» Kontron User's Guide «

CB 511

User's Guide (Version 1.00)
0-0096-6821

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1. Table of Contents

1.1. Table of Figures

2. Introduction

Kontron Embedded Computers 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 Embedded Computers products. The attached documentation does not entail any guarantee on the part of Kontron Embedded Computers with respect to technical processes described in the manual or any product characteristics set out in the manual. Kontron Embedded Computers does not accept any liability for any printing errors or other inaccuracies in the manual unless it can be proven that Kontron Embedded Computers is aware of such errors or inaccuracies or that Kontron Embedded Computers is unaware of these as a result of gross negligence and Kontron Embedded Computers has failed to eliminate these errors or inaccuracies for this reason. Kontron Embedded Computers 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 Embedded Computers.

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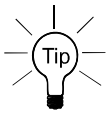
2.1. Symbols used in this Manual

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

This manual provides important information required for the proper operation of the CB 511 platform!

This chapter contains instructions which must be observed when working with the CB 511 platform.

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 to batteries or CF card, for example.

3.2. Exclusion of Accident Liability Obligation

Kontron Embedded Computers 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 included document “General Safety Instructions for IT Equipment”, the hints in this manual or eventually the warning signs label on the device, Kontron Embedded Computers shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.

4. Safety Instructions

Please consider the included “General Safety Instructions for IT Equipment”.

4.1. Electrostatic Discharge (ESD)

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

1. Transport boards in static-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

The following measures help to avoid electrostatic damages to the device:

1. Cover the workplace with approved antistatic material. Always wear a wrist strap connected to workplace as well as properly grounded tools and equipment.
2. Use anti-static mats, heel straps, or air ionizes to give added 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 field service tools such as cutters, screwdrivers, and vacuum cleaners which are conductive.
8. Always place drives and boards PCB-assembly-side down on the foam.

4.2. Instructions for the Lithium Battery

The installed SBC (Single Board Computer) is equipped with a Lithium battery. The Lithium battery may only be replaced by the manufacturer.

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).

4.3. FCC Statement

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 residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

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

4.4. 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. Scope of Delivery

- ❑ CB 511 platform (corresponding to the ordered system configuration)
- ❑ DC power cable or external AC/DC Adapter (as ordered)
- ❑ General Safety Instructions for IT Equipment

Factory pre-assembled for the ordered variant:

- ❑ Rubber feet (self-adhesive) for the desktop variant

or

- ❑ Left and right brackets for the wall or table mounting variant

Optional Parts

- ❑ Mini-PCIe WLAN card (internally installed) with 1x or 2x WiFi antennas

The CB 511 platform can only be factory-equipped with the expansion card (Mini-PCIe WLAN card). Please observe that the power consumption of the installed Mini-PCIe card in the CB 511 system should not exceed 5 W.

5.1. Type Label and Product Identification

The type label (product designation, serial number) and the inspection status label of your CB 511 system are located on the bottom side of the device.

Fig. 1: Front view

Fig. 2: Rear view

6. Product Description

The CB 511 platform expands the Kontron "CB Series" computer line. The CB 511 platform is equipped with a Single Board Computer (Intel® Atom, N270 processor, 1.6GHz). The hardware system configuration and the robust construction with excellent mechanical stability of the CB 511 platform offer the superior qualities of a computer designed for operation in harsh industrial environment. The CB 511 platform can be equipped with a rear side accessible CompactFlash™ card, type I (see chapter 6.2.4 "CompactFlash™ Slot").

The CB 511 is a fanless system with a compact aluminum chassis with cooling fins. The rated voltage range of the mains can be found on the type label. The type label is located at the bottom side of the device. The CB 511 can be factory-equipped with a Mini-PCIe WLAN card for one or two antennas. For the extension option of the CB 511 platform please refer to the "Configuration Guides - CB-Series" on the web site www.kontron.com.

Fig. 3: Bottom view

Fig. 4: Right view

Fig. 5: Front side

Fig. 6: Left view

Fig. 7: Top view

Fig. 8: Rear view

☞ The device can be operated in all positions except with the top side facing down.

When power on the CB 511, make sure that the air openings on the front (Fig. 9, pos. 3) and rear side (Fig. 12, pos. 2) and the cooling fins of the chassis are not obstructed (covered) by any objects.
To provide sufficient heat dissipation for the device cooling, do not cover the cooling fins of the CB 511. Do not place any objects on the device. When installing the platform, please note the clearance recommendation in the chapter 10.2 "Mechanical Specifications".

6.1. Front View

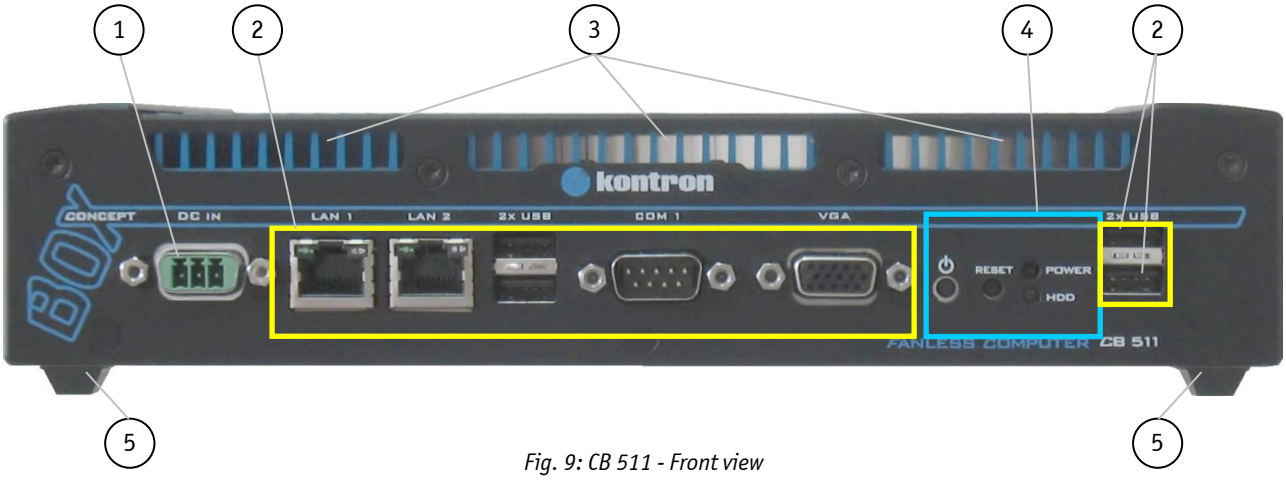


Fig. 9: CB 511 - Front view

1 DC IN power connector
2 External connectors of the installed SBC
3 Air openings at the front side
4 Controls and indicators
5 Rubber feet

6.1.1. DC IN – Connector

The 3-pin connector (Fig. 9, pos. 1) provides the power connection of the CB 511 platform to the appropriate main power source:

- ❑ **DC power supply:** using the DC power cord
- ❑ **AC power supply:** using the optional external AC/DC adapter

Please pay attention to the chapter 7.1 "Connecting to DC or AC Main Power Source".

