MODEL:

IOVU-572M

Panel PC, 5.7" Touchscreen, 624 MHz Marvell XScale PXA310, Fast Ethernet, Two USB, 802.11b/g Wireless, RS-232/422/485 RoHS Compliant, IP 64 Protection

User Manual

Rev. 1.10 – December 26, 2014

Revision

Date	Version	Changes
December 26, 2014	1.10	Updated for R11 version: - updated **Section 4.5.1 Wireless Connection Setup** - updated diagrams in **Section 4.3.2.2**
August 27, 2013	1.01	Added **Section 4.5.1**
February 13, 2012	1.00	Initial release

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1

Introduction

1.1 Overview

Figure 1-1: IOVU-572M

The IOVU-572M Panel PC comes with a 5.7" touch screen panel. It is powered by a 624 MHz Marvell XScale PXA310 processor and has 256 MB of SDRAM.

The IOVU-572M comes installed with Windows CE 6.0. The package also includes a software development kit and documentation for easy operating system customization according to needs.

The IOVU-572M is an extremely low power Panel PC. The system is fanless for quiet and reliable operation

1.2 Benefits

Some of the IOVU-572M benefits include:

- Customizable operating system to suit application needs.
- Less downtime due to overheating because of the fanless design
- Cost savings with low power consumption
- Easy installation with a wide range of input voltages supported
- Solid-state storage and IP 64 protection of the front cover for handling tough working environments

1.3 Features

The IOVU-572M features are listed below:

- 624 MHz Marvell XScale PXA310 processor
- 256 MB of SDRAM
- Two Ethernet ports
- Two USB ports
- One RS-232/422/485 serial communication connection
- Two built-in speakers
- 4-wire resistive touch panel
- 12-36 VDC input
- RoHS compliant

1.4 Technical Specifications

The IOVU-572M technical specifications are listed in Table 1-1.

System Specifications	
CPU	624 MHz Marvell XScale PXA310 processor
Memory	256 MB of SDRAM
Real-time Clock	Battery backup RTC
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Reset	Reset button
Display	
Display Type	TFT LCD screen
Display Size	5.7"
Resolution	640 x 480 262,000 colors
Brightness	400 cd/m^2
Touch Panel	4-wired resistive touch panel

I/O and Communications	
Ethernet	2 x 10/100 Mb/s
Serial Ports	1 x RS-232/422/485
USB Interfaces	2 x USB host connectors
Audio	2 x 1.5 Watt speakers
LED Function	1 x Power ON/OFF LED on front panel
Memory Socket	SD Card socket
Power	
Power Supply	12-36 VDC
Power Consumption	12 W or less
Environmental and Mechanical	
Operating Temperature	Minimum: -10ºC (14°F) Maximum: 60°C (140°F)
Storage Temperature	Minimum: -20ºC (-4°F) Maximum: 70°C (158°F)
Humidity	5%RH to 90%RH (non-condensing)
Vibration	MIL-STD-810G-514.6C-1 Axis: 3 axes/ Vertical / Transverse / Longitudinal. 10-500 Hz, 60min/axis. Equivalent to Z:1.04 Grms X:0.200 Grms Y:0.74 Grms
Front Panel Color	Pantone Black C
Physical Dimensions	180 mm x 135.8 mm x 46.7 mm
Ingress Protection	IP 64 compliant front panel

Table 1-1: Technical Specifications

1.5 Certifications

All IOVU-572M series models comply with the following international standards:

- ▪ RoHS
- ▪ IP 64

For a more detailed description of these standards, please refer to **Appendix A**.

Chapter

2

Detailed Specifications

2.1 Front Panel

The IOVU-572M front panel (Figure 2-1) comprises a 5.7" TFT WVGA 16-bit color touch screen LCD in an ABS+PC plastic frame.
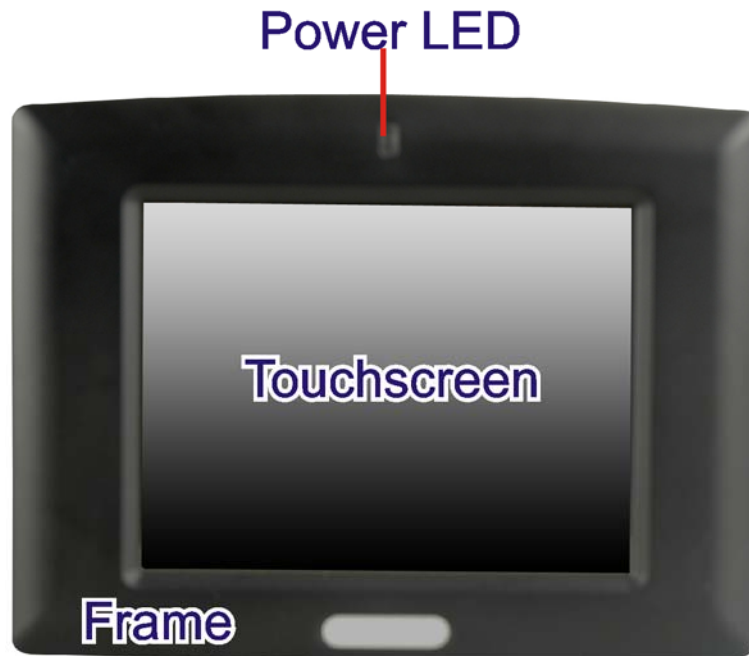
Figure 2-1: Front Panel

