

# Industrial Box PCs IMM-V4xS Series



## User Manual



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# Warning!

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

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

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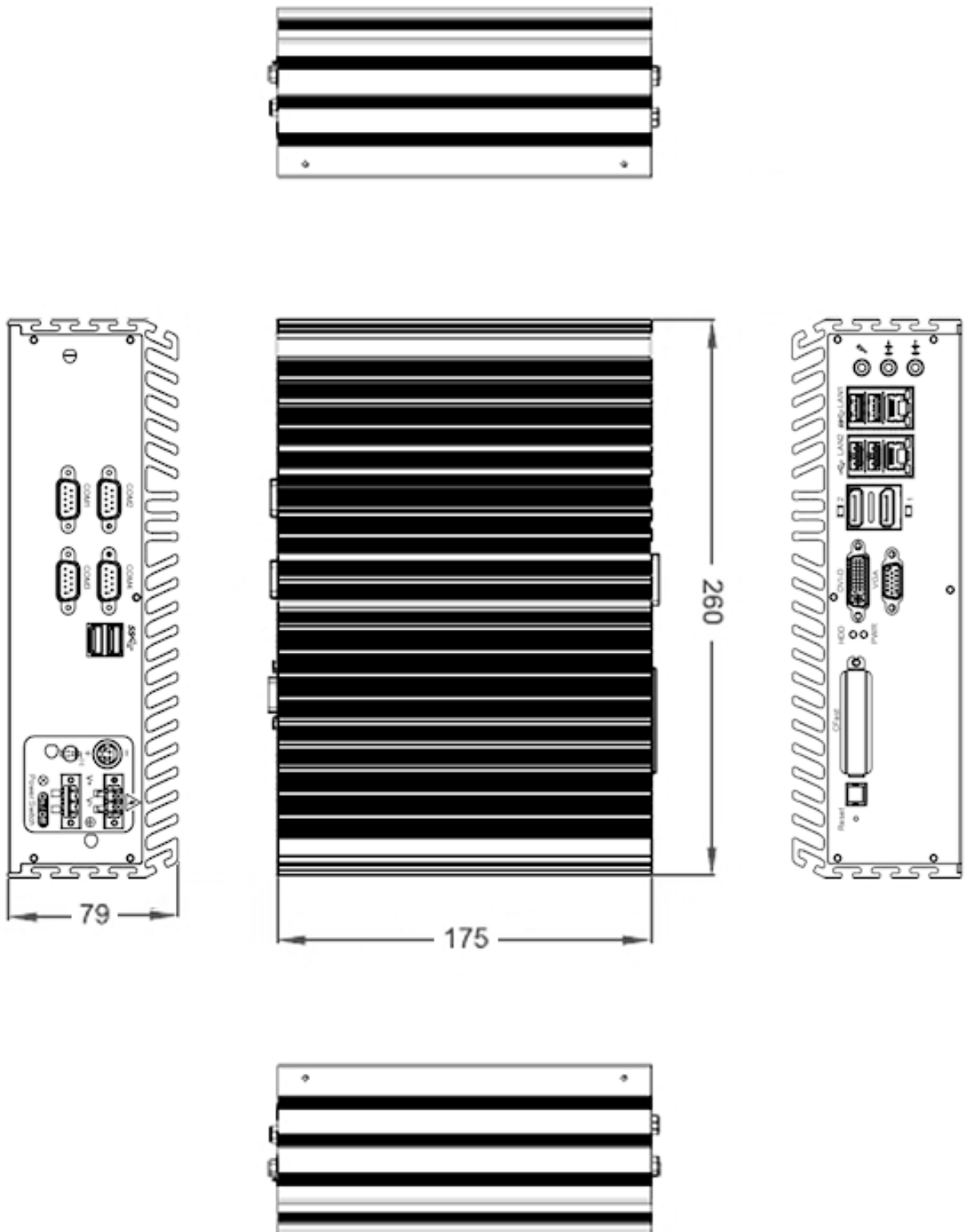


