

OPERATING INSTRUCTION

Control Panels CP600-eCo

CP604(-B), CP607(-B), CP610(-B)



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Introduction

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

The Manual refers to the following models:

| | |
|-------|---|
| CP604 | Control panel with TFT color 4.3" widescreen display touchscreen |
| CP607 | Control panel with TFT color 7" widescreen display touchscreen |
| CP610 | Control panel with TFT color 10.1" widescreen display touchscreen |

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:

DANGER: indicates a failure to observe safety rules and such failure may cause death or serious injuries.



ATTENTION: indicates a failure to observe safety rules and that deficiency may cause damage.



CAUTION: indicates a failure to observe safety rules and that deficiency may cause defects to the equipment or inconsistencies.



1 Product overview

The CP600-eCo control panels combine state-of-the-art features and top performance with an outstanding design. They have been designed to offer an outstanding price/performance ratio for challenging applications. They are the ideal choice for CP600 applications including factory and building automation.

The CP600-eCo control panels have been designed to run the PB610-B software.

- Compatible with PB610 Panel Builder 600.
- Full vector graphic support. Native support of SVG graphic objects, transparency and alpha blending.
- Screen object dynamics: control visibility and transparency, move, resize, rotate any object on screen. Change properties of basic and complex objects.
- Multilanguage applications with TrueType fonts. Easily create, install and maintain applications in multiple languages to meet global requirements.
- Data display in numerical, text, bargraph, analog gauges and graphic image formats.
- Rich set of state-of-the-art CP600 features: data acquisition and logging, trend presentation, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), recipes, security and user management, email and RSS feeds.
- Wide selection of communication drivers available with multiple-driver communication capability.
- Remote monitoring and control with Client-Server functionality.
- On-line and Off-line simulation with PB610-B software.
- Powerful scripting language for automating CP600 applications. Efficient script debugger improves productivity in application development.
- Rich gallery of vector symbols and objects.

2 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 EN 55011 Class A

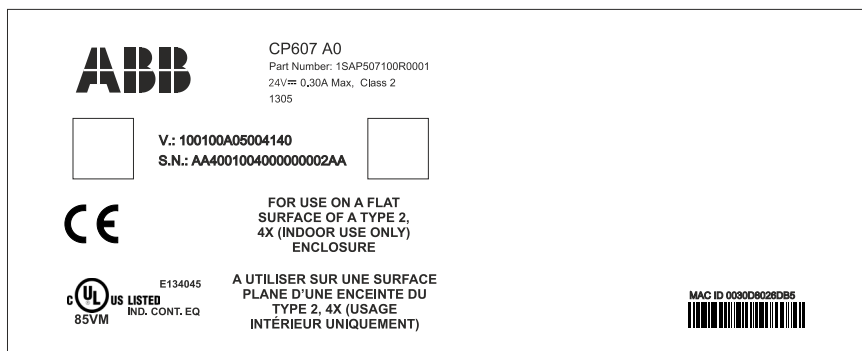
EN 61000-6-2 EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6

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.

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.



CP607
 A0
 1SAP507100R0001
 1305
 100100A05004140
 AA4001004000000002AA

product model name
 software product version
 product part number
 YWWY year/week of production
 version id of the product
 serial number

3 Technical specifications

| | |
|-------------------------------|--|
| Touchscreen technology | Resistive |
| RTC backup | Supercapacitor |
| Fuse | Automatic |
| Serial Port | RS-232, RS-485, RS-422 software configurable |
| Recipe memory | Flash |
| Hardware clock | Clock/Calendar with back-up supercapacitor |
| Accuracy RTC (at 25°C) | <100ppm |

Environmental conditions

| | | |
|--|--|--------------|
| Operating temperature (surrounding air temperature) | 0 ÷ +50°C | EN60068-2-14 |
| Storage temperature | -20 ÷ +70°C | EN60068-2-14 |
| Operating and storage humidity | 5 ÷ 85 % RH not-condensing | EN60068-2-30 |
| Vibrations | 5 ÷ 9 Hz, 7 mm _{p-p} 9 ÷ 150 Hz, 1 g | EN60068-2-6 |
| Shock | ± 50 g, 11 ms, 3 pulses per axis | EN60068-2-27 |
| Protection class | IP66 front panel * | EN 60529 |

* The front face of the control panel, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the "Environmental conditions". Even though the level of resistance of the control panel is equivalent to these standards, oils that should have no effect on the CP600 can possibly harm the unit. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oil are allowed to adhere to the unit for long periods of time. If the front face protection sheet on the CP600 becomes peeled off, these conditions can lead to the ingress of oil into the unit and separate protection measures are suggested.

If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed.

Electromagnetic Compatibility (EMC)

| | | |
|---|---|---------------|
| Radiated disturbance test | Class A | EN 55011 |
| 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, 10V/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 induced by radiofrequency field | 0.15 ÷ 80 MHz, 10V | EN 61000-4-6 |
| Voltage dips, short interruptions and voltage variations immunity test | Port: AC mains; Level: 100% duration: 1 cycle and 250 cycles (50Hz); 40% duration: 10 cycles (50Hz); 70% duration: 25 cycles (50Hz); Phase: 0°-180° | |
| Test executed on the 230Vac side of the ABB Power Supply | | EN 61000-4-11 |

