BL PPC(15/17) 3000

Configurable panel PC

Data sheet
3250_en_A

1 Description

The BL PPC 3000 is a configurable panel PC that utilizes the Intel® Celeron® 1020E 2.2 GHz processor, chosen for its balance of processing power, graphic performance and energy efficiency. The robust design and I/O capability make the BL PPC 3000 a product that can be used in a wide variety of applications. The three built-in COM ports enable connection to legacy RS-232 devices. One COM port can also be configured for RS-422 or RS-485.

While the BL PPC 3000 is configurable, two pre-configured units provide a basic, fixed configuration: the BL PPC15 3000 includes a 15-in. touch screen and the BL PPC17 3000 includes a 17-in. touch screen. Both models are equipped with 4 GB RAM memory and are ready for installation of a CompactFlash® card (CF), hard disk drive (HDD) or solid state drive (SSD).

2 Features

- Powerful and efficient Celeron processor
- 15- or 17-inch resistive touch screen
- Three COM ports
- IP65 rating (front), IP20 rating (back)

	Protective earth ground and circuit ground (return) are connected.
	Make sure you always use the latest documentation. It can be downloaded at phoenixcontact.com/products.
	This data sheet is valid for all products listed on the following page:

3 Ordering data

Products

Description	Type	Order No.	Pcs. / Pkt.
Industrial panel PC, configurable, Intel Celeron 1020E 2.2 GHz processor	BL PPC 3000	2701397	1
Industrial panel PC, 15-in. touch screen preconfigured with 4 GB RAM, ready for installation of a CF card, HDD or SSD	BL PPC15 3000	2701393	1
Industrial panel PC, 17-in. touch screen preconfigured with 4 GB RAM, ready for installation of a CF card, HDD or SSD	BL PPC17 3000	2701394	1

Replacement parts

Description	Type	Order No.	Pcs. / Pkt.
Connector, printed circuit board for power input	MSTB 2,5/ 3-STF	1786844	50

4 Technical data

General data	
Dimensions (width x height x depth)[1]	
with 15-in. display	410 x 309 x 129 mm
with 17-in. display	452 x 357 x 129 mm
Ambient temperature (operating)	0 … 45°C
Ambient temperature (storage/transport)	-40 … 70°C
Permissible humidity (relative)	5 … 95%
Weight	
with 15-in. display	9.5 kg
with 17-in. display	11.6 kg
Degree of protection	IP65 in front, IP20 at back
Mounting	Panel mount
LED indicators	Power, HDD, Run, Error

[1] Dimensions are overall, including bezel

Electrical data	
Power supply, nominal	24 V DC
Power supply, range	19.2 … 28.8 V DC
Power consumption, typical[1]	
BL PPC15 3000	45.3 W @ 24 V
BL PPC17 3000	56.4 W @ 24 V
Current consumption, maximum[2]	
BL PPC15 3000	2.38 A @ 19.2 V
BL PPC17 3000	2.94 A @ 19.2 V
Type of connection	Removable Combicon screw-type
Conductor size	0.2 … 2.5 mm² (24 … 12 AWG)
Torque, wire clamping screw	0.5 … 0.6 Nm
RTC battery, typical life	5 years

[1] Windows® 7 OS, SSD, loopback plugs in all COM and LAN ports, running burn-in test at 20%

[2] Windows 7 OS, SSD, loopback plugs in all COM and LAN ports, USB ports fully loaded, running burn-in test at 100%

Operating systems	
Operating system (configuration option)	Windows® XP Windows Embedded Standard 2009 Windows Embedded Standard 7 Windows 7 Professional 64-bit Windows 7 Ultimate 64-bit Windows 7 Professional (32-bit) Windows 7 Ultimate (32-bit)

Data storage	
Type	CF, HDD, SSD

Main memory	
RAM (configurable option)	4, 8 or 16 GB
Type	DDR3 SODIMM

Processor data	
Processor	Intel Celeron 1020E
Clock speed	2.2 GHz
Cache	2 MB
Number of cores	2
Number of threads	2
Maximum TDP	35 W
Number of memory channels	2