# Chapter 1: System specifications

## 1.1 Specifications

Model	IMM-V43S	IMM-V45S	IMM-V47S
<b>System</b>			
CPU	Intel® 3 <sup>rd</sup> generation Core i3 dual-core processor 2.4 GHz	Intel® 3 <sup>rd</sup> generation Core i5 dual-core processor 2.7 GHz (Turbo: 3.3 GHz)	Intel® 3 <sup>rd</sup> generation Core i7 quad-core processor 2.3 GHz (Turbo: 3.3 GHz)
System chipset	Intel QM77		
System memory	4 GB DDR3 RAM / two 204-pin SO-DIMM sockets, max. 16 GB		
<b>I/O Ports</b>			
USB	2 x USB 2.0 type A and 4 x USB 3.0 type A		
Serial / Parallel	1 x RS-232/422/485 and 3 x RS-232		
Audio	Line in, Line out, Mic in		
LAN	2 x GbE RJ-45		
Power	3 pins terminal block connector + Mini-DIN		
<b>Storage Space</b>			
HDD	1 x 500 GB 2.5" SATA III HDD		
Card reader	1 x External CFast slot		
Supported OS	Windows XP Pro, Windows XP Embedded, Windows 7 Pro, Windows 7 Embedded Standard		
<b>Expansion</b>			
Expansion bus	2 x Mini-PCIe		
<b>Graphics</b>			
Graphics chipset	Intel® GMA HD4000		
Display memory	Up to 1.7 GB shared memory		
Graphic ports	1 x VGA, 1 x DVI-D/HDMI, 2 x Display Port		
<b>Power</b>			
Input voltage	6~36V DC		
Power consumption	max. 32 Watt @ 24VDC	max. 35 Watt @ 24VDC	max. 37 Watt @ 24VDC
<b>Mechanical</b>			
Construction	Aluminum molding heat sink and heavy duty steel chassis		
Mounting	Wall mount		
Dimensions (mm)	260 x 175 x 79		
Net weight (kg)	2.8 kg		
<b>Environmental</b>			
Operating temperature	0~60°C (-25~70°C when equipped with wide temperature range HD and memory)		
Storage temperature	-40~85°C		
Humidity	10 to 90%, non- condensing / relative humidity 95% @ 70°C		
Vibration	5 Grms @ 5~500 Hz according to IEC68-2-64		
Shock	50 Grms, half-sine 11 ms duration (w / SSD, According to IEC60068-2-27)		
Certification	CE / FCC Class A		

## 1.2 Dimensions



## Chapter 2: System features

### 2.1 Features of the IMM-V4xS series

The IMM-V4xS series is a range of robust cost-effective embedded Box PCs. They are powered by a 3rd generation Intel Core i3, i5 or i7 processor.

These systems offer 2 USB 2.0, 4 USB 3.0, 2 Gigabit LAN and 4 serial communication ports.

The graphics output supports 3 independent displays connected with VGA, DVI-D, HDMI or Display Port.

The wide operation temperature range (-25°C ~ 70°C) and the wide power input range (6~36 VDC) makes the IMM-V4xS series ideally suited for mobile applications.



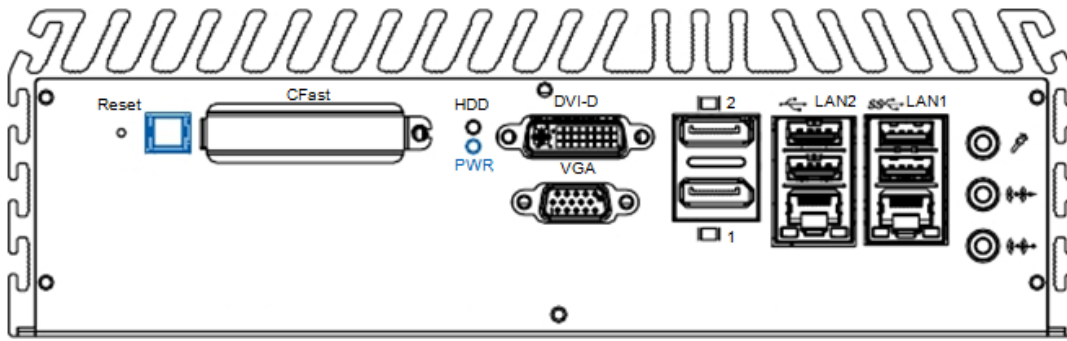
**IMM-V4xS front side**



**IMM-V4xS back side**

## 2.2 Description of the front panel

### 2.2.1 Power button



The power button is a non-latched switch with dual color LED (Blue/Orange) indicator. When the system is working the indicator will show a blue color. The indicator shows an orange color when the system is in standby mode.

