kontron

» User's Guide «

OmniClient

User's Guide (Version 1.0)
1059-6079

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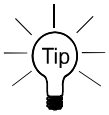
2. Introduction

Kontron would like to point out that the information contained in this manual may be subject to technical alteration, particularly as a result of the constant upgrading of Kontron products. The attached documentation does not entail any guarantee on the part of Kontron with respect to technical processes described in the manual or any product characteristics set out in the manual. Kontron does not accept any liability for any printing errors or other inaccuracies in the manual unless it can be proven that Kontron is aware of such errors or inaccuracies or that Kontron is unaware of these as a result of gross negligence and Kontron has failed to eliminate these errors or inaccuracies for this reason. Kontron expressly informs the user that this manual only contains a general description of technical processes and instructions which may not be applicable in every individual case. In cases of doubt, please contact Kontron.

Kontron Europe GmbH
Lise-Meitner-Str. 3-586156 Augsburg

Germany

2.1. Symbols used in this Manual

Symbol	Meaning
	This symbol indicates the danger of injury to the user or the risk of damage to the product if the corresponding warning notices are not observed.
	This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.
	This symbol indicates general information about the product and the user manual.
	This symbol indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

3. Important Instructions

Before performing any installation or working with the device, this manual must be read carefully to become familiar with the device. The general safety instructions and information in this manual must be observed.

The manufacturer's instructions provide useful information on your OmniClient system.

3.1. Warranty Note

Due to their limited service life, parts which 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, for example, to the battery and to the display backlight.

3.2. Exclusion of Accident Liability Obligation

Kontron shall be exempted from the statutory accident liability obligation if the user fails to observe the included document: "General Safety Instructions for IT Equipment" the hints in this manual or eventually the warning signs label on the device.

3.3. Liability Limitation / Exemption from the Warranty Obligation

In the event of damage to the device caused by failure to observe the "General Safety Instructions for IT Equipment" in this manual or eventually the warning signs label on the device, Kontron shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.

4. General Safety Instructions for IT Equipment

Please read this chapter carefully and take careful note of the instructions, which have been compiled for your safety and to ensure to apply in accordance with intended regulations. If the following general safety instructions are not observed, it could lead to injuries to the operator and/or damage of the product; in cases of nonobservance of the instructions Kontron is exempt from accident liability, this also applies during the warranty period.

The product has been built and tested according to the basic safety requirements for low voltage (LVD) applications and has left the manufacturer in safety-related, flawless condition. To maintain this condition and to also ensure safe operation, the operator must not only observe the correct operating conditions for the product but also the following general safety instructions:

- ❑ The product must be used as specified in the product documentation, in which the instructions for safety for the product and for the operator are described. These contain guidelines for setting up, installation and assembly, maintenance, transport or storage.
- ❑ The on-site electrical installation must meet the requirements of the country's specific local regulations.
- ❑ If a power cable comes with the product, only this cable should be used. Do not use an extension cable to connect the product.
- ❑ To guarantee that sufficient air circulation is available to cool the product, please ensure that the ventilation openings are not covered or blocked. If an air filter is provided, this should be cleaned regularly. Do not place the system close to heat sources or damp places. Make sure the system is well ventilated.
- ❑ Only devices or parts which fulfill the requirements of SELV circuits (Safety Extra Low Voltage) as stipulated by IEC 60950-1 may be connected to the available interfaces.
- ❑ Before opening the device, make sure that the device is disconnected from the mains.
- ❑ Switching off the device by its power button does not disconnect it from the mains. Complete disconnection is only possible if the power cable is removed from the wall plug or from the device. Ensure that there is free and easy access to enable disconnection.
- ❑ The device may only be opened for the insertion or removal of add-on cards (depending on the configuration of the system). This may only be carried out by qualified operators.
- ❑ If extensions are being carried out, the following must be observed:
  - all effective legal regulations and all technical data are adhered to
  - the power consumption of any add-on card does not exceed the specified limitations
  - the current consumption of the system does not exceed the value stated on the product label.
- ❑ Only original accessories that have been approved by Kontron can be used.
- ❑ Please note: safe operation is no longer possible when any of the following applies:
  - the device has visible damages or
  - the device is no longer functioning

  In this case the device must be switched off and it must be ensured that the device can no longer be operated.

Additional safety instructions for DC power supply circuits

- ❑ To guarantee safe operation of devices with DC power supply voltages larger than 60 volts DC or a power consumption larger than 240 VA, please observe that:
  - the device is set up, installed and operated in a room or enclosure marked with "RESTRICTED ACCESS", if there are no safety messages on product as safety signs and labels on the device itself.
  - no cables or parts without insulation in electrical circuits with dangerous voltage or power should be touched directly or indirectly
  - a reliable protective earthing connection is provided
  - a suitable, easily accessible disconnecting device is used in the application (e.g. overcurrent protective device), if the device itself is not disconnectable
  - a disconnect device, if provided in or as part of the equipment, shall disconnect both poles simultaneously
  - interconnecting power circuits of different devices cause no electrical hazards
- ❑ A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN60950-1 or VDE0100 or EN60204 or UL508 regulations.
- ❑ The devices do not generally fulfill the requirements for "centralized DC power systems" (UL 60950-1, Annex NAB; D2) and therefore may not be connected to such devices!

4.1. Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

1. Transport boards in ESD-safe containers such as boxes or bags.
2. Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.
3. Always be properly grounded when touching a sensitive board, component, or assembly.
4. Store electrostatic-sensitive boards in protective packaging or on antistatic mats.

4.1.1. Grounding Methods

By adhering to the guidelines below, electrostatic damage to the device can be avoided:

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace. Always use properly grounded tools and equipment.
2. Use antistatic mats, heel straps, or air ionizers for more protection.
3. Always handle electrostatically sensitive components by their edge or by their casing.
4. Avoid contact with pins, leads, or circuitry.
5. Turn off power and input signals before inserting and removing connectors or connecting test equipment.
6. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
7. Use only field service tools which are conductive, such as cutters, screwdrivers, and vacuum cleaners.
8. Always place drives and boards PCB-assembly-side down on the foam.

4.2. Instructions for the Lithium Battery

The implemented motherboard is equipped with a Lithium battery. For the replacing of this battery please observe the instructions described in section 11.2 "Replacing the Lithium Battery".

Caution

Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.

Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).

5. Electromagnetic Compatibility (Class A Device)

For detailed information refer to section 12.5 "CE Directives and Standards".

5.1. Electromagnetic Compatibility (EU)

This product is intended only for use in industrial areas. The most recent version of the EMC guidelines (EMC Directive 2004/108/EC) and/or the German EMC laws apply. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards) the prerequisites for the CE conformity declaration (safety requirements) may no longer apply.

Warning!
This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

5.2. FCC Statement (USA)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

5.3. EMC Compliance (Canada)

The method of compliance is self-declaration to Canadian standard ICES-003:

(English): This Class A digital apparatus complies with the Canadian ICES-003.

(French): Cet appareil numérique de la class A est conforme à la norme NMB-003 du Canada.

6. Scope of Delivery

Please check that your package is complete, and contains the items below (according to the ordered unit configuration). If you discover damaged or missing items, please contact your dealer.

	OmniClient system in the configuration ordered: • HMI-OC156 (with 15.6" display) • HMI-OC185 (with 18.5" display) • HMI-OC215 (with 21.5" display)
	6x mounting clamps with screws
 AC (US)  AC (EU)	AC power cable depending on the configuration ordered
	General safety instruction for IT equipment

Table 1: OmniClient - Scope of delivery

6.1. System Configuration

Depending on the configuration ordered, your OmniClient system may include one or more of the following components. Depending on the ordered optional accessories, they may have already been installed in the system for you.

Power Supply Unit (PSU)	**AC**	90-260 VAC	Chose an AC or DC PSU for your system configuration. Must be ordered pre-installed with your OmniClient system.
	DC	+24VDC (+/- 20%)	
CPU Options		Intel® Core™ i5 or Intel® Core™ i7 2nd generation Must be ordered and pre-installed with your OmniClient system.	
Memory		Up to two 204-pin SODIMM dual-channel DDR3-1333/1600 max up to 16 GB Must be ordered and pre-installed with your OmniClient system.	
		Up to two, 2.5" SATA HDD or SSD drives (internal) Must be ordered and pre-installed with your OmniClient system.	
		1x mSATA SSD; Must be ordered and pre-installed.	

Table 2: OmniClient –System configuration

6.1.1. Optional System Configuration

	RS232 interface Must be ordered and pre-installed into the DB9 punch-outs.
	RS422/S485 module (configuration as RS422 or RS485 via internal DIP switch) Must be ordered and pre-installed into the DB9 punch-outs.
Camera	Must be ordered and pre-installed. For specification refer to 12.6.
WiFi	Must be ordered and pre-installed. For specification refer to 12.7
RFID	Must be ordered and pre-installed.
	Mounting adapter VESA 100 compliant Must be ordered and pre-installed.

Table 3: OmniClient –System configuration options

6.2. Type Label and Product Identification

The type label with the corresponding Kontron product part and serial number is located on the rear side of the touch display unit.

The figures Fig. 1 and Fig. 2 depict the type of label for an AC respectively a DC supply OmniClient. There are three primary model numbers of the OmniClient based on the screen size. The "-xxxx" suffix in the model number identifies the ordered system configuration.

System Type	Model No.	Product Identification
OmniClient 156	HMI-OC156-xxxx	OmniClient with 15.6" display
OmniClient 185	HMI-OC185-xxxx	OmniClient with 18.5" display
OmniClient 215	HMI-OC215-xxxx	OmniClient with 21.5" display

Table 4: Primary model numbers of the OmniClient systems

Fig. 1: OmniClient type label (shown as type label for a HMI-OC215 system, AC configuration)

Fig. 2: OmniClient type label (shown as type label for a HMI-OC215 system, DC configuration)

7. Product Description

Before working with your OmniClient, you should take a few minutes to learn about the variants, various ports, drives, connectors and controls that are part of your OmniClient system.

The OmniClient is a Human-Machine-Interface (HMI) system designed for demanding industrial applications. It integrates a workstation system with an integrated touch screen display. The OmniClient can be configured to meet the requirements of many demanding applications. The rugged design offers excellent mechanical stability suitable for operation in harsh industrial environments.

Two non-detachable components comprise an OmniClient:

- ❑ The computer base designed around the KTQM67/mITX motherboard. It is common for all three system variants.
- ❑ The touch display unit offering 15.6", 18.5" and 21.5" display sizes.

The OmniClient is designed as an active cooled system. The cooling of the unit is performed by a CPU fan, a PSU fan and two system fans.

The air openings, located on the sides of the device, provide air circulation for the system interior cooling, in order to prevent overheating.

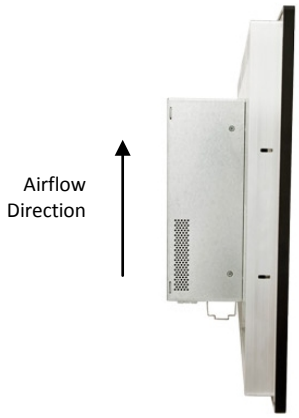


Fig. 3: Airflow direction

☞ When powering the OmniClient system, make sure that the air intake and exhaust openings are not obstructed.

All computer base fans are controlled by on-board thermal sensors. It is normal for the fans to speed up and slow down depending on ambient thermal conditions and on processor/power loading.

In order to prevent the systems overheating and to ensure the access to the I/Os for cable connections, leave at least 5 cm (approx. 2") of free space on the top and bottom side of the computer base .

The OmniClient can be pre-installed with an AC (100-240 V) wide range power supply or a 24 V DC (18-36 VDC) power supply.

All versions are suitable for installation in an instrument panel or other cabinet.

The system is designed to be mounted in the user's application by either of the following methods:

- ❑ Installation in an instrument panel or other cabinets (preferred mounting method) using the corresponding supplied mounting clamps.
- ❑ Installation by a heavy duty VESA 100 compliant mounting system.

☞ Installation using the VESA 100 mounting adapter must be properly designed to support the heavy load of the OmniClient system.

The mounting and operation of the OmniClient is allowed only in the vertical position with the interfaces downwards.

The OmniClient is designed to comply with IP65 protection class at the front side (when installed to a wall only).

The following sections detail each of these components and their function in the OmniClient.

