



Baseline 2 configurable industrial PCs

User manual

UM EN BL2 ...100

User manual

Basicline 2 configurable industrial PCs

UM EN BL2 ...100, Revision E

2020-02-14

This user manual is valid for:

BL2 BPC 1100	1105772
BL2 BPC 2100	1105773
BL2 BPC 3100	1105776
BL2 BPC 7100	1105777
BL2 BPC 9100	1105778
BL2 BPC 1101	1099299
BL2 BPC 2101	1099302
BL2 BPC 3101	1099306
BL2 BPC 7101	1099309
BL2 BPC 9101	1099311
BL2 PPC 2100	1105780
BL2 PPC 3100	1105781
BL2 PPC 7100	1105782
BL2 PPC 9100	1105783
BL2 PPC15.6 2101	1099318
BL2 PPC15.6 3101	1099319
BL2 PPC15.6 7101	1099320
BL2 PPC15.6 9101	1099321
BL2 PPC18.5 2101	1099324
BL2 PPC18.5 3101	1099325
BL2 PPC18.5 7101	1099327
BL2 PPC18.5 9101	1099328
BL2 PPC21.5 2101	1099331
BL2 PPC21.5 3101	1099332
BL2 PPC21.5 7101	1099333
BL2 PPC21.5 9101	1099334

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1 For your safety

Read this user manual carefully and keep it to hand for future reference.

1.1 Labeling of warning notes



This symbol indicates hazards that could lead to personal injury. There are three signal words indicating the severity of a potential injury.

DANGER

Indicates a hazard with a high risk level. If this hazardous situation is not avoided, it will result in death or serious injury.

WARNING

Indicates a hazard with a medium risk level. If this hazardous situation is not avoided, it could result in death or serious injury.

CAUTION

Indicates a hazard with a low risk level. If this hazardous situation is not avoided, it could result in minor or moderate injury.



This symbol together with the **NOTE** signal word alerts the reader to a situation which may cause damage or malfunction to the device, hardware/software, or surrounding property.



Here you will find additional information or detailed sources of information.

1.2 Qualification of users

The use of products described in this manual is oriented exclusively to electrically skilled persons or persons instructed by them. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

1.3 Field of application of the products

1.3.1 Intended use

The products described in this document are designed for use in manufacturing and industrial environments.

The products are built according to the latest safety requirements. However, dangerous situations or damage to the products or other property can arise from misuse of this device.

The products fulfill the requirements of the EMC directives and harmonized European standards. Any modifications to the systems can influence the EMC behavior.



The device contains valuable recyclable materials that should be utilized. The electronic circuit board is fitted with a lithium battery.

Dispose of the device separately from other waste, i.e., via an appropriate collection site.

Radio interference

These products are Class A items of equipment (EN 61000-6-4). When using the equipment in residential areas, it may cause radio interference. In this case, the operator is obligated to implement appropriate measures.

1.3.2 Product changes

Changes or modifications to hardware and software of the device are not permitted.

Incorrect operation or modifications to the device can endanger your safety or damage the device. Do not repair the device yourself. If the device is defective, please contact Phoenix Contact.

2 Overview and ordering data

2.1 Description

The BL2 ...100 IPC is a configurable box PC (BPC) or panel PC (PPC) that utilizes the Intel® processors chosen for their balance of processing power, graphic performance, and energy efficiency. The robust design and I/O capability make the BL2 ...100 a product that can be used in a wide variety of applications.

Features

- Compact, rugged housing
- Fanless design
- Intel® Core™ i7 processors available
- DIN rail- and wall-mount options
- Two integrated 10/100/1000 Ethernet ports with independent MAC addresses
- IP66 rating (front), IP20 rating (back)
- UEFI-configurable RS-232/422/485 communication port
- Up to 8 GB RAM
- USB 2.0 and 3.0 ports

2.2 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Industrial box PC , configurable, Intel® Celeron® processor N3350 1.10/2.40 GHz	BL2 BPC 1100	1105772	1
Industrial box PC , configurable, Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 BPC 2100	1105773	1
Industrial box PC , configurable, Intel® Core™ i3-6100U processor 2.30 GHz	BL2 BPC 3100	1105776	1
Industrial box PC , configurable, Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 BPC 7100	1105777	1
Industrial box PC , configurable, Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 BPC 9100	1105778	1
Industrial box PC , Intel® Celeron® processor N3350 1.10/2.40 GHz	BL2 BPC 1101	1105779	1
Industrial box PC , Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 BPC 2101	1105780	1
Industrial box PC , Intel® Core™ i3-6100U processor 2.30 GHz	BL2 BPC 3101	1105781	1
Industrial box PC , Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 BPC 7101	1105782	1
Industrial box PC , Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 BPC 9101	1105783	1
Industrial panel PC , configurable, Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 PPC 2100	1105780	1
Industrial panel PC , configurable, Intel® Core™ i3-6100U processor 2.30 GHz	BL2 PPC 3100	1105781	1
Industrial panel PC , configurable, Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 PPC 7100	1105782	1
Industrial panel PC , configurable, Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 PPC 9100	1105783	1
Industrial panel PC , with 15.6-in. display, Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 PPC 2100	1099318	1
Industrial panel PC , with 15.6-in. display, Intel® Core™ i3-6100U processor 2.30 GHz	BL2 PPC 3100	1099319	1

Products [...]