Durability information

| | |
|---|---|
| Backlight service life (LED type) | 20000 Hrs. or more (Time of continuous operation until the brightness of the backlight reaches 50% of the rated value when the surrounding air temperature is 25°C) - see Note 1 |
| Front foil (without direct exposure to sunlight or UV) | 10 years if the surrounding air temperature is 25°C |
| UV Resistance | Indoor applications: After 300 hours cycled humidity in QUV accelerated weathering, some yellowing and brittleness may be present. |
| Solvent resistance | Contact for 1/2 hour at 21°C, No visible effect: Acetone, Butyl Cellosolve, Cyclohexanone, Ethyl Acetate, Hexane, Isopropyl Alcohol, MEK, Methylene Chloride, Toluene, Xylene Contact for 24 hours at 49°C, No visible effect: Coffee, Ketchup, Lemon Juice, Mustard (slight yellow stain), Tea, Tomato juice. |
| Touchscreen reliability | > 1 million operations |

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

4 Technical data

| Model | <i>CP604</i> | <i>CP607</i> |
|---------------------------|--|---|
| Display / Backlight | TFT Color / LED | TFT Color / LED |
| Colors | 64K | 64K |
| Resolution | 480X272 | 800X480 |
| Diagonal (inches) | 4.3" widescreen | 7" widescreen |
| Dimming | yes | yes |
| User memory | 60 MB Flash | 60 MB Flash |
| RAM | 256 MB DDR | 256 MB DDR |
| Serial Port | RS-232,RS-485, RS-422 software configurable | RS-232,RS-485, RS-422 DB9 female software configurable |
| Ethernet port | 10/100 Mbit | 10/100 Mbit |
| USB port | Host interface V2.0 max. 500mA | Host interface V2.0 max. 500mA |
| Real Time Clock | yes | yes |
| Voltage | 18-32Vdc | 18-32Vdc |
| Current rating (at 24VDC) | 0.25A | 0.30A |
| Weight | 0.4 Kg | 0.6 Kg |

| | |
|----------------------------------|--|
| Model | CP610 |
| Display / Backlight | TFT Color / LED |
| Colors | 64K |
| Resolution | 1024X600 |
| Diagonal (inches) | 10.1" widescreen |
| Dimming | yes |
| User memory | 60MB Flash |
| RAM | 512 MB DDR |
| Serial Port | RS-232,RS-485, RS-422 software configurable |
| Ethernet port | 10/100 Mbit |
| USB port | Host interface V2.0 max. 500mA |
| Real Time Clock | yes |
| Voltage | 18-32Vdc |
| Current rating (at 24VDC) | 0.38A |
| Weight | 1 Kg |

4.1 Dimensions

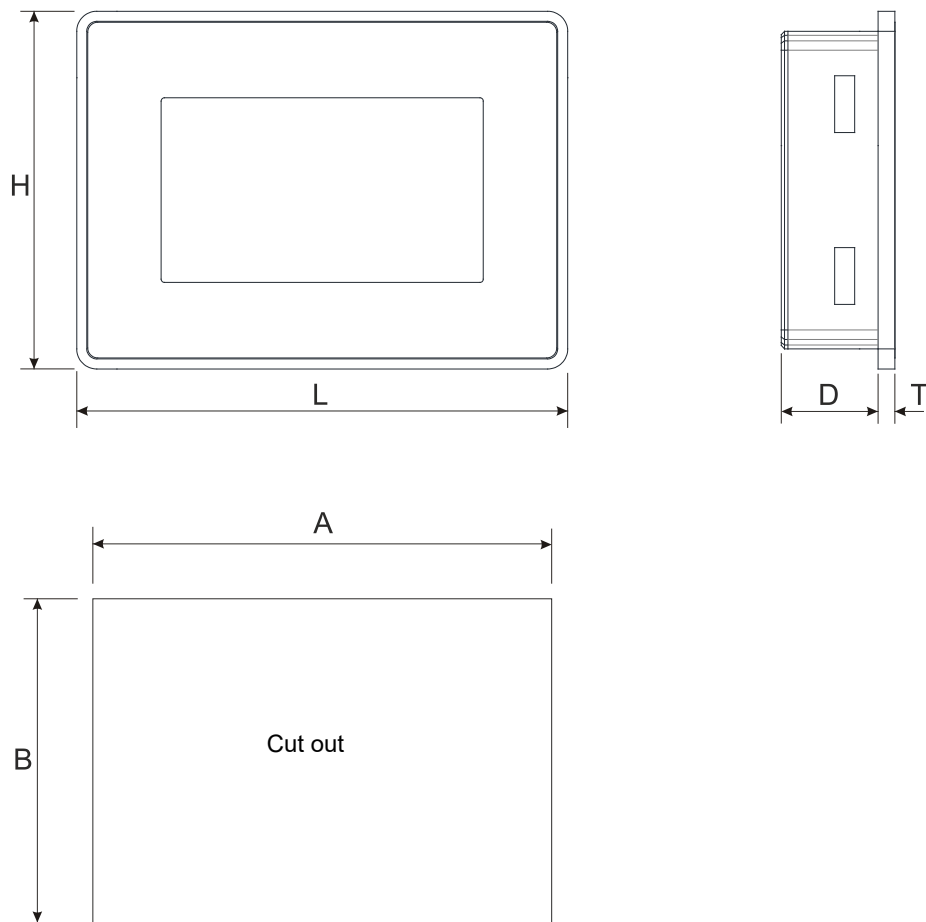


Fig. 4.1

| MODEL | A | B | L | H | D | T |
|--------------|-------------|------------|-------------|-------------|------------|-----------|
| CP604 | 136mm/5.35" | 96mm/3.78" | 147mm/5.78" | 107mm/4.21" | 29mm/1.14" | 5mm/0.19" |

