VALUELINE IPC

A configurable industrial computer platform

Data sheet
2643_en_K

1 Description

The Valueline industrial PC (VL IPC) product line is a configurable industrial computer platform. A VL IPC system can be custom configured from various display, CPU, memory and mass storage options, allowing greater flexibility in matching hardware to specific application requirements. The robust, modular design of the VL IPC product streamlines the manufacturing process resulting in faster product delivery times.

The Valueline industrial PC can be integrated with other Phoenix Contact control and networking products to create a complete Phoenix Contact automation solution.

The targeted applications for the Valueline industrial PC are:

– Machine and process control
– Monitoring and visualization
– Data acquisition
– Database retrieval and storage

2 Features

– Compact, rugged housing
– Flexible mounting options
– Wide variety of touch screen display sizes with or without USB port
– Removable hard-disk drive, solid-state drive and CompactFlash® data storage options
– Two integrated 10/100/1000 Ethernet ports with independent MAC addresses
– Up to 3 GB RAM
– Up to two CompactFlash slots
– Two optional slots allow installation of PCI cards for direct connection to fieldbus networks or other applications

> **NOTE:**
> Circuit ground (0 V) and functional earth ground (FE) are connected.

> Make sure you always use the latest documentation.
> It can be downloaded at phoenixcontact.com.

> This data sheet is valid for all products listed on the following page:

PHŒNIX CONTACT

INSPIRING INNOVATIONS

3 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Industrial PC, configurable	**VALUELINE IPC**	2913108[1]	1

[1] An order key must be appended to the 7-digit order number to reflect the various options that are specified in each configuration. The order key is generated using the Phoenix Contact on-line configuration tool.

Accessories

Description	Type	Order No.	Pcs./Pkt.
Power supply unit, primary switched-mode	**TRIO-PS/1AC/24DC/2.5**	2866268	1
Power supply unit, primary switched-mode	**TRIO-PS/1AC/24DC/5**	2866310	1
Power supply unit, primary switched-mode	**TRIO-PS/1AC/24DC/10**	2866323	1
Power supply unit, primary switched-mode	**QUINT-PS/1AC/24DC/3.5**	2866747	1
Power supply unit, primary switched-mode	**QUINT-PS/1AC/24DC/5**	2866750	1
Power supply unit, primary switched-mode	**QUINT-PS/1AC/24DC/10**	2866763	1
Service socket with USB (socket/plug), type A with 0.6 m cable	**SI-SES-U1A/0,6**	1404514	1

Replacement parts

Description	Type	Order No.	Pcs. / Pkt.
Connector, printed circuit board for power input	**MSTB 2,5/ 4-STF-5,08**	1778001	50

4 Technical data

General data

Dimensions (width x height x depth)	
VL IPC without PCI slots, no display	265 x 207 x 49 mm
VL IPC with PCI slots, no display	265 x 207 x 87 mm
Display only, 12 in.	365 x 282 x 45 mm
Display only, 15 in.	410 x 309 x 47 mm
Display only, 17 in.	452 x 356.5 x 50 mm
Display only, 18.5 in.	532 x 335 x 47 mm
Display only, 19 in.	489 x 406 x 48 mm
Display only, 21.5 in.	597 x 372 x 49 mm
Display only, 24 in.	670 x 404 x 49 mm
Ambient temperature (storage/transport)	-40 … 70°C
Permissible humidity (relative)	5 … 95%
Weight	
without PCI slots	3.40 kg
with PCI slots	5.35 kg
Display, 12 in.	4.46 kg
Display, 15 in.	4.51 kg
Display, 15. in. stainless steel bezel	5.24 kg
Display, 17 in.	6.43 kg
Display, 18.5 in.	8.16 kg
Display, 19 in.	9.51 kg
Display, 21.5 in.	10.89 kg
Display, 24 in.	12.47 kg
Degree of protection	IP65 (front), IP20 (back)
	UL Type 4[1]
Mounting	Panel, bookshelf and wall
LED indicators	Power, HDD, Run, Error

[1] Only 12-, 15- and 17-in. displays without the front USB port

Temperature data (operating)[1]

	No display 12-in. display 15-in. display	17-in. display 19-in. display	18.5-in.display 21.5-in.display 24-in. display
Celeron® M and Core™2 Duo with CompactFlash® card or solid-state drive	-20 …40°C	-20 … 45°C	0 … 45°C
Celeron M and Core 2 Duo with rotating hard-disk drive	0 … 40°C	0 … 45°C	0 … 45°C
Atom™ with CompactFlash card or solid-state drive	-20 … 55°C	-20 … 50°C	0 … 50°C
Atom with rotating hard-disk drive	0 … 55°C	0 … 50°C	0 … 50°C

[1] Temperature values at 100% CPU utilization

Electrical data

Power supply, nominal	24 V DC
Power supply, range	19.2 … 28.8 V DC
Connection	Removable Combicon screw-type
Conductor size	0.2 … 2.5 mm² (24 … 12 AWG)
Torque	5 … 6 Nm
RTC battery, typical life	5 years

Recommended power supply size

Atom™ processor with no display, 12-inch, 15-inch display	2.5 A
All other processors	5.0 A
Any configuration with PCI slots	5.0 A