Description	Type	Order No.	Pcs./Pkt.
Industrial panel PC, with 15.6-in. display, Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 PPC 7100	1099320	1
Industrial panel PC, with 15.6-in. display, Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 PPC 9100	1099321	1
Industrial panel PC, with 18.5-in. display, Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 PPC 2100	1099324	1
Industrial panel PC, with 18.5-in. display, Intel® Core™ i3-6100U processor 2.30 GHz	BL2 PPC 3100	1099325	1
Industrial panel PC, with 18.5-in. display, Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 PPC 7100	1099327	1
Industrial panel PC, with 18.5-in. display, Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 PPC 9100	1099328	1
Industrial panel PC, with 21.5-in. display, Intel® Celeron® processor N4200 1.10/2.50 GHz	BL2 PPC 2100	1099331	1
Industrial panel PC, with 21.5-in. display, Intel® Core™ i3-6100U processor 2.30 GHz	BL2 PPC 3100	1099332	1
Industrial panel PC, with 21.5-in. display, Intel® Core™ i5-6300U processor 2.40/3.00 GHz	BL2 PPC 7100	1099333	1
Industrial panel PC, with 21.5-in. display, Intel® Core™ i7-6600U processor 2.60/3.40 GHz	BL2 PPC 9100	1099334	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
Service socket with USB (socket/plug), type A with 0.6 m cable	SI-SES-U1A/0,6	1404514	1
Adapter, DisplayPort to VGA video adapter	DP to VGA ADPTR	2400173	1
Adapter, DisplayPort to DVI-I video adapter	DP to DVI ADPTR	2400174	1
Cable, DisplayPort to DisplayPort, 2 m	VL 2.0M DP CABLE	2404774	1

Visit phoenixcontact.net/products for available accessories

Replacement parts

Description	Type	Order No.	Pcs./Pkt.
Connector, printed circuit board connector	MSTB 2,5/ 3-STF-5,08	1777992	1

3 Installation

3.1 Mounting

Depending upon the configuration ordered, there are several ways to mount the BL2 ...100. Use the appropriate section below to mount the BL2 ...100.



NOTE:

Install the BL2 ...100 with adequate clearance around the heat sink to provide sufficient air flow such that ambient temperatures do not exceed the operating limits. Install cooling fan(s) in the enclosure, if necessary.

Connectors and switches must be accessible. A wall panel thickness of 1.9 mm (14 ga.) is required for correct mounting of a BL2 PPC ...100 to maintain IP66 protection.

When installing the BL2 ...100 in a cabinet, follow these general rules:

- Verify clearances within the cabinet. Typically, leave at least 5 cm (2 in.) on each side with 13 cm (5 in.) on the connector side.
- Drill all holes and make all cuts before beginning installation. Be sure to protect already installed components from shavings during this procedure.
- Supporting panels must be at least 14 gauge to provide proper support.
- Make sure that there is adequate space around the heat sink to provide sufficient cooling.



NOTE:

Exceeding the system temperature limits can result in performance degradation of any or all components. It is therefore important that the ambient temperature of the installation environment is kept within the system temperature limits of your BL2 ...100.

3.1.1 Wall mount (BL2 BPC ...100)

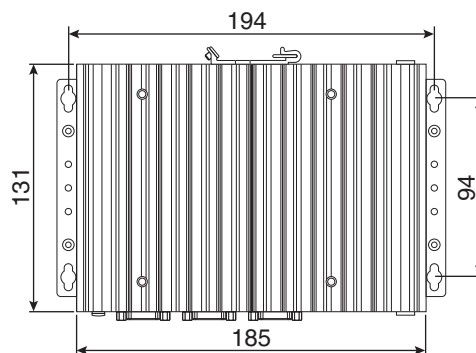


Figure 3-1 Mounting dimensions (BL2 BPC 1100, BL2 BPC 2100)

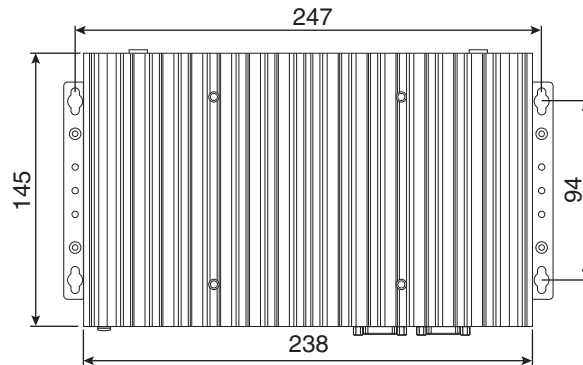


Figure 3-2 Mounting dimensions (BL2 BPC 3100, BL2 BPC 7100, BL2 BPC 9100)

Installation

1. Use the BL2 BPC ...100 as a template (or the dimensions shown in Figure 3-1 or Figure 3-2) and mark the locations of the holes on the mounting surface.
2. Use the correct anchor type for the mounting surface and securely attach the BL2 BPC ...100 to the wall. Ensure that the attaching hardware is in the small section of the keyholes.

Removal

1. Remove power and disconnect cables to the IPC.
2. Loosen and remove the screws securing the IPC to the mounting surface.

3.1.2 DIN rail mount


NOTE:

Only the BL2 BPC 1100 and BL2 BPC 2100 has the option of DIN rail mounting.