6.1.2. Controls and Indicators

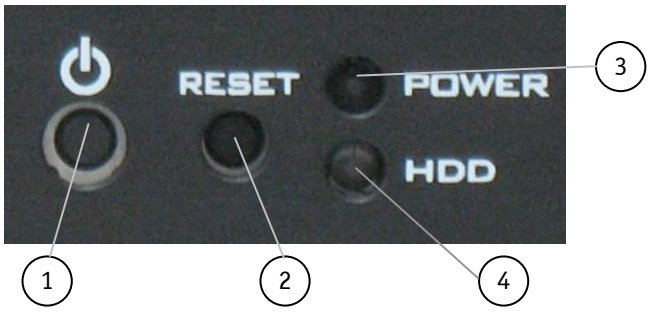


Fig. 10: CB 511 - controls and indicators

1 Power button
2 RESET button
3 Power LED
4 HDD activity LED

6.1.2.1. Power Button

Press this button (Fig. 10, pos. 1) to power the system on or off.

Please observe the BIOS Setup settings (BIOS Setup / Chipset / South Bridge Configuration / **Restore on AC Power Loss**, Setup options: ***Power On*** / Power Off). The default setting is "Power On".
Please also note the description in section 9.1 "Protection against Overheating".

Prerequisite:
The CB 511 has to be connected to an appropriate main power source (AC via optional external AC/DC adapter or DC).

Even when the CB 511 platform is turned off via the power button there is still a standby-voltage of 5 VSb on the SBC.

For DC power connection:
The DC power source should be able to be switched off and on via an isolating switch. This serves as disconnect device and must be easily accessible.

For AC power connection via external AC/DC adapter:
The main power cable of the optional external AC/DC adapter serves as disconnect device. For this reason the outlet of the AC power source must be located near to the device and be easily accessible.

6.1.2.2. Power LED and HDD LED

The power LED (Fig. 10, pos. 3) and the HDD LED (Fig. 10, pos. 4) are located on the front side of the CB 511 platform and indicate the system status.

System	System Status	Color of the Power LED
CB 511 (The DC IN connector is connected to the main power source.)	The system is in standby mode.	orange
	The system is operational.	green
	Voltage, temperature or battery error	red

System	Activity of the installed Storage Media	Color of the HDD LED
CB 511 (The DC IN connector is connected to the main power source)	CF card only	green

6.1.2.3. RESET-Button

To restart the system, e.g. after a system hang-up, press the “RESET” button (Fig. 10, pos. 2). The system restarts automatically; you don’t have to turn the computer off and on.

During a reset all data in the main memory will be erased. Any unsaved data will be lost after a reset.

6.1.3. Interfaces on the Front Side

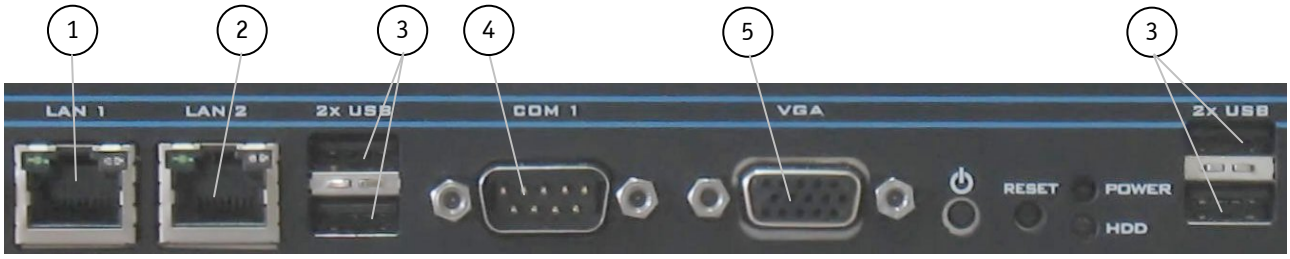


Fig. 11: External interfaces of the integrated SBC

1 LAN1 port (RJ45) (10/100/1000Mbps)
2 LAN2 port (RJ45) (10/100/1000Mbps)
3 4x USB 2.0 port
4 Serial port (COM1), as RS232
5 VGA port

6.1.3.1. LAN Ports

These ports (Fig. 11, pos. 1 and pos. 2) consist of RJ45 connectors with integrated LEDs and support a transfer rate of 10/100/1000Mbps.

Left LED Color	Link Status
Off	No Link
Green	Link is established
Green	Link is established

Right LED Color	Link Speed
Off	10 Base-T
Green	100 Base-T
Orange	1000 Base-T

6.1.3.2. USB 2.0 Ports

You can connect various USB devices to these two USB 2.0 interface connectors (Fig. 9, pos. 2 and Fig. 11, pos. 3).

6.1.3.3. Serial Port (COM1)

The serial port COM1 (Fig. 11, pos. 4) consists of a 9-pin, RS232 configured D-SUB connector that allows the connection of a serial peripheral.

6.1.3.4. VGA Port

You can connect to this port (Fig. 11, pos. 5) (15-pin D-SUB connector) an analog monitor to this connector.

6.2. Rear Side

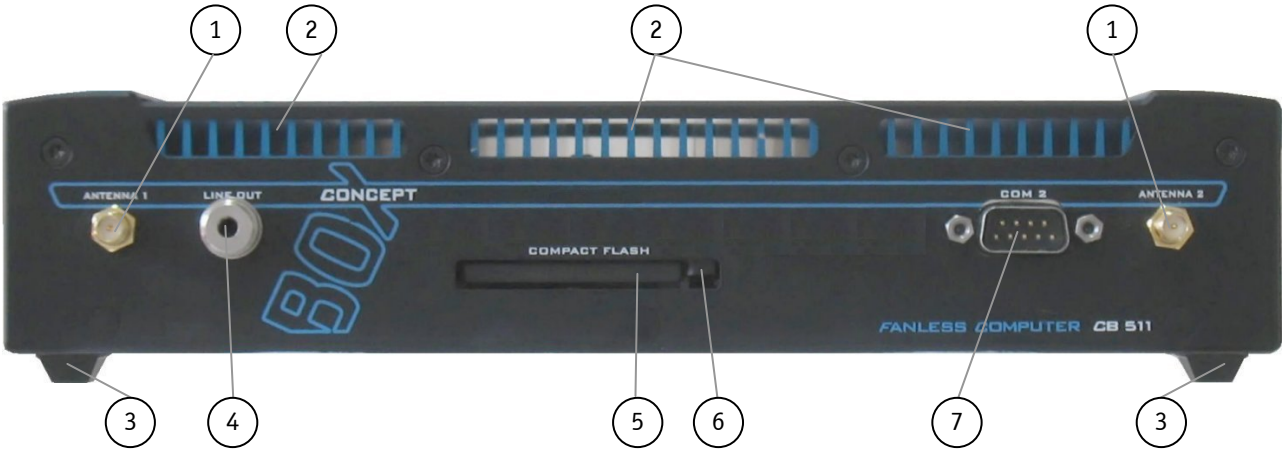


Fig. 12: CB 511 rear side with two WiFi antenna connectors (with one also possible)

1 Reverse (RP) SMA connector for WLAN antenna (Mini PCIe WLAN card with 1x or 2x antenna are optional)

2 Air openings at the rear side

3 Rubber feet

4 Audio connector (Line-Out)

5 CF slot (shown with inserted CF card)

6 CF card eject button

7 COM2 serial port (RS232)

6.2.1. Audio (LINE OUT)

To this Line-Out connector (Jack 3.5 mm) (Fig. 12, pos. 4) can be connected an active loudspeaker/headphone.

6.2.2. Serial Port (COM2)

This RS232 serial port (Fig. 12, pos. 7) is provided as a 9-pin D-SUB connector. It allows the connection of a serial peripheral device.