7.1. Product Images of OmniClient 21.5" AC PSU (other units similar)

Fig. 4: Bottom view

Fig. 5: Right view

Fig. 6: Front view

Fig. 7: Left view

Fig. 8: Top view

Fig. 9: Rear view

7.2. Product Images of OmniClient 15.6" DC PSU (other units similar)

Fig. 10: Bottom view

Fig. 11: Right view

Fig. 12: Front view

Fig. 13: Left view

Fig. 14: Top view

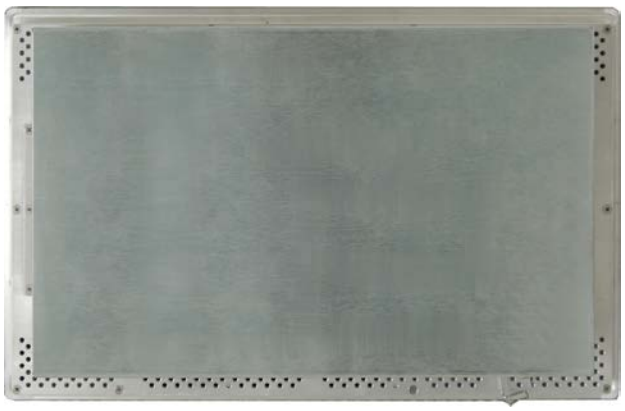


Fig. 15: Rear view

7.3. Front View

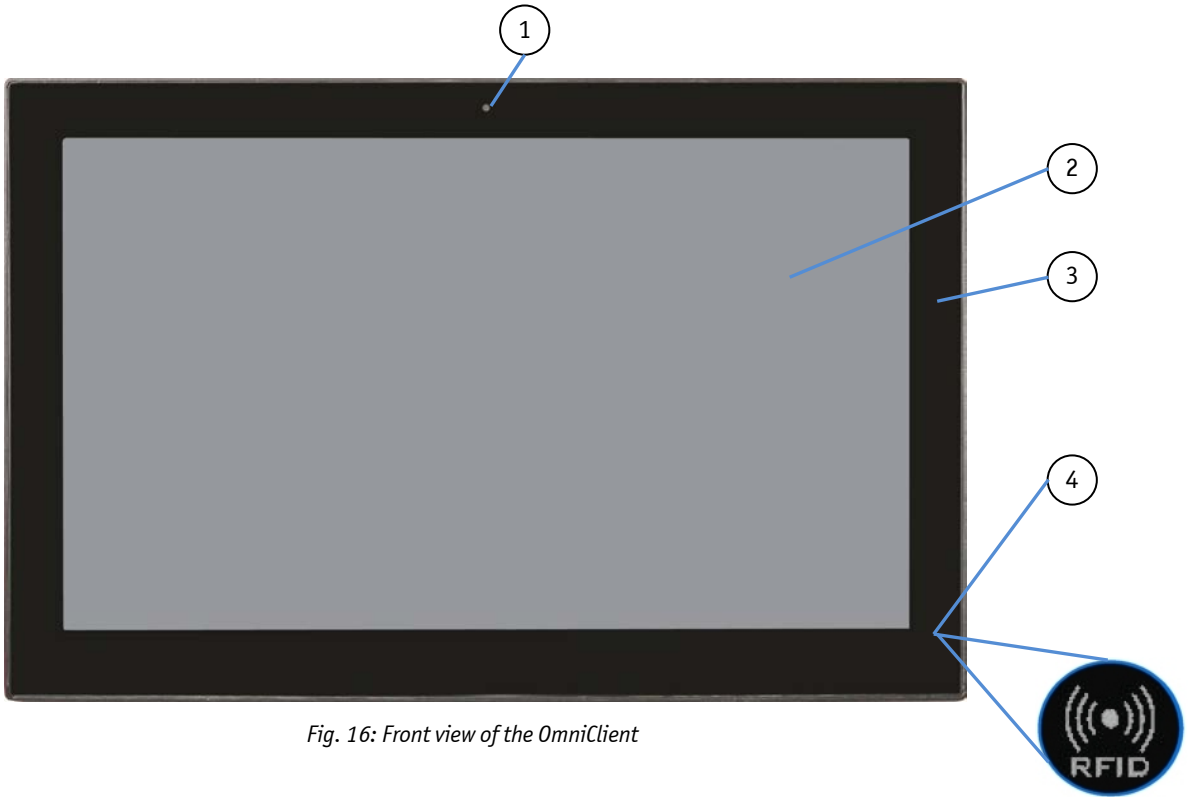


Fig. 16: Front view of the OmniClient

1 Camera (optional)

2 TFT display with touch screen

3 Front bezel (border)

4 RFID reader location (optional)
Detail: enlarged RFID logo

7.3.1. Front Bezel

The front side of the OmniClient system consists of an appropriate aluminum front bezel, the display with the integrated projected capacitive touch screen and the anti-glare glass plate.

For the outline refer to 12.3 "Mechanical Specifications".

7.3.2. Display with Touch Screen

Depending on the OmniClient system ordered, the built-in display is a 15.6"/18.5"/21.5" size TFT display with corresponding **P**rojected **C**apacitive (PCAP) touch screen. The touch screen is USB connected. The surface of each display size is also mechanically protected through an appropriate anti-glare glass plate.

The touch screen registers contacts of fingers and allows the user to operate the system without a keyboard or a pointing device. The implemented touch technology allows 6-touch operations with fingers or thin gloves. For information about the required touch screen driver refer to section 10.2 "Operating System and Hardware Component Drivers".

For technical specification of the built-in display and touch screen refer to chapter 12 "Technical Data".

Do not use a hard or a pointed object (like screw driver) to operate the touch screen, since it can damage the touch screen surface and can disturb the touch screen functionality. If any stylus is used make sure it is proper for PCAP sensitive surface.
The touch screen is covered with an anti-glare glass panel and care should be taken when cleaning it (see the section 11.1 "Touch Screen Care and Cleaning").

7.3.2.1. Projected Capacitive Touch Screen

Advantages of the PCAP:

- offers superior optical clarity,
- provides much higher positional accuracy and
- may detect multiple touches simultaneously.

The capacitive touch screen is factory-calibrated.

7.3.3. Camera (Option)

Your OmniClient can optionally be equipped with a camera [5 MP (for photos) and 2 MP (for video)]. For the camera specifications refer to the section 12.6 "Camera Specifications".

7.3.4. RFID Card Reader (Option)

Your OmniClient can optionally be equipped with a contactless RFID card reader. It is designed for reading chip data from electronic cards and documents (contactless reading of RFID data).

Depending on your application installed the RFID card reader allows reading of chip cards for authentication functions or for services that requires user-specific authorizations (for access rights control).

7.3.5. Integrated WiFi Module (Option)

If ordered there is manufacturer pre-installed an 802.11n Wi-Fi USB module, which is backward compatible with 802.11a/b/g standard. With advanced 2T2R MIMO technology the WiFi module delivers ultimate wireless data rate for up to 300 Mbps.
The WiFi antennas are integrated behind the PCAP touch glass. No external antennas will be seen.

7.4. Bottom Side

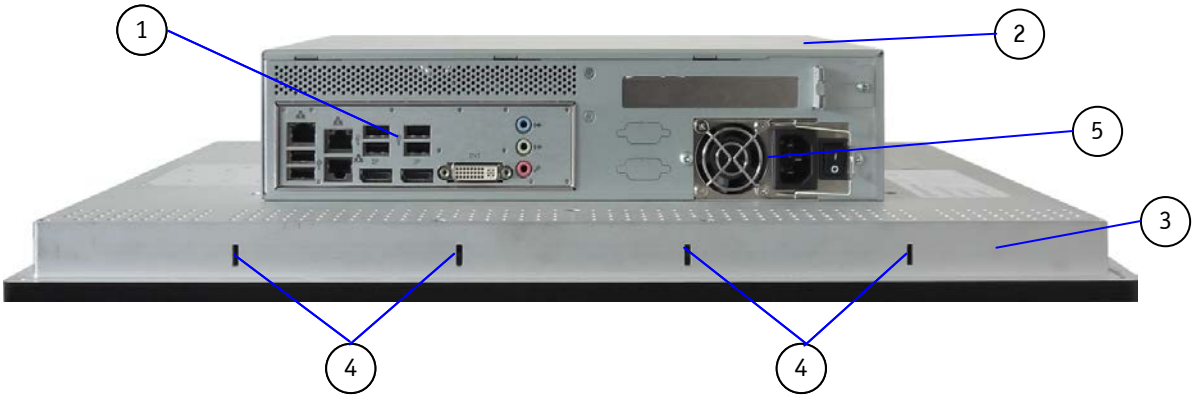


Fig. 17: Bottom side of the OmniClient (interface side with AC PSU); shown as a system with a 21.5" display

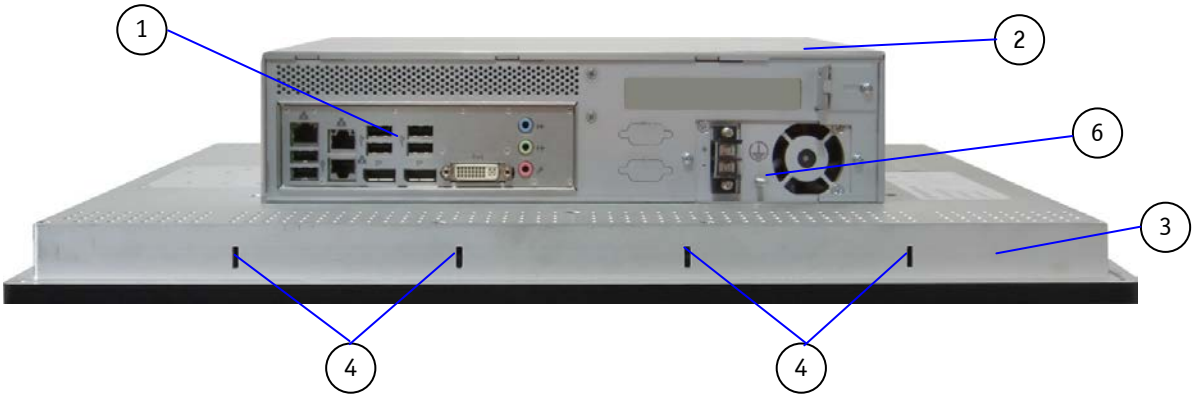


Fig. 18: Bottom side of the OmniClient (interface side with DC PSU); shown as a system with a 21.5" display

1 Interface side
2 Computer base
3 Touch display unit
4 Two pairs of mounting slots (without installed mounting clamps and screws)
5 Installed AC PSU
6 Installed DC PSU

7.4.1. Interfaces of the Computer Base

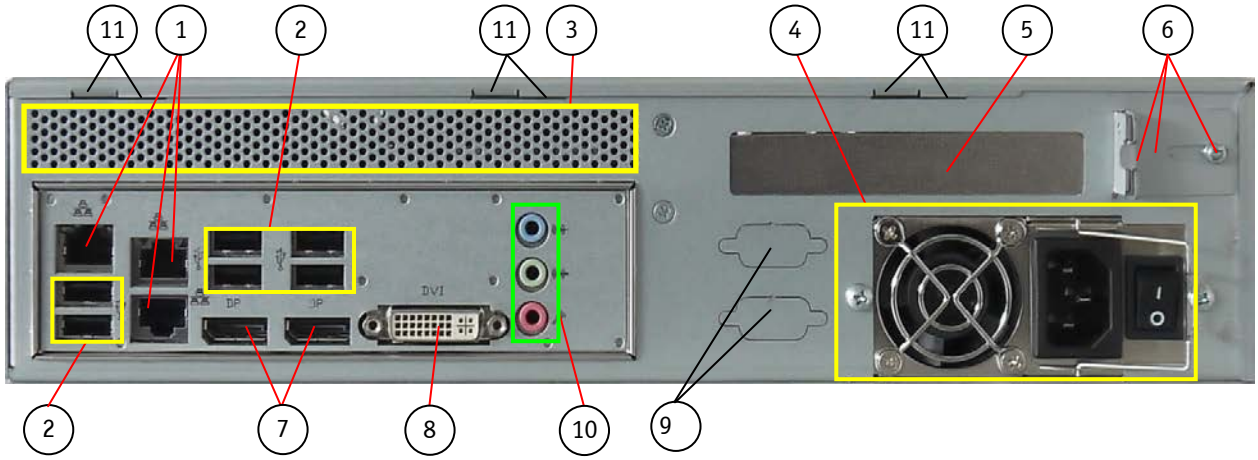


Fig. 19: Detail with the bottom side of the computer base (shown with an AC PSU)

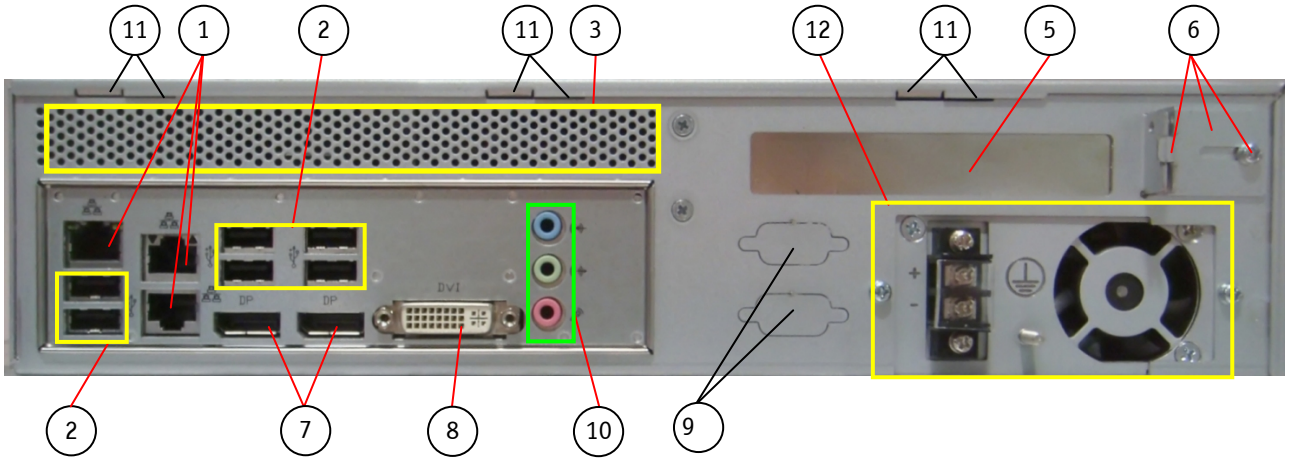


Fig. 20: Detail with the bottom side of the computer base (shown with a DC PSU)

1 3x Ethernet connectors – RJ45 (10/100/1000 Mbps)
2 6x USB (2.0) port connectors
3 Air intake (computer base)
4 AC Power Supply Unit (PSU)
5 Free expansion slot for PCIe x16 cards (max. power 25W)
6 Slide bracket with screw for securing a PCIe expansion card
7 2x Display Port (DP)
8 DVI-I connector
9 DB9 punch outs for optional RS232/422/485 interfaces
10 Audio ports (Line-Out/Line-In/Mic-In)
11 Fixing latches (cover) and retaining slots (chassis) for securing the cover
12 DC Power Supply Unit (PSU)

Detailed information and technical data of the interfaces can be found in the manual of the installed motherboard. You can download the relevant motherboard manual for your system configuration from our web site at www.kontron.com.

7.4.1.1. USB 2.0 Connectors

The system is equipped at the bottom side with 6x USB 2.0 interface connectors (Fig. 19 and Fig. 20, pos. 2). These interfaces provide connections for USB-compatible devices. For pin assignments refer to section 13.6.

7.4.1.2. DVI-I Video Connector

The DVI-I interface (Fig. 19 and Fig. 20, pos. 8) supports both digital and analog connections. A digital device can be connected directly to this interface of the OmniClient. An analog device should be connected to this interface via a DVI to VGA adapter (not included). For pin assignments refer to section 13.3.

7.4.1.3. DisplayPort Video Connectors

Two DisplayPort (DP) connectors (Fig. 19 and Fig. 20, pos. 7) comply with DisplayPort 1.1a specification. For pin assignments refer to section 13.4.

7.4.1.4. Ethernet Interfaces

The OmniClient provides 3x RJ45 sockets (Fig. 19 and Fig. 20, pos. 1) supporting 10/100/1000 Mbps data transfer rates.

In order to achieve the specified performance of the Ethernet port, Category 5 twisted pair cables must be used with 10/100 Mb and Category 5E, 6 or 6E with 1 Gb LAN networks. For pin assignments refer to section 13.5.