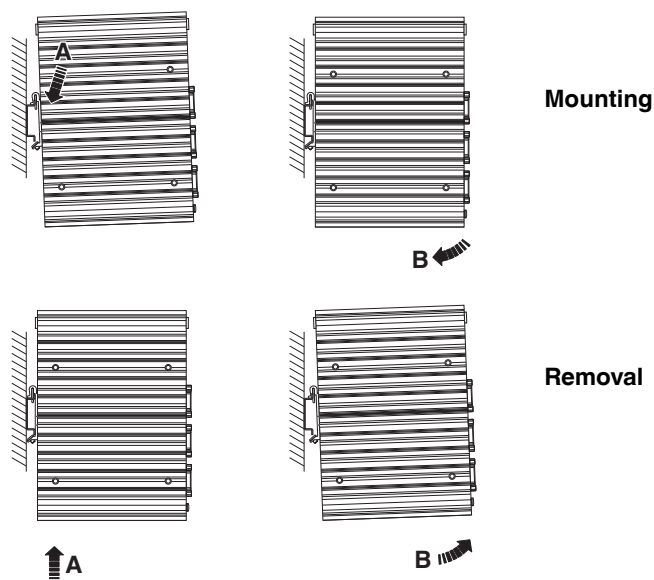


Figure 3-3 DIN rail mounting

1. Angle the BL2 BPC ...100 so the top edge of the mounting plate hangs on the top edge of the DIN rail.
2. Rotate the BL2 BPC ...100 down (A) against the lower edge of the DIN rail. Press in (B) until the latch snaps closed.
3. Secure the device on the rail with clamps.
4. If necessary to remove, raise the device straight up (A) and rotate the device away from the rail (B).

3.1.3 Panel mount (BL2 PPC ...100)

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

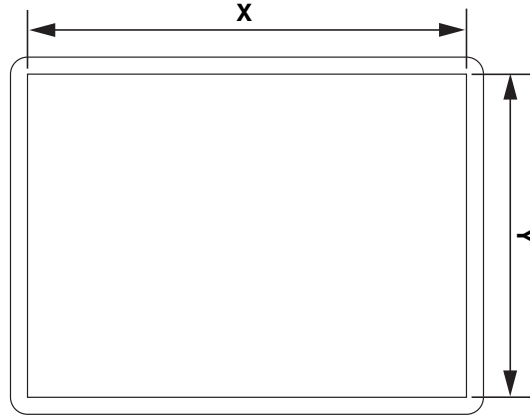


Figure 3-4 Panel cutout dimensions

Table 3-1 Display cutout dimensions

Display size	X (mm)	Y (mm)
21.5 in.	547	367
18.5 in.	475	306
15.6 in.	401	296

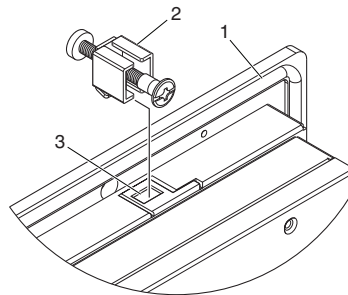
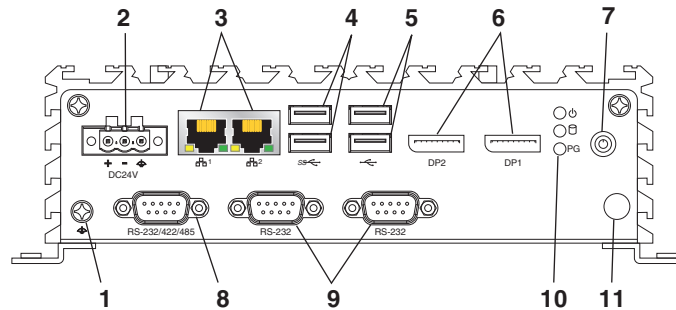


Figure 3-5 Panel-mounting clamps

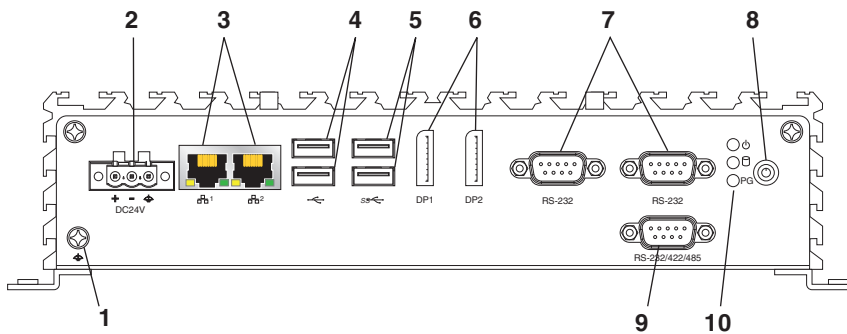
2. From the front, push the BL2 PPC ...100 through the opening, making sure the gasket (1) is properly positioned in the groove and against the panel.
3. From the rear, place the clamps (2) in the slots (3) on the display and slide the clamp to the left to lock it into the slot. Clamps must be installed in every slot.
4. Tighten the screw on each clamp, alternating from one side to the other until the front bezel is secure against the mounting panel. Torque the screws to 1.2 Nm.

3.2 Interfaces



- | | |
|-----------------------------------|---|
| 1 Functional earth (ground) screw | 7 On/off switch |
| 2 Power connector | 8 Configurable RS-232/422/485 serial port |
| 3 Ethernet RJ45 ports | 9 RS-232 serial ports |
| 4 USB 3.0 connectors | 10 Status LEDs |
| 5 USB 2.0 connectors | 11 Antenna mount location (optional) |
| 6 DisplayPort connectors | |

Figure 3-6 Connectors and ports (BL2 ... 1100, BL2 ... 2100)



- | | |
|-----------------------------------|--|
| 1 Functional earth (ground) screw | 7 RS-232 serial ports |
| 2 Power connector | 8 On/off switch |
| 3 Ethernet RJ45 ports | 9 Configurable RS-232/422/485 serial port |
| 4 USB 3.0 connectors | 10 Status LEDs |
| 5 USB 2.0 connectors | Antenna mount location (optional) (see Figure 3-9) |
| 6 DisplayPort connectors | |

Figure 3-7 Connectors and ports (BL2 ... 3100, BL2 ... 7100, BL2 ... 9100)

After mounting the BL2 ...100, make any necessary cable connections (see Figure 3-6).