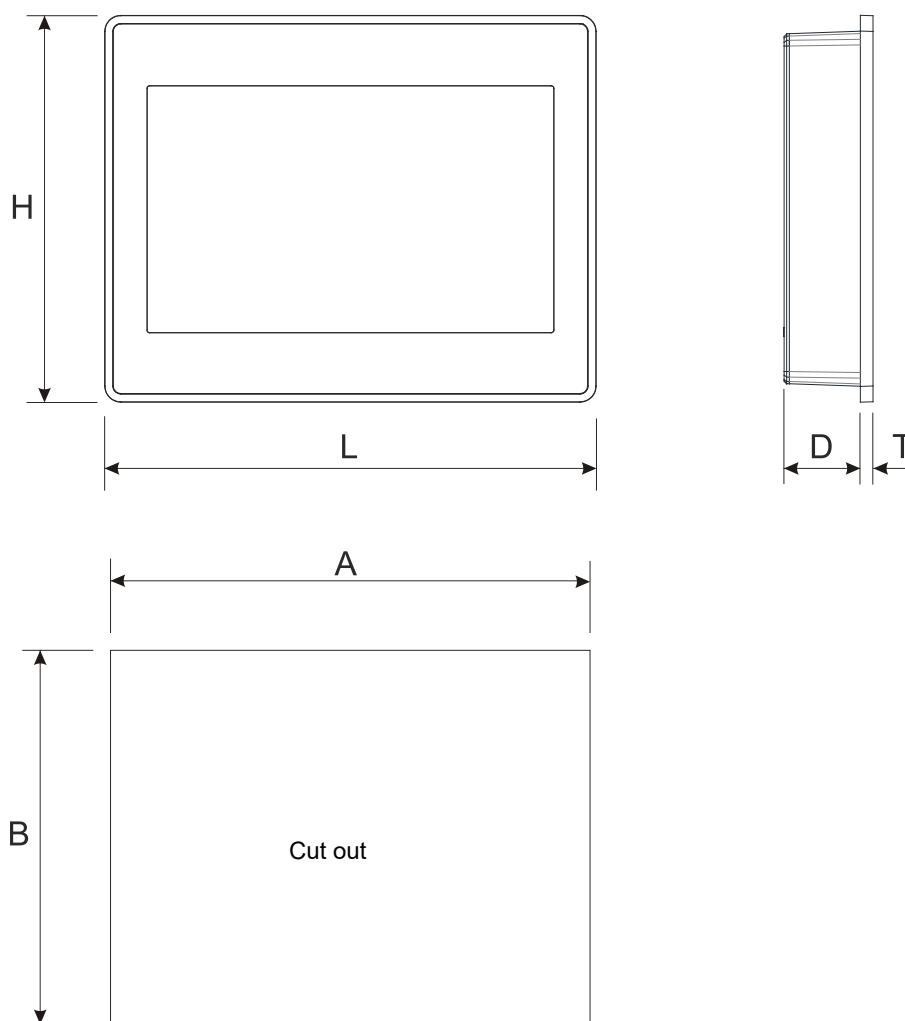


Fig. 4.2

| MODEL | A | B | L | H | D | T |
|--------------|-------------|-------------|-------------|-------------|------------|-----------|
| CP607 | 176mm/6.90" | 136mm/5.35" | 187mm/7.36" | 147mm/5.79" | 29mm/1.14" | 5mm/0.19" |