Computer data

Operating system (configurable option)	Windows® XP Windows 7 Windows Embedded Standard 7
Processor (configurable option)	1.60 GHz Intel® Atom™ N270, 533FSB, 512 kB L2 Cache 1.06 GHz Intel Celeron® M, 533FSB, 1 MB L2 Cache 1.5 GHz Intel Core™2 Duo, 667 FSB, 4 MB L2 Cache
RAM (configurable option)	1 GB … 3 GB
Data memory (configurable option)	2.5 in. SATA hard-disk drive 2.5 in. SATA solid-state drive CompactFlash®
Optical drive (configurable option)	CD-RW/DVD-RW
Number of CompactFlash® slots (configurable option)	2 maximum
Number of PCI slots (configurable option)	2 maximum
PCI card size (maximum)	
Slot 1	169.8 x 106.3 mm
Slot 0	180.9 x 107.9 mm
Maximum current draw per PCI slot	600 mA

Interfaces

USB	4x Type A, USB 1.1/2.0
Serial, RS-232 (configurable option)	DB-9, male
Video	VGA (DB-15, female) DVI-D[1]
NVRAM connection	Mini-PCI (on-board)
NVRAM size (configurable option)	128 kB
Number of Ethernet connectors	2
Ethernet connection	10/100/1000 Mbps

[1] DVI-D port not included with Atom processor

Display - 24 in.

Screen size, diagonal	608 mm (24.0 in.)
Screen size, horizontal x vertical	531 x 299 mm
Resolution	1920 x 1080
Type	Resistive touch screen
Brightness	300 Cd/m^2
Number of colors	16.7 million
Contrast ratio	1000:1
View angle, horizontal/vertical (CR=10), typ.	170°/180°
Installation cutout dimensions (width x height)	620.4 x 352.8 mm
Outside bezel dimensions (width x height x depth)	670 x 404 x 10 mm
Backlight life, minimum	50000 hr.
Interface	USB 1.1/2.0, Type A

Display - 21.5 in.

Screen size, diagonal	546 mm (21.5 in.)
Screen size, horizontal x vertical	477 x 269 mm
Resolution	1920 x 1080
Type	Resistive touch screen
Brightness	300 Cd/m^2
Number of colors	16.7 million
Contrast ratio	5000:1
View angle, horizontal/vertical (CR=10), typ.	89°/89°
Installation cutout dimensions (width x height)	553 x 328 mm
Outside bezel dimensions (width x height x depth)	597 x 372 x 10 mm
Backlight life, minimum	50000 hr.

Display - 19 in.

Screen size, diagonal	483 mm (19.0 in.)
Screen size, horizontal x vertical	376 x 301 mm
Resolution	1280 x 1024
Type	Resistive touch screen
Brightness	300 Cd/m^2
Number of colors	16.7 million
Contrast ratio	1300:1
View angle, horizontal/vertical (CR=10), typ.	89°/89°
Installation cutout dimensions (width x height)	443 x 360 mm
Outside bezel dimensions (width x height x depth)	489 x 406 x 10 mm
Backlight life, minimum	50000 hr.
Interface (configurable option)	USB 1.1/2.0, Type A

Display - 18.5 in.

Screen size, diagonal	470 mm (18.5 in.)
Screen size, horizontal x vertical	410 x 230 mm
Resolution	1366 x 768
Type	Resistive touch screen
Brightness	300 Cd/m²
Number of colors	16.7 million
Contrast ratio	1000:1
View angle, horizontal/vertical (CR=10), typ.	85°/80°
Installation cutout dimensions (width x height)	488 x 292 mm
Outside bezel dimensions (width x height x depth)	532 x 335 x 10 mm
Backlight life, minimum	50000 hr.

Display - 17 in.

Screen size, diagonal	430 mm (16.93 in.)
Screen size, horizontal x vertical	338 x 270 mm
Resolution	1280 x 1024
Type	Resistive touch screen
Brightness	350 Cd/m²
Number of colors	16.7 million
Contrast ratio	1000:1
View angle, horizontal/vertical (CR=10), typ.	85°/80°
Installation cutout dimensions (width x height)	424 x 329.5 mm
Outside bezel dimensions (width x height x depth)	452 x 356.5 x 10 mm
Backlight life, minimum	50000 hr.
Interface (configurable option)	USB 1.1/2.0, Type A

Display - 15 in.

Screen size, diagonal	378 mm (14.88 in.)
Screen size, horizontal x vertical	304 x 228 mm
Resolution	1024 x 768
Type	Resistive touch screen
Brightness	350 Cd/m²
Number of colors	16.2 million
Contrast ratio	700:1
View angle, horizontal/vertical (CR=10), typ.	70°/65°
Installation cutout dimensions (width x height)	386.6 x 285.0 mm
Outside bezel dimensions (width x height x depth)	410 x 309 x 10 mm
Backlight life, minimum	50000 hr.
Interface (configurable option)	USB 1.1/2.0, Type A

Display - 12 in.