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 D-SUB 9 serial ports are available for use. Two ports are set as RS-232 while one port is configurable as either RS-232, RS-422, or RS-485.

- USB (USB): USB devices connect using Type A connectors. Two ports are USB 2.0 and two are USB 3.0 ports.



USB 3.0 ports utilize a blue connector. USB 2.0 ports are black.

- DisplayPort (DP): These ports connect the BL2 ...100 to external digital displays with a corresponding DP++ connector.
- Antenna port: Optional port for installation of an antenna (see “Antenna” on page 14).

External display

External displays can be connected to the DP ports of the BL2 ...100.

- The BL2 BPC ...100 supports up to three external displays.
- The BL2 PPC ...100 supports up to two external displays.

3.2.1 Power connection

A three-position, screw-type COMBICON connector (MSTB 2,5/ 3-STF-5,08) is provided for connecting power to the BL2 ...100.

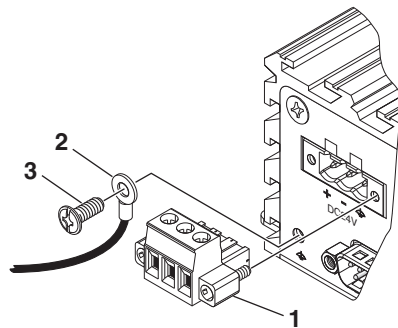


Figure 3-8 Power connector

Connect a power source to the included power connector (1). 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.). Secure the connector to the BL2 ...100 chassis.

Table 3-2 Power connector

Pin No.	Description
	Functional earth (ground)
-	0 V DC
+	24 V DC ±20%

A separate FE connection is required to satisfy UL requirements. Place the functional earth (ground) wire (2) under the ground screw (3) using a ring terminal connection. Torque screw to 1.2 Nm.

**NOTE:**

To comply with UL 61010-2-201, a safety extra-low voltage (SELV) according to DIN EN 61131 as supply voltage is required.

This device is protection class I item of equipment.

UEFI is set to boot on power, allowing the system to boot as soon as the power plug is installed. This can be changed in the UEFI Setup Utility.

3.2.2 Serial communication

One D-SUB 9 connector (see Figure 3-6 or Figure 3-7) can be configured to communicate on the RS-232, RS-422, or RS-485 physical layer. The physical layer is set using the UEFI (see "UEFI" on page 17). The remaining connectors are limited to RS-232 only.

The BL2 ...100 is capable of the following communication parameters:

Table 3-3 RS-232/422/485 communication settings

	Data bits	Parity	Stop bits
RS-232	7/8	None/Even/Odd	1/2
RS-422/485 Autotoggle RTS	8	None/Even/Odd	1/2
RS-422/485 Manual RTS	7/8	None/Even/Odd	1/2



The table shows the capabilities of the IPC. Configuration of parameters to communicate with a specific device is typically part of the software tool performing the communication.

The function of the pins in the D-SUB 9 connector varies with the different configuration settings.

Table 3-4 D-SUB 9 pinout

D-SUB 9 pin	RS-232	RS-422	RS-485
1	DCD	TXD-	TXD-/RXD-
2	RXD	TXD+	TXD+/RXD+
3	TXD	RXD+	–
4	DTR	RXD-	–
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	Ring indicator	–	–

3.3 Antenna

An optional factory-installed mini PCIe card is available to allow the BL2 ...100 to be placed on a wireless network. Included with the installed card is an antenna (1) that attaches to a connector on the top of the unit (2).



The BL2 ... 1100 and BL2 ... 2100 have one antenna connector on the top and one on the bottom (see "Connectors and ports (BL2 ... 1100, BL2 ... 2100)" on page 11). The top connector is inaccessible if the DIN rail mounting method is used and the bottom connector must be used.

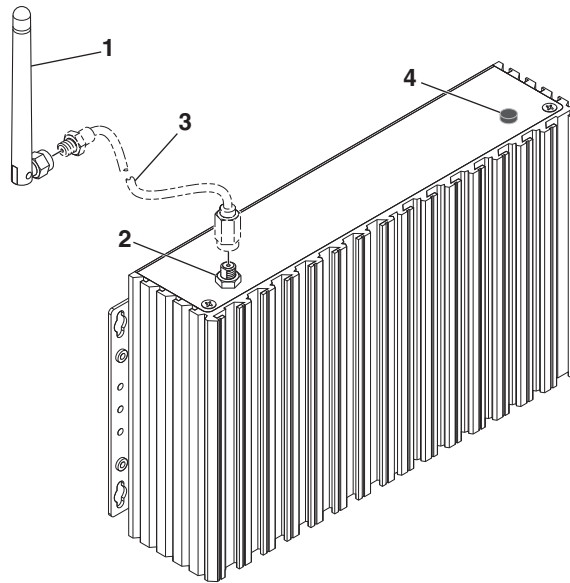


Figure 3-9 Antenna installation (BL2 BPC 3100 shown)

Since the BL2 ...100 is often installed within an enclosure, it may be advisable to install the antenna on the exterior of the enclosure rather than directly to the IPC. To do this, an appropriate length antenna cable (3) must be purchased separately.

The antenna (or antenna cable) threads onto the BL2 ...100. For external antenna mounting, route and secure the antenna cable appropriately within the enclosure.



NOTE:

Do not allow metal chips to fall within the enclosure when creating the hole for mounting the antenna.

4 Operation

4.1 LED operation

Four LEDs are provided on the BL2 ...100. These LEDs provide operating information (see Figure 3-6 on page 11).

