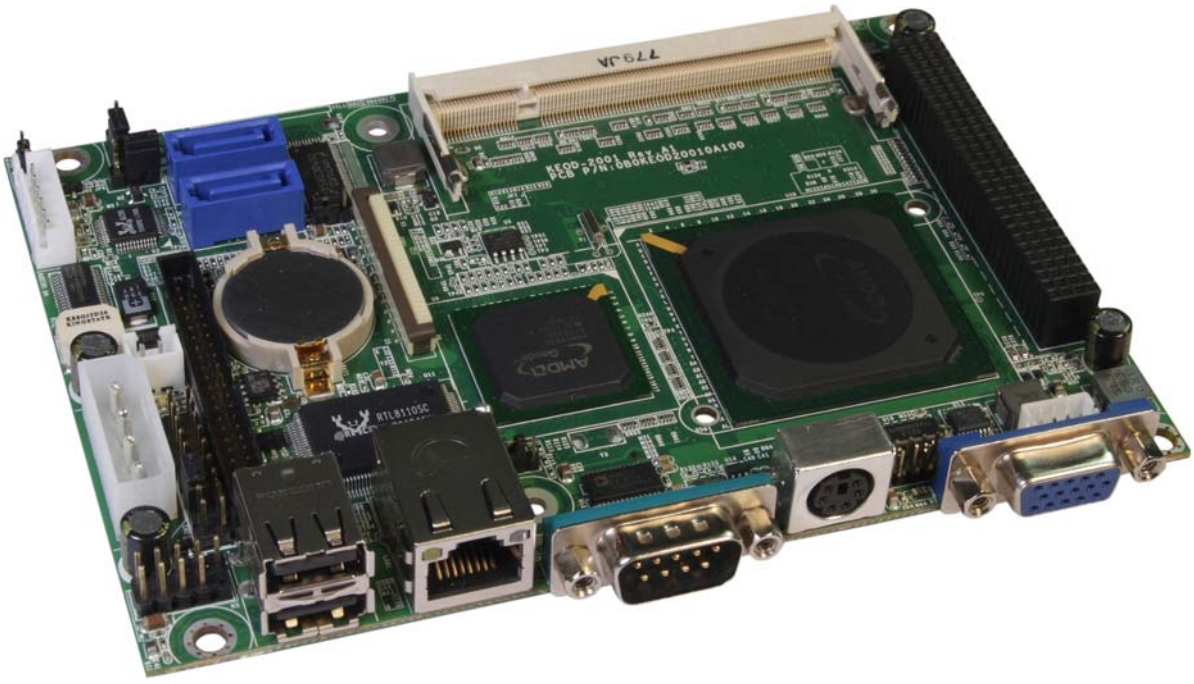
kontron

» Kontron User's Guide «



JRex*plus* LX

KTD-S0001-C

3.5" embedded line

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1 User Information

1.1 About This Document

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1.2 Copyright Notice

1.3 Trademarks

Brand and product names are trademarks or registered trademarks of their respective owners.

1.4 Standards

KONTRON Technology A/S is certified to ISO 9000 standards.

1.5 Warranty

This product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period KONTRON Technology A/S will at its discretion decide to repair or replace defective products.
Within the warranty period the repair of products is free of charge as long as warranty conditions are observed.
The warranty does not apply to defects resulting from improper or inadequate maintenance or handling by the buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.
KONTRON Technology A/S will not be responsible for any defects or damages to third party products that are caused by a faulty KONTRON Technology A/S product.

1.6 Life Support Policy

KONTRON Technology's products are not for use as critical components in life support devices or systems without express written approval of the general manager of KONTRON Technology A/S.
As used herein:
Life support devices or systems are devices or systems which
a) are intended for surgical implant into body or
b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labelling, can be reasonably expected to result in significant injury to the user.
A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

1.7 Technical Support

Please consult our Web site at **http://www.kontron.com/support** for the latest product documentation, utilities, drivers and support contacts. In any case you can always contact your board supplier for technical support.
Before contacting support please be prepared to provide as much information as possible:
Board identification:

- Type
- Part number (find PN on label)
- Serial number (find SN on label)

Board configuration:

- DRAM type and size
- BIOS revision (find in the BIOS Setup)
- BIOS settings different than default settings (refer to the BIOS Setup section)

System environment:

- O/S type and version
- Driver origin and version
- Attached hardware (drives, USB devices, LCD panels ...)

2 Introduction

2.1 JRex Embedded Line Family

Each JRex is a member of the 3.5" SBC family of KONTRON Technology A/S.
JRex embedded line modules are characterized by the same surface pinouts and interfaces for reset logic and ATX power supply feature, 2 x USB, Fast LAN, PS/2 keyboard and mouse connector, Compact-Flash socket, CRT interface as well as one serial port. These embedded line family features allow to use of the same chassis over the whole product line and maximize design reuse. JRex modules allow the use of standard laptop memories and full ATX power supplies.
These homogeneous features facilitate easy upgrades within the JRex embedded line product family. Connection of LCD panels is simplified when using the onboard standard JILI30 interface.
As part of the standard features package all JRex modules come with a JIDA interface which is integrated into the BIOS of the SBC modules. This interface enables hardware independent access to the JRex features that can't be accessed via standard APIs. Functions such as watchdog timer, brightness of panel backlight and user bytes in EEPROM can be configured with ease by taking advantage of this standard JRex module feature.

2.2 JRex*plus* LX Overview

Please refer to the following matrix to choose the product that suits your needs best.

Article number	18-bit LVDS (JILI30)	24-bit LVDS (JILI30)
02006-0000-50-0		✔
02006-0000-50-1	✔	

3 Specifications

3.1 Functional Specifications

Processor: AMD Geode™ LX800

- 64 kB data and 64 kB instruction L1 cache
- 128 kB L2 cache
- Integrated memory controller run with one DDR200 to DDR400 unbuffered DDR-SDRAM (SO-DIMM form factor) up to 1GB
- Integrated display controller with dual display support (CRT/TFT) and up to 254 MB video RAM (UMA)

Chipset: AMD Geode™ CS5536

- 64 bit, 66 MHz GeodeLink™ interface
- External PCI bus with 32 bit / 33 MHz operation (PCI V2.2 compliant)
- One Parallel-ATA PCI IDE controller
- Four USB channels (OHCI/EHCI)
- Integrated audio controller (AC'97)

Onchip Video Graphics Array (VGA)

- CRT monitor interface (resolution: up to 1920x1440 pixel)
- LVDS flatpanel interface supports single clock with 18/24 bit color depth (resolution: max. 1024x768 pixel, limited to LVDS Transmitter)

Onchip Parallel-ATA (P-ATA)

- Supports PIO mode, Multiword DMA and Ultra DMA up to UDMA5
- Compact Flash (CF) socket useable as master or slave

Onchip Universal Serial Bus (USB)

- Four ports are capable to handle USB1.1 (OHCI) and USB2.0 (EHCI)

Onchip Audio

- Up to 16 bit sample resolution with 48 kHz sample rate
- Use the onboard audio codec ALC203E (Realtek)
- Supports LINE OUT, LINE IN and MICROPHONE IN

Super-I/O (LPC): Winbond W83627EHG

- Two serial ports (RS-232 compatible)
- Second serial port optionally as RS-422 or RS-485
- One parallel port configurable as enhanced parallel port (EPP) and extended capabilities port (ECP) with bidirectional capability
- One legacy floppy interface
- PS/2 keyboard and mouse controller
- Watchdog timer

Gigabit LAN (PCI): Realtek RTL8110SC

- Full duplex operation at 10/100/1000 Mbps
- Fully compliant with IEEE 802.3, IEEE 802.3u and IEEE 802.3ab

Serial-ATA (PCI): VIA VT6421L

- The controller supports RAID mode for up to two devices
- Complies with Serial-ATA specification rev. 1.0 (150 MB/s)

Digital I/O (SMBus™): Winbond 83601G

- Four inputs and four outputs, +5V signal level

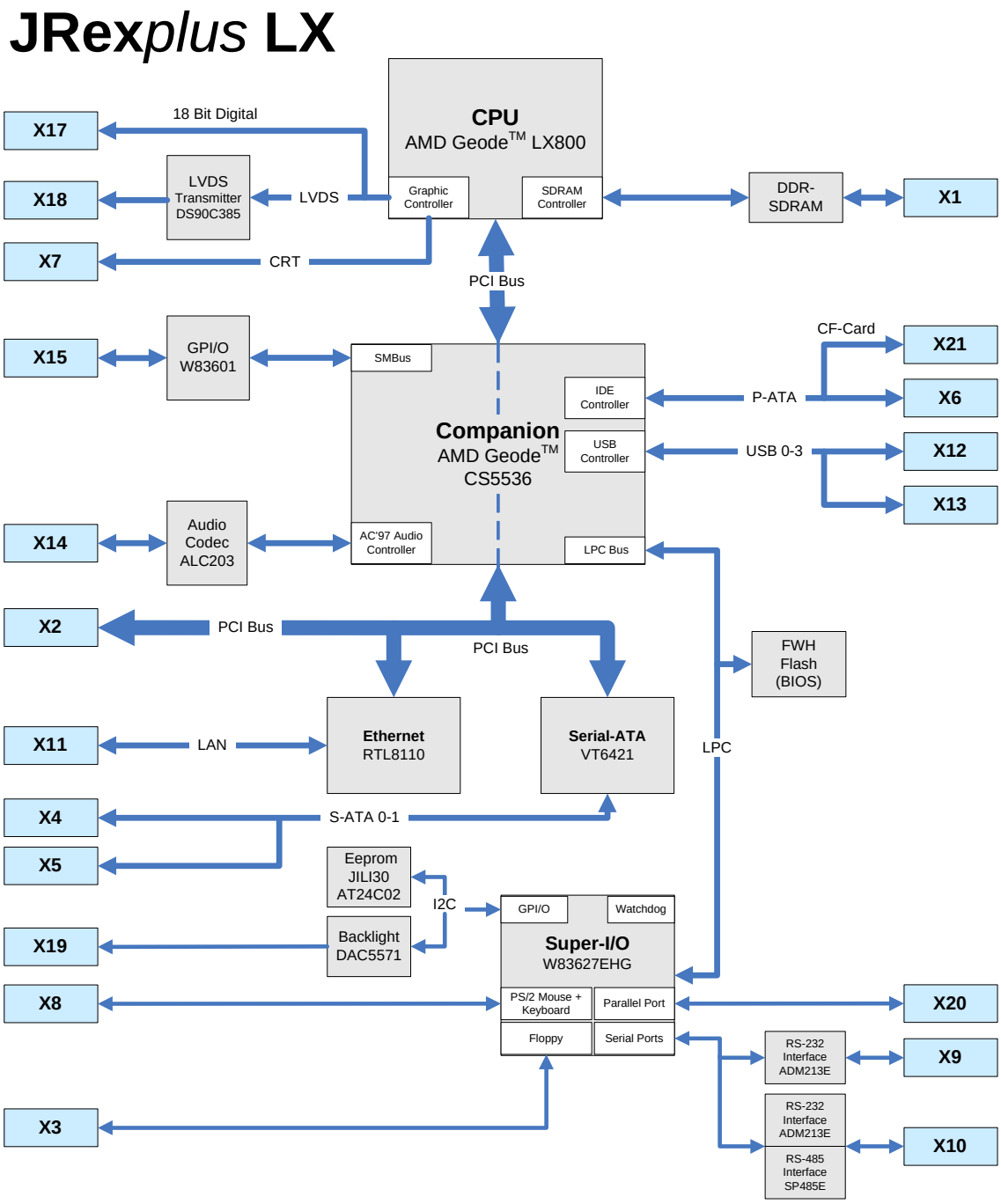
External PCI bus

- One PCI-104 bus connector, only 3.3V PCI cards supported

BIOS: AWARD, 512 kb Flash BIOS

Real-Time Clock (RTC) with CMOS RAM and battery

3.2 Block Diagram



3.3 Mechanical Specifications

Dimensions

- 102 x 147 mm (4.0" x 5.8")
- Height on top approx. 16.5 mm
- Height on bottom approx. 6 mm

3.4 Electrical Specifications

Supply Voltage

The power supply connector (4 pins) requires +5V (+12V optionally). The additional ATX supplement connector (2 pins) requires +5V standby.

