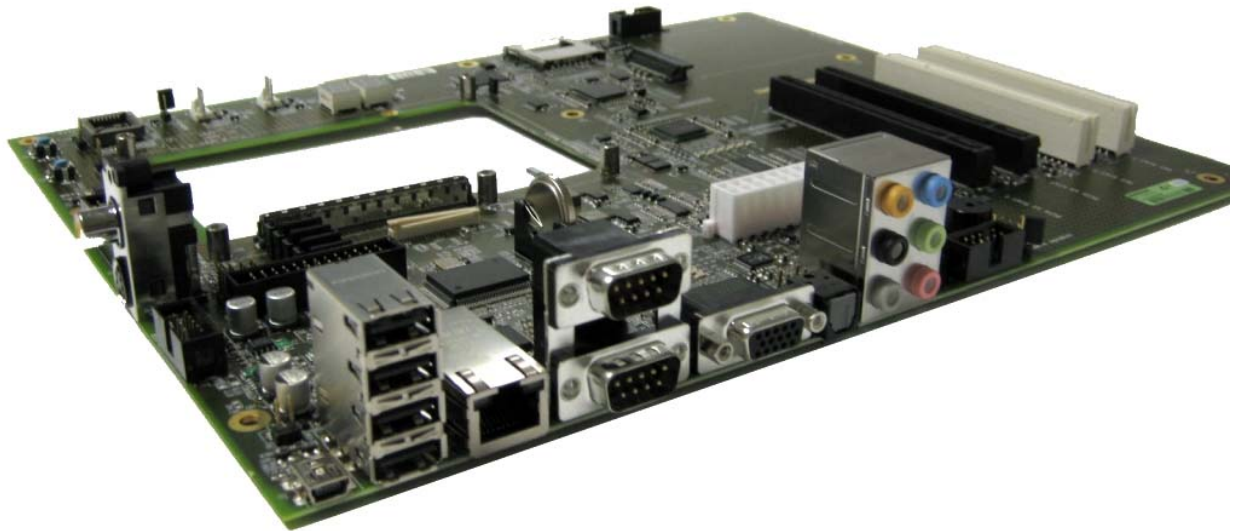


# Kontron User's Guide



## nanoETXexpress Evaluation Board

Document Revision 0.10\_Preliminary

Computer On  
Modules

Blades &  
Mezzanines

CPU  
Boards

Systems

Mobile  
Rugged

Custom  
Solutions



**kontron**

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# 1 User Information

## 1.1 About This Document

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Kontron Embedded Modules GmbH is certified to ISO 9000 standards.

## 1.5 Warranty

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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.

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## 1.6 Technical Support

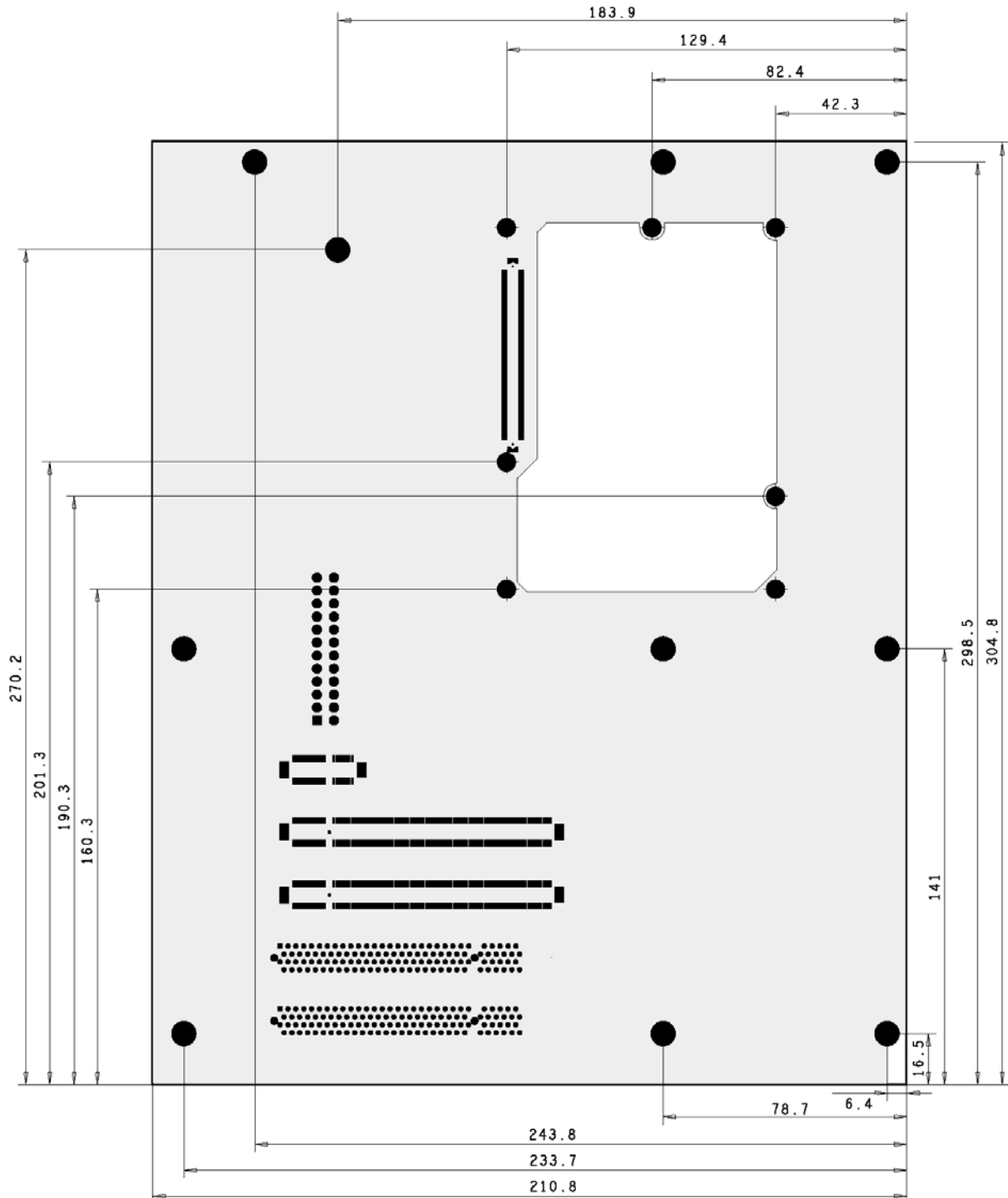
Technicians and engineers from Kontron Embedded Modules GmbH and/or its subsidiaries are available for technical support. We are committed to making our product easy to use and will help you use our products in your systems.

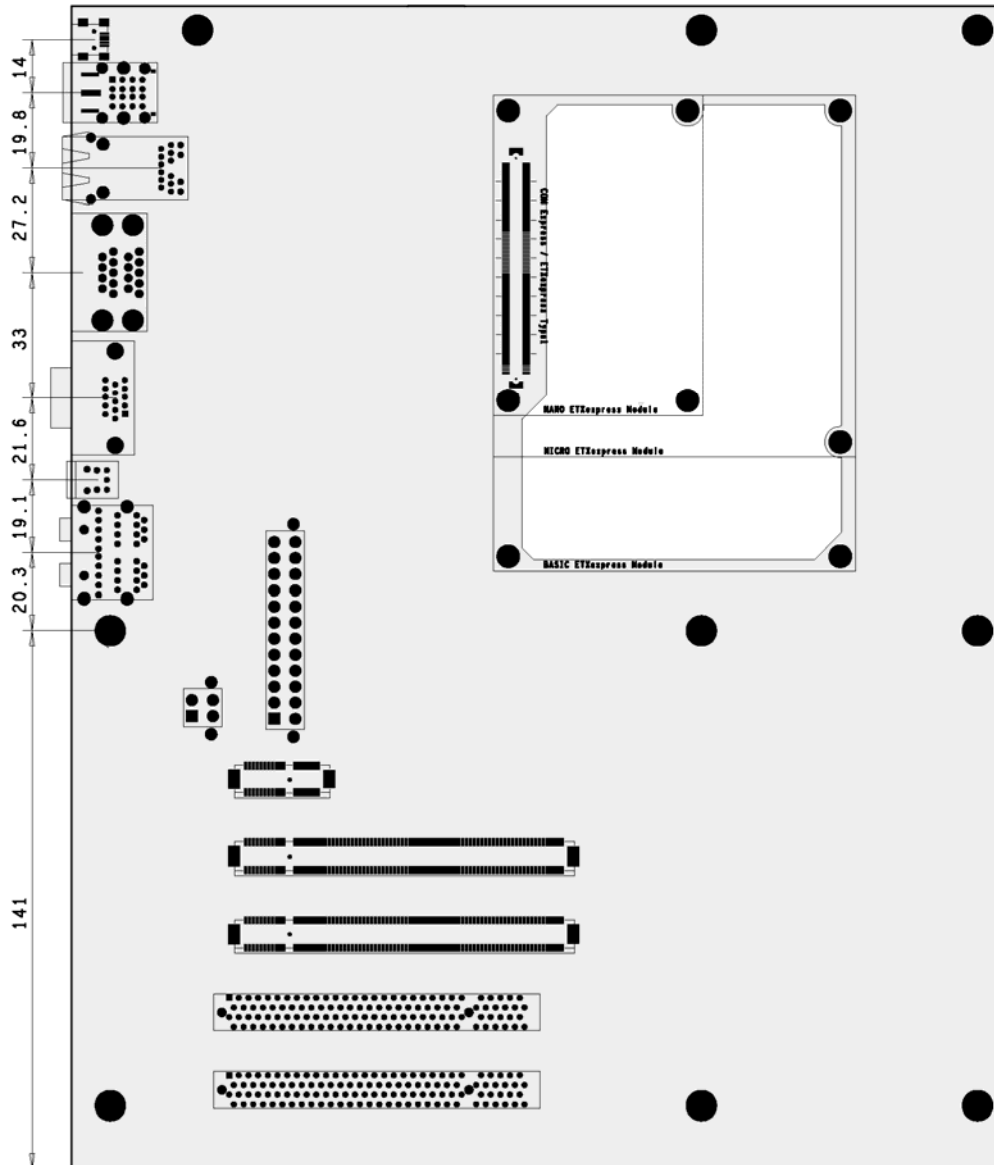
Please consult our Web site at <http://www.kontron.com/support> for the latest product documentation, utilities, drivers and support contacts. In any case you can always contact your board supplier for technical support.

## 2 Specifications

### 2.1 Mechanical Specifications

The nanoETXexpress UGM Evaluation Board is 304.8mm x 210.8mm in size and compares to ATX form factor with 12" x 8.3". The maximum height on top is the audio connector J8 with 34,7mm.





