Benutzerhandbuch/ User's Manual

JRex-IBOX Fanless

User's Manual
Version 1.00

Kontron Embedded Computers GmbH

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kontron

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Introduction

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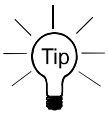
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Symbols used in this Manual

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's manual.
	This symbol precedes helpful hints and tips for daily use.

Important Instructions

This chapter contains instructions which must be observed when using the JRex-IBOX Fanless.

The manufacturer's instructions provide useful information on the JRex-IBOX Fanless.

Note on the Warranty

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 guarantee beyond that provided by law. This applies to batteries, for example.

Exclusion of Accident Liability Obligation

Kontron Embedded Computers shall be exempted from the statutory accident liability obligation if the user fails to observe the safety instructions.

Liability Limitation / Exemption from the Warranty Obligation

In the event of damage to the device caused by failure to observe the hints in this manual and on the device (especially the safety instructions), 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.



Safety Instructions

Please read this section carefully and observe the instructions for your own safety and correct use of the device.

This chapter also contains information on approval and interference suppression of your JRex-IBOX Fanless.

Please observe the warnings and instructions on the device and in the manual.

The device has been built and tested by Kontron Embedded Computers in accordance with EN 60950/VDE 0805 and left the company in a perfectly safe condition.

In order to maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in this manual.

- ❑ The device must be used in accordance with the instructions for use.
- ❑ The electrical installations in the room must correspond to the requirements of the respective regulations.
- ❑ Take care that there are no cables, particularly power cables, in areas where persons can trip over them.
- ❑ Do not use a power cable in sockets shared by a number of other power consumers. Do not use an extension cable.
- ❑ Only use the power cord supplied.
- ❑ The unit is only completely disconnected from the main power source when the power cord is disconnected either from the power source or from the unit. Therefore, the power cord and its connectors must always remain easily accessible.
- ❑ Only devices and components which fulfill the requirements of a SELV circuit (Safety Extra Low Voltage) in accordance with EN 60950 may be connected to the interfaces of the system.

- ❑ All plugs on the connection cables must be screwed or locked to the housing.
- ❑ Do not place the device in direct sunlight, near heat sources or in a damp place. Make sure the device has adequate ventilation.
- ❑ Due to the applied CPU cooling method with „Heat Pipe“, the JRex-IBOX Fanless should be used only:
  - in vertical position with the interfaces faced downwards, or
  - in horizontal position.
- ❑ The device may be opened only for the replacement of the lithium battery and main memory. The device must be switched off and disconnected from the power supply.
- ❑ The extension of the device can be carried out only in the factory.
- ❑ Maintenance or repair on the open device may only be carried out by qualified personnel authorized by Kontron Embedded Computers.
- ❑ Only original accessories approved by Kontron Embedded Computers may be used.
- ❑ It must be assumed that safe operation is no longer possible
  - if the device has visible damage or
  - if the device no longer functions.

  In these cases the device must be shut down and secured against unintentional operation.

For DC powered systems

- ❑ The DC-input must fulfill SELV Requirements of EN 60950 standard.



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:

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.

Grounding Methods

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

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace as well as 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 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.

Instructions for the Lithium Battery

The installed SBC (Single Board Computer) of your JRex-IBOX Fanless is equipped with a lithium battery. For the replacing of this battery please observe the instructions described in the “Replacing the Lithium Battery” chapter.



Warning
Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer.



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

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.

Electromagnetic Compatibility

This product has been designed for industrial, commercial and office use, including small business use. The most recent version of the EMC guidelines (EMC Rules 89/336/EWG) 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.

Scope of Delivery

- ❑ JRex-IBOX Fanless (A or B), corresponding to the ordered configuration
- ❑ JRex-IBOX Fanless User's Manual
- ❑ AC Power Cord (for JRex – A only)
- ❑ DC-Phoenix Terminal without Cable (for JRex-IBOX Fanless – B only)
- ❑ Y Adapter Cable for Keyboard and Mouse)

Optional Parts

- ❑ CompactFlash™ Card, Type I

Type Labels and Product Identification

The type label with the corresponding product part number is located on the bottom side of the JRex-IBOX Fanless.

Product Designation	**Product Identification**
JRex-IBOX Fanless – A	JRex-IBOX Fanless with AC power supply
JRex-IBOX Fanless – B	JRex-IBOX Fanless with DC power supply

Product Description



Fig.1: JRex-IBOX Fanless (shown as DC Version)

The JRex-IBOX Fanless expand the industrial computer product line -Box PC- developed by Kontron. The hardware of JRex-IBOX Fanless can be flexibly configured corresponding to the customized requirements. The small and rugged design offers excellent mechanical stability. The JRex-IBOX Fanless provides the demanding characteristics required for a computer that is very suitable for using in harsh industrial environment.

The JRex-IBOX Fanless is an industrial computer without cooling fans. The passive CPU cooling method of „Heat Pipe“ maintains a constant temperature and allows the heat transfer in only one direction.
Following technical highlights are to be specified: user friendly, noiseless, low power consumption.

☞ Due to the applied CPU cooling method with „Heat Pipe“, the JRex-IBOX Fanless should be used only:

- ❑ in vertical position with the interfaces faced downwards, or
- ❑ in horizontal position.

The cooling of the JRex-IBOX Fanless is performed by the heat sink surface. The heat sink is located on the device rear. The air openings located on the sides of the device provide fresh cool air for the device interior cooling, preventing overheating.

The JRex-IBOX Fanless accommodates a 3.5” JRex SBC (Single Board Computer) card an external accessible CompactFlash™-slot (IDE) and an optional internal 2.5” hard disk (IDE).

Your system can be equipped with one of the JRex-SBC cards:

- ❑ JRex-CE [with additional COM2 interface (option)],
- ❑ JRex-PM.

The standard system configuration supports the following interfaces:
2x USB (2.0/1.1), 1x LAN (10/100 Mbps), 1x combined PS/2 for keyboard and mouse, 1x VGA and 1x COM1 (RS232C).

The JFLEX-slot of the integrated SBC card is used for system expansion. Depending on the integrated SBC card and the configuration of the JRex-IBOX Fanless, with or without the optional HDD, your system can be expanded by up to two JFLEX-expansion cards.

Following expansion cards cam be customized installed on two levels (L1 and L2):

- ❑ JFLEX-SerialGPIO1***** [can be installed on level1 (L1) only]
- ❑ JFLEX-Communication1***** [can be installed on level1 (L1) only]
- ❑ JFLEX-Sound1 [can be installed on level1 (L1) as well as on level2 (L2)]

Only one of the two expansion cards marked by "*****" can be installed in a JRex-IBOX Fanless configuration.