- +5V DC ± 5%
- +12V DC ± 5% (optionally)
- +5V DC standby ± 5% (optionally)

Supply Voltage Ripple

- Maximum 100mV peak to peak 0 – 20 MHz

Supply Current (DOS prompt - single power supply +5V / ATX mode add +5VSB)

Power consumption tests were executed during the DOS prompt with 256 MB DDR SDRAM, CRT monitor, USB keyboard and CF card as boot device (default BIOS settings).

Full Load		Soft Off S5 AT mode		Soft Off S5 ATX mode	
[A]	[W]	[A]	[W]	[A]	[W]
1.40	7.00	0.45	2.25	0.06	0.30

Supply Current (Windows® XP SP3 - single power supply +5V)

The power consumption tests were executed during Windows® XP SP3 by using a tool to stress the CPU (100% load) and extensive 3D graphic. The boards were ran with 256 MB DDR SDRAM, CRT monitor, USB keyboard & mouse and a CF card as boot device (default BIOS settings).

Full Load		Idle		Standby S3	
[A]	[W]	[A]	[W]	[A]	[W]
1.80	9.00	1.20	6.00	tbd	tbd

3.5 Real-Time Clock Battery

- Voltage range: +2.4V - +3.6V (typ. +3.0V)
- Maximum current: 5µA @ +3.0V

Lithium battery precautions

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.	**VORSICHT!** Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch den selben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.
ATTENTION! Risque d'explosion avec l'échange inadéquat de la batterie. Remplacement seulement par le même ou un type équivalent recommandé par le producteur. L'évacuation des batteries usagées conformément à des indications du fabricant.	**PRECAUCION!** Peligro de explosión si la batería se sustituye incorrectamente. Sustituya solamente por el mismo o tipo equivalente recomendado por el fabricante. Disponga las baterías usadas según las instrucciones del fabricante.
ADVARSEL! Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.	**ADVARSEL!** Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.
VARNING! Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.	**VAROITUS!** Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laltevalmistajan suosittelemaan tyyppiln. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

3.6 Environmental Specifications

Temperature

Operating (with appropriate airflow):

- Ambient temperature: 0 to +60°C [1)]

Non operating:

- Ambient temperature: -10 to +85°C

Note: *1) It is the customer's responsibility to provide sufficient airflow around each of the components to keep them within the allowed temperature range.*

Humidity

- Operating: 10% to 90% (non condensing)
- Non operating: 5% to 95% (non condensing)

3.7 MTBF

The following MTBF (Mean Time Between Failure) values were calculated using a combination of manufacturer's test data, if the data was available, and a Bellcore calculation for the remaining parts. The Bellcore calculation used is 'Method 1 Case 1'. In that particular method the components are assumed to be operating at a 50% stress level in a 40°C ambient environment and the system is assumed to have not been burned in. Manufacturer's data has been used wherever possible. The manufacturer's data, when used, is specified at 50°C, so in that sense the following results are slightly conservative. The MTBF values shown below are for a 40°C in an office or telecommunications environment. Higher temperatures and other environmental stresses (extreme altitude, vibration, salt water exposure, etc.) cause lower MTBF values.

- System MTBF (hours): tbd

Note: *Fans usually shipped with KONTRON Technology A/S products have 50.000-hour typical operating life. The above estimation assumes no fan but a passive heat sinking arrangement. Estimated RTC battery life (as opposed to battery failures) is not included in the MTBF calculation. The RTC battery lifetime has to be considered separately. Battery life depends on both temperature and operating conditions. When the KONTRON unit has external power; the only battery drain is from leakage paths.*

4 Getting Started

Getting started with the JRex*plus* LX is very easy. Take the following steps:

❶ Plug a suitable DDR-SDRAM memory module into the RAM socket.

❷ Connect the CRT monitor to the CRT interface or a LCD panel to the JILI30 interface respectively the 18 bit digital interface by using the corresponding adapter cable.

❸ Plug a keyboard and/or mouse to the combined PS/2 connector by using a Y-cable.

❹ Plug a data cable to the hard disk interface. Attach the hard disk to the connector at the opposite end of the cable. If necessary connect the power supply to the hard disk's power connector.

❺ Make sure all your connections have been made correctly. Turn on the power.

❻ Enter the BIOS by pressing the Del key during boot-up. Make all changes in the BIOS Setup. See the BIOS Setup chapter of this manual for details.

5 System Memory

The JRex*plus* LX uses only 200 pin Small Outline Dual Inline Memory Modules (SODIMMs). One socket is available for 2.5V/2.6V unbuffered DDR200 up to DDR400 SDRAM of up to 1 GB.
The total amount of memory available on the SDRAM module is used for main memory and graphic memory on the JRex*plus* LX. Shared Memory Architecture (SMA) manages the sharing of system memory between graphic controller and processor. Therefore the full memory size is not available for software applications. Up to 254 MB of system memory are used as graphic memory.

6 PCI Bus Expansion

A quad-row socket trough-hole connector with a 2 x 2 mm (0.79" x 0.79") pitch implements the standard 32 bit PCI bus signals. The PCI-104 bus is available through the standard connector X2.
A description of signals, including electrical characteristics and timings, is beyond the scope of this document. Please refer to the official PCI bus and PC/104-plus specifications for more details.
Under no circumstances 5V PCI cards may be used on the JRex*plus* LX board. Only Universal and 3.3V add on cards are permitted. $V_{I/O}$ is open or set to 3.3V on the PCI bus. 5V PCI add on cards can irretrievably damage the JRex*plus* board due to a short curcuit with $V_{I/O}$. Before using a PCI add on card please make absolutely sure that this card is conform to these requirements. The LX chipset does only support a 3.3V PCI bus.
The jumper JP10 switches 3.3V to $V_{I/O}$ (Default: Open).
Note: Some PCI-104 extension cards might interfere mechanically with the CPU cooler. To avoid this and to achieve the best possible cooling perfomance the usage of a PCI-104 spacer is recommended.
Note: The usage of a PCI-104 to PCI adapter or riser card is not generally recommended. Due to considerable differences in between these third party adapter cards (e.g. different circuit path routing) the signal integrity may suffer.

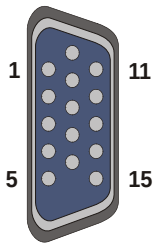
Attention: *5V PCI expansion cards can damage the board.*
Four slots are available via the connector X2 (IDSEL, /IRQ) but only three slots are busmaster capable.

7 Graphics Interface

The graphics accelerator supports CRT monitors and a variety of LCD panels with single clock, color depths of 18/24 bit and resolutions up to 1920x1440 for CRT and XGA (1024x768) for LCD.

7.1 CRT Connector

The CRT monitor interface is available through the standard DSUB15 connector X7.

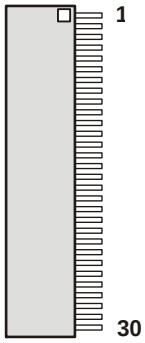
Header	Pin	Signal Name	Function
	1	**RED**	Red video signal
	2	**GRN**	Green video signal
	3	**BLU**	Blue video signal
	4	**N.C.**	Not connected
	5	**GND**	Ground
	6	**GND**	Ground
	7	**GND**	Ground
	8	**GND**	Ground
	9	**VCC** [1)]	Power +5V
	10	**GND**	Ground
	11	**N.C.**	Not connected
	12	**N.C.**	Not connected
	13	**HSYNC**	Horizontal sync
	14	**VSYNC**	Vertical sync
	15	**N.C.**	Not connected

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

7.2 Flat Panel Connectors

The LVDS interface for the flat panel is available through the X18 connector (30 pins) on the bottom side of the board. The implementation of this subsystem complies with the JILI specification of KONTRON Technology A/S. Another option for connecting a display to the JRex*plus* LX is a (LV)TTL compatible 18 bit RGB interface available on X17 (32 pins). A variety of cables for different display types are available from KONTRON. Please refer to the actual ***Display Cable Guide*** on the same product web site.

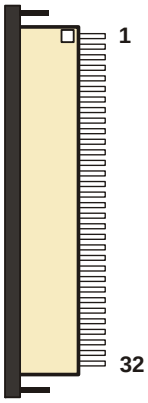
7.2.1 JILI30 Connector



Header	Pin	Signal Name	Function
	1	**FTX0-**	First channel data output 0 (negative)
	2	**FTX0+**	First channel data output 0 (positive)
	3	**FTX1-**	First channel data output 1 (negative)
	4	**FTX1+**	First channel data output 1 (positive)
	5	**FTX2-**	First channel data output 2 (negative)
	6	**FTX2+**	First channel data output 2 (positive)
	7	**GND**	Ground
	8	**FTXC-**	First channel clock output (negative)
	9	**FTXC+**	First channel clock output (positive)
	10	**FTX3-**	First channel data output 3 (negative)
	11	**FTX3+**	First channel data output 3 (positive)
	12	**N.C.**	Not connected
	13	**N.C.**	Not connected
	14	**GND**	Ground
	15	**N.C.**	Not connected
	16	**N.C.**	Not connected
	17	**GND**	Ground
	18	**N.C.**	Not connected
	19	**N.C.**	Not connected
	20	**N.C.**	Not connected
	21	**N.C.**	Not connected
	22	**N.C.**	Not connected
	23	**N.C.**	Not connected
	24	**GND**	Ground
	25	**SDA**	I2C data line
	26	**DATAENA**	Data enable output
	27	**SCL**	I2C clock line
	28 - 30	**VCC** [1)]	Power +3.3V or +5V

Attention: *The JILI30 interface supports only the VESA FPDI standard.*

7.2.2 18 Bit Digital Connector

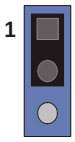
Header	Pin	Signal Name	Function
	1	**GND**	Ground
	2	**PCLK**	Data shift clock
	3	**PHS**	Horizontal sync
	4	**PVS**	Vertical sync
	5	**GND**	Ground
	6	**PR0**	Red color data line 0
	7	**PR1**	Red color data line 1
	8	**PR2**	Red color data line 2
	9	**PR3**	Red color data line 3
	10	**PR4**	Red color data line 4
	11	**PR5**	Red color data line 5
	12	**GND**	Ground
	13	**PG0**	Green color data line 0
	14	**PG1**	Green color data line 1
	15	**PG2**	Green color data line 2
	16	**PG3**	Green color data line 3
	17	**PG4**	Green color data line 4
	18	**PG5**	Green color data line 5
	19	**GND**	Ground
	20	**PB0**	Blue color data line 0
	21	**PB1**	Blue color data line 1
	22	**PB2**	Blue color data line 2
	23	**PB3**	Blue color data line 3
	24	**PB4**	Blue color data line 4
	25	**PB5**	Blue color data line 5
	26	**GND**	Ground
	27	**PDE**	Data enable
	28 - 29	**VCC** [1)]	Power +3.3V or +5V
	30	**R/L**	Rotate image left or right (option)
	31	**U/D**	Rotate image up or down (option)
	32	**RSVD**	Reserved

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

Warning: *Check jumper JP6 (Panel Power) for correct settings for your panel – not doing so might cause permanent damage to your panel.*

7.2.3 18 Bit Digital Jumper Settings

Three jumper JP3 - JP5 allows a special configuration for pin 30 to 32 of the 18 bit digital connector.



