USER GUIDE

Control Panel CP-156

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CONTROL PANEL CP-156 - USER GUIDE

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Revision History

Revision	Brief Description of Changes	Date of Issue	Author/ Editor
0.A	Initial Issue in English	2019-October-01	GUGMA

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Customer Comments

If you have any difficulties using this user guide, discover an error, or just want to provide some feedback, contact Kontron support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Symbols

The following symbols may be used in this user guide

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
NOTICE	NOTICE indicates a property damage message.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
	Electric Shock! This symbol and title warn of hazards due to electrical shocks (>60V) when touching products or parts of products. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.
	ESD Sensitive Device! This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
	HOT Surface! Do NOT touch! Allow to cool before servicing.
	Laser! This symbol inform of the risk of exposure to laser beam and light emitting devices (LEDs) from an electrical device. Eye protection per manufacturer notice shall review before servicing.
	This symbol indicates general information about the product and the user guide. This symbol also indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.

⚠CAUTION

Warning

All operations on this product must be carried out by sufficiently skilled personnel only.

⚠CAUTION

Electric Shock!

Before installing a non hot-swappable Kontron product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.

Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

Special Handling and Unpacking Instruction

NOTICE

ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

Lithium Battery Precautions

If your product is equipped with a lithium battery, take the following precautions when replacing the battery.

⚠CAUTION

Danger of explosion if the battery is replaced incorrectly.

- Replace only with same or equivalent battery type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Kontron and described in this user guide or received from Kontron Support as a special handling instruction, will void your warranty.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present user guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Quality and Environmental Management

Kontron aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements. For more information regarding Kontron's quality and environmental responsibilities, visit http://www.kontron.com/about-kontron/corporate-responsibility/quality-management.

Disposal and Recycling

Kontron's products are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- Improve the environmental performance of all those involved during the lifecycle of EEE

Environmental protection is a high priority with Kontron.
Kontron follows the WEEE directive
You are encouraged to return our products for proper disposal.

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1/ Product overview

The CP-156 Control Panel is designed as an operating panel for industrial applications. As standard, the panel has a capacitive multitouch display with a glass front and a very slim, high-quality metal frame. On the back side, the panel has a robust stainless steel housing.

The CP-156 Panel has a 15.6" WXGA color TFT touch panel with 1366 x 768 pixels and dimmable LED backlight. It is equipped with an ARM Cortex-A9 low-power embedded RISC controller with one or two processor cores. The CP-156 can comprise one microSD slot, one or two 10/100 MBit Ethernet interfaces, two USB2.0 host interfaces as well as a CAN interface, an RS485 interface and up to two RS232 interfaces.

Linux is used as the operating system. The use of the Soft-PLC CODESYS inclusive of Target-, Web- and HMI-VISU is optionally possible.

This manual is applicable to the following versions:

Table 1: Versions

Article No.	Name	Versions
11387	CP-156g 32-1240	15.6-inch Control Panel i.MX6 Dual Core with aluminum frame

Table 2: Detail configuration of the product versions:

Version	11387			
15.6" WXGA (1366 x 768) Colour-TFT	x			
Capacitive touch with glass and aluminum front	x			
Capacitive touch with glass and stainless steel front				
800 MHz i.MX6 Single-Core				
800 MHz i.MX6 Dual-Core	x			
1 MByte serial NOR Flash	x			
512 MByte NAND Flash	x			
4 GByte eMMC Flash				
1 GByte RAM	x			
8 kByte FRAM				
128 kByte SRAM	x			
microSD-Card slot	x			
Real-time clock battery-supported	x			
NET1 10/100 MBit Ethernet	x			
NET2 10/100 MBit Ethernet	x			
2x USB Host (USB1, USB2)	x			
COM1 RS232	x			
COM2 RS232	x			
COM3 RS485	x			
CAN	x			
Linux Distribution	x			

2/ Technical data

Depending on the version, the CP-156 Control Panel can have the following properties (existing versions see 1/):

- 15.6" WXGA Colour-TFT Display wih 1366 x 768 pixels, 24 Bit RGB via LVDS. Brightness typ. 400 cd/m^2, wide viewing angle from all sides typ. 85°/80°/85°/85°
- Capacitive multi touch screen
- Glass front inserted in a milled aluminum frame or stainless steel frame
- Processor NXP ARM Cortex A9, 800 MHz i.MX6 Single or Dual Core CPU
- Up to 512 MByte NAND Flash
- 4-16 GByte eMMC Flash
- 1 MByte serial NOR Flash
- 1 GByte dynamic RAM
- 8-128 kByte static RAM
- Slot for microSD FlashCards up to 2 GByte and SDHC-Cards up to 32 GByte
- LED backlight dimmable via software
- battery-supported, processor-independent real-time clock (RTC)
- up to two 10/100 MBit independent Ethernet interfaces on RJ45 (8P8C) connectors
- up to two USB Host interfaces on 4-pol. USB plug type A
- one CANopen/Basic-CAN interface, galv. insulated on 4-pin Phoenix connector
- up to two serial COM interfaces RS232 on 9-pin DSUB connector
- one serial RS485 interface, galv. insulated on 4-pin Phoenix connector
- Power supply 24 VDC ±20%, on 3-pin. Phoenix connector

2.1. Operating system

The operating system is embedded Linux (Yocto Distribution).

