

COMe Eval Carrier2 T6 (ADT6)

User Guide Rev. 3.0

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COMe Eval Carrier2 T6 – User Guide

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NOTICE

You find the most recent version of the “General Safety Instructions“ online in the download area of this product.

NOTICE

This product is not intended for use or suited for storage or operation in corrosive environments, in particular under exposure to sulfur and chlorine and their compounds. For information on how to harden electronics and mechanics against these stress conditions, contact Kontron Support.

Revision History

Revision	Brief Description of Changes	Date of Issue	Author
1.0	Initial issue	2019-Sept-23	hjs
1.1	Introduction modified, corrected signals 5V_MOD and V_WIDE_MOD	2020-Jan-27	hjs
1.2	variant 38116-0000-00-5 removed	2020-July-21	hjs
1.3	Word2016 issues	2021-April-13	hjs
1.4	Pinout of J99 in chapter 5.17 updated	2021-May-10	hjs
1.5	Picture of J99 in chapter 5.17 updated	2021-July-08	hjs
2.0	Update to HW Rev. L112	2023-Jul-12	MK
3.0	Update to HW Rev. L113	2024-Apr-03	MK

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Symbols

The following symbols may be used in this user guide



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



NOTICE indicates a property damage message.



CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury
ATTENTION indique une situation dangereuse qui, si elle n'est pas évitée, peut entraîner des blessures mineures ou modérées.



Electric Shock!

This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of products. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.



ESD Sensitive Device!

This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.



Caution: HOT Surface!

Do NOT touch! Allow to cool before servicing.

Attention : Surface CHAUDE !

Ne pas toucher ! Laissez refroidir avant de procéder à l'entretien.



Caution: Laser!

This symbol inform of the risk of exposure to laser beam and light emitting devices (LEDs) from an electrical device. Eye protection per manufacturer notice shall review before servicing.



This symbol indicates general information about the product and the user guide.
 This symbol also indicates detail information about the specific product configuration.



This symbol precedes helpful hints and tips for daily use.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.

⚠ CAUTION

Warning

All operations on this product must be carried out by sufficiently skilled personnel only.

⚠ CAUTION



Electric Shock!

Before installing a non hot-swappable Kontron product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.

Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

Special Handling and Unpacking Instruction

NOTICE



ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

⚠ CAUTION

Handling and operation of the product is permitted only for trained personnel within a work place that is access controlled. Follow the "General Safety Instructions" supplied with the product.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

Lithium Battery Precautions

If your product is equipped with a lithium battery, take the following precautions when replacing the lithium battery.

⚠ CAUTION

Risk of Explosion if the lithium Battery is replaced by an incorrect Type. Dispose of used lithium batteries According to the instructions.

Risque d'explosion si la pile au lithium est remplacée par une pile de type incorrect.
Éliminez les piles au lithium usagées conformément aux instructions.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Kontron and described in this user guide or received from Kontron Support as a special handling instruction, will void your warranty.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present user guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Quality and Environmental Management

Kontron aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements. For more information regarding Kontron's quality and environmental responsibilities, visit www.kontron.com/about-kontron/corporate-responsibility/quality-management.

Disposal and Recycling

Kontron's products are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- › Reduce waste arising from electrical and electronic equipment (EEE)
- › Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste
- › Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- › Improve the environmental performance of all those involved during the lifecycle of EEE



Environmental protection is a high priority with Kontron.
Kontron follows the WEEE directive
You are encouraged to return our products for proper disposal.