Pins	Signal
1 - 2	**VCC**
2 - 3	**GND**

The following table shows the assignment

Jumper	Digital Connector
JP3	Pin 30
JP4	Pin 32 (reserved)
JP5	Pin 31

7.3 Connecting a Flat Panel

To determine whether your flat panel is supported check the ***Display Cable Guide*** on the KONTRON web site. If you use one of those adapters supplied by KONTRON configuration is easy:

❶ Check whether you have the correct adapter and cable for the panel you plan to use. Inspect the cable for damages. Disconnect the power from your system.

❷ Check jumper JP6 for correct panel voltage (**Pos. 1-2 = +3.3V 2-3 = +5V**).

❸ Check jumper JP2 for correct backlight voltage (**Pos. 1-2 = +12V 2-3 = +5V**).

❹ Check jumper JP1 for correct backlight on/off polarity (**Pos. 1-2 = High 2-3 = Low**).

❺ Connect the cable to the flat panel connector X17 or X18 on the JRex*plus* LX and connect the other end to your display.

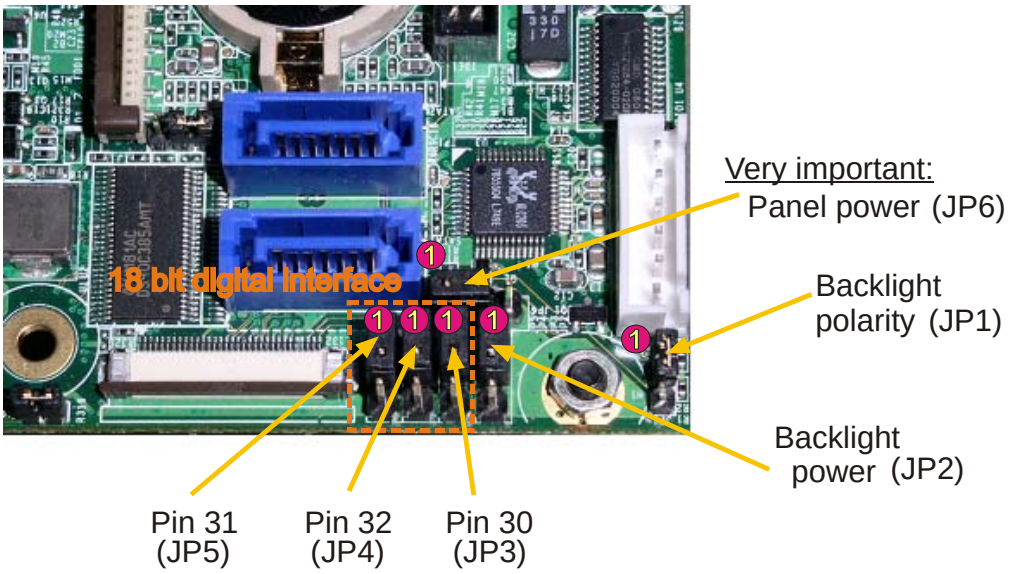
❻ Connect the backlight converter.

❼ Supply power to your system.

❽ If no image appears on your display connect a CRT monitor to the CRT connector.

❾ If you still do not see improvement consider contacting the dealer for technical support.

7.4 Flat Panel Jumper



7.5 Available Video Modes

The following list shows the video modes supported by the graphics controller with maximum frame buffer size. When configured for saller frame buffers and/or using a flat panel on the JILI30 interface not all of the video modes listed below may be available. Capability depends on system configuration and on display capabilities. Different operating systems also may not support all listed modes by the available drivers.

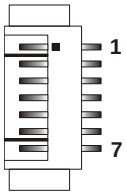
Video Mode	Type	Characters/Pixels	Colors
00h/01h	Text	40 x 25	16
02h/03h	Text	80 x 25	16
04h/05h	Graphic	320 x 200	4
06h	Graphic	640 x 200	2
07h	Text	80 x 25	2
0Dh	Graphic	320 x 200	16
0Eh	Graphic	640 x 200	16
0Fh	Graphic	640 x 350	2
10h	Graphic	640 x 350	4
11h	Graphic	640 x 480	2
12h	Graphic	640 x 480	16
13h	Graphic	320 x 200	256

7.6 Extended VESA Modes

VESA Mode	Type	Pixels	Colors
101h	Graphic	640 x 480	256
103h	Graphic	800 x 600	256
105h	Graphic	1024 x 768	256
107h	Graphic	1280 x 1024	256
110h	Graphic	640 x 480	32k
111h	Graphic	640 x 480	64k
112h	Graphic	640 x 480	16M
113h	Graphic	800 x 600	32k
114h	Graphic	800 x 600	64k
115h	Graphic	800 x 600	16M
116h	Graphic	1024 x 768	32k
117h	Graphic	1024 x 768	64k
118h	Graphic	1024 x 768	16M
119h	Graphic	1280 x 1024	32k
11Ah	Graphic	1280 x 1024	64k
11Bh	Graphic	1280 x 1024	16M
131h	Graphic	1600 x 1200	256
133h	Graphic	1600 x 1200	64k
134h	Graphic	1600 x 1200	16M

7.7 Backlight Connector

Backlight is available through the X19 connector (7 pins). Backlight voltage and backlight on/off polarity are controlled through the jumper JP1 and JP2

Header	Pin	Signal Name	Function
	1	**N.C.**	Not connected
	2	**BKLTADJ**	Brightness control (0V - 5V)
	3	**GND**	Ground
	4	**VCC** [1)]	Power +5V or +12V
	5	**VCC** [1)]	Power +5V or +12V
	6	**GND**	Ground
	7	**BKLTON**	Backlight on/off

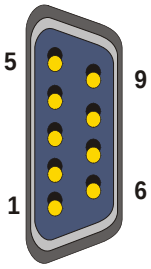
Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

8 Serial Port Interfaces

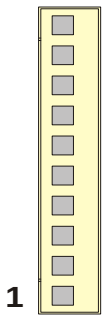
Two fully functional serial ports (COMA and COMB) provide asynchronous serial communications. COMA and COMB support RS-232 operation modes. They are 16550 high-speed UART compatible and support 16-byte FIFO buffers for transfer rates from 50 Baud to 115.2 KBaud. A programmable baud rate generator allows transfer rates up to 1.5 MBaud.
One serial port is available as RS-232 on the JRex front panel, the second serial port COMB can be used as well as RS-422 or RS-485 interface.

8.1 Connector

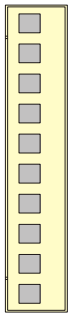
COMA is available through the standard DSUB9 connector X9 (9 pins).

Header	Pin	Signal Name	Function	DSUB25
	1	**/DCD**	Data carrier detect	8
	2	**RXD**	Receive data	3
	3	**TXD**	Transmit data	2
	4	**/DTR**	Data terminal ready	20
	5	**GND**	Ground	7
	6	**/DSR**	Data set ready	6
	7	**/RTS**	Request to send	4
	8	**/CTS**	Clear to send	5
	9	**/RI**	Ring indicator	22

COMB is available through the connector X10 (10 pins). A DSUB9 adapter cable is deliverable from KONTRON (KAB-DSUB9-3, part number 96061-0000-00-0).

Header	Pin	Signal Name	Function	DSUB9
	1	**/DCD**	Data carrier detect	1
	2	**/DSR**	Data set ready	6
	3	**RXD**	Receive data	2
	4	**/RTS**	Request to send	7
	5	**TXD**	Transmit data	3
	6	**/CTS**	Clear to send	8
	7	**/DTR**	Data terminal ready	4
	8	**/RI**	Ring indicator	9
	9	**GND**	Ground	5
	10	**VCC** [1)]	Power +5V	---

The same connector X10 can be used as a RS-422 or RS-485 interface. The configuration is changeable in the BIOS Setup.

Header	Pin	Signal RS-422	Signal RS-485	Function
	1	**TX-**	**TX- / RX-**	Transmit data - / Receive data -
	2	**N.C.**	**N.C.**	Not connected
	3	**RX+**	**N.C.**	Receive data + / Not connected
	4	**N.C.**	**N.C.**	Not connected
	5	**TX+**	**TX+ / RX+**	Transmit data + / Receive data +
	6	**N.C.**	**N.C.**	Not connected
	7	**RX-**	**N.C.**	Receive data - / Not connected
	8	**N.C.**	**N.C.**	Not connected
	9	**GND**	**GND**	Ground
	10	**VCC** 1)	**VCC** 1)	Power +5V

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

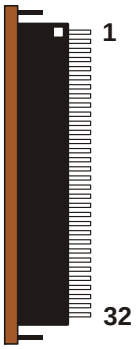
Attention: *A RS-422/RS-485 terminating resistor is not equipped on the JRexplus LX.*

9 Parallel Port Interface

The JRex*plus* LX incorporates a parallel port that can be set to uni-/bidirectional and supports EPP/ECP operating modes.

9.1 Connector

The parallel port is available through the connector X20 (32 pins). A DSUB25 adapter cable is deliverable from KONTRON (KAB-DSUB25-2, part number 61033).

Header	Pin	Signal Name	Function	DSUB25
	1	**VCC** 1)	Power +5V	N.C.
	12	**/AFD**	Autofeed	14
	13	**/STB**	Strobe	1
	14	**/ERR**	Error	15
	15	**D0**	Data 0	2
	16	**/INIT**	Init	16
	18	**D1**	Data 1	3
	19	**/SLIN**	Select in	17
	20	**D2**	Data 2	4
	21	**D3**	Data 3	5
	23	**D4**	Data 4	6
	24	**D5**	Data 5	7
	25	**D6**	Data 6	8
	26	**D7**	Data 7	9
	28	**/ACK**	Acknowledge	10
	29	**/BUSY**	Busy	11
	30	**PE**	Paper out	12
	31	**/SLCT**	Select out	13
	2, 11	**GND**	Ground	18 - 25
	17, 22	**GND**	Ground	18 - 25
	27,32	**GND**	Ground	18 - 25

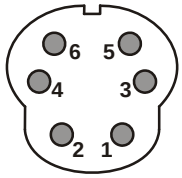
Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

10 PS/2 Keyboard and Mouse Interface

The Super-I/O of the JRex*plus* LX supports a PS/2 keyboard and mouse. A PS/2 keyboard can be directly connected to this interface. If you intend to use a PS/2 mouse connect a Y-cable to this interface. There are many different Y-cables available on the market. Some cables have reverse keyboard/mouse signals. If your keyboard and mouse do not work connect the keyboard to the mouse side and vice versa.

10.1 Connector

The keyboard/mouse interface is available through the standard miniDIN connector X8 (6 pins).

Header	Pin	Signal Name	Function
	1	**KBDAT**	Keyboard data
	2	**MSDAT**	Mouse data
	3	**GND**	Ground
	4	**VCC** 1)	Power +5V
	5	**KBCLK**	Keyboard clock
	6	**MSCLK**	Mouse clock

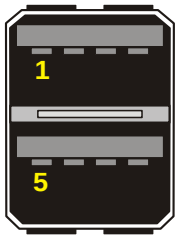
Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

11 USB Interface

The USB interface comes with four USB ports which follow the OHCI/EHCI specification and are USB 2.0 compliant. You can expand the amount of USB connections by adding external hubs. Two ports are available on a standard connector and two more ports on a pin strip.

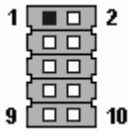
11.1 Standard Connector

Two USB ports are available through the standard USB connector X12 (8 pins).