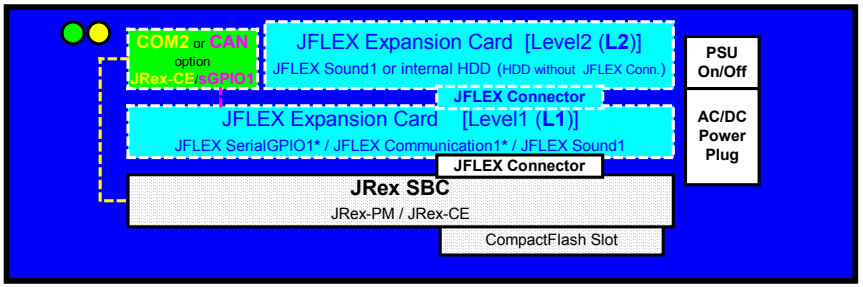


Fig. 2: JRex-IBOX Fanless – system configuration

The different system configurations are integrated in the same chassis; three different front panels (either as AC or DC version) are used (refer to the "Front Panel and Configuration Variants" chapter):

- ❑ Front panel for system configuration with JFLEX-Serial GPIO1
- ❑ Front panel for system configuration with JFLEX-Communication1
- ❑ Front panel for system configuration with JFLEX-Sound1

The LED indicators comprise the power LED and hard disk activity LED. These LEDs inform about the status of the device.

The operating element consists of the AC or DC PSU "Power switch".

The JRex-IBOX Fanless can be equipped with an AC or a DC power supply.

When powering on the JRex-IBOX Fanless, make sure that the air intake and exhaust openings are not obstructed.

The system can be used as a desktop unit or integrated into a system.

The JRex-IBOX Fanless is suitable as stand-alone device for wall mounting or DIN-Rail mounting.



Fig. 3: JRex-IBOX Fanless with JFLEX-SerialGPIO1 (shown as AC version)



Fig. 3a: JRex-IBOX Fanless with JFLEX-SerialGPIO1 (shown as DC version)



Fig. 4: JRex-IBOX Fanless with JFLEX-Communication1 (shown as AC version)



Fig. 4a: JRex-IBOX Fanless with JFLEX-Communication1 (shown as DC version)



Fig. 5: JRex-IBOX Fanless with JFLEX-Sound1 (shown as AC version)



Fig.5a: JRex-IBOX Fanless with JFLEX-Sound1 (shown as DC version)

Front Side

At the front side of the JRex-IBOX Fanless are the following items (depending on the ordered system configuration):

- ❑ the CompactFlash™ card slot
- ❑ the external interfaces of the SBC card (3.5“ JRex)
- ❑ the interfaces of the installed expansion card (on L1 and L2)
- ❑ the AC or DC power plug and the On/Off switch of the PSU (depending on the ordered AC or DC version)
- ❑ the LED indicators

Front Side with JFLEX-SerialGPIO1

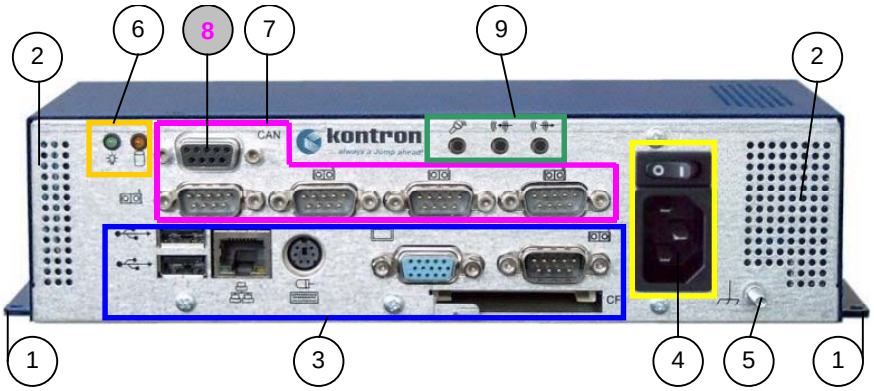


Fig. 6: JRex-IBOX Fanless (shown as AC version with JFLEX-SerialGPIO1 and JFLEX-Sound1)

1 Bracket for wall mounting
2 Ventilation openings at the front side
3 Interfaces of the SBC card with CF slot and CF card holder
4 AC or DC power plug with the corresponding On/Off switch (depending on the ordered system configuration)
5 M4 metric thread stud for frame ground
6 LED indicators
7 Interfaces of the installed expansion card on level1 (shown with JFLEX-SerialGPIO1)
8 Optional CAN interface (depending on the ordered system configuration)
9 Interfaces of the installed expansion card on level2 (shown with JFLEX-Sound1) (if no expansion card is installed, the cut-out for the interfaces are covered)

Front Side with JFLEX-Communication1

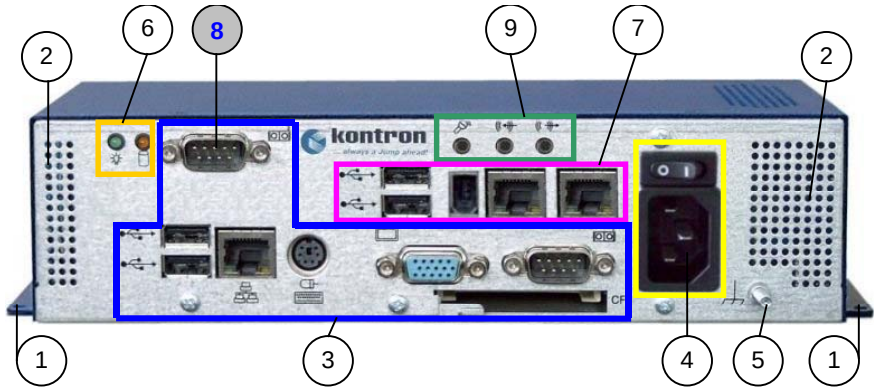


Fig. 6a: JRex-IBOX Fanless (shown as AC version with JFLEX-Communication1 and JFLEX-Sound1)

1 Bracket for wall mounting
2 Ventilation openings at the front side
3 Interfaces of the SBC card with CF slot and CF card holder
4 AC or DC power plug with the corresponding On/Off switch (depending on the ordered system configuration)
5 M4 metric thread stud for frame ground
6 LED indicators
7 Interfaces of the installed expansion card on level1 (shown with JFLEX-Communication1)
8 Optional COM2 interface [TTL level, see the note below)] (possible to be configured only in system configuration with JRex-CE-SBC card; for all others system configurations the cut-out for this interface connector is covered)
9 Interfaces of the installed expansion card on level2 (shown with JFLEX-Sound1) (if no expansion card is installed, the cut-out for the interfaces are covered)

Information about the COM2 interface (TTL level)
This interface offers TTL signals.
An additional converter is needed in order to connect RS232C/RS485/RS422 devices to this interface!

