Basicline 2 PPC 1200 industrial PC

User manual

UM EN BL2 PPC 1200

PHŒNIX CONTACT

INSPIRING INNOVATIONS

User manual

Basicline 2 PPC 1200 industrial PC

UM EN BL2 PPC 1200, Revision C   2021-02-10

This user manual is valid for:

Designation	Order No.
BL2 PPC7 1201-4/64-W10	1274012
BL2 PPC10 1201-4/128-W10	1274014

4031_en_C

Table of contents

1 For your safety

Read this user manual carefully and keep it 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 user manual is oriented exclusively to:
– Qualified electricians 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.
– Qualified application programmers and software engineers. 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 product

1.3.1 Intended use

The products described in this document are designed for use in manufacturing and industrial environments. They are tested to ITE levels.

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, which 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.

Operating display panel at full brightness for long duty cycles and/or at higher ambient temperature may short lifespan of the display.

Dim panel when not in use to extend the life of the display.

Radio interference

These products are Class A items of equipment (EN 55024 and EN 55032). 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 PPC 1201-4/… IPC is a configurable 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 PPC 1201-4/… a product that can be used in a wide variety of applications.

Features

– Compact, rugged housing
– Fanless design available
– Two integrated 10/100/1000 Ethernet ports with independent MAC addresses
– IP65 rating (front), IP20 rating (back)
– Two UEFI-configurable RS-232/422/485 communication ports
– Up to 4 GB RAM
– USB 2.0 and 3.0 ports

2.2 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Industrial panel PC, Intel® Celeron® processor N3350 1.10/2.40 GHz, 7-inch display, 4 GB of RAM, 64 GB mSATA SSD, and Windows 10 IoT Enterprise LTSC 2019	BL2 PPC7 1201-4/64-W10	1274012	1
Industrial panel PC, Intel® Celeron® processor N3350 1.10/2.40 GHz, 10-inch display, 4 GB of RAM, 128 GB mSATA SSD, and Windows 10 IoT Enterprise LTSC 2019	BL2 PPC10 1201-4/128-W10	1274014	1

Accessories

Description	Type	Order No.	Pcs./Pkt.
Visit phoenixcontact.net/products for available accessories			

Replacement parts

Description	Type	Order No.	Pcs./Pkt.
Connector, printed circuit board connector	MC 1,5/ 2-STF-3,81	1827703	1

3 Installation

⊙ **NOTE:**

Exceeding the system temperature limits can result in performance degradation of any or all components.

Install the BL2 PPC 1201-4/… with adequate clearance around the heat sink and provide a minimum of 0.5 m/s air flow so that ambient air temperatures do not exceed the operation limits. Insert cooling fan(s) in the enclosure, if necessary.

Connectors and switches must be accessible.

When installing the BL2 PPC 1201-4/… in a enclosure, 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 1.9 mm (14 ga.) to provide proper support.
– Make sure that there is adequate space around the heat sink to provide sufficient cooling.

3.1 Mounting

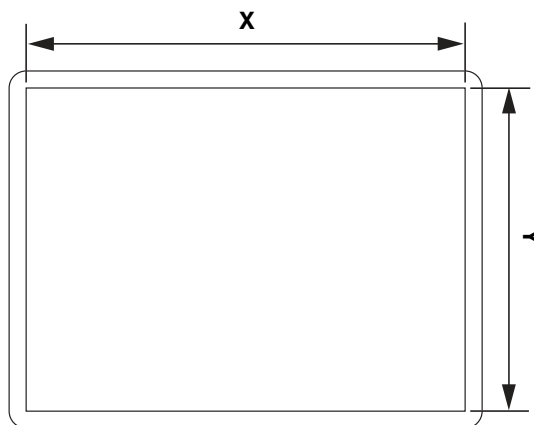1. Cut a hole in the enclosure according to the dimensions for the selected display.

Figure 3-1   Panel cutout dimensions

Table 3-1   Display cutout dimensions

Display size	X (mm)	Y (mm)
7 in.	186	124
10 in.	229	155

2. Remove the paper seal (1) from the sticky side of the gasket (2) and apply it to the back side of the bezel (3).
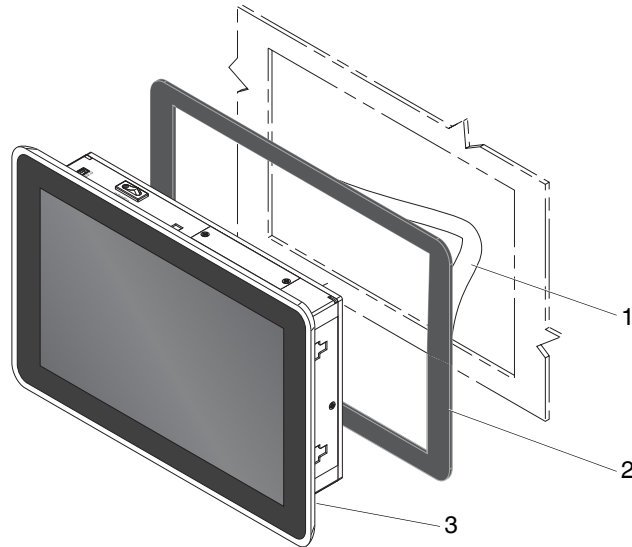