2.2. Dimensions and weight

External dimensions: W ⨯ H ⨯ D: 404.5 x 253.5 x 59.4 mm

Display size: W ⨯ H: 344.2 x 193.4 mm, 15.6" diagonal

Mounting depth: 53 mm

Weight: 3.44 kg

2.3. Environmental conditions

List of permissible ambient conditions for the operation of the product.

Ambient temperature operation: 0 ... +55 °C

Ambient temperature storage: -20 ... +70 °C

Humidity: 10 - 90 % (non-condensing)

Atmosphere: free of corrosive or explosive gases

Protection class: Front: IP65, rear: IP20

EMC with correct wiring and shielding of the interfaces:

- according to EN 61000-6-2 Immunity
- according to EN 61000-6-4 Emission

⚠DANGER

No use in potentially explosive areas!

Use in hazardous areas can result in death, serious injury or considerable damage to property.

The device is not designed for use in hazardous areas and does not have the appropriate approvals.

2.4. Power supply

Supply voltage: +24 VDC ±20 %

Current consumption: typ. 700 mA

Power consumption: typ. 16.8 VA

Recommended design of the power supply unit:

Voltage/ output power: 24 VDC / min. 30 W

Ripple: max. 200 mV p-p

Operate the device exclusively with a SELV (Safety Extra Low Voltage) voltage source which fulfils the requirements of an LPS (Limited Power Source) according to DIN EN 60950-1.

NOTICE

The power consumption depends on the configuration as well as the type and number of active interfaces..

2.5. Materials

The following materials are used for the housing of the CP-156:

Housing Rear: Stainless steel

Housing front: aluminium or stainless steel

Glass front: chemically toughened glass

2.6. Accessories

Table 3: Accessories for the CP-156 Control Panel

Article No.	Designation	Comment
90189	Handbuch Control Panel CP-156	Deutsches Handbuch
90196	System Manual Linux	Deutsches Handbuch
90204	User Guide Control Panel CP-156	English manual
90208	System Manual Linux	English manual

3/ Design and function

3.1. Description of function

3.1.1. LCD display

The active colour TFT LCD 15.6" display with WXGA resolution (1366 x 768) is connected to the processor board via an internal LVDS interface.

3.1.2. Touchscreen capacitive

The integrated capacitive touchscreen is connected to the processor board via an internal interface.

⚠CAUTION **Damage to the screen, caused by any impact with a hard object, could lead to injury.**
Operate the touch screen only with finger or touch pen.

3.1.3. Processor board

The single board computer used within the CP-156 is based on an i.MX6 ARM Cortex-A9 processor design, single or dual core. All of the specified I/O features are fully integrated.

Flash-ROM, fast boot serial NOR Flash, DDR3 DRAM main memory and non-volatile data memory SRAM components are used as standard. All devices are soldered down for high reliability.

3.1.4. MicroSD-Card

The microSD card slot X3 integrated on the base module allows the use of SD cards up to 2 GByte and SDHC cards up to 32 GByte.

Figure 1: MicroSD-Card

The microSD card must be inserted with contacts to the rear (towards the rear of the device) as shown in the figure above.

3.1.5. Backlight

The brightness of the backlight can be adjusted via the system configuration or via software via a Linux command.

3.1.6. Real-time clock RTC

A real-time clock is installed on the processor board and is accurate to within 10 seconds per month.

3.1.7. Battery

The 3 V lithium battery CR1632 supports the SRAM memory and the real time clock in case of power failure.

3.1.8. Ethernet NET1

The Ethernet interface NET1 is operated via an Ethernet controller at the RMII interface of the processor. The electrically isolated 10/100 Mbit Ethernet interface is available on the RJ45 (8P8C) connector X5. Two LEDs signal the interface status. The green LED lights up when the link is active and flashes during data transmission. The yellow LED lights up for data transmission at 100Mb/s.

3.1.9. Ethernet NET2

The Ethernet interface NET2 is operated via an Ethernet controller at the HSIC interface of the processor. The electrically isolated 10/100 Mbit Ethernet interface is available on the RJ45 (8P8C) connector X6. Two LEDs signal the interface status. The green LED lights up when the link is active and flashes during data transmission. The yellow LED lights up for data transmission at 100Mb/s.

3.1.10. USB

The processor board provides two USB 2.0 host interfaces. The signals are routed to the USB type A connector X9.

