display has 15" or 17". For technical specifications of the built-in display refer to section 4.1.

The display is mechanically protected by the resistive touch screen.

1.3.3 USB (2.0) Connector

This connector allows connection of USB-compatible devices.

REMARK

| The front side USB port with mounted plastic cover is also protected acc. IP65.

1.3.4 Touch Screen

The display unit is equipped with a resistive touch screen. The touch screen is internally connected to the on-board USB interface of the installed ETX baseboard.

The touch screen registers contacts of a finger or a pen and moves the mouse pointer.



WARNING:
Do not use a hard or a pointed object to operate the touch screen, since it can damage the touch screen foil surface.

Calibrating the Touch Screen

Calibration serves two purposes:

- Sets the active area of the touch screen
- Aligns the active area of the touch screen to the screen's image.



WARNING:
Before you calibrate the touch screen, let the unit warm up for 30 minutes.

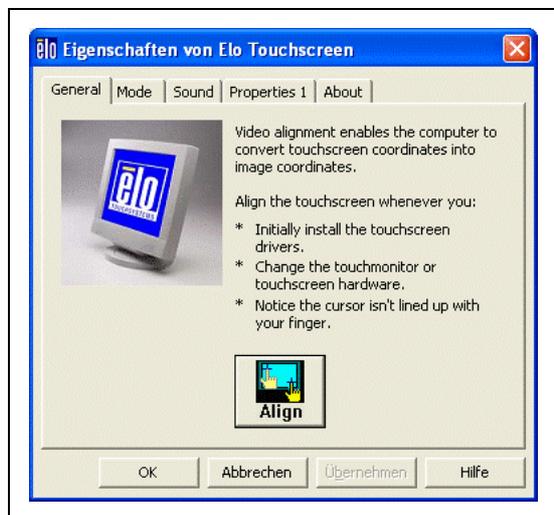


Fig. 1-4: Touch screen menu properties

image040.gif

Calibration aligns the active touch-sensitive area of the touch screen with the image on the display. Calibration also determines the edges of the screen's image and locates the center of the touch screen. If the touch screen is not calibrated properly, the active area of the touch screen may not be aligned with the screen's image or may be unnecessarily small in size.

Use the calibration tool "Align" to recalibrate the touch screen as necessary:

- The installed touch screen is calibrated at the factory. Run the calibration routine when an alignment problem exists between the mouse pointer and the contact location on the screen.
- Carefully touch the location of the markers with your stylus to recalibrate the touch screen.

1.4 Rear Side View

At the rear side of the IPC Terminal are rubber seal, the 12 mounting threaded M4 metric studs and the PC unit with the heat sink. Also are available two screws for securing the PC unit to the display unit (not visible in the picture below).

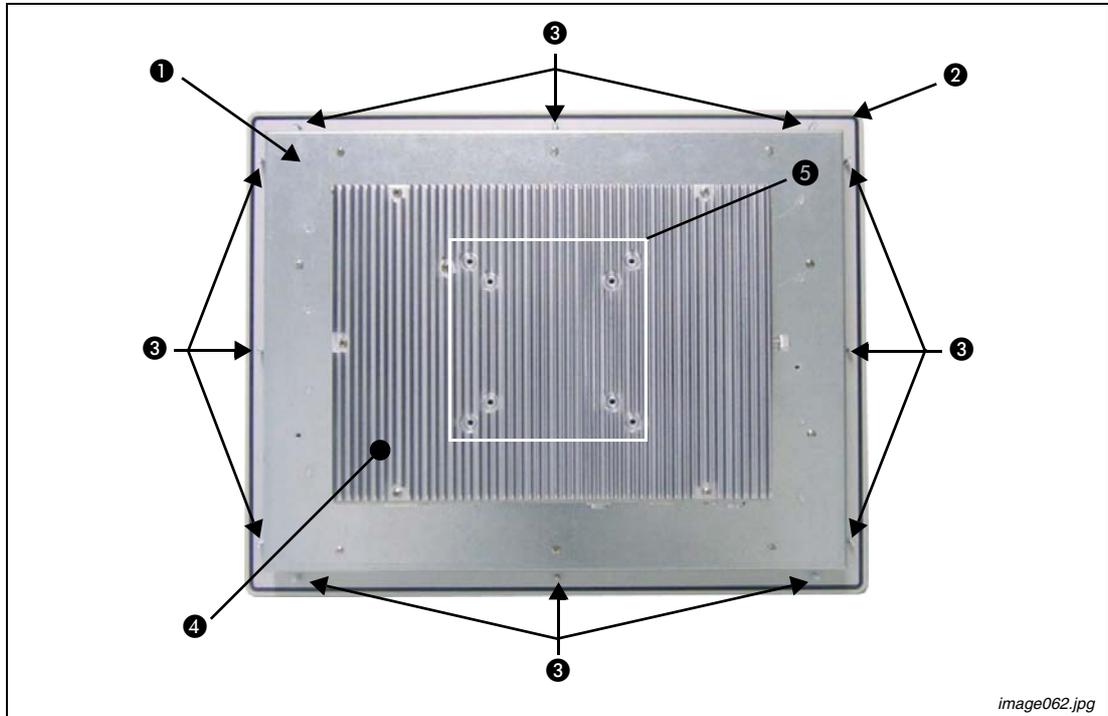


Fig. 1-5: PC Terminal (rear side)

