OPERATING INSTRUCTION

Control Panels CP600-Pro

CP6605, CP6607, CP6610, CP6615, CP6621

Contents

1 Introduction

The operational guidelines described below is information on device technical data, installation, transportation, storage, assembly, use and maintenance.

The Manual refers to the following models:

Picture	Type	Description
	CP6605	Control Panel, TFT graphical display, multi-touchscreen, 5”, 800 x 480 pixel
	CP6607	Control Panel, TFT graphical display, multi-touchscreen, 7”, 800 x 480 pixel
	CP6610	Control Panel, TFT graphical display, multi-touchscreen, 10.1”, 1280 x 800 pixel
	CP6615	Control Panel, TFT graphical display, multi-touchscreen, 15.6”, 1366 x 768 pixel
	CP6621	Control Panel, TFT graphical display, multi-touchscreen, 21.5”, 1920 x 1080 pixel

2 Safety Guide

2.1 Safety Guide

The manual contains safety standards that must be respected for the personal safety and to avoid damage.

Indications of attention are divided into three levels of severity.

2.2 Safety Notices

DANGER!

Indicates an imminent risk. It will lead to death or serious injury if not avoided.

WARNING!

Indicates a possible risk. It may lead to death or serious injury if not avoided.

CAUTION!

Indicates a possible risk. It may lead to light or slight injury or material damage if not avoided.

2.3 Markups

- Enumeration.

✓ Precondition for an operation instruction or a description.

→ Operation instruction with one step.

1. Operation instruction with several steps.

   ➤ Result of an operation.

NOTE

Helpful information with background information or an emphasized notice.

TIP

Application tips or other useful information and suggestions.

3 Product Overview

New control panels in screen sizes from 5” to 21.5” provide comprehensive HMI functions with multi-touch operation for a wide range of applications. Real glass fronts and an increased operating temperature range of -20 … +60 °C make them first choice even for harsh environments. The engineering tool PB610 Panel Builder 600, part of Automation Builder, ensures easy scalability on the CP600 platform.

New multi-touch control panels for high-end applications

- The portfolio includes five screen sizes from 5” to 21.5”, all widescreen, with multi-touch real glass screens for demanding high-end applications. Gateway function with OPC UA Server and Client.
- The wide range of operating temperatures -20…+60 °C makes them suitable for a wide range of applications and first choice for demanding ones.
- Protocols for ABB PLCs, machinery and motion drives for Ethernet and serial connection make these control panels first choice for ABB automation solutions.
- OPC UA client and server functions make them well prepared for future communication solutions.
- Engineering by means of PB610 Panel Builder 600, part of ABB’s Automation Builder, facilitates integration into automation packages and enables good scalability on the CP600 platform for versatile applications.

4 Standards and Approvals

The products have been designed for use in an industrial environment in compliance with the 2014/30/EU EMC Directive.

The products have been designed in compliance with:

EN 61000-6-4	CISPR 22	Class A
	CISOR 16-2-3	
EN 61000-6-2	EN 61000-4-2	
	EN 61000-4-3	
	EN 61000-4-4	
	EN 61000-4-5	
	EN 61000-4-6	
	EN 61000-4-8	
	EN 61000-4-11	
	EN 61000-4-29	
	EN 60945	

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special measures are taken in order to ensure conformity to EN 61000-6-3.

In compliance with the above regulations the products are CE marked.

NOTE

If the mounting surface is not plane and robust enough, the degree IP69K is not guaranteed.

A special mounting flange is included to provide the necessary support.