3.1.11. CAN

The electrically isolated interface CAN1 provides the signals CANL and CANH in CAN level. The interface is connected to terminal X2.1. The interface is terminated internally with a terminating resistor (120 Ω).

3.1.12. Serial interfaces RS232

The serial interfaces COM1 and COM2 provide the signals RxD, TxD, CTS and RTS in RS232 level at connector X12 and X15. These interfaces are not galvanically isolated.

3.1.13. Serial interface RS485

The serial interface COM3 provides the signals A and B in RS485 level at connector X2.2. This interface is galvanically isolated. The interface is internally terminated.

3.2. Connectors

The Control Panel has the following Interfaces:

Table 4: Interfaces

Connector	Type	Purpose
X1	3-pole pluggable terminal pitch 5 mm for 24 VDC supply	PWR
E1	Battery compartment for CR1632	BAT
X3	MicroSD Card Slot	SD
X5	RJ45 (8P8C) Connector for Ethernet, horizontal	ENET
X6	RJ45 (8P8C) Connector for Ethernet, horizontal	ENET
X9	Double-level USB Host connector type A, horizontal	USB
X2.1	4-pole pluggable terminal pitch 3.5 mm for CAN	CAN
X2.2	4-pole pluggable terminal pitch 3.5 mm for RS485 (COM3)	RS485
X12	9-pin D-Sub male connector, horizontal (COM2)	RS232
X15	9-pin D-Sub male connector, horizontal (COM1)	RS232

Figure 2: Interfaces bottom view

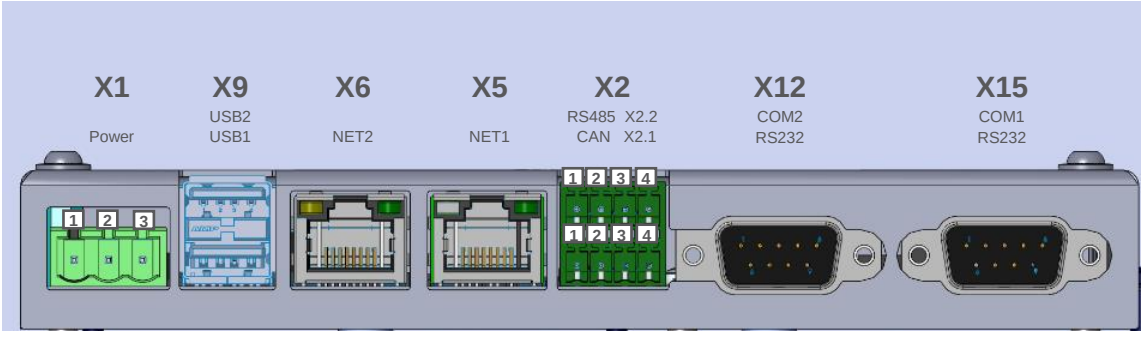
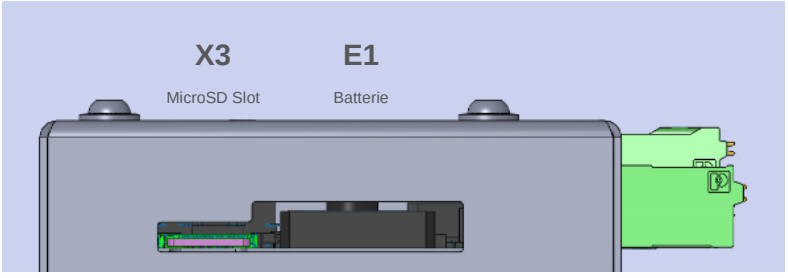


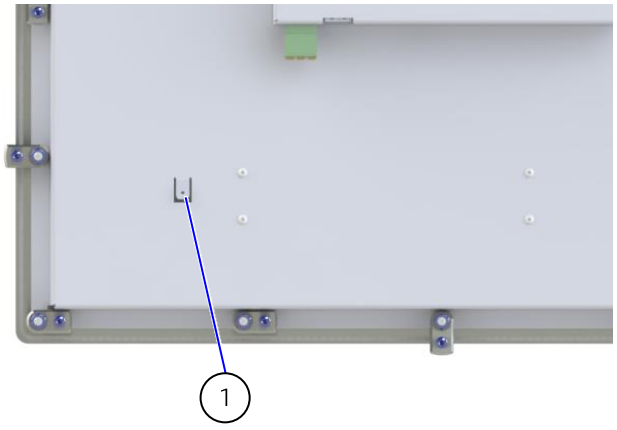
Figure 3: Interfaces side view



3.2.1. Functional earth

For the grounding of the device see notes in chapter 5.2

Figure 4: Functional earth



1 earth lug

3.2.2. Power supply Connector X1

Table 5: Power supply Connector X1

Pin	Signal	Type	Comment
1	FE		Functional earth
2	0V	PWR	Power supply 0 Volt DC
3	24V	PWR	Power supply +24 VDC ±20%