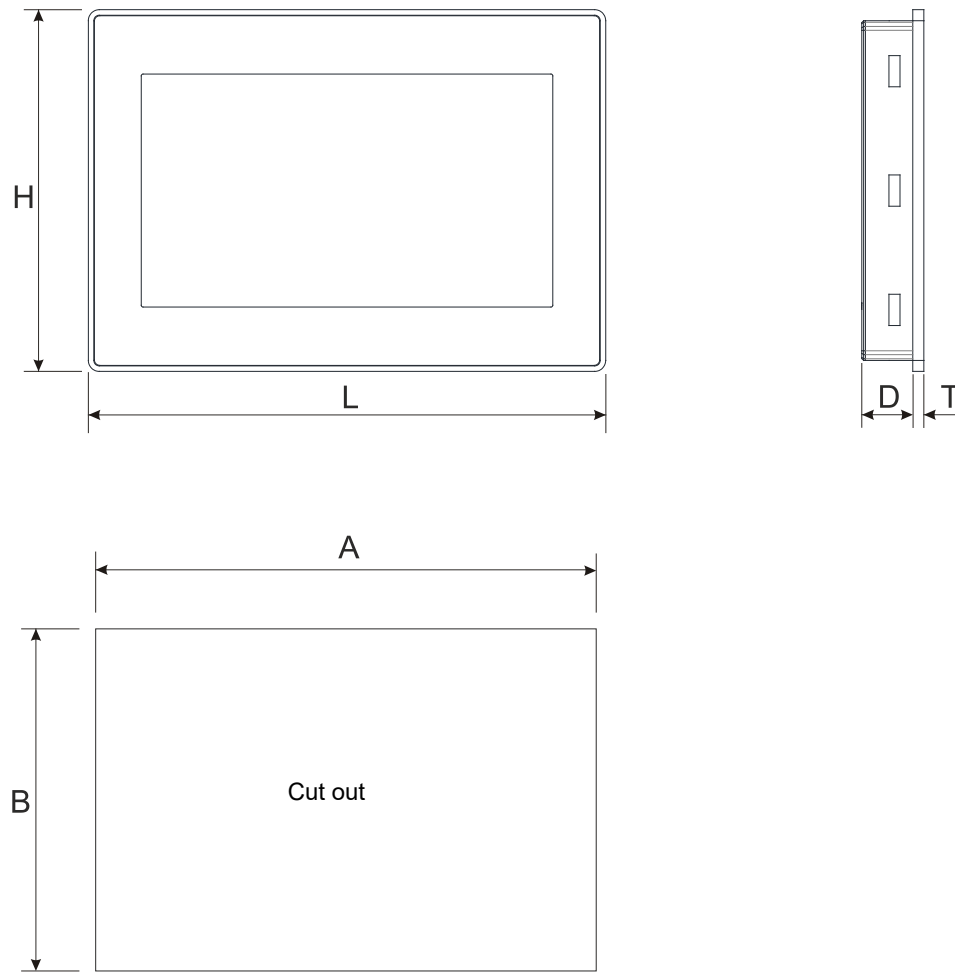


Fig. 4.3

| MODEL | A | B | L | H | D | T |
|-------|--------------|-------------|--------------|-------------|------------|-----------|
| CP610 | 271mm/10.66" | 186mm/7.32" | 282mm/11.10" | 197mm/7.75" | 29mm/1.14" | 6mm/0.23" |

4.2 Installation environment

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 plastic bezel corner get in contact with the panel.
- the cutout for the panel must be of the dimensions indicated in this manual.

The equipment is not intended for continuous exposure to direct sunlight. This might accelerate the aging process of the front panel film.

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

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

The IP66 is guaranteed only if:

- max deviation from the plane surface to the cut-out: $\leq 0.5\text{mm}$
- thickness of the case where is mounted the equipment: from 1,5mm to 6mm
- max surface roughness where the gasket is applied: $\leq 120\text{ um}$

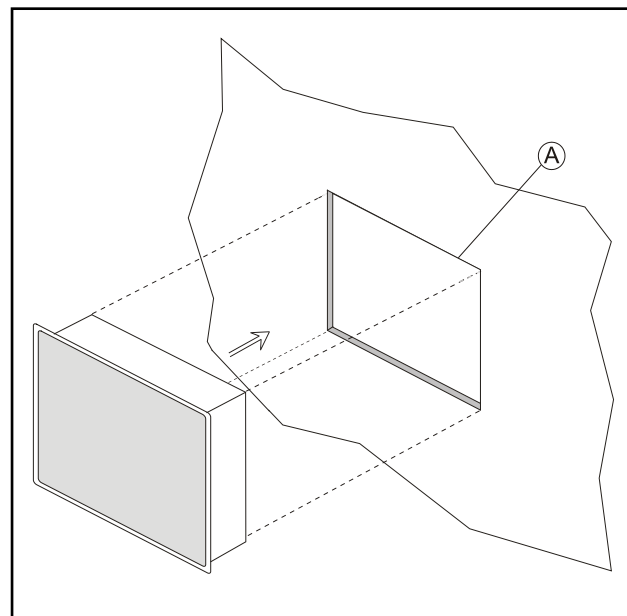


Fig. 4.4

A. Installation cut-out

4.3 Installation procedure

Place the fixing brackets as shown in figure.

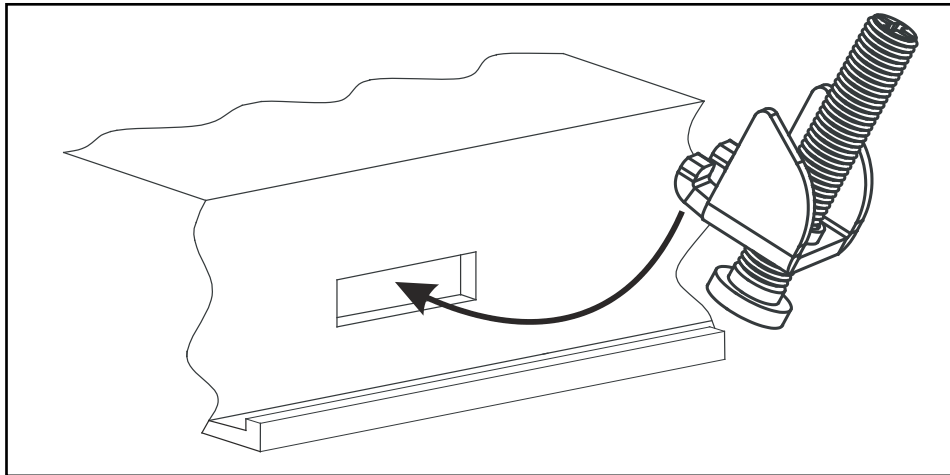


Fig. 4.5

**CAUTION**

Screw each fixing screw until the bezel corner gets in contact with the panel.
Tightening torque: 75 Ncm