Press the power button to turn the IMM-V4xS on.

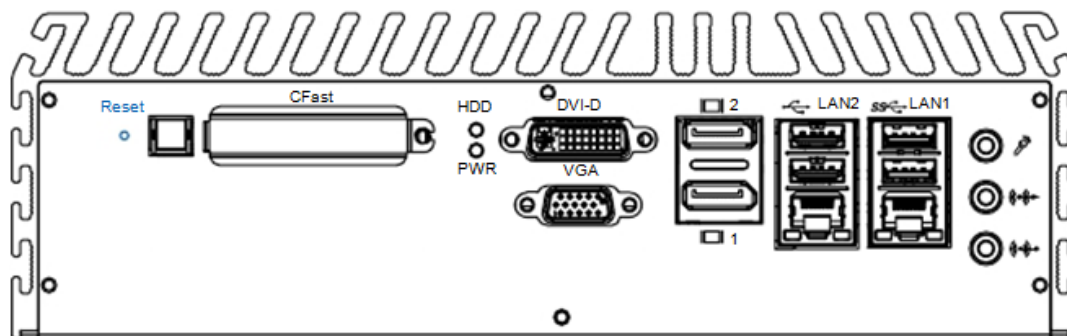
Either issue a shutdown command in your operating system or press the power button once to turn the IMM-V4xS off.

If the system for any reason is halted, you can press the power button for 4 seconds to forcibly shut down the system.

#### **Note:**

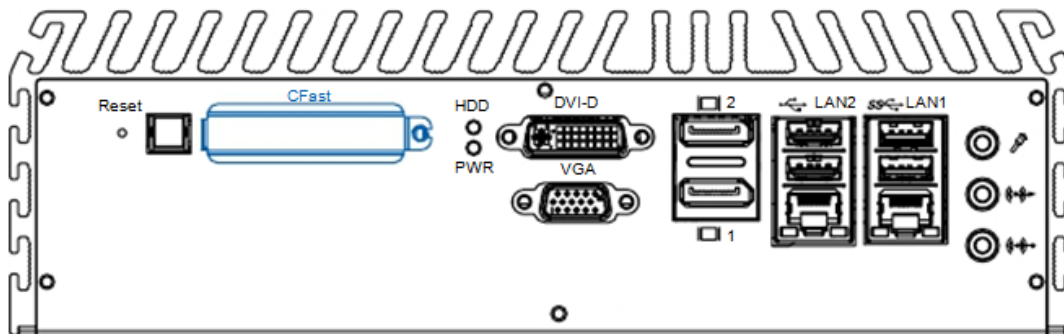
The system keeps an interval of 4 seconds between two on/off operations. So please wait 4 seconds before attempting to switch the system on again after a shutdown of the system.

### 2.2.2 Reset button



Use this switch to reset the system without turning off the power. Momentarily pressing the switch will activate a reset.