Table 4-1 LED indications

LED	Indication	Description
PWR	Green	When 24 V DC is applied and the power switch is turned on
SATA	Flashes green	Indicates data storage (HDD or SSD) activity
RUN		Reserved for future use
ERROR	Orange	Indicates processor is actively thermal throttling
	Red	Indicates processor has shut down due to overheating

5 Maintenance

**NOTE: Electrostatic discharge**

Electrostatic discharge can damage or destroy components. When handling, observe the necessary safety precautions against electrostatic discharge (ESD) according to EN 61340-5-1 and IEC 61340-5-1.

5.1 UEFI

The unified extensible firmware interface (UEFI) configures the software to match the hardware contained within the industrial PC.

**NOTE:**

Changing UEFI parameters can lead to system instability and data loss. Therefore, it is recommended that only advanced users modify the UEFI settings.

To access the UEFI setup utility, there must be an actual (physical) keyboard attached to one of the USB ports.

During the boot process, press the <F2> key to enter the UEFI setup utility. Use the arrow keys to navigate and highlight desired selections. Follow on-screen instructions and be sure to save any changes.

One-time change to the boot sequence

A device must be connected before applying power to be displayed as a selectable device.

A quick-boot menu allows changes to the boot sequence one time. This can be used to load a new operating system from a USB drive.

1. Press the <F7> key during the boot process to access the quick-boot menu.
2. Highlight the device from which to boot.
3. Press the <Enter> key to initiate the boot process.

5.2 Mass storage replacement

Before beginning any mass storage replacement procedures, use an external drive and make a copy of or backup the contents of the internal drive to be replaced. Disconnect the external drive before removing power to the BL2 ...100.

**WARNING:**

Always remove power to the IPC and any connected devices before performing internal maintenance.

**NOTE:**

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) according to EN 61340-5-1 and IEC 61340-5-1.

5.2.1 Accessing the drives

BL2 BPC ...100

1. Remove the BL2 BPC ...100 from its mounting location and place it on a clean, horizontal surface. It is not necessary to remove the mounting brackets.

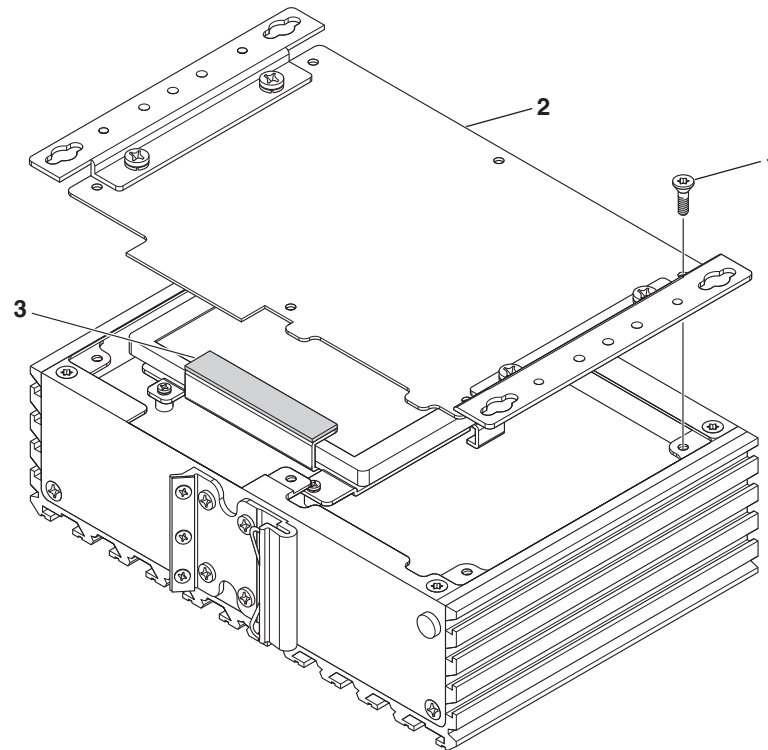


Figure 5-1 Access panel

2. Remove the six screws (1) securing the access panel (2) to the chassis.



NOTE:

Two sticky-backed thermal pads are located between the access panel and drive tray.

3. Gently pry the access panel away from the chassis using a flat screwdriver. Turn the access panel over to protect the thermal pads (3) and set aside. The drive tray should be visible inside the chassis.
4. Replace any desired components.
5. To reinstall, place the access panel on the chassis, making sure no cables are pinched. Secure the panel using the hardware previously removed.

BL2 PPC ...100

1. Remove the BL2 PPC ...100 from its mounting location and place it on a clean, horizontal surface.
2. Remove the six screws (1) securing the IPC chassis to the rear of the display.