Cable (acc. to chapter 2.3/ EMC): max. 3 m, unshielded

Connector Type: Phoenix MSTBA 2.5/3-G – 1757488

Mating connector: Phoenix FKCN 2.5/ 3-ST– 1732755 (included in delivery)

Associated permissible cable cross-sections:

- Conductor cross-section min: 0.5 mm² (corresponds AWG 24)
- Conductor cross-section max: 1.5 mm² (corresponds AWG 16)

The panel must be grounded via the functional earth connection of the power supply connector X1 with low impedance. See chapter 5.2

3.2.3. Ethernet Connectors X5 and X6

Cable (according to chapter 2.3/ EMC): max. 30 m, shielded, Cat-5e

Table 6: Ethernet Connectors X5 and X6

Pin	Signal	Type	Comment
1	TX+	OUT	Ethernet Transmit data +
2	TX-	OUT	Ethernet Transmit data -
3	RX+	IN	Ethernet Receive data +
4			Reserved
5			Reserved
6	RX-	IN	Ethernet Receive data -
7			Reserved
8			Reserved

3.2.4. CAN Connector X2.1

Table 7: CAN Connector X2.1

Pin	Signal	Type	Comment
1	SHIELD	SHLD	
2	CANH	I/O	CAN Signal CAN_HIGH
3	CANL	I/O	CAN Signal CAN_LOW
4	GND_CAN	GND	

Cable (acc. to chapter 2.3/ EMC): max. 30 m, shielded

Connector Type: Phoenix MCDN 1.5/ 4-G1-3.5 – 1953732

Mating connector: e.g. Phoenix FMC 1.5/ 4-ST-3.5 – 1952283

Associated permissible cable cross-sections:

- Conductor cross-section min: 0.2 mm² (corresponds AWG 24)
- Conductor cross-section max: 1.5 mm² (corresponds AWG 16)*

* Max. conductor cross-section reduced to 0.75 mm² for ferrules with plastic ferrule

3.2.5. RS485 Connector X2.2

Table 8: RS485 Connector X2.2

Pin	Signal	Type	Comment
1	SHIELD	SHLD	
2	A	I/O	RS485 half duplex TxRx+
3	B	I/O	RS485 half duplex TxRx-
4	GND_RS485	GND	

Cable (acc. to chapter 2.3/ EMC): max. 3 0m, shielded

Connector Type: Phoenix MCDN 1.5/ 4-G1-3.5 – 1953732

Mating connector: e.g. Phoenix FMC 1.5/ 4-ST-3.5 – 1952283

Associated permissible cable cross-sections:

- Conductor cross-section min: 0.2 mm^2 (corresponds AWG 24)
- Conductor cross-section max: 1.5 mm^2 (corresponds AWG 16)*

* Max. conductor cross-section reduced to 0.75 mm^2 for ferrules with plastic ferrule

3.2.6. RS232 Connector X12

Table 9: RS232 Connector X12

Pin	Signal	Type	Comment
1	-		
2	RxD	IN	RS232 Receive Data
3	TxD	OUT	RS232 Transmit Data
4	-		
5	GND	GND	
6	-		
7	RTS	OUT	RS232 Request to Send
8	CTS	IN	RS232 Clear to Send
9	-		
CASE	GND	GND	

Cable (acc. to chapter 2.3/ EMC): max. 3m, shielded

3.2.7. RS232 Connector X15

Table 10: RS232 Connector X15

Pin	Signal	Type	Comment
1	-		
2	RxD	IN	RS232 Receive Data
3	TxD	OUT	RS232 Transmit Data
4	-		
5	GND	GND	
6	-		
7	RTS	OUT	RS232 Request to Send
8	CTS	IN	RS232 Clear to Send
9	-		
CASE	GND	GND	

Cable (acc. to chapter chapter 2.3/ EMC): max. 3.m, shielded

4/ Assembly and installation

Prior to commissioning, the temperature of the unit must be adjusted to the room temperature.

⚠WARNING

Observance of the standards and regulations of the country of destination

Improper installation may result in death, serious injury or serious damage to property.

The device must be installed in machines or systems in compliance with all standards and regulations applicable in the countries of destination. Appropriate measures to meet such requirements (e.g. regarding EMC, ESD, etc.) must be taken by the manufacturer of these machines or systems.

⚠WARNING

Danger due to malfunctions due to improper earthing of the device.

This can result in death, serious injury or considerable damage to property.

The device must be properly earthed.