### 2.2.3 CFast card socket

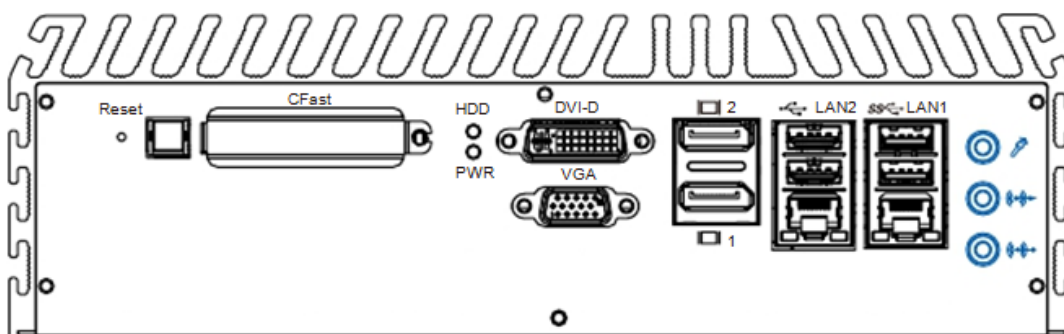


The IMM-V4xS systems are equipped with a CFast socket with SATA II support on the front panel for Type-I / Type-II Compact Flash cards  
Unscrew the cover to access the CFast slot.

### **WARNING**

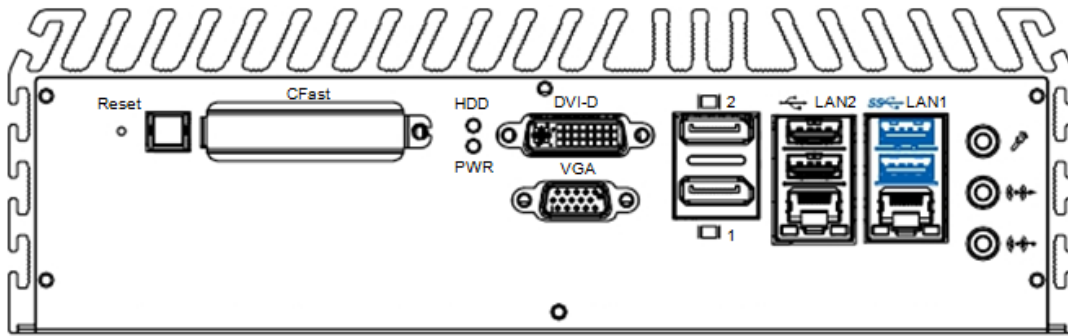
**Disconnect the power before inserting or removing the CFast card.**  
The IMM-V4xS series does not support CFast hot swap and PnP (Plug and Play) functions.

### 2.2.4 Audio ports



The IMM-V4xS is equipped with ports for Line In, Line Out and MIC and offers stereo audio input and output.  
Both the Intel® QM77 chipset driver and the Realtek ALC892 codec have to be installed to utilize the audio functions in Windows.

## 2.2.5 Dual USB 3.0 ports

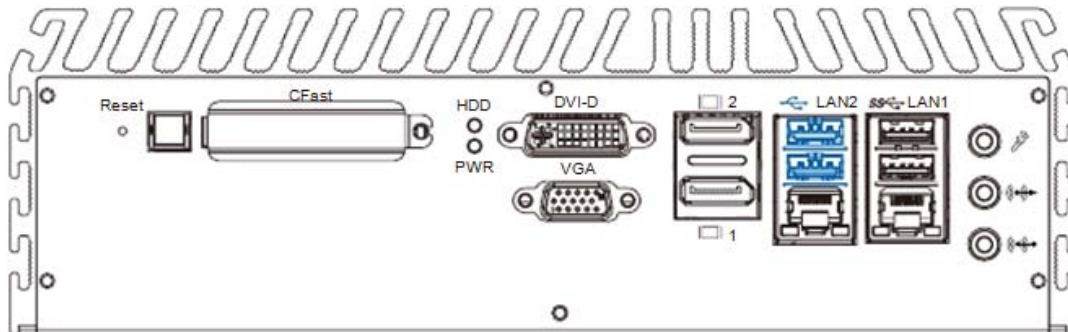


The IMM-V4xS is equipped with 2 SuperSpeed USB host ports on the front panel. These USB 3.0 ports support data transfer rates up to 4.8 Gb/s. These ports also support the following USB variants:

- USB 2.0 (HighSpeed, 480 Mb/s)
- USB 1.1 (FullSpeed, 12 Mb/s)
- USB 1.0 (LowSpeed, 1.5Mb/s)

The USB 3.0 ports are preferably used to connect an external flash disk or hard drive for storing large amounts of data.