## 2.2 Environmental Specifications

### 2.2.1 Temperature

**Operating:**

Ambient temperature: 0 to +60 °C

Non-operating: tbd

**Storage:**

Ambient temperature: tbd

---

*Note: The maximum operating temperature is the maximum measurable temperature on any spot on a baseboards' surface. You must maintain the temperature according to the above specification.*

---

### 2.2.2 Humidity

Operating: 10% to 90% (non condensing)

Non operating: 5% to 95% (non condensing)

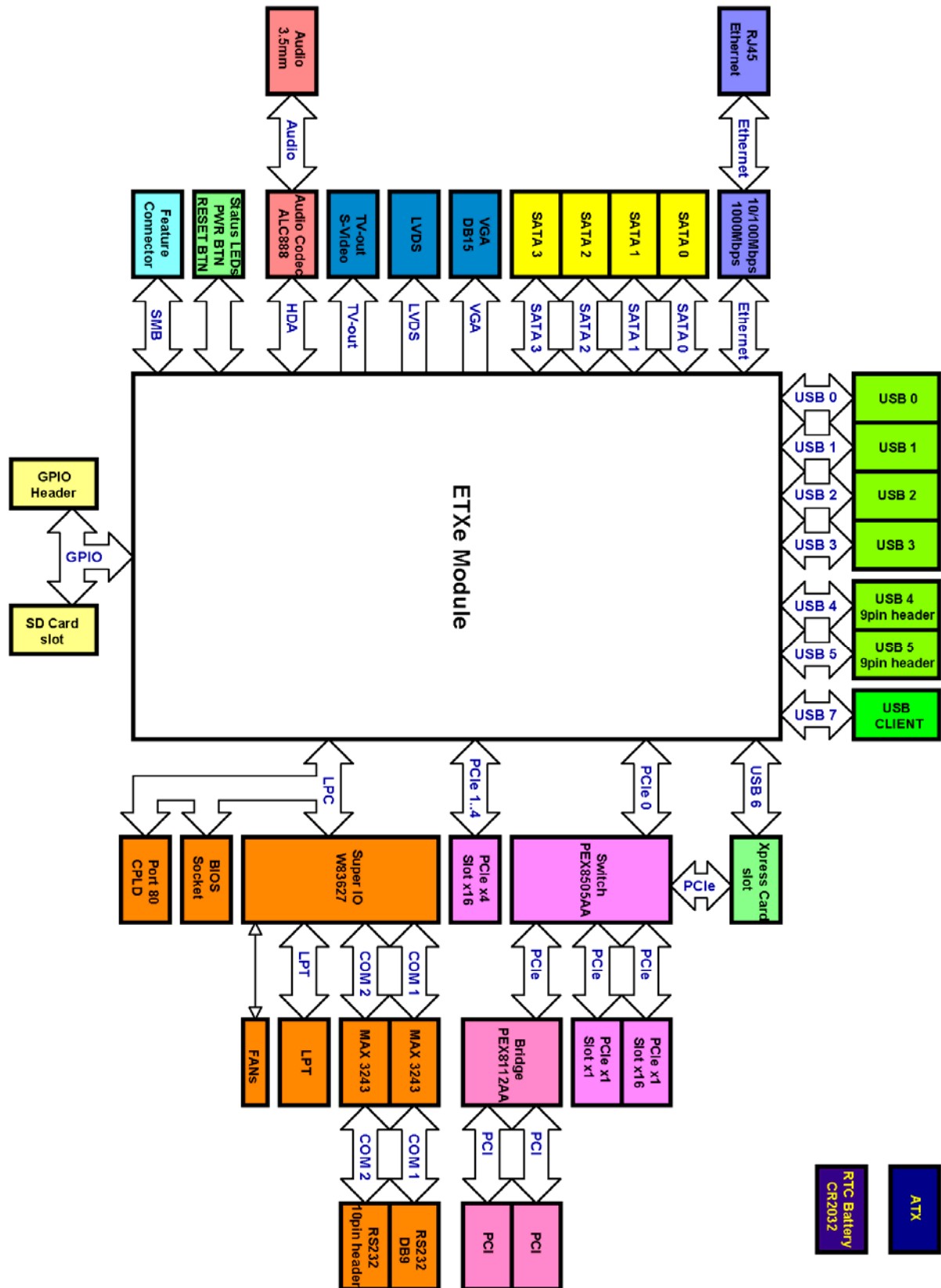
## 3 Short description

The Kontron nanoETXexpress Evaluation Board is a Type 1 COM Express baseboard compatible to the new nanoETXexpress standard. COM Express Type 2 modules in basic and compact size can also be used without the features of Connector C/D.

### Product specifications:

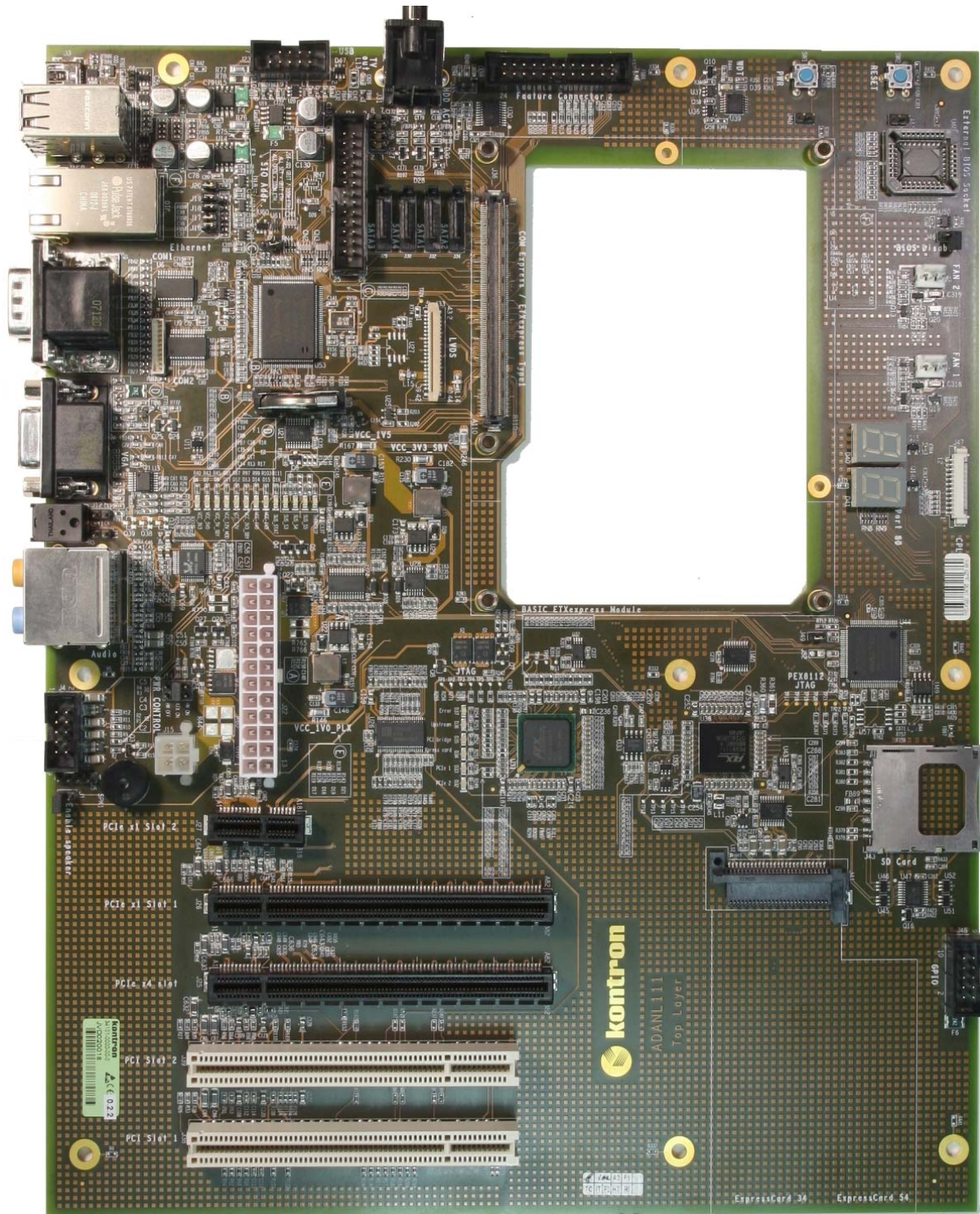
- PCIexpress to PCIexpress Switch
- PCIexpress to PCI Bridge
- Compatible to 10/100Mbit and GBit-Ethernet Modules
- 2 PCI Slots
- 1 PCIexpress x16 Slot, electrically x4
- 1 PCIexpress x16 Slot, electrically x1
- 1 PCIexpress x1 Slot
- Express Card Slot
- 4 x SATA Ports
- LPT and 2 COM Ports
- 4 USB 2.0/1.1 Ports + 2 onboard USB pin header
- USB Client connector
- LVDS, VGA and TV output for integrated module graphics
- Shared SD Card Interface and GPIO Header
- Onboard HD Audio Codec Realtek ALC888
- Analog 7.1 Audio, optical Toslink out and digital S/PDIF in & out
- Kontron Feature Connector
- Front Panel Connector (HDD Act, Reset SW, Power SW)
- Port 80 Post Code display and Status LEDs
- Onboard reset and power button