5 Connections

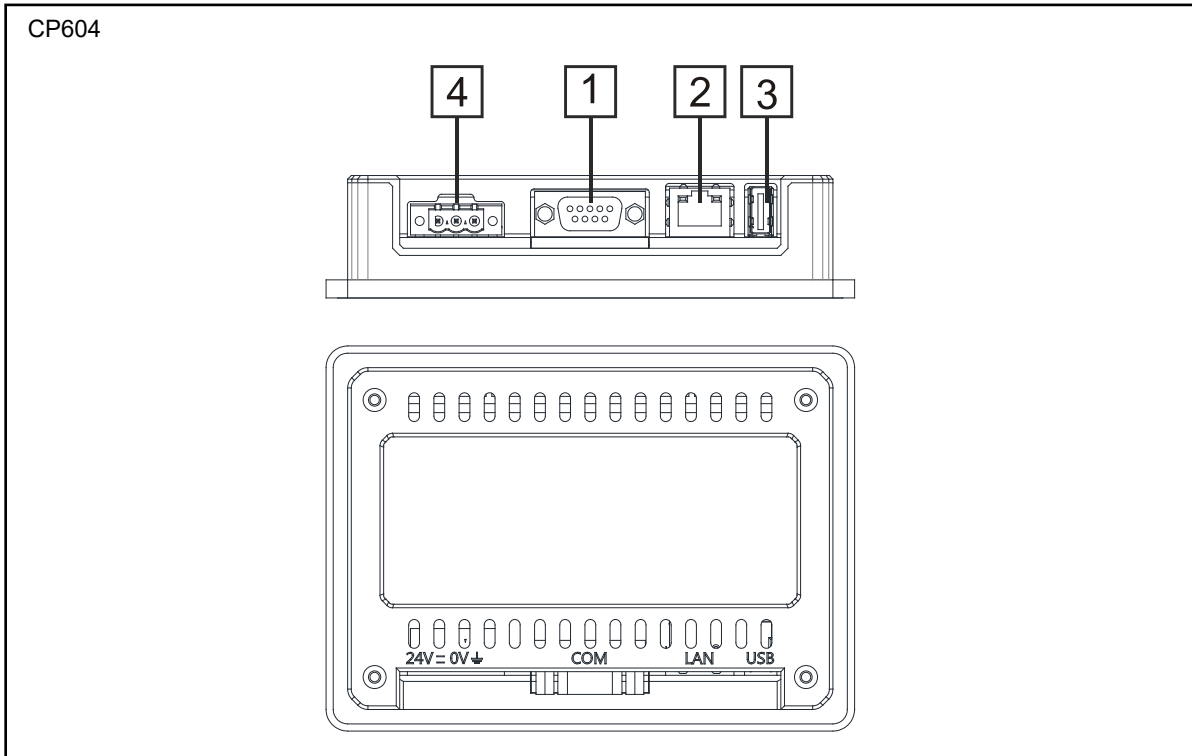


Fig. 5.1

1. Serial Port
2. Ethernet Port
3. USB Port
4. Power Supply

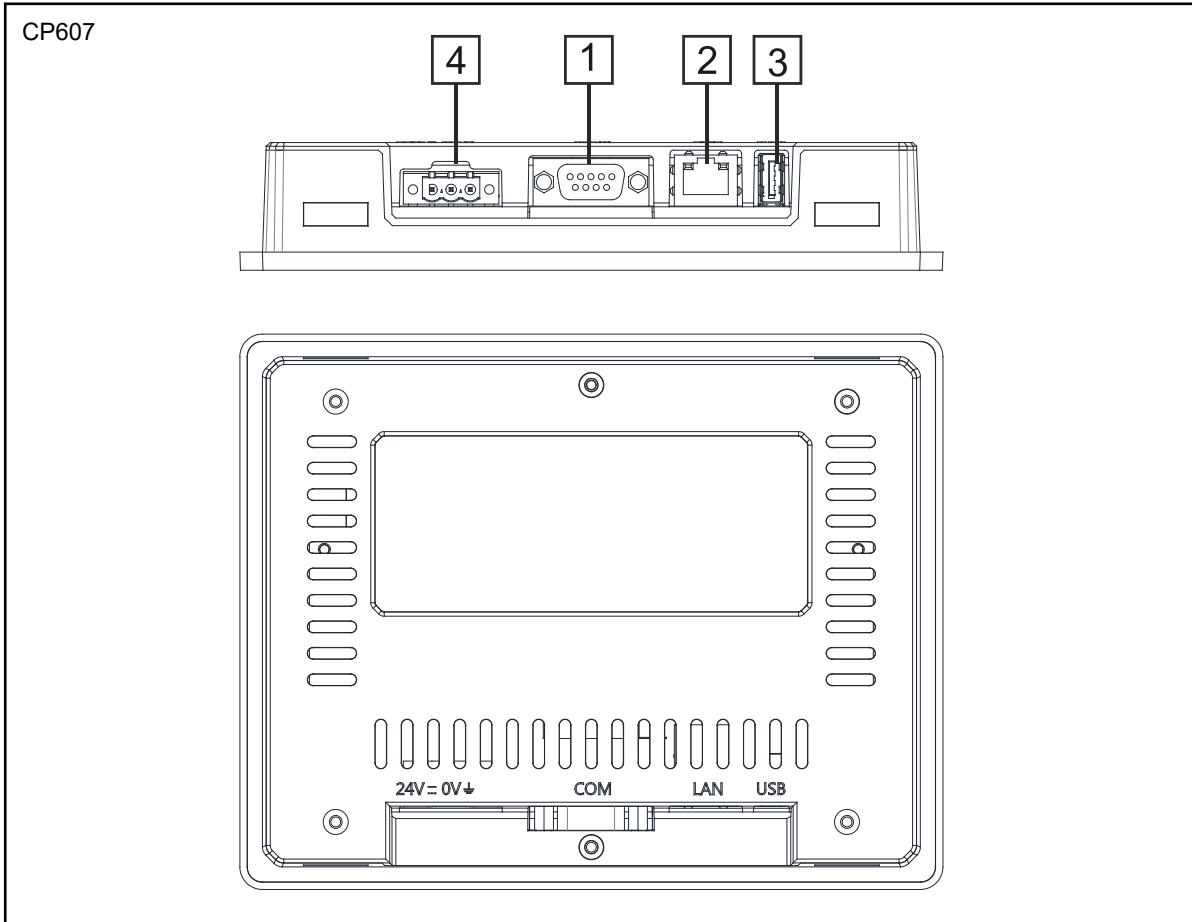


Fig. 5.2

- 1. Serial Port
- 2. Ethernet Port
- 3. USB Port
- 4. Power Supply

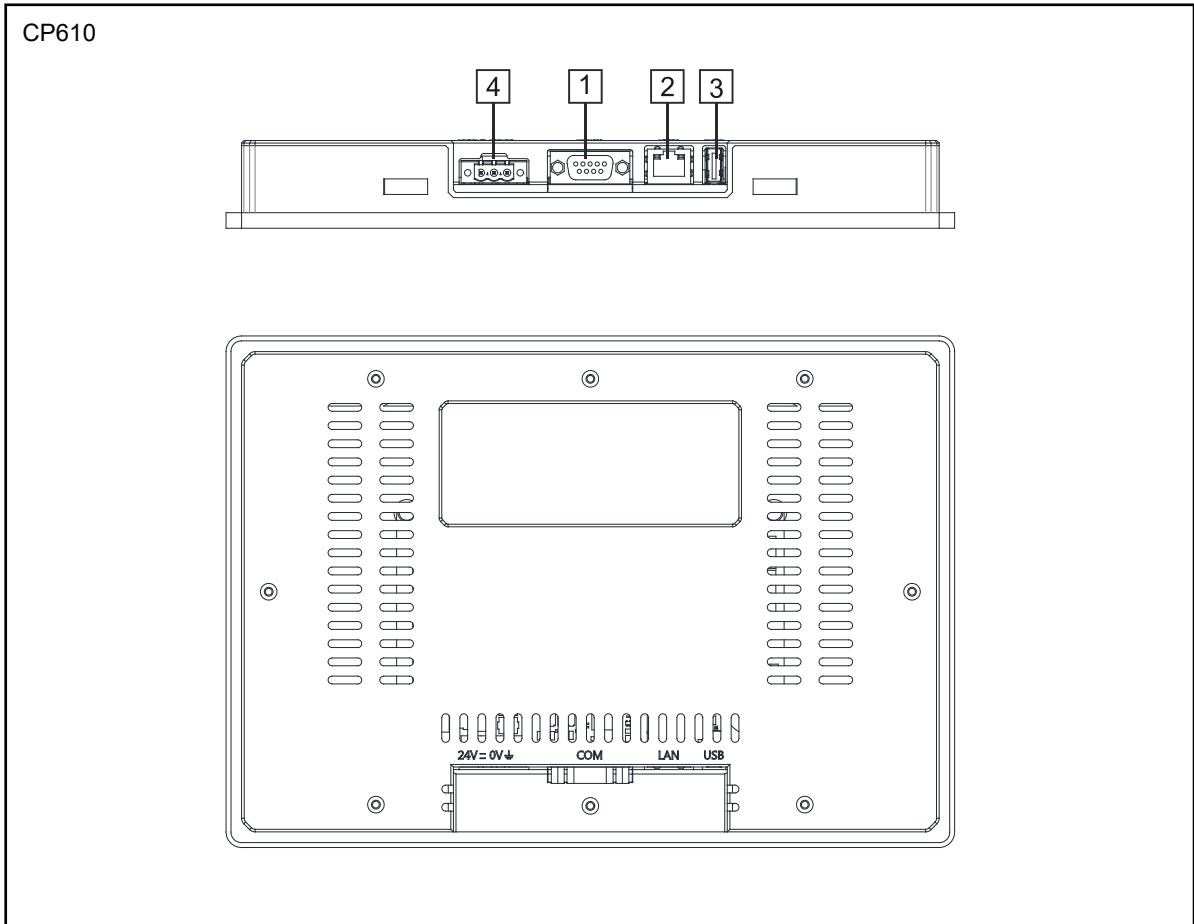


Fig. 5.3

1. Serial Port
2. Ethernet Port
3. USB Port
4. Power Supply

5.1 Serial port

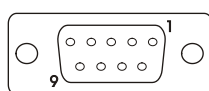
The serial port is used to communicate with the PLC or with another type of controller. Standards available for the signals in the PLC port connector are: RS-232, RS-422, RS-485.

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

RS-232

| Pin | Description |
|-----|-------------|
| 1 | GND |
| 2 | |
| 3 | TX |
| 4 | RX |
| 5 | |
| 6 | +5V output |
| 7 | CTS |
| 8 | RTS |
| 9 | |

SERIAL PORT



RS-422, RS-485

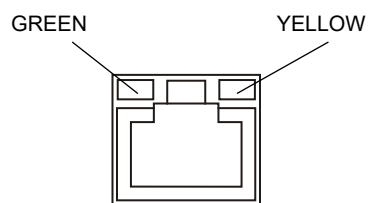
| Pin | Description |
|-----|-------------|
| 1 | GND |
| 2 | |
| 3 | CHA- |
| 4 | CHB- |
| 5 | |
| 6 | +5V output |
| 7 | CHB+ |
| 8 | CHA+ |
| 9 | |

To operate in RS485 pins 4-3 and 8-7 must be connected externally.

The communication cable must be chosen for the type of device being connected. It is highly recommended to use communication cable for AC500 (-eCo), TK682 (Order No. 1SA-P500982R0001)

5.2 Ethernet port

The Ethernet port have two LED indicators for status. Please see description below.



LED indicators

| Green | Yellow | |
|---------------------|--------|---|
| ON | OFF | No LAN cable connected |
| BLINK (link active) | ON | LAN cable connected with 100Mbit/s link |
| BLINK (link active) | OFF | LAN cable connected with 10Mbit/s link |

6 Power supply, grounding and shielding

The power supply terminal block is shown in figure.