Screen size, diagonal	307 mm (12.1 in.)
Screen size, horizontal x vertical	246 x 185 mm
Resolution	800 x 600
Type	Resistive touch screen
Brightness	400 Cd/m^2
Number of colors	16.2 million
Contrast ratio	600:1
View angle, horizontal/vertical (CR=10), typ.	70°/60°
Installation cutout dimensions (width x height)	334 x 253 mm
Outside bezel dimensions (width x height x depth)	365 x 282 x 10 mm
Backlight life, minimum	50000 hr.
Interface (configurable option)	USB 1.1/2.0, Type A

Mechanical tests

Shock test according to IEC 60068-2-27	15g, 11 ms impulse
Vibration resistance according to IEC 61131-2	Hard-disk drive: 0.5g CompactFlash: 1.0g

Conformance with EMC directives

Developed according to IEC 61000-6-2	
IEC 61000-4-2 (ESD)	Criterion B
IEC 61000-4-3 (radiated-noise immunity)	Criterion A
IEC 61000-4-4 (burst)	Criterion B
IEC 61000-4-5 (surge)	Criterion B
IEC 61000-4-6 (conducted noise immunity)	Criterion A
IEC 61000-4-8 (noise immunity against magnetic fields)	Criterion A
EN 55022 (noise emission)	Class A

Approvals

Conformity	$C \epsilon$
Electromagnetic Compatibility Directive (EMC)	2004/108/EC
Listing[1]	ᶜ(UL)ᵁˢ UL 508
Hazardous Locations[2]	ᶜ(UL)ᵁˢ Class I, Division 2, Groups A, B, C, D

[1]   Configurations with a 18.5-, 21.5- and 24-in. display are not UL listed

[2]   Displays with front panel USB ports do not qualify with Class I, Division 2 listing

5 Installation

5.1 Wall-mount and bookshelf installation

Wall mounts are valid for VL IPCs that do not include a display. Use this type of mounting to install the VL IPC on the inside of a cabinet. The VL IPC can be attached to a flat surface in either a wall mount or bookshelf orientation. Either way, attach the unit using the four keyholes. The mounting surface must be flat and not subject to vibration.
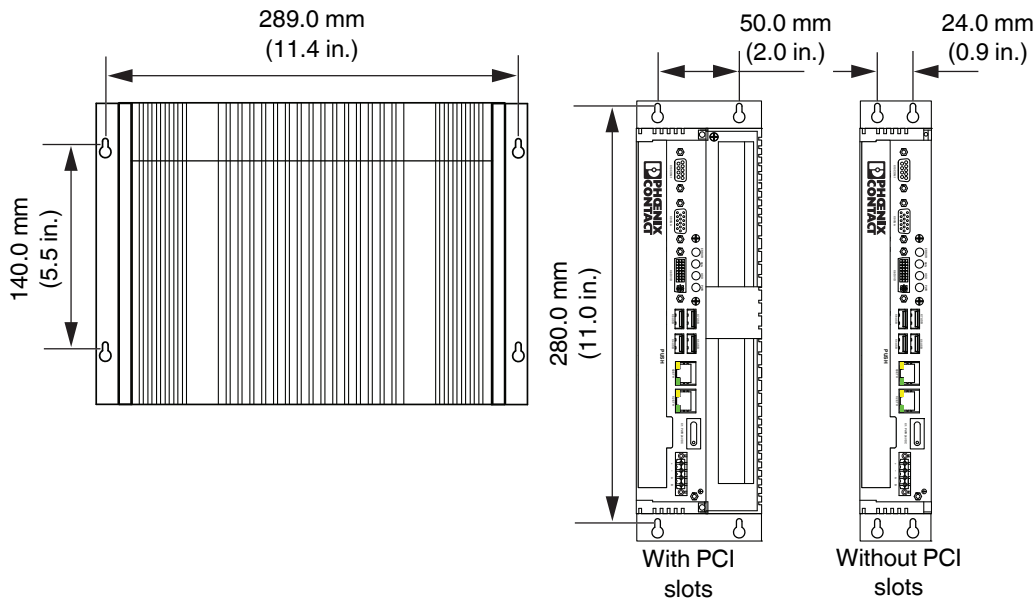

Figure 1   Wall and bookshelf mounts

To install a wall-mounted VL IPC, follow these steps:

1. Use the VL IPC as a template and mark the locations of the keyholes on the mounting surface.

> **NOTE:**
> The unit must be installed with the small end of the keyhole oriented up.

2. Use the correct anchor type for the mounting surface and securely attach the VL IPC to the wall. Anchor hardware must be smaller than 6 mm. Ensure the attaching hardware is in the small section of the keyholes.

3. Tighten mounting screws. Be careful not to overtighten the attachment hardware.

5.2 Panel mount

Panel mounts are the only valid mounting system for VL IPCs with a display. This mounting system permits installation of the VL IPC in a cabinet so the display panel is visible on the outside (see Figure 2).

> **NOTE:**
> Connectors and switches must be accessible from the rear. A wall panel thickness of at least 1.9 mm (14 ga.) is required for correct mounting with IP65 protection.
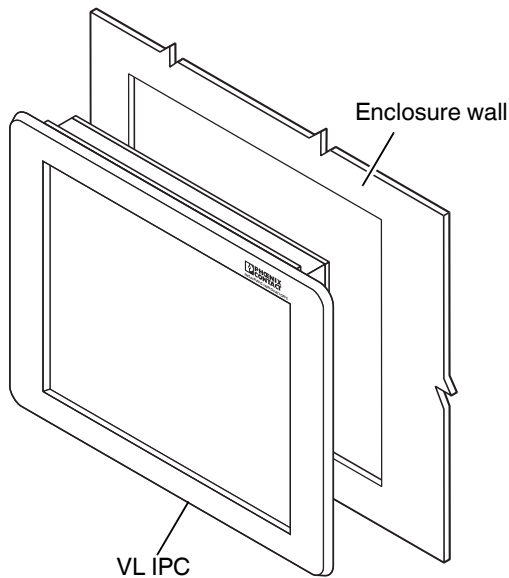
Figure 2   Panel mount