6.2.3. WLAN (Option)

Depending on the ordered system configuration, the CB 511 platform can be equipped with WLAN expansion card (with one or two antennas). If you have ordered a system configuration including WLAN, at the rear side a Reverse (RP) SMA-connector is installed (Fig. 12, pos. 1) for screwing on the provided WLAN antenna.

For WLAN communication the antenna an antenna (Fig. 13) will be screwed on to the RP SMA connector (Fig. 12, pos. 1) of the CB 511 system. The antenna can be tilt and rotated in the appropriate position to get the optimal transmission and reception quality.

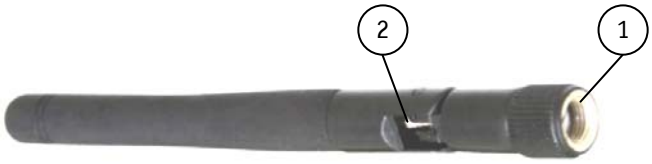


Fig. 13: WLAN (WiFi) Antenna

1 Reverse (RP) SMA antenna connector

2 Hinge for positioning the antenna

6.2.4. CompactFlash™ Slot

The CB 511 is equipped with an external accessible CompactFlash™ slot for CompactFlash™ card type I (Fig. 12, pos. 5). The CompactFlash slot is equipped with an eject button (Fig. 12, pos. 6) for removing the CompactFlash™ card.

Before you attempt to install or remove a CompactFlash™ card, the system must be properly powered down and disconnected from the main power source. The CF card is not a “hot-swap” device.

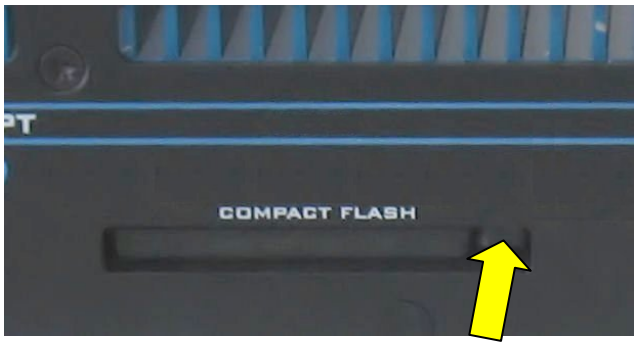


Fig. 14: Remouving the CompactFlash™ card (press the eject button)

Fig. 15: Installing the CompactFlash™ card

6.2.4.1. Removing the externally accessible CompactFlash™ Card

To remove the CompactFlash™ card, please perform the following steps:

To prevent data loss when removing, don’t remove the CF card during read or write operations.

1. Power down the CB 511 properly and disconnect it from the AC or DC main power source.
2. To release the CF card, push the eject button (Fig. 12, pos. 6) as shown in Fig. 14.
3. Remove the CF card from the CF slot and from the device.

6.2.4.2. Inserting the externally accessible CompactFlash™ Card

To install the CompactFlash™ card, please perform the following steps:

1. Disconnect it from the AC or DC main power source. Disconnect all peripherals.
2. Insert the CompactFlash™ card with the connectors facing forward into the CF slot as shown in Fig. 15.
3. Carefully but firmly slide the CompactFlash™ card into the CF card slot until it seats and locks into place.

If this appears as necessary, it may be that the CF card is not properly inserted into the guidance of the CF slot. Remove the card from the slot and carefully reinsert it.

6.3. Chassis with cooling Fins

All three sides of the aluminum chassis (left, upper and right side) are covered with cooling fins. The cooling fins provide heat dissipation during operation.

☞ To provide sufficient heat dissipation for the cooling of the CB 511 platform, never cover the cooling fins of the chassis. Do not place any objects on the device.

Fig. 16: Right side of the chassis

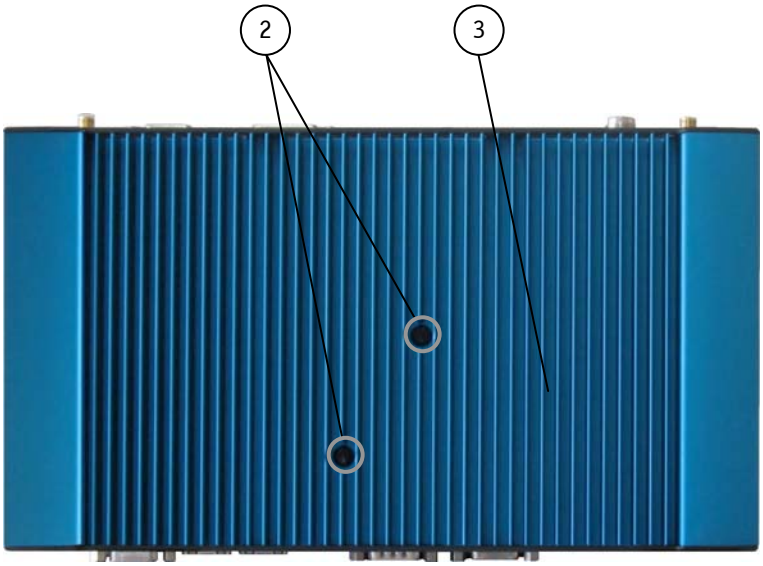


Fig. 17: Top side of the chassis

Fig. 18: Left side of the chassis

1 Cooling fins of the chassis on the right side
2 Torx screws that fix the internal heat transfer plate to the chassis
3 Cooling fins of the chassis on the top side
4 Cooling fins of the chassis on the left side

☞ Do not loosen or remove the two torx screws (Fig. 17, pos. 2) that fix the internal heat transfer plate to the chassis.

6.4. Bottom Side

At the bottom side are located: the type label, the inspection status label and if applicable, the license sticker.