Front Side with JFLEX-Sound1

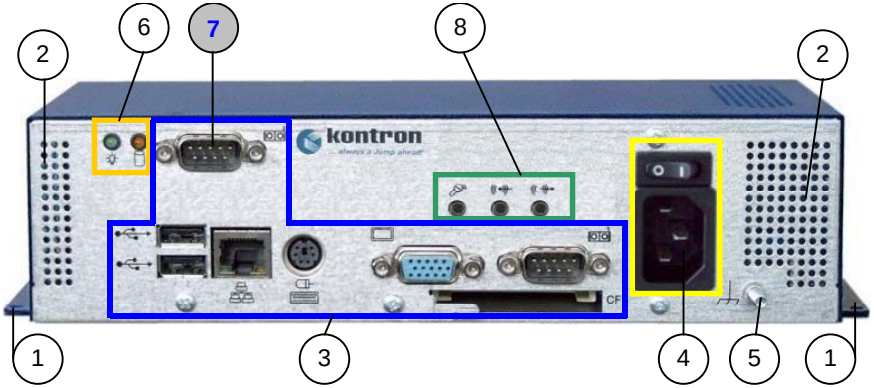


Fig. 6b: JRex-IBOX Fanless (shown as AC version with JFLEX-Sound1)

1 Bracket for wall mounting
2 Ventilation openings at the front side
3 Interfaces of the SBC card with CF slot and CF card holder
4 AC or DC power plug with the corresponding On/Off switch (depending on the ordered system configuration)
5 M4 metric thread stud for frame ground
6 LED indicators
7 Optional COM2 interface (TTL level) (possible to be configured only in system configuration with JRex-CE-SBC card; for all others system configurations the cut-out for this interface connector is covered)
8 Interfaces of the installed expansion card on level1 (shown with JFLEX-Sound1)
(if no expansion card is installed, the cut-out for the interfaces are covered)

Interfaces of the JRex-IBOX Fanless

External Interfaces of the installed SBC Card

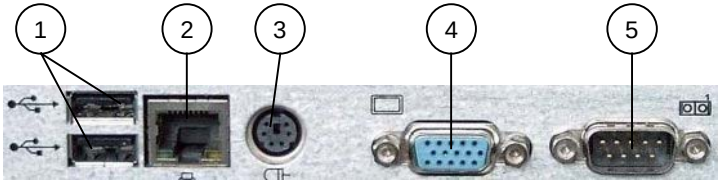


Fig. 7: JRex-SBC – interfaces (without CF slot)

1 2x USB 2.0/1.1 interface (depending on the ordered system configuration; refer to the interface description)

2 Ethernet interface connector(RJ45)

3 Combined PS/2 keyboard and mouse connector

4 VGA interface connector

5 Serial interface connector (COM1) [the JRex-CE-SBC card has an additional on-board COM2 interface (TTL level); refer to the interface description)]

Independently of the installed SBC card (JRex-PM/-CE), are available the interfaces described below:

USB Interface Connectors

The JRex SBC card supports two USB 2.0/1.1 interfaces. These connectors allow you to connect USB-compatible devices to the JRex-IBOX Fanless.

Ethernet Interface Connector

The JRex-IBOX Fanless is equipped with a LAN connector. This interface connector is provided as a RJ45-socket with integrated LEDs and supports a data transfer rate of 10/100 Mbps.

VGA Interface Connector

An external (analog) monitor can be plugged into this interface which is provided as a 15-pin D-SUB socket.

Serial Interface Connector COM1, Optional COM2

The **COM1** interface connection is available as a 9-pin D-SUB plug RS232C configured and allows you to connect a serial peripheral.

The JRex-CE SBC card is equipped with an on-board **COM2** interface connector. System configurations that accommodates the JRex-CE SBC card and are equipped with JFLEX-Communication1 (refer to *fig. 6a, pos. 8*) and/or JFLEX-Sound1 (refer to fig. *6b, pos. 7*) only, can be configured with this additional COM2 (TTL level) interface.

Installed SBC Card	COM1 (RS232C)	COM2 (TTL Level)
JRex-PM	☑	☐
JRex-CE	☑	☑



Please observe that the optional COM2 (TTL-level) interface connector can only be installed in system configurations (with JFLEX-Communication1 and/or JFLEX-Sound1) which accommodate a JRex-CE SBC card.



If your system configuration is without installed COM2 interface, the cut-out for this interface connector is covered.

Combined PS/2 Mouse and Keyboard Connector

To the provided 6-pin Mini-DIN PS/2 connector (female) you can connect:

- ❑ a PS/2-compatible mouse (by use of the Y adapter cable only) or
- ❑ a PS/2-compatible keyboard or
- ❑ a PS/2-compatible mouse and keyboard (by use of the Y adapter cable only).



For detailed information refer to the user's manual of the installed SBC card.

CompactFlash™ Slot of the SBC Card

The JRex-IBOX Fanless is equipped with a front side accessible CompactFlash™ slot. The CF-slot will accept only CF cards type I. The CF card slot is provided with a card holder (screwed on the device front side) in order to secure the CF card into the CF slot.



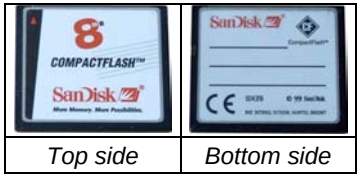
Fig. 8: Removing the CF card holder

Installing and Removing the CompactFlash™ Card

The card holder must be unscrewed first, in order to install or remove the CF card, (refer to *fig. 8*). **Install the CF card into the JRex-BOX with the top-side down!**

☞ The system must be powered down before the Compact Flash™ card can be installed or removed.

Example of CF card



Top side	*Bottom side*



Fig. 9: Installing the CompactFlash™ card



Fig. 10: Securing the CF card with the CF card holder

Interfaces of the JFLEX-SerialGPIO1 Card

The JFLEX-SerialGPIO1 expansion card can be installed only on Level1 (L1) of the JRex-IBOX Fanless (refer to fig. *2*).