Interfaces	
USB	4x Type A USB 1.1/2.0
Serial connection	2x 9-pos. D-Sub (male) for RS-232 1x 9-pos. D-Sub (male), jumper selectable for RS-232/422/485
Super I/O chipset	ITE IT8781F
Chipset	HM65
Video	VGA (DB-15, female)
Graphic processor	Integrated, HD Graphics 4000
Number of Ethernet connectors	2
Ethernet connection	10/100/1000 Mbps
LAN chipset efficient	Realtek® 8111F

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
Display backlighting type	CCFL
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)	424.0 x 329.5 mm
Outside bezel dimensions (width x height x depth)	452.0 x 357 x 10 mm
Display backlight MTBF	50000 hr.

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
Display backlighting type	CCFL
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 285.6 mm
Outside bezel dimensions (width x height x depth)	410 x 309 x 10 mm
Display backlight MTBF	50000 hr.

Mechanical tests	
Shock test according to IEC 60068-2-27	15g with 11 ms impulse
Vibration resistance according to EN 60068-2-6	
with SSD/CF card	1g
with HDD	0.5g

Conformance with EMC directives	
Developed in accordance to IEC 61000-6-2	
IEC 61000-4-2 (Electrostatic discharge)	Criterion B
IEC 61000-4-3 (Immunity against electromagnetic fields)	Criterion A
IEC 61000-4-4 (Burst)	Criterion B
IEC 61000-4-5 (Surge)	Criterion B
IEC 61000-4-6 (Immunity against high-frequency interference)	Criterion A
IEC 61000-4-8 (Immunity against magnetic fields)	Criterion A
IEC 55022 (Noise emission)	Class A

Approvals
FCC Part 15 Class A

5 Installation

The BL PPC... 3000 is mounted in a panel (enclosure or cabinet). This mounting system permits installation of the BL PPC 3000 in a cabinet so the display panel is visible on the outside (see Figure 1). The seal around the display maintains a degree of protection of IP65, provided the cabinet is also rated to IP65.

Be sure sufficient clearance exists for routing cables to the connectors. When installing the BL PPC... 3000, follow these general rules:

– Verify clearances within the cabinet. Typically, leave at least 5 cm (2 in.) on each side. Depending on cable routing, additional space may be required.
– Drill all holes and make all cuts before beginning installation. Be sure to protect already installed components from shavings.

– Make sure that there is adequate space around the heat sink (on the back of the BL PPC... 3000) as well as the air inlets and outlets to provide sufficient cooling.

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.