2.2 Connector Panel

All external peripheral interface connectors are located on the bottom panel of the IOVU-572M . The peripheral interface connectors are shown in Figure 2-2.
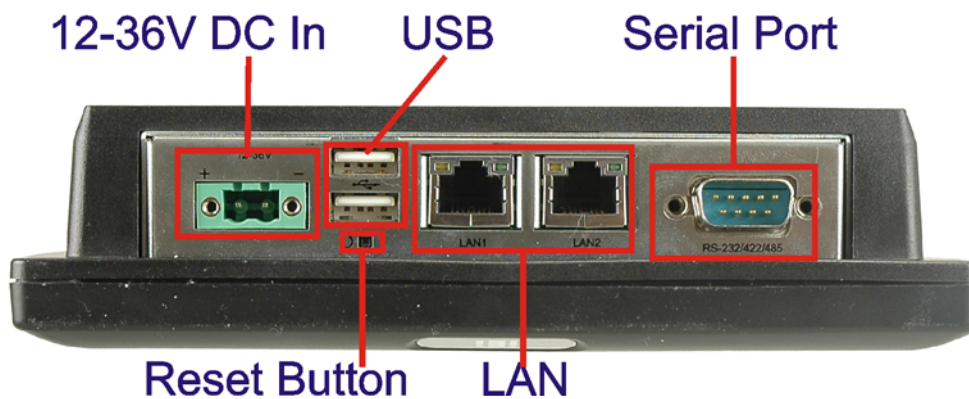
Figure 2-2: IOVU-572M Peripheral Connectors

External peripheral interface connectors on the IOVU-572M include:

- 1 x DC-IN bare wire terminal block
- 2 x RJ-45 LAN connectors
- 1 x RS-232/422/485 connector
- 2 x USB connectors
- 1 x Reset button

2.3 Dimensions

The physical dimensions of the IOVU-572M are shown in Figure 2-3 and listed below:

- Width: 180 mm
- Height: 135.8 mm
- Depth: 46.7 mm
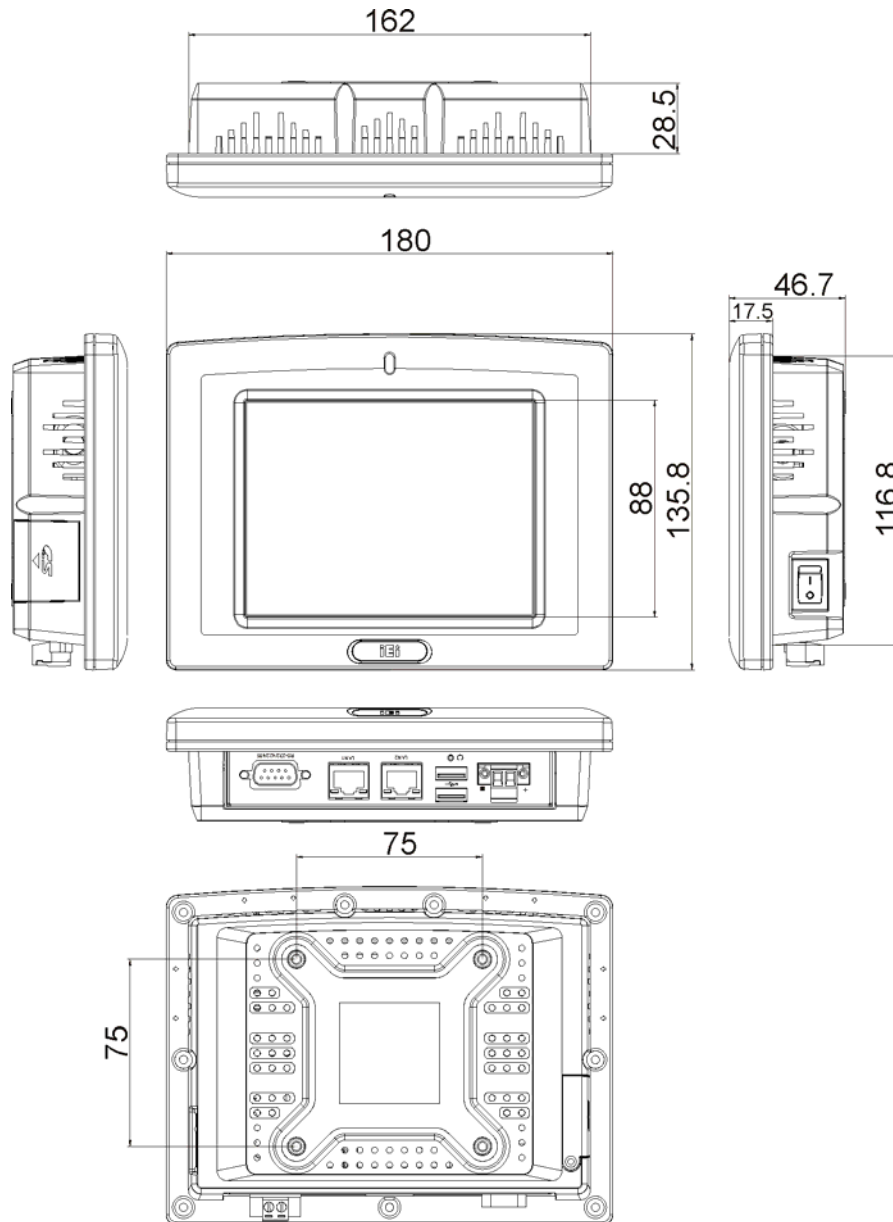
Figure 2-3: IOVU-572M Physical Dimensions (millimeters)

2.4 Power Supply

WARNING:

Whenever you need to remove a part for maintenance or upgrading, switch off the power supply and unplug the power cord first.

The IOVU-572M has a terminal block connector on the bottom panel.

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the IOVU-572M and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IOVU-572M. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IOVU-572M or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding*: Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the IOVU-572M, place it on an anti-static pad. This reduces the possibility of ESD damaging the IOVU-572M.

3.2 Unpacking Precautions

When the IOVU-572M is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 3.1**.
- Make sure the packing box is facing upwards so the IOVU-572M does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

3.3 Unpacking Checklist

![NOTE icon] **NOTE:**

> If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the IOVU-572M from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The IOVU-572M is shipped with the following components:

Quantity	Item and Part Number	Image
1	IOVU-572M	
1	Utility CD including SDK, utilities, and technical documentation	
1	Null modem cable	
1	Touch pen	

Table 3-1: Package List Contents

3.4 Optional Items

Item and Part Number	Image
Panel mount kit ALFPK-08	
VESA 75 wall mount kit AFLWK-07	
LCD monitor/PPC stand kit for VESA 75, up to 5kg STAND-A08-RS	
12V/5A DC 60W power adapter with bare wire, 90-264V AC input 63000-FSP060DBAB1555-RS	

Table 3-2: Optional Items

Chapter

4

Installation

4.1 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the IOVU-572M, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the IOVU-572M must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the IOVU-572M is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The IOVU-572M must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air Circulation**: Make sure there is sufficient air circulation when installing the IOVU-572M. The IOVU-572M's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the IOVU-572M. Leave at least 5 cm of clearance around the IOVU-572M to prevent overheating.
- **Grounding**: The IOVU-572M should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the IOVU-572M.