- ❶ Rear side of the front plate (panel mount)
- ❷ Rubber seal (gasket)
- ❸ Threaded M4 metric studs
- ❹ Heat sink with VESA® 75/100 mounting holes
- ❺ VESA® 75/100 compliant mounting holes

1.5 Bottom Side View (with Interfaces)

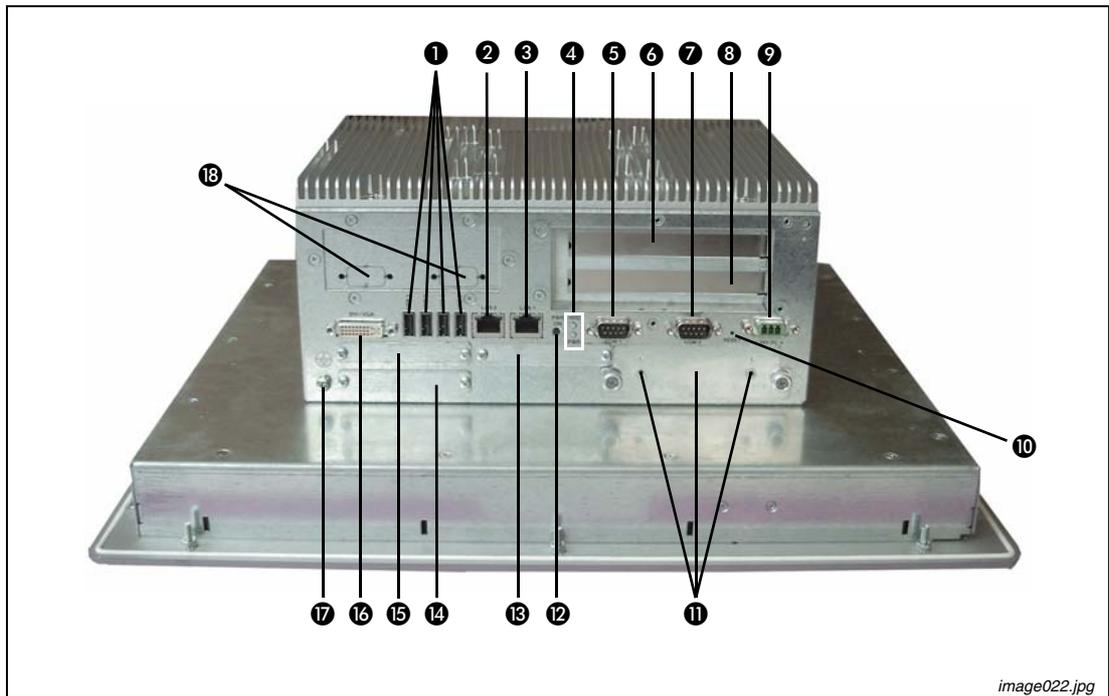


Fig. 1-6: IPC Terminal (interface side)

No.	Description	No.	Description
①	4x USB (2.0) connector	⑩	Reset switch
②	LAN2 interface connector	⑪	HDD drive cage with knurled screws
③	LAN1 interface connector	⑫	Power button (ATX)
④	LED control indicators	⑬	CF slot (not equipped)
⑤	COM1 (RS232) port connector	⑭	Express Card slot
⑥	Free expansion slot for PCI cards 32bit@33MHz (half size)	⑮	CF slot (not equipped)
⑦	COM2 (RS232) port connector	⑯	DVI-I/VGA connector
⑧	Free expansion slot for PCI cards 32bit@33MHz (half size)	⑰	Grounding Point
⑨	DC power plug (shown with DC terminal for the power cord)	⑱	COM3 and COM4 optional

Tab. 1-1: Interfaces

1.5.1 Interfaces on the Bottom Side (Rear side of the System)

USB 2.0 Connectors

The system is equipped at the bottom side (rear) with four USB 2.0 interface connectors. These connectors and provide connections for USB-compatible devices.

DVI-I Interface Connector

The DVI-I interface (Single Link) supports both digital and analog connections. Digital devices can be connected directly to this interface of the IPC Terminal but analog devices should be connected to this interface via a DVI to VGA adapter (not included).