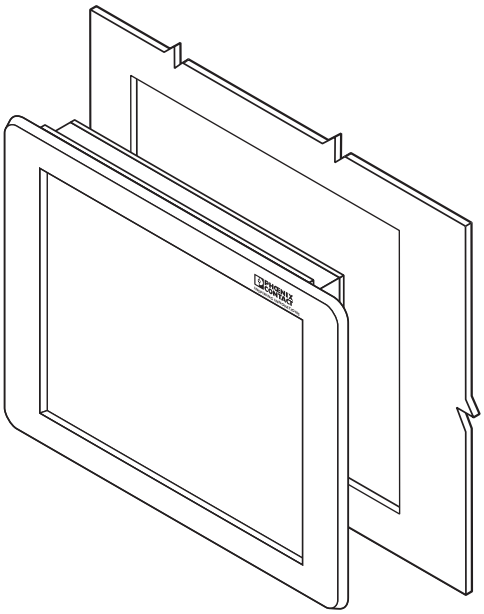


Figure 1 Panel mounting - front view

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

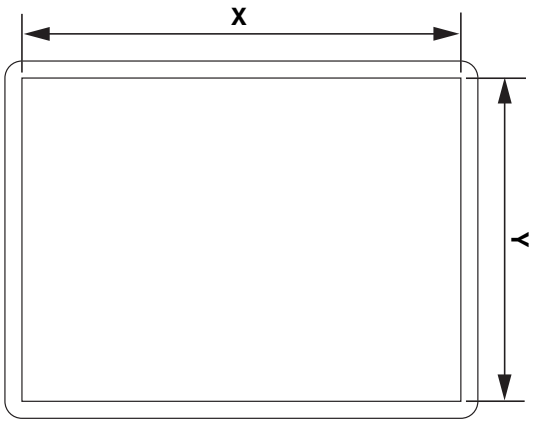


Figure 2 Panel cutout dimensions for displays

Display size	X (mm)	Y (mm)
15 in.	386.6	285.6
17 in.	424.0	329.5

2. From the front, push the BL PPC... 3000 through the opening. Ensure that the gasket is properly positioned in the groove.
3. Insert the screw, 1, through the clamp, 2, and thread the foot, 3, onto the screw.

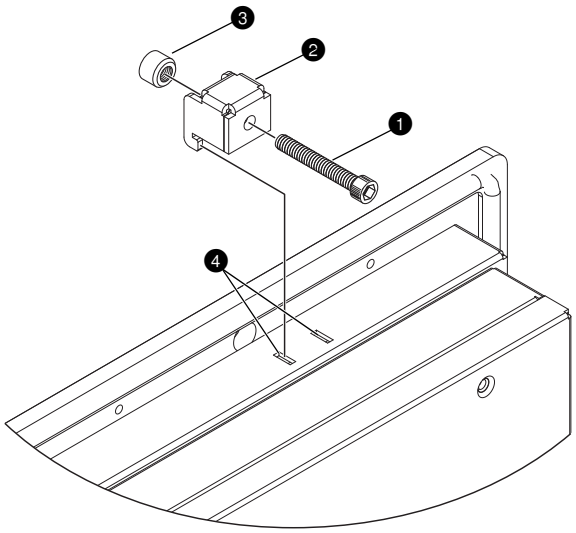


Figure 3 Panel mount clamps

4. From the rear, place the clamps in the slots, 4, on the display. Clamps must be placed in every slot.
5. Tighten the screws 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.

6 Interfaces

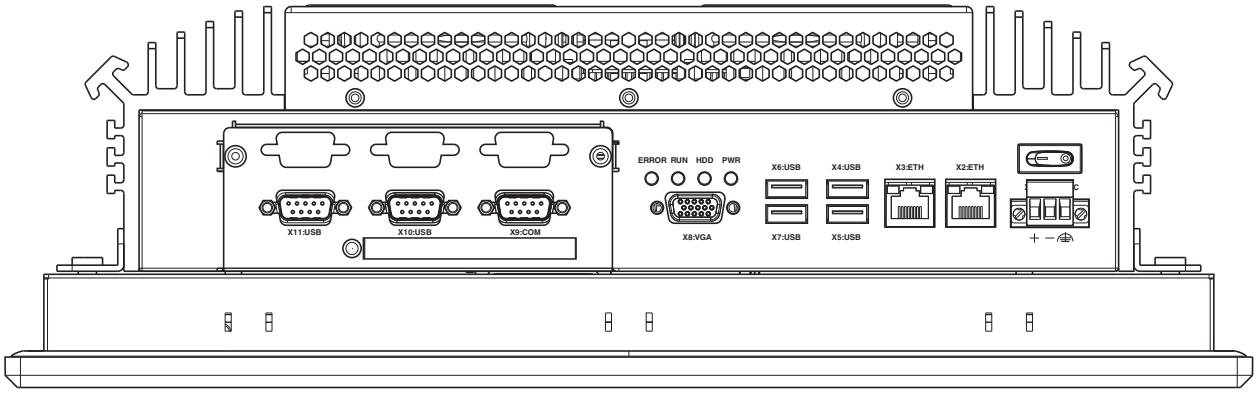


Figure 4 Connectors

After mounting the BL PPC... 3000, make any necessary cable connections (see Figure 4).