4.2 SD Card Installation

The IOVU-572M supports a single SD card. To install the SD card, follow the steps below.

Step 1:   Undo the SD card cover screw.

Step 2:   Slide open the SD card cover.

Step 3:   Slide the SD card into the slot. Replace the SD card slot cover and screw.
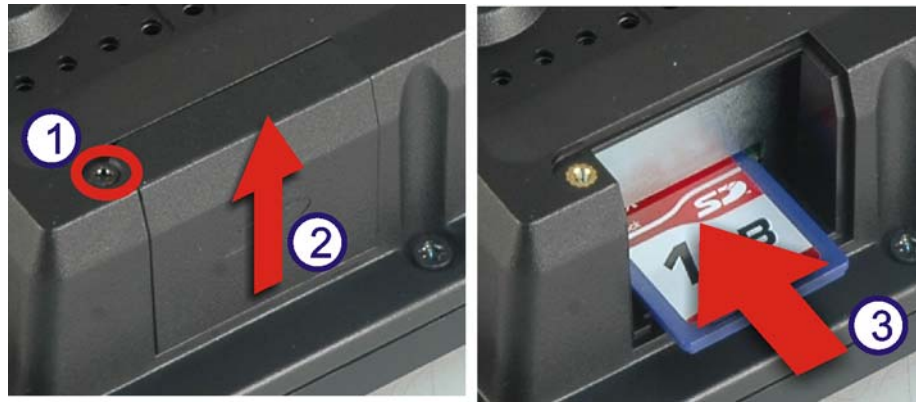
Figure 4-1: SD Card Installation

4.3 External Peripheral Interface Connectors

Table 4-1 lists the external interface connectors on the IOVU-572M. Detailed descriptions of the connectors can be found in the following table.

Connector	Type
12-36 V DC bare wire power terminal	Terminal Block
Ethernet connectors	RJ-45 Jack connector
RS-232/422/485 Serial connector	D-sub 9 Male connector
USB connectors	Dual USB port

Table 4-1: External Interface Connectors
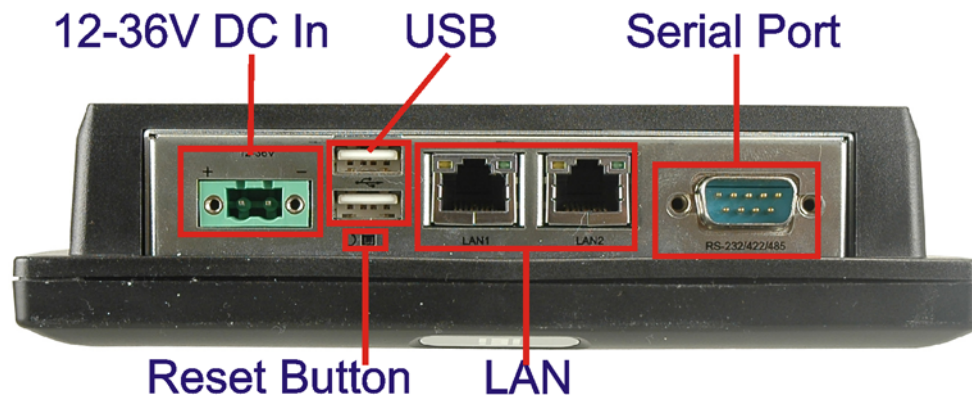
Figure 4-2: IOVU-572M Peripheral Connectors

4.3.1 12 V~36 V DC Terminal Block

The power terminal block connects to a 12~36 V DC power source.

CN Label:	**12-36 V**
CN Type:	Terminal block
CN Location:	See Figure 4-2
CN Pinouts:	See Table 4-2 and Figure 4-3

Pin	Description
1	12~36 V DC Power in
2	GND

Table 4-2: 12~36 V Power Connector Pinouts
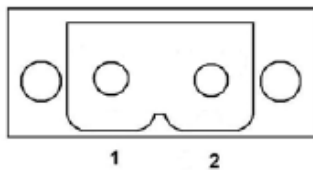
Figure 4-3: Power Terminal Block

4.3.2 RS-232/422/485 Serial Port

This section outlines the usage and setup of the serial port on the rear I/O panel.

4.3.2.1 Connecting the Serial Port

The IOVU-572M has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the IOVU-572M.

Step 1: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 4-4.
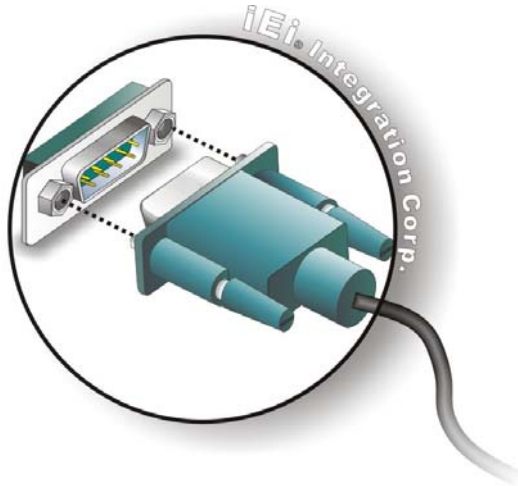
Figure 4-4: Serial Device Connector

Step 2: **Secure the connector**. Secure the serial device connector to the external

interface by tightening the two retention screws on either side of the connector.

4.3.2.2 RS-232/422/485 Selection

To select RS-232, RS-422, or RS-485 mode, please follow the directions below.