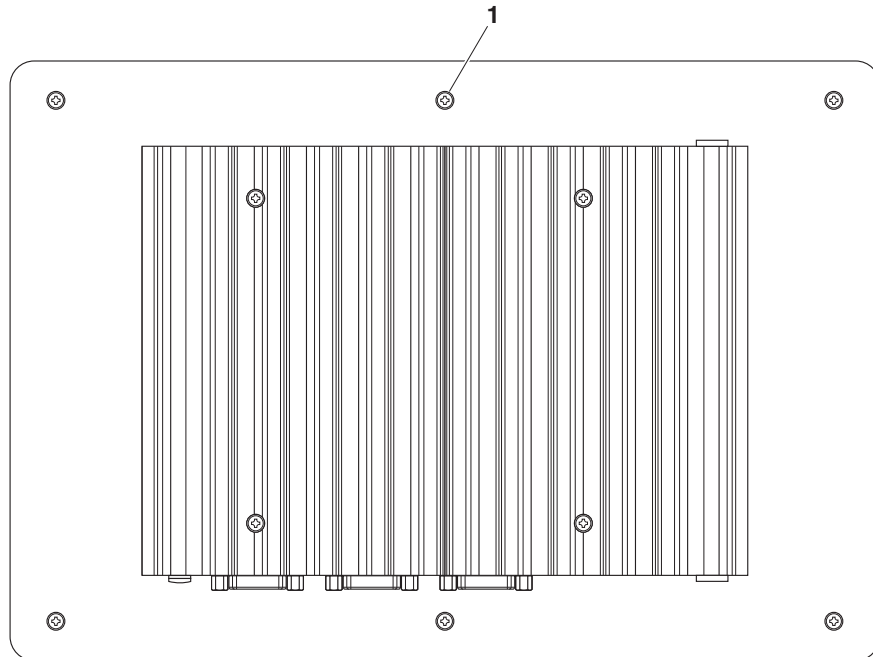


Figure 5-2 IPC chassis removal from panel

3. Carefully turn the IPC chassis over and set it on the back side of the display.

**NOTE:**

Do not move the IPC chassis away from the display. Cables are connected between the IPC chassis and display.

4. Remove the screw securing the ground wire to the adapter plate.
5. Remove the six screws securing the adapter plate to the rear of the chassis (see Figure 5-1 for similar panel).

**NOTE:**

Two sticky-backed thermal pads are located between the adapter plate and drive tray.

6. Gently pry the adapter plate away from the chassis using a flat screwdriver. Turn the adapter plate over, keeping the connected cables in the opening to the display, and set it on the back of the display with the thermal pads facing up.

**NOTE:**

It is not necessary to disconnect the video cables to the display from the chassis.

7. Replace any desired components.
8. Place the adapter plate on the chassis, making sure no cables are pinched. Secure the plate using the hardware previously removed.

5.2.2 SATA drive

The SATA drive tray located just under the access panel (BL2 BPC ...100) or adapter plate (BL2 PPC ...100). Sticky-backed thermal pads transfer heat away from the drive to the chassis.

1. Remove the three screws (1) securing the tray (2) and drive (3) assembly.

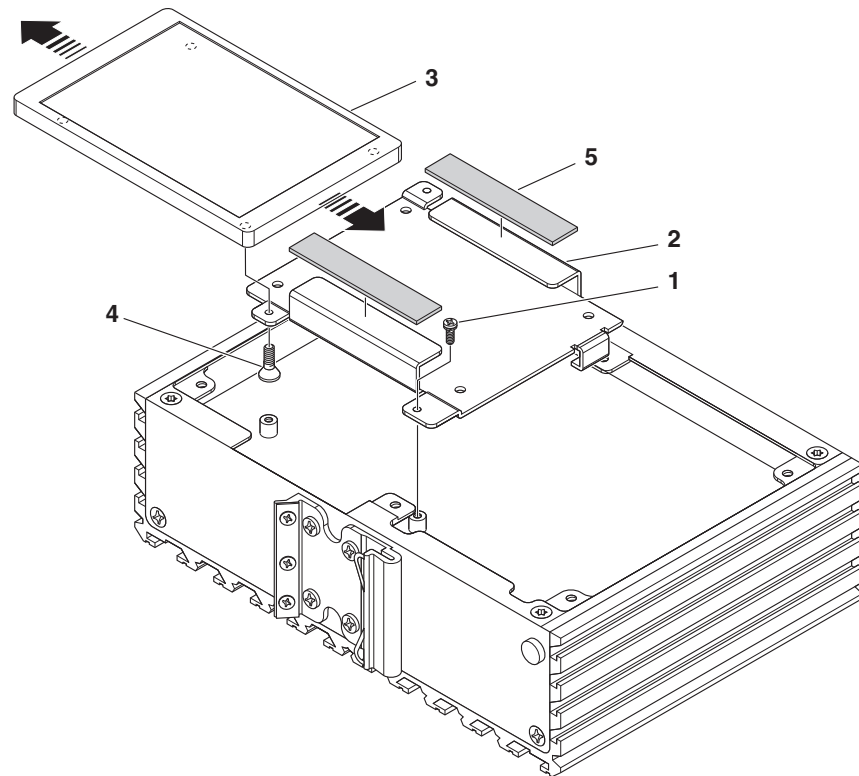


Figure 5-3 SATA drive tray (BL2 BPC ...100 shown)

2. Lift the assembly off the circuit board and disconnect the ribbon cable (not shown).
3. Remove the four screws (4) securing the drive in the tray and slide the drive out of the tray.
4. Slide the new drive in the tray and secure it using the previously removed hardware.
5. Place the drive and tray assembly in the chassis and connect the ribbon cable.
6. Secure the drive tray assembly in the chassis using the three screws previously removed.
7. Reinstall or replace thermal pads (5) as necessary.

5.2.3 M.2 drive

The M.2 drive location varies depending upon the model.

- BL2 ...PC 1100, BL2 ...PC 2100: The M.2 card is located under the SATA drive tray. The access panel or adapter plate and SATA drive must be removed for access.
- BL2 BPC 3100, BL2 BPC 7100, BL2 BPC 9100: The access panel must be removed. The M.2 card is accessible without removing the SATA drive.
- BL2 PPC 3100, BL2 PPC 7100, BL2 PPC 9100: The M.2 card is accessible through the cable pass through hole. The adapter plate does not require removal.

BL2 ...PC 1100, BL2 ...PC 2100:

1. Remove the SATA drive and tray assembly.
2. Remove the screw and washer holding the M.2 drive in place.
The card will lift off the board slightly.