Serial Interface Connectors (COM1 and COM2)

These RS232 connections are available as 9-pin D-SUB plugs and provide connection for serial devices.

Ethernet Interface Connectors

These interface connectors are provided as RJ45 sockets with integrated LEDs. The data transfer rate depends on the installed ETXexpress module (see below):

Ethernet Port	Data Transfer Rate for System Configuration with:	
	ETXexpress-PM Module	ETXexpress-CD Module
LAN1	10/100/1000 Mbps	10/100/1000 Mbps
LAN2	10/100/1000 Mbps	10/100/1000 Mbps

Tab. 1-2: Data transfer rate

Left LED State	Link Speed	Right LED State	Link Activity State
Off	10 Base-T	Off	Link not active
Green	100 Base-T	Green	Link active
Yellow	1000 Base-T		

Tab. 1-3: LED States Ethernet Ports

1.5.2 Power Button

The power button “PWR ON” is located on the bottom side (rear) of the system. Press this button in order to turn the system on or off. The power button behavior can be set in the BIOS Setup.

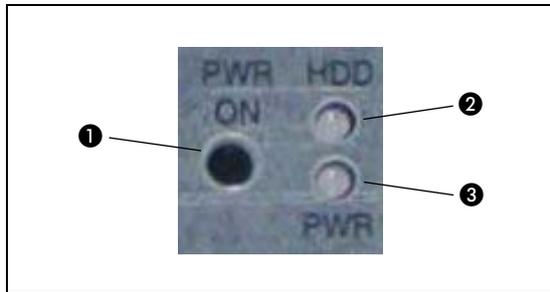


Fig. 1-7: Power Button and LED indicators

image073.jpg

- ① Power button
- ② HDD LED
- ③ Power LED



WARNING:

- *Even the system is turned off via the ATX power button there is still a standby-voltage of 5 V on the ETX express baseboard.*
- *The system is not completely disconnected from the main power source by turning it off via the ATX power button.*
- *The unit is only completely disconnected from the main power source, when the power cord is disconnected either from the power source or the unit.*
- *Therefore, the power cord and its connectors must always remain easily accessible.*

1.5.3 LED Control Indicators

The IPC Terminal is equipped with two LED indicators (bottom, rear side).

LED state	Description
Power LED	Lights up green when the system is powered on via the power button.
	Lights up red when the system is in standby (depends on the behavior of the power button (BIOS Setup setting)).
HDD LED	Lights up red for hard disk activity.

Tab. 1-4: Power and HDD LED states

1.5.4 Power LED Error codes

This function displays four important fail conditions:

- Voltage Error
- Temperature Error
- Fan Error
- Battery Error

All these errors will be notified by the status led and by a beeper. The following illustration shows the blink/beep for different conditions:

Cycle	1								2							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
OK	[Solid Green]															
Voltage Error																
Temperature Error																
Fan Error																
Battery Error																

Fig. 1-8: Power LED

If more than one fail condition occurs simultaneously, only the highest priority error code will be shown.

The priority order is:

- | | | | |
|---|---|----------|-------------------|
| ① | ↓ | most | Voltage Error |
| ② | | less | Temperature Error |
| ③ | | less | Fan Error |
| ④ | | at least | Battery Error |

E.g. if there is a temperature error and a fan error, only the temperature error will be displayed.

Item		Error	Good	Error
Voltage Error	12 V	<11.4 V	11.4 – 12.6 V	>12.6 V
	5 V	<4.7 V	4.7 – 5.2 V	>5.2 V
	3.3 V	<3.1 V	3.1 – 3.5 V	>3.5 V
Temperature Error		<-10 °C	-10 – +79 °C	>79 °C
Fan Error	1	<900 1/min	900 – 20000 1/min	>20000 1/min
	2	<900 1/min	900 – 20000 1/min	>20000 1/min
Battery Error		<2.5 V	2.5 – 3.5 V	>3.5 V

Tab. 1-5: Error range

1.5.5 CompactFlash™ Slot

The IPC Terminal is equipped with a bottom side accessible CompactFlash™ slot. (The second CF slot is not equipped; refer to Fig. 1-6, No. 15). The CF slot will accept only CF cards type I.



WARNING:

The system must be powered down before the Compact Flash™ card can be installed or removed.

1.5.6 Removable HDD Drive Cage

The IPC Terminal is equipped with a removable drive cage for a 2.5" SATA HDD. The drive cage is secured to the system with two knurled screws.

It is allowed to remove/replace the hard disk while the system is powered-up.