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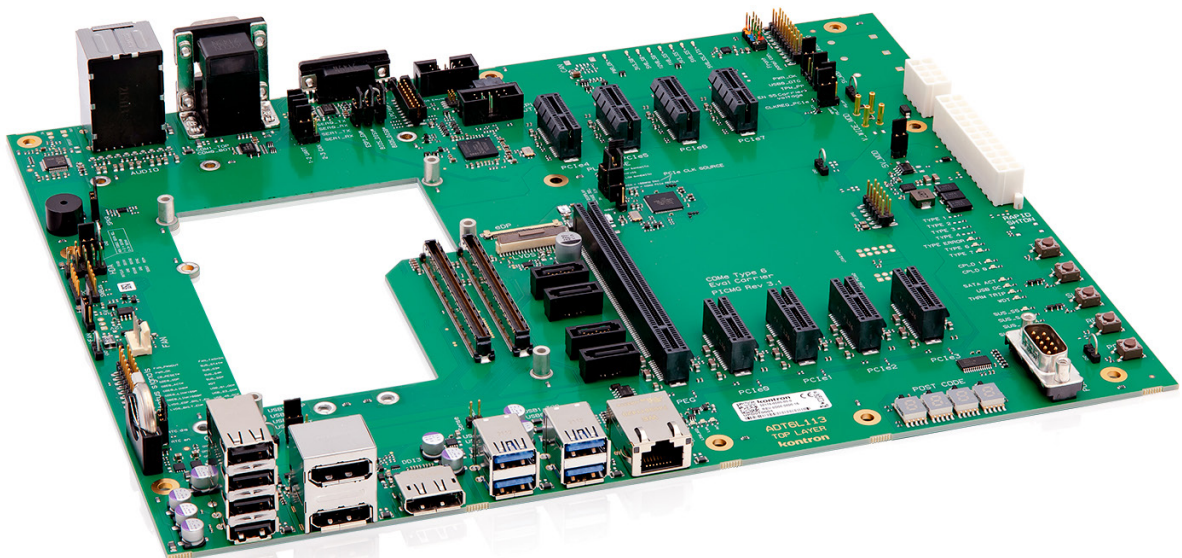
1/Introduction

1.1. Product Description

The COMe Eval Carrier2 T6 is being developed as an evaluation, testing and validation carrier board (baseboard) in ATX form factor for COM Express® Type 6 modules. It offers a testing platform for a huge variety of interfaces. Main purpose of this carrier board is to bring out all the signals from COM Express® connector of COMe Type6 modules to industry standard interfaces. The key features are:

- › Compliance COM Express® Rev. 3.1, Pin-out Type 6
- › 1x GbE NBase-T interface
- › 4x SATA standard interface
- › 1x PEG x16 PCI Express®
- › 8x PCIe x1
- › 3x DP Panel Signal
- › 1x LVDS/eDP
- › 1x VGA
- › 4x USB 3.1 (incl. USB 2.0) + 4x USB 2.0
- › 2x COM ports (RX/TX only)
- › 1x Audio Connector
- › ATX Power Supply (24-pin + 8-pin connector)
- › External fan connector
- › Pin headers for COM Express® specific signals enabling measurement like GPIOs, I2C and SMBus
- › External BIOS flash sockets

Figure 1: COMe Eval Carrier2 T6



1.2. Product Naming Clarification

The product names for Kontron COM Express® Computer-on-Modules consist of a short form of the industry standard (COMe-), the form factor (b=basic, c=compact, m=mini), the capital letters for the CPU and Chipset Codenames (XX) and the pin-out type (#) followed by the CPU Name.

COM Express® defines a Computer-On-Module, or COM, with all components necessary for a bootable host computer, packaged as a super component.

- › COMe-bXX# modules are Kontron's COM Express® modules in basic form factor (125 mm x 95 mm)
- › COMe-cXX# modules are Kontron's COM Express® modules in compact form factor (95 mm x 95 mm)
- › The COMe Eval Carrier2 T6 fits all three types of modules.

1.3. Understanding COM Express® Functionality

All Kontron COM Express® basic and compact modules contain two 220pin connectors; each of it has two rows called Row A & B on primary connector and Row C & D on secondary connector. The COM Express® Computer-On-Module (COM) features the following maximum amount of interfaces according to the PCI Industrial Computer Manufacturers Group (PICMG) module Pin-out type.

1.4. COM Express® Documentation

The COM Express® Specification defines the COM Express® module form factor, pin-out, and signals. This document is available at the PICMG® website by filling out the order form.

1.5. COM Express® Benefits

COM Express® modules are compact and highly integrated computers. All modules feature a standardized form factor and connector layout which carry a specified set of signals. Each COM is based on the COM Express® specification. This standardization allows designers to create a single-system baseboard that can accept present and future COM Express® modules.

The baseboard designer can optimize exactly how each of these functions implements physically. Designers can place connectors precisely where needed for the application on a baseboard designed to optimally fit a system's packaging.

A single baseboard design can use a range of COM Express® modules with different sizes and pin-outs. This flexibility can differentiate products at various price/performance points. The modularity of a COM Express® solution also ensures against obsolescence when computer technology evolves. A properly designed COM Express® baseboard can work with several successive generations of COM Express® modules.

A COM Express® baseboard design has many advantages of a customized computer-board design and, additionally, delivers better obsolescence protection, heavily reduced engineering effort, and faster time to market.

2/System Specifications

2.1. Component Main Data

The table below summarizes the features of the motherboard.