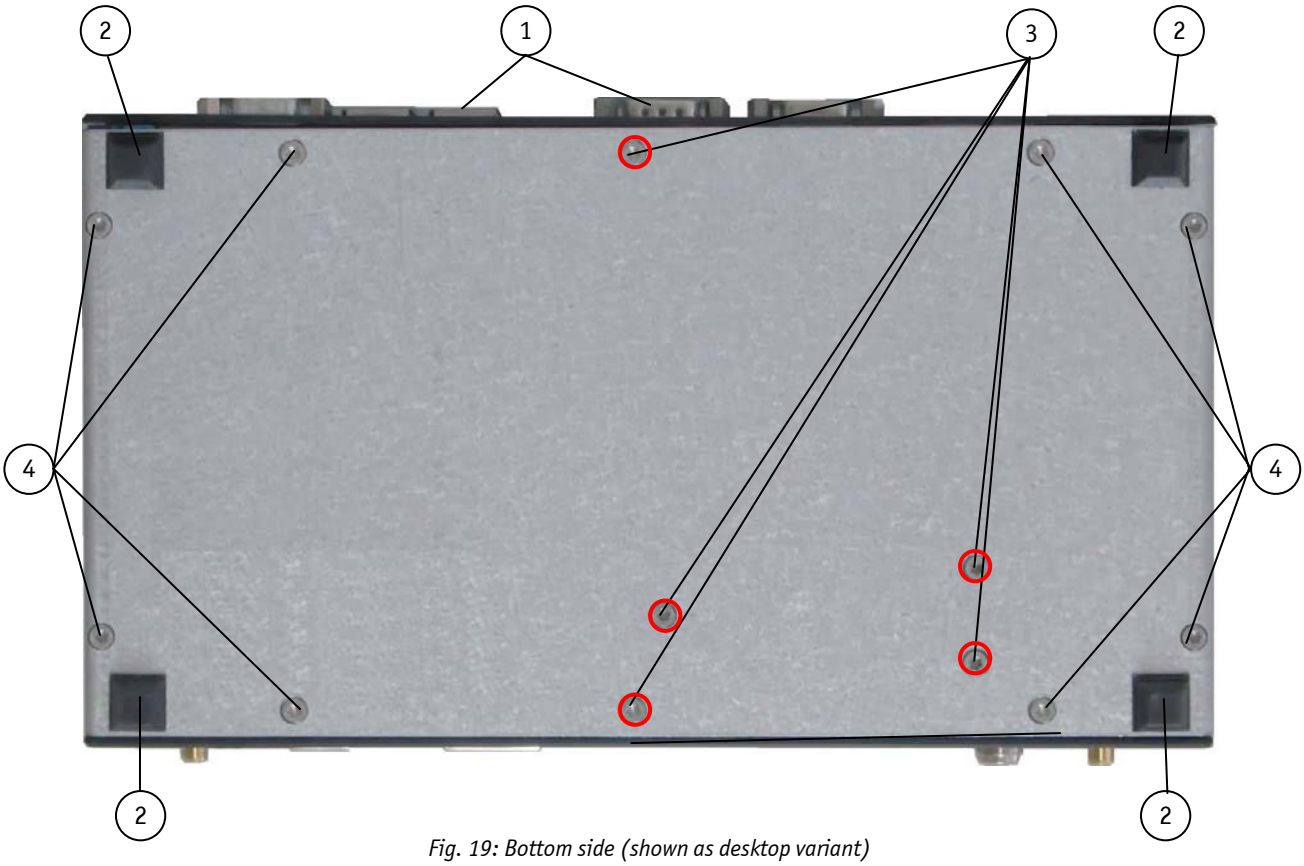


Fig. 19: Bottom side (shown as desktop variant)

1 Side with external interfaces of the SBC

2 Rubber feet of the desktop version

3 Screws M3x6 DIN7991 A2 torx for securing of the bottom part of the chassis

4 Torx screws for attachment of the chassis or of the optional brackets (for wall or table mounting)

☞ Do not loosen or remove the torx screws (Fig. 19, pos. 3) and (Fig. 19, pos. 4).

If you attempt to change your desktop unit to a wall mount unit, refer to the chapter 8.1 “Wall or Table Mount using the Brackets”.

6.5. Storage Media

A CompactFlash™ card (IDE) can be installed into the CF slot of the CB 511 platform. The CF slot is accessible from the rear side. For installing and /or removing the CompactFlash™ card please observe the description in the subsections 6.2.4.1 and 6.2.4.2.

6.6. DC Power Cord for Connection to an DC Power Source

Fig. 20: DC power cord

6.7. AC/DC-Adapter for Connection to an AC Mains Power Source

The external AC/DC adapter is provided with an AC power cord.

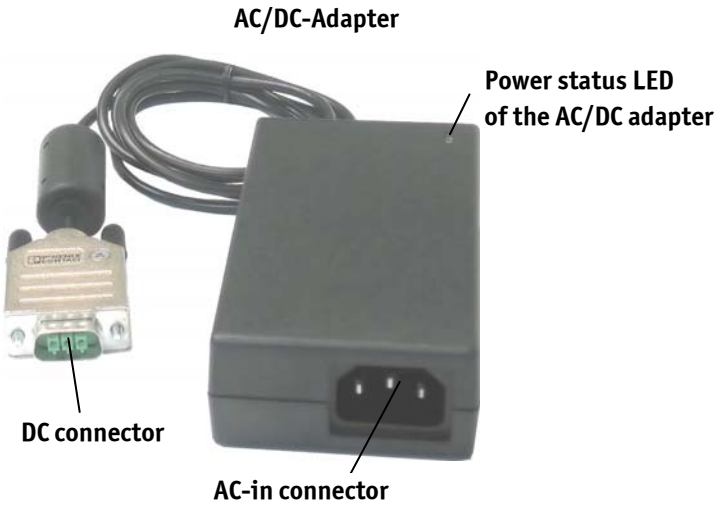


Fig. 21: AC/DC adapter

Fig. 22: AC power cord

AC/DC-Adapter	
AC input	**DC output**
100-240 V 1.5 A 50-60 Hz	24 VDC 2.5 A max.

7. Starting Up

☞ The rated voltage range of the mains (AC/DC) must agree with the voltage value on the type label.

7.1. Connecting to DC or AC Main Power Source

The DC input connector (Fig. 9, pos. 1) is located on the front side of the CB 511 platform.

☞	The CB 511 can be connected to a DC power source (refer to Fig. 23) via the DC power cord (Fig. 20) as well as to an AC mains power source (refer to Fig. 24) using the external AC/DC adapter (Fig. 21 and Fig. 22).
⚠	Even when the CB 511 platform is turned off via the power button (Fig. 10, pos. 1) there is still a standby-voltage of 5VSb on the SBC. **For DC power connection:** The DC power source should be able to be switched off and on via an isolating switch. This serves as disconnect device and must be easily accessible. **For AC power connection via external AC/DC adapter:** The mains power cable of the optional external AC/DC adapter serves as disconnect device. The unit is complete disconnected from the mains power source, only when the power cord is disconnected either from the main power source or from the unit. For this reason the outlet of the AC mains power source must be located near to the device and be easily accessible.

7.1.1. Connecting the CB 511 Platform to a DC Power Source

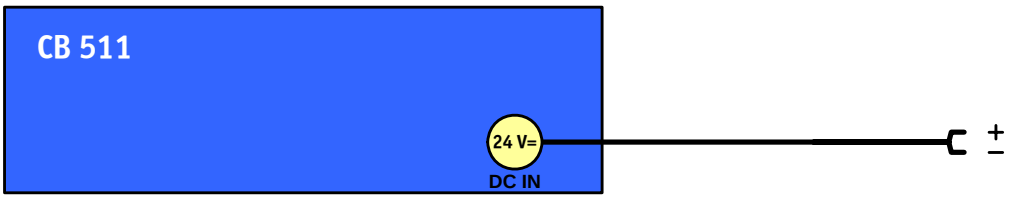


Fig. 23: CB 511 - DC power connection

To connect the CB 511 platform to a corresponding DC main power supply, please perform the following steps:

1. Connect the 3-pin connector of the DC power cord to the DC input connector (Fig. 9, pos. 1) of the CB 511 platform. The DC input connector of the CB 511 platform is located on the front side and is marked “DC IN”.
2. The DC power source must be switched off via a 2-pole disconnect device to make sure that no voltage is present at the terminals during the connecting procedure.
3. Connect the other end of the DC power cord to the 24V DC power source.
   Pay attention to the polarity of the connections. The wires (positive and negative) of the DC power cord are marked plus (+) and minus (-) signs (refer to Fig. 20).
4. Switch on the DC power source via the disconnect device.

⚠ It must be ensured that the CB 511 platform can be powered ON and OFF via a readily accessible two-pole disconnect device that shall be incorporated in the building installation wiring.

This serves as disconnect device and must be easily accessible.

7.1.2. Connecting the CB 511 Platform to an AC Mains Power Source using the AC/DC Adapter

CB 511 can be connected via the AC/DC adapter to an AC mains power source.