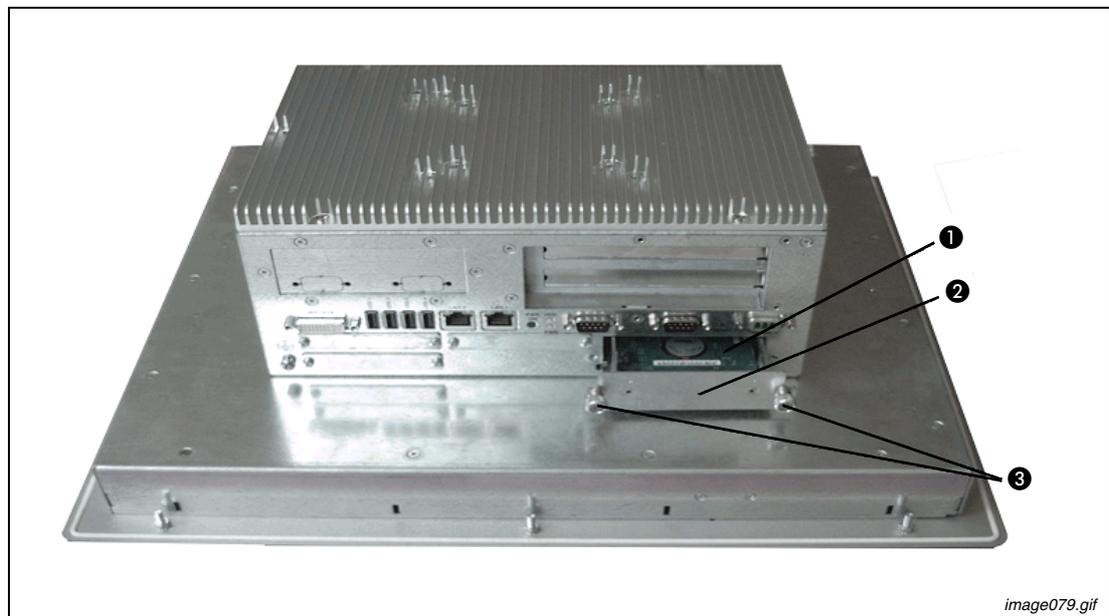


Fig. 1-9: Bottom side of IPC Terminal (shown with opened removable drive cage)

- ① 2.5" SATA hard disk
- ② Removable drive cage
- ③ Knurled screws



WARNING:

- *In order to prevent the loss of data do not remove the hard disk during HDD read or write activities.*
- *System operation is allowed only with closed HDD drive cage and secured by the knurled screws.*

1.6 Left & Right Side View

At the left side is situated the expansion card access door secured with a knurled screw. When opening this access door you have access to the free card slots of the raiser card installed onto the ETX baseboard. Install the expansion cards as described in section 2.2.1.