Table 1: Component Main Data

COMe Eval Carrier2 T6	
Form factor	Testing Hardware with 244.0 mm x 305.0 mm (ATX)
Memory	
EEPROM System (U13)	JILI EEPROM (option)
External I/O	
LAN	1x Gbit-Ethernet port
USB	4x USB 3.1 + 4x USB 2.0 double stack
Internal I/O	
SATA	4x Gen3 connectors
PCIe	1x x16, 8x x1
LEDs	SMD LEDs e.g. for VCC/Type/Ethernet/HDD/USB_OC/CPLD0,1/THRMTRIP/SUS_STAT,S3,S4,S5
GPIO	GPIO Header with 10 pins (8 GPIOs) (J49)
I2C	I2C Connector (J21)
Battery	CR2032 battery holder
Fan	4-pin fan connector, Voltage can be 5 V or 12 V (default 4-pole)
Carrier Board Power	
Power input	Carrier is powered from standard ATX power supply with ATX 24-pin and 8-pin connectors.
Single Supply Support	Carrier requires ATX power
Miscellaneous	
Miscellaneous	2x UART, 7-Segment Postcode Display, PostCode UART J62
Graphics	
DisplayPort DP	3x DP
VGA	1x VGA
LVDS	1x LVDS, 1x eDP

⚠ CAUTION

Danger of explosion if the lithium battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer

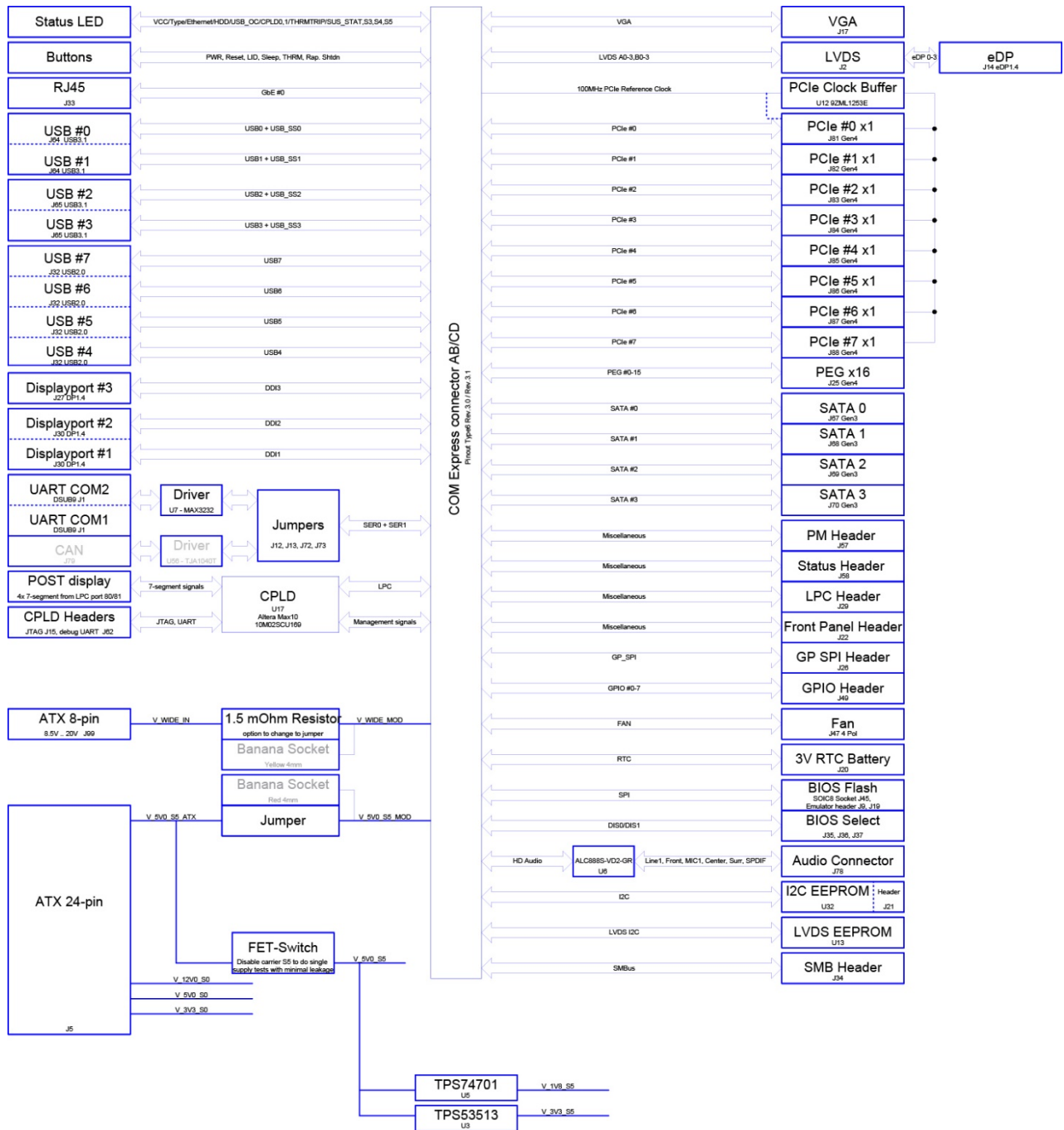
Dispose of used batteries according to the manufacturer's instructions