The plug on AC power cord supplied corresponds to the requirements of the country in which you purchased your system. Make sure that the AC power cord is suitable for the country where the device is to be used.

The AC power cord is the disconnecting device. For this reason, the outlet of the AC mains power source must always be mounted close to the system and be easily accessible.

The AC/DC adapter must be placed freely and must not be covered.

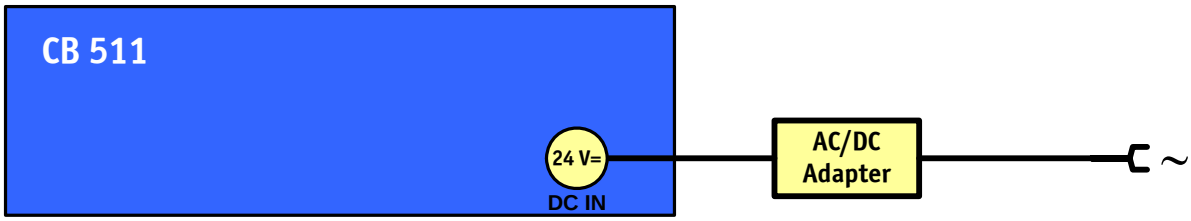


Fig. 24: Connecting the CB 511 to an AC main power source via the AC/DC adapter

To connect the CB 511 platform to a corresponding AC main power supply, please perform the following steps:

1. Connect the 3-pin connector of the AC/DC adapter to the DC input connector (Fig. 9, pos. 1) of the CB 511 platform. The DC input connector is located on the front side and is marked "DC IN".
2. Connect the AC power cord to the AC/DC adapter.
3. Connect the other end of the AC power cord to a corresponding AC mains outlet.

Make sure that the AC mains power source (outlet) is properly grounded and that the AC power cord is intact and undamaged. Ungrounded power sources are not allowed.

7.2. Operating Systems and Hardware Component Drivers

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

If you have ordered your CB 511 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 switch it on for the first time.

If you have ordered CB 511 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.

8. Installing the CB 511 Platform

Important Instructions!

The expansion card (if ordered) can only be factory installed.

Please follow the corresponding instructions in this manual when installing/mounting the CB 511 platform.

The system has to be mounted and installed only by the service person for this area familiar with the associated dangers.

The device can be operated in all positions except with the top side facing down.

Please observe all specified dimensions required for mounting included in the drawing with outline dimensions for the CB 511 platform. The corresponding drawing can be downloaded from our web site www.kontron.com by selecting the product name.

When installing the CB 511, there must be at least 40 mm (approximately 1.575") free space around the cooling fins to prevent the system overheating.

Leave at least 100 mm (approximately 3.937") free space to the front and rear of the unit in order to have access to the interfaces to connect the peripherals and to operate the power button.

The air openings at the front (Fig. 9, pos 3) and on the rear (Fig. 12, pos. 2) and the cooling fins of the chassis must not be obstructed.

If you attempt to mount the CB 511 to a table or to a wall, attach to the system only the brackets (Fig. 25 and Fig. 26) with the screws (Fig. 19, pos. 4).

The platform must be firmly attached to a clean flat and solid mounting surface. Use proper fastening materials suitable for the mounting surface. Ensure that the mounting surface type and the used mounting solution safely support the load of the CB 511 platform and the attached components.

Please follow the local/national regulations for grounding.

The voltage feeds must not be overloaded.
Adjust the cabling and the external overcharge protection to correspond with the electrical data indicated on the type label.

The type label is located on bottom side of the unit.

8.1. Wall or Table Mount using the Brackets

In order to mount the CB 511 platform to a wall (vertical) or on a table (horizontal) can be ordered two mounting brackets (Fig. 25 and Fig. 26) with keyhole shaped mounting slots. You can adapt your desktop CB 511 to a wall mount system by attaching the mounting brackets to the left and the right side of the platform bottom side.

When mounting the device, pay attention to the range of restriction areas around the platform. Refer to the subsection 10.2.2 “Dimensions for Wall and Table Mounting”.

Please observe the “General Safety Instructions for IT Equipment” (included) and the installation instructions (refer to the chapters 4 and 8).

Please observe that each mounting bracket may be used as left or right bracket. This versatility allows you to mount the CB 511 platform in the required mounting position (which interface side should be downward/upward mounted). Refer to Fig. 27 and Fig. 28.

Fig. 25: Left/right mounting bracket

Fig. 26: Right/left mounting bracket

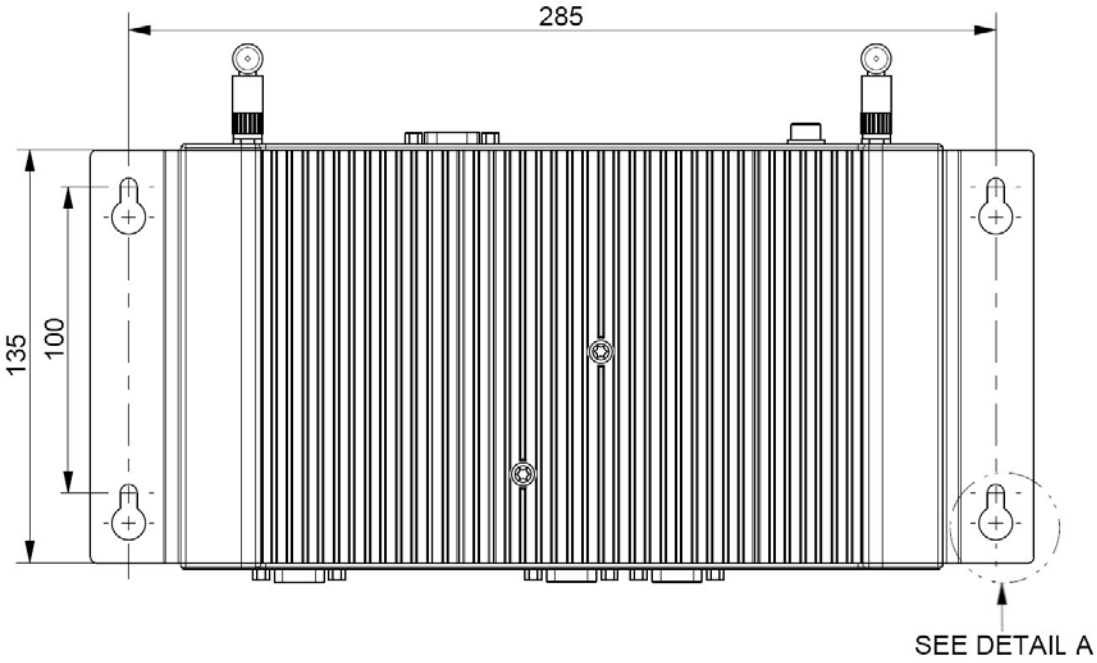


Fig. 27: CB 511 with mounting brackets installed in order to have the device interface side with antenna upwards

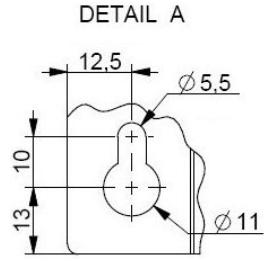


Fig. 28: Detail with dimensions of the keyhole slot

8.2. CB 511 Platform - Desktop

The CB 511 platform will be delivered as desktop version with rubber feet attached to the bottom side of the device. When positioning the device, pay attention to the restriction area at the front and rear side of the platform. See section 10.2.1 “CB 511 Desktop Dimensions”.