Header	Pin	Signal Name	Function
	1	**VCC** [1)]	Power +5V
	2	**USB0-**	USB port 0 (negative)
	3	**USB0+**	USB port 0 (positive)
	4	**GND**	Ground
	5	**VCC** [1)]	Power +5V
	6	**USB1-**	USB port 1 (negative)
	7	**USB1+**	USB port 1 (positive)
	8	**GND**	Ground

11.2 Extension Connectors

The other USB ports are available through the standard pin strip connector X13 (10 pins).

Header	Pin	Signal Name	Function
	1	**VCC** [1)]	Power +5V
	2	**VCC** [1)]	Power +5V
	3	**USB2-**	USB port 2 (negative)
	4	**USB3-**	USB port 3 (negative)
	5	**USB2+**	USB port 2 (positive)
	6	**USB3+**	USB port 3 (positive)
	7	**GND**	Ground
	8	**GND**	Ground
	9	**KEY (N.C.)**	Key pin
	10	**GND**	Ground

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

The following picture shows the KONTRON USB slot adapter (USB Bracket, part number 821401).

11.3 Limitations

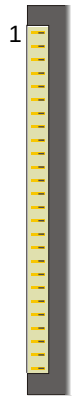
The power contacts for USB devices on pin 1 and pin 4 respectively pin 1/2 and pin 7/8 are protected. They are suitable to supply connected USB devices with a maximum input current of 500mA. Do not supply external USB devices with higher power dissipation through these pins.

12 Floppy Drive Interface

The floppy drive interface of the JRex*plus* LX uses a 2.88 MB Super-I/O floppy disk controller and can support one floppy disk drive with densities that range from 360 kB to 2.88 MB. The controller is 100% IBM compatible.

12.1 Connector

The floppy disk interface is available on the flat-foil connector X3 (26 pins). This type of connector is often internally used in notebooks to connect a floppy drive.
Accessories are available for this interface from KONTRON. To connect a standard 3.5" floppy drive use an adapter cable (ADA-FLOPPY-2, part number 96001-0000-00-0). If you have a slim-line 3.5" floppy drive you may need a flat-foil cable (KAB-FLOPPY/ MOPS-1, part number 96019-0000-00-0). It also is possible to get a slim line 3.5" floppy drive with cable (FLOPPY-MOPS-1, part number 96010-0000-00-0).

Header	Pin	Signal Name	Function	Pin	Signal Name	Function
	1	**VCC** [1)]	Power +5V	2	**/IDX**	Index
	3	**VCC** [1)]	Power +5V	4	**/DRO**	Drive select 0
	5	**VCC** [1)]	Power +5V	6	**/DSKCHG**	Disk change
	7	**N.C.**	Not connected	8	**N.C.**	Not connected
	9	**N.C.**	Not connected	10	**/MTRO**	Motor on 0
	11	**N.C.**	Not connected	12	**/FDIR**	Direction select
	13	**N.C.**	Not connected	14	**/STEP**	Step
	15	**GND**	Ground	16	**/WDATA**	Write data
	17	**GND**	Ground	18	**/WGATE**	Write gate
	19	**GND**	Ground	20	**/TRKO**	Track 0
	21	**GND**	Ground	22	**/WRTPRT**	Write protect
	23	**GND**	Ground	24	**/RDATA**	Read data
	25	**GND**	Ground	26	**/HDSEL**	Side one select

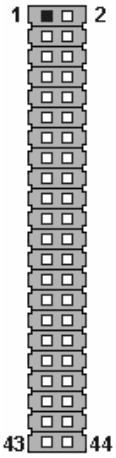
Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

13 Parallel-ATA Interface (P-ATA)

The JRex*plus* LX features one Parallel-ATA interface (Primary channel, UDMA33/66 mode) that can drive two hard disks. When two devices share a single adapter they are connected in a master/slave, daisy-chain configuration. If only one drive is connected you must set it as master. Alternatively the same interface can be used for Compact Flash card applications. Due to mechanical restrictions KONTRON chipdisks can't be directly mounted. A stand-off extension for the pingrid is needed to connect the chipdisk properly.

13.1 Connector

The P-ATA interface is available through connector X6 (44 pins). This interface is designed in 2 mm grid for optimal connectivity to a 2.5" hard disk. You can use two cables to directly connect a hard disk in a 2.5" form factor (KAB-IDE-2MM, part number 96021-0000-00-0) or a 3.5" form factor (KAB-IDE-25, part number 96020-0000-00-0).

Header	Pin	Signal Name	Function	Pin	Signal Name	Function
	1	**/RESET**	Reset	2	**GND**	Ground
	3	**D7**	Data 7	4	**D8**	Data 8
	5	**D6**	Data 6	6	**D9**	Data 9
	7	**D5**	Data 5	8	**D10**	Data 10
	9	**D4**	Data 4	10	**D11**	Data 11
	11	**D3**	Data 3	12	**D12**	Data 12
	13	**D2**	Data 2	14	**D13**	Data 13
	15	**D1**	Data 1	16	**D14**	Data 14
	17	**D0**	Data 0	18	**D15**	Data 15
	19	**GND**	Ground	20	**KEY (N.C.)**	Key pin
	21	**DRQ**	DMA request	22	**GND**	Ground
	23	**/IOW**	I/O write	24	**GND**	Ground
	25	**/IOR**	I/O read	26	**GND**	Ground
	27	**IOCHRDY**	I/O channel ready	28	**CSEL** [2)]	Cable select
	29	**/DACK**	DMA acknowledge	30	**GND**	Ground
	31	**IRQ**	Interrupt request	32	**N.C.**	Not connected
	33	**SA1**	Address 1	34	**ATAD**	UDMA detection
	35	**SA0**	Address 0	36	**SA2**	Address 2
	37	**/CS1**	Chip select 1	38	**/CS3**	Chip select 3
	39	**ACT**	Drive activity	40	**GND**	Ground
	41	**VCC** [1)]	Power +5V	42	**VCC** [1)]	Power +5V
	43	**GND**	Ground	44	**N.C.**	Not connected

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.
2) Pin 28 is connected with 470Ω to Ground for Cable Select P-ATA devices.

13.2 Compact Flash Card Interface

The same primary P-ATA channel is realized as a CF card interface, also capable of UDMA. The interface has jumper options to be either a master or slave device. If for example the Compact Flash card is set to master only a slave device can be connected to the 44 pin IDE connector.

13.2.1 Connector

The CF card interface is available through the standard CF connector X21 (50 pins).

Pin	Signal Name	Function	Pin	Signal Name	Function
1	**GND**	Ground	2	**D3**	Data 3
3	**D4**	Data 4	4	**D5**	Data 5
5	**D6**	Data 6	6	**D7**	Data 7
7	**/CS1**	Chip select 1	8	**GND**	Ground
9	**GND**	Ground	10	**GND**	Ground
11	**GND**	Ground	12	**GND**	Ground
13	**VCC** [1)]	Power +5V	14	**GND**	Ground
15	**GND**	Ground	16	**GND**	Ground
17	**GND**	Ground	18	**SA2**	Address 2
19	**SA1**	Address 1	20	**SA0**	Address 0
21	**D0**	Data 0	22	**D1**	Data 1
23	**D2**	Data 2	24	**N.C.**	Not connected
25	**GND**	Ground	26	**GND**	Ground
27	**D11**	Data 11	28	**D12**	Data 12
29	**D13**	Data 13	30	**D14**	Data 14
31	**D15**	Data 15	32	**/CS3**	Chip select 3
33	**GND**	Ground	34	**/IOR**	I/O read
35	**/IOW**	I/O write	36	**VCC** [1)]	Power +5V
37	**IRQ**	Interrupt	38	**VCC** [1)]	Power +5V
39	**GND**	Ground	40	**N.C.**	Not connected
41	**/RESET**	Reset	42	**IOCHRDY**	I/O channel ready
43	**/DRQ**	DMA request	44	**/DACK**	DMA acknowledge
45	**ACT**	Drive activity	46	**N.C.**	Not connected
47	**D8**	Data 8	48	**D9**	Data 9
49	**D10**	Data 10	50	**GND**	Ground

Jumper JP7 allows the configuration for master/slave mode.

Pins	Signal
1 - 2	Master
2 - 3	Slave

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

Warning: *Inserting or removing the Compact Flash card while in operation can cause serious damage and must be avoided.*

13.3 BBS Support (BIOS Boot Specification)

The BIOS supports BBS, this means for all hard disk types there is one entry in the Setup (e.g. normal hard disk, CF card drive, USB and S-ATA hard disk or USB flash drive). The boot priority of the hard disks drives can be set in the Setup submenu *Advanced BIOS Features/Hard Disk Boot Priority*. USB flash drives which are formatted as a super-floppy are not supported.

13.4 Problems with CF Card Support

Fewest problems will be determined using a CF card that is set as an 'IDE-fixed' device. With CF cards that are not configured as a 'IDE fixed' device long waiting times of a few minutes will occure during WIN XP SP2 start after the installation. By pressing the buttons CTRL+ALT+DEL you can easily access the operating system during this waiting time. The delay when starting XP can be avoided by disabling the virtual RAM in the system control panel (using 'No Paging File'). Whithout the paging file there are no delays during bootup of Windows®.
The combination of a CF card that supports UDMA modes and one or two further P-ATA drive(s) can lead to boot problems. This depends on the used devices. Detailled informations can be found in the KONTRON document **CF-Card Test Report**. One possibility to avoid these problem is to deactivate UDMA for both devices. An exchange of the cable might also lead to an improvement.

13.5 Problems with Boot Order

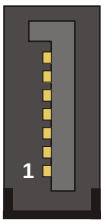
When using a S-ATA DVD drive, e.g. for the Windows® XP installation, and the hard disk is attached to the P-ATA interface (including CF card) the boot order that is set in the BIOS Setup will not be strictly adhered as long as the installation CD/DVD is inserted in the DVD drive. When the CD/DVD is removed the boot order will function correctly according to the setting in the BIOS Setup.
This is also valid for a standard 3.5" floppy drive (not USB) in case that a disk is provided in the floppy drive.

14 Serial-ATA Interface (S-ATA)

The JRex*plus* LX has realized two S-ATA ports. Serial-ATA connections boost the data rate theoretically up to 150 MB/sec. In addition it changes the parallel interface requiring 40 separate wires to a serial interface requiring only 6 wires. A RAID (Redundant Array of Independent Disks) configuration is possible.

14.1 Connector

The S-ATA interface is available through the standard L-type connectors X4 and X5 (7 pins).

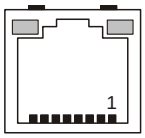
Header	Pin	Signal Name	Function
	1	**GND**	Ground
	2	**TX+**	Transmit (positive)
	3	**TX-**	Transmit (negative)
	4	**GND**	Ground
	5	**RX-**	Receive (negative)
	6	**RX+**	Receive (positive)
	7	**GND**	Ground

15 LAN Controller

The JRex*plus* LX uses a Realtek RTL8110SC Gigabit PCI LAN controller. The controller support 10/ 100/1000 Base-T interfaces. The devices auto-negotiates the use of a 10, 100 or 1000 Mbps connection.
Additionally it is possible to enable the LAN PXE Boot in the BIOS Setup to allow the system to boot up via a network connection from a PXE server.

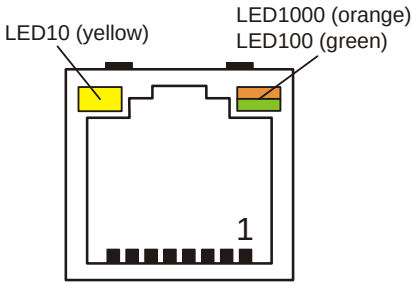
15.1 Connector

The LAN interface is available through the standard RJ45 connector X11 (8 pins).