Step 1: Select "**Start > Programs > IEI > IEI CEUTILITY.exe**" to run IEI_CEUTILITY.exe

Step 2: **Change serial port mode setting**. Use the drop down menu in Figure 4-5 to

select the desired mode setting.
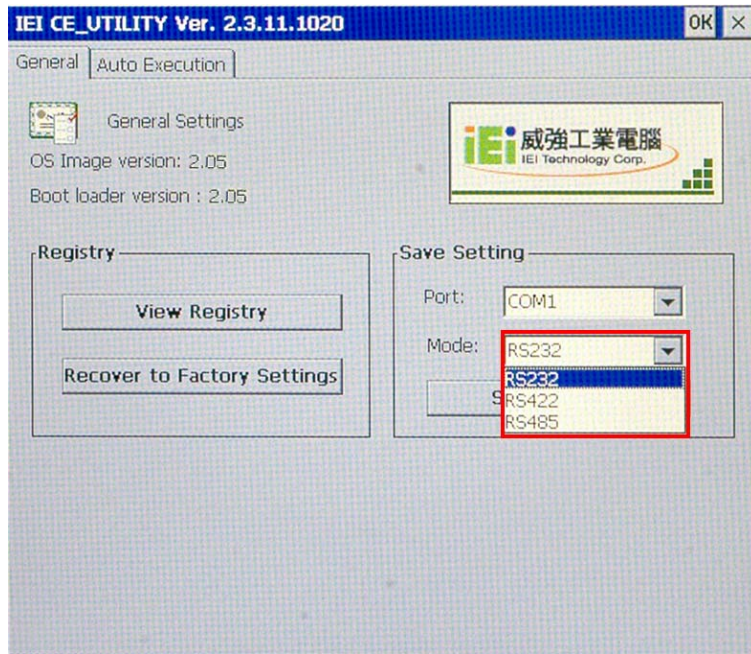
Figure 4-5: Serial Port Mode Setting

Step 3: Click "**Save Registry**" to save the changes.
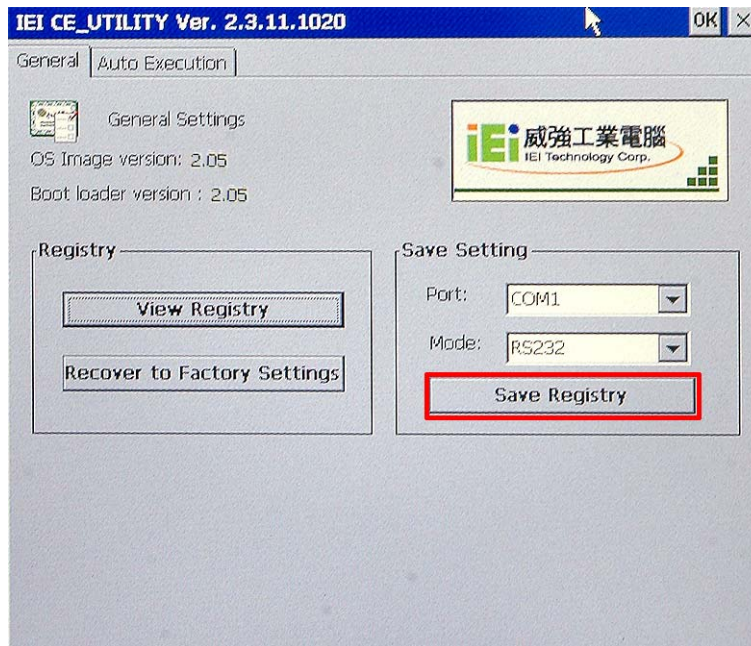
Figure   4-6: Confirm Serial Port Mode Setting

Step 4: **Confirm save changes.** Click "Yes" to continue.
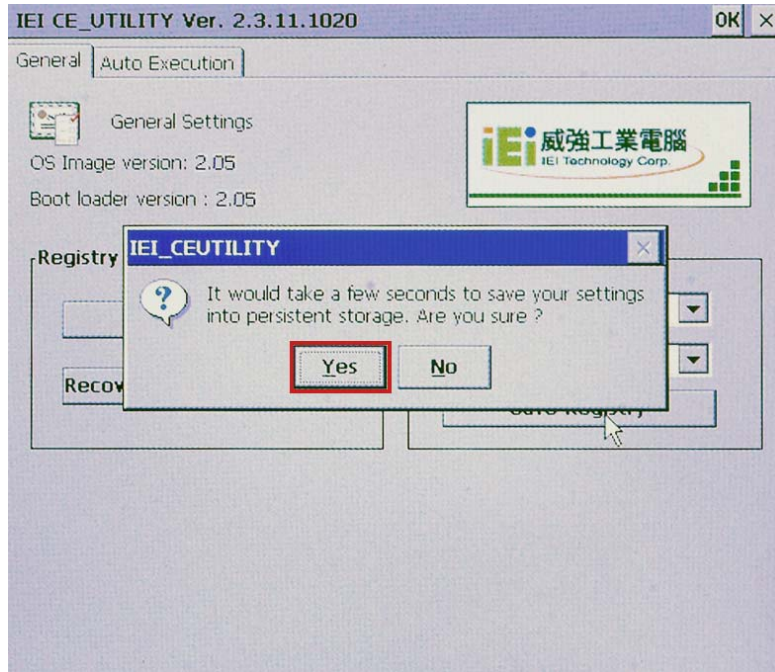
Figure   4-7: Confirmation Window