9. Maintenance and Prevention

Equipment from Kontron Embedded Computers requires only minimum servicing and maintenance for problem-free operation.

- ❑ For light soiling, clean the CB 511 with a dry cloth.
  Carefully remove dust from the cooling fins of the chassis using a clean, soft brush.
- ❑ Stubborn dirt should be removed using a mild detergent and a soft cloth.

9.1. Protection against Overheating

The system comes with a protective function against overheating.

The implemented protective function against overheating will turn off the system when the specified maximum environmental temperature (+60 °C) is exceeded during operation (caused by external influences) and the internal temperature has reached 85 °C.

	**For the CB 511 platform:** A temperature value of 85°C at the internal temperature sensor corresponds to an environmental temperature of 65 °C. Any unsaved data will be lost when the system is switched off by the protective function against overheating. The device turns on automatically and performs a system start as soon as the internal temperature decreases to 70 °C.
	**System behavior after DC or AC mains power loss;** (refer to BIOS Setup / Chipset / South Bridge Configuration / Restore on AC Power Loss: option settings: ***Power On*** / Power Off). The default setting for the CB 511 is “Power On”. In this case the system will boot up immediately after the DC or AC mains power was restored. Depending on the behavior of your installed application software, it is possible that the software starts immediately without any warning, as soon as the DC or AC mains power is restored and the system is booted up.

10. Technical Data

CB 511		
Installed SBC	SBC with Intel® Atom™ processor	
Processor	Intel® Atom™ N270	
Storage Media	1x CompactFlash™ Type I (IDE)	
Lithium Battery	CR2032; 3.0 V; 0.18Ah (UL recognized)	
BIOS	AMI	
Interfaces	Interfaces at the rear side: 1x VGA 1x COM1(RS232) 4x USB (2.0) 2x LAN (10/100/1000Mbps)	Interfaces at the front side: 1x Line-Out 1x COM2 (RS232) **Options:** WLAN(optional; with 1x or 2x antenna connector)
Internal Onboard Slots	1x mini PCIe x1 for optional WLAN card	
Controls (at the front side)	Power button RESET button	
Indicators (at the front side)	Power LED Hard disk activity LED	
DC IN Connector (at the front side)	3-pin input connector	
Power Consumption per Slot (Mini PCIexpress)	Max. 5 W	
Mains Power Supply	See type label	DC: 24 VDC (10-30V DC) via DC power cable AC: 100-240V via external AC/DC adapter

The document "Configuration Guide" and the manual of the installed SBC can be downloaded from our web site: www.kontron.com by selecting the product.

10.1. Electrical Specifications

The corresponding electrical specifications for your CB 511 platform can be found on the type label of the system.

10.2. Mechanical Specifications

10.2.1. CB 511 Desktop Dimensions

☞ For a sufficient air circulation around the device, we recommend not to place (mount) or operate any other devices within the restriction area marked with “40mm” (all around the cooling fins of the chassis) (see Fig. 29).

The restriction area marked with “100mm” (at the front and rear side of the platform) is reserved for cable connections (see Fig. 30).

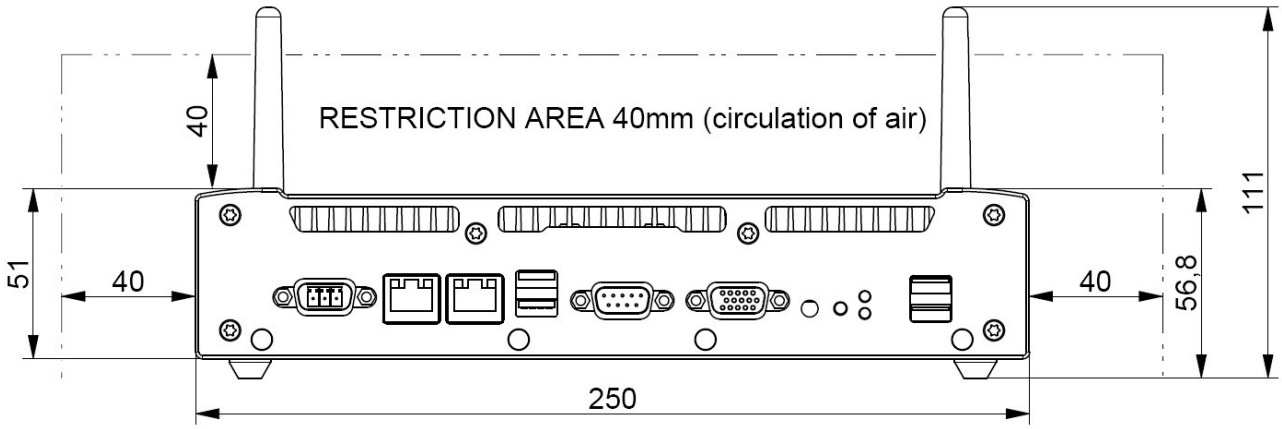


Fig. 29: Dimensions in the front view (desktop)

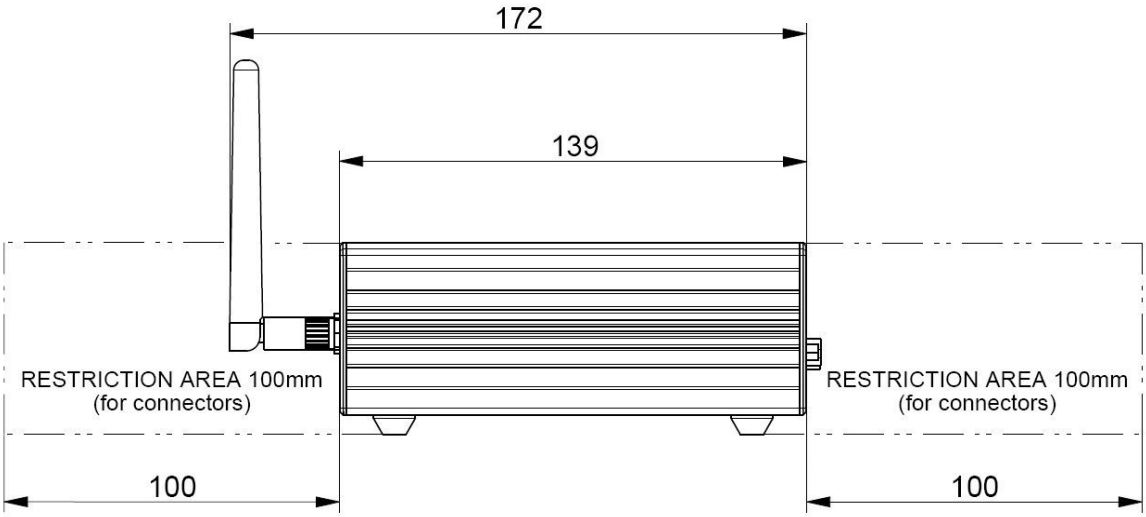


Fig. 30: Dimensions in the side view (desktop)