NOTICE

Damage to plugs or cables due to improper handling when plugging in and plugging out

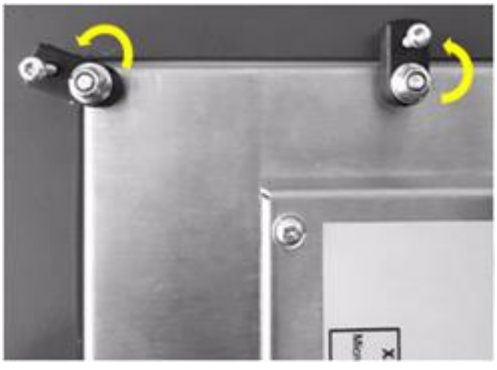
Material damage to cables, plugs and other plant components can result.

Always hold the plug when plugging and unplugging a cable.

4.1. Mounting instructions

1. Insert the device from the front into the cut-out of the control cabinet and push it carefully until it is fully inserted.
2. Swivel out the mounting elements on the rear side so that the fixing screws are above the cabinet plate.
3. Tighten the fixing screw at the first mounting element in a corner until it presses on the cabinet plate.
4. repeat procedure 3) for opposite mounting element
5. repeat procedure 3) for the remaining mounting elements.

Figure 5: Mounting in the front of the switch cabinet



5/ Commissioning

NOTICE

Removal of the protective film by pulling it off sideways

For easy removal, pull off the protective foil on the front of the device to the side.

5.1. Power supply

The CP-156 Control Panel is operated with 24 VDC. The power supply must be connected to connector X1. See section. 3.2.2.

Voltage level and power consumption see Chap. 2.4.

5.2. Grounding

The panel must be grounded via the functional earth connection of the power supply connector X1 with sufficiently low impedance (< 1 Ohm) to avoid possible transmitted interference from signal cables or external assemblies. Recommended cable cross-section is 1.5 mm^2.

In addition, the panel can optionally be grounded via the ground lug on the rear of the housing. For this optional grounding, use a 6.3 x 0.8 mm flat receptacle and widen it slightly with a slotted screwdriver so that it expands to 1 mm.

5.3. System Configuration

The system configuration feature provides an easy to use interface for setting up the device. This can be selected locally on the device at startup in a selection menu of the integrated web browser or called via a web browser on another device that is connected to the Panel via Ethernet.

The clear menu structure makes it possible to quickly find the numerous setting options such as network settings, URL, CODESYS, display, FTP, IP-Tables, screensaver, web browser settings, passwords, diagnostics, etc.

Default IP addresses for panel access:

Ethernet 1: 192.168.1.100 (Subnet: 255.255.255.0)

Ethernet 2: 192.168.1.101 (Subnet: 255.255.255.0)

Default passwords (factory setting):

- User: root
- Password: root

A detailed description of the settings and functions can be found in the System Manual Linux Art. No. 90208.

The System Manual is also integrated in the system configuration of the device.

5.4. HTML5 Browser

The Chromium based HTML5 browser allows the display of web pages or a CODESYS V3 WebVisu. The URL and the device IP address are set via the system configuration, via an own web server on an external web browser or via a script file on a connected USB stick.

5.5. iniNet Micro-Browser

The optional integrated Micro-Browser from iniNet allows the efficient display of a CODESYS V3 WebVisu or the HMI solution SpiderControl from iniNet.

The settings are made directly at startup via the configuration menu of the micro-browser.

5.6. Soft-PLC CODESYS

The optionally integrated Soft-PLC CODESYS from 3S allows convenient PLC program generation according to IEC 61131-3. Various industrial protocols and the integration of C/C++ code are supported. The interfaces available to the user are documented in the manual for the development environment. The development environment can be requested free of charge from Kontron Electronics AG at www.kontron-electronics.ch.

The CP-156 supports CODESYS V3.

The CODESYS Device Package contains all device descriptions and libraries for the CODESYS development environment. The CODESYS Device Package can be ordered free of charge from Kontron Electronics AG at www.kontron-electronics.ch. The CODESYS PLC application is loaded into the Flash-memory of the processor board via the microSD card, USB or Ethernet interface.

If the panel was purchased with the CODESYS PLC license, the corresponding runtime license is delivered together with the hardware.

5.7. CODESYS Visualizations

The optionally integrated development environment CODESYS from 3S allows the efficient creation of graphical user interfaces with or without touch screen. The visualization variants TargetVisu, WebVisu and HMI-Remote are supported. The interfaces that are available to the user are documented in the manual for the development environment. The development environment can be requested free of charge from Kontron Electronics AG at www.kontron-electronics.ch.

The CODESYS Visu application is loaded into the flash memory of the CPU module via the microSD card, USB or Ethernet interface. The devices IP and CODESYS settings are made via the system configuration.

Depending on the acquired CODESYS HMI functional scope (CODESYS Target- and/or WebVisu) the corresponding licenses are delivered together with the hardware.

5.8. Backup/Restore the system (Live System)

The Backup/Restore function (Live System) allows easy backup and restore of the complete device via USB stick or SD card.

With a backup of the system, the devices can be reset to a defined state or even cloned.

The backup/restore function is integrated in the system configuration and can be accessed directly via the selection menu.