The available connectors are:

– Ethernet (ETH): Two RJ45 connectors allow the computer to communicate on a 10/100/1000 Base-T Ethernet network.
– Serial (COM): Three 9-pos. D-Sub ports allow connection of serial devices. Two ports operate on the RS-232 layer; one port can be configured to communicate on the RS-232, RS-422 or RS-485 physical layer (see “Serial communication” on page 7 for jumper settings).
– USB (USB): USB devices connect using Type A connectors. The BL PPC... 3000 has four USB ports.
– VGA (VGA): This port connects the BL PPC... 3000 to an external analog display with a corresponding VGA connector.

External display

An external analog display can be connected to the VGA port of the BL PPC... 3000 (see Figure 4). An Extended Display Identification Data (EDID) display 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.

6.1 Power connection

A three-position, screw-type Combicon connector (MSTB 2,5/ 3-STF) is provided for connecting power to the BL PPC... 3000.

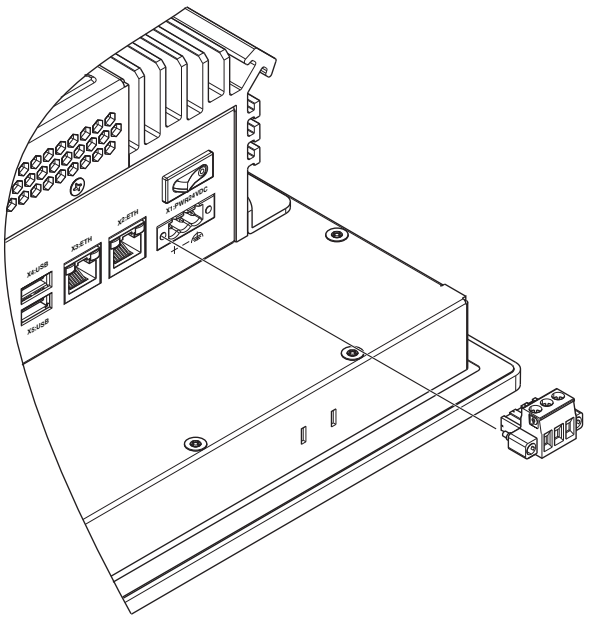


Figure 5 Power connector

Connect a power source to the included power connector. This connector supports wire sizes from 0.2 to 2.5 mm² (24 to 12 AWG). Torque the wire retaining screws in the

connector to 0.5 Nm (4.4 lb_f-in.) torque. Secure the connector to the BL PPC... 3000 chassis.

PIN NO.	DESCRIPTION
⏚ (FE)	Chassis ground
–	0 V DC
+	+19.2…28.8 V DC

NOTE:

The ⏚ of the BL PPC... 3000 must be connected to a functional ground.

6.2 Serial communication

Jumpers on the circuit board provide the ability to use the configurable COM port on the BL PPC… 3000 for specific applications.

Port **X9: COM1** can be configured to communicate on the RS-232, RS-422 or RS-485 physical layer. Ports **X10:COM2** and **X11:COM3** are limited to RS-232 only.

NOTE:

The COM port cable must be less than 30 m when the port is configured for RS-422/RS-485. Longer cable lengths can be achieved by using an external surge suppression device.

The COM ports can also be set, when operating as RS-485 ports, to enable built-in bias and termination resistors.

Jumper pins located on the board behind the D-Sub connectors enable configuration of the COM ports. To access the jumpers (see Figure 6):

1. Turn off the BL PPC... 3000 and disconnect the power supply.
2. Remove the BL PPC... 3000 to an ESD safe location.
3. Disconnect any cables attached to any of the D-Sub connectors.
4. Remove the screw, 1, securing the handle, 2, and rotate the handle 180°.
5. Remove the two screws, 3, securing the assembly in the chassis.
6. Grasp the handle and slide the assembly, 4, straight out from the chassis.