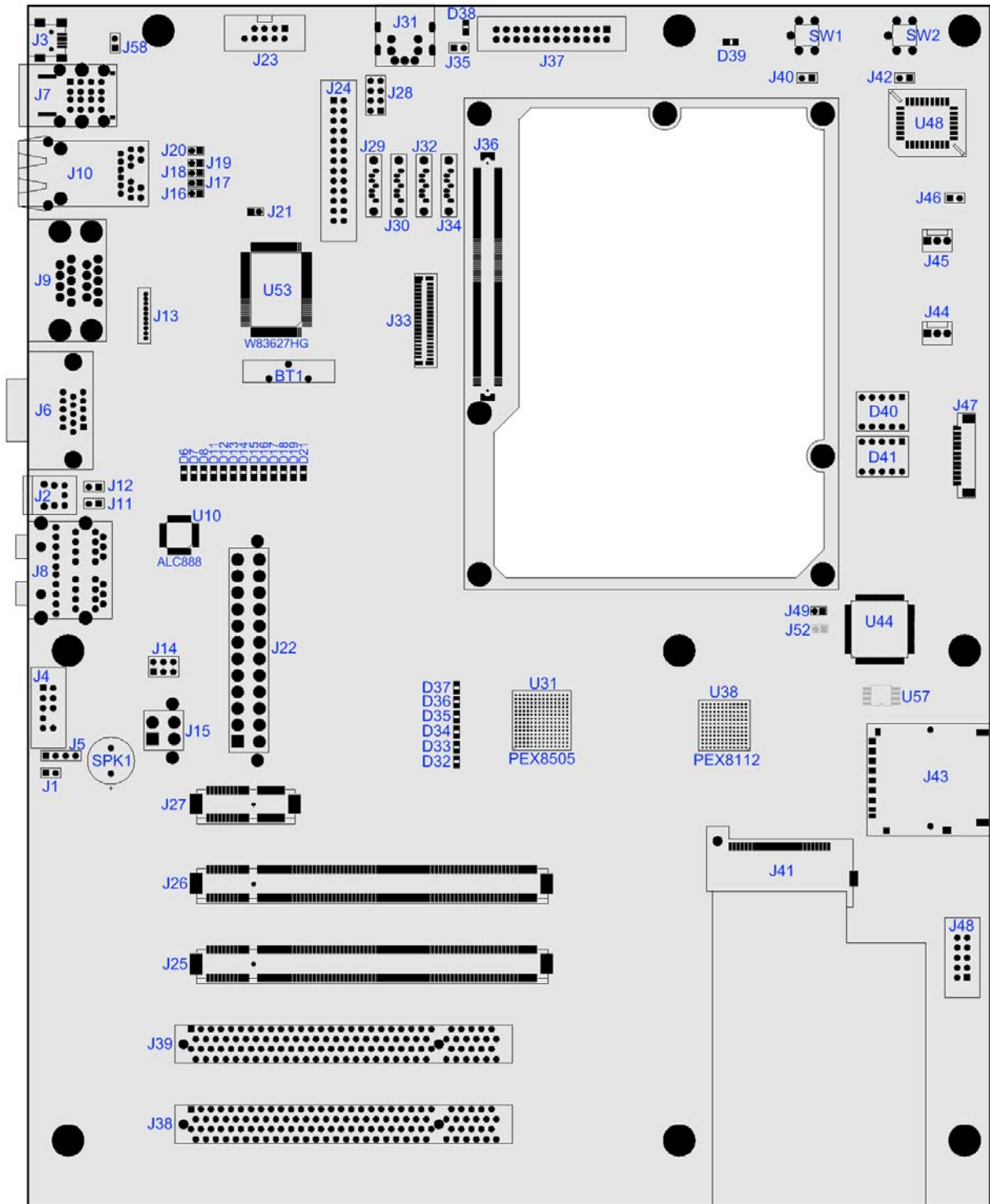
# 4 Block Diagram





# 5 Connector locations





## Summary of all available connectors and interfaces

Connector	Description	Connector	Description
J1	Onboard Speaker Enable/Disable	J26	PCIexpress x1 Slot0 (mechanical x16)
J2	Optical S/PDIF out (Toslink)	J27	PCIexpress x1 Slot1
J3	USB Client	J28	Component TV-Out
J4	Front Panel Audio Connector	J29	SATA2
J5	Digital Microphone In	J30	SATA3
J6	VGA	J31	Composite and S-Video TV-Out
J7	USB Ports 0-3	J32	SATA0
J8	7.1 Analog HD Audio	J33	LVDS (JILI)
J9	Combi Connector COM1/COM2	J34	SATA1
J10	RJ-45 Ethernet Port	J35	HDD Activity LED connector
J11	Electrical S/PDIF Output	J36	COMexpress Type1 connector
J12	Electrical S/PDIF Input	J37	Kontron Feature Connector
J13	COM2	J38	PCI Slot 0
J14	ATX_PS_ON Override	J39	PCI Slot 1
J15	ATX_12V 4pin Power	J40	Power Button connector
J16	100MBit / 1GBit Ethernet Switch	J41	ExpressCard Slot
J17		J42	Reset Button connector
J18		J43	SD I/O Card Interface
J19		J44	FAN1
J20		J45	FAN2
J21	Onboard SIO Address Switch	J46	Enable/Disable Module BIOS
J22	ATX 24pin Main Power	J47	CPLD JTAG (for internal use only)
J23	USB4 & USB5 pin header	J48	GPIO Connector
J24	Parallel Port LPT	J49	ExpressCard Reset selector
J25	PCIexpress x4 Slot (mechanical x16)	J52	SPI/LPC Firmware Hub selector (optional)

## Active onboard components:

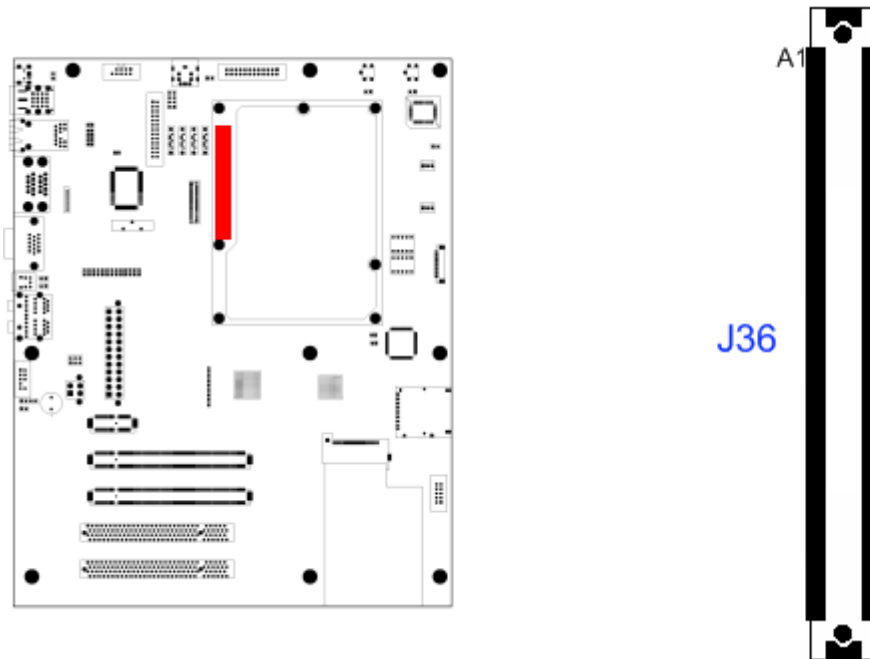
Component	Description	Status LED	Description
BT1	RTC Battery	D6	VCC_3V3
SPK1	Onboard Speaker	D7	VCC_5V0
SW1	Power Button	D8	VCC_5V_SBY
SW2	Reset Button	D11	VCC_12V_MOD
U31	PCIe - PCIe Switch PEX8505	D12	VCC_12V
U38	PCIe - PCI Bridge PEX8112	D13	VCC_3V3_SBY
U10	HD Audio Codec Realtek ALC888	D14	VCC_1V0
U44	Altera CPLD	D15	VCC_1V5
U48	PLCC Socket for LPC BIOS Flash	D16	SUS_STAT
U53	LPC-IO Winbond W83627HF	D17	SUS_S3
U57	SPI Flash (optional)	D18	SUS_S4
D38	HDD Activity LED	D19	SUS_S5
D39	Watchdog Trigger LED	D21	THRMTRIP
D40	Port80 MSB	D32	PCIe x1 Slot1
D41	Port80 LSB	D33	PCIe x1 Slot0
		D34	XpressCard
		D35	PCIe-PCI Bridge
		D36	PCIe Switch Upstream
		D37	PCIe Switch Fatal Error

## 6 Connector and feature description

This chapter describes naming and layout of all standard connectors, pin outs and functions of onboard pin headers, configuration jumpers and interfaces. Blue marked jumpers shows the default jumper settings.

### 6.1 COMexpress connector (J36)

The standard Type 1 COM Express connector follows the COMexpress specification. Please refer to the specifications or module manuals on <http://www.kontron.com> for more details and pin out description.



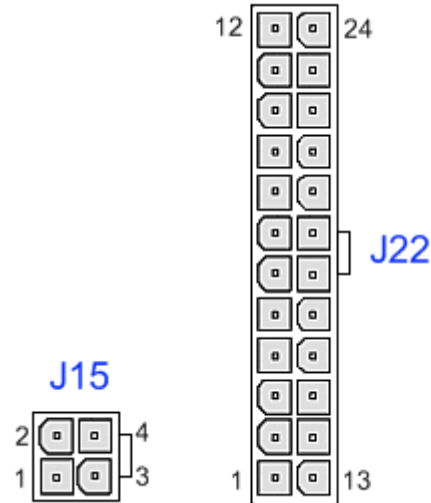
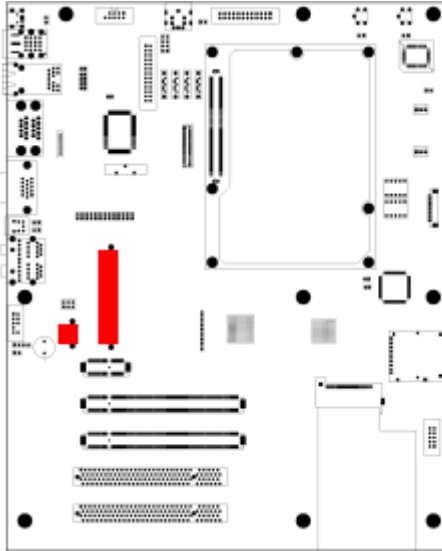
The Kontron nanoETXexpress Evaluation Baseboard offers the possibility to connect a full featured Type1 module following the new standard form factor nanoETXexpress or to connect a Type2 module like ETXexpress in basic or micro size without the features of the second connector C/D.

The Type1 connection via connector A/B defines following feature set:

Row A Functions	Row B Functions
Gigabit Ethernet	LPC
	SMB
SATA0, SATA2	SATA1, SATA3
Power Management	Audio, I2C
USB6, USB4	USB7, USB5
USB2, USB0	USB3, USB1
PCIe 0-5	PCIe 0-5
LVDS	LVDS
GPIO	VGA, TVout
VCC	VCC

## 6.2 ATX Power Connector (J15, J22)

Connect the ATX and the ATX\_12V power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the module. If the ATX\_12V power connector is not connected, the system will not start.



**24 pin ATX Power**

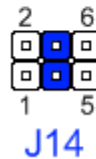
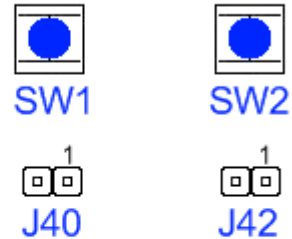
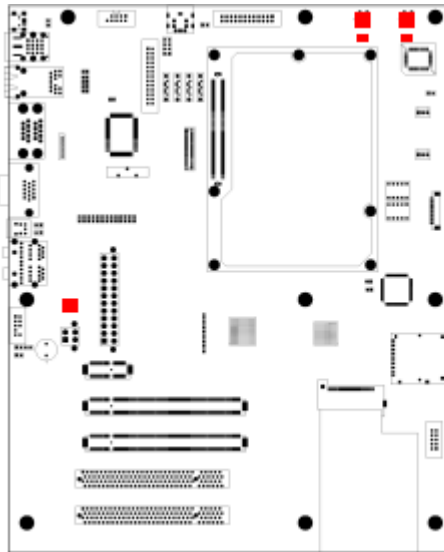
Pin	Def	Pin	Def
1	+3.3VDC	13	+3.3VDC
2	+3.3VDC	14	-12VDC
3	GND	15	GND
4	+5VDC	16	PS_ON
5	GND	17	GND
6	+5VDC	18	GND
7	GND	19	GND
8	PWR_OK	20	-5VDC
9	+5VSB	21	+5VDC
10	+12VDC	22	+5VDC
11	+12VDC	23	+5VDC
12	+3.3VDC	24	GND

**4 pin ATX\_12V**

Pin	Def
1	GND
2	GND
3	+12VDC
4	+12VDC

### 6.3 Power, Reset & PS\_ON Override (SW1, SW2, J14, J40, J42)

The behavior of power button SW1 and pin header J40 can be configured in BIOS Setup. Refer to the module's manual for more details and possible configurations.



**Reset & Power Button**

Connector	Function
J40	Power Button
SW1	
J42	Reset Button
SW2	

**PS\_ON override J14**

Closed Pins	Function
1 - 2	OFF
<b>3 - 4</b>	<b>PS_ON</b>
5 - 6	Always ON

J40 (Power Button) and J42 (Reset Button) are pin header to connect a switch on the chassis front panel. With the manual PS\_ON override Jumper J26 you are able to switch the Power Supply on or off manually.