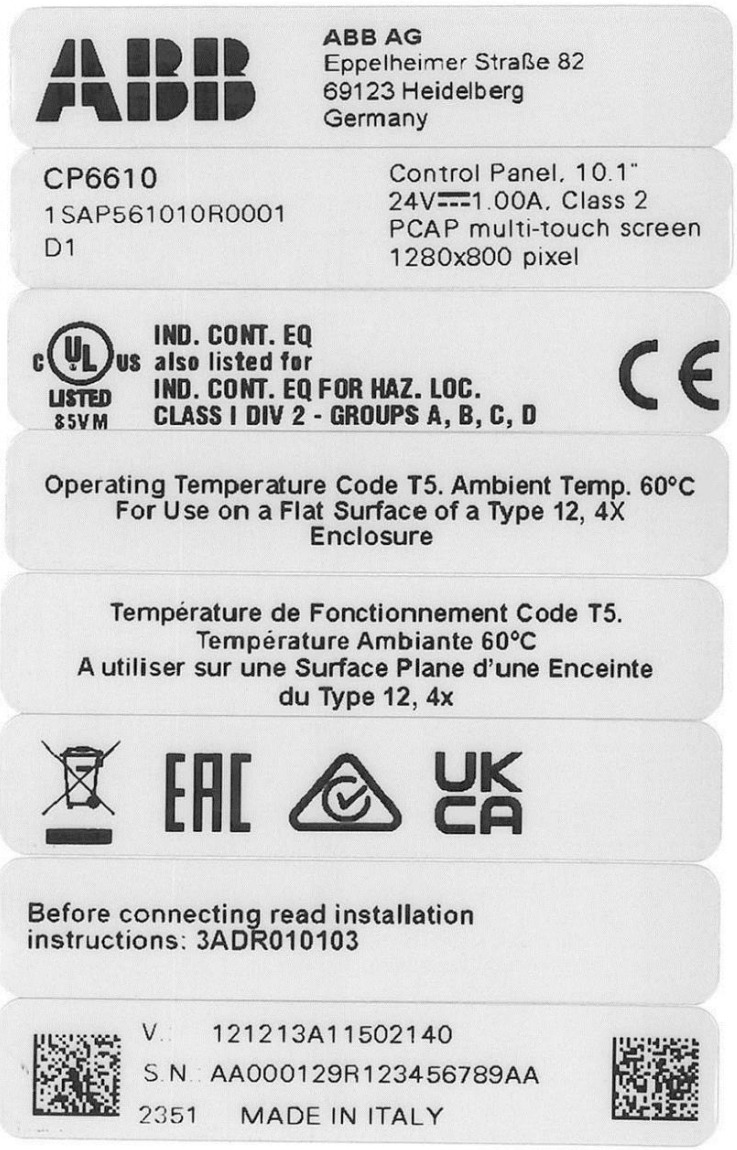
4.1 Product Identification

The product may be identified through a plate attached to the rear cover. You will have to know the type of unit you are using for correct usage of the information contained in the guide.

An example of this plate is shown in the figure below:

NOTE

The CP6610 label is used as an example for CP600-Pro Series.



Information on type plate (example)	Description
Product model name	CP6610
Product part number	1SAP561010R0001
Serial number	S.N.: AAxxxxxxxxxxxxxxxxAA
Product version ID	V.: xxxxxxxxxxxxxx
Manufacturer address	**ABB AG** Eppelheimer Straße 82, 69123 Heidelberg Germany

5 Technical Specifications

Touchscreen technology	**Projected capacitive**	
Back-up battery	3 V 50 mAh Lithium, rechargeable, not user-replaceable.	
Fuse	Automatic	
Serial port	RS-232, RS-485, RS-422 software configurable	
Flash	4 GB for CP6605, CP6607, CP6610; 8 GB for CP6615, CP6621.	
RAM	512 MB for CP6605; 1 GB for CP6607, CP6610; 2 GB for CP6615, CP6621.	
Hardware clock	Clock/Calendar with back-up battery	
Accuracy RTC (at 25°C)	< 100 ppm	
Environmental conditions		
Operating temperature	-20 … +60 °C (vertical installation)	EN 60068-2-14
Storage temperature	-20 … +70 °C	EN 60068-2-1 EN 60068-2-2 EN 60068-2-14
Operating and storage humidity	5 … 85 % RH not-condensing	EN 60068-2-30
Vibrations	5 … 9 Hz, 7 mm; 9 … 150 Hz, 1 g^{p-p}	EN 60068-2-6
Shock	± 50 g, 11 ms, 3 pulses per axis	EN 60068-2-27
Protection class	Front panel IP66, Rear IP20	EN 60529
Electromagnetic Compatibility (EMC)		
Radiated disturbance test	Class A	CISPR 22 CISPR 16-2-3
Electrostatic discharge immunity test	8 kV (air electrostatic discharge) 4 kV (contact electrostatic discharge)	EN 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity test	80 MHz … 1 GHz, 10 V/m 1.4 GHz … 2 GHz, 3 V/m 2 GHz … 2.7 GHz, 1 V/m	EN 61000-4-3
Burst immunity test	±2 kV DC power port ±1 kV signal line	EN 61000-4-4
Surge immunity test	±0,5 kV DC power port (line to earth) ±0,5 kV DC power port (line to line) ±1 kV signal line (line to earth)	EN 61000-4-5

Immunity to conducted disturbances inducted by radiofrequency field	0.15…80 MHz, 10 V	EN 61000-4-6
Power frequency magnetic field immunity test	Enclosure, 50/60 Hz, 30 A/m	EN 61000-4-8
Voltage dips, short interruptions and voltage variations immunity test	Port: AC mains; Level: 0 % duration: 1 cycle and 250 cycles (50 Hz); 1 cycle and 300 cycles (60 Hz); 40 % duration: 10 cycles (50 Hz); 12 cycles (60 Hz); 70 % duration: 25 cycles (50 Hz); 30 cycles (60 Hz); Phase: 0°-180° Test executed on the 230 VAC side of the power supply	EN 61000-4-11
	Port: DC mains; Level: 0% duration: 10 ms 20 spaces by 1 s Test executed on the 24 VDC of the EUT	EN 61000-4-29
Durability information		
Backlight service life (LED type)	40000 hr. or more (Time of continues operation until the brightness of the backlight reaches 50 % of the rated value when the ambient temperature is 25 °C) - see Note 1	

Note 1: Extended use in environments where the ambient temperature is 40 °C or higher may degrade backlight quality/reliability/durability.