1. Cut a hole in the enclosure according to the dimensions for the selected display.
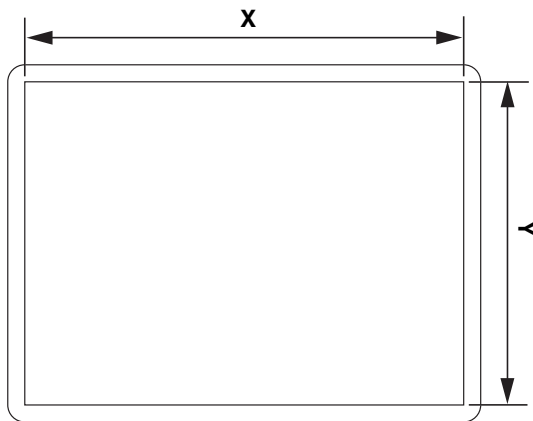

Figure 3   Panel cutout dimensions for displays

Display size	X (mm)	Y (mm)
12 in.	334.0	253.0
15 in.	386.6	285.6
17 in.	424.0	329.5
18.5 in.	488.0	292.0
19 in.	443.0	360.0
21.5 in.	477.0	269.0
24 in.	620.4	352.8

2. From the front, push the VL IPC through the opening. Ensure the gasket is properly positioned in the groove.

3. From the rear, place the display clamps, 1, in the slots, 2, on the display and slide the clamp to the right (see Figure 4). Clamps must be used in every slot.
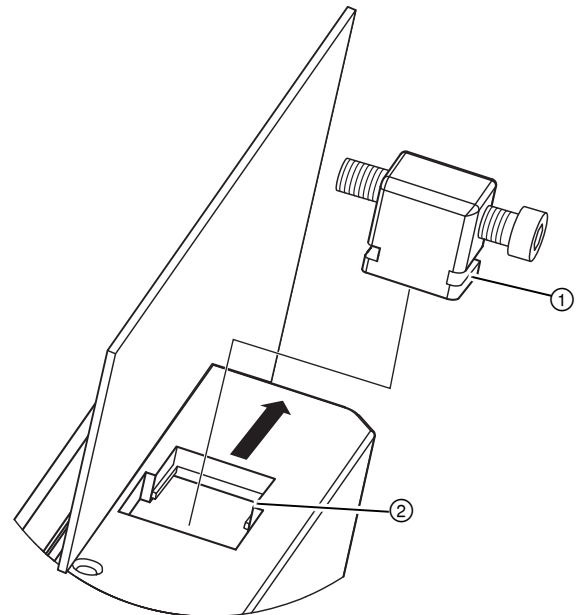
Figure 4   Panel mount clamps

4. Tighten the screws with a screwdriver on all clamps, alternating from one side to the other until the front bezel is secure against the panel. Torque the bolts to 1.2 Nm.

5.3   Communication interfaces

Various ports and connections allow the VL IPC to communicate with other devices. The connections available on the IPC module are:

– **Ethernet:** Two RJ45 connectors are located on the rear of the VL IPC. These allow the computer to communicate on a 10/100/1000 Base-T Ethernet network.

– **Serial:** Serial devices connect to the DB-9 RS-232 port.

– **USB:** USB devices connect using Type A connectors. The VL IPC has four USB ports.

– **VGA:** This port connects the VL IPC to an external analog display with a corresponding VGA connector.

– **DVI-D:** This port connects the VL IPC to an external digital display with a corresponding DVI-D connector.

5.4 External display

External displays can be connected to the VL IPC to function as a desktop extension or as an auxiliary display. Use the VGA port for analog displays and DVI-D port for digital displays.

Extended Display Identification Data (EDID) displays will download its capabilities to the display driver while non-EDID displays will not. In either case, additional settings can be applied through the Intel® Graphics Media Accelerator.

> **NOTE:**
> The VL IPC DVI-D port only passes digital signals. Therefore, connecting an analog display to the DVI-D port and using a VGA-to-DVI adapter will not work.

5.5 Installing PCI cards

Installing a PCI card in the optional PCI slots is done as follows:

> **NOTE:**
> Use standard ESD precautions when removing or installing PCI cards to avoid damage to the cards and the VL IPC.

> **i** The PCI card option is not available with the Atom standard chassis.

1. Ensure the card does not exceed the maximum dimensions for the intended slot.
2. Remove power from the unit.
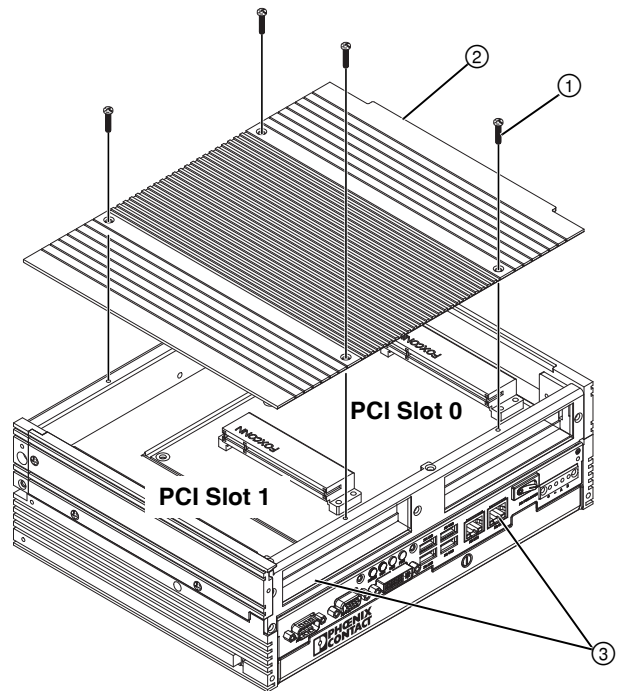
Figure 5   Cover removal