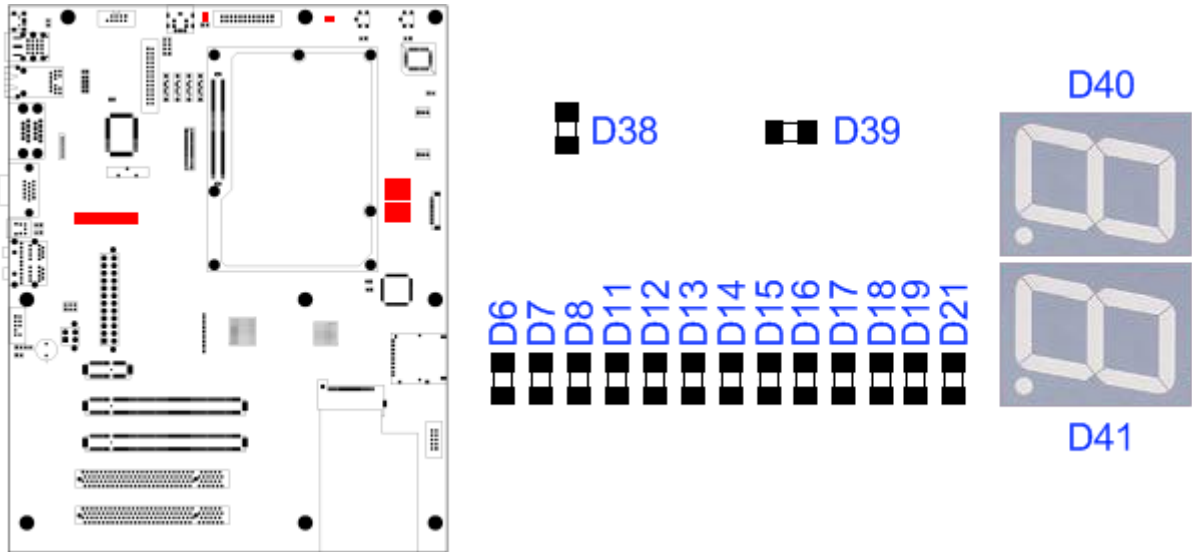
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*Note: Blue Jumpers and bold marked text shows Kontron default settings*

---

## 6.4 Status LEDs & POST Code Display

The onboard status and voltage indicator LEDs will show you the current power states, alarm signals and correct voltage status on the COMexpress module.

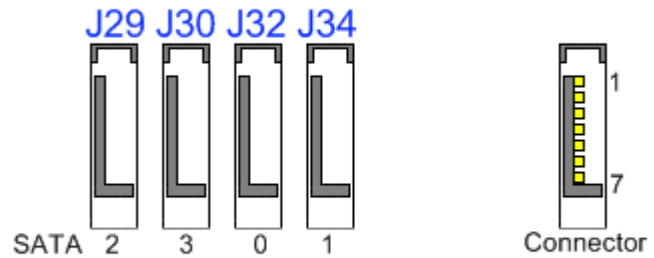
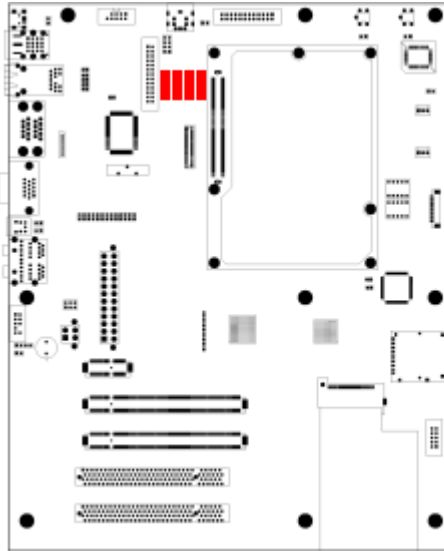


LED	Description	LED	Description
D38	HDD Activity LED	D6	VCC_3V3
D39	Watchdog Trigger Active	D7	VCC_5V0
D40	Port80 MSB	D8	VCC_5V_SBY
D41	Port80 LSB	D11	VCC_12V_MOD
		D12	VCC_12V
		D13	VCC_3V3_SBY
		D14	VCC_1V0
		D15	VCC_1V5
		D16	SUS_STAT
		D17	SUS_S3
		D18	SUS_S4
		D19	SUS_S5
		D21	THRMTRIP

LED D38 shows hard disk activity for connected SATA devices. D40 (Port80 MSB) and D42 (Port80 LSB) shows the actual POST Codes if the module BIOS is configured to send POST Code cycles to the LPC Bus.

## 6.5 SATA (J29, J30, J32, J34)

The COM Express specification provides 4 SATA channels maximum. Please check how many SATA ports are supported by the used COMexpress module.



**SATA Connector Pin out**

Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

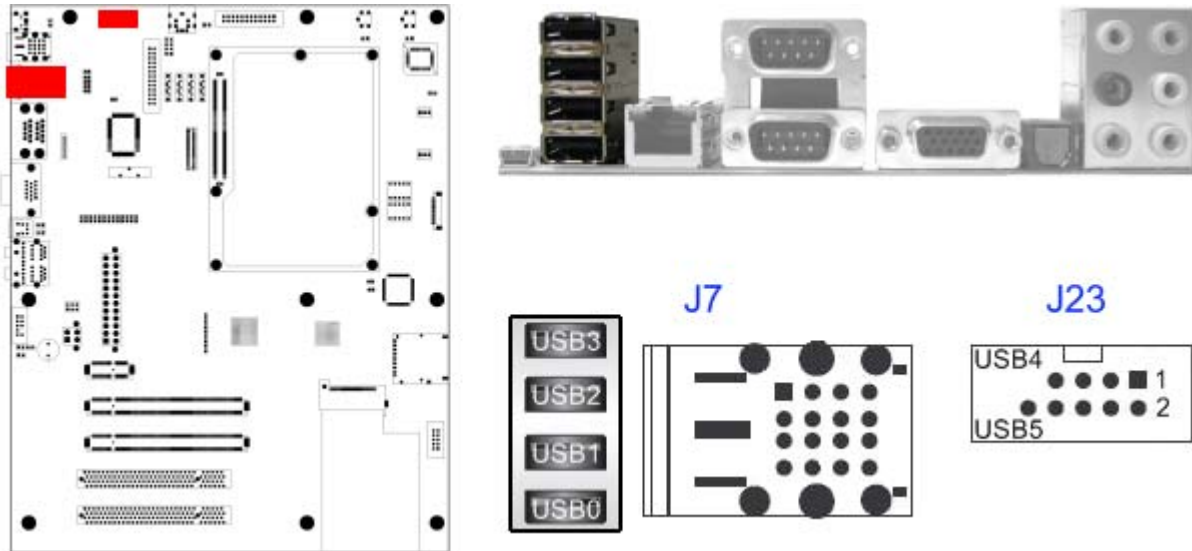
**Connector Configuration**

Connector	SATA Port
J29	SATA2
J30	SATA3
J32	SATA0
J34	SATA1

Refer to the COMexpress module manual how to enable and configure SATA.

## 6.6 USB (J7, J23)

COM Express defines a maximum of 8 USB Ports. On nanoETXexpress Evaluation Baseboard 4 USB Ports (USB0-USB3) are provided via rear panel connector J7 and two (USB4 & USB5) ports via onboard pin header (J23). USB Port 6 is used for Express Card.



**J23 Pin out**

Pin	Description	Pin	Description
1	VCC USB4	2	VCC USB5
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND USB4	8	GND USB5
9	Key Pin	10	n.c.

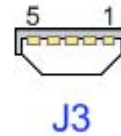
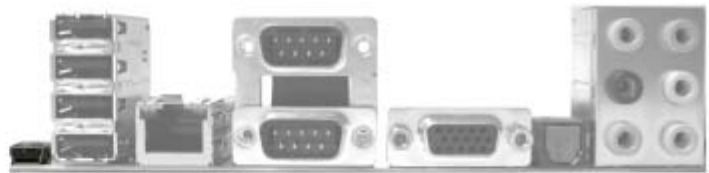
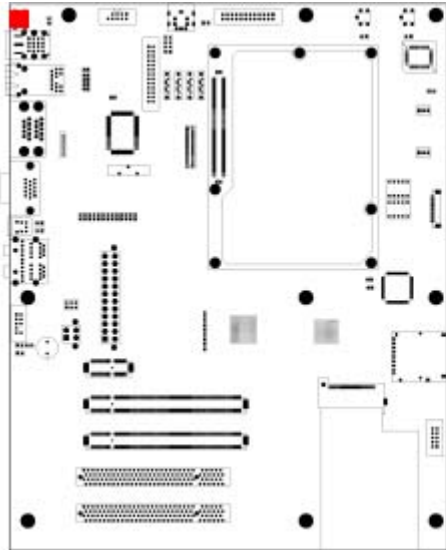
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*All USB Ports are ESD and over-current protected.*

---

## 6.7 USB Client (J3)

With nanoETXexpress a new function called USB Client is coming up. If supported by the used chipset on the module, USB Port7 is used as an USB Client connection via MiniUSB Connector TypeA (J3). The client function is a software implemented USB device in the chipset which allows connecting the platform to other USB Host interfaces for purposes of file transfer, network connectivity or any other USB functions.



Refer to the module manual and download section of the used module for driver and software downloads to use USB Client functionality.

---

**Warning:** *Do not use USB Client Port J3 to connect any USB devices*

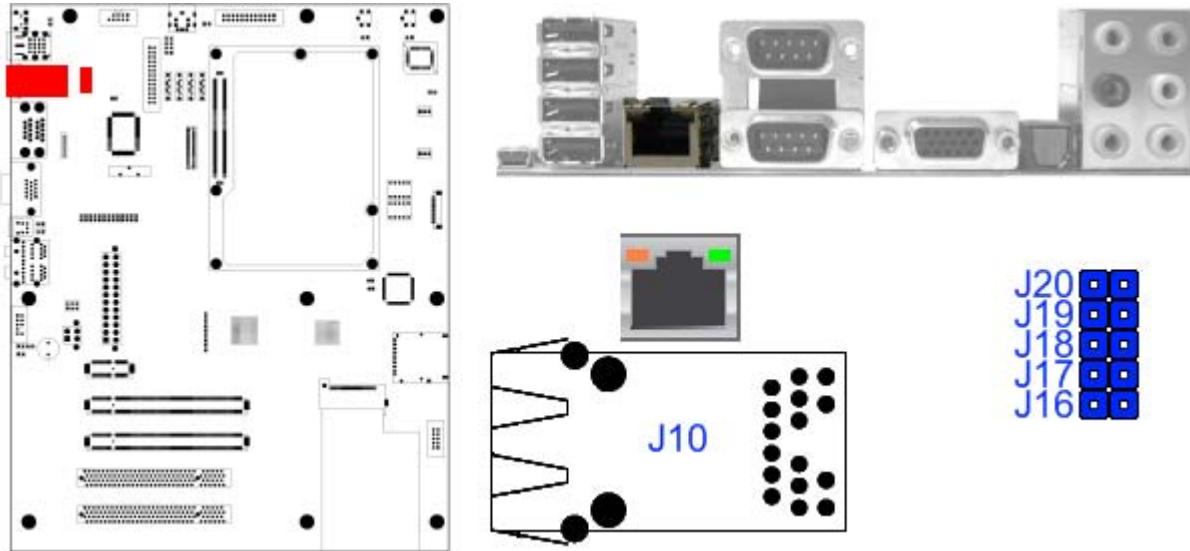
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**Note:** *If Express Card USB function (USB6) and USB Client (USB7) can be used depends on the modules specification. For the Express Card USB function a module with full USB support is necessary.*

---

## 6.8 Ethernet (J10)

The Ethernet Port must be configured according to the modules specifications. For Gigabit Ethernet modules close all jumpers J16-J20 (default). For modules with only 10/100MBit connection (e.g. microETXexpress) open all Jumpers.