6 Technical Data

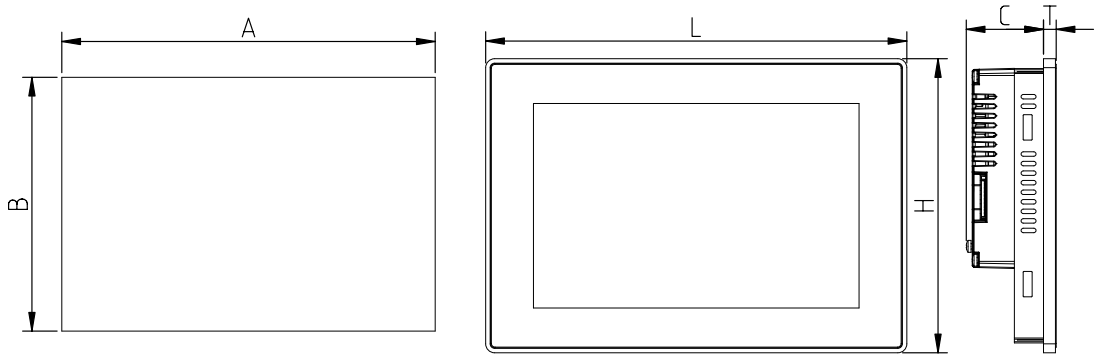
Model	CP6605	CP6607	CP6610
Display	TFT Color	TFT Color	TFT Color
Backlight	LED	LED	LED
Colors	64 K	16 M	16 M
Resolution	800×480	800×480	1280×800
Diagonal	5”	7”	10.1”
Dimming	yes	yes	yes
Flash	4 GB	4 GB	4 GB
SD card slot	yes	yes	yes
RAM	512 MB	1 GB	1 GB
Serial port	RS-232, RS-485, RS-422 configurable	RS-232, RS-485, RS-422 configurable	RS-232, RS-485, RS-422 configurable
Ethernet port	2×10/100 Mb	2×10/100 Mb 1×10/100/1000 Mb	2×10/100 Mb 1×10/100/1000 Mb
USB port	1×v2.0, max. 500 mA	2×v2.0, max. 500 mA	2×v2.0, max. 500 mA
Battery	rechargeable	rechargeable	rechargeable
RTC	yes	yes	yes
Voltage	24 VDC*	24 VDC*	24 VDC*
Current rating at 24Vdc	0.6 A	0.7 A	1.0 A
Weight	1 kg	1.3 kg	1.7 kg

* 18 … 32 VDC

Model	CP6615	CP6621
Display	TFT Color	TFT Color
Backlight	LED	LED
Colors	16 M	16 M
Resolution	1366×768	1920×1080
Diagonal	15.6”	21.5”
Dimming	yes	yes
Flash	4 GB	4 GB
SD card slot	yes	yes
RAM	2 GB	2 GB
Serial port	RS-232, RS-485, RS-422 configurable	RS-232, RS-485, RS-422 configurable
Ethernet port	2×10/100Mb 1×10/100/1000 Mb	2×10/100Mb 1×10/100/1000 Mb
USB port	2×v2.0, max. 500 mA	2×v2.0, max. 500 mA
Battery	rechargeable	rechargeable
RTC	yes	yes
Voltage	24 VDC*	24 VDC*
Current rating at 24Vdc	1.2 A	1.7 A
Weight	4.1 kg	6.1 kg

* 18 … 32 VDC

6.1 Dimensions



	A	B	C	H	L	T
CP6605	136.00 mm / 5.35”	96.00 mm / 3.78”	51.80 mm / 2.04”	107.00 mm / 4.21”	147.42 mm / 5.80”	8.70 mm / 0.34”
CP6607	176.00 mm / 6.93”	136.00 mm / 5.35”	47.00 mm / 1.85”	147.42 mm / 5.80”	187.42 mm / 7.38”	8.50 mm / 0.33”
CP6610	271.00 mm / 10.67”	186.00 mm / 7.32”	52.00 mm / 2.05”	197.00 mm / 7.76”	282.00 mm / 11.10”	8.50 mm / 0.33”
CP6615	411.00 mm / 16.18”	256.00 mm / 10.08”	55.70 mm / 2.19”	267.00 mm / 10.51”	422.00 mm / 16.61”	8.50 mm / 0.33”
CP6621	541.00 mm / 21.30”	336.00 mm / 13.23”	55.70 mm / 2.19”	347.00 mm / 13.66”	552.00 mm / 21.73”	8.50 mm / 0.33”

6.2 Installation Environment

Avoid prolonged exposition to direct sunlight to avoid the risk of overheating the device.

The equipment is not intended for installation in contact with corrosive chemical compounds. Check the resistance of the front panel to a specific compound before installation.