Step 5:   Settings will take effect after the system reboots. Click "Yes" to restart.
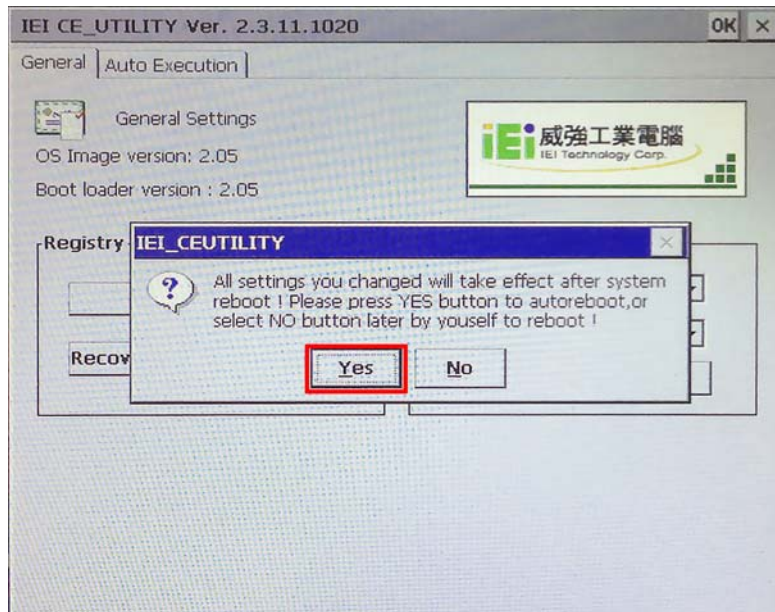
Figure   4-8: Restart

4.3.2.3 Pinouts

Serial port pinouts are shown below.

Pin	RS-232	RS-422	RS-485
1	DCD	RXD-	DATA-
2	RX	RXD+	DATA+
3	TX	TXD-	
4	DTR		
5	GND	GND	GND
6	DSR		
7	RTS	TXD+	
8	CTS		
9	RI		

Table 4-3: Serial Port Pinouts
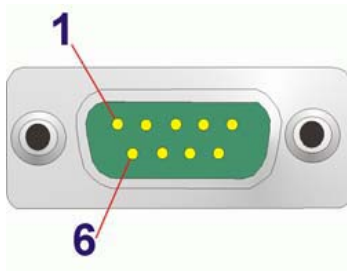
Figure 4–9: Serial Port Pinouts

4.3.3 USB Connectors

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the IOVU-572M.

Step 1: **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See Figure 4-10.
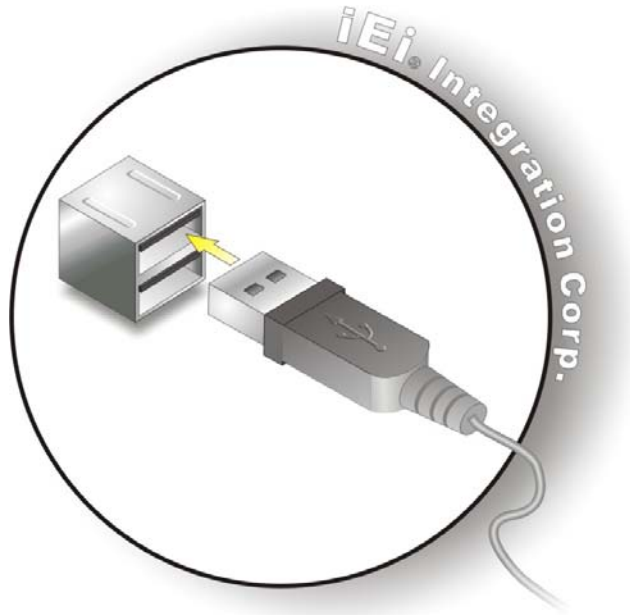
Figure 4-10: USB Connector

USB devices connect directly to the USB connectors on the external peripheral connector panel.

Pin	Description	Pin	Description
1	VCC	5	VCC
2	D1-	6	D2-
3	D1+	7	D2+
4	GND	8	GND

Table 4-4: USB Connector Pinouts

4.3.4 Ethernet Connector

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the IOVU-572M. See Figure 4-11.
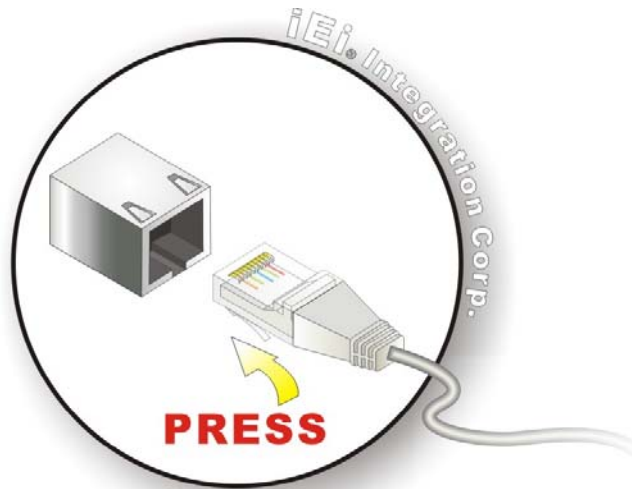
Figure 4-11: LAN Connection

Step 2: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN

cable RJ-45 connector into the on-board RJ-45 connector.

The Ethernet connector pinouts are shown below.

PIN	DESCRIPTION
1	TPT+
2	TPT-
3	TPR+
4	LAN_GND
5	LAN_GND
6	TPR-
7	LAN_GND
8	LAN_GND

Table 4-5: Ethernet Connector Pinouts
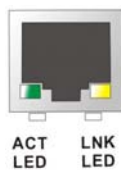
Figure 4-12: Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked (Table 4-6).

SPEED LED		LINK LED	
Status	Description	Status	Description
GREEN	ON: 100 MB OFF: 10 MB	YELLOW	ON: Linked Flashing: Activity

Table 4-6: Ethernet Connector LEDs

4.4 Mounting the System

⚠ **WARNING!**

When mounting the flat panel PC onto an arm, onto the wall or onto a panel, it is better to have more than one person to help with the installation to make sure the panel PC does not fall down and get damaged.

Three methods of mounting the IOVU-572M are listed below.

- Wall mounting
- Panel mounting
- Arm mounting

The mounting methods are described below.