7.4.1.5. Audio Connector

Audio Speakers, Line-in and Microphone are available in the stacked audio jack connector (Fig. 19 and Fig. 20 pos. 13). For pin assignments refer to section 13.7.

7.4.1.6. DB9 Punch-Outs (for optional Serial Ports)

Two DB9 punch-outs (Fig. 19 and Fig. 20, pos. 9) are available on the bottom side and can optionally be fitted with an RS232 port or an adapter for RS422/RS485 serial interface.
To configure these serial connections, your order must contain the desired interface configuration as RS232, RS422 or RS485. These serial interfaces can be only factory-installed. For pin assignments refer to the sections 13.8, 13.9 and 13.10.

7.4.2. Free Expansion Slot

The installed motherboard is equipped with one PCIe x16 slot, 2.0 compliant. You can expand your system with PCIe x16 extension card that are full-height/half-length size. Use the retaining bracket with screw (Fig. 19 and Fig. 20, pos. 6) to secure a PCIe x16 expansion card into the available riser card. To install or remove an expansion card refer to the section 8.2 "Installing/Removing the PCIe Expansion Card".

The power consumption of the installed PCIe card (supported PCIe x1 and PCIe x4) must not exceed 25W maximum.

Please observe that if a PCIe expansion graphic card is installed the graphics to be displayed is not supported by the build-in screen. An additional monitor is needed.

7.4.3. Air Openings on the bottom Side

☞ When powering on the OmniClient, make sure that the air intake and exhaust openings (Fig. 19 and Fig. 20, pos. 3) are not obstructed.

7.4.4. Power Supply Versions

On request, your Omni Client can be equipped either with a wide rage AC PSU (Fig. 21) or a DC PSU (Fig. 22).
The power supply unit (Fig. 19, pos. 4 or Fig. 20, pos. 12) is located on the bottom side of the OmniClient, as component of the computer base.

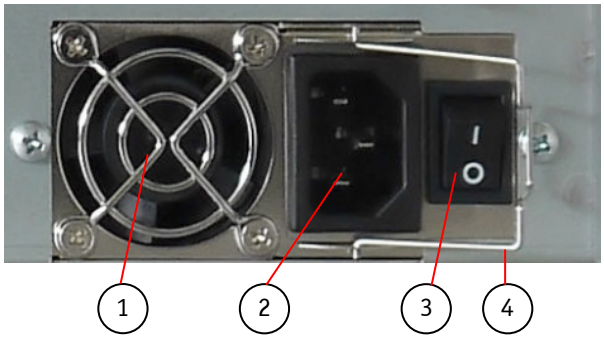


Fig. 21: Detail of the AC wide range PSU

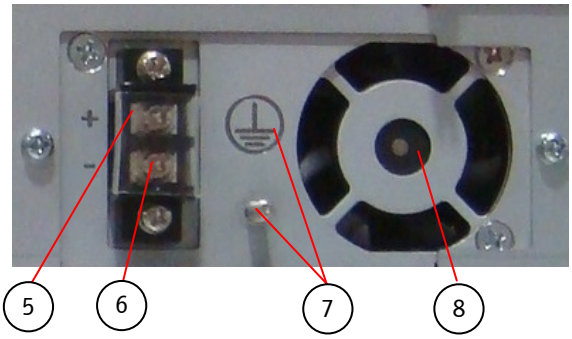


Fig. 22: Detail of the DC PSU

Legend for Fig. 21 **and** Fig. 22:

1 Fan of the AC PSU
2 AC power connector (IEC 60320 C14)
3 Power ON/OFF switch (AC PSU only)
4 AC power cable securing clip
5 +24 VDC (18 – 36 VDC) with protective cover
6 DC Negative (–) (RTN) with protective cover
7 Threaded ground stud and Protective Earth symbol (DC PSU only)
8 Fan of the DC PSU

☞ When connecting to a mains power source (AC or DC) please refer to the instructions in chapter 10.

7.4.5. Grounding Stud (M4) for DC Systems (DC PSU)

The computer base with DC PSU is equipped with a threaded ground stud (Fig. 22, pos. 7). The system must be grounded as described in the subsection 10.1.2 "DC Power Connection".

7.4.6. Mounting Slots on the bottom Side of the Touch Display Unit

On the bottom side of the touch display unit (Fig. 17, pos. 3) are available two pairs of mounting slots (Fig. 17 and Fig. 18, pos. 4) for the provided mounting clamps (Fig. 36).

Note for mounting clamps
The OmniClient with 15.6", 18.5" and 21.5" display will be mounted into an instrument panel or cabinet by use of the mounting clamps and screws, as shown in Fig. 26, pos. 8.

7.5. Left and Right Side View

On the side of the computer base (Fig. 23 and Fig. 24, pos. 1) are situated air intake openings (Fig. 23, pos. 4) and two screws (Fig. 23, pos. 2) that secure the computer base cover.

☞ When powering on the OmniClient, make sure that the air intake and exhaust openings are not obstructed.

7.5.1. Mounting Slots on the left and right Side of the Touch Display Unit

One pair of mounting slots (Fig. 23 and Fig. 24, pos. 6) is located on the left and right side of the touch display unit.

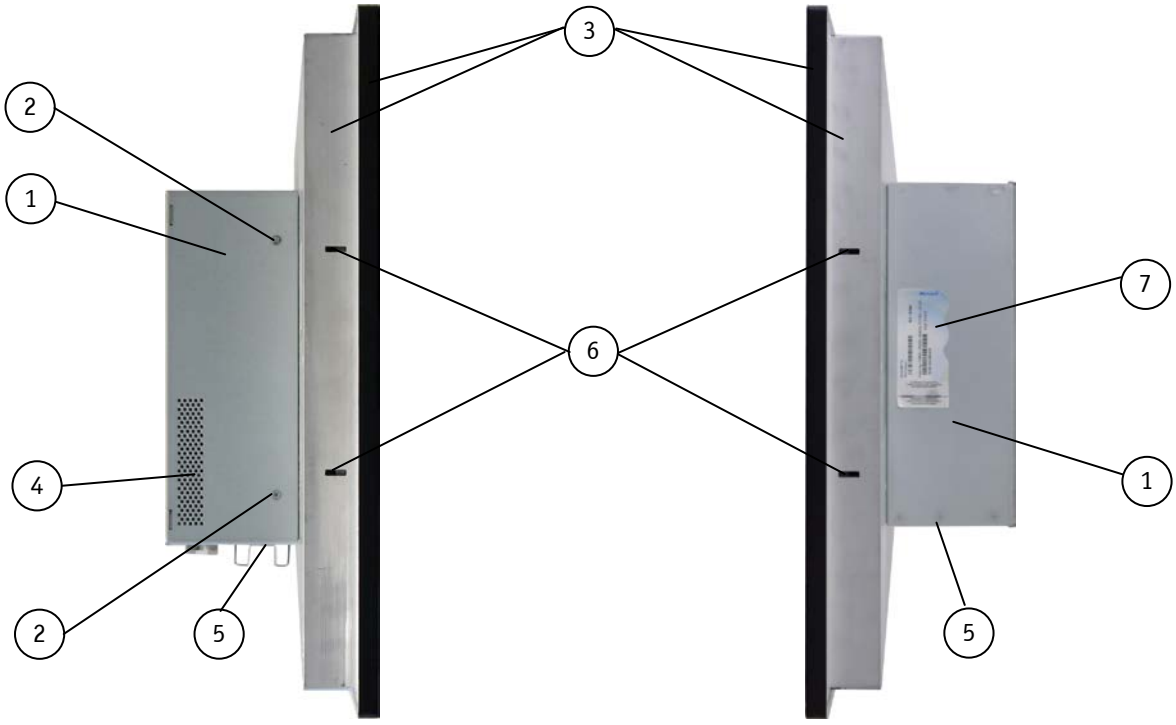


Fig. 23: OmniClient (left side) shown as HMI-OC215

Fig. 24: OmniClient (right side) shown as HMI-OC215

Legend for Fig. 23 **and** Fig. 24:

1 Computer base

2 Computer base access cover secured with two screws

3 Touch display unit

4 Air intake openings

5 Interface side (bottom)

6 One pair mounting slots for installing the mounting clamp and screws

7 Windows (if applicable) license label

7.6. Top Side

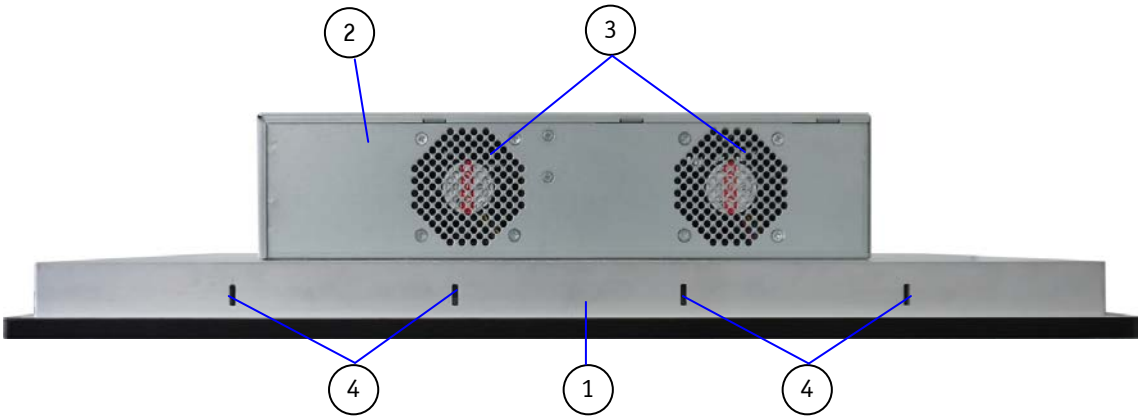


Fig. 25: Top side of OmniClient (shown as HMI-OC215)

1 Touch display unit

2 Computer base

3 System fans location with air exhaust openings

4 Two pairs of mounting slots without installed mounting clamps and screws

☞ When powering on the OmniClient, make sure that the air intake and exhaust openings are not obstructed.

7.7. Rear Side

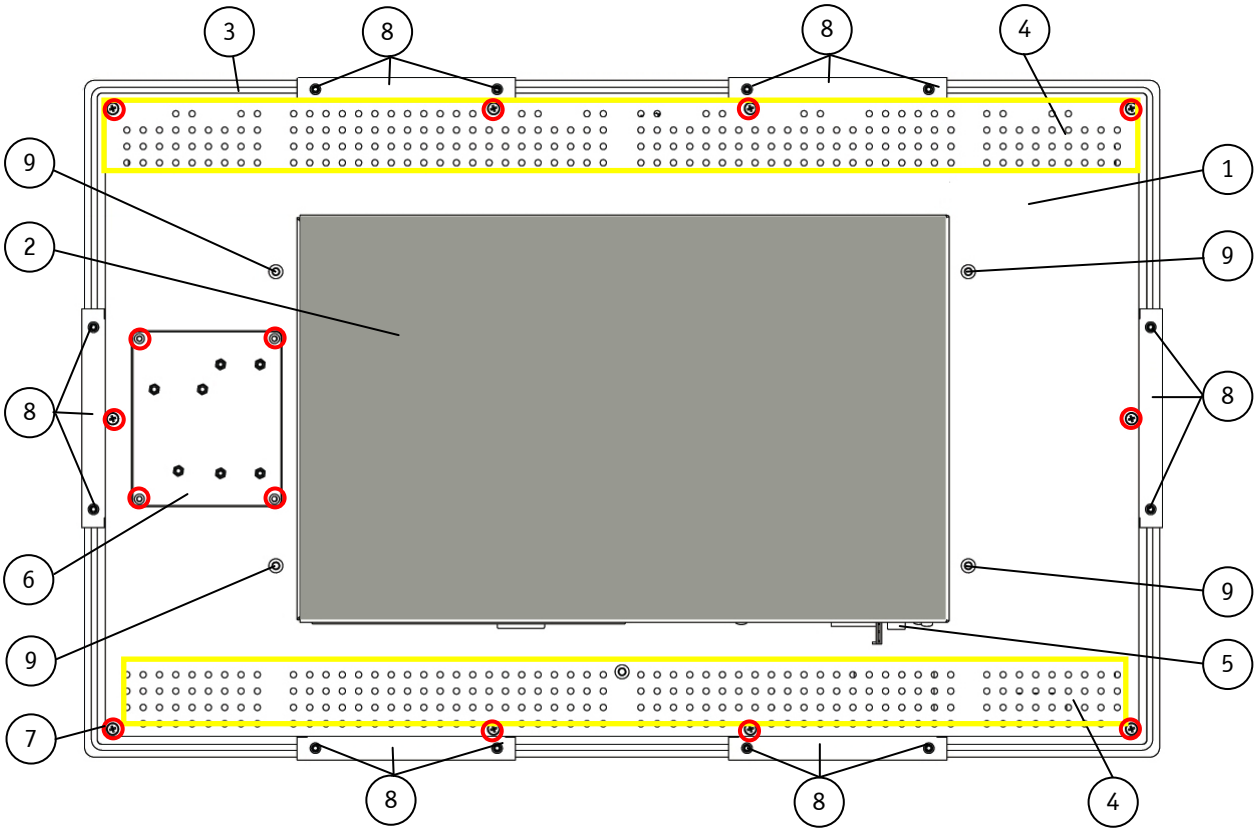


Fig. 26: Rear side of OmniClient (shown as a HMI-OC215)

1 Rear side of the touch display unit
2 Rear side of the computer base
3 Seal location (around the rear side of the touch display unit)
4 Air openings on the rear side of the touch display unit
5 Interface side of the computer base
6 WiFi and RFiD controller access cover (do not remove it)
7 14 x screws (red marked in the picture)
8 6 x mounting clamps with screws
9 4x M4 threaded blind holes for mounting of the optional VESA adapter

Please do not remove the screws marked with red in the picture (Fig. 26, pos. 7).

When powering on the OmniClient make sure that the air intake and exhaust openings are not obstructed.

Note for mounting clamps
The OmniClient with 15.6", 18.5" and 21.5" display will be mounted into an instrument panel or cabinet by use of the mounting clamps and screws, as shown in Fig. 26, pos. 8.

7.7.1. Gasket on the Rear Side

The gasket (Fig. 26, pos. 3 and Fig. 37, pos. 5) at the rear of the OmniClient has to be present and in proper condition.