⚠ CAUTION

To avoid the risk of damaged components, use only type 6 compliant COMe modules.

2.2. Block diagram

Figure 2: Block Diagram COMe-Type6 Eval Carrier



Product Variants

Table 2: Product Variants

Product Number	Description
38116-0000-00-0	COMe connector height: 8 mm
38116-0000-00-5	COMe connector height: 5 mm

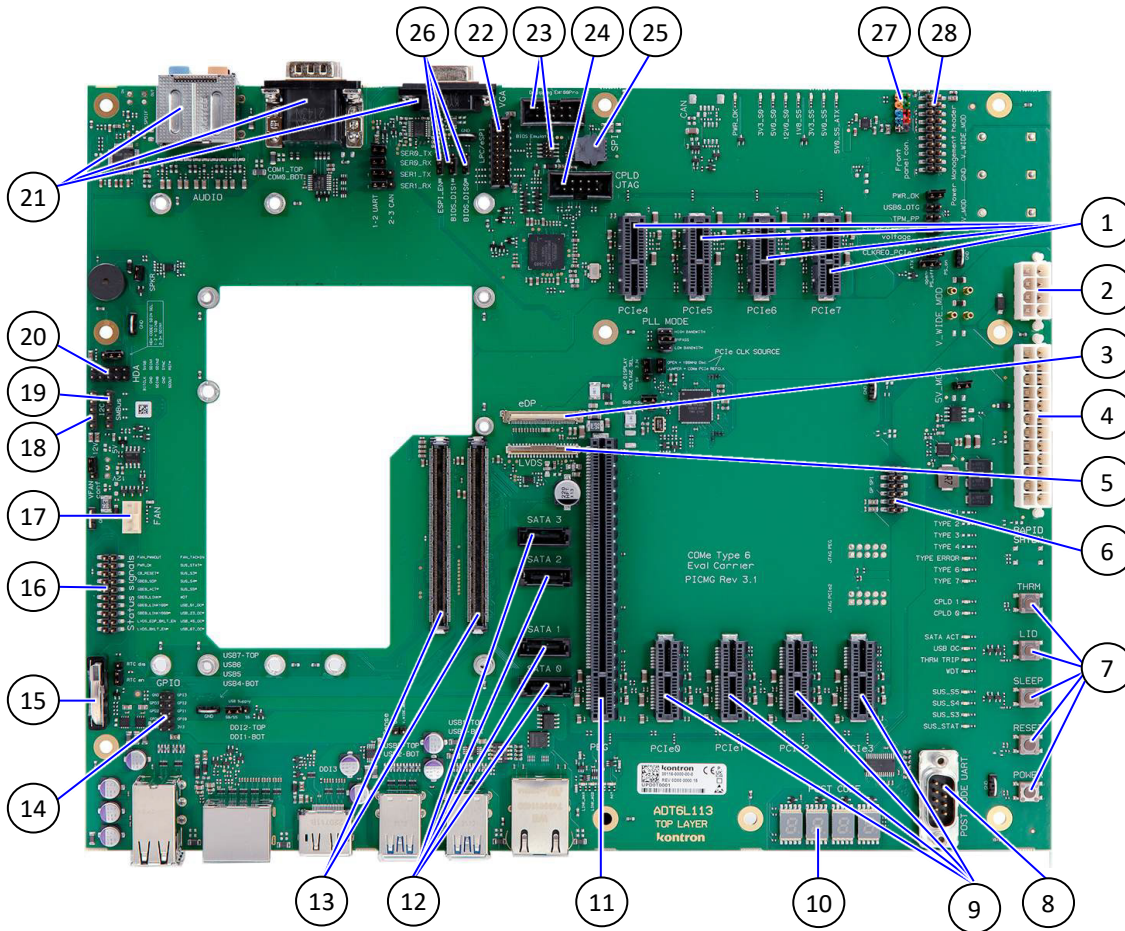
2.3. Environmental Conditions**Table 3: Environmental Conditions**