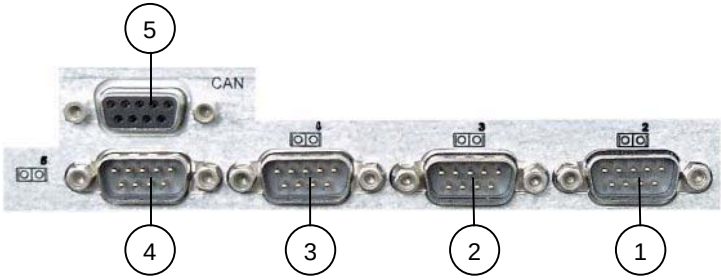


Fig. 11: Interfaces of the JFLEX-SerialGPIO1 card

1 COM2 interface connector (RS232C)

2 COM3 interface connector (RS232C)

3 COM4 interface connector (RS232C)

4 COM5 interface connector (RS485); (as RS422 only by the factory configurable)

5 CAN interface connector (optional)

If your JRex-IBOX Fanless is configured without the CAN interface, the cut-out for this interface connector is covered.

JRex-IBOX Fanless configuration with installed JFLEX-SerialGPIO1 card (configured with the CAN interface) and JRex-CE-SBC card, can not be configured also with the COM2 interface of the SBC card.

For detailed information and technical data refer to the user's manual of the JFLEX-SerialGPIO1 card.

Interfaces of the JFLEX-Communication1 Card

The JFLEX-Communication1 expansion card can be installed only on Level1 (L1) of the JRex-IBOX Fanless (refer to fig. *2*)

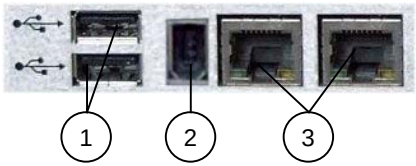


Fig. 12: Interfaces of the JFLEX-Communication1 card

1 2x USB (2.0/1.1) interface connector

2 FireWire interface connector (6-pin connector)
Note!
The attached peripheral devices must be self powered devices, because the **JRex-IBOX Fanless does not provide power to FireWire devices!**

3 2x LAN (10/100 Mbps) (RJ45 integrated LEDs)

For detailed information and technical data refer to the user's manual of the JFLEX-Communication1 card.

Interfaces of the JFLEX-Sound1 Card

The JFLEX- Sound1 expansion card uses the REALTEK ALC650, Full-Duplex, Stereo Audio Codec, compliant with AC'97 Speciification 2.2.

The JFLEX-Sound1 expansion card can be installed on Level1 (L1) as well as on Level2 (L2) of the JRex-IBOX Fanless; (refer to *fig*. *2*).

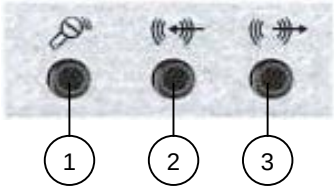


Fig. 13: Interfaces of the JFLEX-Sound1 card

1 Microphone connector

2 Line-in connector

3 Line-out connector

These audio jacks (3.5 mm) allow you to connect an external speaker/headphone set (Line-out), an external audio device (Line-in) and an external microphone (Mic-in).

For detailed information and technical data refer to the user's manual of the JFLEX-Sound1 card.

Operating Elements

On/Off Switch of the Power Supply

The AC or DC power plug is located on the front side of the JRex-IBOX Fanless (refer to fig.*: 3, 4, 5 and 3a, 4a, 5a*).

Use the On/Off power switch to turn the system on or off.

The unit is only completely disconnected from the main power source, when the power cord is disconnected either from the power source or the unit.

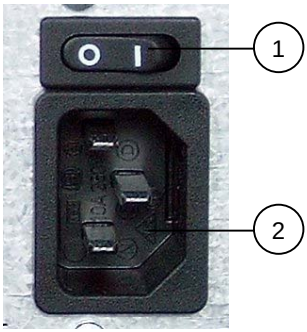


Fig. 14: AC power plug and AC On/Off power switch

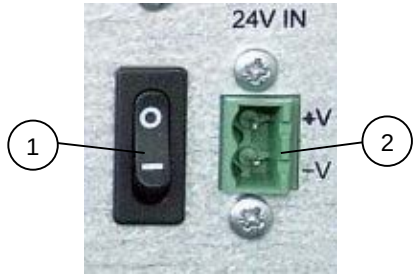


Fig. 14a: DC power plug and DC On/Off power switch

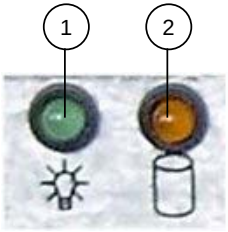
1 AC respectively DC power plug

2 AC respectively DC On/Off switch

☞ When powering on the JRex-IBOX Fanless (AC or DC), make sure that the ventilation openings are not obstructed.

LED Indicators

The LED indicators are located on the front side of the JRex-IBOX Fanless and indicate the status of the system.



1 Power LED

2 HDD activity LED

Fig. 15: LED indicators

Power LED (green)	Lights up if the system is switched on via the AC respectively DC power switch. The JRex-IBOX Fanless must be attached by means of the power cord to an appropriate power source (AC or DC).
Hard disk activity LED (orange)	Lights up orange and indicates hard disk or CompactFlash™ activity, depending on the configuration of your JRex-IBOX Fanless.

Ventilation Openings

The chassis of the JRex-IBOX Fanless is provided with ventilation openings at the front side, rear and at the left and right side. The ventilation openings provide a proper air circulation and avoid overheating.



When powering on the JRex-IBOX Fanless, make sure that the ventilation openings are not obstructed.