Header	Pin	Signal Name	Function
	1	**TXD+ / BI_D1+**	10/100 transmit / 1000 pair 1 (positive)
	2	**TXD- / BI_D1-**	10/100 transmit / 1000 pair 1 (negative)
	3	**RXD+ / BI_D2+**	10/100 receive / 1000 pair 2 (positive)
	4	**BI_D3+**	1000 pair 3 (positive)
	5	**BI_D3-**	1000 pair 3 (negative)
	6	**RXD- / BI_D2-**	10/100 receive / 1000 pair 2 (negative)
	7	**BI_D4+**	1000 pair 4 (positive)
	8	**BI_D4-**	1000 pair 4 (negative)

15.2 Connector LED Definition

The network transmission rate and activity are indicated by two LEDs. LED10 (10 Mbit; single color LED) and LED100/LED1000 (100 Mbit respectivly 1 Gbit; two color LED).



16 Audio Interface

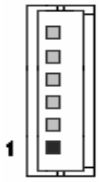
The JRex*plus* LX supports an AC'97 V2.3 audio codec with 16 bit resolution and 48 kHz sample rate. The interface includes LINE OUT, LINE IN and MICROPHONE IN. The AC'97 specification provides low cost, high quality sound. This is done by embedding half of the required technology in the Southbridge and the other half in a separate chip from an OEM supplier. For signal levels see the AC'97 Component Specification (Intel®).

16.1 Hardware Features

Parameter	Values	Units
Output resolution (LINE OUT)	16	bit
Output sample rate (LINE OUT)	44.1/48	kHz
Output Signal-to-Noise Ratio (LINE OUT)	100	dB
Input resolution (LINE IN)	16	bit
Input sample rate (LINE IN)	44.1/48	kHz
Input Signal-to-Noise Ratio (LINE IN)	90	dB

16.2 Connector

The analog audio interface is available through the connector X14 (6 pins).

Header	Pin	Signal Name	Function
	1	**LINE_OUT_R**	Line output right
	2	**GND**	Ground
	3	**LINE_OUT_L**	Line output left
	4	**LINE_IN_R**	Line input right
	5	**MIC_IN**	Microphone input
	6	**LINE_IN_L**	Line input left

17 Digital I/O Interface

The JRex*plus* LX features four digital inputs and four digital outputs. All inputs/outputs are TTL compatible.

17.1 Electrical Specifications

Digital Inputs

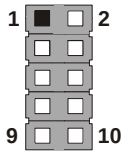
Parameter	Min.	Typ.	Max.	Units
Input LOW voltage			0.8	V
Input HIGH voltage	2.0		5.25	V
Input rate - JIDA16 call (INT15h)			300	Hz

Digital Outputs

Parameter	Min.	Typ.	Max.	Units
Output LOW voltage			0.55	V
Output HIGH voltage	2.4		5.0	V
Output HIGH current			12	mA
Switching rate - JIDA16 call (INT15h)			350	Hz

17.2 Connector

The digital I/O interface is available through the connector X15 (10 pins).

Header	Pin	Signal Name	Function
	1	**OUT1**	Digital output 1
	2	**IN1**	Digital input 1
	3	**OUT2**	Digital output 2
	4	**IN2**	Digital input 2
	5	**OUT3**	Digital output 3
	6	**IN3**	Digital input 3
	7	**OUT4**	Digital output 4
	8	**IN4**	Digital input 4
	9	**VCC** [1)]	Power +5V
	10	**GND**	Ground

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

18 Power Supply

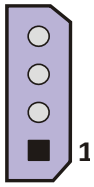
The JRex*plus* LX supports two power supply modes: **AT** and **ATX**.

AT mode: Only one connector (4 pins) is required. After switching on the supply voltage a circuit generates a reset and the board immediately begins to work. The JRex*plus* board works fine in +5V only mode. The +12V supply voltage is optional and can be used for the backlight voltage for example. Disadvantage: Power state S5 is consuming more current.

ATX mode: Two connectors (4 pins and 2 pins) are required. After switching on the supply voltage the board is then immediately ready to operate, though only on standby power. When the power button is pressed the remaining supply voltages are connected and the board begins to work.

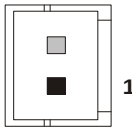
18.1 Main Power Connector (AT/ATX)

The main power connector is available as X22 (4 pins).

Header	Pin	Signal Name	Function
	1	**VDD** 1)	Power supply +12V
	2	**GND**	Ground
	3	**GND**	Ground
	4	**VCC** 1)	Power supply +5V

18.2 Power Connector Supplement (ATX)

The power connector supplement is available as X23 (2 pins).

Header	Pin	Signal Name	Function
	1	**/PS_ON**	Power supply on
	2	**5VSB** 1)	Standby voltage +5V

Note: *1) To protect the external power lines of peripheral devices make sure that*
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

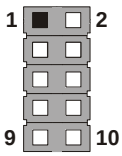
18.3 Power Pins

Every power pin on the power connector supplement is limited to a maximum current and the following limitations apply:

Power	Number of Pins	Max. Current
5VSB	1	1A

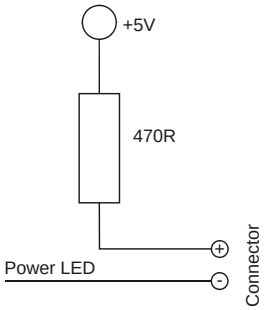
18.4 Power Front Panel Header

The power button and other power signals are available through the pin strip FP2 (10 pins).

Header	Pin	Signal Name	Function
	1	**PWR_LED+**	Power LED (positive)
	2	**PWR_BTN+**	Power button (positive)
	3	**N.C.**	Not connected
	4	**PWR_BTN-**	Power button (negative)
	5	**PWR_LED-**	Power LED (negative)
	6	**N.C.**	Not connected
	7	**RSVD**	Reserved
	8	**RSVD**	Reserved
	9	**GND**	Ground
	10	**RSVD**	Reserved

18.4.1 Power LED

The following picture illustrates the onboard wiring.

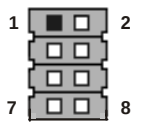


19 Common Front Panel Pins

The Common Front Panel provides some special functions (e.g. reset button and speaker).

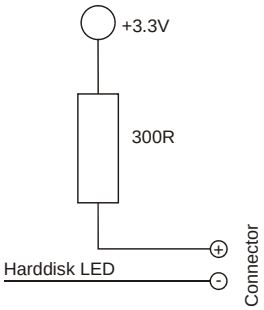
19.1 Pin Strip

The Common Front Panel is available through the pin strip FP1 (8 pins)

Header	Pin	Signal Name	Function
	1	**RST_BTN+**	Reset button (positive)
	2	**SPKR+**	Speaker (positive)
	3	**RST_BTN-**	Reset button (negative)
	4	**N.C.**	Not connected
	5	**HDD_LED+**	Harddisk LED (positive)
	6	**N.C.**	Not connected
	7	**HDD_LED-**	Harddisk LED (negative)
	8	**SPKR-**	Speaker (negative)

19.1.1 Harddisk LED

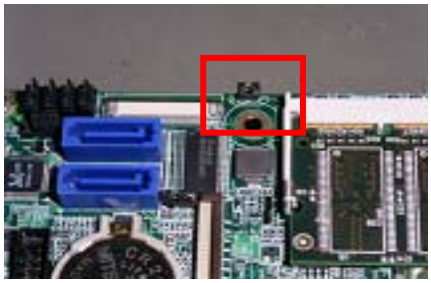
The following picture illustrates the onboard wiring.



20 Crisis Management

Modifying parameters in the BIOS Setup implies the risk of leaving your system in a unbootable state. In case this happens two jumper exists to reset the settings to 'Fail-Safe values'.
In case no battery is connected then follow these five steps:

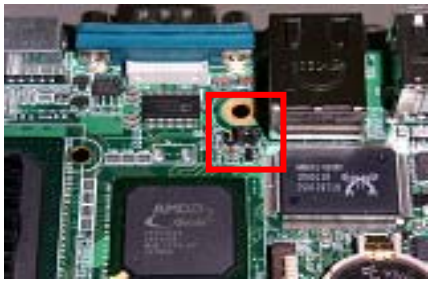
1. Power down the board
2. Remove the tagged jumper JP9 (see the picture)
3. Power up the board and enter the BIOS Setup
4. Before saving your new settings with 'Save & Exit' put the jumper back
5. The board should be functional now



In case there is a backup battery for the real time clock:

1. Power down the board
2. Switch the second jumper JP8 as depicted and wait for 3 seconds
3. Put the jumper back as it was before

Then continue with the steps from the no battery case.



21 CPU/Memory Speed

Not every combination of CPU and memory clock frequency is possible. To ensure functionality of the board please make sure to use only combinations from the following table.

CPU Speed	Memory Speed
200 MHz	DDR200
333 MHz	DDR200
333 MHz	DDR266
333 MHz	DDR333
400 MHz	DDR200
400 MHz	DDR266
400 MHz	DDR333
400 MHz	DDR400
433 MHz	DDR266
433 MHz	DDR333
433 MHz	DDR400
500 MHz	DDR266
500 MHz	DDR333
500 MHz	DDR400

22 Setup Guide

The PHOENIX/AWARD BIOS Setup utility changes system behavior by modifying the BIOS configuration. The Setup program uses a number of menus to make changes and turn features on or off.
Whenever you contact technical support about BIOS issues providing a BIOS version <BLX8R???> is especially helpful.

22.1 Start PHOENIX/AWARD BIOS Setup Utility

To start the PHOENIX/AWARD BIOS Setup utility press <DEL> when the following string appears during boot-up.

Press <DEL> to enter Setup

The main menu then appears.

The Setup screen is composed of several sections:

Setup Screen	Location	Function
Menu Bar	Upper half	Lists and selects all top level menus
Legend Bar	Near bottom or bottom	Lists Setup navigation keys
Item Specific Help Window	Bottom or left side	Help for selected item

Menu Bar
The menu bar at the top of the window lists different menus. Use the left/right arrow keys to make a selection.

Legend Bar
Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu.

Selecting an Item
Use the ↑ or ↓ key to move the cursor to the field you want. Then use the + and – keys to select a value for that field.

Displaying Submenus
Use the ← or → key to move the cursor to the submenu you want. Then press <Enter>. A pointer (▸) marks all submenus.