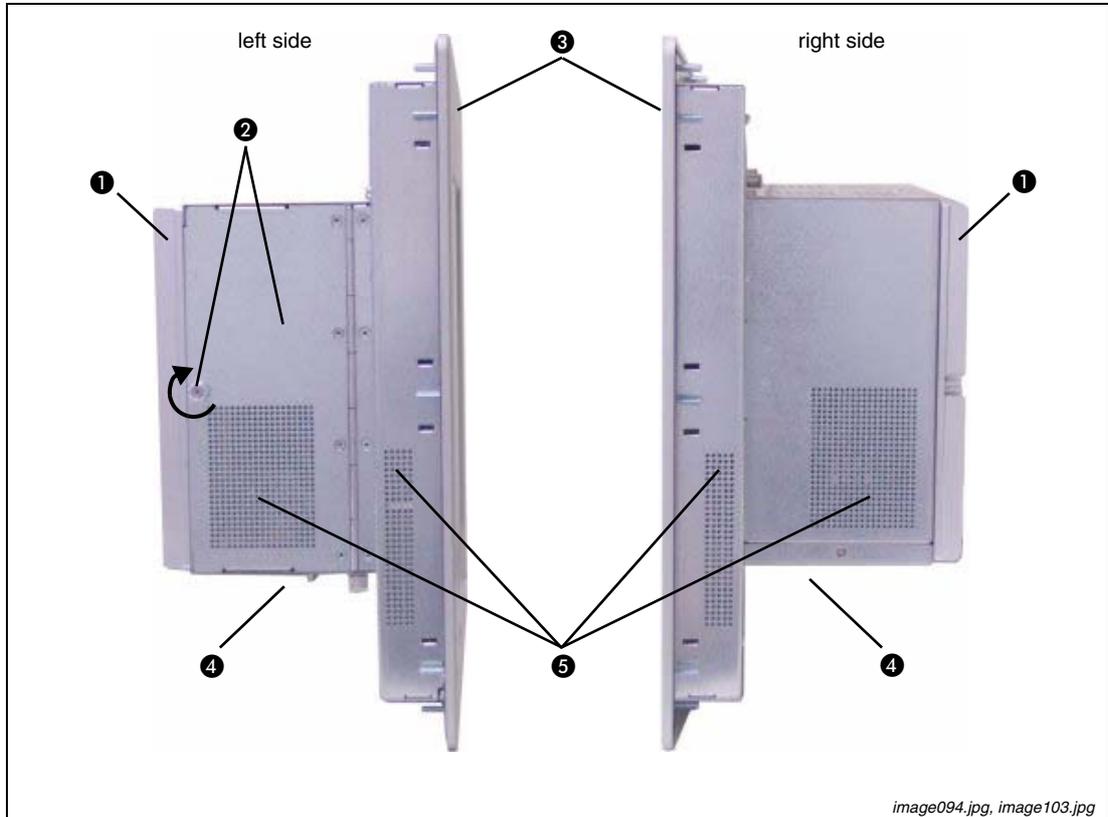


Fig. 1-10: Left and right side of IPC Terminal

- ① Heat sink with VESA® 75/100 mounting holes
- ② Expansion card access door with knurled screw
- ③ Front panel with display
- ④ Interface side (bottom)
- ⑤ Exhaust openings



WARNING:

When powering on the IPC Terminal, make sure that the air intake and exhaust openings are not obstructed.

1.7 Top Side View

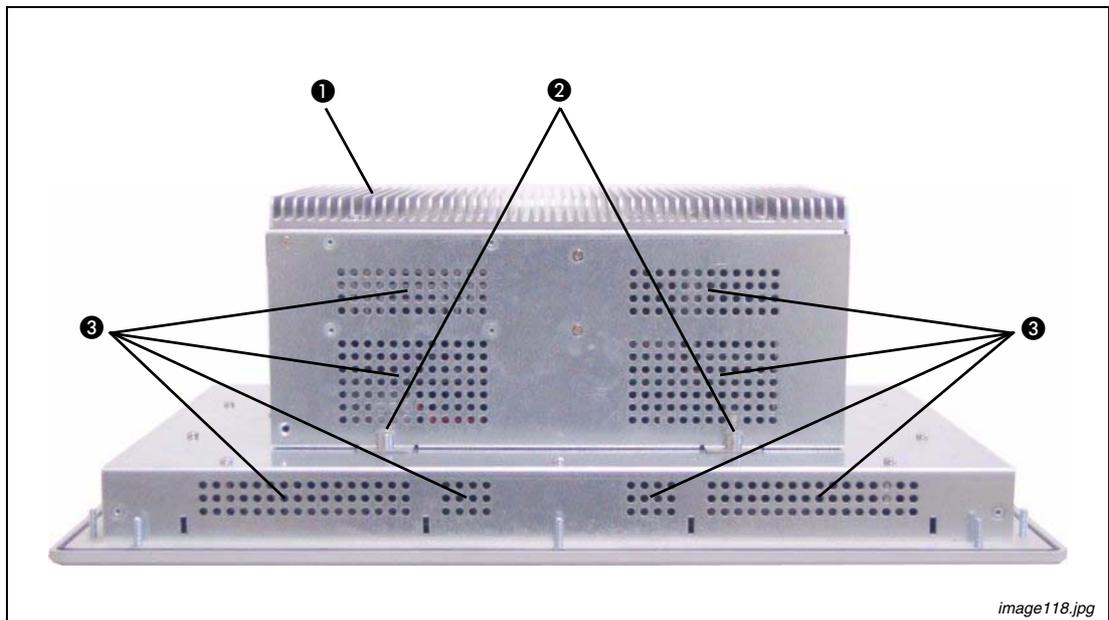


Fig. 1-11: Top side of IPC Terminal

- ❶ Heat sink with VESA® 75/100 mounting holes
- ❷ Screws for securing the PC unit to the display unit
- ❸ Exhaust openings



WARNING:

When powering on the IPC Terminal, make sure that the air intake and exhaust openings are not obstructed.

2 Starting Up

The DC power socket is located on the bottom side (rear) of the system.



WARNING:

The voltage of the power source must correspond to the voltage value on the type label.