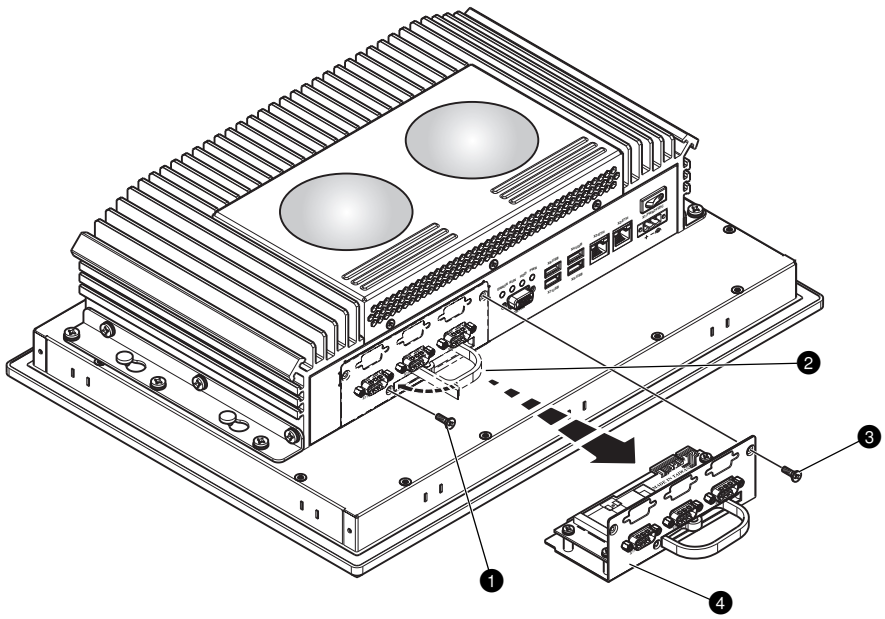


Figure 6 Accessing the COM port jumpers

7. Locate the jumpers on the board.

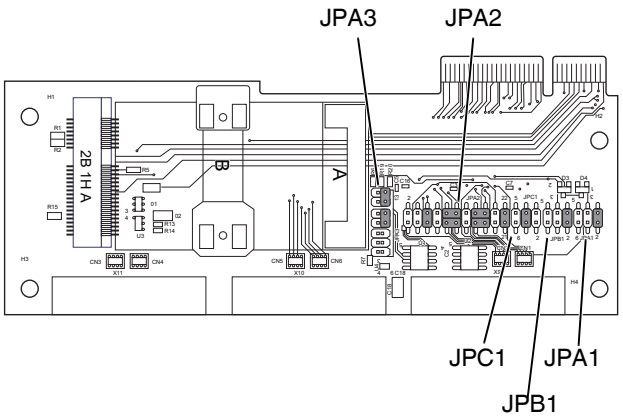
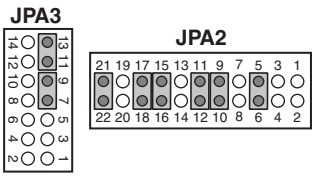
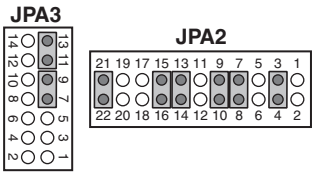
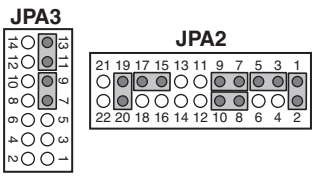
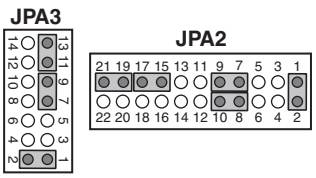
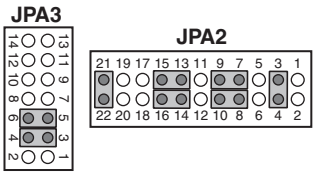
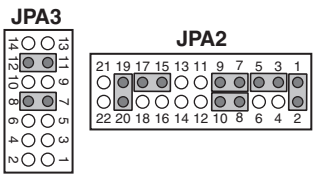
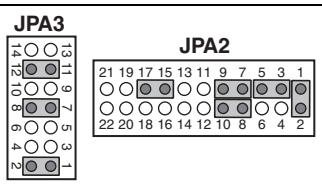