4.4.1 Wall Mounting

To mount the IOVU-572M onto the wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four screw holes in the bracket on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (Figure 4-13).
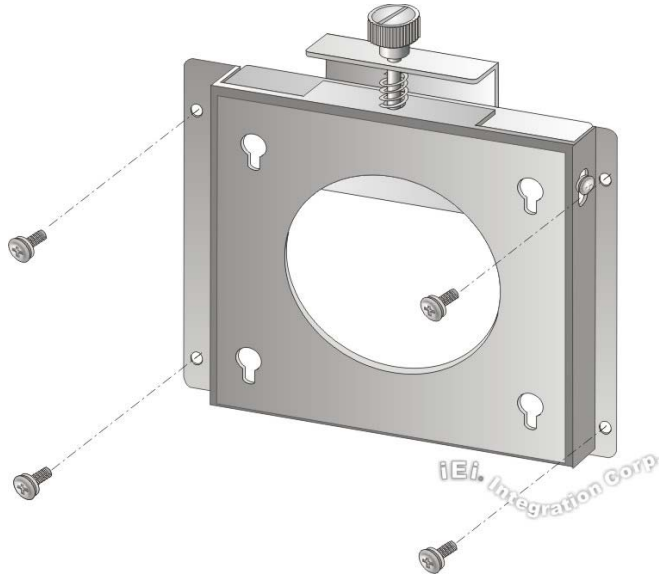
Figure 4-13: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the IOVU-572M and tighten until the screw shank is secured against the rear panel (Figure 4-14).

Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (Figure 4-14). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.
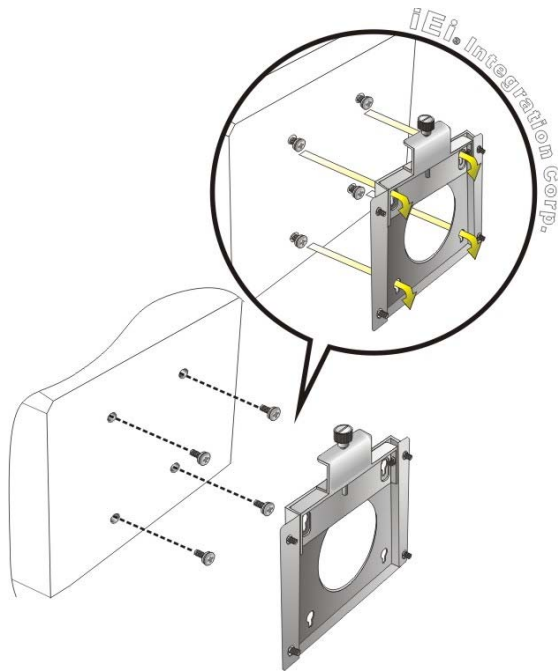
Figure 4-14: Chassis Support Screws

Step 9: Secure the panel PC by fastening the retention screw of the wall-mounting

bracket. (Figure 4-15).
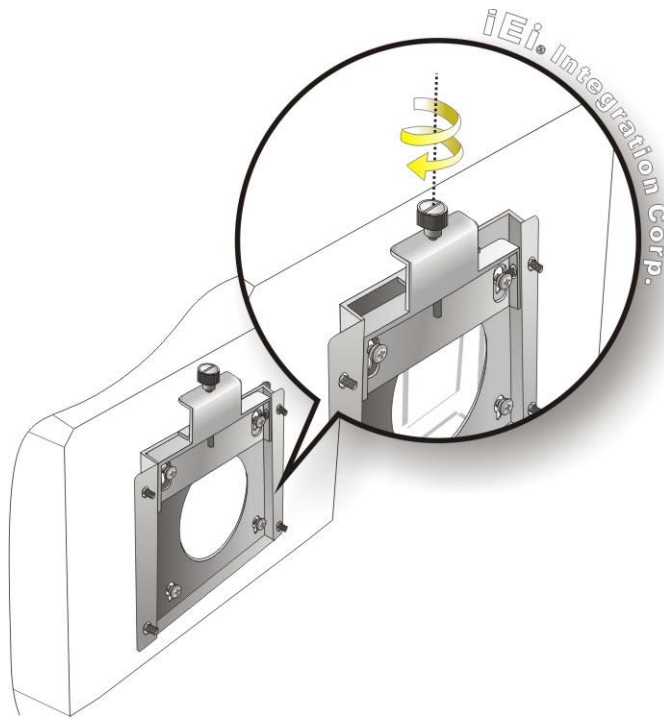
Figure 4-15: Secure the IOVU-572M

4.4.2 Panel Mounting

The IOVU-572M can be mounted in a panel.

⚠️ **CAUTION:**

When mounting the IOVU-572M take care to tighten the retention screws or bolts until fully secure, but do not over tighten. Over tightening the retention screws or bolts may cause them to become stripped, rendering them useless.

To mount the IOVU-572M into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the IOVU-572M.

Step 2: Cut out a section from the panel that corresponds to the rear panel dimensions of the IOVU-572M. Take care that the panel section that is cut out is smaller than

the overall size of the frame that surrounds the IOVU-572M but just large

enough for the rear panel of the IOVU-572M to fit through (see Figure 4-16).
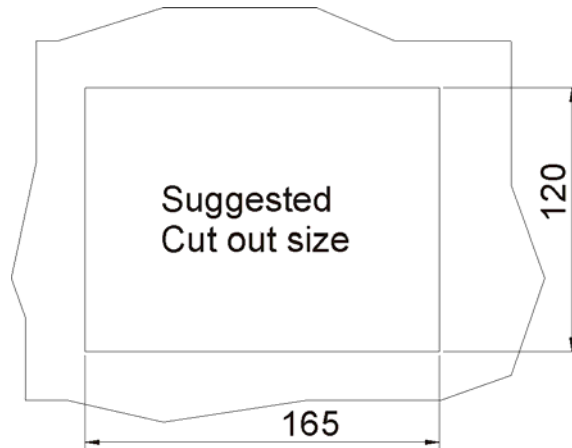
Figure 4-16: IOVU-572M Panel Opening (mm)

Step 3: Slide the IOVU-572M through the hole until the frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the frame.