Fig. 16: Ventilation openings on the front side

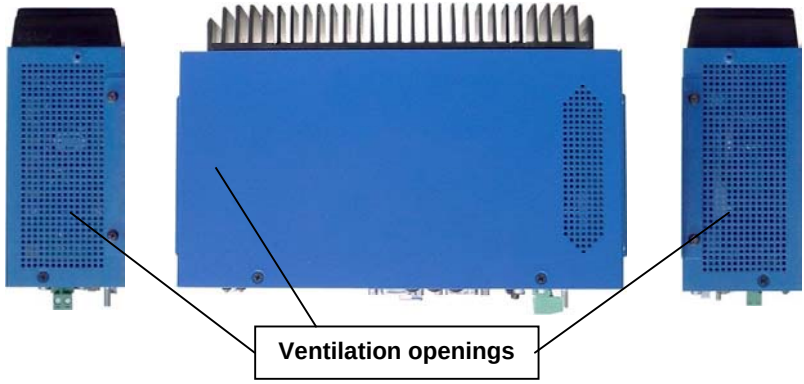


Fig. 16a: Ventilation openings on the right, top and left side

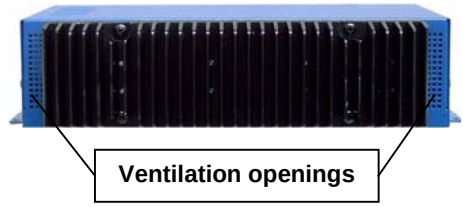


Fig. 16b: Ventilation openings on the rear side

Bottom Side

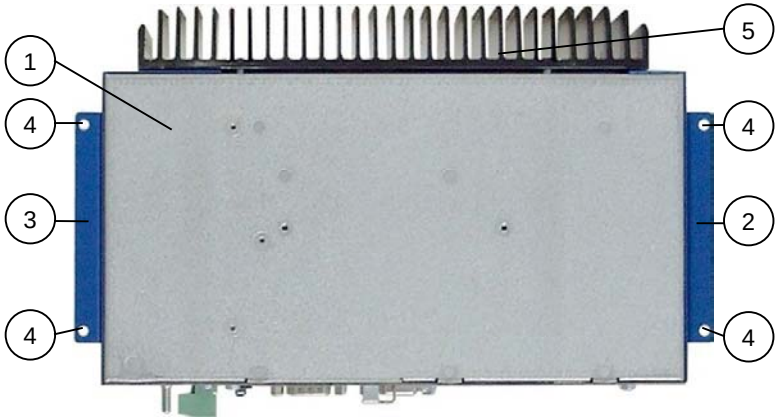


Fig. 17: JRex-IBOX Fanless – bottom side (Wall mounting version)

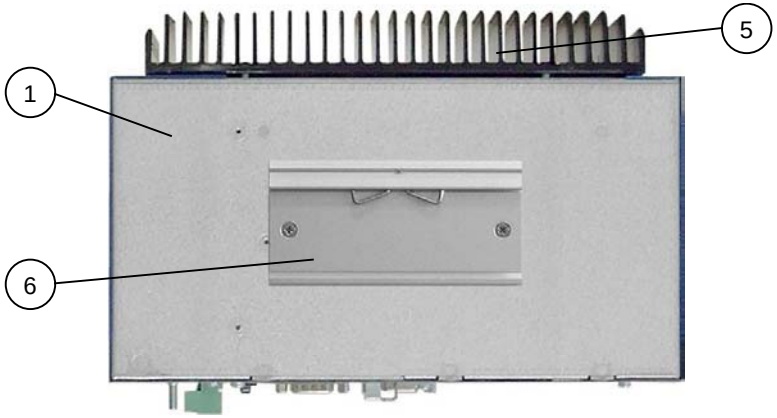


Fig. 17a: JRex-IBOX Fanless – bottom side (DIN-Rail version)

Legende for Fig. 17 and 17a:

1 Bottom side of the JRex-IBOX Fanless
2 Left side bracket for wall mounting
3 Right side bracket for wall mounting
4 4x Mounting holes (∅4)
5 Heat sink
6 Spring clip for DIN-Rail mounting

Versions of the Power Supply

Depending on the ordered system configuration, your JRex-IBOX Fanless can be equipped with an AC or DC power supply.

For information about the power supply unit and the supply voltage of your system, refer to the type label attached to the bottom side of the unit.

System Version	**Integrated PSU**	**Input**
JRex-IBOX Fanless - A	AC wide range 60W	100 - 240 VAC 50 - 60 Hz max. 1 A
JRex-IBOX Fanless - B	DC 24 V 60W	18 - 36 VDC max. 2.5 A

Starting Up

Power Cord Connection

The AC respectively DC power plug is located on the front side of the system.

The voltage of the power source must correspond to the voltage value on the type label.

AC Connection



Fig. 18: AC power connection

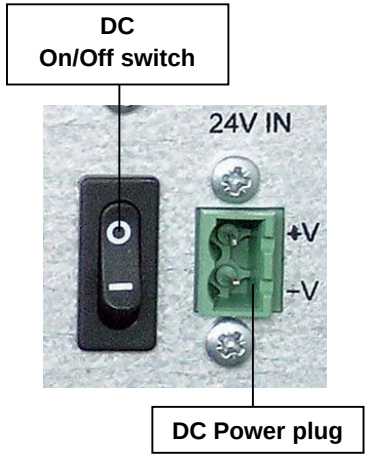


Fig. 18a: DC power connection

1. Connect the supplied AC power cord into the system AC power plug (refer to fig. *18)*.
2. Connect the other end of the AC power cord into a corresponding outlet.

Use a power cord suitable for the power supply in your country.

Make sure that the power supply (outlet) is properly grounded and that the power cord is in perfect condition without any visible damage. An ungrounded power supply is not permissible.

DC Connection

For the DC connection please prepare the connecting wires with the provided Phoenix terminal.



The length of the DC connecting wires may not exceed 10 m. Strip and twist the connecting wire-ends but do not tin it the with solder.

1. Loosen enough the two slotted screws of the provided Phoenix terminal, so that you can insert the ends of the connecting wires. Pay attention to the polarity of the connections (refer to *fig. 18a*).
2. Tighten the slotted screw firmly.

The second end of each wire will be prepared as required for the connection to the DC-power supply.

Connect JRex-IBOX Fanless to the DC power source, as follows:

1. Connect the prepared DC power cord end (with Phoenix terminal) into the DC power plug of the JRex-IBOX Fanless (refer to *fig. 18a*).
2. Connect the other end of the DC power cord into a corresponding outlet of the DC power source.

Operating System and Hardware Component Drivers

Your computer can optionally be supplied with or without pre-installed operating system.
If you have ordered your JRex-IBOX Fanless with pre-installed operating system, all drivers are installed, corresponding to the ordered computer configuration (optional hardware components). Your computer is fully functional when you turn it on for the first time.
If you have ordered your JRex-IBOX Fanless without pre-installed operating system, you have to install the operating system and the corresponding drivers for the ordered computer configuration (optional hardware components). In order to install the operating system **you might need in addition an external USB connected CD-ROM drive**.



The needed drivers can be downloaded from the web page: http://www.kontron-emea.com.

Maintenance

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

- ❑ Occasionally wipe the system with a soft dry cloth.
- ❑ Remove persistent dirt by use of a soft, slightly damp cloth (use only a mild detergent).

Replacing the Lithium Battery

The SBC card of your JRex-IBOX Fanless is equipped with a lithium battery.



Please adhere to the description in this manual when opening the unit. Before removing the cover to gain access to the internal components, the system must be powered down and the power cord has to be disconnected from the power source.



Please refer to the ESD safety procedures for handling assemblies with static sensitive devices.
Failure to take heed of this warning instruction can result in damage to the device.

To replace the battery please proceed as follows:

1. Turn off your system and disconnect the power cord from the power source.

2. Remove the six Philips screws (three on the left side and three on the right side) and the two screws at the upper side of the device (refer to *fig. 19* and *fig. 19a)*. Retain the screws and brackets for later use.