Figure 3-2   Gasket installation

3. Insert the BL2 PPC 1201-4/… through the opening.
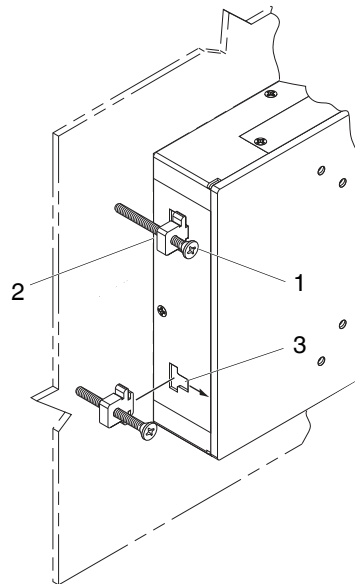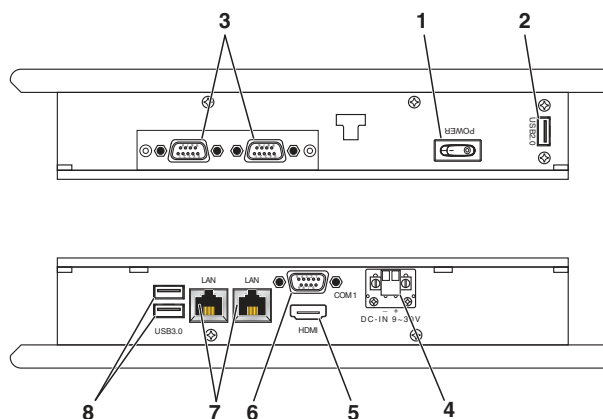4. Insert the screws (1) through the clamps (2).

Figure 3-3   Panel-mounting clamps

5. From the rear of the enclosure, place a clamp in each slot (3) and slide away from the enclosure panel.
6. Using an alternating pattern, turn each screw clockwise until the BL2 PPC 1201-4/… is secured in the enclosure panel.
7. Torque each clamp screw to 0.88 Nm.

3.2   Interfaces

1 Power switch	**5** HDMI port
2 USB 2.0 port	**6** RS-232 serial port
3 Configurable RS-232/422/485 serial ports	**7** Ethernet RJ45 ports
	8 USB 3.0 connectors
4 Power connector	

Figure 3-4   Connectors and ports (BL2 PPC10 1200 shown)

After mounting the BL2 PPC 1201-4/… in the enclosure, make any necessary cable connections (see Figure 3-4)

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 D-SUB 9 serial ports are available for use. The default for all ports is RS-232, IIRC. Two ports are 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 one is USB 3.0.

> **i** USB 3.0 ports utilize a blue connector. USB 2.0 ports are black.

3.2.1 Power connection

A two-wire removable connector is provided for providing power to the BL2 PPC 1201-4/….
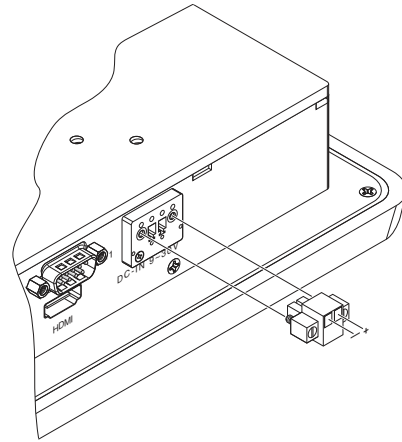

Figure 3-5   Power connector

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.). Secure the connector to the BL2 PPC 1201-4/… chassis.

Table 3-2   Power connector

Pin No.	Description
–	0 V DC
+	24 V DC ±20%

NOTE:

To ensure safe operation, use safety extra-low voltage (SELV) according to DIN EN 61131 as supply voltage.

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.

3.2.2 Serial communication

Two D-SUB 9 connectors (see Figure 3-4) can be configured to communicate on the RS-232, RS-422, or RS-485 physical layer.

The BL2 PPC 1201-4/… 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 PPC 1201-4/… to be placed on a wireless network. Included with the installed card is an antenna (1) that attaches to a connector on the side of the unit (2).
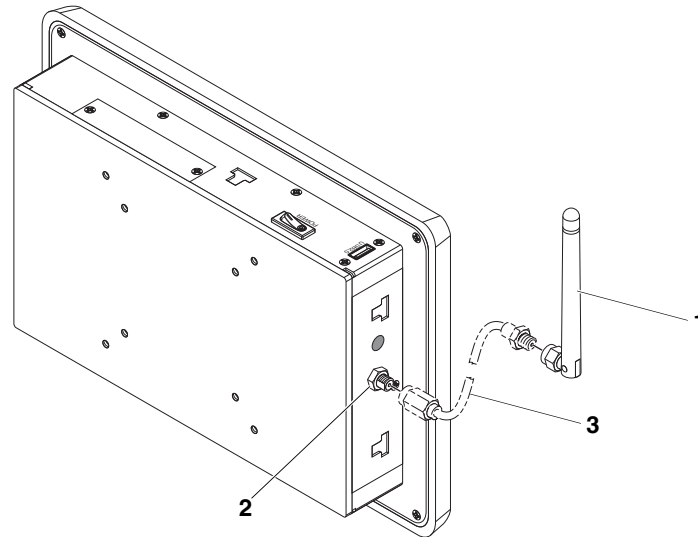

Figure 3-6   Antenna installation

Since the BL2 PPC 1201-4/… 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 threads onto the BL2 PPC 1201-4/…. 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.
> Installation of the miniPCI card for wireless communication voids the UL 61010 listing.