3. Place the unit on a soft cloth on a flat, horizontal surface with the ribbed surface (cover) up.
4. Remove the four Phillips-head screws, 1, from the cover, 2, and remove the cover.

> **i** Do not remove the tamper-proof (Torx®) screws, 3.

5. PCI card installation can be in slot 1 (see below), slot 0 (see "For PCI slot 0:" on page 10) or both.

> **i** When installing two cards of the same type, drivers often assign higher priority to the card in the lower slot number.

– For PCI slot 1:
a) Remove the four Phillips-head screws, 1, securing the left side panel, 2, and remove the panel.
b) Remove the retaining screw and washer, 3, securing the bracket, 4. Remove the bracket from the bracket frame, 5.
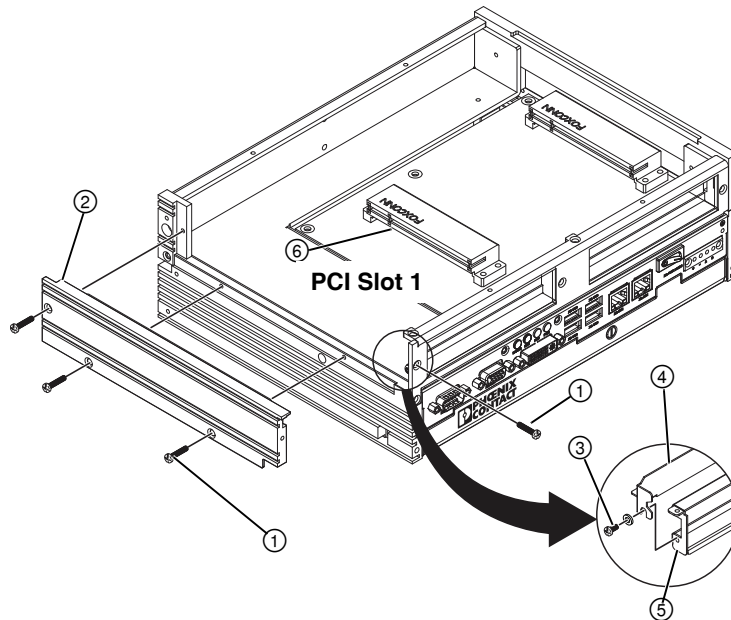
Figure 6   Side panel and bracket removal

c)   Line up the card's connectors with the PCI slot connector, 6. Carefully push the card into the connector. After it is fully inserted in the connector, the card bracket should be aligned with the bracket frame.

d)   Insert the retaining screw and washer, 3, previously removed and tighten to secure the card.

e)   Re-install the left side panel, 2, using the four Phillips-head screws previously removed in step a).

–   For PCI slot 0:

a)   Remove the two Phillips-head screws, 1, holding the bracket frame, 2. Remove the bracket frame and bracket, 3, as an assembly.

b)   Remove the retaining screw and washer, 4, and remove the bracket from the bracket frame.
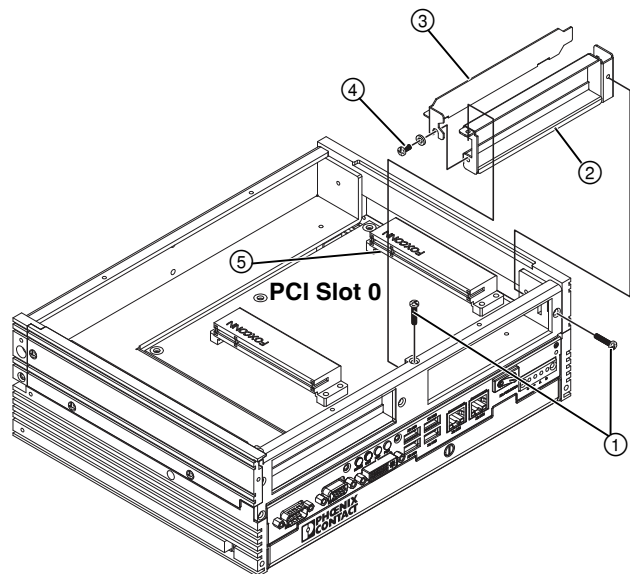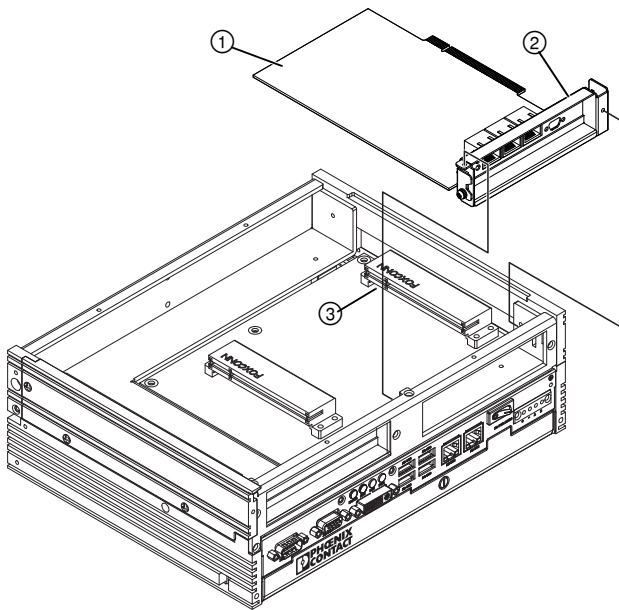