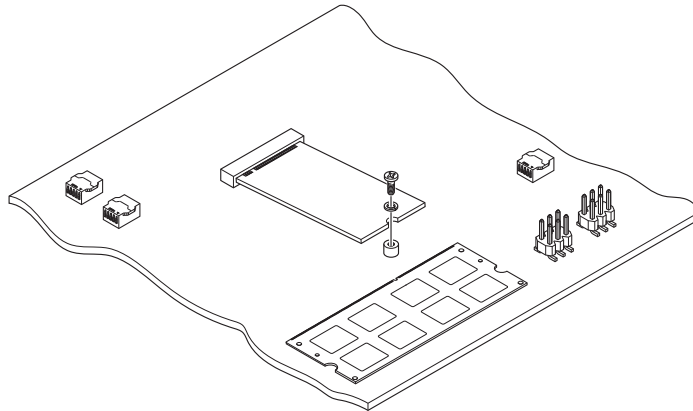


Figure 5-4 M.2 drive removal

3. Pull the drive out of the socket and remove it.
4. Insert the new drive into the socket at the same angle as the one that was removed. Make sure the drive is fully seated in the socket.
5. Secure the drive with the washer and screw previously removed.
6. Reinstall the SATA drive and tray assembly.

BL2 BPC 3100, BL2 BPC 7100, BL2 BPC 9100

1. Remove the screw and washer holding the M.2 drive in place (see Figure 5-4). The card will lift off the board slightly.
2. Pull the drive out of the socket and remove it.
3. Insert the new drive into the socket at the same angle as the one that was removed. Make sure the drive is fully seated in the socket.
4. Secure the drive with the washer and screw previously removed.
5. Reinstall the SATA drive and tray assembly.

BL2 PPC 3100, BL2 PPC 7100, BL2 PPC 9100

1. Remove the adapter plate from the chassis.
2. Remove the screw and washer holding the M.2 drive in place (see Figure 5-4). The card will lift off the board slightly.

3. Pull the drive out of the socket and remove it.
4. Insert the new drive into the socket at the same angle as the one that was removed. Make sure the drive is fully seated in the socket.
5. Secure the drive with the washer and screw previously removed.
6. Reinstall the SATA drive and tray assembly.

A Technical appendix

A 1 Technical data

General data

Overall, dimensions (width x height x depth)^{*}

BL2 BPC 1100, BL2 BPC 2100	185 x 131 x 54 mm
BL2 BPC 3100, BL2 BPC 7100, BL2 BPC 9100	238 x 145 x 54 mm
BL2 PPC ...100 with 15.6-in. display	417 x 312 x 82 mm
BL2 PPC ...100 with 18.5-in. display	490 x 320 x 81 mm
BL2 PPC ...100 with 21.5-in. display	562 x 382 x 81 mm

Ambient temperature (operation) with low air flow[†] 0 ... 50°C

Ambient temperature (storage/transport) -20 ... 80°C

Permissible humidity (relative) 10% ... 90%, non-condensing

If equipped with wireless mini PCIe card option 10% ... 80%, non-condensing

Weight

BL2 BPC 1100, BL2 BPC 2100	1.2 kg
BL2 BPC 3100, BL2 BPC 7100, BL2 BPC 9100	2.0 kg
BL2 PPC 2100	
with 15.6-in. display	5.5 kg
with 18.5-in. display	6.2 kg
with 21.5-in. display	7.8 kg
BL2 PPC 3100, BL2 PPC 7100, BL2 PPC 9100	
with 15.6-in. display	6.0 kg
with 18.5-in. display	6.7 kg
with 21.5-in. display	8.3 kg

Degree of protection

BL2 BPC ...100	IP20
BL2 PPC ...100	IP66 in front, IP20 at back

Mounting

BL2 BPC ...100	Wall or DIN rail [‡]
BL2 PPC ...100	Panel mount

LED indicators Power, SATA, Run, Error

* Dimensions are overall, including bezel

† Tested air flow is 0.3...0.8 m/s

‡ Only the BL2 BPC 2100 has a DIN rail mounting option

Electrical data	
Power supply, nominal	24 V DC ±20%
Type of connection	Removable COMBICON screw-type
Conductor size	0.2 ... 2.5 mm ² (24 ... 12 AWG)
Torque, wire clamping screw	0.5 ... 0.6 Nm

Current and power data*		BL2 BPC 1100	BL2 ... 2100	BL2 ... 3100	BL2 ... 7100	BL2 ... 9100
Current consumption @ 24 V, maximum†						
with no display		1.1 A	1.3 A	1.9 A	1.9 A	1.9 A
with 15.6-in. display		–	1.7 A	2.3 A	2.3 A	2.7 A
with 18.5-in. display		–	1.8 A	2.3 A	2.4 A	2.7 A
with 21.5-in. display		–	2.1 A	2.4 A	2.5 A	2.8 A
Power, maximum @ 24 V, maximum†						
with no display		26.4 W	31.2 W	45.6 W	46.1 W	47.3 W
with 15.6-in. display		–	40.8 W	55.4 W	55.4 W	58.1 W
with 18.5-in. display		–	43.2 W	56.2 W	56.6 W	55.4 W
with 21.5-in. display		–	50.4 W	64.3 W	65.5 W	66.7 W

* Does not include wireless mini PCIe card

† Windows 10, M.2 drive, 8 GB RAM (BL2...1100/BL2...2100), 8 GB RAM (BL2...3100/BL2...7100/BL2...9100), loopback plugs in all COM and LAN ports, USB ports fully loaded, running Burn-in® tests

Operating systems	
Operating system	Windows® 10 IoT Enterprise LTSC 2019

Data storage	
Type (configurable option)	M.2 SSD SATA HDD
Number of bays	1
Size	2.5 in.