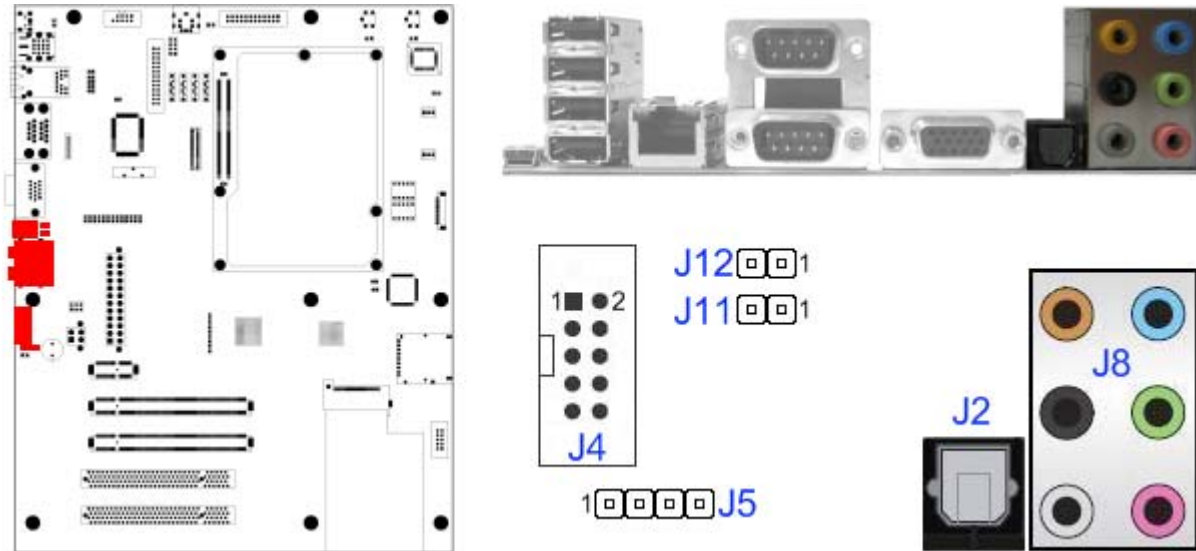


### J10 Ethernet LED function

LED	State	Function
1 (left)	Green	Link1000
	Yellow	Link100
	Off	Link10
2 (right)	On	Link
	Blinking	Activity

## 6.9 High Definition Audio (J2, J4, J5, J8, J11, J12)

The nanoETXexpress Evaluation Baseboard is equipped with a Realtek ALC888 High Definition Audio Codec which supports up to 7.1-channel speaker configuration, optical and digital S/PDIF out, S/PDIF in and digital microphone input.



The optical Toslink S/PDIF Connector (J2) and the coaxial S/PDIF Connector (J12) provides digital audio out. J5 is used for digital microphone connection and J11 for digital S/PDIF in. A standard front panel can be connected via pin header J4.

Pin	J4	J5	J12	J11
1	MIC2-L	DMIC-CLK	SPDIF_OUT	SPDIF_IN
2	GND	DMIC-DATA	GND	GND
3	MIC2-R (MIC Power)	PWR_3.3V	-	-
4	PRESENCE#	GND	-	-
5	LINE2-R (LineOut-R)	-	-	-
6	MIC2-JD	-	-	-
7	SENSE	-	-	-
8	Key Pin	-	-	-
9	Line2-L (LineOut-L)	-	-	-
10	LINE2-JD	-	-	-

### Speaker Configuration J8

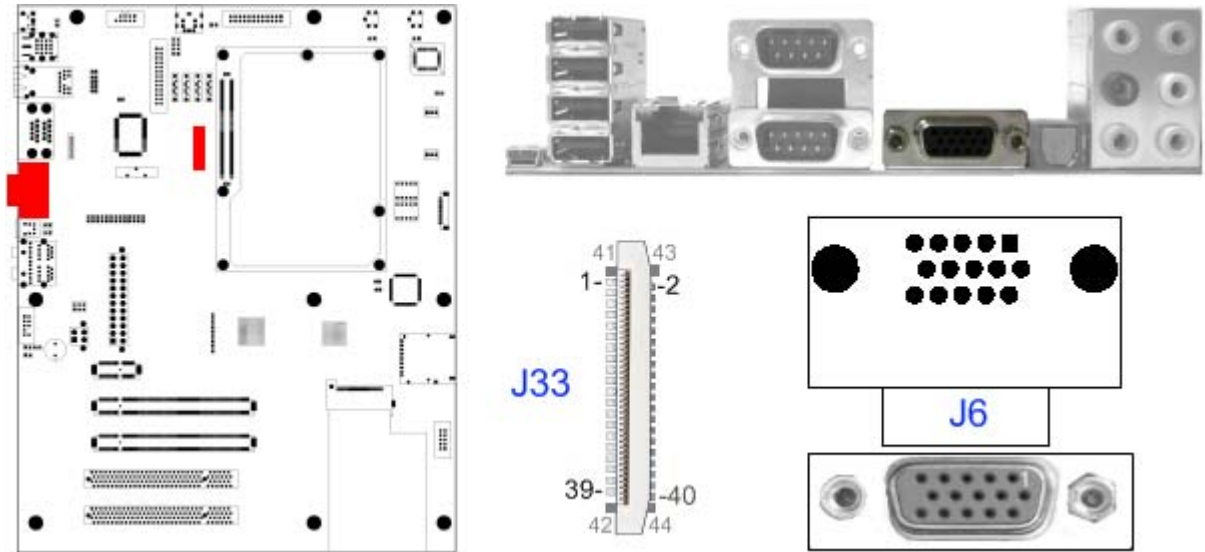
J8	2-channel	4-channel	6-channel	8-channel
Orange	-	-	Center/Subwoofer	Center/Subwoofer
Black	-	Rear Speaker	Side Speaker	Rear Speaker Out
Gray	-	-	-	Side Speaker Out
Blue	Line In	Line In	Line In	Line In
Green	Line Out	Front Speaker	Front Speaker	Front Speaker
Pink	Mic In	Mic In	Mic In	Mic In

**Note1:** In addition to the default speaker settings, the analog audio Jacks can be reconfigured to perform different functions via the Realtek HDAudio Driver Software which is available on Kontron website. Only microphones still must be connected to the default pink jack.

**Note2:** Audio is only working in combination with HD Audio compatible COM Express Modules.

## 6.10 VGA & LVDS (J6, J33)

The integrated graphics from the ETXexpress module can be used by LVDS connector J33 or the analog DSUB15 VGA connector J6.



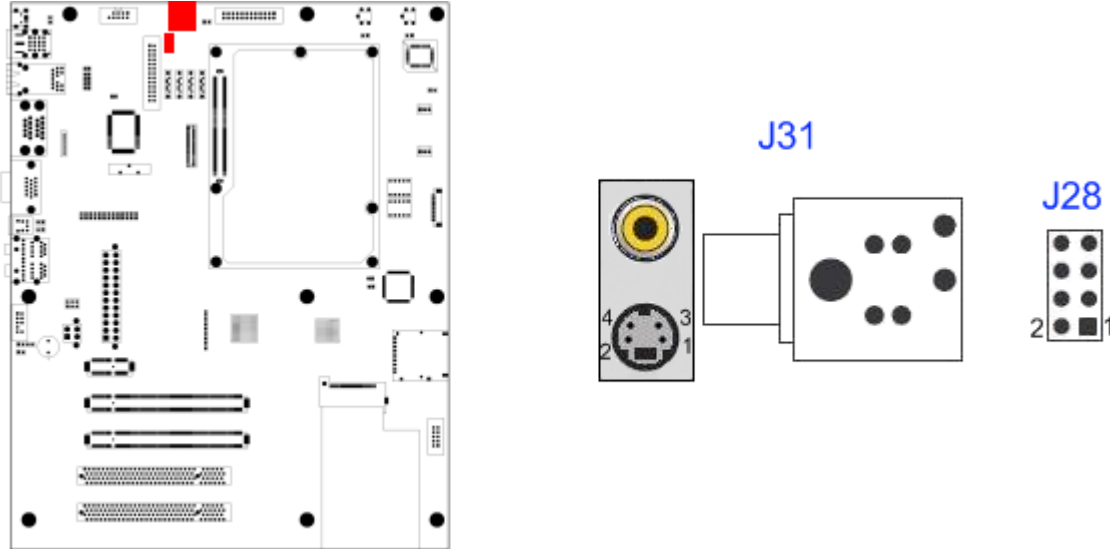
### LVDS & VGA Pin out

Pin	LVDS Signal	VGA Signal	Pin	LVDS Signal
1	LVDS_BKLT_CTRL	Red	21	LVDS_B1+
2	LVDS_A0-	Green	22	DETECT# (GND)
3	LVDS_A0+	Blue	23	LVDS_B2-
4	ENAVDD	NC	24	LVDS_B2+
5	LVDS_A1-	GND1	25	GND
6	LVDS_A1+	AGND1	26	LVDS_B_CK-
7	NC	AGND2	27	LVDS_B_CK+
8	LVDS_A2-	AGND3	28	GND
9	LVDS_A2+	Key	29	LVDS_B3-
10	GND	GND2	30	LVDS_B3+
11	LVDS_A_CK-	NC	31	+5V
12	LVDS_A_CK+	ID1 (DDC_DAT)	32	+5V
13	GND	HSYNC	33	+5V
14	LVDS_A3-	VSYNC	34	+5V
15	LVDS_A3+	ID3 (DDC_CLK)	35	BLON#
16	JILI_DAT	-	36	GND
17	LVDS_B0-	-	37	GND
18	LVDS_B0+	-	38	+12V
19	JILI_CLK	-	39	+12V
20	LVDS_B1-	-	40	+12V

For a detailed description of LVDS JILI interface refer to the JILI documentation on Kontron's webpage.

## 6.11 TV-Out (J28, J31)

The nanoETXexpress Evaluation Baseboard provides three possible TV-Out connections. Composite Video (Yellow Cinch) and S-Video out are available on connector J31. Component TV-Out is available via pin header J28.

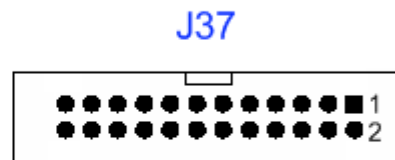
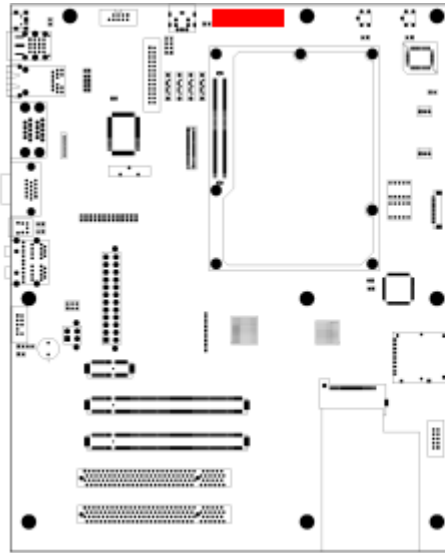


### TV-Out connector Pin out

Pin	Composite J31	S-Video J31	Component J28
1	FBAS	GND_Y	Pb (Chrominance)
2	GND	GND_C	GND A
3	-	Luminanz_Y	Y (Luminance)
4	-	Chrominanz_C	GND B
5	-	-	Pr (Chrominance)
6	-	-	GND C
7	-	-	GND_VIDEO
8	-	-	n.c.