Figure 7   PCI slot 0 removal

Figure 8   PCI slot 0 card installation

c) Attach the PCI card, 1, to the bracket frame, 2, and secure it with the retaining screw and washer previously removed.

d) Position the PCI card and frame assembly so the frame assembly rests on top of the vibration reduction strip. Carefully push the card into the connector, 3, ensuring the frame assembly aligns with the mounting holes in the chassis and the card is properly seated in the connector.

e) Secure the bracket frame to the chassis using the two Phillips-head screws previously removed in step a).

NOTE:
Tighten all screws on the VL IPC frame to no more than 7 Nm.

6. Re-install the top cover, and replace and tighten the four screws previously removed.

7. Reconnect power to the VL IPC.

8. Start the VL IPC.

6   Operations

6.1   Software license and activation

Use of the Microsoft® operating system is subject to the licensing limitations specified by the Microsoft Software License. Phoenix Contact is not responsible and cannot be held liable for proper use of the operating system or any other software installed on the computer unless that software is a product developed and manufactured by Phoenix Contact.

To reduce software piracy and provide customers with quality service, Microsoft includes a product activation requirement on some software, including some operating systems. Use of the software is limited to the first 30 days after first launching the software unless the product activation process is completed. A pop-up program prompts the user to begin the process when the software is first started. If activation is not completed, the software repeats the product activation pop-up on a pre-determined cycle. Once started, message boxes lead the user through the process to obtain proper product activation.

Additional details are included in the Microsoft Software License and are also available at www.Microsoft.com.

The Windows product key is on a sticker that is affixed to the VL IPC.

6.2   Accessing the optical drive

Use the optional CD-RW/DVD-RW to install programs or backup control programs and data. To insert or remove a CD/DVD, follow these steps:

1. Open the access door.

2. Press the eject button to remove an optical disk.
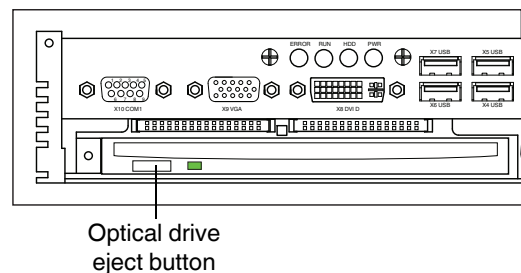

Optical drive eject button

Figure 9   Optical drive eject button

3. Insert the CD/DVD in the proper orientation for the drive. The recorded/recordable side should face down or left.

4. Gently push the CD/DVD disk in the slot.

6.3   Using CompactFlash cards

VL IPC CompactFlash® slots are not hot-swappable. The eject button is only to be used once the VL IPC is powered down for ease of CompactFlash card exchangeability.

To install a CompactFlash card, follow these steps:

> (!) **NOTE:**
>
> CompactFlash cards are handled like hard-disk drives in a VL IPC and are, therefore, not hot-swappable. Ejecting a CompactFlash card before the VL IPC is powered down could result in data loss.
>
> Industrial fixed media CompactFlash cards must be used in the VL IPC CompactFlash slots. Though the brand does not matter, the type of card does. Therefore, because the Windows operating system will not boot from consumer grade removable media CompactFlash cards in a VL IPC, they cannot be used.

1. Turn the VL IPC off.
2. Open the access door at the rear of the VL IPC.

> **i** You may need to remove some cables for easier access to the CompactFlash slots.

3. Install a CompactFlash card in the proper slot (see "VL IPC components" on page 12). The card should be inserted so the lip is toward the connectors. Push the card straight into the device until seated.

> **i** When inserting a CompactFlash card, use slot 0 for bootable CompactFlash cards and slot 1 for data-only CompactFlash cards.

4. To select a bootable CompactFlash, the BIOS must be properly configured.

To remove a card from slot 0, use small needle-nose pliers and carefully pull the card straight out. To remove a card from slot 1, use the ejector mechanism. Push the button next to the slot, and then pull the card straight out of the slot.
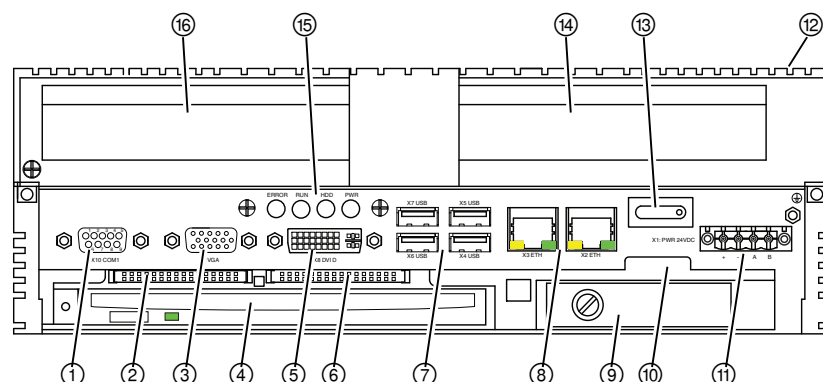
7   Maintenance

The VL IPC has several removable components.