24 V DC, 5.4 A is required as external power supply!

2.1 DC-Connection

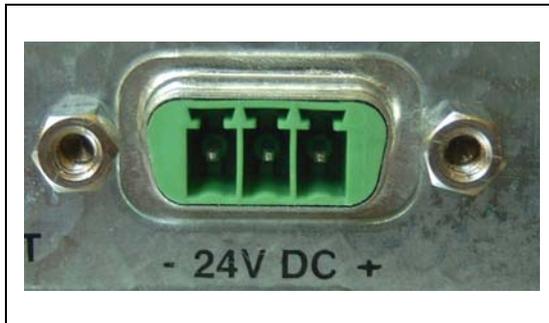


Fig. 2-1: DC-connector
(without Phoenix plug terminal)

image125.png

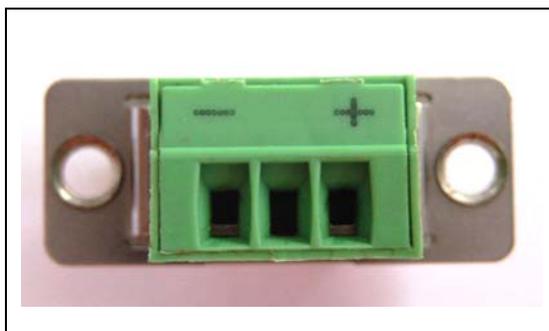


Fig. 2-2: DC-Terminal
(Phoenix plug terminal
AWG 28-16)

image127.png

For the DC-connection prepare the connecting wires with the supplied Phoenix plug. Pay attention to the right polarity of the wires (refer to fig. 2-1 and fig. 2-2).

The second end of each wire will be prepared as required for the connection to the DC-power supply.

REMARK

The length of the DC connecting wires may not exceed 3m. Strip and twist the connecting wire-ends but do not tin it with solder.

2.2 Accessing Internal Components

**WARNING:**

- *The installation and removal of expansion cards have to be carried-out only by qualified specialist personnel in accordance with the description in this manual.*
- *Before removing the cover to gain access to the internal components, the system must be powered-down and the power cord has to be disconnected from the power source.*
- *To expand your system with additional cards, please observe the power consumption specification specified in section 4.2.1 and that each additional card does not exceed 25 W power consumption.*
- *Please observe the safety instruction for handling assemblies with static sensitive device. Failure to take heed of this warning instruction can result in damage to the device.*
- *Please consult the documentation provided by the manufacturer of the expansion card for instructions before attempting to install/remove an expansion card into/ from the IPC-Terminal.*

2.2.1 Installing/Removing the Expansion Cards

The expansion cards for the performance extension of your computer can be installed into the free slots of the riser card. Please consider following instruction when you install (or remove) expansion cards.

To install (or remove) an expansion card, follow these steps:

- ① Turn off your system and disconnect the power cord from the power source.
- ② The IPC Terminal should lie on a flat, clean surface with the front panel downwards (Make sure that the display surface is protected against scratching and damage).
- ③ Loosen the knurled screw on the left side of the unit that secures the access door refer to fig. 2-3 pos. ② and open the expansion card access door.
- ④ To remove/install an expansion card, you have to remove the corresponding expansion card/slot bracket. Loosen the corresponding fastening screw on the internal side, which secures the slot bracket and remove it. Retain the screws for later use.
- ⑤ Insert/remove the expansion card into/from the slot of the riser card.
- ⑥ If you have removed an expansion card, re-insert a slot bracket.
- ⑦ Secure the bracket (slot bracket or card bracket) to the chassis with the fastening screw.
- ⑧ Close the access door and secure it with the knurled screw.



Fig. 2-3: IPC Terminal with opened expansion cards access door

- ① Screws to secure the expansion cars/slot brackets
- ② Front panel (detail)
- ③ Free PCI slots (32bit@32 MHz)
- ④ Expansion cards access door with knurled screw
- ⑤ Changeable Battery

2.3 Installation Instructions

REMARKS

Expansion card installation should be performed before installing the IPC Terminal system into an industrial cabinet or into a control panel. Refer to section section 2.2.1.

Leave sufficient space at the interface side for connecting the peripheral devices.

**DANGER:**

If you mount the IPC Terminal into an industrial cabinet, it is advisable to use two people for the mounting, because the system weighs approx. 11 kg (approx. 24,25 lbs).

**WARNING:**

- *Ensure there is sufficient air circulation around the device when installing the IPC Terminal. The openings for air intake and exhaust on the device must not be obstructed. Leave at least 5 cm (approx. 2") of free space around the PC unit to prevent the device from possibly overheating!*
- *The voltage feeds must not be overloaded. Adjust the cabling and the external overcharge protection to correspond with the electrical data indicated on the type label. The type label is located on the rear right hand side of the system.*

If you install the V panel into an instrument panel or other cabinet use the twelve threaded M4 metric studs on the rear side of the front plate.

For the panel assembly, cut a window and twelve pre-drill holes according the mechanical drawings.

Mechanical Drawings for the terminals IPC-VP1151 and IPC-VP1171 can be downloaded from our web page www.mitsubishi-automation.com. The system must be attached firmly with twelve M4 metric nuts. The contact surface with the rubber seal must be clean and flush.