## 6.12 Kontron Feature Connector (J37)

The Feature Connector J37 is a Kontron standard connection for easy communication with external devices for example SM Bus communication with Kontron M.A.R.S. Smart Battery System. See the detailed description of available functions below:



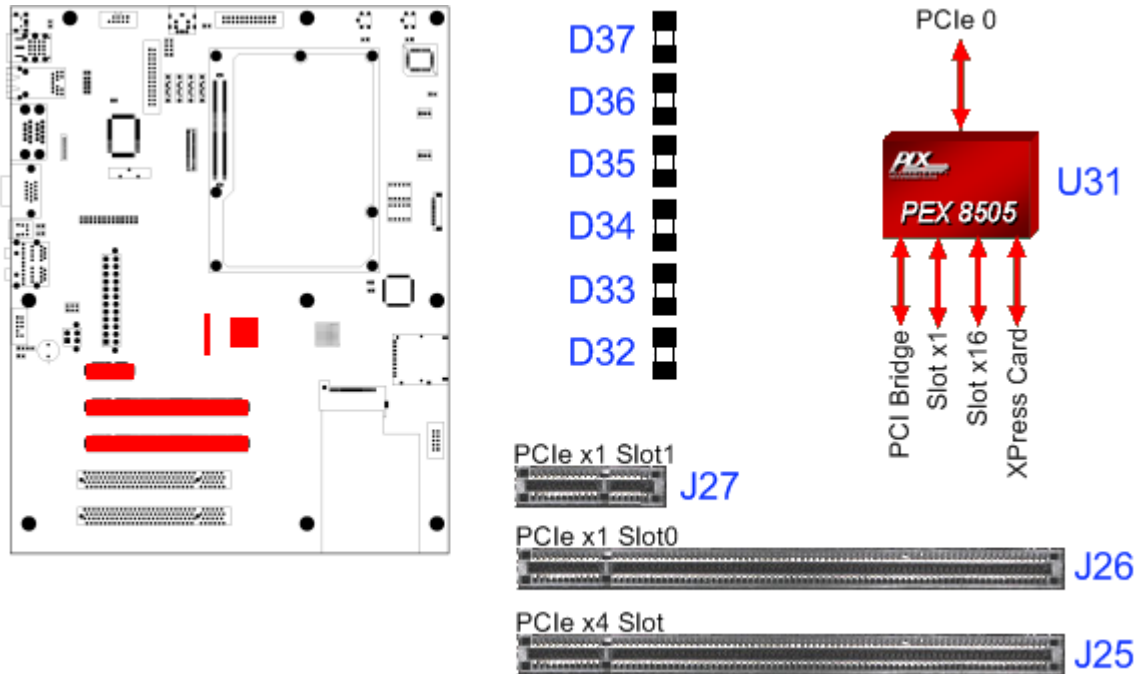
### Feature Connector Pin out

Pin	Signal Description		
1	PWR_+5V	5V power	+5V UL-protected with inductor (600R@100MHz, 1A)
2	GPO2	3.3V-O	General-purpose power management event output
3	#BATLOW	3.3V-I	Battery low input. May be driven low by external circuitry to signal that the system battery is low, or may be used to signal some other external power management event.
4	GPI2	3.3V-I	General-purpose power management event input
5	#SYS_RESET	3.3V-I	This input may be driven low by external circuitry in order to reset the power management logic
6	WDT	3.3V-O	Indicating that a Watchdog Timeout Event has occurred
7	LPC_SERIRQ	3.3V-I	Serial interrupt request. This pin is used to support the serial interrupt protocol.
8	-	-	Not connected
9	I2C_DAT	3.3V-IO	Data line of I2C-Bus
10	#SMB_ALERT	3.3V-I	System Management Bus Alert input. May be driven low by SMB devices in order to signal an event on the SM Bus
11	I2C_CLK	3.3V-O	Clock line of I2C-Bus
12	SMB_DAT	3.3V-IO	Clock and data line of SM-Bus.
13	SMB_CLK	3.3V-O	
14	-	-	Not connected
15	#WAKE1	3.3V-I	Low driven general purpose wake-up signal
16	VCC_RTC	3V-I	3V backup cell input. Should be connected to a 3V backup cell for RTC operation and storage register non-volatility in the absence of system power. (VBATT = 2.4 – 3.3V)
17	#THRM	3.3V-I	Input from off-module temperature sensor indicating an over temperature situation
18	GND	GND	Ground
19	PWR_OK	3.3V-I	High active input indicating that power from the power supply is ready. It can also be used as low active reset input signal.

Pin	Signal Description		
20	GND	GND	Ground
21	#PWRBTN	3.3V-I	Power Button Input. This input is used to support the ACPI Power Button function.
22	GND	GND	Ground
23	#ATA_ACT	3.3V-O	Low active output signal, which indicates activity on IDE interfaces.
24	#CB_RESET	3.3V-O	Low active Reset output from module to carrier board

### 6.13 PCIeexpress (J25, J26, J27, U31 and Status LEDs)

PCIexpress lane0 from the COMexpress module is used to connect a 5-lane PCIeexpress Gen1 switch PEX8505AA. The Type 1 connection of the nanoETExpress Evaluation Board offers a maximum of 5 PCIe lanes from the module (PCIe0 ... PCIe4). The switch provides 4 additional PCIeexpress lanes (PCIe5 ... PCIe8). See the detailed PCIeexpress configuration in the list below.



J25 (PCIexpress x4 Slot) and J26 (PCIexpress x1 Slot0) are mechanical x16 slots to connect x16 PCIeexpress cards. The electrical configuration does not match the mechanical:

#### PCIexpress configuration:

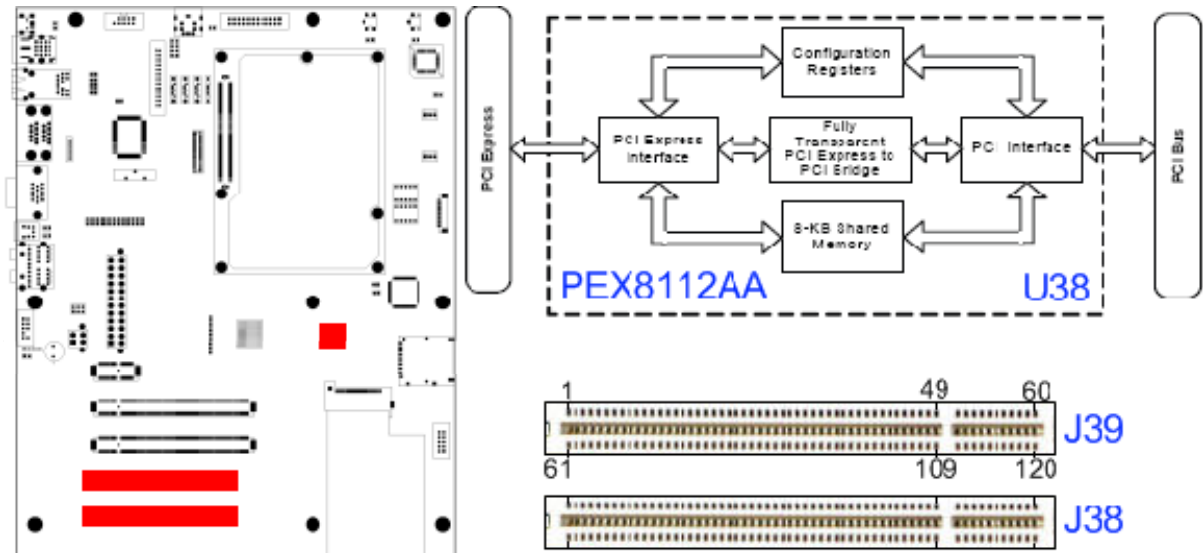
Baseboard PCIe Lane	Source	Target
#0	COMe Module lane#0	PCIe Switch lane#0 (Uplink)
#1	COMe Module lane#1	PCIe x4 slot (J25)
#2	COMe Module lane#2	
#3	COMe Module lane#3	
#4	COMe Module lane#4	
#5	PCIe Switch lane#1	
#6	PCIe Switch lane#2	Xpress-Card Slot
#7	PCIe Switch lane#3	PCIe x1 Slot0 (J26)
#8	PCIe Switch lane#4	PCIe x1 Slot1 (J27)

6 LEDs from the PCIe switch shows the status of PCIeexpress. The 'Lane Good LEDs' D32 to D36 provides visual indication that the Physical Layer of the link for each lane is trained to at least x1 width.

LED	Function	LED	Function
D37	Fatal Error in PEX8505	D34	Xpress-Card
D36	Upstream link to Module	D33	PCIe x1 Slot0
D35	PCIe-PCI Bridge	D32	PCIe x1 Slot1

## 6.14 PCI (J38, J39, U38)

According to the COMexpress specification PCI usually is provided by connector C/D. On the nanoETXexpress Evaluation Board with Type1 connection PCI must be generated with a PCIexpress to PCI Bridge.



The PCIe-toPCI Bridge PEX8112AA provides a maximum of 4 PCI Slots. PCI Slot0 (J38) and PCI Slot1 (J39) can be used on the nanoETXexpress Evaluation Board.

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*Note1: If PCIexpress and PCI can be used depends on the modules specification. Please refer to the module documentation for further details. Appendix A gives a short overview.*

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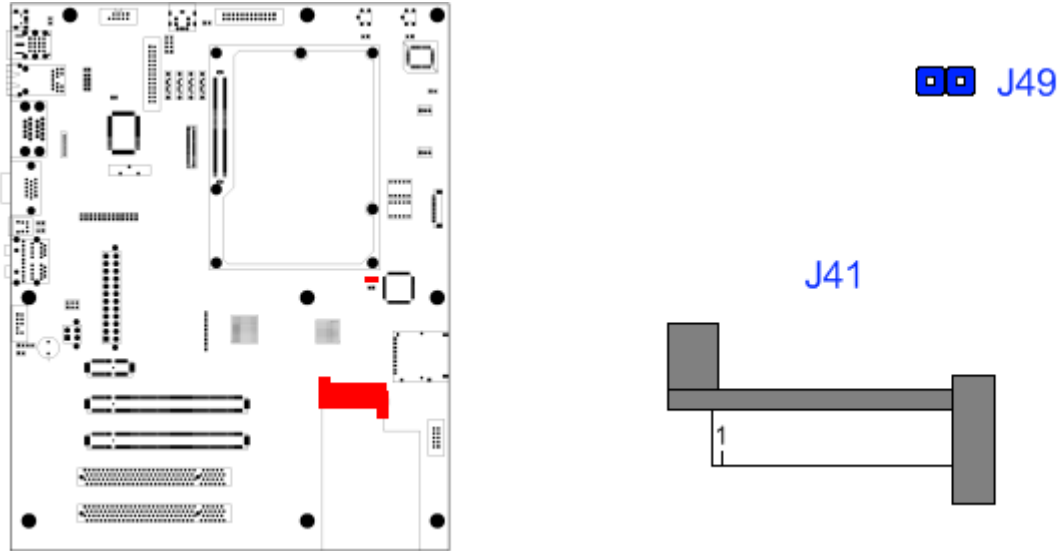
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*Note2: The PCI IO voltage is set to 3,3V and therefore PCI is not compatible to 5V only cards.*

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## 6.15 Express Card (J41, J49)

The onboard Express Card is connected to PCIexpress Lane #6 (lane #2 of PCIe Switch) and to USB Port6. To use the Express Card USB functions an ETXexpress module with at least 8 USB Ports is necessary.