Figure 4-17: Panel Mounting Clamp

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (Figure 4-18).
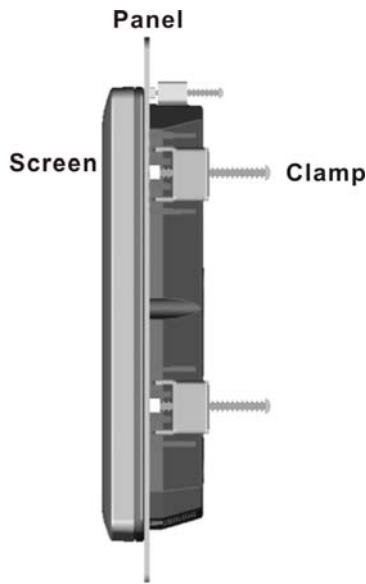
Figure 4-18: Tighten the Panel Mounting Clamp Screws

4.4.3 Arm Mounting

The IOVU-572M is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75 mm interface pad. To mount the IOVU-572M on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the IOVU-572M.

Step 2: Once the mounting arm has been firmly attached to the surface, lift the IOVU-572M onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those on the IOVU-572M.

Step 4: Secure the IOVU-572M to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the IOVU-572M.

4.4.4 Stand Mounting

The IOVU-572M has Video Electronics Standards Association (VESA) standard mounting holes tapped into the rear panel. The monitor stand mounting plate has a matching VESA hole pattern. To mount the IOVU onto a stand, please follow the steps below.

Step 1: Line up the threaded holes on the monitor rear panel with the screw holes on the monitor stand mounting plate.

Step 2: Secure the monitor to the stand with the supplied retention screws (Figure 4-19).

Figure 4-19: Stand Mounting

4.5 Software

The IOVU-572M comes with a pre-installed Windows CE 6.0 operating system and a rich software application development kit. For information about configuring the operating system, adding remote management tools or additional software and drivers, refer to the

user manuals on IEI IOVU Utility CD that came with the IOVU-572M. The IOVU includes the following software:

- Standard Windows® CE 6.0 professional version license.
- Optional Board Support Package (BSP) for customers to customize their own OS image.
- Attached Software Development Kit (SDK) for embedded Visual C++ to program Windows CE application.
- Built-in .NET Compact Framework support with related SDK
- Free pre-installed utilities for configuring and diagnosing your IOVU-572M.
- Free remote management tools installed in laptop for remotely configuring, monitoring, and managing your IOVU-572M.

4.5.1 Wireless Connection Setup

To setup wireless connection, please follow the instructions below.

Step 1: Double click the icon to launch the Laird Connection Manager.

Step 2: The Laird Connection Manager appears (**Figure 4-20**). Click **Scan**.
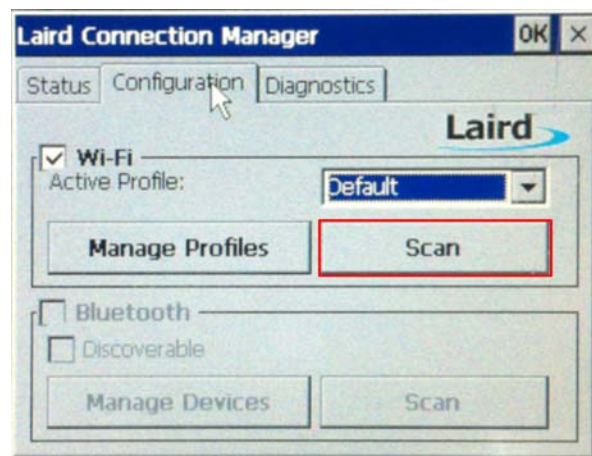
Figure 4-20: Laird Connection Manager

Step 3: The Scan window appears with a list of available Wi-Fi networks (**Figure 4-21**). Select one of the Wi-Fi networks and click **Configure**.
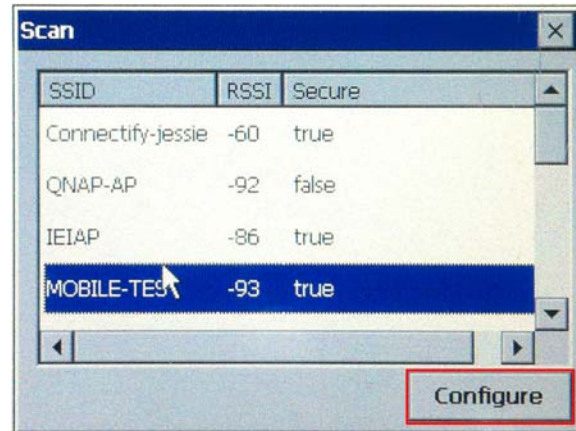
Figure 4-21: Laird Connection Manager – **Scan**

Step 4: The Admin Login window appears (**Figure 4-22**). **Leave the password field blank** and click **OK**. (Note: the network password will be entered later.)
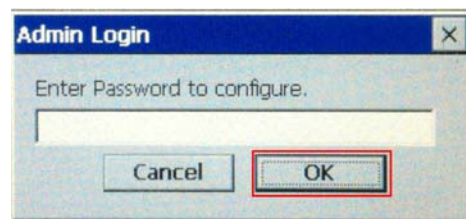
Figure 4-22: Laird Connection Manager – **Admin Login**

Step 5: Click **Yes** in **Figure 4-23** to create a new network profile.
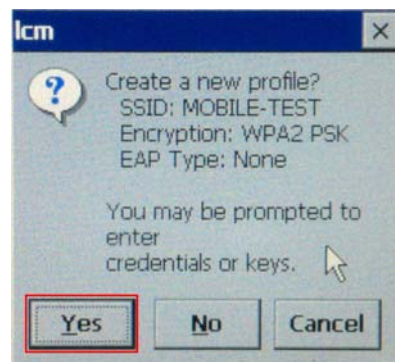
Figure 4-23: Laird Connection Manager – **lcm**