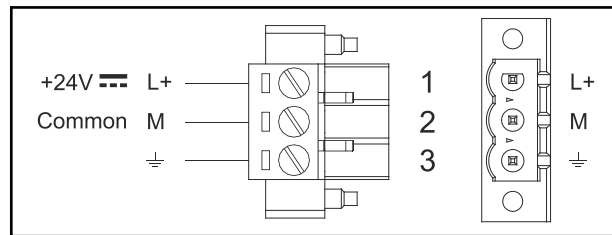


Fig. 6.1

DC Power Connector - AWG24 wire size - R/C Terminal Blocks (XCFR2), Female pitch 5.08mm, torque 50Ncm

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

The unit must always be grounded to earth. Grounding helps limit the effects of noise due to electro-magnetic interference on the control system.

Use terminal 3 on the power supply terminal block earth connection.

The power supply circuit may be floating or grounded. In the latter case, connect to ground the power source common as shown in figure with a dashed line.

When using the floating power scheme, note that the CP600 devices internally connects the power common to ground with a $1M\Omega$ resistor in parallel with a $4,7nF$ capacitor.

The power supply must have double or reinforced insulation.

The suggested wiring for the power supply is shown in figure.

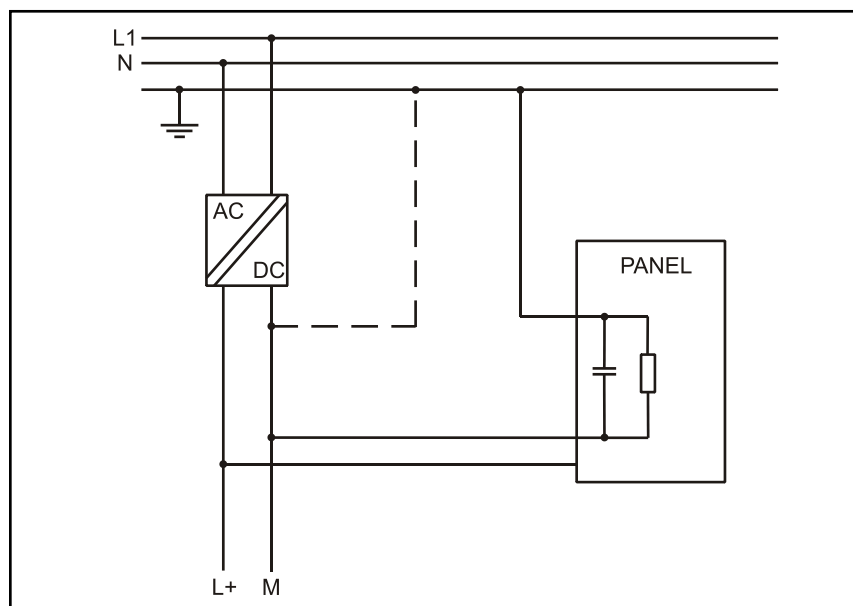


Fig. 6.2

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

7 Cleaning faceplates

The equipment must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.

8 Getting started

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

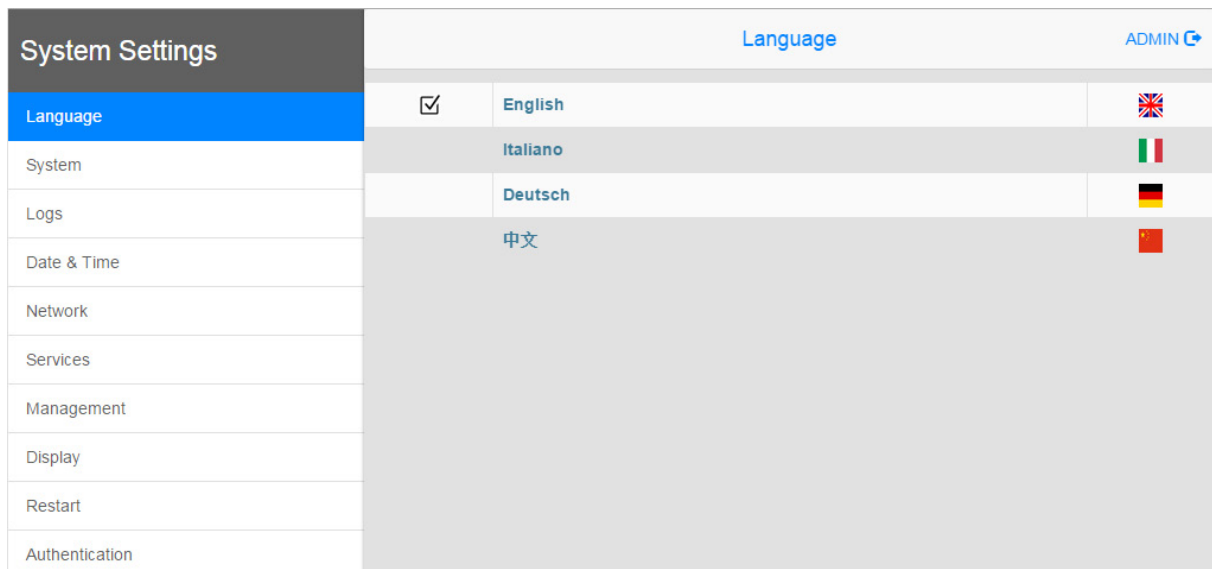
There are two options to transfer a PB610-B application project to a CP600 device:

- | | |
|----------|--|
| Ethernet | Connect the CP600 device to the computer with an Ethernet network connection. From PB610 Panel Builder 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. |

9 System settings

CP600-eCo 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 screen, both menu and content of selected item may be shown on screen or not.