Connector J41 allows using both ExpressCard/34 and ExpressCard/54. The maximum continuous Card Power is

- 1,3A on 3,3V
- 275mA on Aux Power
- 650mA on 1,5V

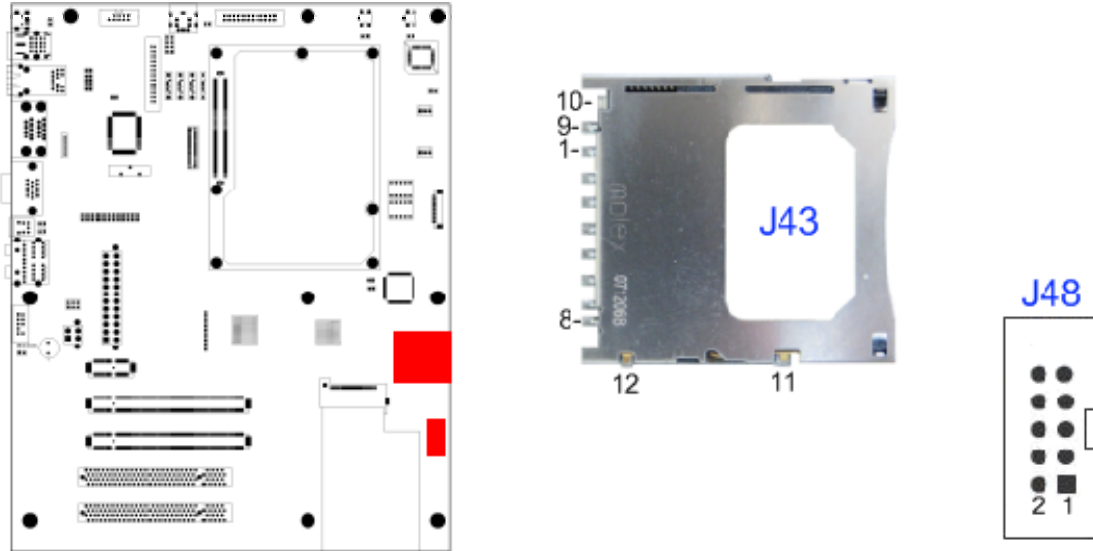
### Express Card pin out

Pin	Signal	Pin	Signal
1	GND	14	3.3VS_1
2	USB_D-	15	3.3VS_0
3	USB_D+	16	CLKREQ#
4	CPUSB#	17	CPPE#
5	NC	18	REFCLK-
6	NC	19	REFCLK+
7	SMB_CLK	20	GND
8	SMB_DATA	21	PERNO
9	1.5V_2	22	PERPO
10	1.5V_1	23	GND_1
11	WAKE#	24	PETNO
12	3.3VAUX	25	PETPO
13	PERST#	26	GND_0

Jumper J49 switches ExpressCard Reset between 'ModuleHotplug' (Closed Jumper, default) and CB\_Reset# (Open Jumper)

## 6.16 SDIO & GPIO (J43, J48)

COMexpress defines a maximum of 4GPIs and 4 GPOs. With the new nanoETXexpress standard the 8 General Purpose Input/Output signals alternatively can be configured as SDIO interface. Refer to the module's manual if SD Card feature is supported and how to be configured.



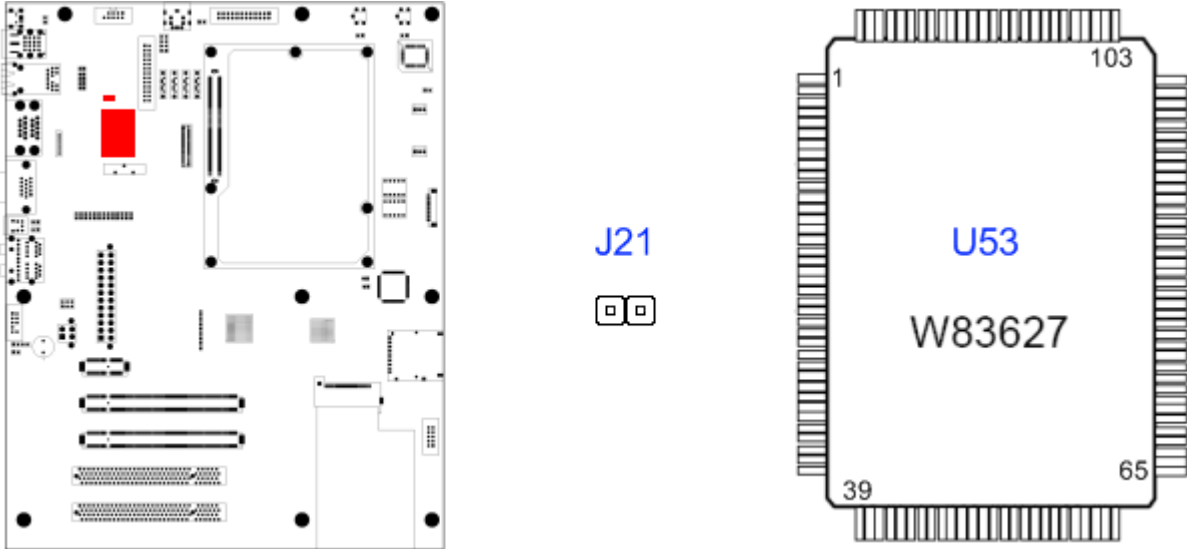
A TI74LVCH244A octal buffer provides galvanic isolation between SDIO and GPIO output connectors. J43 is active, if a SD Card is connected (Pin10, Detect).

### SDIO & GPIO pin out

Pin	SDIO - J43	GPIO - J48
1	CD/DAT3 - Card Detection (GPI3)	VCC 3,3V
2	CMD - Command/Response (GPO1)	GPO #0
3	VSS1 - Supply Voltage - GND	GPI #0
4	VDD - Power Supply - 3,3V	GPO #1
5	CLK - Clock (GPO0)	GPI #1
6	VSS2 - Supply Voltage - GND	GPO #2
7	DAT0 - Data Line 0 (GPI0)	GPI #2
8	DAT1 - Data Line 1 (GPI1)	GPO #3
9	DAT2 - Data Line 2 (GPI2)	GPI #3
10	Detect (GPO3)	GND
11	Protect (GPO2)	-
12	GND	-

## 6.17 LPC-I/O Controller (J21, U53)

The nanoETXexpress Evaluation Baseboard is equipped with an external LPC I/O Controller Winbond W83627HFJ to provide standard legacy connections like COM or LPT.



To avoid address conflicts if a Super I/O is present on the COMexpress Module it's possible to switch the Baseboard's Super I/O Address with jumper J25.

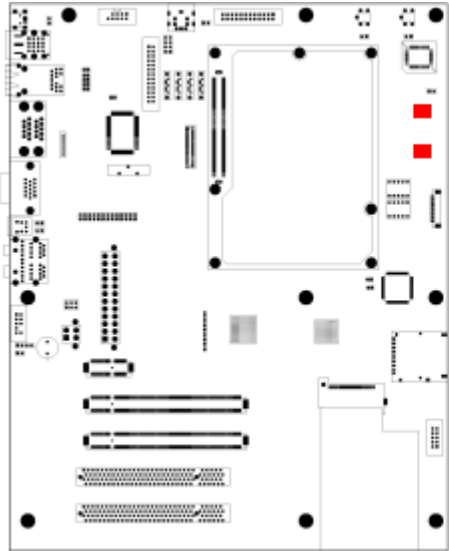
### SIO address switch J21

Jumper	Address
closed	4Eh
<b>open</b>	<b>2Eh</b>

*Note:* To use the LPC-I/O functions like COM, LPT and hardware monitoring features a Kontron module with legacy BIOS is necessary.

### 6.17.1 LPC-I/O Fan Control (J44, J45)

The Winbond 83627HFJ LPC-I/O Controller provides an internal Hardware Monitor and FAN connection.



J45  
FAN2



J44  
FAN1

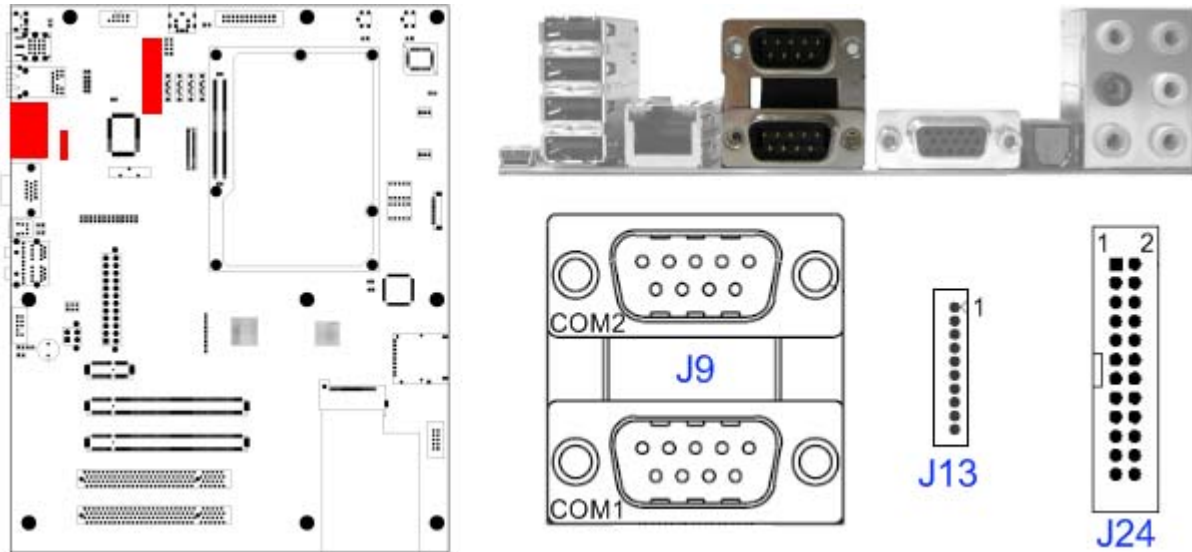
Fan Connector Pin out

Pin	FAN1	FAN2
1	Sense	Sense
2	+12V	+12V
3	GND	GND

*Note:* To support FAN control and monitoring it is required to set the LPC Decode Range 1 Base to 290h and the Range 1 Size to 8B in the module BIOS. Refer to the module's manual for more details.

## 6.18 LPCI-I/O Parallel and Serial Ports (J9, J13, J24)

For serial DSUB connections use J9 (COM1, COM2) or J13 (COM2) with Kontron Adapter cable [KAB-DSUB9-3](#). The parallel port can be used with adapter cable [KAB-DSUB25-1](#).