2.4 Operating System and Hardware Component Drivers

The IPC Terminal can optionally be supplied with or without a pre- installed operating system.

If you have ordered your IPC Terminal with a pre- installed operating system, all drivers are installed, corresponding to the ordered computer configuration (optional hardware components). Your computer is fully functional, when you switch it on for the first time.



WARNING:

- *Consider the manufacturer specifications of the operating system and the integrated hardware components.*
- *To expand your system with additional cards, please observe the power consumption specification specified in section 4.2.1 and that every additional card does not exceed 25 W power consumption.*

3 Maintenance and Prevention

Mitsubishi Industrial Panel PCs require minimal maintenance and care to keep them operating correctly.

- Occasionally wipe the system with a soft dry cloth.
- You should only remove persistent dirt by use of a soft, slightly damp cloth (use only a mild detergent).

**WARNING:**

Do not use abrasives, abrasion sponges, steel wool, metal threads, or solvent like alcohol, acetone, or gasoline to clean the display's protection pane or the touch screen surface.

3.1 Replacing the Lithium Battery

The baseboard is equipped with a lithium battery. To replace this battery, please proceed as follows:

- ① Open the unit as described in section 2.2.1 (steps ① – ③).
- ② If your system is equipped with expansion cards, please remove them first as described in section 2.2.1 (steps ⑤ – ⑥).
- ③ Remove the battery by pressing outwards the ejector spring.
- ④ Insert the new battery into the socket.
- ⑤ Make sure that you insert the battery correctly. The plus pole must be on top!
- ⑥ Reinstall the removed expansion cards and reconnect the removed data cable.
- ⑦ Close the Unit as described in section 2.2.1 (step ⑧).

The lithium battery must be replaced with an identical battery.
(Lithium battery 3.0 V for RTC^①, type: CR2032)

**CAUTION:**

Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).

**DANGER:**

There is a danger of explosion if the wrong type of battery is used for replacement. Replace only with the same or equivalent type of battery as recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

^① RTC = Real Time Clock

4 Specifications

4.1 Main specifications

Specifications		IPC-VP1151	IPC-VP1171
Display unit	type	TFT	
	size	15"	17"
	graphical resolution [pixel]	1024 × 768	1280 × 1024
	brightness	350 cd/m ²	300 cd/m ²
Power supply	voltage	24 V DC ±20 %	
	input current	max. 5.4 A	
Processor type		Intel Core Duo 2 × 1.06 GHz	
Lithium Battery		Type: CR2032; 3.0 V; 0.22 Ah	
Cooling		Fanless	
Operating system		Windows XP professional	
Internal memory capacity		512 MB RAM	
Screen type		Resistive analog touch panel	
Integrated hard disk		40 GB	
LED indicators		2 (Power ON / HDD)	
Interfaces external	serial	2 × RS232C	
	others	5 × USB (1 × front side; 4 × rear side)	
	Video	1 × DVI-I (single Link)	
LAN network interface		1 × 10/100 Mbps, 1 × 100/1000 Mbps	
Free card slots		2 × PCI 32 bit @33 MHz (half size)	
Removable HDD		1 × SATA II (300 Mbps for configuration with ETXexpress-CD)	
Drive Bay		1 × Compact Flash™ (on-board); for CF card type I	
Operating elements (on back side)		Power button / Reset button	
IP rating		IP65 (front)	
Operating temperature range		0 – +40 °C at 90 % r.H. (no condensation) 0 – +45 °C at 70 % r.H. (no condensation)	
Storage temperature range		0 – +40 °C at 90 % r.H. (no condensation) 0 – +45 °C max. at 70 % r.H. (no condensation)	
Altitude	operation	3000 m (10000 ft)	
	storage	4500 m (15000 ft)	
Shock	operation	15 G, 11 ms duration, half sine	
	storage	30 G, 11 ms duration, half sine	
Vibration resistance	operation	1 G: resistant to vibrations from 10 – 500 Hz along 3 axes (acc. to EN 60068-2-6)	
	storage	2 G: resistant to vibrations from 10 – 500 Hz along 3 axes (acc. to EN 60068-2-6)	
Weight (without packaging)		max. 11 kg (24.25 lbs.)	
Dimensions (W×H×D) [mm]		450 × 354 × 163	461 × 339 × 168

4.2 Miscellaneous specifications

4.2.1 Power specifications

Power specification ^①	
Total power of all additional customized applications	max.: 125 W
Power consumption per slot (PCI)	max.: 25 W
Power consumption at +3.3 VDC +5 VDC and +12 VDC (combined)	max.: 75 W

① max. power value for additional customized applications

4.2.2 Housing specifications

- Rear side mounting standard : VESA 75/100 compliant
- Housing: Zinc-coated steel, Aluminium front bezel