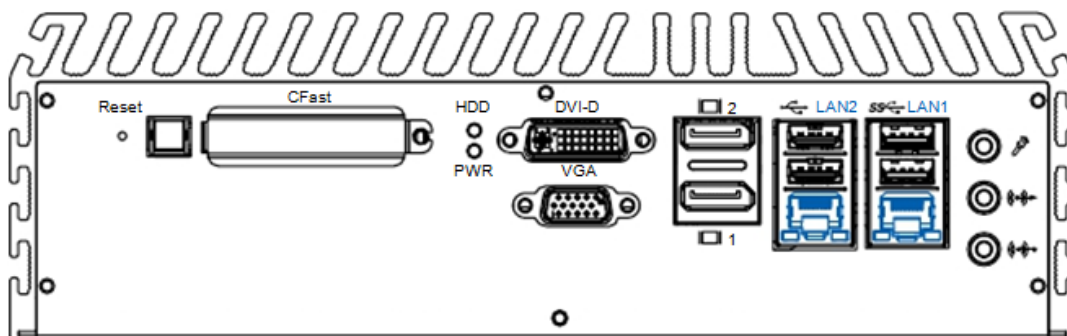
## 2.2.6 Dual USB 2.0 ports



The IMM-V4xS is also equipped with 2 HighSpeed USB host ports on the front panel. These USB 2.0 ports support data transfer rates up to 480 Mb/s.

These ports are preferably used to connect devices which do not benefit from the speed of the USB 3.0 ports. Such devices are: keyboard, mouse, printer, etc.

## 2.2.7 Dual Gigabit LAN ports



The Gigabit LAN ports of the IMM-V4xS support 10/100/1000 Mbps.

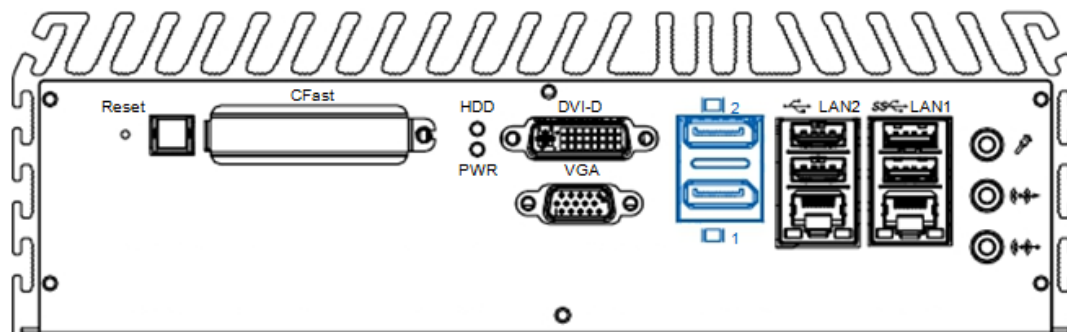
Both ports offer Wake-on-LAN and Preboot Execution Environment capabilities.

The Ethernet ports use standard RJ-45 jack connectors with LED indicators on the front side to show Active/Link status and Speed status.

The LED indicators on the right bottom corners glow a solid green color when the cable is properly connected to a 100 Mbps Ethernet network. The LED indicator on the left bottom corner will flash on and off when Ethernet packets are being transmitted or received.

The LED indicators on the right bottom corners glow a solid orange color when the cable is properly connected to a 1000 Mbps Ethernet network. The LED indicator on the left bottom corner will flash on and off when Ethernet packets are being transmitted or received.

## 2.2.8 Dual Display Ports



DisplayPort is a digital display interface developed by the Video Electronics Standards Association (VESA).

Each port is capable of driving resolutions up to 2560 x 1600 at 60 Hz.