Step 6: The Manage Profiles window appears with a list of detailed information of the Wi-Fi network (**Figure 4-24**).
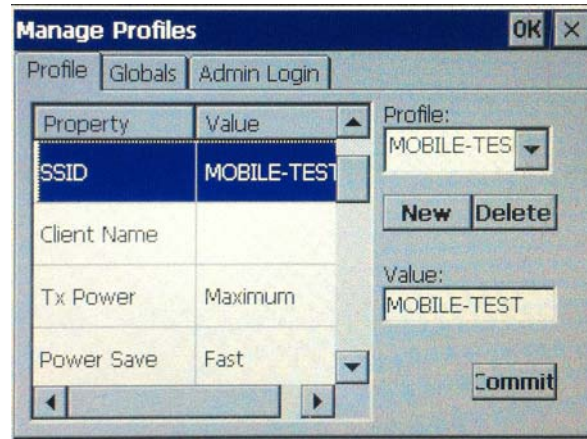
Figure 4-24: Laird Connection Manager – Manage Profiles

Step 7: Scroll down to the bottom and click **Passphrase**. Enter the password for the network in the Value field. Click the **Commit** button to connect the network. Click **OK** to close the window. See **Figure 4-25**.
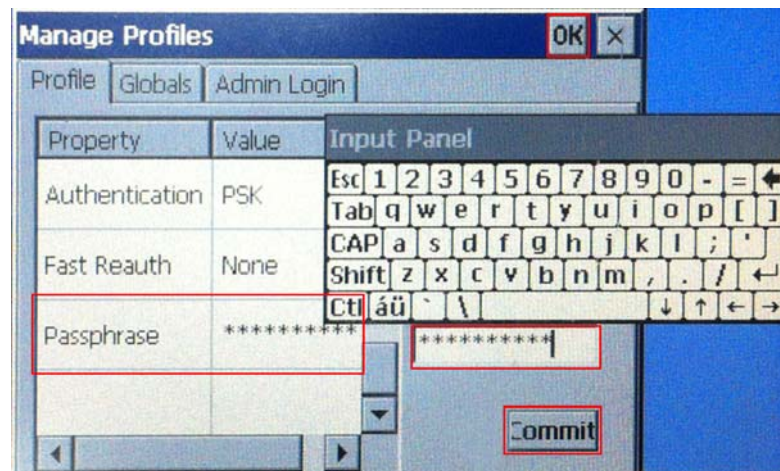
Figure 4-25: Laird Connection Manager – Enter Password

Step 8: On the main page, select the network you just created from the drop down menu. Click **OK** to exit the Laird Connection Manager. See **Figure 4-26**.

Figure 4-26: Laird Connection Manager – Select Network

Step 9: When the network is successfully connected, the icon in the notification area (as shown in **Figure 4-27**) appears.
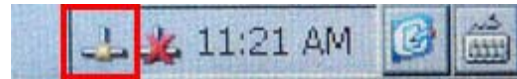
Figure 4-27: Network Connected

Appendix

A

Certifications

A.1 RoHS Compliant

All models in the IOVU series comply with the Restriction of Hazardous Materials (RoHS) Directive. This means that all components used to build the industrial workstations and the workstation itself are RoHS compliant.

The RoHS Directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

A.2 IP 64 Compliant Front Panel

The front panels on all models in the IOVU series have an ingress protection rating (IP) of 64, IP 64 or greater. The front panels are protected from dust particles and splashed water.

Appendix

B

Safety Precautions

B.1 Safety Precautions

⚠ **WARNING:**

> The precautions outlined in this appendix should be strictly followed.
> Failure to follow these precautions may result in permanent damage to
> the IOVU-572M.

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ▪ *Make sure the power is turned off and the power cord is disconnected* whenever the IOVU-572M is being installed, moved or modified.
- ▪ *Do not apply voltage levels that exceed the specified voltage range*. Doing so may cause fire and/or an electrical shock.
- ▪ *Electric shocks can occur* if the IOVU-572M chassis is opened when the IOVU-572M is running.
- ▪ *Do not drop or insert any objects* into the ventilation openings of the IOVU-572M.
- ▪ *If considerable amounts of dust, water, or fluids enter the IOVU-572M*, turn off the power supply immediately, unplug the power cord, and contact the IOVU-572M vendor.
- ▪ **DO NOT**:
  - ○ Drop the IOVU-572M against a hard surface.
  - ○ Strike or exert excessive force onto the LCD panel.
  - ○ Touch any of the LCD panels with a sharp object
  - ○ In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions

 WARNING:

Failure to take ESD precautions during the installation of the IOVU-572M may result in permanent damage to the IOVU-572M and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IOVU-572M. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IOVU-572M is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- *Self-grounding*: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- *Only handle the edges of the electrical component*: When handling the electrical component, hold the electrical component by its edges.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the IOVU-572M, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the IOVU-572M, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.

- The interior of the IOVU-572M does not require cleaning. Keep fluids away from the IOVU-572M interior.
- Be cautious of all small removable components when vacuuming the IOVU-572M.
- Turn the IOVU-572M off before cleaning the IOVU-572M.
- Never drop any objects or liquids through the openings of the IOVU-572M.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the IOVU-572M.
- Avoid eating, drinking and smoking within vicinity of the IOVU-572M.

B.2.2 Cleaning Tools

Some components in the IOVU-572M may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the IOVU-572M.

- *Cloth* – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the IOVU-572M.
- *Water or rubbing alcohol* – A cloth moistened with water or rubbing alcohol can be used to clean the IOVU-572M.
- *Using solvents* – The use of solvents is not recommended when cleaning the IOVU-572M as they may damage the plastic parts.
- *Vacuum cleaner* – Using a vacuum specifically designed for computers is one of the best methods of cleaning the IOVU-572M. Dust and dirt can restrict the airflow in the IOVU-572M and cause its circuitry to corrode.
- *Cotton swabs* - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- *Foam swabs* - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

B.2.3 Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device

must accept any interference received, including interference that may cause undesired operation.

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FOR PORTABLE DEVICE USAGE (<20m from body/SAR needed)

Radiation Exposure Statement:

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FOR COUNTRY CODE SELECTION USAGE (WLAN DEVICES)

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

Hazardous Materials Disclosure

C.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						