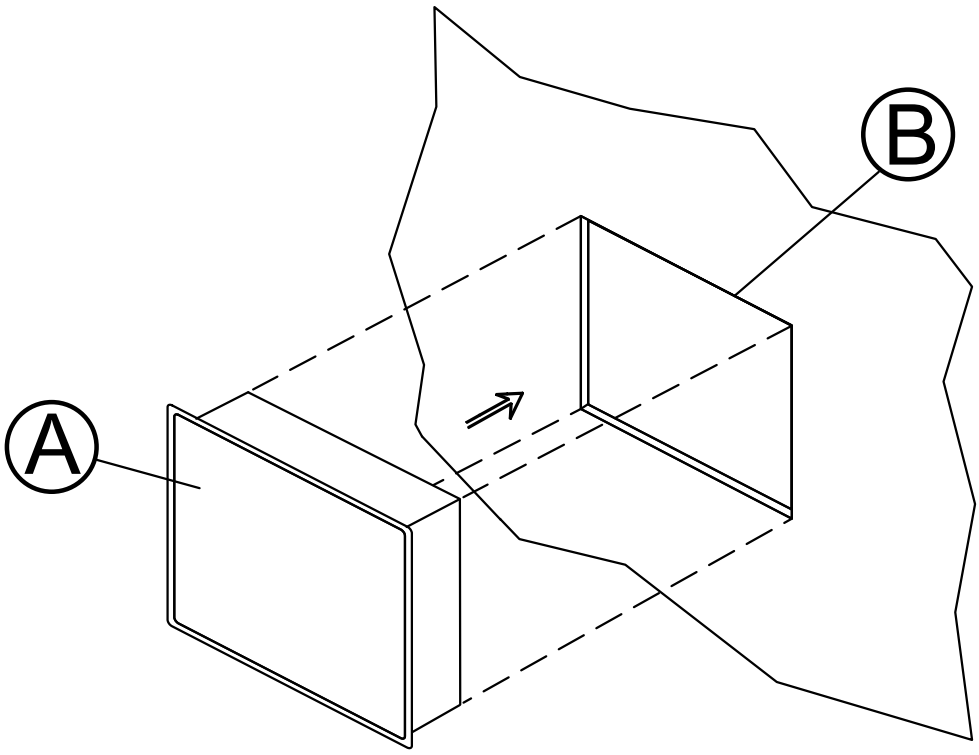
Do not use tools of any kind (screwdrivers, etc.) to operate the touch screen of the panel.

In order to meet the front panel protection classifications, proper installation procedure must be followed:

- The borders of the cutout must be flat
- Screw up each fixing screw until the bezel corner get in contact with the panel.
- The cutout for the panel must be of the dimensions indicated in this manual.

The IP66 is guaranteed only if:

- Max deviation from the plane surface to the cut-out: ≤ 0.5 mm
- Thickness of the case where is mounted the equipment: from 1.5 mm to 6 mm
- Max surface roughness where the gasket is applied: ≤ 120 µm



A. CP600-Pro with gasket
B. Installation cut-out

NOTE

If the mounting surface is not plane and robust enough, the degree IP69K is not guaranteed.

A special mounting flange is included to provide the necessary support.

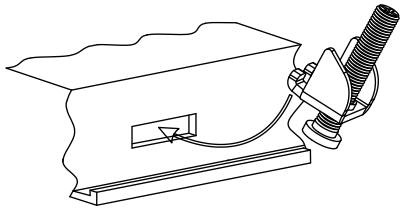
6.3 Safety Instruction

CAUTION!

For all installation notes, please refer to the Installation Instruction provided with the product.

6.4 Installation procedure

Place the fixing brackets contained in the fixing kit as shown in figure.

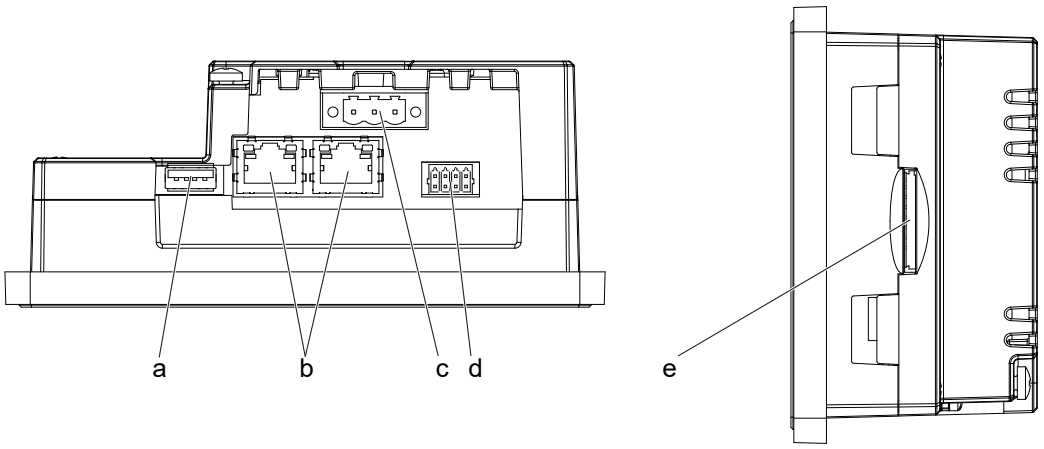


CAUTION!

Tightening torque: 130 Ncm or screw each fixing screw until the bezel corner gets in contact with the panel.