8. Accessing internal Components

8.1. Cover of the Computer Base

The cover will be fixed to the chassis using the fixing bracket (Fig. 27, pos. 4) cover fixing latches (Fig. 27, pos. 3) and the two screws (Fig. 23, pos. 2 and Fig. 28).

8.1.1. Securing the Cover

To secure the cover to the chassis make sure that:

- ❑ The fixing bracket (Fig. 27, pos. 4) is inserted properly into the corresponding cover retaining bracket of the chassis (refer to Fig. 30 and Fig. 31, pos. 1).
- ❑ The fixing latches (Fig. 27, pos. 3) of the cover are matching properly with the retaining slots of the chassis (Fig. 19 and Fig. 20, pos. 11).

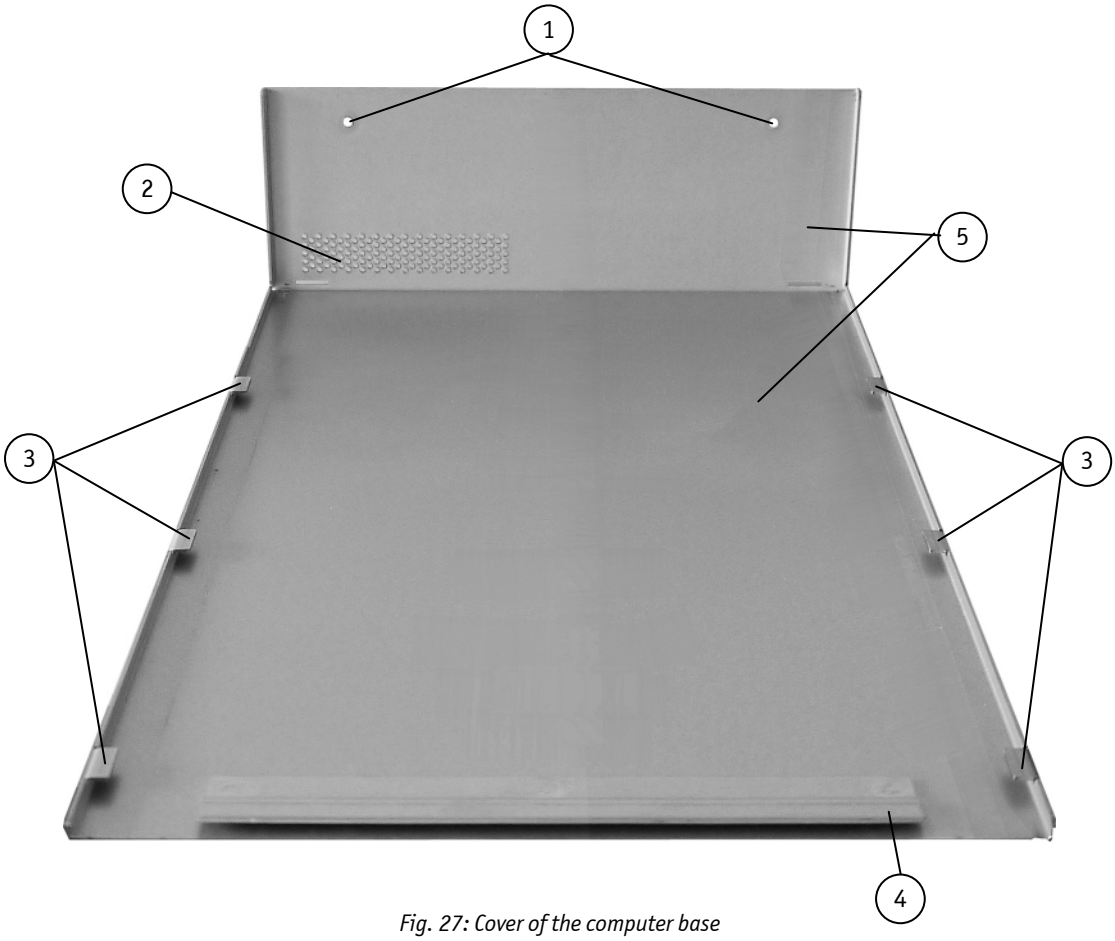


Fig. 27: Cover of the computer base

1 Holes used to secure the cover to the chassis (see also Fig. 23, pos. 2 and Fig. 28)
2 Air intake openings
3 3x fixing latches on the left and right side of the cover
4 Fixing bracket (on the right side)
5 Inside of the cover

8.2. Installing/Removing the PCIe Expansion Card

This section contains important information that you must read before accessing the internal components. You must follow the described procedures properly when installing, removing or handling internal components.
Please consider following instruction when you install (or remove) expansion card or replace the lithium battery.

⚠	The PCIe x16 expansion slot/card and the lithium battery are located on the inside of the computer base of the OmniClient. The computer base may only be opened in accordance with the description in this user's guide for installation and removal of a PCIe expansion card and replacing of the lithium battery. These procedures have to be carried-out only by trained and qualified personnel l. To expand your system with an expansion card, please take care that this card must not exceed a power consumption of 25W. During system operation, the cover must be properly installed and secured with the corresponding screws.
☞	Please consult the documentation provided by the manufacturer of the expansion card for instructions before attempting to install/remove an expansion card into/from the OmniClient.
	Please observe the safety instruction for handling assemblies with static sensitive device. Failure to take heed of this warning instruction can result in damage to the device.

The expansion card for the performance extension of your system can be installed into the free PCIe x16 slot of the riser card. Please consider following instruction when you install (or remove) the expansion card. It is recommended to expand your system with the PCIe card before it is installed on a wall/panel or into an industrial cabinet.

1. Close all applications. Shut down the system properly and disconnect the power from the power source. Disconnect all peripherals.

☞ **Caution!**
Do not disconnect the mains while the system is powered up!
Performing a forced shutdown can lead to loss of data or other undesirable effects!

2. The OmniClient system should lay on a flat, clean surface with the touch display surface downwards. Make sure that the display surface is protected against scratching and damage.
3. Unscrew the two screws that secure cover to the computer base (refer to Fig. 23, pos. 2). Retain it for later use.

Fig. 28: Detail of OmniClient – Removing the screws that secure the cover of the computer base

4. Pull the cover out a little bit to release the cover fixing latches and fixing bracket (Fig. 27, pos.3 and pos. 5) from the retaining bracket and retaining slots of the chassis (see Fig. 29 and Fig. 30).

Fig. 29: Detail of OmniClient - Pull out the cover of the computer base

5. Lift the cover up as shown in Fig. 30 and remove it.

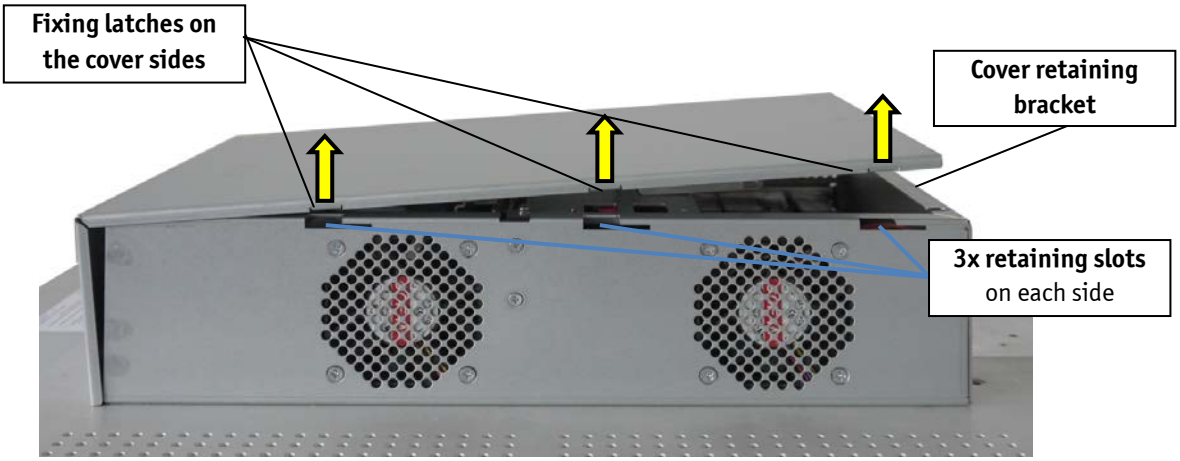


Fig. 30: Detail of OmniClient - Removing the cover of the computer base

The process description is continued on the next page.

6. Now you have access to the PCIe x16 expansion connector of the riser card (see Fig. 31, pos. 4 and Fig. 32).

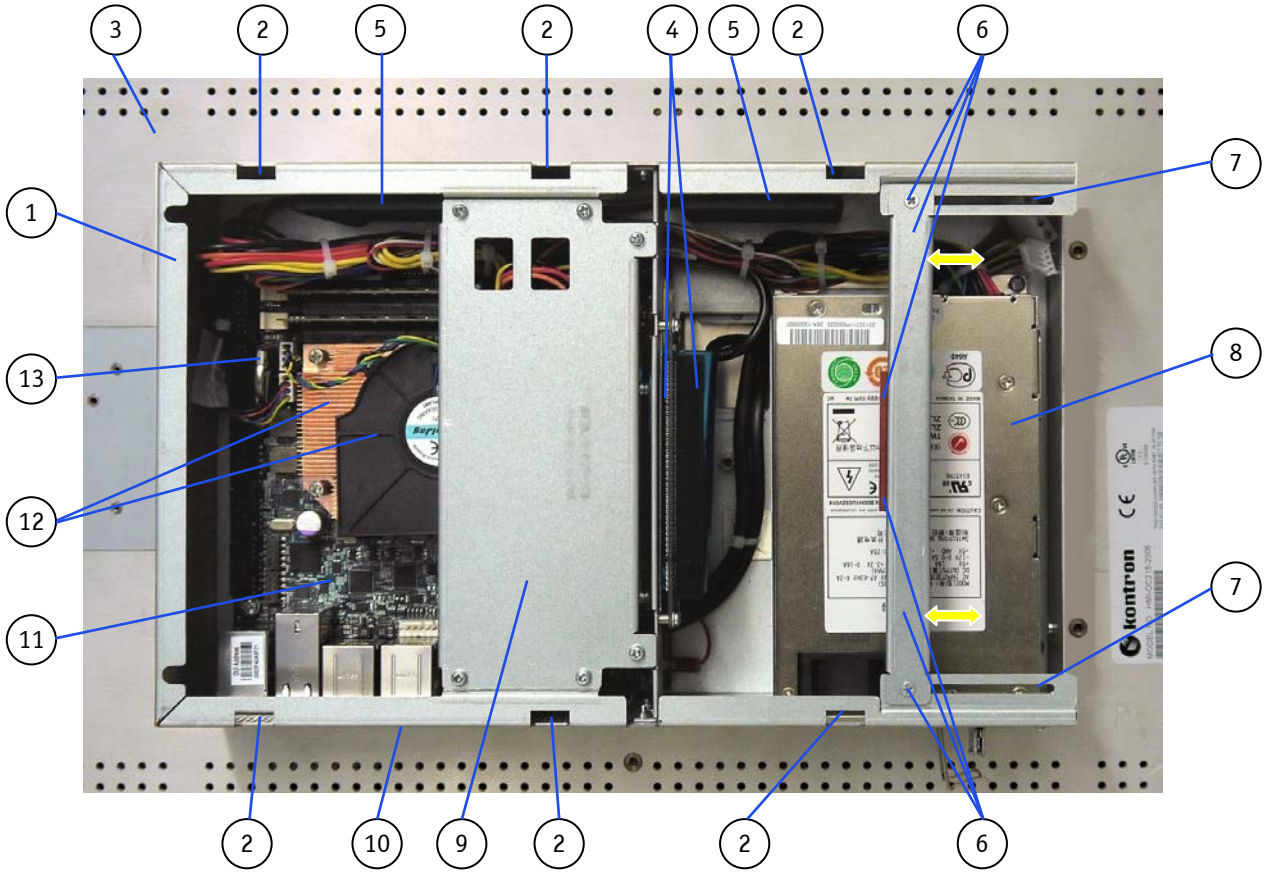


Fig. 31: Detail of OmniClient – Opened computer base, internal configuration

1 Retaining bracket for the cover
2 Slots used to guide the cover latches
3 Part of the touch display unit
4 Riser card with PCIe x16 expansion connector
5 2x system fan (on the top side)
6 Card retainer with securing screws and card soft stopper
7 Slide slots for the card retainer (position depends on the size of the expansion card)
8 Installed DC or AC power supply unit
9 Holder for up to two HDD/SSD
10 Interface side of the computer base
11 Installed motherboard
12 CPU fan and cooler
13 Lithium battery

7. In order to release the PCIe card, if one is installed into the system, loosen the two screws that secure the card retainer (Fig. 31, pos. 6) and slide the retainer backward.

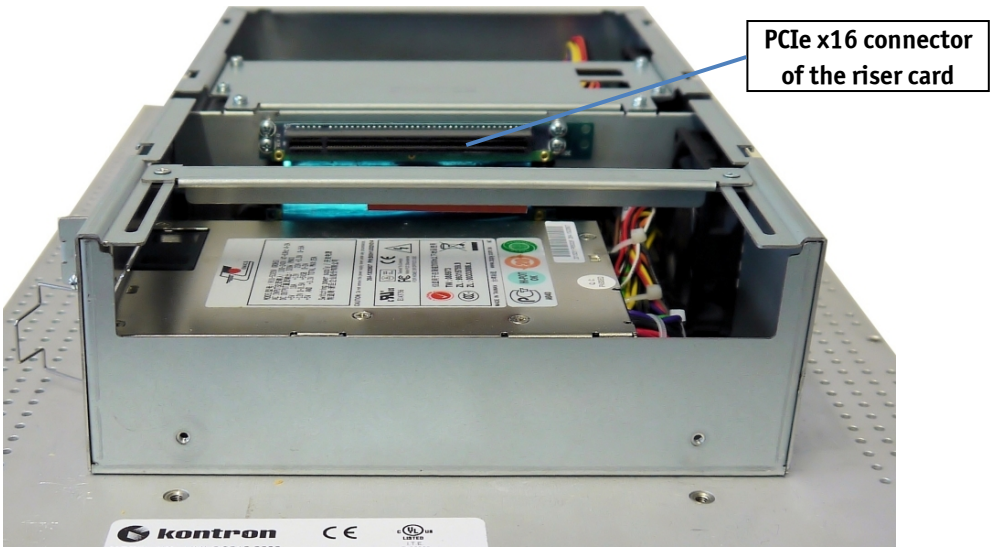


Fig. 32: Detail of OmniClient – Access to the PCIe x16 slot of the riser card (computer base)

8. To remove/install a PCIe expansion card, you have to remove the expansion card slot bracket (see Fig. 19 and Fig. 20, pos. 5). Loosen (1/2 turn to the left) the fastening screw, to unlock the slide bracket (Fig. 19 and Fig. 20, pos. 6). The slide bracket is used to secure the slot bracket or the card slot bracket.