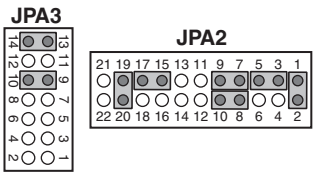
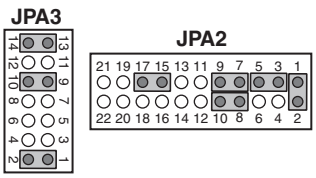
Figure 7 Jumper block locations

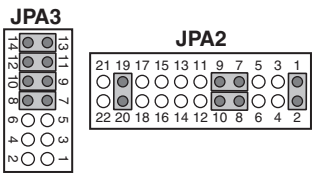
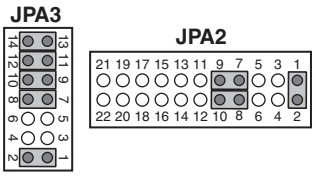
8. To move a jumper, it may be gently grasped using small needle-nose pliers or large tweezers. Pull it straight out until it is clear of the pins. Reposition it over the desired pins and insert it straight onto the pins.

JPA2/JPA3 settings without termination or bias	
Function	**Jumper position**
RS-232 (default)	
RS-422	
RS-485	
RS-485 RTS mode	

The BL PPC 3000 allows enabling of termination in RS-422 or RS-485 networks and bias in RS-485 networks. Termination places a resistor of 100 Ω between the conductors; bias places a resistor of 620 Ω in each conductor before the driver (the end node). To enable termination, bias or both:

JPA2/JPA3 settings with termination	
Function	**Jumper position**
RS-422	
RS-485	
RS-485 RTS mode	

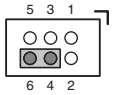
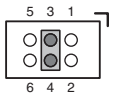
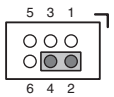
JPA2/JPA3 settings with bias	
Function	**Jumper position**
RS-485	
RS-485 RTS mode	

JPA2/JPA3 settings with termination and bias	
Function	**Jumper position**
RS-485	
RS-485 RTS mode	

The function of the pins in the D-Sub connector varies with the different configuration settings.

DB-9 Pin	RS-232	RS-422	RS-485 (RTS)
1	DCD	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	Do not use
4	DTR	RXD-	Do not use
5	GND	GND	GND
6	DSR	Do not use	Do not use
7	RTS	Do not use	Do not use
8	CTS	Do not use	Do not use
9	Function setup by JPA1	Function setup by JPA1	Function setup by JPA1

Pin 9 in the COM port (DB-9) connector can be configured to provide different voltages using the appropriate jumper setting.

JPA1/JPB1/JPC1	
Function	**Jumper position**
+12 V output	
RI Input (default)	
+5 V output	

To re-install the assembly (refer to Figure 6):

1. Align the assembly, 4, with the slot and slide it straight into the chassis. A slight pressure will be felt as the board engages the connectors on the motherboard.
2. Install the two screws, 3, securing the assembly.
3. Rotate the handle, 2, so it is inside the assembly and secure it with the screw, 1, previously removed.

NOTE:

Failure to properly secure the D-Sub connector assembly and handle will result in a lower IP rating.

4. Install the BL PPC... 3000 as desired and connect the power supply.

7 Operation

7.1 LED operation

Four LEDs are located on the bottom of the BL PPC... 3000. These LEDs provide operating information.