> **i** To access some of these components, it may be necessary to remove cables connected to the VL IPC.

7.1   VL IPC components

There is an access door under the connectors of the VL IPC system module (see Figure 10). Under the access door are two type II CompactFlash slots (slot 0 and slot 1), a bay for an optional optical storage device, a removable hard disk bay and the RTC battery.

1 Serial port
2 CompactFlash slot 0
3 VGA port
4 Optical storage device (optional)
5 DVI-D port
6 CompactFlash slot 1
7 USB ports
8 Ethernet ports

9 Removable hard disk drive
10 RTC battery
11 Power connection (24 V DC)
12 Heat sink (entire back)
13 Power switch
14 PCI slot 0
15 Status LEDs
16 PCI slot 1

Figure 10   VL IPC with access door open
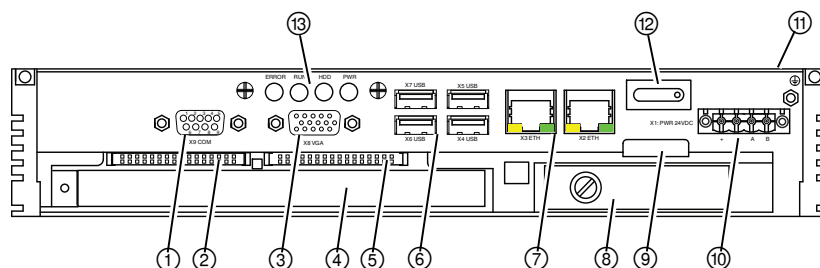
1 Serial port
2 CompactFlash slot 0
3 VGA port
4 Optical storage device (optional)
5 CompactFlash slot 1
6 USB ports
7 Ethernet ports

8 Removable hard disk drive
9 RTC battery
10 Power connection (24 V DC)
11 Heat sink (entire back)
12 Power switch
13 Status LEDs

Figure 11   VL IPC with Atom processor in Atom enhanced chassis with access door open

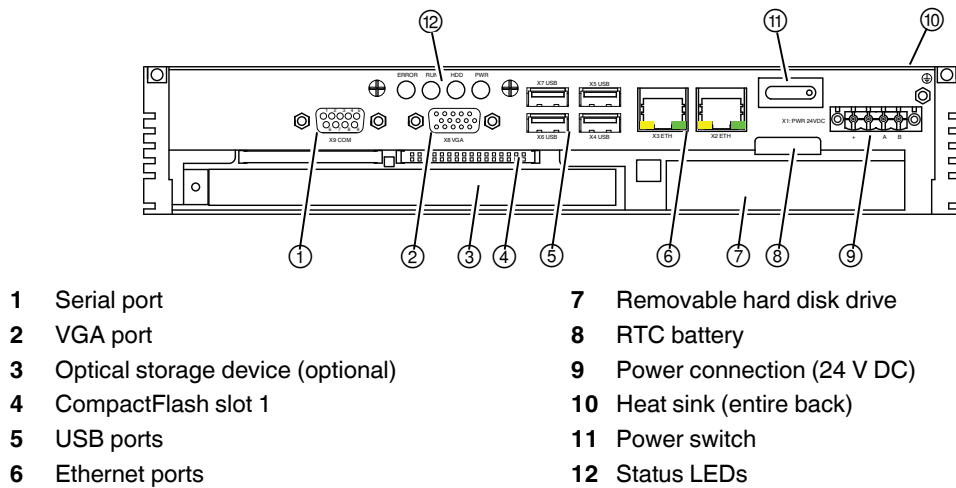|			
1	Serial port	**7**	Removable hard disk drive
2	VGA port	**8**	RTC battery
3	Optical storage device (optional)	**9**	Power connection (24 V DC)
4	CompactFlash slot 1	**10**	Heat sink (entire back)
5	USB ports	**11**	Power switch
6	Ethernet ports	**12**	Status LEDs

Figure 12   VL IPC with Atom processor in Atom standard chassis with access door open

7.2   Real-time clock battery

There is a battery located under the access door. This battery supplies power to the real-time clock (RTC) in the VL IPC when the system is not connected to a 24 V DC power source. The battery has a typical life of 5 years and requires replacement occasionally.