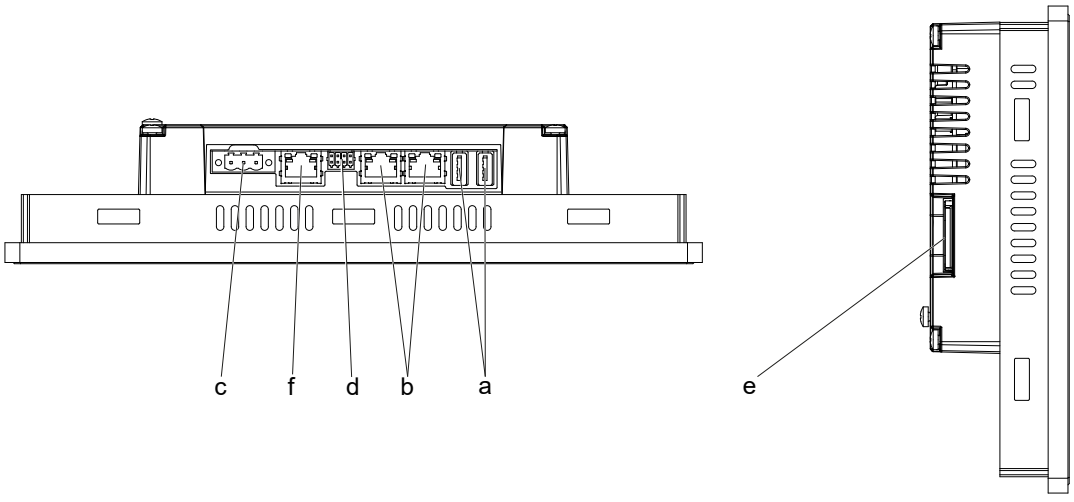
7 Connections

7.1 CP6605



a) USB port
b) Ethernet ports (10/100Mb)
c) Power supply
d) Serial port
e) SD card slot

7.2 CP6607, CP6610, CP6615, CP6621

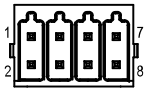


a) USB port
b) Ethernet ports (10/100 Mb)
c) Power supply
d) Serial port
e) SD card slot
f) Ethernet port (10/100/1000 Mb)

7.3 Serial Port

The serial port is used to communicate with the PLC or with another type of controller. Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, and RS-485.

The serial port is software programmable. Make sure you select the appropriate interface in the programming software.



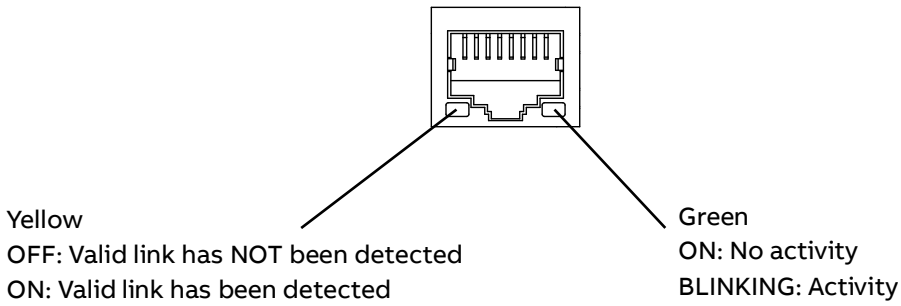
Pin	RS-232	RS-422, RS-485
1	RX	CHB-
2	TX	CHA-
3	CTS	CHB+
4	RTS	CHA+
5	+5V output	+5V output
6	GND	GND
7		
8	SHIELD	SHIELD

To operate in RS-485 pins 1-2 and 3-4 must be connected externally

The communication cable must be chosen for the type of device being connected.

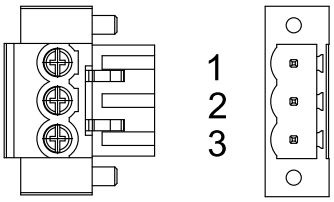
7.4 Ethernet Port

The Ethernet port have two status indicators. Please see description in figure.



8 Power Supply, Grounding and Shielding

The power supply terminal block is shown in the figure below.



Pin	Description
1	+24 V DC (L+)
2	Common (M)
3	Ground

3 conductors 1,5 mm^2 wire size minimum, minimum temperature conductor rating 105 °C.

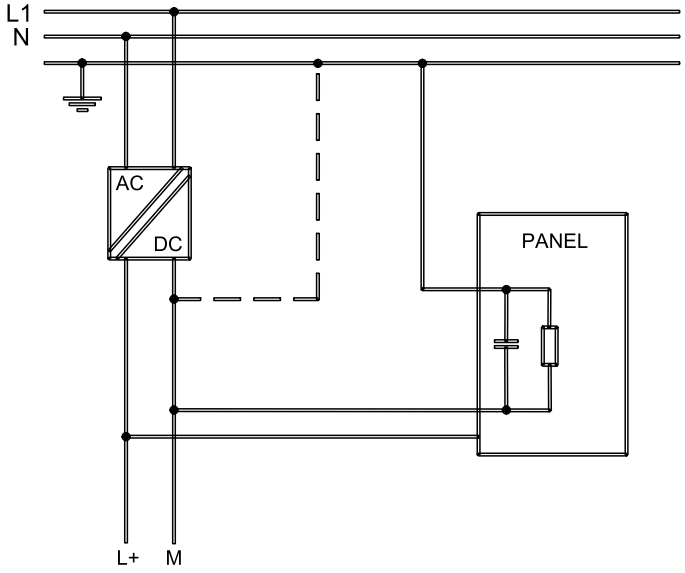
NOTE

Ensure that the power supply has enough power capacity for the operation of the equipment.

The unit must always be grounded to earth with 1,5 mm^2 wire size minimum. Grounding helps limit the effects of noise due to electromagnetic interference on the control system.

Earth connection will have to be done using either the screw or the faston terminal located near the power supply terminal block. A label helps identify the ground connection. Also connect to ground the terminal 3 on the power supply terminal block.

The power supply circuit may be floating or grounded. In the latter case, connect to ground the power source common as shown in figure (see below) with a dashed line. When using the floating power scheme, note that the panes internally connects the power common to ground with a 1 MΩ resistor in parallel with a 4,7 nF capacitor. The power supply must have double or reinforced insulation. The suggested wiring for the power supply is shown below.