Note: *In the Option column* ***bold*** *shows default settings.*

22.2 Menu Bar

Feature	Description
Standard CMOS Features	Defines time, date, hard disk and floppy type
Advanced BIOS Features	Defines virus warning, boot sequence, keyboard and mouse parameters
Advanced Chipset Features	Defines clocks, video settings, LAN, USB and watchdog features
Integrated Peripherals	Defines P-ATA global settings and onboard devices (COM, LPT)
PnP/PCI Configuration	Defines graphic boot device and PCI/memory resources
Power Management Setup	Defines power management and ACPI suspend types
PC Health Status	Shows temperatures/voltages and defines shutdown temperature
Board Information	Shows BIOS version/date, serial number and others
Load Fail-Safe Defaults	Overwrite Setup values with fail-safe values
Load Optimized Defaults	Overwrite Setup values with optimized values
Set Supervisor Password	Change, set or disable supervisor password
Set User Password	Change, set or disable user password
Save & Exit Setup	Saves Setup values to CMOS and exit Setup
Exit Without Saving	Discards all Setup values and exit Setup

22.3 Main Menu

Feature	Option	Description
Date	MM/DD/YYYY	Sets system date
Time	HH:MM:SS	Sets system time
▸ IDE Master Drive	Submenu	Displays result of P-ATA autotyping
▸ IDE Slave Drive	Submenu	Displays result of P-ATA autotyping
Drive A	**None**, 360 kBits 5¼ " 1.2 MBits 5¼ ", 720 kBits 3½ " 1.44 MBits 3½ ", 2.88 MBits 3½ "	Sets type of floppy disk drive
Halt On	All Errors, No Errors **All, But Keyboard** All, But Diskette All, But Disk/Key	If errors detected during boot-up cause system to halt
Base Memory	N/A	Displays amount of conventional memory detected during boot-up
Extended Memory	N/A	Displays amount of extended memory detected during boot-up Extended memory = capacity of memory module – selected frame buffer memory size
Total Memory	N/A	Displays amount of total memory detected during boot-up

22.3.1 IDE Master or Slave Submenu

Feature	Option	Description
HDD Auto-Detection	Press Enter	Executes HDD auto-detection
Master/Slave Drive	None **Auto** Manual	None = disable drive Auto = auto-detection: the drive itself supplies the information Manual = end user supplies the HDD information
Access Mode	CHS LBA Large **Auto**	CHS = physically 28bit addressing mode LBA = adressing mode with logical block numbers Large = for drives that do not support LBA and have more than 1024 cylinders Auto = auto-detection: the drive itself supplies the information
Capacity	N/A	Displays the calculated size of the drive
Cylinder	N/A	Number of cylinders
Head	N/A	Number of read/write heads
Precomp	N/A	Write precompensation cylinder number
Landing Zone	N/A	Defines the head park position
Sector	N/A	Number of sectors per track

22.4 Advanced BIOS Features

Feature	Option	Description
▸ Hard Disk Boot Priority	Press Enter	Selects hard disk boot device order
Virus Warning	Enabled **Disabled**	Enables or disables the virus warning for P-ATA harddisk boot sector
First Boot Device Second Boot Device Third Boot Device	Floppy **Hard Disk (Third)** **CDROM (Second)** **USB FDD (First)** USB-CDROM LAN Disabled	Standard legacy diskette drive Primary hard drive Standard CDROM or DVD drive USB diskette drive USB CDROM drive LAN controller with LAN Boot-ROM Disables boot device
Boot Other Device	Disabled **Enabled**	Enables or disables other boot devices
Security Option	**Setup** System	Setup = password required for Setup System = password required for system boot
JRC Extension	Enabled **Disabled**	Enables or disables the JRC extension (remote control)
Darkboot / Custom Logo	**Disabled** Enabled	If enabled normally Darkboot will be active. For Custom Logo contact KONTRON

Boot Up Numlock Status	Off **On**	On or Off turns NumLock on or off at boot-up (keyboard feature)
Gate A20 Option	Normal **Fast**	Normal = keyboard controller checks Gate A20 Fast = lets chipset controls Gate A20 (Port92h)
Typematic Rate Setting	**Disabled** Enabled	Enables or disables manual adjustability
Typematic Rate	**6**, 8, 10, 12, 15,20, 24, 30 chars/sec.	Sets number of times to repeat a keystroke per second if you hold the key down
Typematic Delay	**250**, 500, 750, 1000 ms	Sets delay time after key is held down before it begins to repeat the keystroke
PS/2 Mouse Function	**Disabled** Enabled	Disabled prevents installed PS/2 mouse from functioning but frees IRQ12 Enabled forces the PS/2 mouse port to be enabled regardless if a mouse is present

22.5 Advanced Chipset Features

Feature	Option	Description
CPU Frequency	200 MHz, 333 MHz, 400 MHz 433 MHz, **500 MHz**	Selects CPU frequency
Memory Speed	DDR200, **DDR266** DDR333, DDR400	Selects memory speed
Video Memory Size	**8**, 16, 32, 64, 128, 254 MB	Defines video memory size. The video memory shares system memory
Output Display	**CRT**, LCD, LCD&CRT	Selects display boot devices. CRT&LCD is the simultaneous mode
LCD Resolution	**Auto**, VGA, SVGA, XGA	VGA, SVGA and XGA provides standard timings for panel resolutions. Auto loads a DisplayID record
Backlight Value	0, 10, 20, 30, **40**, 50, 60 70, 80 100, 120, 150, 180 210, 230, 250	Chooses a value to adjust backlight of the LCD 0 = 0 V and 250 = nearly maximal voltage
LAN Controller	Disabled **Enabled**	Enables or disables the external PCI LAN controller
PXE LAN Boot	Enabled **Disabled**	Enables or disables the PXE LAN boot feature
Audio Controller	**Enabled** Disabled	Enables or disables the internal audio controller
USB Controller	**Enabled** Disabled	Enables or disables the internal USB controller (including the EHCI controller)
EHCI Controller	**Enabled** Disabled	Enables or disables the internal EHCI controller (USB 2.0)
Security Block	**Disabled** Enabled	Enables or disables the internal security block
Watchdog Mode	**Disabled** Generate RESET	Selects operation mode

Watchdog Timeout	1 sec ... **30 sec** 1 min ... 30.5 min	Selects maximum trigger period
Watchdog Delay	1 sec ... **30 sec** 1 min ... 30.5 min	Selects time until the watchdog counter starts the counting

22.6 Integrated Peripherals

Feature	Option	Description
IDE Controller	**Enabled** Disabled	Enables or disables the internal P-ATA controller
Master/Slave Drive PIO Mode	**Auto**, Mode 0, Mode 1 Mode 2, Mode 3, Mode 4	Selects HDD PIO mode or Auto for optimum transfer mode
Master/Slave Drive UDMA	Disabled **Auto**	Disables UDMA or selects the optimum transfer mode
Bus Master Mode	Disabled **Enabled**	Enables or disables bus master mode
HDD Block Mode	Disabled **Enabled**	Enables or disables block mode. If the hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector
Floppy Controller	Disabled **Enabled**	Enables or disables onboard FDC controller
Serial Port 1/2	Disabled **3F8/IRQ4 (Port 1)** **2F8/IRQ3 (Port 2)** 3E8/IRQ4 2E8/IRQ3	Selects I/O base and IRQ of serial port respectively disables the port
Serial Port 2 Mode	**RS-232** RS-422 RS-485	The second serial port supports three different interfaces RS-422 = four wire differential interface RS-485 = two wire differential interface
Parallel Port	Disabled **378/IRQ7** 278/IRQ5 3BC/IRQ7	Selects I/O base and IRQ of parallel port respectively disables the port
Parallel Port Mode	**Standard**, EPP, ECP ECP+EPP	Standard = bidirectional EPP = Enhanced Parallel Port specification ECP = Extended Capabilities Port specification
EPP Mode Select	**EPP1.9**, EPP1.7	Selects the EPP specification
ECP Mode Use DMA	1, **3**	Selects the DMA channel for ECP specification

22.7 PnP/PCI Configurations

Feature	Option	Description
Init Display First	**PCI Slot** Onboard	Defines the search strategy for the primary graphic controller
Reset Configuration Data	**Disabled** Enabled	Enabled erases all configuration data in Extended System Configuration Data (ESCD) which stores the configuration settings for plug-in devices
Resources Controlled by	**Auto (ESCD)** Manual	Selects Auto the system BIOS configure all PnP data. Manual allows user configuration of PCI IRQs and memory ranges
▸ IRQ Resources	Submenu	Defines the assignment of PCI interrupts
▸ Memory Resources	Submenu	Allocates a memory area for peripherals that requires high memory

22.7.1 IRQ Resources

Feature	Option	Description
IRQ5, IRQ10, IRQ11 assigned to	**PCI Device** Reserved	Reserves the specified IRQ for usage by legacy devices (excludes the interrupt for PCI usage).

22.7.2 Memory Resources

Feature	Option	Description
Reserved Memory Base	**N/A**, C800, CC00 D000, D400 D800, DC00	Selects the base segment address of memory area
Reserved Memory Length	8K, 16K 32K, 64K	Selects the length of memory area (in kByte)

22.8 Power Management Setup

Feature	Option	Description
Power Management	Disabled **ACPI**	Enables or disables the ACPI power management
ACPI Suspend Type	**S1 (POS)**	Selects >Power On Standby< (S1)

22.9 PC Health Status

Feature	Option	Description
Shutdown Temperature	**Disabled** 60°C / 140°F 65°C / 149°F 70°C / 158°F	Defines the shutdown temperature
System Temperature	N/A	Local temperature
CPU Temperature	N/A	Temperature of CPU
Board Voltage +Vcore	N/A	+Vcore voltage (generated onboard)
Board Voltage +2.6V	N/A	+2.5V voltage (generated onboard)
Board Voltage +3.3V	N/A	+3.3V voltage (generated onboard)
Board Voltage +5Vsb	N/A	+5V standby voltage (external or onboard)
System Voltage +5V	N/A	+5V voltage (external power supply)
System Voltage +12V	N/A	+12V voltage (external power supply)

22.10 Board Information

Feature	Option	Description
BIOS Version	N/A	Shows the actual BIOS version
BIOS Date	N/A	Shows the BIOS production date
LX800 Chip Rev.	N/A	Shows the Northbridge (LX800) chip revision
CS5536 Chip Rev.	N/A	Shows the Southbridge (CS5536) chip revision
Board Class	N/A	Shows the KONTRON specific board class
Board Name	N/A	Shows the KONTRON specific board name
Hardware Version	N/A	Shows the KONTRON specific hardware version
Manufacturing Date	N/A	Shows the KONTRON specific manufacturing date
Serial Number	N/A	Shows the KONTRON specific serial number
Boot Counter	N/A	Shows the actual boot counter

Appendix A: System Resources

A.1 Interrupt Request (IRQ) Lines

Please ensure that the chosen interrupt is not already in use by PCI devices.

IRQ #	Used for	Available	Comment
0	Timer 0	No	
1	Keyboard	No	
2	8259 Slave (Cascade)	No	
3	Serial Port 2 (COM2)	No	Note (1)
4	Serial Port 1 (COM1)	No	Note (1)
5	PCI IRQ	for PCI	Dynamic (BIOS default)
6	Floppy Controller	No	Note (1)
7	Parallel Port 1 (LPT1)	No	Note (1)
8	Real Time Clock (RTC)	No	
9	ACPI Power Management	No	Note (2)
10	PCI IRQ	for PCI	Dynamic (BIOS default)
11	PCI IRQ	for PCI	Dynamic (BIOS default)
12	PS/2 Mouse	No	Note (1)
13	Floating Point Unit (FPU)	No	
14	P-ATA Controller (Primary)	No	Note (1)
15	P-ATA Controller (Secondary)	No	Note (3)

Note: *1) If the **Used for** device is disabled in the BIOS Setup the corresponding interrupt is free.*
2) Not available if ACPI is used.
3) Not usable in Windows®, since a PCI P-ATA controller uses always two channels.

A.2 Direct Memory Access (DMA) Channels

DMA #	Used for	Available	Comment
0		Yes	
1	(LPT1)	Yes	Note (2)
2	Floppy Controller	No	Note (1)
3	(LPT1)	Yes	Note (2)
4	Cascade	No	
5		No	Note (3)
6		No	Note (3)
7		No	Note (3)

Note: *1) If the **Used for** device is disabled in the BIOS Setup the corresponding DMA channel is free.*
2) Possible setting for LPT1 if configured for ECP mode.
3) 16 bit DMA channels not available.

A.3 Memory Area

The first 640 kB of DRAM are used as main memory. DOS can address 1 MB of memory directly. Memory area above 1 MB (high memory, extended memory) is accessed under DOS via special drivers such as HIMEM.SYS. Other operating systems (Linux or Windows® versions) allow you to address the full memory area directly.

Memory Range	Used for	Available	Comment
C0000h - C7FFFh	VGA BIOS	No	
C8000h - CFFFFh		Yes	if onboard graphic controller is used
D0000h - DFFFFh		Yes	
E0000h - FFFFFh	System BIOS	No	

A.4 I/O Address Map

The I/O-port addresses of the JRex*plus* LX are functionally identical to a standard PC/AT. All addresses not mentioned in this table should be available. We recommend that you do not use I/O addresses below 0100h with additional hardware for compatibility reasons even though they are available.