In addition, the live system for the backup/restore function can be requested free of charge from Kontron Electronics AG at www.kontron-electronics.ch on request.

6/ Operation

The panel does not have its own on/off switch and starts automatically when the power supply is switched on.

The panel is operated via the touch screen.

NOTICE

Damage to the touch screen due to improper operation with inadmissible objects.

Operation with inadmissible sharp or hard objects can cause scratches and damage to the touch screen.

The touch screen may only be operated with a finger or touch pen.

7/ Maintenance

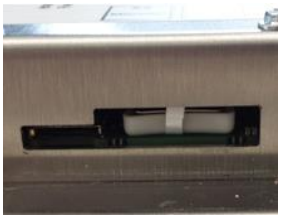
There is no maintenance interval prescribed by the manufacturer of the product.

7.1. Battery replacement

A CR1632 type battery is used as a backup battery. To prevent data loss, the power supply of the device must be connected during battery replacement.

To replace the battery, pull out the side tab of the battery holder E1 on the device and replace the battery with a new one. The battery holder is then plugged back into the device.

When replacing the battery, make sure that the battery and the battery holder are inserted with the correct orientation as shown in the illustrations below.

Pull out the tab of the battery holder	
Battery positive pole upwards	
Insert the battery holder with the open side towards the rear of the device.	

NOTICE

Insert the battery correctly into the battery holder.

If the battery is inserted with the wrong side, the non-volatile data and real time clock of the panel will not be buffered if the supply voltage fails.

The battery must be inserted into the battery holder with the positive terminal facing upwards and the battery holder inserted with the open side towards the rear of the housing.

⚠WARNING

Only use batteries of the specified type which conform to the EU Directives 2006/66/EC and 2013/56/EU (Battery Directive) and Regulation (EC) No. 1907/2006 (REACH) and observe the safety instructions of the battery manufacturer.

Batteries contain toxic substances which, if used improperly, can lead to burns and material damage.

Only use 3V lithium batteries type CR1632 as replacement batteries which comply with the EU Directives 2013/56/EU (Battery Directive) and Regulation (EC) No. 1907/2006 (REACH). Recommended by Kontron Electronics AG are Renata, Varta and Panasonic. Batteries must not be disposed of with household waste and must not be incinerated. Observe the disposal regulations applicable at your location.

Batteries must always be kept out of the reach of children as there is a health hazard if swallowed.

7.2. Cleaning

The device can be cleaned as required. There is no cleaning interval prescribed by the manufacturer of the product.

Since the touch display is touch-sensitive, the panel must be switched off during cleaning.

A soft cleaning cloth with household cleaning agent for glass surfaces is recommended for cleaning the glass panel front. Do not use caustic cleaning agents, abrasive cleaners or hard objects that could cause scratches.

NOTICE

Penetration of liquids during cleaning

Damage to property or destruction of the device may result.

When cleaning the panel front, make sure that only the front side of the panel is cleaned and that no liquids get to other housing parts.

8/ Malfunctions

Table 11: Malfunctions

Malfunction	Possible cause	Recommended action
No function	No power supply to the device	Check whether the power supply cable is correctly plugged in. Check pin assignment. Measure supply voltage.
Interface function impaired	Interface cable not plugged in correctly	Check whether all interface cables are plugged in correctly and the pin assignment is correct.
Touch screen function faulty	No grounding of the device	Check whether the grounding is correctly connected.

NOTICE

Loss of warranty due to manipulation of the device

Repairs and other manipulations of the device may only be carried out by the manufacturer. In particular, opening the device is prohibited. Otherwise any warranty will become void.

9/ Decommissioning and disposal

NOTICE

Disposal of electrical material and batteries

Electrical appliances and batteries must be disposed of in accordance with local regulations. If necessary, contact your local waste disposal company for information. Do not throw devices into the household waste and do not burn them.

Remove the backup battery from the device and dispose of it separately.