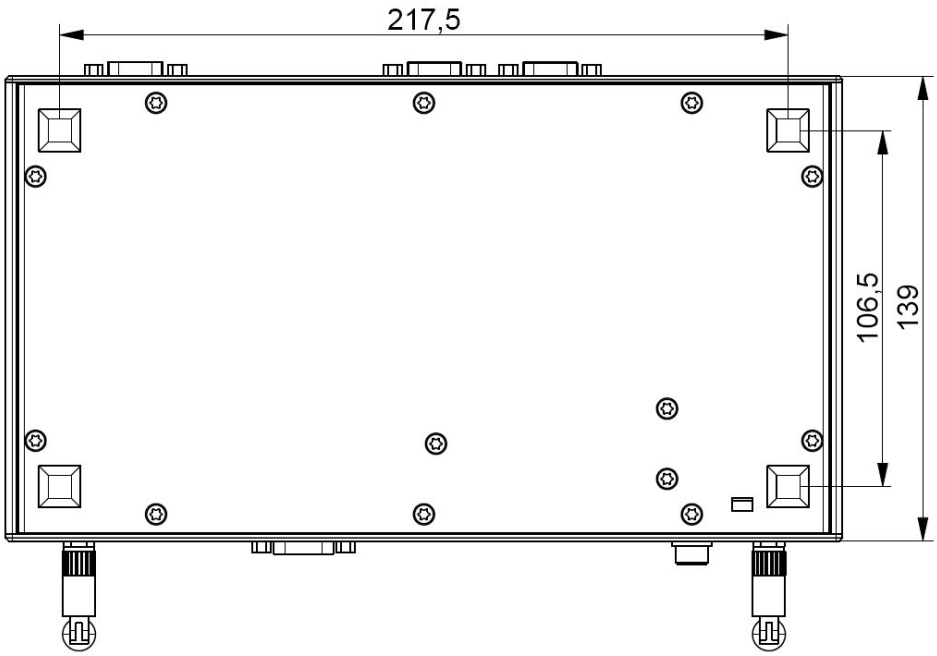


Fig. 31: Dimensions in the bottom view (desktop)

10.2.2. Dimensions for Wall and Table Mounting

☞ For a sufficient air circulation around the device, we recommend not to place (mount) or operate any other devices within the restriction area marked with “40mm” (all around the cooling fins of the chassis) (see Fig. 32).

The restriction area marked with “100mm” (at the front and rear side of the platform) is reserved for cable connections (see Fig. 33).

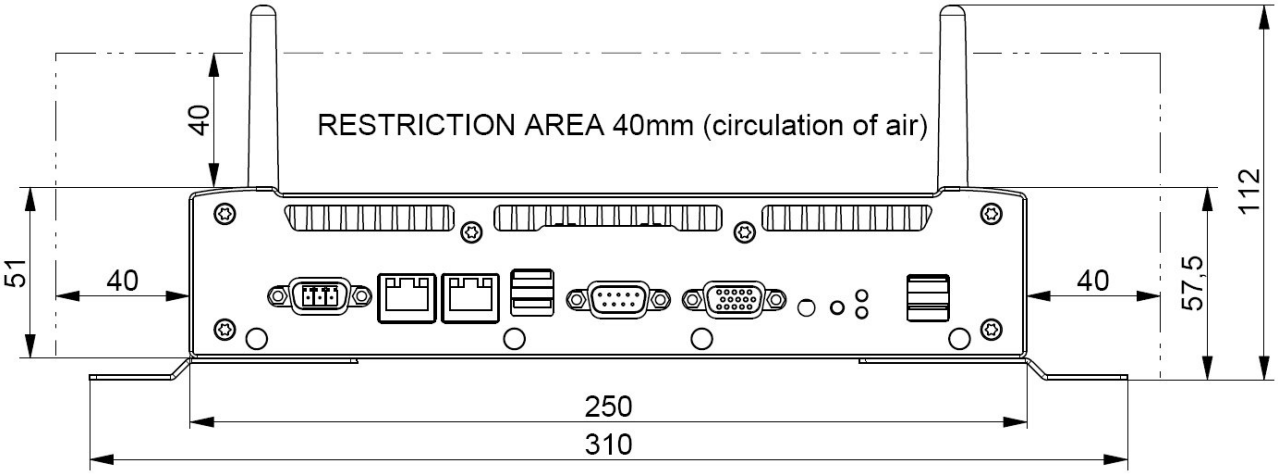


Fig. 32: Dimensions in the front view (with mounting brackets)

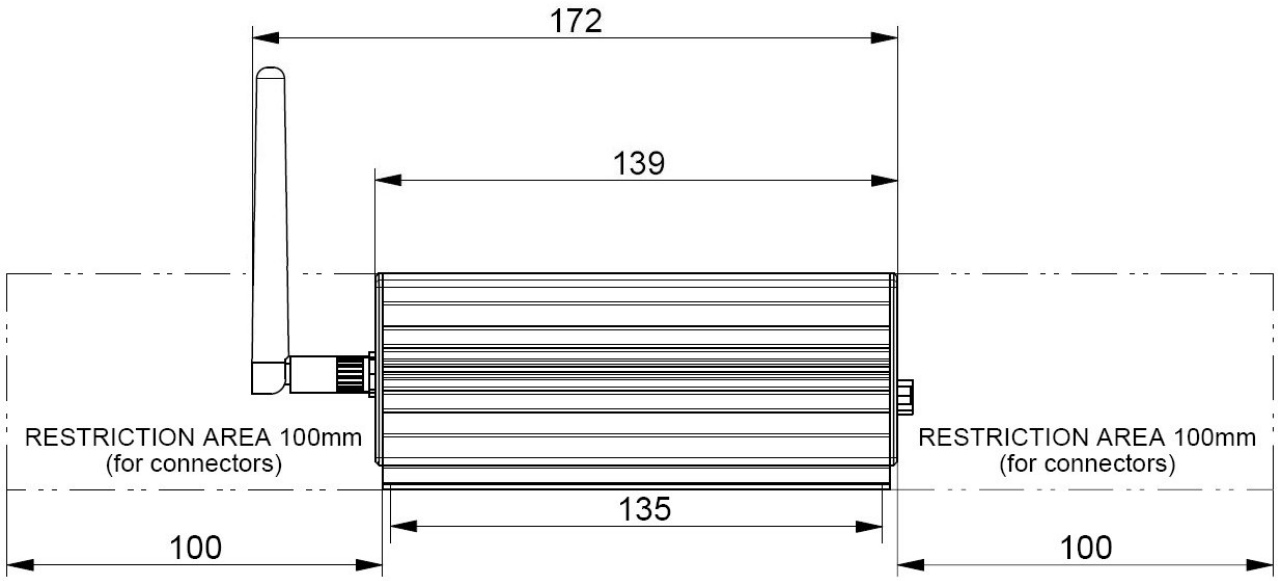


Fig. 33: Dimensions in the side view (with mounting brackets)