Fig. 19: Removing the Philips screws on the left side of the unit

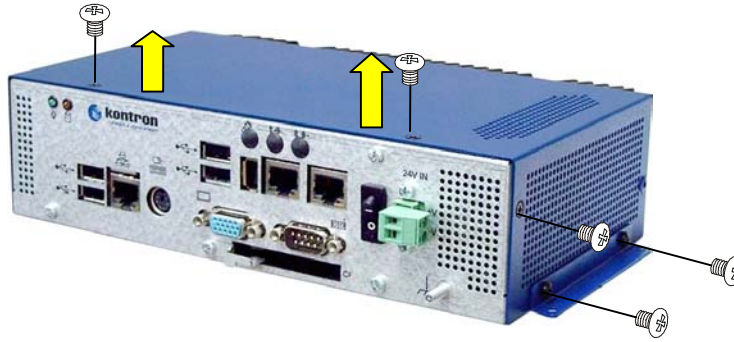


Fig. 19a: Removing the Philips screws on the upper and right side of the unit

3. Lift up the access cover of the JRex-IBOX Fanless and remove it (refer to *fig. 19a)*.

4. The lithium battery is located at the rear of the unit, between the heat sink and the main memory (refer to *fig. 20*).

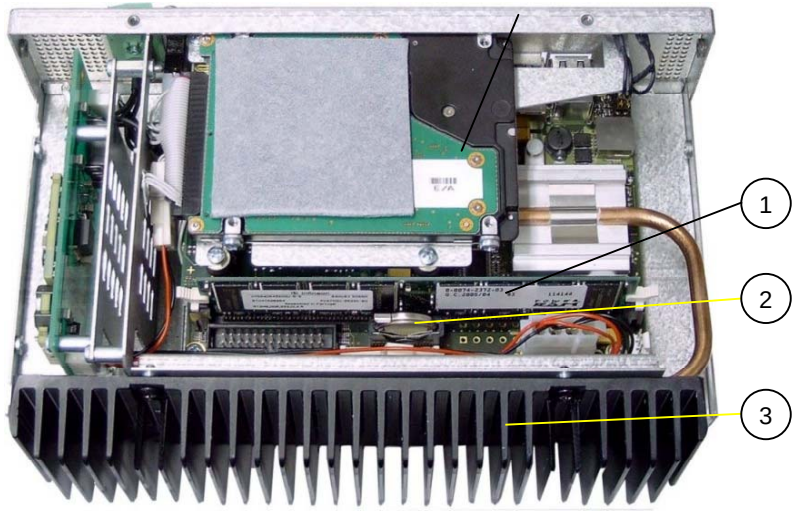


Fig. 20: Location of the lithium battery

1 Main memory

2 Lithium battery

3 Heat sink

5. Remove the main memory from the socket, by pressing the retaining springs (left and right) downwards (refer to *fig. 20a*, step 1).
6. Remove the lithium battery from the socket, by pressing the retaining spring to the rear, and pulling the battery upwards (refer to *fig. 20a*, step 2).

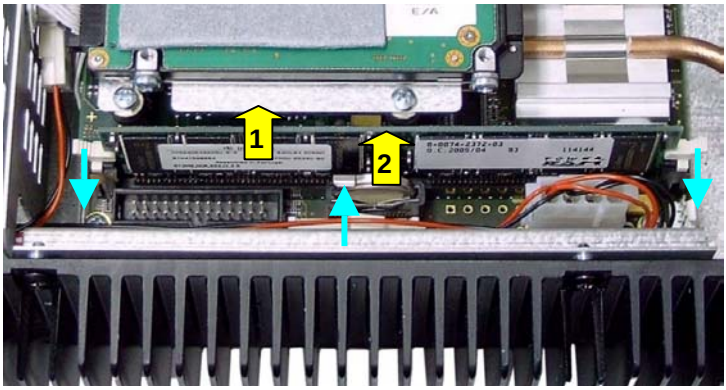


Fig. 20a: Removing of the main memory (step 1) and the lithium batterie (step 2)

7. Insert the new battery into the socket.
8. Make sure that you insert the battery correctly. The plus pole must be facing to the main memory!
9. Replace the main memory into the corresponding socket.
10. Replace the access cover and brackets for wall mounting and secure these to the unit by use of the retained screws.

☞ Please observe, that only the retained M3x4 metric screws may be used for attaching the access cover.

The lithium battery must be replaced with an identical battery or a battery type recommended by Kontron Embedded Computers (Lithium battery 3.0 V for RTC, type: CR2032).



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

Installation Instructions



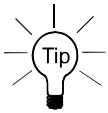
Important Instructions!

Ensure there is sufficient air circulation around the device when installing the JRex-IBOX Fanless. The ventilation openings must not be obstructed.

Leave at least 5 cm (approx. 2”.) of free space around the JRex-IBOX Fanless to prevent the device from possibly overheating!

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 the bottom side of the JRex-IBOX Fanless.



Leave sufficient space at the interface side for connecting the peripheral devices.

Wall Mounting Version

If you attach the JRex-IBOX Fanless to a wall, on the brackets for wall mounting are available four mounting holes (∅ 4 mm).

For wall mounting, first prepare the four drillings (Ø 4 mm) according to the hole pattern (refer to *Fig. 21*). Fasten the JRex-IBOX Fanless to the wall with four M3 metric screws (not included in the package).

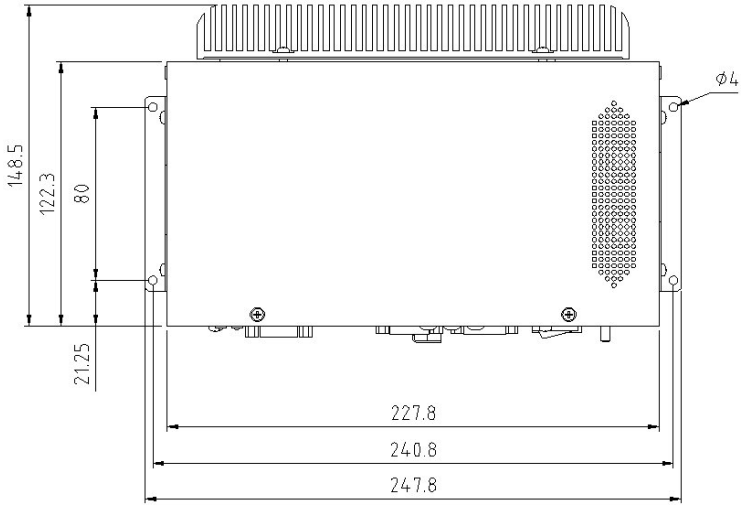


Fig. 21: Hole pattern for the wall mounting of the JRex-IBOX Fanless (all values in mm)

DIN-Rail Mountable Version

This version of the JRex-IBOX Fanless is suitable for snapping onto 35 mm DIN-Rail. The bottom mounted adapter with spring clip is used for DIN-Rail mounting.