I/O Address	Used for	Available	Comment
01F0h - 01F7h	AMD PCI P-ATA Controller	No	Note (1)
0278h - 027Fh		Yes	Possible address of LPT2
0290h - 0297h	Hardware Monitor	No	
02E8h - 02EFh		Yes	Possible address of COM4
02F8h - 02FFh	Serial Port 2	No	Note (1)
0378h - 037Fh	Parallel Port 1	No	Note (1)
03BCh - 03C4h		Yes	Possible address of LPT3
03B0h - 03DFh	Graphic Controller	No	
03E8h - 03EFh		Yes	Possible address of COM3
03F0h - 03F7h	Floppy Controller	No	Note (1)
03F8h - 03FFh	Serial Port 1	No	Note (1)
0480h - 048Fh	DMA Extension	No	Chipset
04D0h - 04D8h	PIC Extension	No	Chipset
0CF8h - 0CFFh	PCI Configuration	No	Chipset
6000h - 63FFh	AMD PCI ISA-Bridge	No	Chipset
9C00h - 9FFFh	AMD PCI ISA-Bridge	No	Chipset
AC1Ch - AC1Fh	AMD PCI Host Bridge	No	Chipset
F400h - F4FFh	VIA PCI S-ATA Controller	No	Onboard PCI device
F600h - F6FFh	Realtek PCI LAN Controller	No	Onboard PCI device Note (1)
F900h - F91Fh	VIA PCI S-ATA Controller	No	Onboard PCI device
FA00h - FDFFh	VIA PCI S-ATA Controller	No	Onboard PCI device
FE00h - FE7Fh	AMD PCI Audio Controller	No	Chipset Note (1)
FF00h - FF0Fh	AMD PCI P-ATA Controller	No	Chipset Note (1)

Note: *1) If the **Used for** device is disabled in the BIOS Setup the corresponding address is free.*

A.5 PCI Devices

All devices follow the Peripheral Component Interconnect 2.2 (PCI 2.2) specification. Please see the specification for more details.

PCI Device	PCI IRQ	Comment
Host Bridge	None	Chipset
Graphics Controller	INTA	Chipset
ISA Bridge	None	Chipset
P-ATA Controller	None	Chipset
USB Controller 1	INTD	Chipset
USB Controller 2	INTD	Chipset
Audio Controller	INTB	Chipset
Encryption Controller	INTA	Chipset
LAN Controller	INTA	PCI bus (AD28)
S-ATA Controller	INTB	PCI bus (AD29)

A.6 System Management Bus (SMBus™)

The JRex*plus* LX uses an onboard System Management Bus (SMBus™). This bus is not available on a peripheral connector and therefore cannot be used for external SMBus™ devices.

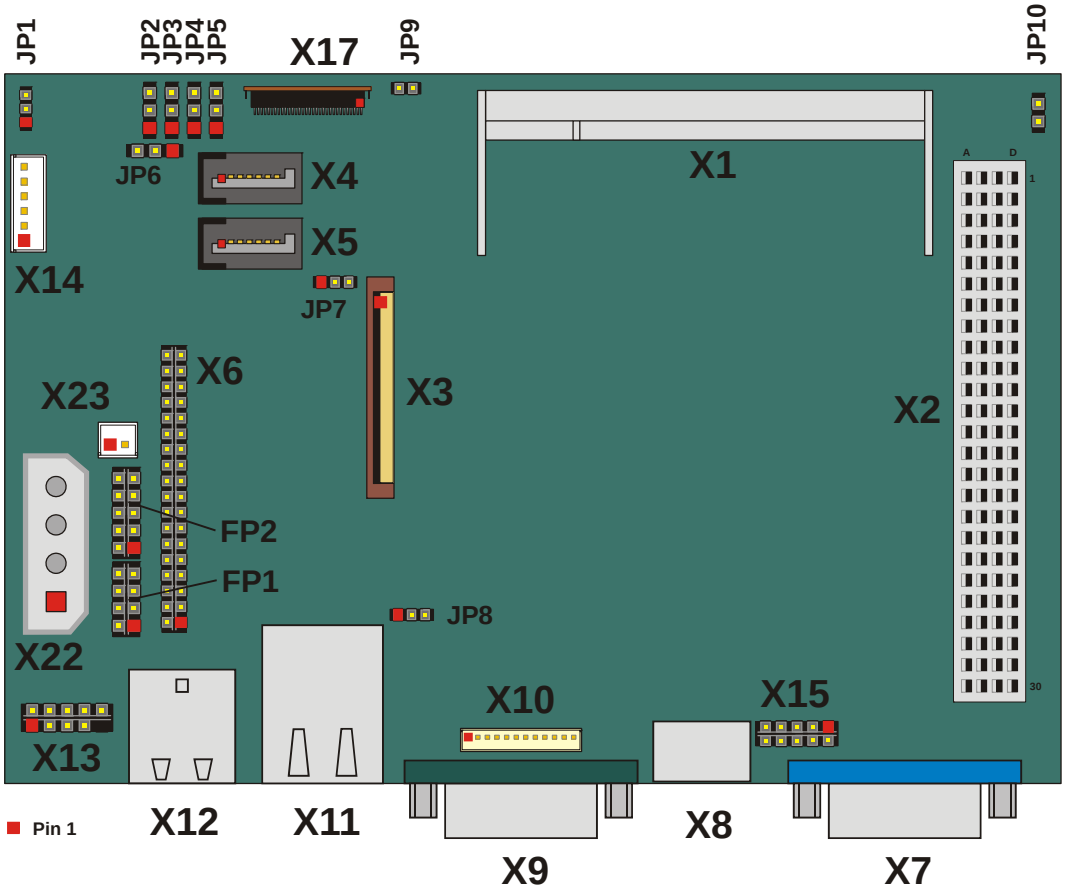
SMBus Address	Device	Comment
30h / 31h	GPIO Controller	Winbond I/O controller W83601
A0h / A1h	SPD Eeprom (DDR-SDRAM)	Part of the DDR RAM module

Warning: *There are more devices connected to the SMBus™ than listed in this table but access to these devices in not permitted. Don't access any other device addresses except those listed above.*

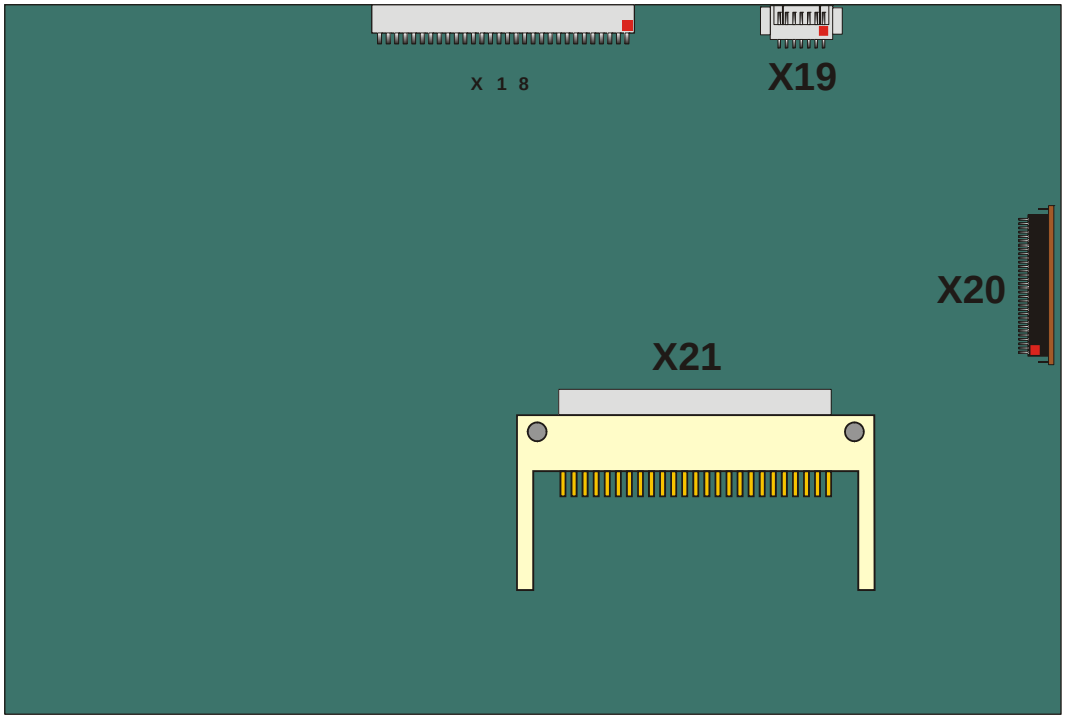
Appendix B: Connector Layout

B.1 Connector Locations

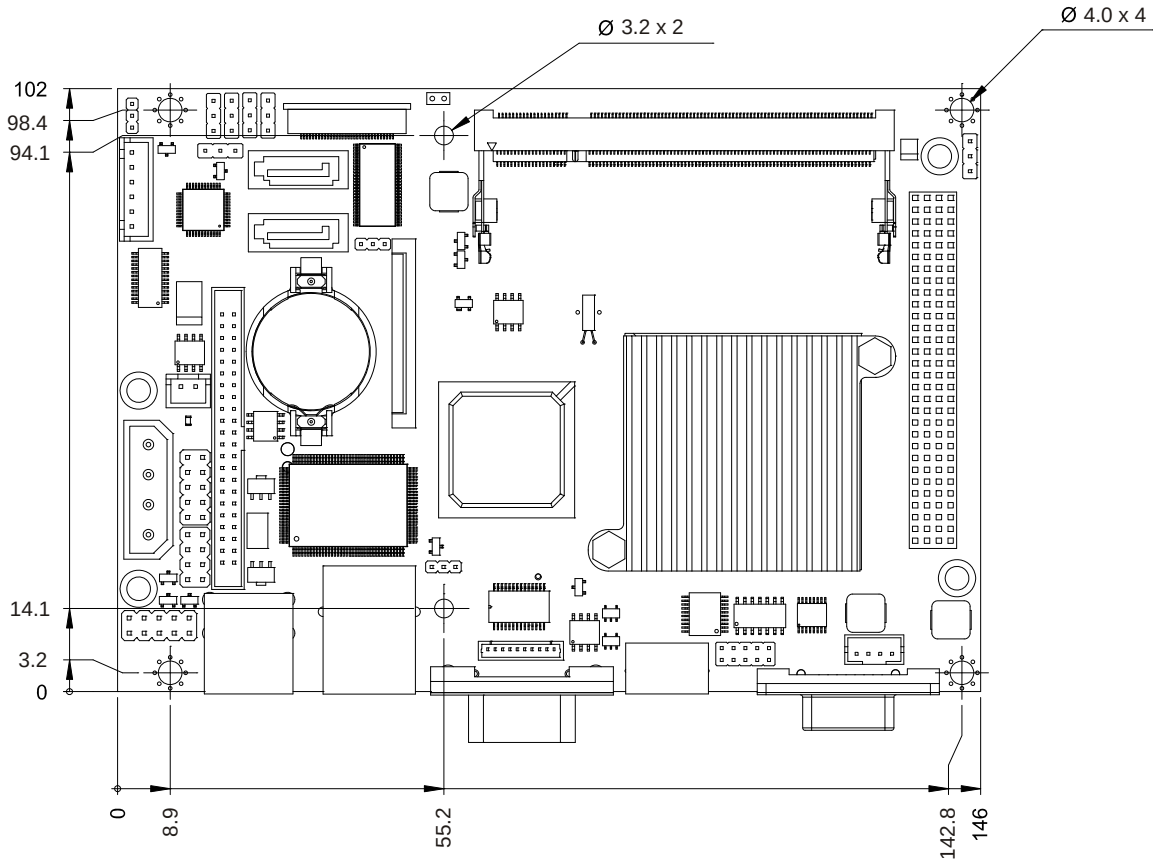
B.1.1 Top Side

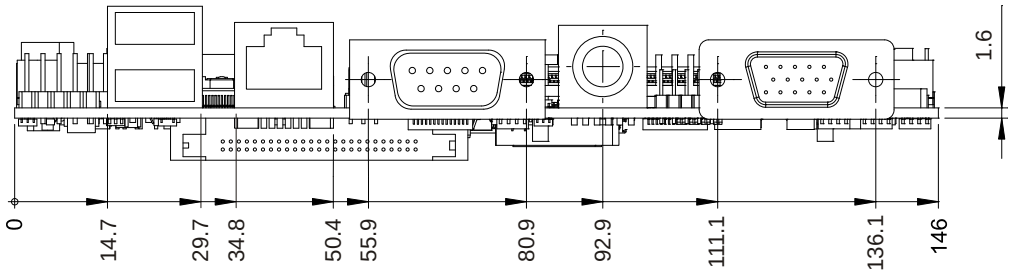


B.1.2 Bottom Side



B.2 Mechanical Dimensions





B.3 Mating Connectors

The table notes mating connectors.