10/ Technical drawings

10.1. Mounting cut-out and device views

Figure 6: Mounting cut-out

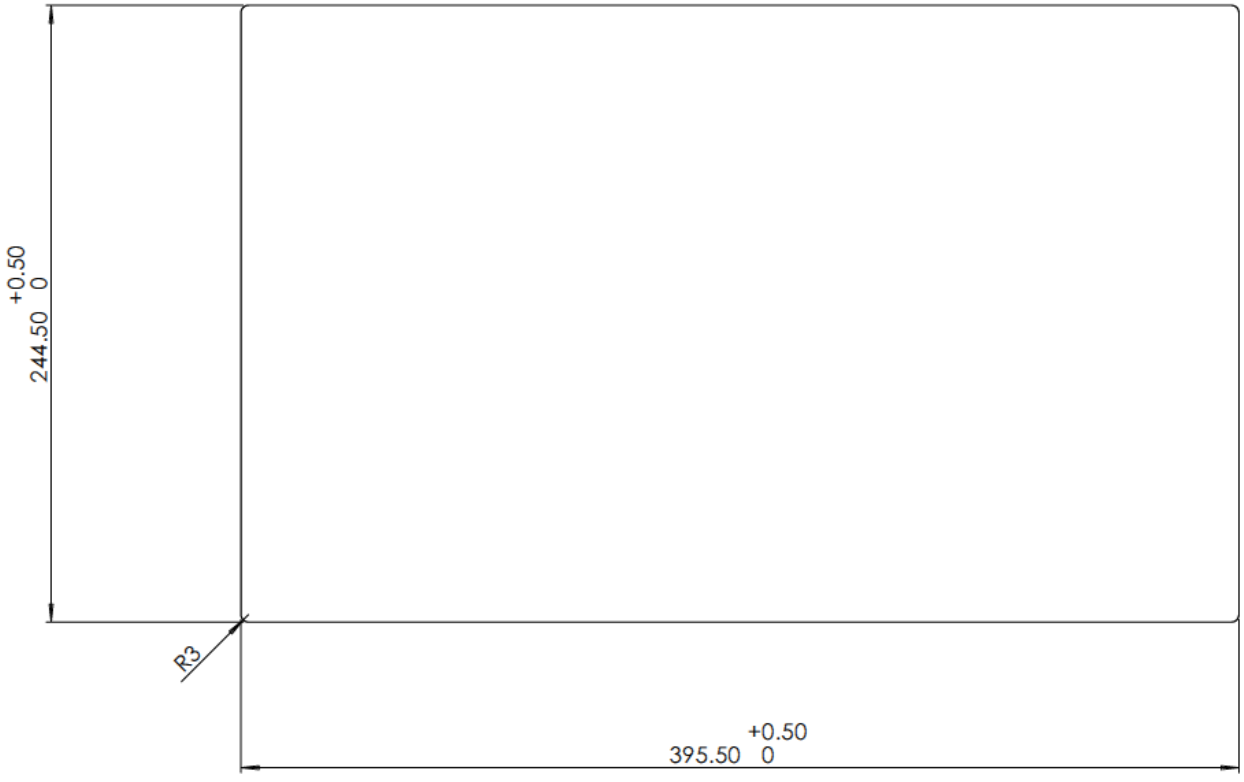


Figure 7: Front view

Figure 8: Rear view

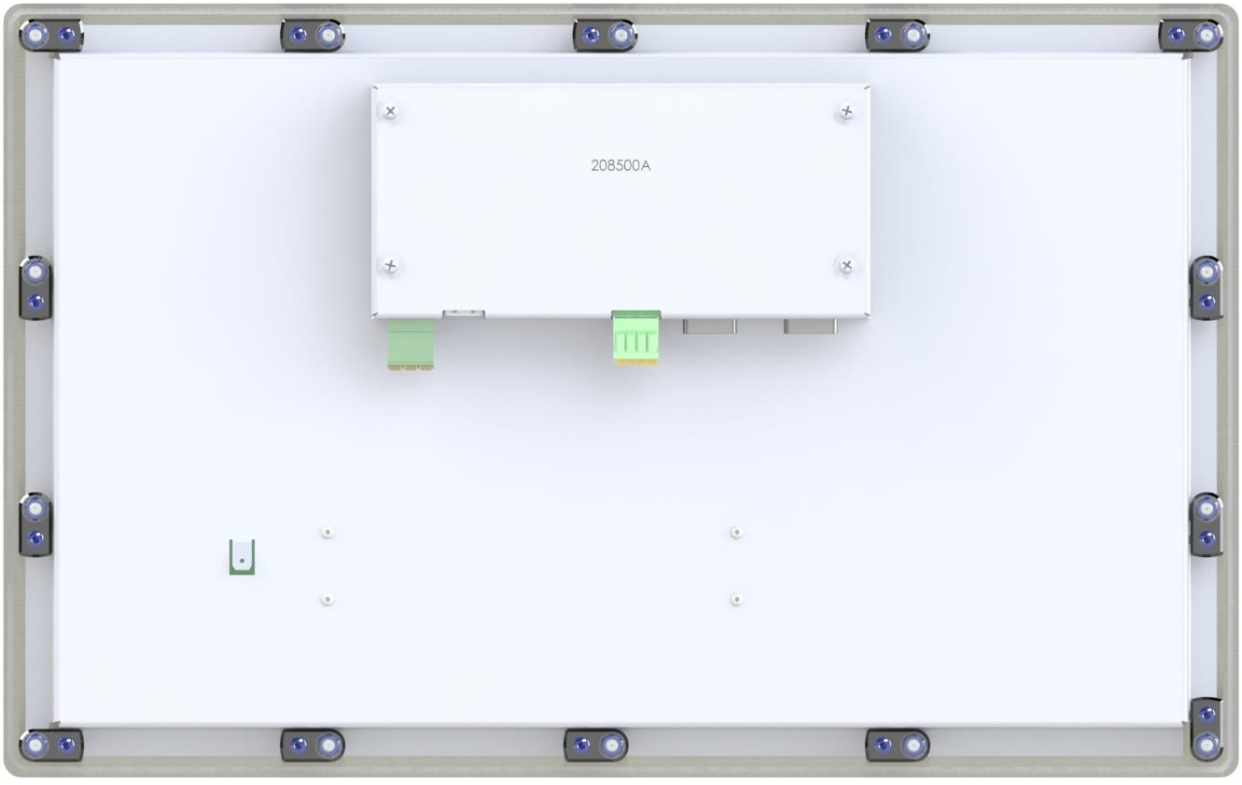
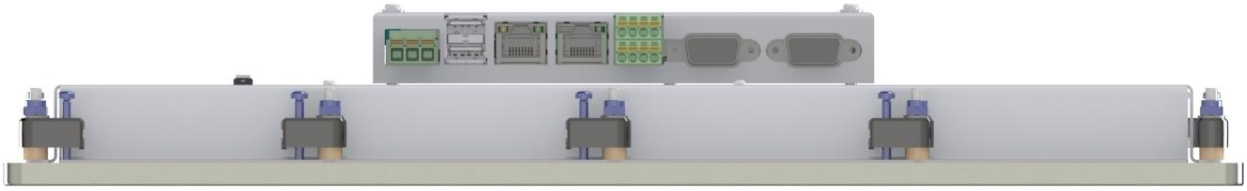