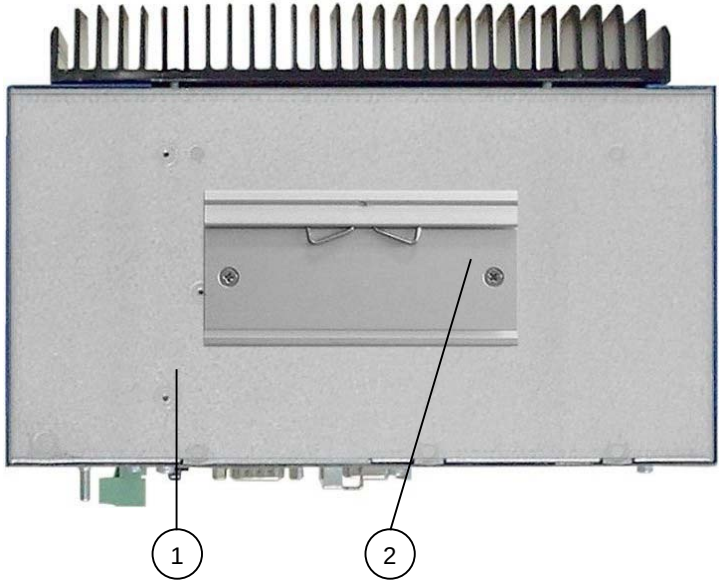


Fig. 22: JRex-IBOX Fanles: DIN-Rail mountable version

1 Bottom side of the DIN-Rail mountable version

2 Spring clip for DIN-Rail mounting

Technical Data

Processor (depending on the installed SBC card)	Intel® Celeron® M 600MHz, cacheless (JRex-PM-SBC), Intel® Pentium® M 1.8GHz, (Dothan), (JRex-PM-SBC), ULV 400MHz (JRex-CE-SBC card), LV 733MHz (JRex-CE-SBC card)
Main Memory (on-board) (depending on the ordered configuration)	1x 168-pin SDRAM-DIMM up to 512MB (JRex-CE SBC card) 1x 184-pin DDR-SDRAM-DIMM up to 1GB (ECC) (JRex-PM SBC card)
Lithium Battery	3.0 V for RTC, type: CR2032
IDE (depending on the ordered configuration)	1x 2.5“ HDD (internal, optional) 1x CompactFlash™-Slot, (external accessible) for CompactFlash™ card, type I
External Interfaces of the SBC Card (on the front side)	2x USB (2.0/1.1) 1x LAN (10/100 Mbps) 1x VGA 1x COM1 (RS232C) 1x PS/2 keyboard and mouse
Additional COM Interface of the JRex-CE SBC Card	1x COM2 (TTL) (can be installed only in JRex-IBOX Fanless configuration without JFLEX-SerialGPIO1 card)
JFLEX-Expansion Cards (depending on the ordered configuration) ***** only one of the two expansion cards marked by “*****” can be installed in a JRex-IBOX Fanless-configuration	1x JFLEX-SerialGPIO1 card***** with: 1x CAN interface (optional) and 3x COM (RS232C), 1x COM (RS485/RS422) 1x JFLEX-Communication1 card***** with: 2x USB (2.0/1.1), 1x FireWire and 2x LAN (10/100 Mbps) interface 1x JFLEX-Sound1 card (AC’97 Specification 2.2 compliant) with: 1x Audio-Line-out, 1x Audio-Line-in, 1x Mic.-in
Operating Element (on the front side)	1x On/Off switch (AC or DC PSU)
LED Indicators (on the front side)	1x Power-LED 1x HDD-LED
AC or DC Power Plug	On the front side
Operating System	Information about the applicable operating systems refer to the web page: www.kontron-emea.com or: support@kontron.com

Electrical Specifications

System Version	Integrated PSU	Input
JRex-IBOX Fanless - A	AC wide range 60 W	100 - 240 VAC 50 - 60 Hz max. 1 A
JRex-IBOX Fanless - B	DC 24 V 60 W	18 - 36 VDC max. 2.5 A

Mechanical Specifications

Dimensions for		JRex-IBOX Fanless
Height	**Wall mounting**	58.8 mm (2.315“)
	DIN-Rail mounting	67.3 mm (2.65“)
Width	**Wall mounting**	247.8 mm (9.756“)
	DIN-Rail mounting	227.8 mm (8.968“)
Depth	**Wall mounting**	148.5 mm (5.846“)
	DIN-Rail mounting	148.5 mm (5.846“)
Weight (without packaging)	**Wall mounting**	ca. 2.00 kg (4.409 lbs.)
	DIN-Rail mounting	ca. 2.00 kg (4.409 lbs.)

Environmental Specifications

System Cooling	passive cooling (heat pipe)
Operating Temperature / Relative Humidity	0 … +50°C / 5-80% (not condensing), 32 .. 122°F / 5-80% (not condensing), corresponding IEC 68-2-1 and IEC 68-2-2.
Storage / Transit Temp. / Relative Humidity	-25 … +70°C / 0-95% (not condensing) -13 … 158°F / 0-95% (not condensing)
Operating Altitude	3000 m (9843 ft.)
Storage / Transit Altitude	10000 m (32810 ft.)
Operating Shocks	15 G, 11 ms, 6 axes, half sine
Storage / Transit Shocks	30 G., 11 ms, 6 axes, half sine
Operating Vibrations	10 - 500 Hz; 1.0 G
Storage / Transit Vibrations	10 - 500 Hz; 2.0 G

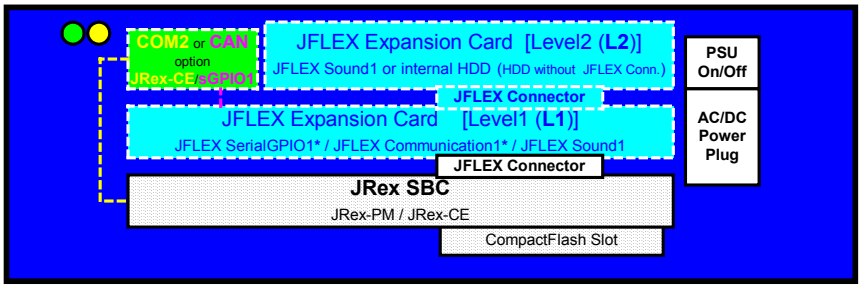
CE Directives and Standards

CE Directives	
Low Voltage Directive (Electrical Safety)	73/23/EWG
EMC Directive	89/336/EWG