A Technical appendix

A 1 Technical data

General data	
Overall, dimensions (width x height x depth)[*]	
BL2 PPC7 1201-4/64-W10	196 x 134 x 48 mm
BL2 PPC10 1201-4/128-W10	266 x 184 x 48 mm
Ambient temperature (operation)[†]	-5 … 50°C
Ambient temperature (storage/transport)	-20 … 70°C
Permissible humidity (relative)	10% … 90%, non-condensing
Weight	
BL2 PPC7 1201-4/64-W10	1.2 kg
BL2 PPC10 1201-4/128-W10	2.9 kg
Degree of protection	IP65
Mounting	VESA 75, VESA 100, panel mount
LED indicators	

[*] Dimensions are overall, including bezel

[†] With 0.5 m/s airflow

Electrical data	
Power supply, nominal	24 V DC ±20%
Type of connection	Removable screw-type
Conductor size	0.2 … 2.5 mm² (24 … 12 AWG)
Torque, wire clamping screw	0.5 … 0.6 Nm

Current and power data[*]	
Current consumption @ 24 V, maximum[†]	
BL2 PPC7 1201-4/64-W10	1.07 A
BL2 PPC10 1201-4/128-W10	1.09 A
Power, maximum @ 24 V, maximum[†]	
BL2 PPC7 1201-4/64-W10	25.7 W
BL2 PPC10 1201-4/128-W10	26.0 W

[*] Does not include wireless mini PCIe card

[†] Windows 10, SSD and M.2 drives, 8 GB RAM, loopback plugs in all COM and LAN ports, USB ports fully loaded, running Burn-in® tests

Operating systems	
Operating system (configuration option)	Windows® 10 IoT Enterprise LTSB 2019

Data storage	
Type (configurable option)	Internal mSATA SSD
Number of bays	1
RAID support	None

Main memory	
RAM, maximum	4 GB
Type	DDR3L

Processor data	
Processor	Intel Celeron N3350
Clock speed	1.10 GHz
	2.40 GHz burst
Cache	2 MB
Number of cores	2
Number of threads	2
Maximum TDP	6 W
Number of memory channels	2

Interfaces	
USB	1x 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	1x DP++
Graphic processor	Intel HD Graphics 500
Number of Ethernet connectors	2
Ethernet connection	10/100/1000 Mbps
LAN chipset	Intel Ethernet controller I211-AT
Number of mini PCIe slots[*]	1
Mini PCIe card size, maximum	30.00 x 50.95 x 15.00 mm

[*]   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
Antenna impedance	50 Ω
Frequency range	
2.4 GHz	2412 ... 2472 Hz
5 GHz	5180 ... 5825 Hz
Data transfer rate	
2.4 GHz	802.11b/g 1… 54 Mbps
5 GHz	802.11a 6 … 54 Mbps
	802.11n 2.4/5 GHz MCS0/8 … 7/13
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)

Display – 7 in. (BL2 PPC7 1201-4/64-W10)	
Display backlighting type	LED
Screen size, diagonal	178 mm
Screen size, horizontal x vertical	153.6 x 90 mm
Resolution	1024 x 600
Type	Capacitive touch screen
Brightness	320 Cd/m^2
Number of colors	16.2 million
Backlight life, minimum	20000 h
Contrast ratio	1000:1
View angle, horizontal/vertical (CR=10), typ.	140°/120
Installation cutout dimensions (width x height)	186 x 124 mm

Display – 10 in. (BL2 PPC10 1201-4/128-W10)

Display backlighting type	LED
Screen size, diagonal	256 mm
Screen size, horizontal x vertical	217 x 136 mm
Resolution	1280 x 800
Type	Capacitive touch screen
Brightness	400 Cd/m²
Number of colors	265,000
Backlight life, minimum	25000 h
Contrast ratio	1300:1
View angle, horizontal/vertical (CR=10), typ.	170°/170°
Installation cutout dimensions (width x height)	229 x 155 mm

Mechanical tests

Shock test according to IEC 60068-2-27	20g with 11 ms duration
Vibration resistance according to EN 60068-2-6	3g, 5-500 Hz

Approvals

CE compliant	
FCC Part 15 Class A	
UL/cUL	UL 61010[*]

[*] Installation of the miniPCI card for wireless communication voids the UL 61010 listing.
Use of the VESA mount (outside an enclosure) removes the UL 61010 listing

B   Appendixes

B 1   List of figures

Section 3

B 2   List of tables

Section 3

Please observe the following notes

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