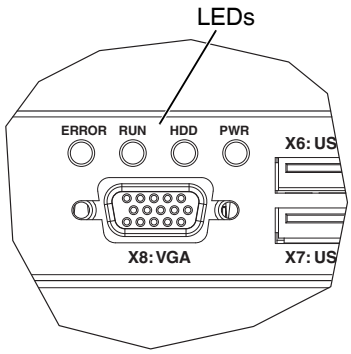


Figure 8 LED layout

LED	Indication	Description
ERROR	Orange Red	Indicates reduced performance due to processor temperature. Indicates an over-temperature condition has caused the processor to shut down.
RUN		Reserved for future use
HDD	Flashes green	Indicates data storage (CF, HDD or SSD) activity
PWR	Green	When 24 V DC is applied and the power switch is turned on

8 Maintenance

8.1 Service panel

NOTE: Electrostatic discharge!

The device contains components that can be damaged or destroyed by electrostatic discharge. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD), in accordance with EN 61340-5-1 and EN 61340-5-2.

The service panel on the top of the BL PPC 3000 can be removed to access the data storage and other components.

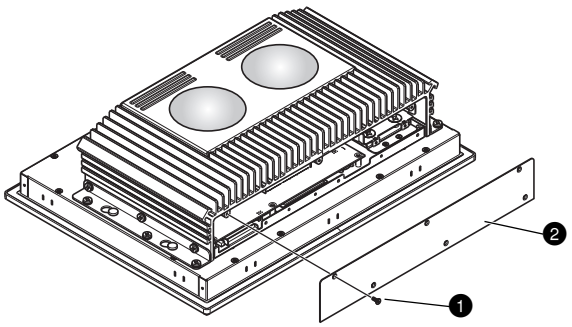


Figure 9 Service panel and component access

1. Turn off the BL PPC... 3000 and disconnect the power supply.
2. Remove the BL PPC... 3000 to an ESD-safe location.
3. Remove the six screws, 1, securing the service panel, 2, and remove the panel.

Several components within the IPC can be removed or replaced.

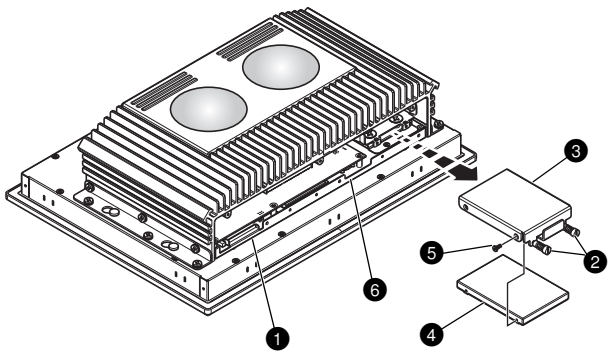


Figure 10 Service panel and components

8.2 CompactFlash® card

The CompactFlash (CF) card is secured into the slot with a retaining bracket. To insert a card:

1. Remove the service panel (see “Service panel” on page 10).
2. Remove the two screws and retaining bracket.
3. Place the card into the slot, ensuring that it is properly oriented and seated.
4. Re-install the retaining bracket using the two screws previously removed.

8.3 HDD/SSD

Data storage can be via a rotating hard-disk drive (HDD) or solid-state drive (SSD). Whichever is installed, it is placed in a tray and inserted into the chassis. To remove the drive:

1. Remove the service panel (see “Service panel” on page 10).
2. Rotate the two thumbscrews, 2, counterclockwise and remove the tray, 3, and drive, 4, assembly from the slot.
3. If desired, remove the four screws, 5, securing the drive in the tray and replace the drive.
4. To install, reverse the procedure.

8.4 CMOS battery

The CMOS battery may require replacement. The battery is type CR2030. To replace the battery:

1. Remove the service panel (see “Service panel” on page 10).
2. Locate the battery, 6.

Note the orientation of the battery. One side should have a plus (+) symbol. The replacement battery must be installed the same way.

3. To remove: Pull down on the retention clip at the bottom of the battery housing and the battery will release from the housing.
4. To replace: Insert the battery into the top of the battery housing at a slight angle. Push the bottom of the battery in until the retention clip secures the battery into the housing.