All the electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

9 Battery

CP600-Pro panels are equipped with rechargeable Lithium battery, not user-replaceable. The hardware real-time clock (date and time) is maintained by the battery.

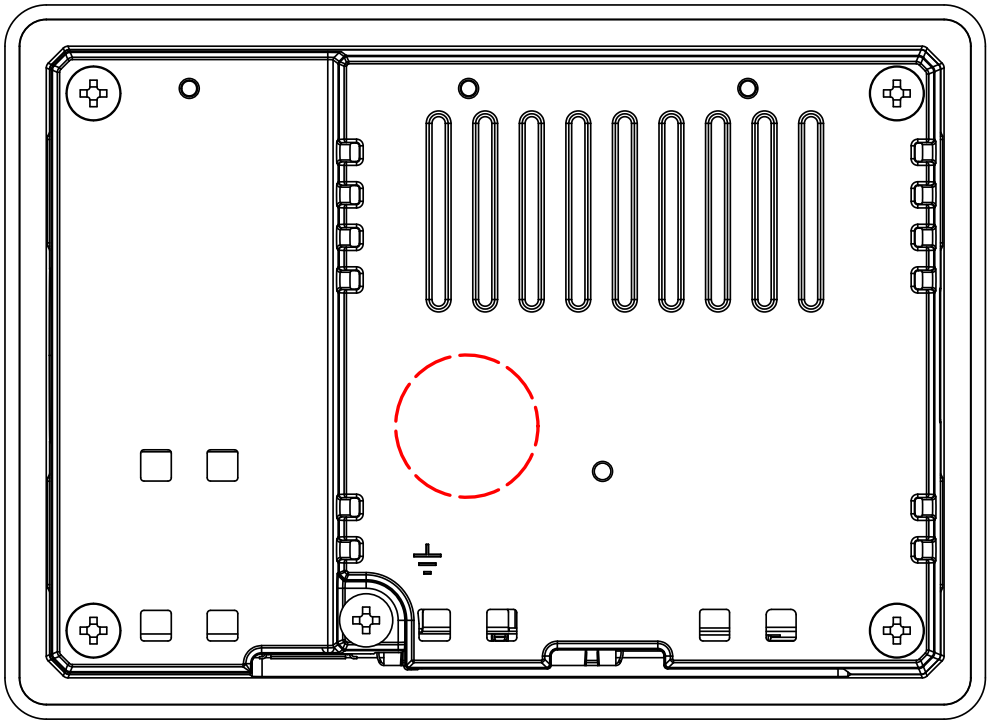
CAUTION!

At the first installation, CP600-Pro panels shall be charged for 48 hours.

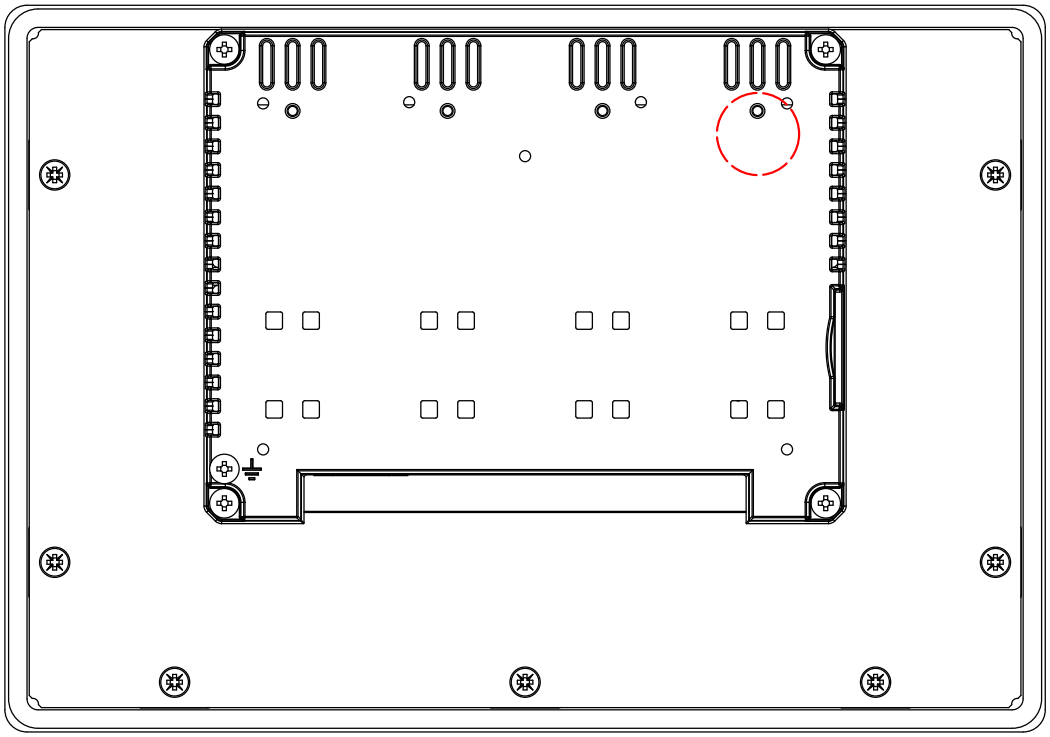
When the battery is fully charged, it ensures a period of 3 months of data backup at 25 °C.