System Settings has two modes of operation:

User Mode PB610-B runtime is running or the CP600 device is in “factory default” status.

System Mode PB610-B runtime is not running or the CP600 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 availables when running in User Mode.

Activation of System Settings in User Mode:

| | |
|-----------------------------|---|
| PB610-B runtime not running | Press "System Setting" button on the CP600 screen |
| PB610-B 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 Systems Settings in System Mode:

| | |
|--------------------|--|
| Normal operation | <p>If PB610-B runtime is not running: Press "System Setting" button on the CP600 screen to enter in System Settings in User Mode. Select "Restart" -> "Config OS" to reboot in System Mode.</p> <p>If PB610-B 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.</p> |
| Recovery operation | <p>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-B runtime or press and hold few seconds (selecting so "RESTART: CONFIG OS") to boot in System Mode.</p> |

System Settings includes options for basic settings of the device.

| | |
|------------------------|--|
| Language | Configure language used for System Setting menu only. |
| System | show informations about platform, status and timers (like 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. |
| Services | enable/disable services. Example of services are OpenSSH server, Cloud services, SNMP and logging. |
| Management | <p>update of BSP components (Main OS, Config OS, Boot loader, XLoader), check for partitions consistence, update of splash screen, informations about usage and size of partitions.</p> <p>The update of Main OS is available only in System Mode, the update of Config OS is only in User Mode.</p> |
| Display | adjust brightness, configure automatic backlight turnoff and select CP600 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 | <p>configure password for administrator ("admin") and for the standard user ("user").</p> <p>Administrator has full access to System Settings (updates of BSP and other system components). Standard user has some limitations.</p> |

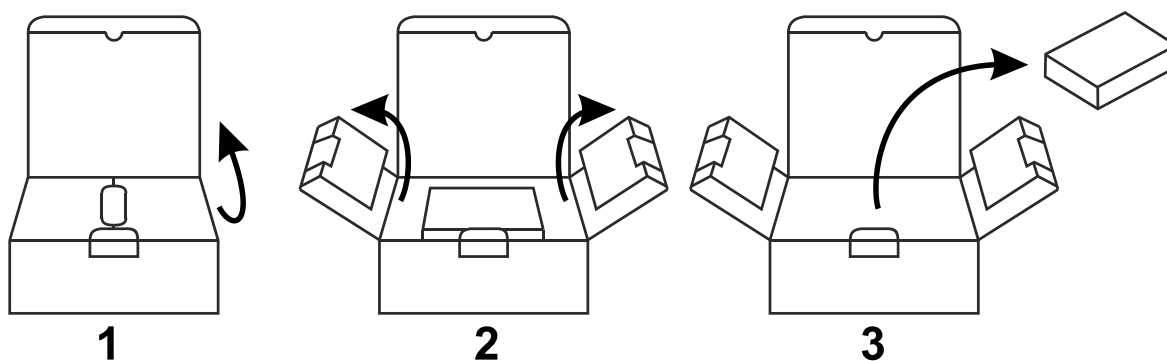
Note: the System Settings tool includes also other options, not described and not documented at this moment

10 Touchscreen calibration

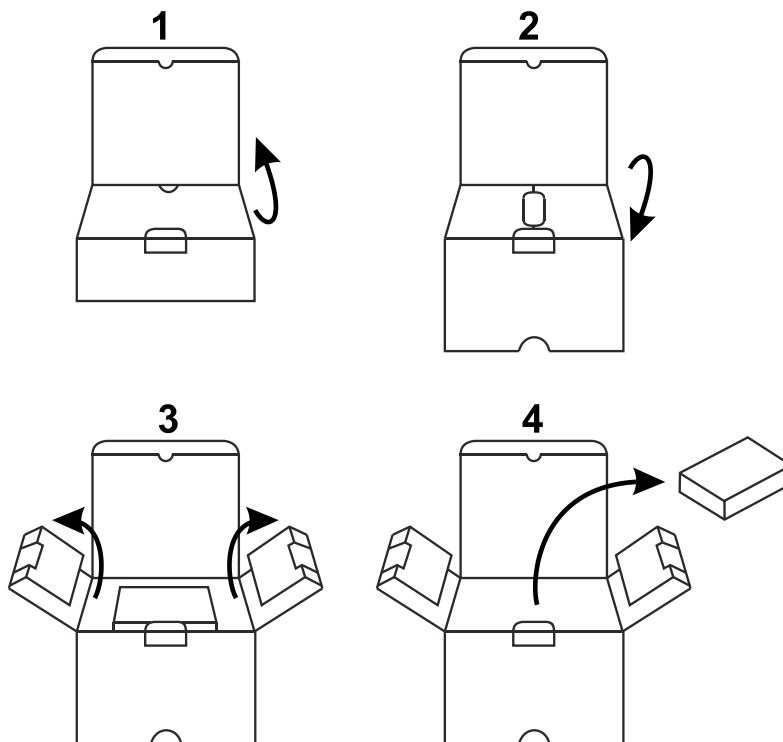
CP600-eCo control panels support calibration of the interface. To start calibration proceed as follow:

- 1) Use the “tap-tap” procedure at boot (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”.
- 2) Release touch and wait few seconds until the message “ENTERING SYSTEM SETTINGS” appears
- 3) Press and hold touch for few seconds for selecting “TOUCHSCREEN CALIBRATION”.

11 Unpacking and packing Instructions



CP604, CP607



CP610

to repack the unit, follow the instructions backwards.



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