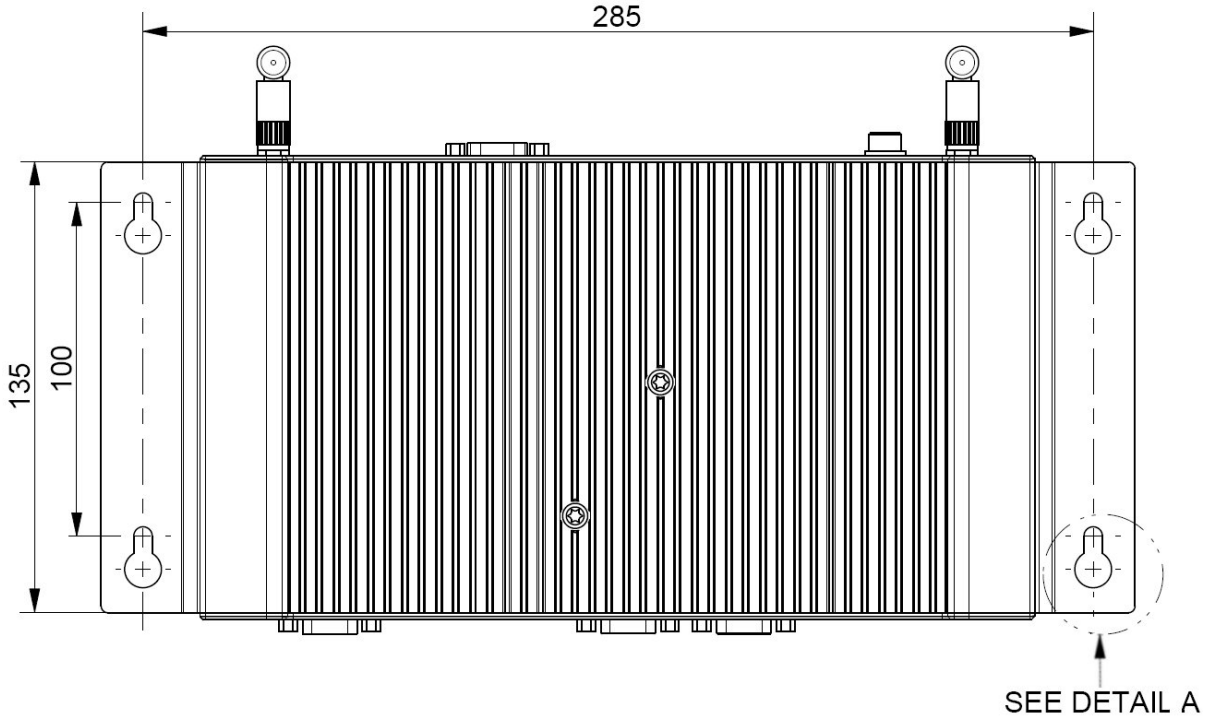


Fig. 34: Dimensions in the top view (wall or table mounting)

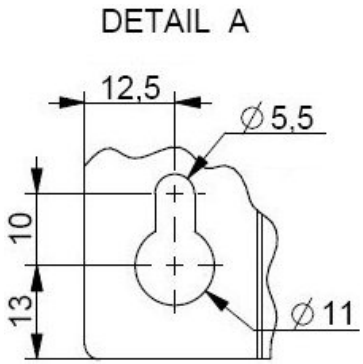


Fig. 35: Detail for keyhole (wall or table mounting)

10.3. Environmental Specifications

Operating Temperature	-20 ... +60 °C, (-4 ... +140 °F),
Storage / Transit Temp. / Relative Humidity	-25 ... +70 °C / 5-95 % @ 40 °C, not condensing (-13 ... +158 °F / 5-95 % @ 104 °F, not condensing)
Max. Operation Altitude	3.048 m (10000 ft)
Max. Storage / Transit Altitude	10.000 m (32810 ft)
Operating Shock	5 G, 11 ms duration, half sine
Storage / Transit Shock	15 G, 11 ms duration, half sine
Operating Vibration	10 – 500 Hz, 0.5 G
Storage / Transit Vibration	10 – 500 Hz, 1.0 G

10.4. CE Directives and Standards

CE Directives	
Elektrical Safety	General Product Safety Directive (GPSD) 2001/95/EC Low Voltage Directive (LVD) 2006/95/EC
Electromagnetic Compatibility (EMC)	EMC Directive 2004/108/EC
CE Marking	Council Directive 93/68/EEC

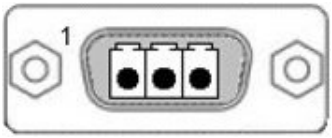
Electrical Safety	Harmonized Standards
EUROPE	Information technology equipment - Safety - Part 1: General requirements EN 60950-1: 2006+A112009
U.S.A. / CANADA	to meet UL60950-1:2007 / CSA C22.2- No. 60950-1-7:2007

EMC	Harmonized Standards
EUROPE	Generic emission standard for industrial environments (Emission): EN 61000-6-4:2007 Generic standards - Immunity for industrial environments (Immunity): EN 61000-6-2:2005
U.S.A.	FCC 47 CFR Part 15, Class A
CANADA	ICES-003, Class A

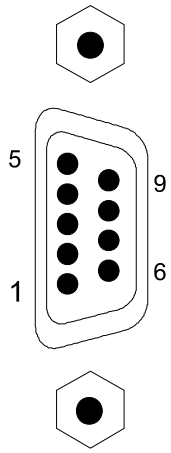
11. Standard Ports – Pin Assignment

Low-active signals are identified with a minus sign.

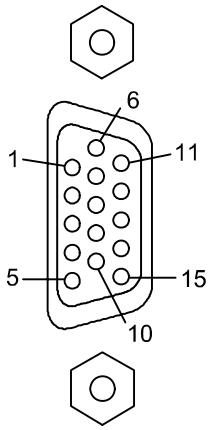
11.1.1. DC IN Connector

Pin	Signal Name	3-Pin DC-In connector (male)
1	0V (input)	
2	NC	
2	+24 VDC (input)	

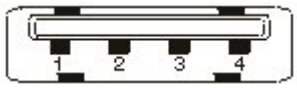
11.1.2. Serial Port COM1 and optional COM2 (RS232)

Pin	Signal Name		9-pin D-SUB connector
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)	

11.1.3. VGA Port

Pin	Signal Name	15-pin D-SUB connector (female)
1	Analog red output	
2	Analog green output	
3	Analog blue output	
4	N.C.	
5–8	GND	
9	+5 V (DDC)	
10	GND	
11	N.C.	
12	SDA (DDC)	
13	TTL HSync	
14	TTL VSync	
15	SCL (DDC)	

11.1.4. USB Port

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

12. Technical Support

For technical support, please contact our Technical Support department:

Tel: +49 (0) 8165/77 112
Fax: +49 (0) 8165/77 110
e-Mail: support@kontron.com

Make sure you have the following information on hand when you call:
• the unit part id number (PN),
• the serial number (SN) of the unit (the serial number can be found on the type label, placed on the bottom side of the system).

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

If you have questions about Kontron Embedded Computers or our products and services, you may reach us at the aforementioned numbers, or at: www.kontron.com or by writing to:

Kontron Embedded Computers GmbH
Oskar-von-Miller-Str. 1

85386 Eching
Germany

12.1. Returning Defective Merchandise

Before you return any device that is not functioning correctly to Kontron Embedded Computers, please work through the following list:

1. Download the form for returning a device with an RMA No. [RMA (**R**eturn of **M**aterial **A**uthorization)] from our website www.kontron.com / Support /RMA Information; contact our Customer Service department to obtain an RMA No.:
   Fax: (+49) 8165-77 412
   e-Mail: service@kontron.com
2. Ensure that you have received an RMA No. from Kontron Customer Services before returning any device. Write this number clearly on the outside of the package that you are sending to us.
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 box.
   • Enclose a copy of the RMA form with the consignment.

Corporate Offices

Europe, Middle East & Africa	North America	Asia Pacific
Oskar-von-Miller-Str. 1 85386 Eching/Munich Germany Tel.: +49 (0)8165/ 77 777 Fax: +49 (0)8165/ 77 219 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@kontron.cn