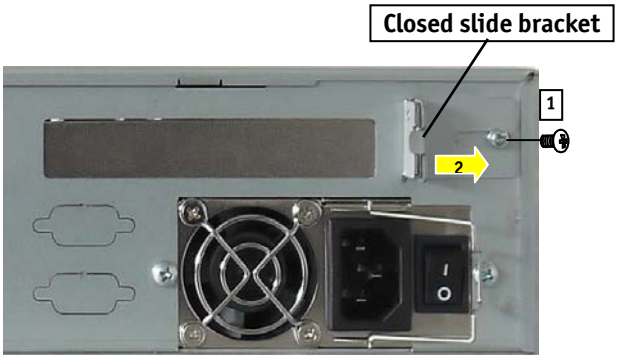


Fig. 33: Detail of computer base – Installing /removing a slot/card bracket (shown with closed slide bracket)

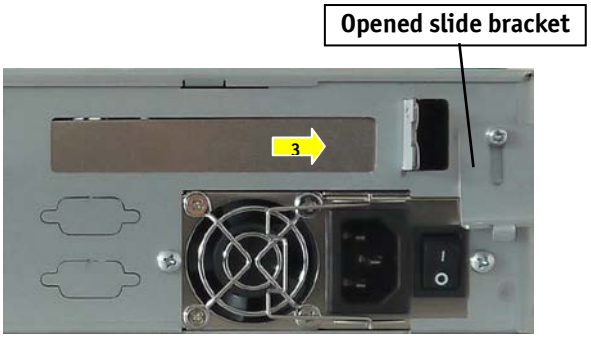


Fig. 34: Detail of computer base – Installing /removing a slot/card bracket (shown with opened slide bracket)

9. Insert/remove the PCIe card into/from the PCIe x16 connector of the riser card (refer to Fig. 32).

10. If you have installed a PCIe card secure it in place with the card retainer (Fig. 31, pos. 6).

11. If you are removed a PCIe expansion card, re-insert a slot bracket.

12. Secure the PCIe card slot bracket/slot bracket to the chassis by reattaching the slide bracket with the fastening screw from step 7.

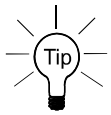
13. Slide the cover onto the computer base and secure it with the two screws. Refer to subsection 8.1.1 "Securing the Cover".

During operation, the cover must be properly installed and secured with the corresponding screws.

9. Installation Instructions

The OmniClient is designed to be mounted in the user's application by either of the following methods:

- ❑ Installation in an instrument panel or other cabinets by use of mounting clamps (preferred mounting method)
- ❑ Installation by a heavy duty VESA 100 compliant mounting system

	The expansion card installation should be performed before installing the OmniClient to a wall/panel or into an industrial cabinet.
	The OmniClient has to be installed and operated only by trained and qualified personnel. We recommend that the mounting procure is to be carried-out by two persons. The mounting and operation of the OmniClient is allowed only in the vertical position with the interfaces downwards. The unit must be placed such that there is sufficient space for operating the power switch (for systems equipped with AC PSU only) and for connecting the cables to the I/O interface connectors. Leave at least 5 cm (approx. 2") of free space around the unit to prevent the device from possibly overheating! Do not obstruct the air intake and exhaust openings. The voltage feeds must not be overloaded. Adjust the cabling and the external overload protection to correspond with the rated voltage range indicated on the type label. The type label is located on the rear left side of the system. During the system operation, the cover of the computer base must be properly installed and secured by the corresponding screws.

9.1. Installation by use of the Mounting Clamps

The mounting clamps with screws (supplied), allow the easy and fast mounting of the OmniClient HMI-OC156/OC185/OC215. Refer to the appropriate outline and mounting drawing for the correct dimensions of cut-outs and air gap clearances required for mounting the unit into a wall or panel. The outline and mounting drawing can be found on our web site www.kontron.com.

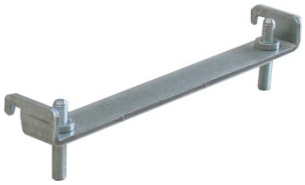
Dimension for:	**HMI-OC156**	**HMI-OC185**	**HMI-OC215**
Cut-out for mounting to a wall/panel (W x H) [mm]	394 x 245	462 x 283	527 x 325
Requirements for Mounting			
Metal mounting panel thickness for proper mounting [mm]	1.5 – 6.35	1.5 – 6.35	1.5 – 6.35
Used clamp with screws for mounting the OmniClient to a wall/panel	6x 		
Proper Torque	Tighten the screws with a torque of 0.5 Nm		
Mounting position	Ensure the vertical and horizontal alignment of the system/display unit.		

Table 5: Requirements for OmniClient mounting into a wall/panel

In order to ensure IP65 front sealing against dust and water, ***mount the system on a non-textured surface.*** Before you install the OmniClient system into a panel or a wall for industrial cabinet, verify the perfect condition of the gasket at the rear of the front bezel. The gasket has to be in place without surface imperfections/defects and dirt.

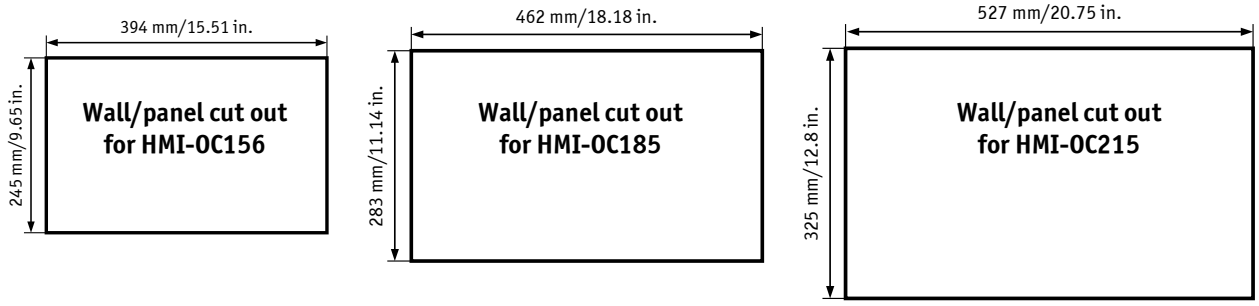


Fig. 35: Wall/panel cutout dimensions for OmniClient systems

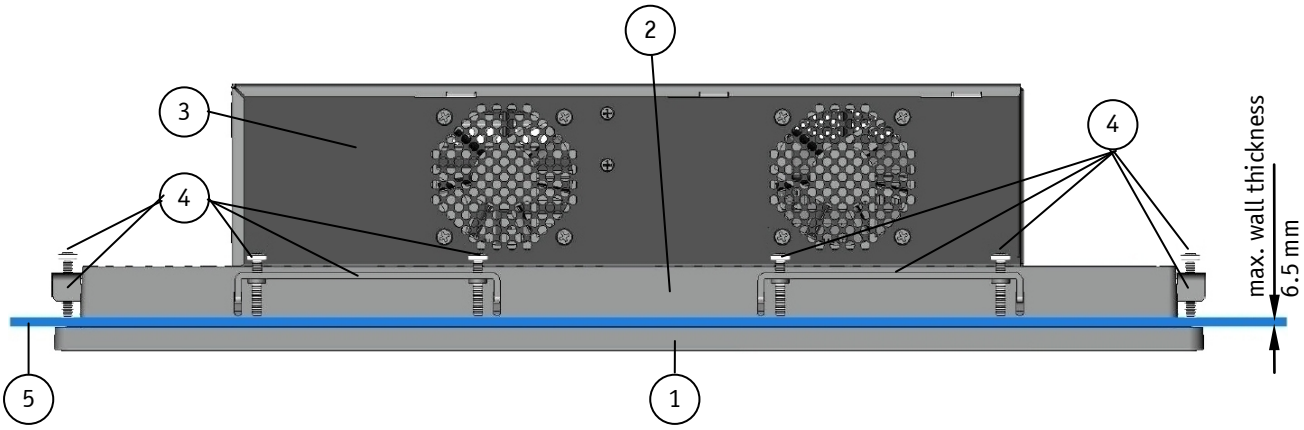


Fig. 36: Wall/panel mounting of the OmniClient by use of the mounting clamps

1 Front panel of the OmniClient with gasket
2 Touch display unit
3 Top side of the computer base of the
4 Mounting clamps with screws for system installation into a wall/panel
5 Example of wall for system installation (with specified max. wall thickness)

To mount the system to a wall or to a panel, follow these steps:

1. Depending on the dimension of the display enclosure of your OmniClient, prepare a cutout in the wall/panel. Refer to Table 5 and Fig. 35 for the wall/panel cutout dimensions or to the corresponding mechanical drawings for your OmniClient on our web site www.kontron.com.
2. The system must be properly powered down and disconnected from the power source and peripherals.
3. The wall/panel where you intend to install the system must be accessible from both sides (front as well as rear).
4. Insert the system into the wall/panel cutout from the front.
5. In order to ensure the protection class IP65 on the front side in the installed condition, the contact surface with the gasket must be clean and flush.
6. Hook the mounting clamps with screws (Table 5) from the rear side of the panel into the corresponding pairs of slots (Fig. 23, Fig. 24, pos. 6 and Fig. 25, pos. 4) of the touch display unit enclosure.
7. The system must be attached firmly by tighten the screws (refer to Fig. 26, pos. 8 and Fig. 36, pos. 4). Refer also to the mounting requirements included in Table 5.

9.2. Installation by use of the VESA 100 compliant Mounting Adapter (Option)

Fig. 37: OmniClient with U-shaped VESA 100 adapter (shown mounted to a HMI-OC215)

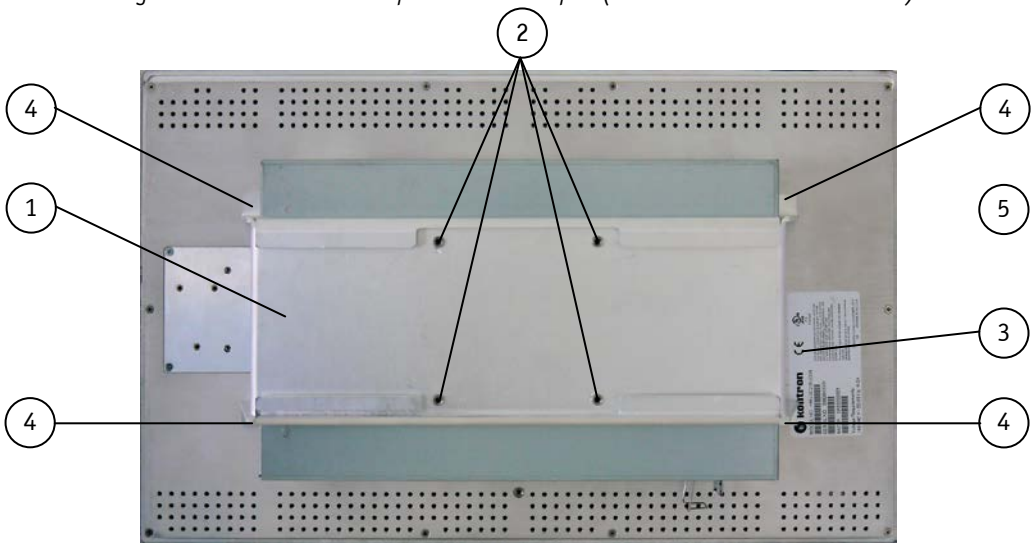


Fig. 38: Rear side of HMI-OC215 with mounted VESA 100 adapter

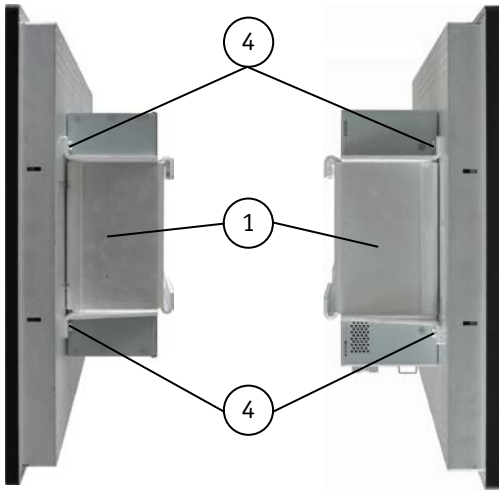


Fig. 39: Right side with VESA 100 adapter (shown as a HMI-OC215)

Fig. 40: Left side with VESA 100 adapter (shown as a HMI-OC215)

Legend for Fig. 37, Fig. 38, Fig. 39 a**nd** Fig. 40:

1 U-shaped VESA adapter (for VESA 100)

2 4x threaded holes for mounting the VESA adapter

3 Type label

4 4 x M4 x 8 screws that secure the U-shaped VESA adapter to the rear side of the system

5 Seal (gasket) around the rear side of the touch display unit

Fig. 41: U-shaped VESA 100 adapter - Side view

Fig. 42: U-shaped VESA 100 adapter - Bottom side view

The OmniClient can be mounted to a VESA 100 compliant mounting system (in vertical position with the interfaces downwards) by use of the U-shaped VESA adapter (Fig. 41 and Fig. 42), (not included).

The U-shaped VESA adapter is common for all OmniClient systems. It must be mounted to the OmniCient (HMI-OC156, HMI-OC185 or HMI-OC215 with four M4x8 metric screws (please refer to Fig. 37, Fig. 38, Fig. 39 and Fig. 40, pos. 4).

10. Starting Up

10.1. Behavior of the System when Connecting to Power

As soon as external power is applied to the main input power connector, Fig. 21 for AC PSU and Fig. 22 for DC PSU), the OmniClient boots up and the operating system and applications, where available, start immediately.

Prerequisite for systems with AC PSU:
The system has to be connected to an appropriate AC mains power source.
The power ON/OFF switch of the AC PSU must be set to ON.

10.1.1. AC Power Connection

The AC mains input socket is located on the bottom side of the OmniClient (Fig. 19, pos. 4 and Fig. 21).

Mains AC power disconnect: The AC power cord is considered the mains disconnect for the OmniClient and must be readily accessible when installed. If the individual OmniClient power cord will not be readily accessible for disconnection then you must install an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the OmniClient(s).