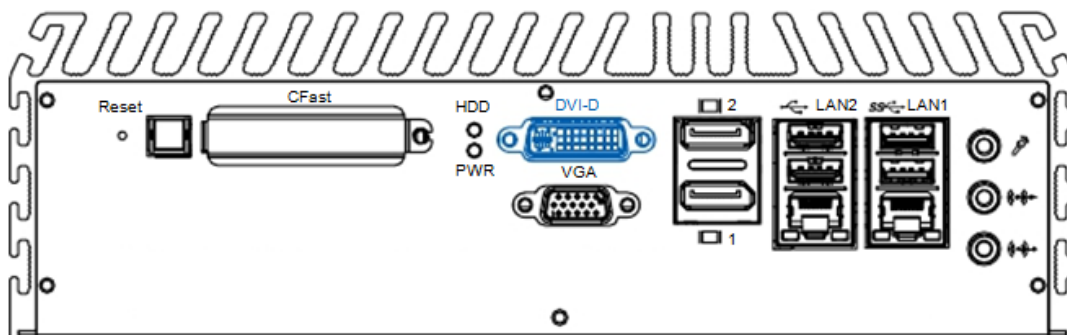
### Note:

The IMM-V4xS models support 3 independent displays.

To use these features you must use both Display Ports together with either the VGA or DVI-D/HDMI output.



## 2.2.9 DVI-D/HDMI port

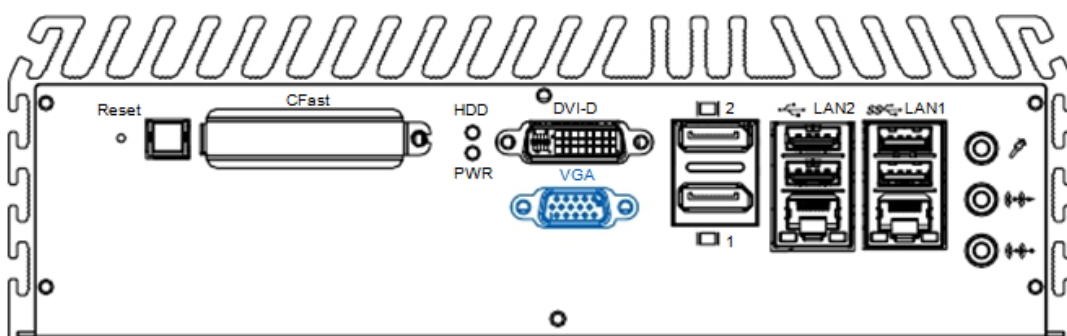


The DVI-D connector on the front panel supports both DVI and HDMI operation mode. This connector can either output DVI signals or HDMI signal. Both DVI-D and HDMI output modes support resolutions up to 1920 x 1200. The DVI or HDMI mode is automatically selected according to the display device connected. You will need a DVI-D to HDMI adapter when connecting to a HDMI display device.

### Note:

The IMM-V4xS models support 3 independent displays. To use this feature you must use both Display Ports together with either the VGA or DVI-D/HDMI output.

## 2.2.10 VGA port



The IMM-V4xS series come with a DB15 female connector on the front panel to connect a VGA monitor. The VGA output mode supports resolutions up to 1920 x 1200.

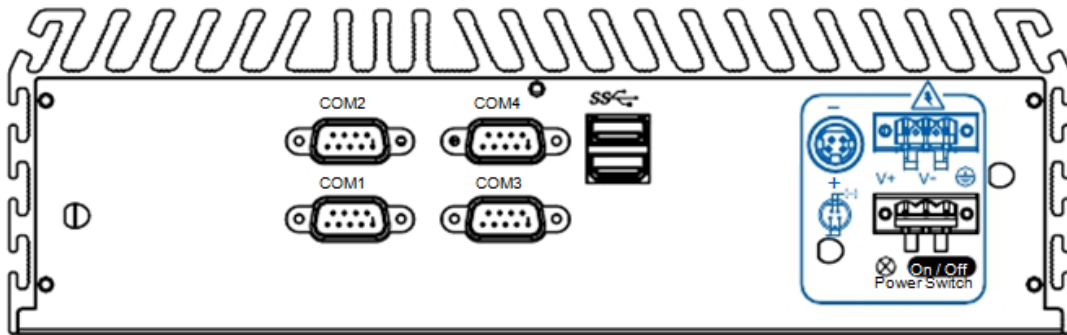
### Note:

The IMM-V4xS models support 3 independent displays. To use this feature you must use both Display Ports together with either the VGA or DVI-D/HDMI output.