Location of the battery: See “red broken circle” in the pictures below.

9.1 CP6605



9.2 CP6607, CP6610, CP6615, CP6621



9.3 Dispose of Batteries

NOTE

The battery must not be disposed as unsorted domestic waste.

Dispose of batteries according to the local regulations.

10 Special Instruction for Use

- Install the HMI device according to the accompanying installation instructions.
- Ground the HMI device according to the accompanying installation instructions.
- Only qualified personnel may install the HMI device or repair it.
- Ensure that the aeration holes are not covered.
- Care shall be taken not to allow layers of dust to form on the faceplate of the HMI device in a way that might cause the accumulation of static charges.
  Keep the faceplate of the HMI device clean: the equipment must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.
- This device should not be used for purposes and methods other than indicated in this document and in the documentation accompanying the product.

11 Cleaning Faceplates

CAUTION!

The equipment must be cleaned only with a soft cloth and neutral soap product.

Do not use solvents.

12 Getting started

CP600-Pro control panels must be programmed with the software PB610.
PB610 Panel Builder 600 is a software tool that must be properly installed on a computer running Microsoft Windows.

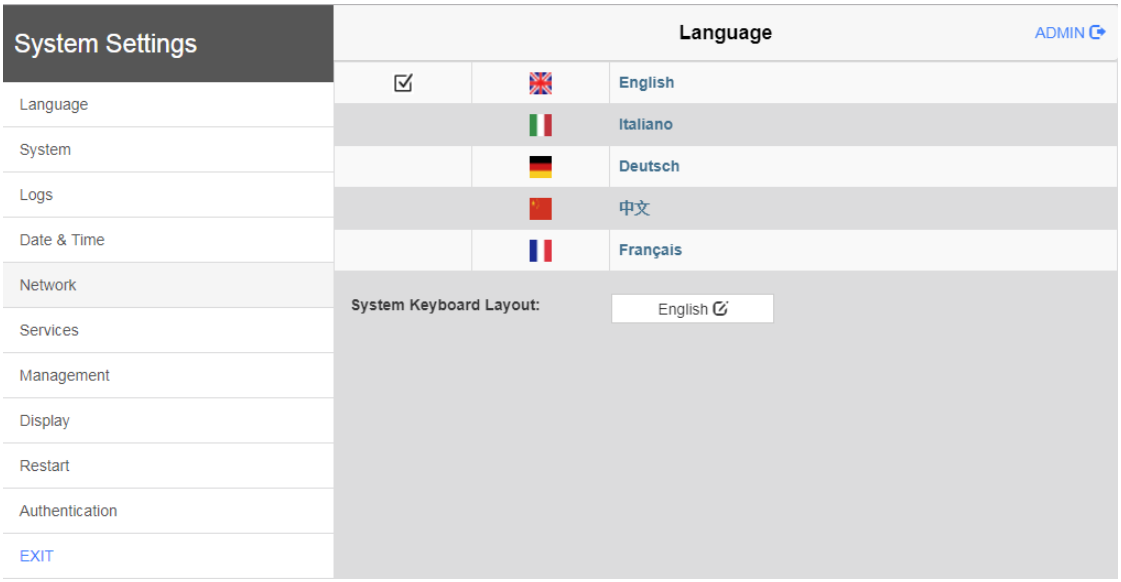
There are two options to transfer a PB610 application project to a CP600-Pro device:

Ethernet	Connect the CP600-Pro device to the computer with an Ethernet network connection. From PB610 Panel Builder 600 choose the command Run/Download to target. You may have to ensure that the proper firewall policy has been configured in the computer to allow PB610 Panel Builder to access the network.
USB	Create an Update Package using PB610 Panel Builder and copy it to a USB Flash drive.

13 System settings

CP600-Pro control panels have a system settings interface to allow configuration of system options.

The user interface of System Settings is based on HTML pages accessible locally on CP600 or in remote using a Web browser Chrome v44 or higher on port 443 (https://IP/machine_config). Default username is “admin”, default password is “admin”. Use navigation menu on the left side of the screen to browse through the available options.



The active item of menu is highlighted on the left side. The right side shows related information and settings. Based on the size of the CP600-Pro screen, both menu and content of selected item may be shown on screen or not.

Two modes of operation can be selected in the System Settings:

User Mode	PB610 runtime is running or the CP600-Pro device is in “factory default” status.
System Mode	PB610 runtime is not running or the CP600-Pro device has a software failure. System Mode includes all options available in User Mode and offers in additions commands dedicated to system upgrade and recovery not available when running in User Mode.

Activation of System Settings in User Mode:

PB610 runtime not running	Press “System Setting” button on the CP600-Pro screen.
PB610 runtime running	Recall context menu and select “System Settings”. To recall the context menu click and hold any unused area of the touchscreen for a few seconds. Default hold time is 2 seconds.

Activation of System Settings in System Mode:

Normal operation	If PB610 runtime is not running: Press “System Setting” button on the CP600-Pro screen to enter in System Settings in User Mode. Select “Restart” → “Config OS” to reboot in System Mode. If PB610 runtime is running: recall context menu and select “System Settings”. To recall the context menu click and hold any unused area of the touchscreen for a few seconds.