Grounding the system: To avoid an electrical shock hazard, you must ensure the system has proper grounding. The OmniClient power cord includes the safety ground conductor and provides proper grounding only for the OmniClient. You must ensure proper grounding is provided for the entire system into which the OmniClient is embedded. You must provide additional, proper grounding for the OmniClient and the host equipment.

Overcurrent protection: The OmniClient is designed for an AC line voltage source with up to 10 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 10 amperes of protection, you must provide supplemental protection for the OmniClient. The overall current rating of a configured system is typically less than 4 amperes.

WARNING: Do not attempt to modify or use an AC power cord set that is not the exact type required. You must use a power cord set that meets the following criteria:

- ❑ Rating: In the U.S. and Canada, cords must be UL (Underwriters Laboratories, Inc.) Listed/CSA (Canadian Standards Organization) Certified type SJT, 18-3 AWG (American Wire Gauge). Outside of the U.S. and Canada, cords must be flexible harmonized (<HAR>) or VDE (Verband Deutscher Elektrotechniker, German Institute of Electrical Engineers) certified cord with 3x 0.75 mm conductors rated 250 VAC.
- ❑ Connector, wall outlet end: Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be listed and rated for 125% of the overall current rating of the server.
- ❑ Connector, OmniClient end: The connectors that plug into the AC receptacle on the OmniClient must be an approved IEC (International Electrotechnical Commission) 320, sheet C13, type female connector.
- ❑ Cord length and flexibility: Cords must be less than 4.5 meters (14.8 feet) long.

Please observe the settings option for "Restore on AC Power Loss" in the BIOS Setup.
Setting options**: Power On**/Power Off/Last State.

To connect the power cable, proceed as follows:

1. Connect the AC power cord to the AC input connector.
2. Connect the other end of the AC power cord to a corresponding mains outlet.

Use a power cord suitable for the mains power supply in your country.
Make sure that the mains power supply (power outlet) is properly grounded and that the power cord is in perfect condition without any visible damage. An ungrounded power supply is not permissible.

10.1.2. DC Power Connection

The DC mains input socket is located on the rear side of the OmniClient (Fig. 20, pos.12 and Fig. 22).

Connection with a DC (Direct Current) source should only be performed by trained service personnel. The OmniClient with DC input is to be installed in a Restricted Access Location in accordance with articles 110-26 and 110-27 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated from any hazardous AC source by double or reinforced insulation. The DC source must be capable of providing up to 300 watts of continuous power per feed pair.

Mains DC power disconnect: You are responsible for installing a properly rated DC power disconnect for the OmniClient. This mains disconnect must be readily accessible, and it must be labeled as controlling power to the server. The UL listed circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible and should be rated no more than 10 amperes.

Grounding the server: This server is intended for installation with an isolated DC return (DC-I and is to be installed in a Common Bonding Network (CBN) per NEBS GR-1089). To avoid an electrical shock hazard, you must reliably connect an earth grounding conductor to the server. The earth grounding conductor must be a minimum of 16 AWG connected to the earth ground stud(s) on the rear of the server. The safety ground conductor should be connected to the chassis stud with a listed closed two-hole crimp terminal having 5/8-inch pitch.

The input connector on the DC power supply is a 2-pin terminal block (barrier strip). This connector is rated at 16A/pin. The input connector Fig. 22and section 13.1, show the DC input power connector and pin-out. Please note that the terminal block is polarity is identified by a "+" for the DC Positive and a "-" for the DC Negative (RTN).

Please ensure that during the DC connection procedure, there is no power flowing from the external DC power source to the OmniClient.

1. Prepare two isolated wires (minimum cross section of 2.5 mm^2) with wire end ferrules, according to the connectors of the screw terminal.
2. Loosen the two cross-head screws of the screw terminal so that you can insert the ends of the wires (prepared with ferrules). Pay attention to the polarity of the wires.
3. Fasten the cross-head screws firmly.
4. Cover the connectors of the screw terminal with the protective cover available.

After attaching the cables to the terminals of the DC PSU +24 VDC (18 - 36 VDC) always operate the DC versions of the OmniClient systems with the protective cover provided.

5. Prepare the other ends of the wires according to the terminal of the DC power source.
6. Connect the wires prepared to the DC mains power source. Pay attention to the polarity of the connectors. The DC power source has to be switched off.
7. Switch on the DC mains power source.

10.2. Operating System and Hardware Component Drivers

Your system can be supplied optionally with a pre-installed operating system.

If you have ordered your OmniClient with a pre-installed operating system, all drivers are installed in accordance with the system configuration ordered (optional hardware components). Your system is fully operational when you power it on for the first time.

If you have ordered The OmniClient without a pre-installed operating system, you will need to install the operating system and the appropriate drivers for the system configuration you have ordered (optional hardware components) yourself.

You can download the relevant drivers for the installed hardware from our web site at www.kontron.com by selecting the product.

Pay attention to the manufacturer specifications of the operating system and the integrated hardware components.

11. Maintenance and Cleaning

Kontron systems require minimal maintenance and care to keep them operating correctly.

- ❑ Occasionally wipe the OmniClient with a soft dry microfiber cloth.
- ❑ You should only remove persistent dirt by use of a soft, slightly damp cloth and mild detergent.

11.1. Touch Screen Care and Cleaning

☞ The touch screen is covered by an anti-glare glass plate and care should be taken when cleaning it. The front side of the touch display unit is sealed against dust and liquids.

The touch screen is protected by an anti-glare glass surface. Care should be taken to avoid using sharp objects such as knife, pen or pencil tips. Sharp objects may permanently damage the surface of the anti-glare glass plate.

Mild detergent and water is recommended for cleaning the touch screen. Use of strong solvents must be avoided. Wet the glass plate with a microfiber cloth lightly moistened with warm water and glass cleaner.

11.2. Replacing the Lithium Battery

The lithium battery is located on the installed motherboard. The OmniClient may only be opened for installing/removing of the expansion card or replacing the lithium battery by trained and qualified personnel according to the description in this user's guide. Use only non-conductive tools for replacing/inserting the lithium battery into/from the battery holder.

☞ Before replacing the lithium battery, the system has to be shut down properly and disconnected from the power source.

Please follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice may result in damage to the device or the latter's components.

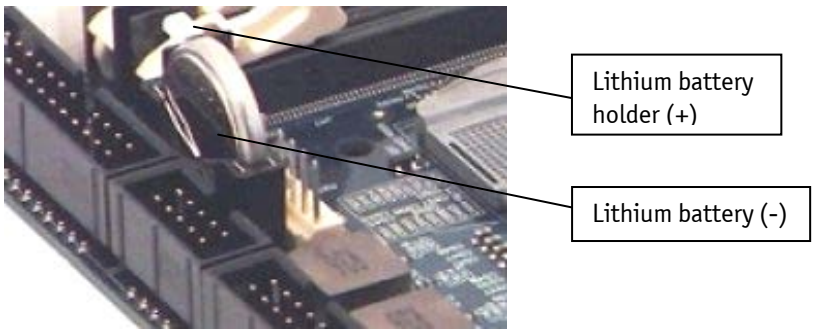


Fig. 43: Lithium battery location

To replace the lithium battery, please perform the following steps:

1. Open the system as described in sections 8.2 steps 1 to 5.
2. Locate the battery positioning into the system (Fig. 31, pos. 13).
3. Remove the lithium battery from the battery holder (see Fig. 43) using a non-conductive tool.

4. Insert the new lithium battery into the battery holder. Pay attention to the polarity of the battery.
5. The lithium battery must only be replaced with the same type of battery (lithium battery 3.0 V for RTC, type: CR2032). The lithium battery type must be UL recognized.
6. Re-attach the cover and secure it by tightening the corresponding screws.

	**Caution** Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.
	Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).

12. Technical Data

System			HMI-OC156	HMI-OC185	HMI-OC215
TFT LCD Display	Size (diagonal)		15.6"	18.5"	21.5"
	Active area (H x V) [mm]		344.23 x 193.54	409.8 x 230.4	476.64 x 268.11
	Resolution (H x V) [pixel]		1366 x 768 (HD)	1366x 768 (HD)	1920 x 1080 (Full HD)
	Pixel Pitch(H x V) [µm]		252 (per one triad) ×252	300 (per one triad) × 300	248 (per one triad) ×248
	Colour Depth		16.7 M colors	16.7 M colors	16.7 M colors
	Backlight		LED	LED	LED
	Brightness [cd/m2]		300	300	300
	Control Signal		24 bit LVDS	24 bit LVDS	24bit LVDS
	Viewing Angle [°] (r / l / u / d)	CR10	85/85/80/80	85/85/80/80	89/89/89/89
	Contrast ratio		500:1	1000:1	5000:1
	Response Time [msec]		8	5	25
Touch Screen			Projected Capacitive	Projected Capacitive	Projected Capacitive
Installed Motherboard			KTQM67/mITX		
Processor			Intel® Core™ i5/i7 2nd generation		
RAM			up to 2x 204-pin SODIMM dual-channel DDR3-1333/1600 max. up to 16 GB		
BIOS			AMI uEFI		
External Interfaces (bottom side accessible)			1x DVI-I		
			6x USB (2.0)		
			3x LAN 10/100/1000 Mbps		
			2x DisplayPort		
			3x Audio		
Lithium Battery			Type: CR2032; 3.0 V; 0.22Ah;		
Free Expansion Slots			1x PCIe x16 (for half size, full-height cards)		
Optional Power Supply (bottom side accessible)		**AC**	100-240 VAC, 50-60 Hz, 4-2 A		
		DC	18-36 VDC, 8 A maximum		
Protection Class			IP20 rear IP65 front		
Options					
Internal Drives			up to 2x 2.5" SATA HDD/SSD 1x mSATA SSD		
Camera			5 MP, color, 2 MP (HD 1080P) 1920 x 1080 (16:9), 30 FPS Audio is not supported		
RFID			Internal USB connected		
WiFi			Internal USB connected		
Serial interfaces			2x DB punch out for RS232/RS422/RS485		
Adapter for VESA 100			On the rear		

12.1. Touch Technology Specifications

Specification / Model	HMI-OC156-xxxx	HMI-OC185-xxxx	HMI-OC215-xxxx
Touch Technology	Projected capacitive system		
Sensor stack thickness	1.1 mm		
Cover glass thickness	1.1 +/-0.2 mm		
Touch Method	Fingers and thin gloves		
Touch Points	6 touches		
Response Time	25 ms		
Interface	USB 2.0		

12.2. Electrical Specifications

HMI-OC156-xxxx HMI-OC185-xxxx HMI-OC215-xxxx	Input Voltage	Input Current
OmniClient with DC PSU	18-36 VDC	8.0 A maximum
OmniClient with AC PSU	100-240 VAC	4-2 A

12.3. Mechanical Specifications

For detailed mechanical dimensions, please see the outline dimensions drawings on the web site www.kontron.com.

OmniClient	HMI-OC156	HMI-OC185	HMI-OC215
Width	411.34 mm (16.19")	479.67 mm (18.88")	544.20 mm (21.43")
Height	262.75 mm (10.34")	300.35 mm (11.83")	341.88 mm (13.46")
Depth (total)	111.08 mm (4.37")		
Depth (from rear surface of display)	101.55 mm (3.99")		
Weight	7.1 kg (15.65 lbs.)	8.9 kg (19.621 lbs.)	10.7 kg (23.59 lbs.)
Front bezel	Aluminum front bezel (black colored)		
Housing	Zinc-coated steel		

Dimension of the touch display unit

Dimension	HMI-OC156	HMI-OC185	HMI-OC215
Aluminum front bezel (W x H)	411.34 x 262.75 [mm] 16.19" x 10.34"	479.67 x 300.35 18.88" x 11.82"	544.20 x 341.88 [mm] 21.43" x 13.46"
Frontal cut out for display (W x H)	346.02 x 195.31 [mm] 13.62" x 7.69"	411.3 x 231.7 [mm] 16.19" x 9.12"	478.32 x 269.79 [mm] 18.83" x 10.62"
Wall/panel mounting cut out (W x H)	393.58 x 244.99 [mm] 15.5" x 9.65"	461.87 x 282.55 [mm] 18.18" x 11.12"	527.14 x 324.82 [mm] 20.76" x 12.79"