4.3 CE Directives and Standards

CE Directives	
Low Voltage Directive (Electrical Safety)	73/23/EEC modified by 93/68/EEC
EMC Directive	2006/95/EC + 2004/108/EC
CE Marking	93/68/EEC

Electrical Safety	Standards
EUROPE	EN 60950-1
U.S.A.	to meet UL 60950-1, First Edition

EMC	Standards
EUROPE	Generic emission standard for industrial environments (Emission): EN 61000-6-4 Generic standards - Immunity for industrial environments (Immunity): EN 61000-6-2
U.S.A.	FCC 47 CFR Part 15, Class A

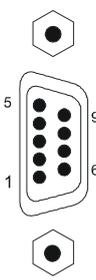
A Appendix

A.1 Interfaces

The following tables contain the plug assignments for the external connections of the IPC Terminal.

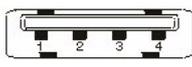
Low-active signals are indicated by a minus sign.

A.1.1 Serial Port (COM1, COM2)

Pin	Signal name	Description	9-pin D-SUB Plug (male)
1	DCD	Data Carrier Detect	
2	RXD	Receive Data	
3	TXD	Transmit Data	
4	DTR	Data Terminal Ready	
5	GND	Signal Ground	
6	DSR	Data Set Ready	
7	RTS	Request to Send	
8	CTS	Clear to Send	
9	RI	Ring Indicator	

Tab. A-1: Pin configuration serial port

A.1.2 USB Port

Pin	Signal name	4-pin USB Socket Type A Version 2.0/1.1
1	VCC	
2	Data-	
3	Data+	
4	GND	

Tab. A-2: Pin configuration USB port

A.1.3 DVI-I Connector (Single Link)

Pin	Signal name	Description	DVI-I Connector (female)
1	TMDS2-	Differential TMDS Data 2-	 <p>The diagram shows a vertical DVI-I Connector (female) with 24 pins numbered 1 to 24. Pins 1-4 are on the top edge, 5-8 on the right edge, 9-12 on the bottom edge, and 13-16 on the left edge. Pins 17-20 are on the top edge, 21-24 on the right edge. Below the main pin array are five pins labeled C1, C2, C3, C4, and C5. C1 and C2 are on the right, C3 and C4 are on the left, and C5 is a small pin on the far left.</p>
2	TMDS2+	Differential TMDS Data 2+	
3	GND	TMDS shield	
4-5	NC ^①	—	
6	DVI_SCL	DDC EDID data clock	
7	DVI_SDA	DDC EDID data	
8	DVI_VS	Analog VSYNC	
9	TMDS1-	Differential TMDS Data 1-	
10	TMDS1+	Differential TMDS Data 1+	
11	GND	TMDS shield	
12-13	NC ^①	—	
14	DVI_5V	5V / 100mA Power Supply	
15	GND	Ground	
16	DISPDET	Hot Plug Detection	
17	TMDS0-	Differential TMDS Data 0-	
18	TMDS0+	Differential TMDS Data 0+	
19	GND	TMDS shield	
20-21	NC ^①	—	
22	GND	TMDS shield	
23	TMDSSCL-	Differential TMDS Clock-	
24	TMDSSCL+	Differential TMDS Clock+	
C1	DVI_R	Analog red	
C2	DVI_G	Analog green	
C3	DVI_B	Analog blue	
C4	DVI_HS	Analog HSYNC	
C5	Analog GND	Analog ground	

Tab. A-3: Pin configuration DVI-I Connector (Single Link)

^① NC = not connected

A.2 Technical Support

For technical support, please contact our Technical Support department:

FA-EBG Support

E-mail: fa.ebg.assist@meg.mee.com

Make sure you have the following information on hand when you call:

- the unit part id number (P/No #),
- and the serial number (S/No #) of the unit (provide the serial number found on the type label, placed on the rear right hand side of the system).
- Be ready to explain the nature of your problem to the service technician.

If you have questions about Mitsubishi or our products and services, you may reach us at:

www.mitsubishi-automation.com

or by writing to:

Mitsubishi Electric EUROPE B.V.
Gothaer Str. 8
D-40880 Ratingen

A.2.1 Returning Defective Material

Before returning any material, please:

- ① Contact our Service and request an RMA number (Return Material Authorization) at:
E-Mail: GER-Repair-Coordination@meg.mee.com
- ② Make sure that you receive an RMA number from Mitsubishi-Service before returning any material. Clearly write or mark this number on the outside of the package you are returning.
- ③ Describe the device failure behavior.
- ④ When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.
- ⑤ When returning a unit.
 - Ensure that the unit is properly packed in the original box.
 - Include a copy of the RMA form.

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