	Default hold time is 2 seconds to enter in System Settings in User Mode. Select “Restart” → “Config OS” to reboot in System Mode.
Recovery operation	If panel is not responsive, use the so-called “tap-tap” procedure. This procedure consists in tapping the surface of the touchscreen during the device power-up phase. Tapping frequency must be high. You have to start tapping the touchscreen as soon as power has been applied to the device. When the sequence has been recognized, the system shows the message: “TAP-TAP DETECTED”. At this point release touch to boot in User Mode without running PB610 runtime or press and hold few seconds (selecting so “RESTART: CONFIG OS”) to boot in System Mode.

System Settings includes options for basic settings of the device.

Language	Configure language used for System Settings menu only.
System	Show information about platform, status and timers (e.g. System on time, backlight on time).
Logs	Enable persistent log for BSP and allows to export it.
Date & Time	Change the device date and time, including time zone and NTP Server
Network	Configure IP Address of Ethernet interface and the other network settings like DNS, Gateway, DHCP, Hostname, routing and bridging.
Services	Enable/disable services. Example of services are: Open SSH server, Cloud services, SNMP and logging.
Management	Update of BSP components (Main OS, Config OS, Boot loader, XLoader), check for partitions consistence, update of splash screen, information about usage and size of partitions. The update of Main OS is available only in System Mode, the update of Config OS is only in User Mode.
Display	Adjust brightness, configure automatic backlight turnoff and select CP600-Pro orientation (90°, 180°, 270° and 360°).
Restart	Restart the device. “Main OS” option restarts as per default in User Mode, “Config OS” option restart panel directly into System Settings in System Mode.
Authentication	Configure password for administrator (“admin”) and for the standard user (“user”). Administrator has full access to System Settings (updates of BSP and other system components). Standard user has some limitations.

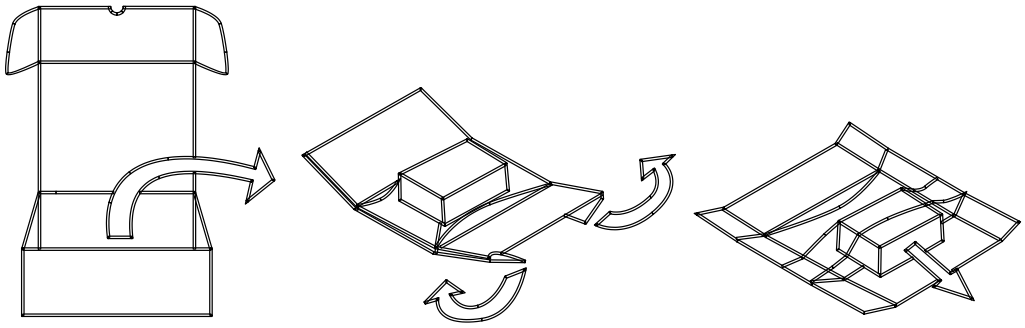
14 Touchscreen Calibration

CP600-Pro control panels support calibration of the interface. To start the calibration proceed as follow:

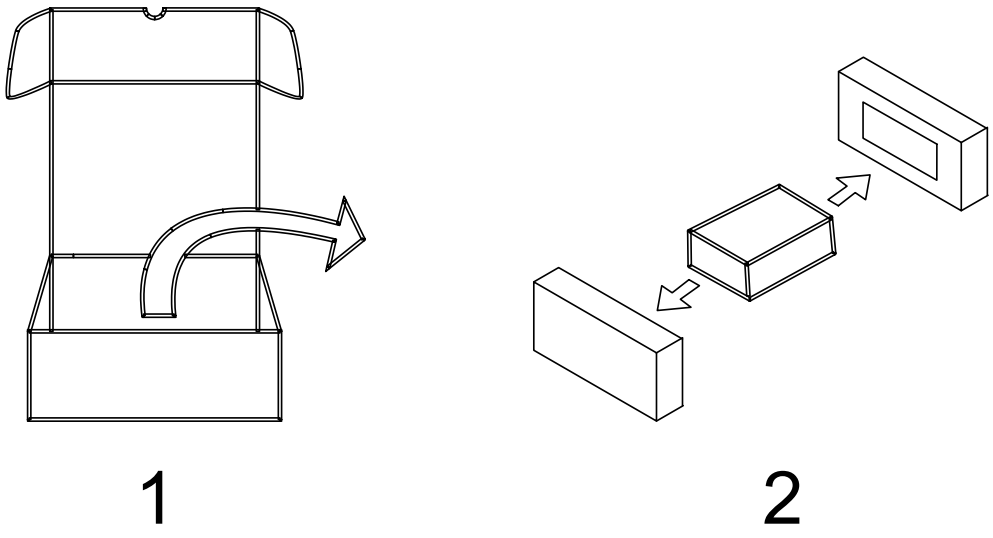
1. Long-press a blank area of the screen until a pop-up menu appears.
2. Click on “Show system settings”.
3. Click on “Display”.
4. Click on “Touch calibration”.
5. Click the center of 4 red crosses to complete the calibration.

15 Unpacking and Packing Instructions

15.1 CP6605, CP6607, CP6610



15.2 CP6615, CP6621



NOTE

To repack the unit, please follow the instructions backwards.

ABB AG
new.abb.com/plc