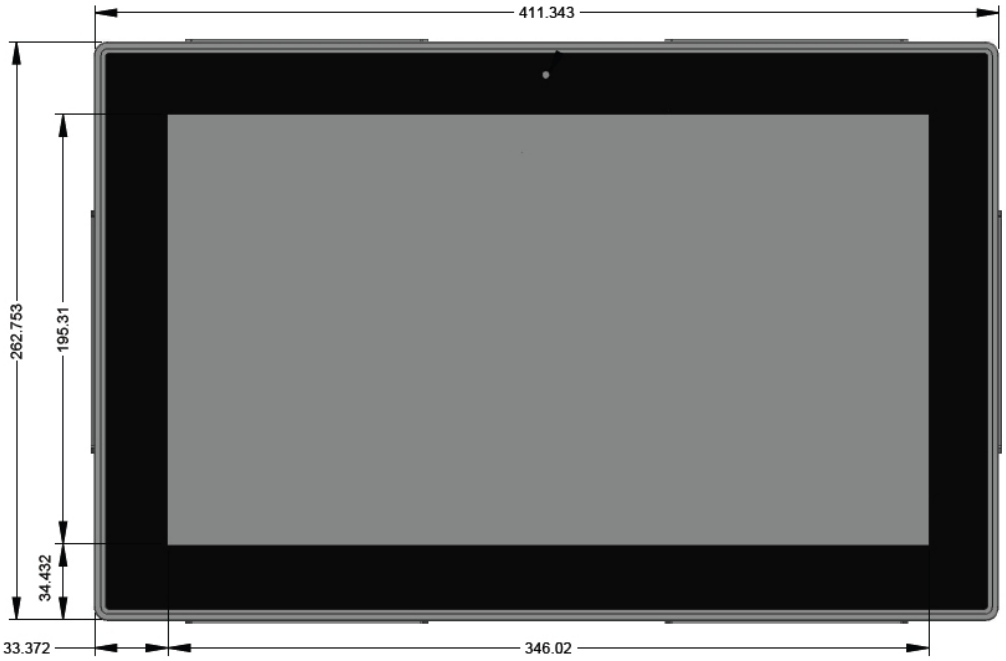


Fig. 44: Mechanical specification - Front view of an HMI-OC156

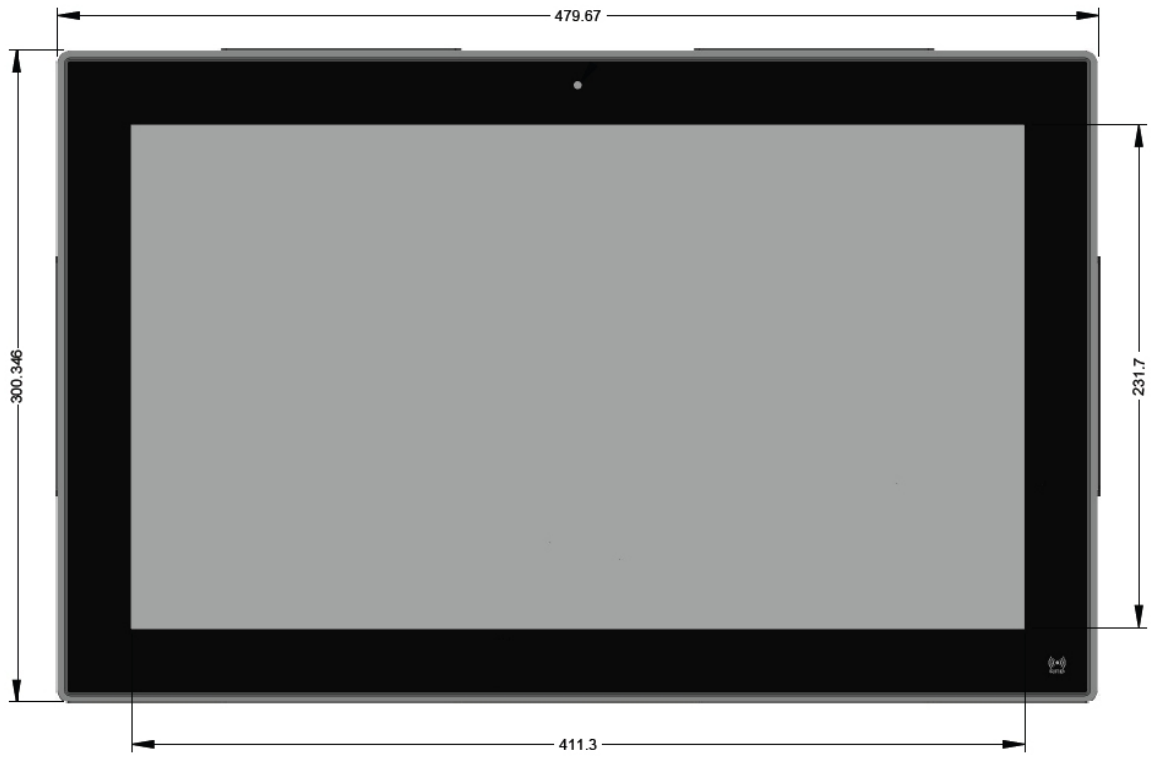


Fig. 45: Mechanical specification - Front view of an HMI-OC185

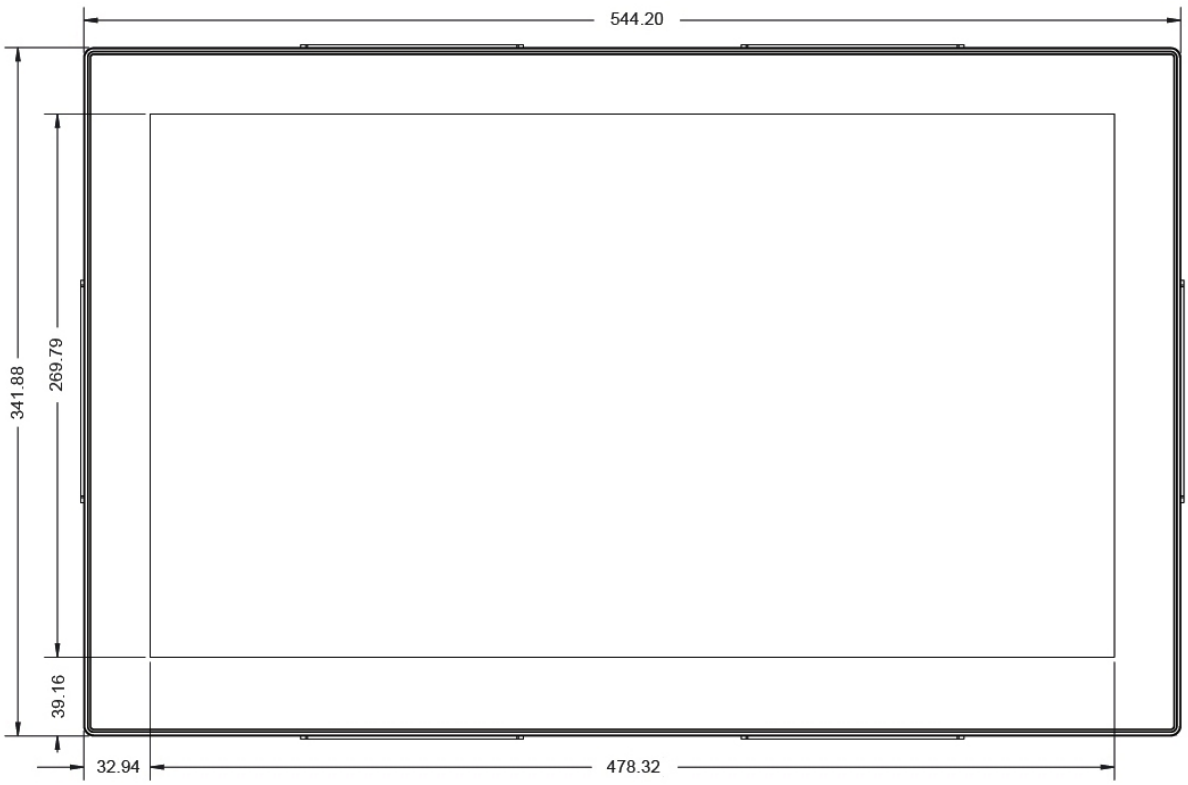


Fig. 46: Mechanical specification - Front view of an HMI-OC215

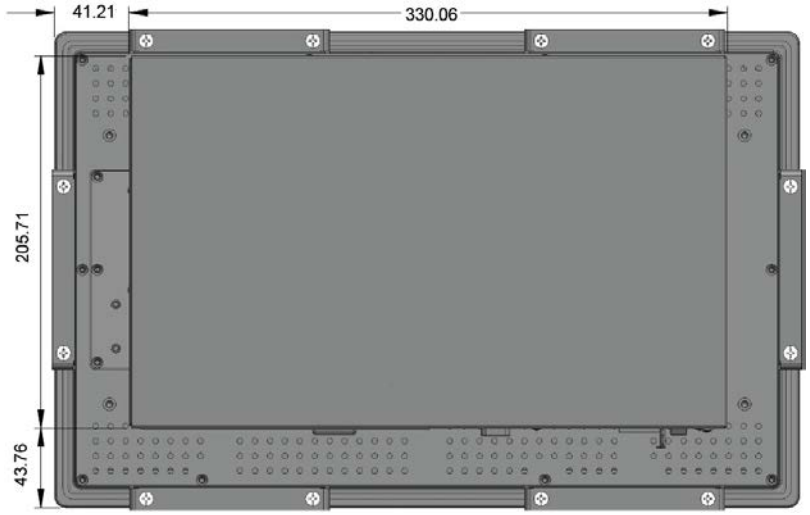


Fig. 47: Mechanical specification - Rear view of an HMI-OC156

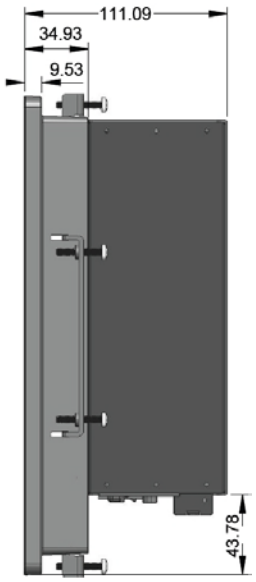


Fig. 48: Mechanical specification - Side view of an HMI-OC156

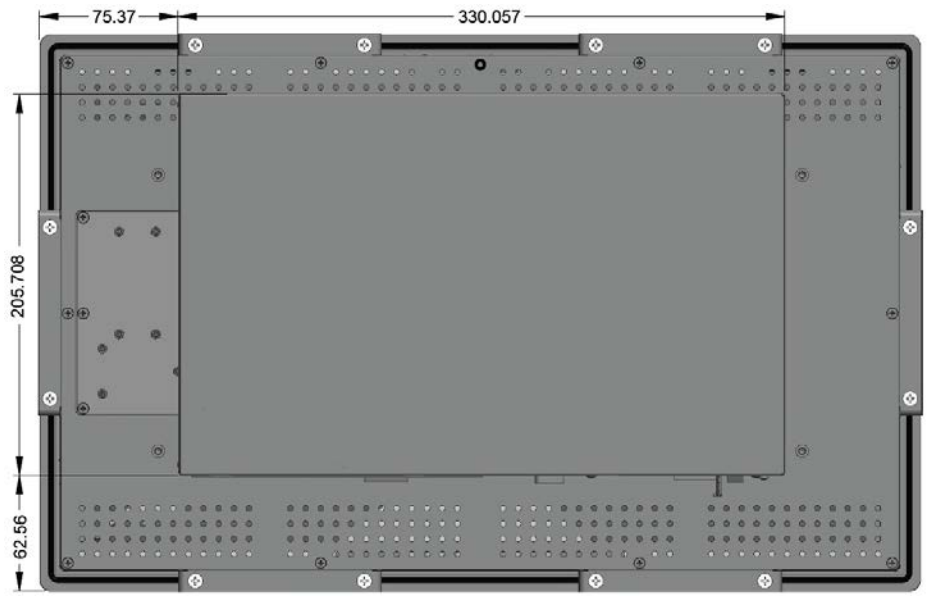


Fig. 49: Mechanical specification - Rear view of an HMI-OC185

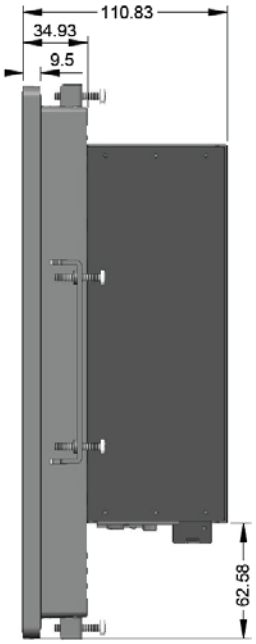


Fig. 50: Mechanical specification - Side view of an HMI-OC185

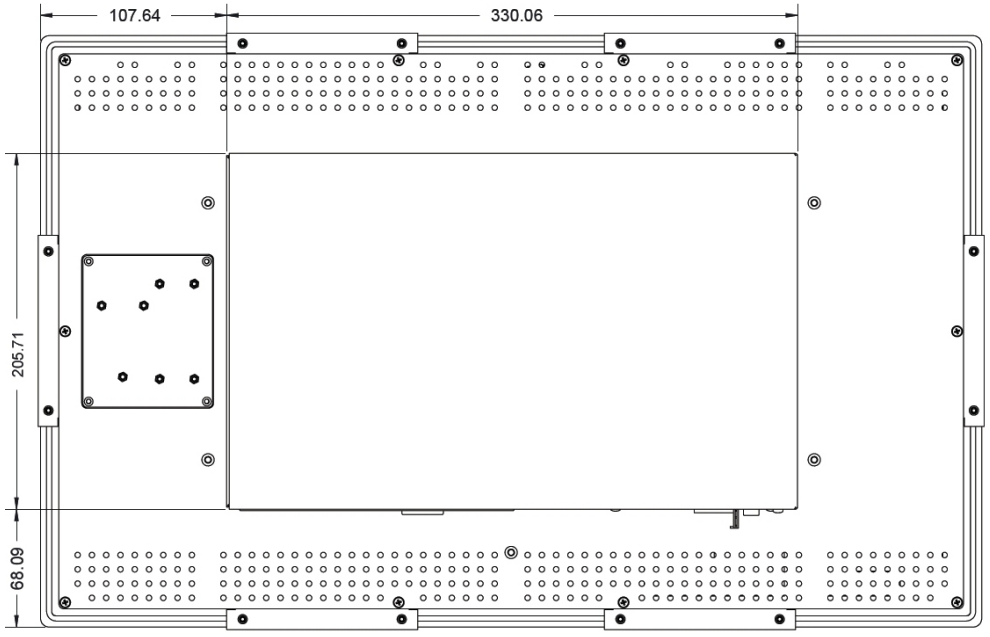


Fig. 51: Mechanical specification - Rear view of an HMI-OC215

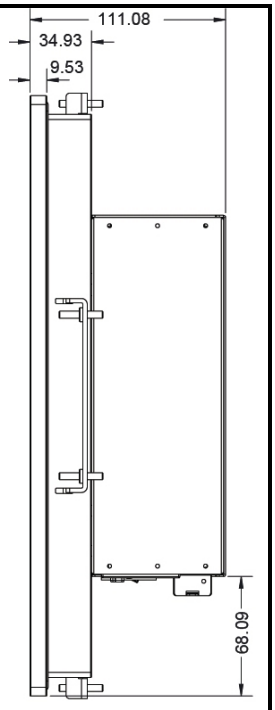


Fig. 52: Mechanical specification - Side view of an HMI-OC215

12.4. Environmental Specifications

Thermal Management	active cooling (1x PSU fan, 1x CPU fan and 2x system fans)
Operating Temperature	0 ... +50 °C 32 °F ... 122 °F
Relative Humidity Storage/Transit (non operating)	90 % @ 25-40 °C (non-condensing)
Altitude Storage/Transit (non operating)	U to 3048 m (10,000 ft.)
Shock Storage/Transit (non operating)	10 G, 11 ms duration, 3 shock/axes
Vibration Storage/Transit (non operating)	10 – 500 Hz, 2.0 G/3axis
Protection class	IP20 (rear section) Front: IP65 (mounted to a wall only)

12.5. CE Directives and Standards

CE Directives	
Low Voltage Directive (Electrical Safety)	2006/95/EC
EMC Directive	2004/108/EC
RoHS Directive	2002/65/EC

Electrical Safety	Standards
EUROPE	EN 60950-1:2006 + A1:2010 + A12:2011 + AC:2011
USA	UL 60950-1, 2nd Edition
Canada	CSA C22.2 No. 60950-1-07, 2nd Edition
CB Scheme	IEC 60950-1; am1

EMC	Standards
EUROPE	Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase): EN 61000-3-2:2006+A1:2009+A2:2009
	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <=16 A per phase and not subjected to conditional connection: EN 61000-3-3:2008
	Emission of Information technology equipment Radio disturbance characteristics Limits and methods of measurement: EN 55022: 2010/AC: 2011 ITE - Immunity characteristics - Limits and methods of measurement EN 55024:2010
U.S.A. Canada	FCC 47 CFR Part 15, Class A ICES-003 class A

12.6. Camera Specifications

Camera	Specification
Type	Color
Focus Adjustment	Automatic
Maximum Resolution	5M pixel
Audio Support	No
Max Digital Video Resolution	2MP (HD 1080P) 1920 x 1080 (16:9) (30 FPS)
Interface	USB 2.0

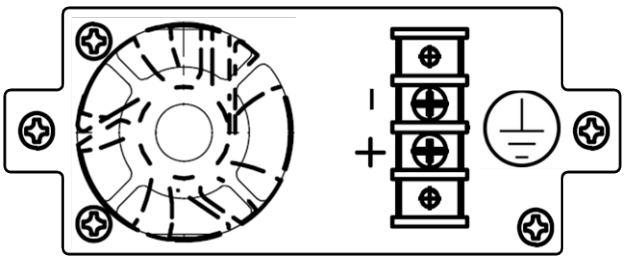
12.7. WiFi Specification

WiFi	Specification
IEEE WLAN Standard	802.11a, 802.11b, 802.11g, 802.11n
Interface	USB 2.0

13. Technical Appendix - Interfaces

The following tables contain the plug assignments for the external connections of the OmniClient.
Low-active signals are indicated by a minus sign.