## 2.3 Description of the rear panel

### 2.3.1 Power terminal block

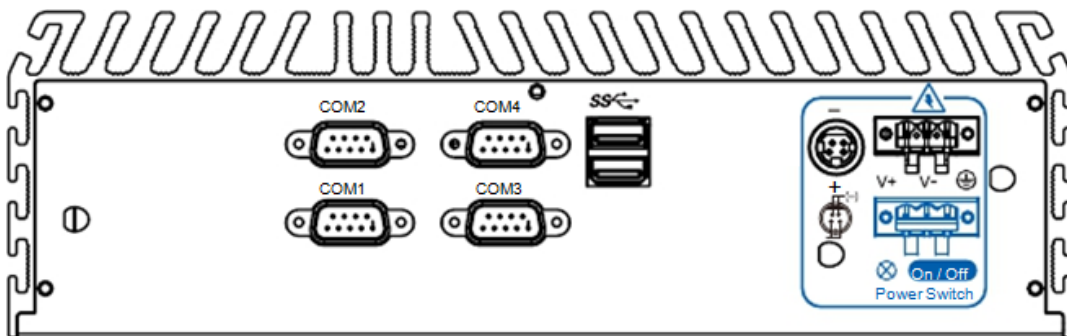


A Mini-DIN connector and a screw terminal block gives you the choice to connect the power the way you prefer.

The system can operate on voltages between 6 VDC and 36 VDC and offers 80V power surge protection.

Be sure to connect the ground terminal to limit the effects of noise caused by EMI.

### 2.3.2 Remote power switch

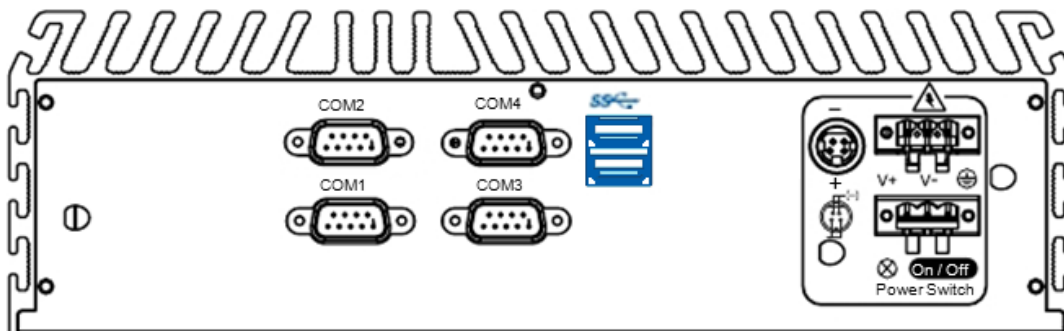


The IMM-V4xS gives you the option to connect a remote power switch.

Connect a pushbutton to the 2-pin screw terminal block to use this option.

The remote power switch supports both soft power-on / power-off (instant off or delay 4 second), and suspend mode.

### 2.3.3 Dual USB 3.0 ports

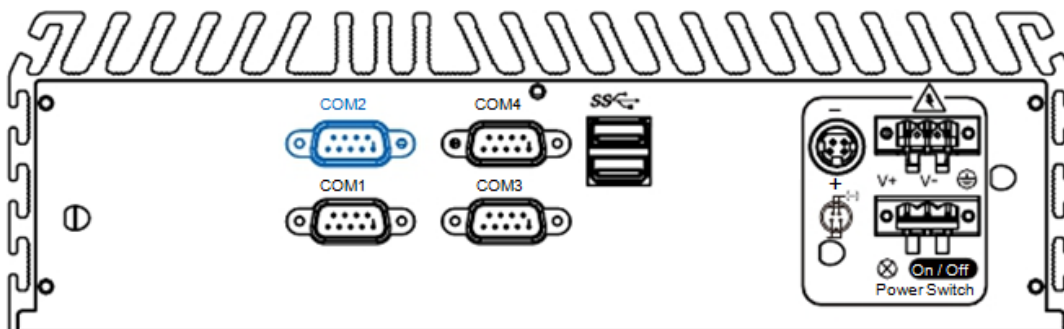


The IMM-V4xS is equipped with 2 SuperSpeed USB host ports on the rear panel. These USB 3.0 ports support data transfer rates up to 4.8 Gb/s. These ports also support the following USB variants:

- USB 2.0 (HighSpeed, 480 Mb/s)
- USB 1.1 (FullSpeed, 12 Mb/s)
- USB 1.0 (LowSpeed, 1.5Mb/s)

The USB 3.0 ports are preferably used to connect an external flash disk or hard drive for storing large amounts of data.

### 2.3.4 Serial port COM2



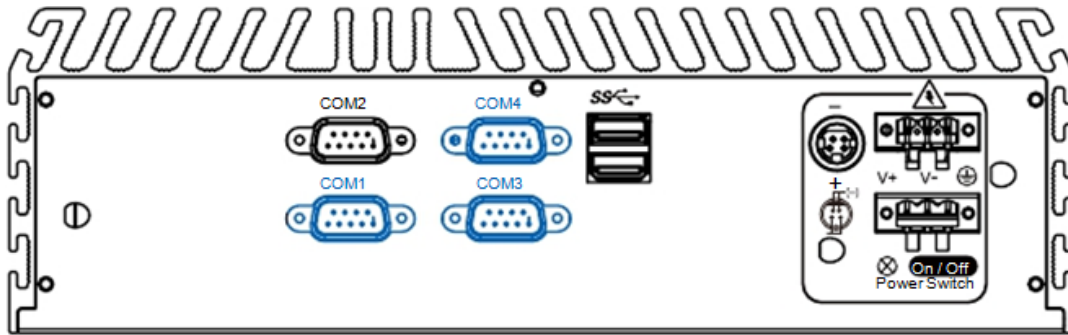
Serial port COM2 can be configured for RS-232, RS-422, or RS-485 with auto flow control. The default setting for COM2 is RS-232. Configuration of COM2 can be done in the BIOS settings.

BIOS options for COM2 are:

RS-232, RS-422 (5-wire), RS-422 (9-wire), RS-485, RS-485, RS-485 with auto-flow control

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

### 2.3.5 Serial ports COM1, COM3, COM4



COM1, COM3 and COM4 are RS-232 only and provide speeds up to 115200 bps.

Pin	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

## Chapter 3: Driver installation

Use the Driver DVD that came with the system to install the drivers for the IMM-V4xS Box PC.



Install the drivers in the sequence as listed below:

1. Chipset driver
2. VGA driver
3. LAN driver
4. Audio driver
5. USB 3.0 driver
6. AHCI Intel® Rapid Storage Technology driver
7. AMT function of Intel ME (Management Engine)

### 3.1 Chipset driver

This driver installs the following components:

- PCIe / PCI and ISAPNP configuration services
- IDE/AHCI storage interface Support
- USB Support
- Identification of Intel Chipset Components in Device Manager

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.2 VGA driver

This driver installs the following components:

- Display service
- High definition audio support for HDMI port

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.3 LAN driver

This driver installs the following components:

- LAN 1: Intel® 82579LM network device
- LAN 2: Intel® 82574L network device

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.4 Audio driver

This driver installs the following components:

- Realtek High definition device software and Utility

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.5 USB 3.0 driver

This driver installs the following components:

- USB 3.0 device support software

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.6 AHCI Intel® Rapid Storage Technology driver

This driver installs the following components:

- Software panel for SATA device
- Utilities for RAID volume creating

## WARNING

**The functionality of this driver can only be used in AHCI mode.**

**To enable the AHCI mode you will have to select 'AHCI' in the BIOS under 'Advanced → SATA mode selection' before you install this driver.**

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.

### 3.7 AMT function of Intel ME (Management Engine)

This driver installs the following components:

- Intel® ME (Management Engine) support
- Intel® AMT software panel
- SOL (Serial on LAN) device driver

Please following the instructions on the screen and reboot your system once the installation of the driver has finished.





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