Figure 9: Side view from below



11/ Technical Support

For technical support contact our Support department:

- E-mail: support@kontron.com
- Phone: +49-821-4086-888

Make sure you have the following information available when you call:

- Product ID Number (PN),
- Production batch or Serial Number (SN)

The numbers can be found on the Type Label, located on the product's rear side.

Be ready to explain the nature of your problem to the service technician.

11.1. Warranty

Due to their limited service life, parts that by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law. This applies to the CMOS battery, for example.

If there is a protection label on your product, then the warranty is lost if the product is opened.

11.2. Returning Defective Merchandise

All equipment returned to Kontron must have a Return of Material Authorization (RMA) number assigned exclusively by Kontron. Kontron cannot be held responsible for any loss or damage caused to the equipment received without an RMA number. The buyer accepts responsibility for all freight charges for the return of goods to Kontron's designated facility. Kontron will pay the return freight charges back to the buyer's location in the event that the equipment is repaired or replaced within the stipulated warranty period. Follow these steps before returning any product to Kontron.

1. Visit the RMA Information website:

   http://www.kontron.com/support-and-services/support/rma-information

   Download the RMA Request sheet for **Kontron Europe GmbH** and fill out the form. Take care to include a short detailed description of the observed problem or failure and to include the product identification Information (Name of product, Product number and Production batch or Serial number). If a delivery includes more than one product, fill out the above information in the RMA Request form for each product.

2. Send the completed RMA-Request form to the fax or email address given below at Kontron Europe GmbH. Kontron will provide an RMA-Number.

   Kontron Europe GmbH
   RMA Support
   Phone: +49 (0) 821 4086-0
   Fax: +49 (0) 821 4086 111
   Email: service@kontron.com

3. The goods for repair must be packed properly for shipping, considering shock and ESD protection.

Goods returned to Kontron Europe GmbH in non-proper packaging will be considered as customer caused faults and cannot be accepted as warranty repairs.

4. Include the RMA-Number with the shipping paperwork and send the product to the delivery address provided in the RMA form or received from Kontron RMA Support.

Appendix A: List of Acronyms

Table 12: List of used Acronyms

CP	**C**ontrol **P**anel
EMC	**E**lectro**m**agnetic **c**ompatibility; interference immunity to electrical or electromagnetic influences
ESD	**E**lectro**s**tatic **D**ischarge; electrostatic discharge, high electrical voltage pulse
HMI	**H**uman **M**achine **I**nterface; Interface between machine and user
I/O	**I**nput/**O**utput
RTC	**R**eal **T**ime **C**lock
Soft-PLC	**P**rogrammable **l**ogic **c**ontroller in **Soft**ware
SELV	**S**afety **E**xtra **L**ow **V**oltage
LPS	**L**imited **P**ower **S**ource

About Kontron

Kontron is a global leader in Embedded Computing Technology (ECT). As a part of technology group S&T, Kontron offers a combined portfolio of secure hardware, middleware and services for Internet of Things (IoT) and Industry 4.0 applications. With its standard products and tailor-made solutions based on highly reliable state-of-the-art embedded technologies, Kontron provides secure and innovative applications for a variety of industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best fully integrated applications overall. For more information, please visit: **www.kontron.com**

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