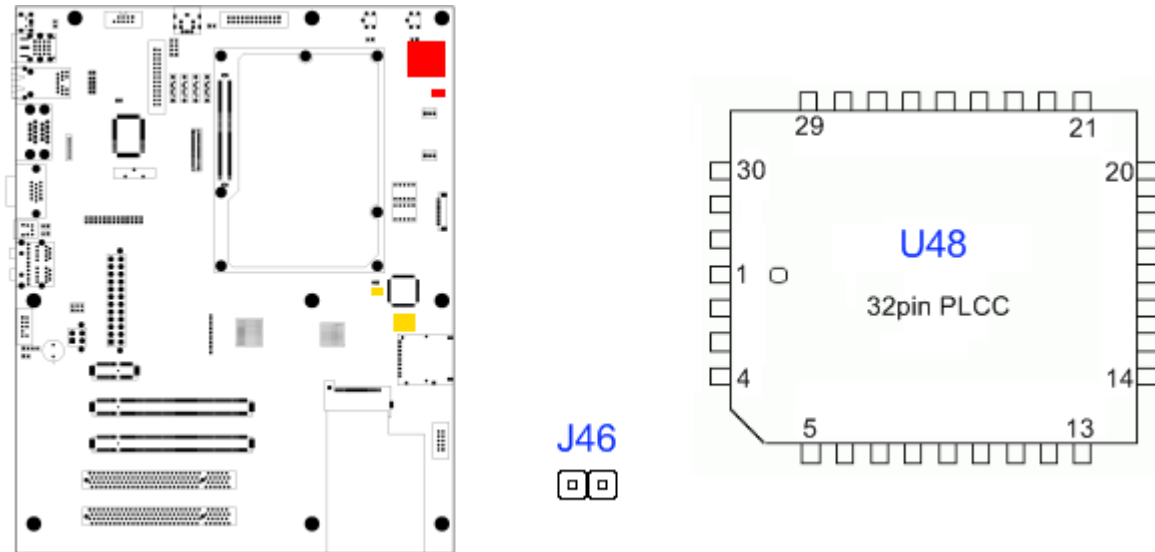
### LPT and COM Port pin out

Pin	J24 - LPT	J9-COM1/2	J13-COM2	Pin	LPT	COM1/COM2	J13-COM2
1	#STB	DCD	DCD	2	#AFD	DSR	DSR
3	PD0	RXD	RXD	4	#ERROR	RTS	RTS
5	PD1	TXD	TXD	6	#INIT	CTS	CTS
7	PD2	DTR	DTR	8	#SLCTIN	RI	RI
9	PD3	GND	GND	10	GND	NC	VCC_5V
11	PD4	-	-	12	GND	-	-
13	PD5	-	-	14	GND	-	-
15	PD6	-	-	16	GND	-	-
17	PD7	-	-	18	GND	-	-
19	#ACK	-	-	20	GND	-	-
21	BUSY	-	-	22	GND	-	-
23	PE	-	-	24	GND	-	-
25	SLCT	-	-	26	n.c.	-	-

*Note:* To use the LPC-I/O functions like COM, LPT and hardware monitoring features a Kontron module with legacy BIOS is necessary.

## 6.19 Backup BIOS (U48, J46)

The nanoETXexpress Evaluation Baseboard provides a backup LPC Firmware Hub U48. The backup BIOS must be activated with jumper J46.



The yellow marked components are for an optional SPI flash (U57). In case of using an SPI flash jumper J52 must be closed to activate it. A open jumper J52 enables the LPC Firmware Hub U48.

### Backup BIOS Disable J46

J69	Active BIOS
Closed	Backup BIOS
Open	Module BIOS

### Updating the baseboard BIOS with booting from the module

- Open jumper J46 to boot from the module
- Prepare a DOS bootable device with the BIOS to be flashed (e.g. a USB stick)
- Boot into DOS
- Close jumper J46
- Start the flashing command

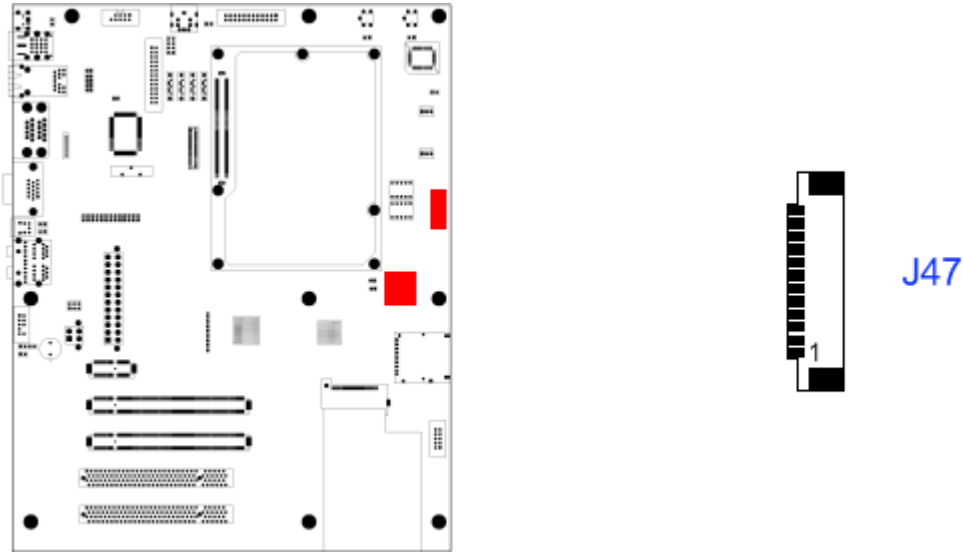
### Updating the module BIOS with booting from the baseboard

- Close jumper J46 to boot from the baseboard
- Prepare a DOS bootable device with the BIOS to be flashed (e.g. a USB stick)
- Boot into DOS
- Open jumper J46
- Start the flashing command

**Note:** Only use suitable BIOSes for the regarding product either on the module or the baseboard.

## 6.20 CPLD (J47, U44)

Current Kontron products are equipped with an Altera CPLD (Complex Programmable Logic Device) for power up sequencing and other functionalities. The nanoETXexpress Evaluation Baseboard's CPLD (U44) can be accessed by connector J47



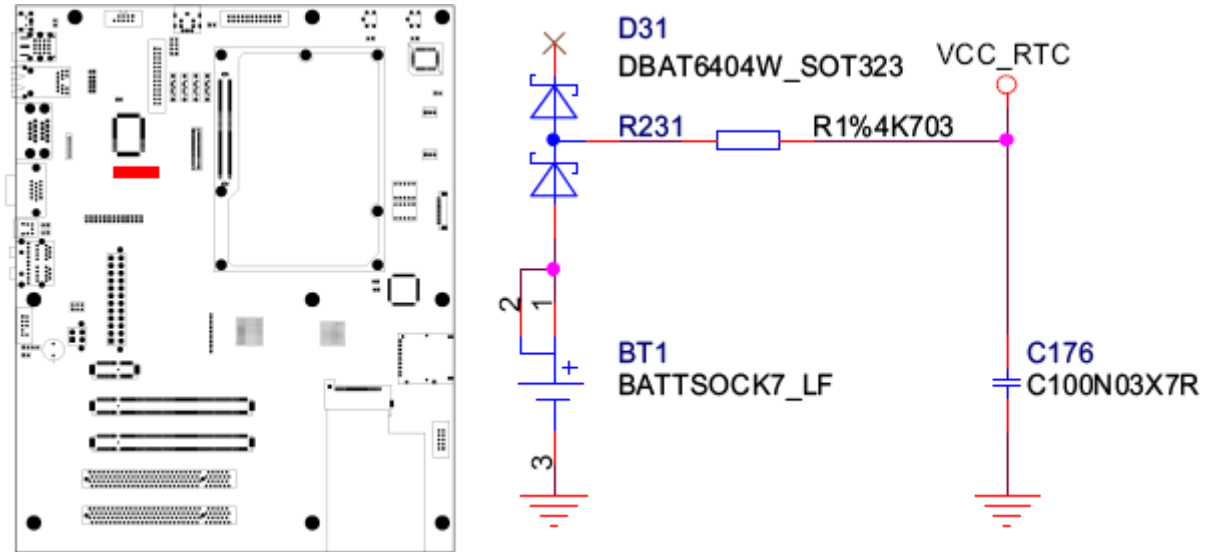
CPLD J47 Pin out

Pin	Signal
1	3,3V
2	TDI
3	TCK
4	TMS
5	TDO
6	MCCI_DATA_OUT
7	MCC_DATA_IN
8	MCC_RST
9	MCCI_CLK
10	MCCI_INT
11	MCCI_Freeze
12	GND

**Warning:** *J47 is for internal use only. Do not connect any devices.*

## 7 Battery Information (BT1)

The nanoETXexpress Evaluation Baseboard includes a standard CR2032 3V RTC battery.



English:

**CAUTION:** *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Deutsch:

**VORSICHT:** *Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.*

French:

**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.*

Danish:

**ADVARSEL:** *Lithiumbatteri – Eksplosionsfare ved fejlagtig Håndtering. Udskiftning må kun ske med batteri af samme fabrikant og type. Lever det brugte batteri tilbage til leverandøren.*

Finnish:

**VAROITUS:** *Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaanlaltevalmistajan suosittelemaan tyyppiin. Havita käytetty paristo valmistajan ohjeiden mukaisesti.*

Spanish:

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**Precaución:** ***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.***

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*Note: The battery of this product is not considered to be accessible by the end user. Therefore the safety instructions are only given in English, German, French, Danish, Finnish and Spanish language. If the battery of this product however is accessible by the end user, it is in the responsibility of the Kontron customer to give the corresponding safety instructions in the required language(s).*

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## 8 Security advice

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*To protect the external power lines to peripheral devices the customer has to take care about:*

- The wires to the external device have the right diameter to withstand the max. available current*
  - The housing of the external device fulfils the fire protection requirements of IEC/EN 60950.*
-

## 9 Limitations

### Hardware limitations on PCB rev. L111:

- The octal buffer is not able to switch between SDIO and GPIO. SD Card interface is only working with desoldered buffer and assembled R380. A manual switching via jumper will be implemented in newer designs.
- The optional SPI Flash U57/J52 is not supported.

## 10 Appendix A - Product Compatibility

A short overview which baseboard functions can be used on Kontron COMexpress modules:

	USB Client	SDIO	PCIe 0 (*)	PCIe 1-4	GB LAN	SATA 0-3	TV-out
nanoETXexpress-SP	✓	✓	✓	-	✓	SATA 0	-
microETXexpress-SP	✓	✓	✓	✓	✓	SATA 0,1	-
microETXexpress-PM	- (**)	-	- (**)	-	10/100	SATA 0,1	-
ETXexpress-PM	-	-	✓	PCIe 1	✓	SATA 0,1	-
ETXexpress-CD	-	-	✓	PCIe 1,2,3	✓	SATA 0,1	✓
ETXexpress-690	-	-	✓	PCIe 1,2	✓	✓	-
ETXexpress-MC	-	-	✓	PCIe 1,2,3	✓	SATA 0,1,2	✓
ETXexpress-PC	-	-	✓	✓	✓	✓	✓

(\*) *PCIexpress lane0 support includes PCIexpress x1 Slot0, PCIexpress x1 Slot1, PCIe part of Express-Card and PCI support.*

(\*\*) *microETXexpress-PM only supports 6 USB Ports and no PCIexpress whereby XPress-Card has no function.*

# 11 Document History

Rev.	Date	Edited by	Changes
0.10_prelim	08.10.08	PRO	Initial Release