To replace the battery:
1. Open the access door at the rear of the VL IPC.
2. The RTC battery is above the hard disk slot. Use needle-nose pliers to carefully pull out the battery.
3. Be sure to replace the battery with the same type (CR2032 3V Lithium), oriented as shown in Figure 13.
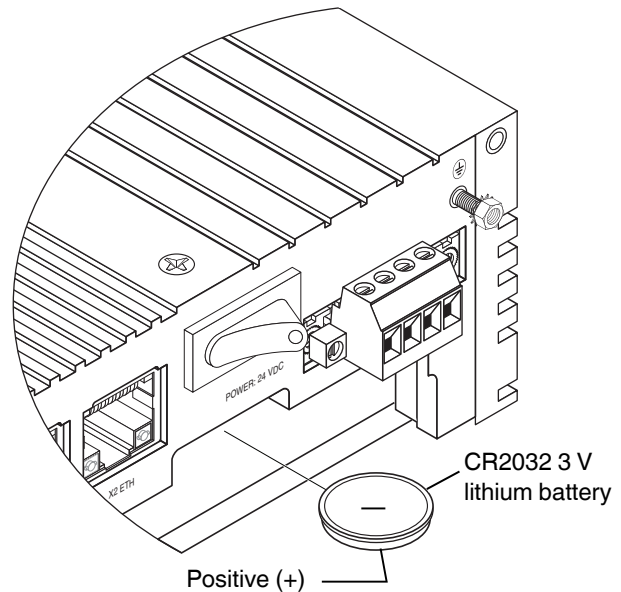

Figure 13   Insert RTC battery as shown

7.3   Disk drive

The disk drive installs in a tray that is easily removable. VL IPC systems without a drive come with a blank tray. To install a new drive or replace the current drive, follow these instructions:

1. Remove power from the unit.

> ℹ️ If necessary, remove or disconnect any cables that interfere with accessing the drive.

2. Open the access door.
3. Turn the screw counterclockwise several turns. It is spring-loaded and, when it clears the threads, it pops out.
4. Grasp the screw and swing the front lever out from the door.
5. Pull the lever to slide the tray and drive assembly out of the bay.

> ℹ️ Hold the access door flat to ensure the tray clears as it is removed.

6. If present, the drive can be removed from the tray by removing the four screws along the sides of the drive.
7. If necessary, install the drive in a tray using the appropriate mounting hardware for the drive.

> ℹ️ The VL IPC can be operated without a drive (booted from the CompactFlash master). For extended operating periods, it is recommended that an empty tray be installed in the drive bay and locked closed.

8. With the drive installed in the tray (or with a blank tray), orient the tray so the front lever is fully extended and toward the power connector. Slide the assembly straight into the slot until it clicks into place.
9. Gently push the drive in so the connector is properly seated.
10. Swing the front lever flat across the front of the drive assembly.
11. Using a screwdriver, push the screw in and turn clockwise to secure the front lever.
12. Close the access door and return any removed cables to their proper connector.
13. Restore power.

7.4 BIOS configuration

Although Phoenix Contact doesn't recommend changing BIOS configuration settings without specific instruction from Phoenix Contact Technical Services, this is something that may be necessary. To access the BIOS configuration, there must be an attached (physical) keyboard through one of the USB ports. During boot-up, the BIOS briefly displays the comment "Press DEL to enter Setup." Follow the on-screen instructions and be sure to save any changes.

7.5 Boot options

There are two boot modes in the VL IPC.

Automatic boot mode

Automatic mode checks for bootable devices in the order (first, second and third) specified in the BIOS. To view or change a boot device:

1. Powerup or restart the VL IPC and, when the first black screen with white text appears, press the <Delete> key about once every second to initiate the BIOS Setup Utility.
2. Use the arrow keys to highlight **Advanced BIOS Features** then press the <Enter> key.
3. Select a device boot order (first, second or third) then press the <Enter> key.
   a) Select a device:

Hard Disk	CDROM
USB-FDD	PXE Boot X3:ETH
PXE Boot X2:ETH	Disabled

> ℹ️ If a bootable CompactFlash card is installed, **slot 0** and/or **slot 1** will appear as selections.

   Additional items will be listed if an expansion chassis is installed with one or two network cards that support network booting.
   b) Press the <Enter> key to accept the device or press the <Esc> key to abort the change.
4. **Boot Other Device** looks for any bootable device in case the first, second and third boot devices fail or are not available. To enable this feature:
   a) Use the arrow keys to highlight **Boot Other Device** and press the <Enter> key.
   b) Select Enabled then press the <Enter> key to accept the change.
5. When more than one hard disk device type or CDROM device type is connected to the VL IPC, they can be prioritized in the boot order. To do that:
   a) From the **Advanced BIOS Features** menu, select either **Hard Disk Boot Priority** or **CD-ROM Boot Priority** using the arrow keys.
   b) Follow the Item Help directions on the right side to move (prioritize) a highlighted device up or down in the list.
   c) Press the <Esc> key to save the change and exit the submenu.
6. When ready, press the <F10> key to save changes, exit and continue booting the VL IPC.

Manual boot mode

Manual boot mode overrides automatic boot mode and allows users to boot from external USB devices such as a memory stick, CompactFlash card, CD-ROM, etc. To boot from an external device:

1. Connect a bootable USB device before booting. Otherwise, it will not be listed in the **Boot** menu.
2. Powerup or restart the VL IPC and, when the first black screen with white text appears, press the <F12> key about once every second to initiate the **Boot** menu.
3. Use the arrow keys to highlight the desired device under Hard Disk or CDROM, then press the <Enter> key to boot from that device.

Power on after power fail options

The VL IPC provides three options for power-up behavior once power is applied. To change the setting:

1. Select Integrated Peripherals.
2. Select SuperIO Device.
3. Select PWRON After PWR-Fail.
4. Select:
   a) OFF - for the VL IPC to remain OFF.
   b) ON - for the VL IPC to powerup and reboot when power is restored (the default mode).
   c) Former-Sts - for the VL IPC to maintain its on or off status before power is restored.
5. Press the <Enter> key to accept the change.
6. Save the change and confirm it.