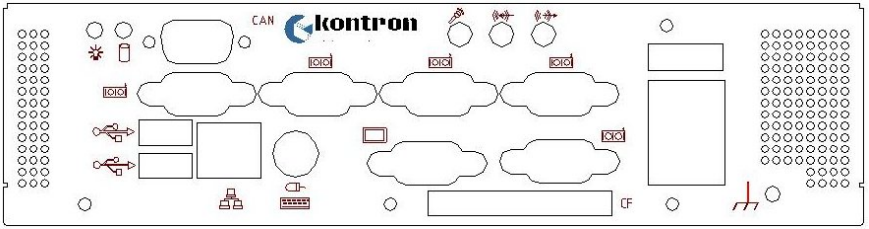
Electrical Safety	**Standards**
EUROPE	EN 60950-1: 2001

EMC	**Standards**
EUROPE	Emission: EN 55011:1998+A1:1999+A2:2002, Class A Immunity: EN 61000-6-2: 2001
U.S.A.	FCC 47 CFR Part 15, Class A

Front Panel and Configuration Variants



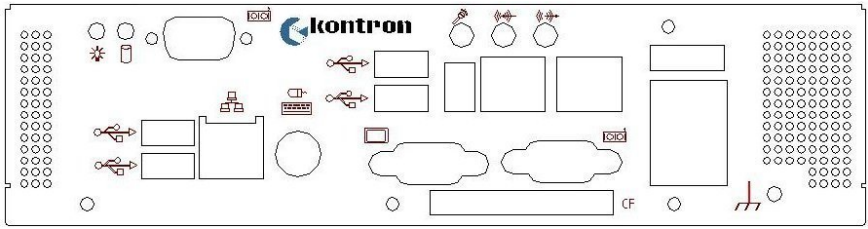
Configuration with JFLEX-SerialGPIO1



Front panel (AC version) for system configuration with:
JFLEX-SerialGPIO1, JFLEX-Sound1 / HDD

SBC Card → → → →		**JRex-PM**			**JRex-CE** *(without option. COM2)*		
CF-Slot			•			•	
L1	JFLEX-SerialGPIO1 (with optional CAN Interface)		•			•	
L2	with JFLEX-Sound1 (without HDD)	•			•		
	with HDD (without JFLEX-Sound1)		•			•	
	without JFLEX-Sound1 and HDD			•			•
AC or DC PSU			•			•	

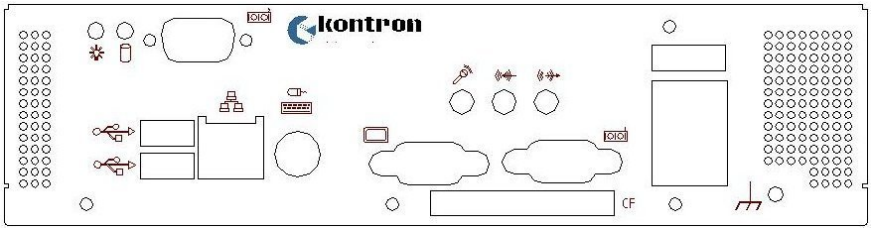
Configurations with JFLEX-Communication1



Front panel (AC version) for system configuration with:
JFLEX-Communication1, JFLEX-Sound1 / HDD

SBC Card → → → →		**JRex-PM**			**JRex-CE** *(with option. COM2)*		
CF-Slot			●			●	
L1	JFLEX-Communication1		●			●	
L2	with JFLEX-Sound1 (without HDD)	●			●		
	with HDD (without JFLEX-Sound1)		●			●	
	without JFLEX-Sound1 and HDD			●			●
AC or DC PSU			●			●	

Configurations with JFLEX-Sound1



Front panel (AC version) for system configuration with:
JFLEX-Sound1 and HDD

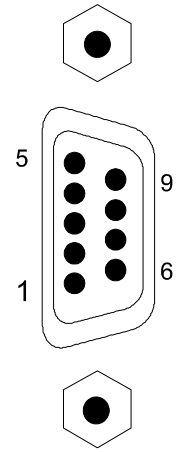
SBC Card → → → →		**JRex-PM**				**JRex-CE** *(with option. COM2)*			
CF-Slot			●				●		
L1	with JFLEX-Sound1	●				●			
	without JFLEX-Sound1			●				●	
L2	with HDD	●		●		●		●	
	without HDD		●		●		●		●
AC or DC PSU			●				●		

Technical Appendix – Interfaces

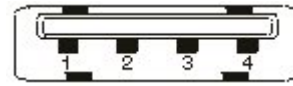
The following tables contain the plug assignments for the external connections of the JRex-IBOX Fanless.

Low-active signals are indicated by a minus sign.

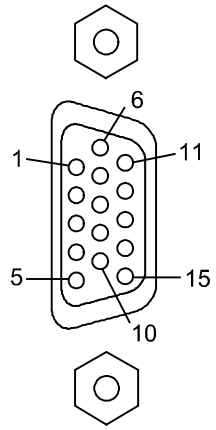
Serial Port [COM1 (RS232C)]

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)	

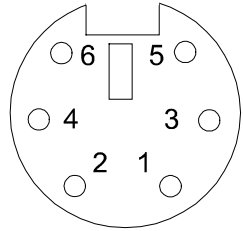
USB Port

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

VGA Port

Pin	Signal Name	15-pin D-SUB Socket (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)	

PS/2 Keyboard and Mouse Connector

Pin	Signal Name	6-pin Mini-DIN Socket
1	Keyboard date	
2	Mouse date	
3	GND	
4	+5 V	
5	Keyboard clock	
6	Mouse clock	

Technical Support

For technical support, please contact our Technical Support department.

German headquarter Hotline:
Tel: +49 (0)9461 950-104
Fax: +49 (0)9461 950-200
e-mail: support@kontron.com

Make sure you have the following information on hand when you call:

- the unit part id number (P/No #),
- and the serial number (S/No #) (located on the bottom of the unit).

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

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

Kontron Embedded Computers GmbH
Oskar von Miller-Str. 1

85386 Eching
Germany

Returning Defective Merchandise

Before returning any merchandise please:

1. Contact our Service and request an
   RMA number (Return Material Authorization) by:
   Fax: (+49) 8165-77 412
   e-mail: service@kontron.com

2. Make sure to receive an RMA number from Kontron Embedded Computers-Service before returning any merchandise. Clearly write or mark this number on the outside of the package you are returning.

3. Describe the device failure behavior as precisely as possible.

4. When returning goods, include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.

5. When returning a unit:
   - Ensure that the unit is properly packed in the original box.
   - Include a copy of the RMA form.