Identifier	Mating Connector	Comment
X10	1.25 mm 10 pin (MOLEX 50058-8000 or comp.)	for standard DSUB9 adaptation
X14	2.50 mm 6 pin (JST SXH-002T-P0.6 or comp.)	for audio support (Line In, Line Out and Microphone)
X19	1.25 mm 7 pin (MOLEX 51021-0700 or comp.)	for backlight cables

B.4 Pinout Tables

Pin	PCI-104 (A)	PCI-104 (B)	PCI-104 (C)	PCI-104 (D)
1	GND	N.C.	VCC5 [2]	AD0
2	$V_{I/O}$ [2]	AD2	AD1	VCC5 [2]
3	AD5	GND	AD4	AD3
4	C/BE0	AD7	GND	AD6
5	GND	AD9	AD8	GND
6	AD11	$V_{I/O}$ [2]	AD10	Reserved
7	AD14	AD13	GND	AD12
8	VCC3 [2]	C/BE1	AD15	VCC3 [2]
9	SERR [1]	GND	Reserved	PAR
10	GND	PERR [1]	VCC3 [2]	Reserved
11	STOP	VCC3 [2]	LOCK [1]	GND
12	VCC3 [2]	TRDY	GND	DEVSEL
13	FRAME	GND	IRDY	VCC3 [2]
14	GND	AD16	VCC3 [2]	C/BE2
15	AD18	VCC3 [2]	AD17	GND
16	AD21	AD20	GND	AD19
17	VCC3 [2]	AD23	AD22	VCC3 [2]
18	IDSEL0 (AD20)	GND	IDSEL1 (AD21)	IDSEL2 (AD22)
19	AD24	C/BE3	$V_{I/O}$ [2]	IDSEL3 (AD23)
20	GND	AD26	AD25	GND
21	AD29	VCC5 [2]	AD28	AD27
22	VCC5 [2]	AD30	GND	AD31
23	REQ0	GND	REQ1	$V_{I/O}$ [2]
24	GND	REQ2	VCC5 [2]	GNT0
25	GNT1	$V_{I/O}$ [2]	GNT2	GND
26	VCC5 [2]	CLK0	GND	CLK1
27	CLK2	VCC5 [2]	CLK3	GND
28	GND	INTD	VCC5 [2]	RST
29	VCC12 (+12V) [2]	INTA	INTB	INTC
30	N.C.	N.C.	N.C.	GND

Pin	P-ATA X6	CF-Card X21	Floppy X3	LPT X20	CRT X7	18bit Digital X17	JILI30 X18
1	/RESET	GND	VCC5 [2]	VCC5 [2]	RED	GND	FTX0-
2	GND	D3	/IDX	GND	GRN	PCLK	FTX0+
3	D7	D4	VCC5 [2]	N.C.	BLU	PHS	FTX1-
4	D8	D5	/DR0	N.C.	N.C.	PVS	FTX1+
5	D6	D6	VCC5 [2]	N.C.	GND	GND	FTX2-
6	D9	D7	/DSKCHG	N.C.	GND	PR0	FTX2+
7	D5	/CS1	N.C.	N.C.	GND	PR1	GND
8	D10	GND	N.C.	N.C.	GND	PR2	FTXC-
9	D4	GND	N.C.	N.C.	VCC5 [2]	PR3	FTXC+
10	D11	GND	/MTR0	N.C.	GND	PR4	FTX3-
11	D3	GND	N.C.	GND	N.C.	PR5	FTX3+
12	D12	GND	/FDIR	/AFD	N.C.	GND	N.C.
13	D2	VCC5 [2]	N.C.	/STB	HSYNC	PG0	N.C.
14	D13	GND	/STEP	/ERR	VSYNC	PG1	GND
15	D1	GND	GND	D0	N.C.	PG2	N.C.
16	D14	GND	/WDATA	/INIT		PG3	N.C.
17	D0	GND	GND	GND		PG4	GND
18	D15	SA2	/WGATE	D1		PG5	N.C.
19	GND	SA1	GND	/SLIN		GND	N.C.
20	KEY (N.C.)	SA0	/TRK0	D2		PB0	N.C.
21	DRQ	D0	GND	D3		PB1	N.C.
22	GND	D1	/WRTPRT	GND		PB2	N.C.
23	/IOW	D2	GND	D4		PB3	N.C.
24	GND	N.C.	/RDATA	D5		PB4	GND
25	/IOR	GND	GND	D6		PB5	SDA
26	GND	GND	/HDSEL	D7		GND	DATAENA
27	IOCHRDY	D11		GND		PDE	SCL
28	CSEL	D12		/ACK		VCC3/VCC5 [2]	VCC3/VCC5 [2]
29	/DACK	D13		/BUSY		VCC3/VCC5 [2]	VCC3/VCC5 [2]
30	GND	D14		PE		R/L	VCC3/VCC5 [2]
31	IRQ	D15		/SLCT		U/D	
32	N.C.	/CS3		GND		RSVD	
33	SA1	GND					
34	ATAD	/IOR					
35	SA0	/IOW					
36	SA2	VCC5 [2]					
37	/CS1	IRQ					
38	/CS3	VCC5 [2]					
39	ACT	GND					
40	GND	N.C.					
41	VCC5 [2]	/RESET					
42	VCC5 [2]	IOCHRDY					
43	GND	DRQ					
44	N.C.	/DACK					
45		ACT					
46		N.C.					
47		D8					
48		D9					
49		D10					
50		GND					

Pin	PS/2 KB+MS X8	COM A X9	COM B RS-232 X10	COM B RS-422/485 X10	USB A X12	USB B X13
1	KBDAT	/DCD	/DCD	TX- / (RX-)	VCC5 [2]	VCC5 [2]
2	MSDAT	RXD	/DSR	N.C.	USB0-	VCC5 [2]
3	GND	TXD	RXD	RX+	USB0+	USB2-
4	VCC5 [2]	/DTR	/RTS	N.C.	GND	USB3-
5	KBCLK	GND	TXD	TX+ / (RX+)	VCC5 [2]	USB2+
6	MSCLK	/DSR	/CTS	N.C.	USB1-	USB3+
7		/RTS	/DTR	RX-	USB1+	GND
8		/CTS	/RI	N.C.	GND	GND
9		/RI	GND	GND		KEY (N.C.)
10			VCC5 [2]	VCC5 [2]		GND

Pin	Backlight X19	S-ATA X4 / X5	LAN X11	Audio X14	Digital I/O X15
1	N.C.	GND	TXD+ / BI_D1+	LINE_OUT_R	OUT1
2	BKLTADJ	TX+	TXD- / BI_D1-	GND	IN1
3	GND	TX-	RXD+ / BI_D2+	LINE_OUT_L	OUT2
4	VCC5/VCC12 [2]	GND	BI_D3+	LINE_IN_R	IN2
5	VCC5/VCC12 [2]	RX-	BI_D3-	MIC_IN	OUT3
6	GND	RX+	RXD- / BI_D2-	LINE_IN_L	IN3
7	BKLTON	GND	BI_D4+		OUT4
8			BI_D4-		IN4
9					VCC5 [2]
10					GND

Pin	Common Front Panel FP1	Power Front Panel FP2	Main Power X22	Power Supplem. X23
1	RST_BTN+	PWR_LED+	VDD [2]	/PS_ON
2	SPKR+	PWR_BTN+	GND	5VSB [2]
3	RST_BTN-	N.C.	GND	
4	N.C.	PWR_BTN-	VCC [2]	
5	HDD_LED+	PWR_BTN-		
6	N.C.	N.C.		
7	HDD_LED-	RSVD		
8	SPKR-	RSVD		
9		GND		
10		RSVD		

Note: *1) Not supported on the JRexplus LX board.*
2) To protect the external power lines of peripheral devices make sure that
- the wires have the right diameter to withstand the maximum available current.
- to enclosure of the peripheral device fulfills the fire-protecting conditions of IEC/EN 60950.

Appendix C: Reference Documents

KONTRON Technology A/S can't guarantee the availability of internet addresses.

Document	Internet Address
Advanced Configuration and Power Interface (ACPI)	http://www.acpi.info/spec.htm
AT Attachment Storage Interface Specification (ATA)	http://t13.org
Digital Visual Interface (DVI)	http://www.ddwg.org
High Definition Audio Specification (HD Audio)	http://www.intel.com/standards/hdaudio
High Speed Serialized AT Attachment (S-ATA)	http://www.sata-io.org/developers
IEEE 802.3 Specification (Ethernet)	http://standards.ieee.org/getieee802
Low Pin Count Interface Specification (LPC-Bus)	http://developer.intel.com/design/chipsets/industry/lpc.htm
Open LVDS Display Interface Standard Spec. (Open LDI)	http://www.national.com/analog/displays/open_ldi
PCI Express® Base Specification (PCI Express®)	http://www.pcisig.com/specifications
SD Specification (SD Card)	http://www.sdcard.org/developers/tech/sdio/sdio_spec
System Management Bus Specification (SMBus™)	http://www.smbus.org/specs
Universal Serial Bus Specification (USB)	http://www.usb.org/developers/docs

Appendix D: Document Revision History

Revision	Date	Author	Changes
S0001-C	01/10/11	M. Hüttmann	Change TX+/TX- signal on the RS422/RS485 connector
S0001-B	09/28/10	M. Hüttmann	Added a note to the new Display Cable Guide
S0001-A	07/06/10	M. Hüttmann	Some small changes
S0001-0	12/10/09	M. Hüttmann	Adapted to KONTRON Technology A/S guidelines
1.3	01/23/09	M. Hüttmann	Some slightly changes
1.2	11/17/08	M. Hüttmann	Added some notes in chapter PCI Bus Expansion and Problems with Boot Order
1.1	10/24/08	M. Hüttmann	Added cooler problem in chapter PCI Bus Expansion
1.0	09/25/08	M. Hüttmann	Added chapter Problems with CF-Card Support, Problems with Boot Order and LED Definition as well as JP10
0.3	06/13/08	M. Hüttmann	Added subchapter Chipdisk Support and adjust X14 connector Pin 1 (chapter Connector Locations)
0.2	05/08/08	M. Hüttmann	Added chapter Crisis Management, CPU/Memory Speed, subchapter Summary of Panel Jumper, BBS Support and other little changes
0.1	02/20/08	M. Hüttmann	First revision

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