13.1. Power Connector – DC Power Supply Option

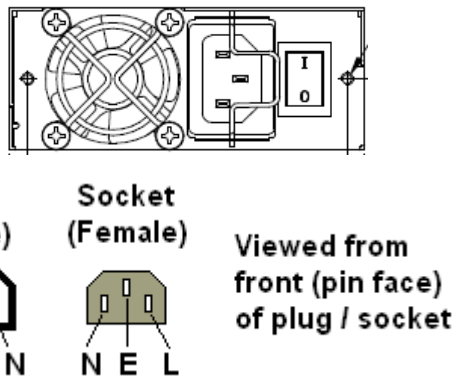
Pin	Signal Name	3-pin Power Connector (male)
1	Ground (-)	
2	+18 – 36 VDC IN (+)	

13.2. Power Connector – AC Power Supply Option

The AC Power supply uses a standard IEC-60320-C13 power cord.

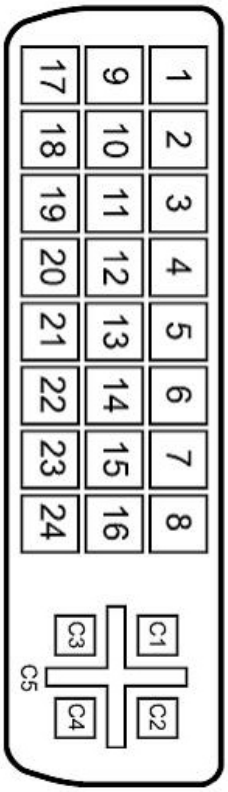
WARNING:
Do not attempt to modify or use an AC power cord set that is not the exact type required. You must use a power cord set that meets the following criteria:

- Rating: In the U.S. and Canada, cords must be UL (Underwriters Laboratories, Inc.) Listed/CSA (Canadian Standards Organization) Certified type SJT, 18-3 AWG (American Wire Gauge). Outside of the U.S. and Canada, cords must be flexible harmonized (<HAR>) or VDE (Verband Deutscher Elektrotechniker, German Institute of Electrical Engineers) certified cord with 3x 0.75 mm conductors rated 250 VAC.
- Connector, wall outlet end: Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be listed and rated for 125% of the overall current rating of the server.
- Connector, server end: The connectors that plug into the AC receptacle on the server must be an approved IEC (International Electrotechnical Commission) 320, sheet C13, type female connector.
- Cord length and flexibility: Cords must be less than 4.5 meters (14.8 feet) long.

Pin	Signal Name	3-pin Power Connector (male)
1	Live	
2	Earth Ground	
3	Neutral	

13.3. DVI Connector (DVI-I)

The DVI-I connector supports DVI Digital output and DVI analog output.

Pin	Signal Name	Description	DVI-I Connector (female)
1	TMDS2–	Differential TMDS Data 2–	
2	TMDS2+	Differential TMDS Data 2+	
3	GND	TMDS Shield	
4–5	NC		
6	DVI_SCL	DDC EDID data clock	
7	DVI_SDA	DDC EDID data	
8	NC		
9	TMDS1–	Differential TMDS Data 1–	
10	TMDS1+	Differential TMDS Data 1+	
11	GND	TMDS Shield	
12–13	NC		
14	DVI_5V	5 V	
15	GND	Ground	
16	DISPDET	Hot Plug Detection	
17	TMDS0–	Differential TMDS Data 0–	
18	TMDS0+	Differential TMDS Data 0+	
19	GND	TMDS Shield	
20–21	NC		
22	GND	TMDS Shield	
23	TMDSSCL+	Differential TMDS Clock+	
24	TMDSSCL-	Differential TMDS Clock -	
C1	ANALOG RED	Analog output carrying the red color signal	
C2	ANALOG GREEN	Analog output carrying the green color signal	
C3	ANALOG BLUE	Analog output carrying the blue color signal	
C4	ANALOG HSYNC	CRT horizontal synchronization output	
C5	ANALOG GND	Ground reference for RED, GREEN, and BLUE	

Note: The +5 V supply is fused by a 1.1A resettable fuse.

13.4. DP Connector

The DP (Display Port) is based on standard DP type Foxconn 3VD51203-H7JJ-7H or similar.

Pin	Signal Name	Description	Display Port Connector
1	Lane 0 (p)		
2	GND		
3	Lane 0 (n)		
4	Lane 1 (p)		
5	GND		
6	Lane 1 (n)		
7	Lane 2 (p)		
8	GND		
9	Lane 2 (n)		
10	Lane 3 (p)		
11	GND		
12	Lane 3 (n)		
13	Config1	Aux or DDC selection	
14	Config2	(Not used)	
15	Aux Ch (p)	Aux Channel (+) or DDC Clk	
16	GND		
17	Aux Ch (n)	Aux Channel (-) or DDC Data	
18	Hot Plug		
19	Return (GND)		
20	3.3 V		

Note: The +3.3 V supply is fused by a 1.5 A PTC fuse.

The Hot Plug is internally pulled down (100 kohm).

13.5. Ethernet Connectors

The OmniClient supports three channels of 10/100/1000 Mb Ethernet, one (ETH1) is based on Intel® 82579LM Gigabit PHY with AMT 7.0 support and the two other controllers (ETHER2 & ETHER3) are based on Intel® 82574L PCI Express controller.

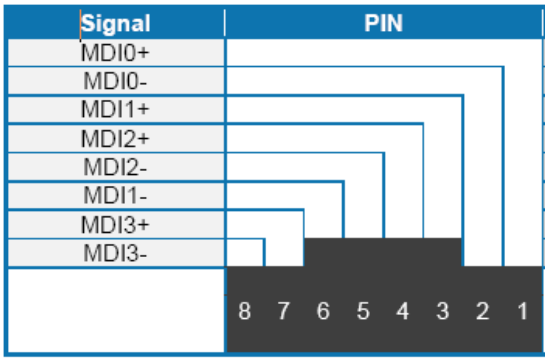
In order to achieve the specified performance of the Ethernet port, Category 5 twisted pair cables must be used with 10/100 Mb and Category 5E, 6 or 6E with 1 Gb LAN networks.

Signal Name	Description
MDI[0]+ / MDI[0]-	In MDI mode, this is the first pair in 1000Base-T, i.e. the BI_DA+/- pair, and is the transmit pair in 10Base-T and 100Base-TX. In MDI crossover mode, this pair acts as the BI_DB+/- pair, and is the receive pair in 10Base-T and 100Base-TX.
MDI[1]+ / MDI[1]-	In MDI mode, this is the second pair in 1000Base-T, i.e. the BI_DB+/- pair, and is the receive pair in 10Base-T and 100Base-TX. In MDI crossover mode, this pair acts as the BI_DA+/- pair, and is the transmit pair in 10Base-T and 100Base-TX.
MDI[2]+ / MDI[2]-	In MDI mode, this is the third pair in 1000Base-T, i.e. the BI_DC+/- pair. In MDI crossover mode, this pair acts as the BI_DD+/- pair.
MDI[3]+ / MDI[3]-	In MDI mode, this is the fourth pair in 1000Base-T, i.e. the BI_DD+/- pair. In MDI crossover mode, this pair acts as the BI_DC+/- pair.

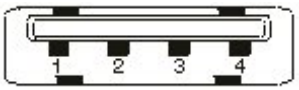
Note: MDI = Media Dependent Interface.

Ethernet connector 1 (ETH1) is mounted together with USB Ports 4 and 5.

Ethernet connector 2 (ETH2) is mounted together with and above Ethernet connector 3 (ETH3).



13.6. USB Port

Pin	Signal Name	4-pin USB Socket Type A Version 2.0/1.1
1	VCC	
2	Data-	
3	Data+	
4	GND	

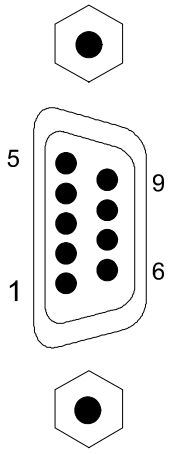
13.7. Audio Connector

The on-board Audio circuit implements 7.1+2 Channel High Definition Audio with UAA (Universal Audio Architecture), featuring five 24-bit stereo DACs and three 20-bit stereo ADCs. The Following Audio connector is available in IO Area.

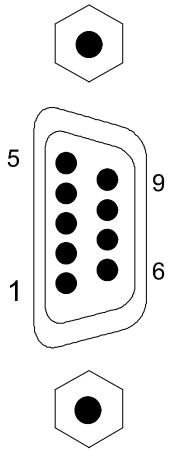
Audio Speakers, Line-in and Microphone are available in the stacked audiojack connector.

Jack Color	Signal	Description
Blue	LINE1-L	Line 1 signal - Left
	LINE1-R	Line 1 signal - Right
	GND	Ground
Green	FRONT-OUT-L	Front Speakers (Speaker Out Left)
	FRONT-OUT-R	Front Speakers (Speaker Out Right)
	GND	Ground
Pink	MIC1-L	Microphone 1 - Left
	MIC1-R	Microphone 1 - Right
	GND	Ground

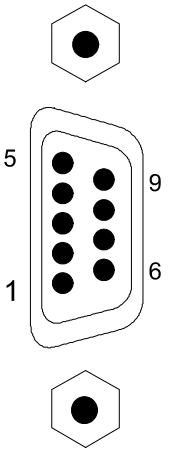
13.8. Serial Port RS232 (Option)

Pin	Signal Name		9-pin D-SUB Plug (male)
1	DCD	(Data Carrier Detect)	
2	RXD	(Receive Data)	
3	TXD	(Transmit Data)	
4	DTR	(Data Terminal Ready)	
5	GND	(Signal Ground)	
6	DSR	(Data Set Ready)	
7	RTS	(Request to Send)	
8	CTS	(Clear to Send)	
9	RI	(Ring Indicator)	

13.9. Serial Port RS422 (Option)

Pin	Signal Name		9-pin D-SUB Plug (optional male or female)
1	TXD-	(Transmit Data -)	
2	RXD+	(Receive Data +)	
3	TXD+	(Transmit Data +)	
4	RXD-	(Receive Data -)	
5	GND	(Signal Ground)	
6	RTS-	(Request to Send -)	
7	RTS+	(Request to Send +)	
8	CTS+	(Clear to Send +)	
9	CTS-	(Clear to Send -)	

13.10. Serial Port RS485 (Option)

Pin Signal Name (RS485 full duplex)	Pin Signal Name (RS485 half duplex)	9-pin D-SUB Plug (optional male or female)
1 TXD- (Transmit Data -)	1 Data- (A)	
2 RXD+ (Receive Data +)	2 NC	
3 TXD+ (Transmit Data +)	3 Data+ (B)	
4 RXD- (Receive Data -)	4 NC	
5 GND (Signal Ground)	5 GND (Signal Ground)	
6 NC	6 NC	
7 NC	7 NC	
8 NC	8 NC	
9 NC	9 NC	

14. Technical Support

For technical assistance, please contact our Technical Support department via:

e-mail: support@kontron.com or
web: http://www.kontron.com/support-and-services.

Ensure that your request contains the following information:

- unit part number (PN),
- serial number (SN), which can be found on the type label,
- a short description of the faulty behavior of your system.

For information about Kontron products and services, please visit www.kontron.com.

14.1. Returning Defective Merchandise

Please follow these steps before you return any merchandise to Kontron:

1. Download the corresponding form for returning a device with an RMA No. [RMA (**R**eturn of **M**aterial **A**uthorization)] from our website http://www.kontron.com/support-and-services/RMA Information; contact our Customer department to obtain an RMA No.
   e-mail: support@kontron.com
2. Ensure that you have received an RMA number from Kontron Customer Services before returning any device. Write this number clearly on the outside of the package.
3. Describe the fault that has occurred.
4. Please provide the name and telephone number of a person we can contact to obtain more information, where necessary. Where possible, please enclose all the necessary customs documents and invoices.
5. When returning a device:
   - Pack it securely in its original packaging.
   - Enclose a copy of the RMA form with the consignment.

Corporate Offices

Europe, Middle East & Africa	North America	Asia Pacific
Lise-Meitner-Str. 3-5 86156 Augsburg Germany Tel.: +49 (0) 821/0 Fax: +49 (0) 821/111 info@kontron.com	14118 Stowe Drive Poway, CA 92064-7147 USA Tel.: +1 888 294 4558 Fax: +1 858 677 0898 info@us.kontron.com	17 Building,Block #1,ABP. 188 Southern West 4th Ring Beijing 100070, P.R.China Tel.: + 86 10 63751188 Fax: + 86 10 83682438 info@us.kontron.cn