Main memory	
RAM, maximum	
BL2...1100, BL2...2100	4 GB
BL2...3100, BL2...7100, BL2...9100	8 GB
Type	DDR3L

Processor data					
	BL2 BPC 1100	BL2 ... 2100	BL2 ... 3100	BL2 ... 7100	BL2 ... 9100
Processor	Intel Celeron N3350	Intel Pentium N4200	Intel Core™ i3-6100U	Intel Core™ i5-6300U	Intel Core™ i7-6600U
Clock speed	1.10 GHz	1.10 GHz	2.30 GHz	2.40 GHz	2.60 GHz
	2.40 GHz burst	2.50 GHz burst		3.00 GHz burst	3.40 GHz burst
Cache	2 MB	2 MB	3 MB	3 MB	4 MB
Number of cores	2	4	2	2	2
Number of threads	2	4	4	4	4
Average TDP	6 W	6 W	15 W	15 W	15 W
Number of memory channels	2	2	2	2	2
Interfaces					
USB	2x Type A USB 2.0; 2x Type A USB 3.0				
Serial connection	1x D-SUB 9 (male), UEFI selectable for RS-232/422/485				
Super I/O chipset	Nuvoton NCT6106D				
Chipset	Integrated				
Video out	2x DP++				
Graphic processor					
BL2 BPC 1100	Intel HD Graphics 500				
BL2...2100	Intel HD Graphics 505				
BL2...3100	Intel HD Graphics 520				
BL2...7100	Intel HD Graphics 620				
BL2...9100	Intel HD Graphics 520				
Number of Ethernet connectors	2				
Ethernet connection	10/100/1000 Mbps				
LAN chipset	Intel Ethernet controller I210-AT				
Number of mini PCIe slots*	1				
Mini PCIe card size, maximum	30.00 x 50.95 x 15.00 mm				
Mass storage	M.2 2242				

* This slot is not available if ordered with the wireless option

Radio module (configurable)	
Connector type	Mini PCIe
Device interface	PCI Express v1.2
Frequency band	IEEE 802.11 a/b/g/n
MTBF	90000 hr
Antenna impedance	50 Ω
Frequency range	
2.4 GHz	2412 ... 2472 Hz
5 GHz	5180 ... 5825 Hz
Data transfer rate	
2.4 GHz	
5 GHz	
Transmit power, typical	
2.4 GHz (b)	12.5 dBm (Channel 1) 14.5 dBm (Channel 2-10) 11.0 dBm (Channel 11)
2.4 GHz (g)	13.5 dBm (Channel 1) 14.0 dBm (Channel 2-10, 54 Mbps) 11.5 dBm (Channel 11)
5 GHz (a)	12.5 dBm (Channel 36-165, 6-48 Mbps) 12.0 dBm (Channel 36-165, 54 Mbps)
Current consumption, TX, typical	
2.4 GHz	310 ... 580 mA
5 GHz	380 ... 790 mA

Display data, 21.5-inch display

Overall dimensions, including bezel (W x H x D)	582 x 382 x 81mm
Screen size, diagonal	548 mm (~21.5 in.)
Screen size, horizontal x vertical	477 X 270 mm
Aspect ratio	16:9
Resolution	1920 x 1080
Type	10-point projective capacitive touch screen
Brightness	300 Cd/m ²
Number of colors	16.7 million
Contrast ratio	5000:1
View angle, horizontal/vertical (CR=10), typ.	85°/80°
Installation cutout dimensions (W x H)	547 x 367 mm
Outside bezel dimensions (W x H x D)	562 x 382 x 9 mm
Backlight life, minimum	50000 hr.
Video signal	DisplayPort (DP++)

Display data, 18.5-inch display

Overall dimensions, including bezel (W x H x D)	491 x 321 x 81 mm
Screen size, diagonal	472 mm (~18.5 in.)
Screen size, horizontal x vertical	412 X 232 mm
Aspect ratio	16:9
Resolution	1366 x 768
Type	10-point projective capacitive touch screen
Brightness	300 Cd/m ²
Number of colors	16.7 million
Contrast ratio	1000:1
View angle, horizontal/vertical (CR=10), typ.	85°/80°
Installation cutout dimensions (W x H)	475 x 305 mm
Outside bezel dimensions (W x H x D)	591 x 321 x 10 mm
Backlight life, minimum	50000 hr.
Video signal	DisplayPort (DP++)

Display data, 15.6-inch display

Overall dimensions, including bezel (W x H x D)	417 x 312 x 82 mm
Screen size, diagonal	397 mm (~15.6 in.)
Screen size, horizontal x vertical	346 X 195 mm
Aspect ratio	16:9
Resolution	1366 x 768
Type	10-point projective capacitive touch screen
Brightness	300 Cd/m ²
Number of colors	16.7 million
Contrast ratio	500:1
View angle, horizontal/vertical (CR=10), typ.	85°/80°
Installation cutout dimensions (W x H)	401 x 296 mm
Outside bezel dimensions (W x H x D)	417 x 312 x 6 mm
Backlight life, minimum	50000 hr.
Video signal	DisplayPort (DP++)

Mechanical tests

Shock test according to IEC 60068-2-27	20g @ half sine with 11 ms impulse for BL2 PPC... and SSD operating
Vibration resistance according to EN 60068-2-6	2g

Conformance with EMC directives

EN 61000-6-2
 EN 61000-6-4

Approvals

CE compliant	2014/30/EU 2011/65/EU 2015/863/EU
FCC Part 15 Class A	
UL/cUL	UL 61010-2-201

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