Operating	-40°C to +85°C Some connectors and Codecs has operating temperature only 0°C to +70°C, relative humidity (non-condensing) 10 % to 93 % at 40°C
Storage	-40°C to +85°C relative humidity (non-condensing) 10 % to 93 % at 40°C
Waste Electrical and Electronic Equipment (WEEE)	Components and materials of the product must not contain lead, mercury, cadmium, hexavalent, chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). (Directive 2002/95/EC)
RoHS II Compliance	The product will comply with the European Council Directive on the approximation of the laws of the member states relating to Directive 2011/65/EU or the last status thereof.
Theoretical MTBF	not applicable
Compliance	CE/UKCA, RoHS II, WEEE

3/Mainboard Views

3.1. Top View

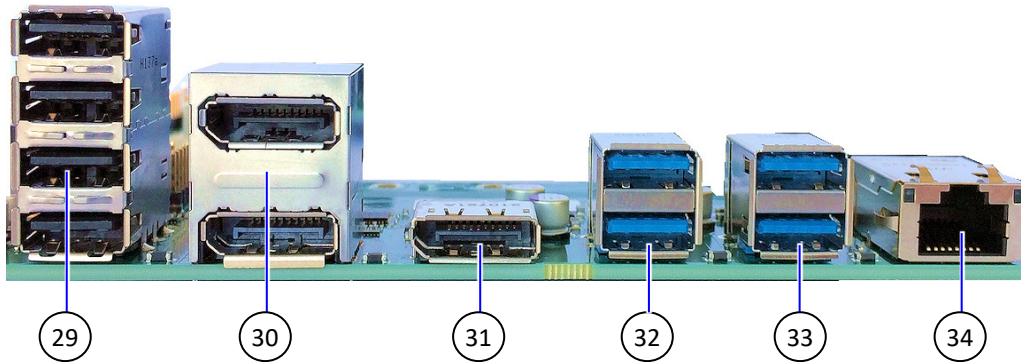
Figure 3: Top View of COMe Eval Carrier2 T6



- | | |
|----------------------------------|--|
| 1. 4x PCI x1 (J85/J86/J67/J88) | 15. Battery (J20) |
| 2. Power Connector (J99) | 16. Status Signal Header (J58) |
| 3. eDP (J14) | 17. Fan (J47) |
| 4. ATX Power Connector (J5) | 18. I2C Header (J21) |
| 5. LVDS (J2) | 19. SMBUs Header (J34) |
| 6. GP SPI (J26) | 20. HDA (J48) |
| 7. Button Switches | 21. Rear Connectors |
| 8. POST Code UART (J62) | 22. LPC/eSPI Header (J29) |
| 9. 4x PCI x1 (J81/J82/J83/J84) | 23. BIOS Emulator Headers (J9, J19) |
| 10. POST Code Display | 24. CPLD JTAG (J15) |
| 11. PCIe x16 (J25) | 25. SPI BIOS Flash Socket (J45) |
| 12. 4x SATA (J67, J68, J69, J70) | 26. BIOS Selection (H22/J35, H23/J36, H24/J37) |
| 13. 2x COMe (J16, J61) | 27. Front Panel Header (J22) |
| 14. GPIO Header (J49) | 28. Power Management Header (J57) |

3.2. Front View

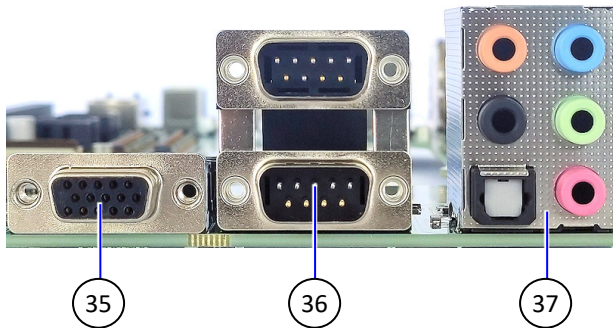
Figure 4: Front View



- 29. 4x USB 2.0 (J32)
- 30. 2x DP 1.4 (J30)
- 31. 1x DP 1.4 (J27)
- 32. 2x USB 3.1 Gen 1 (J65)
- 33. 2x USB 3.1 Gen 1 (J64)
- 34. 1x RJ45 1G Ethernet Connector (J33)

3.3. Rear View

Figure 5: Rear View



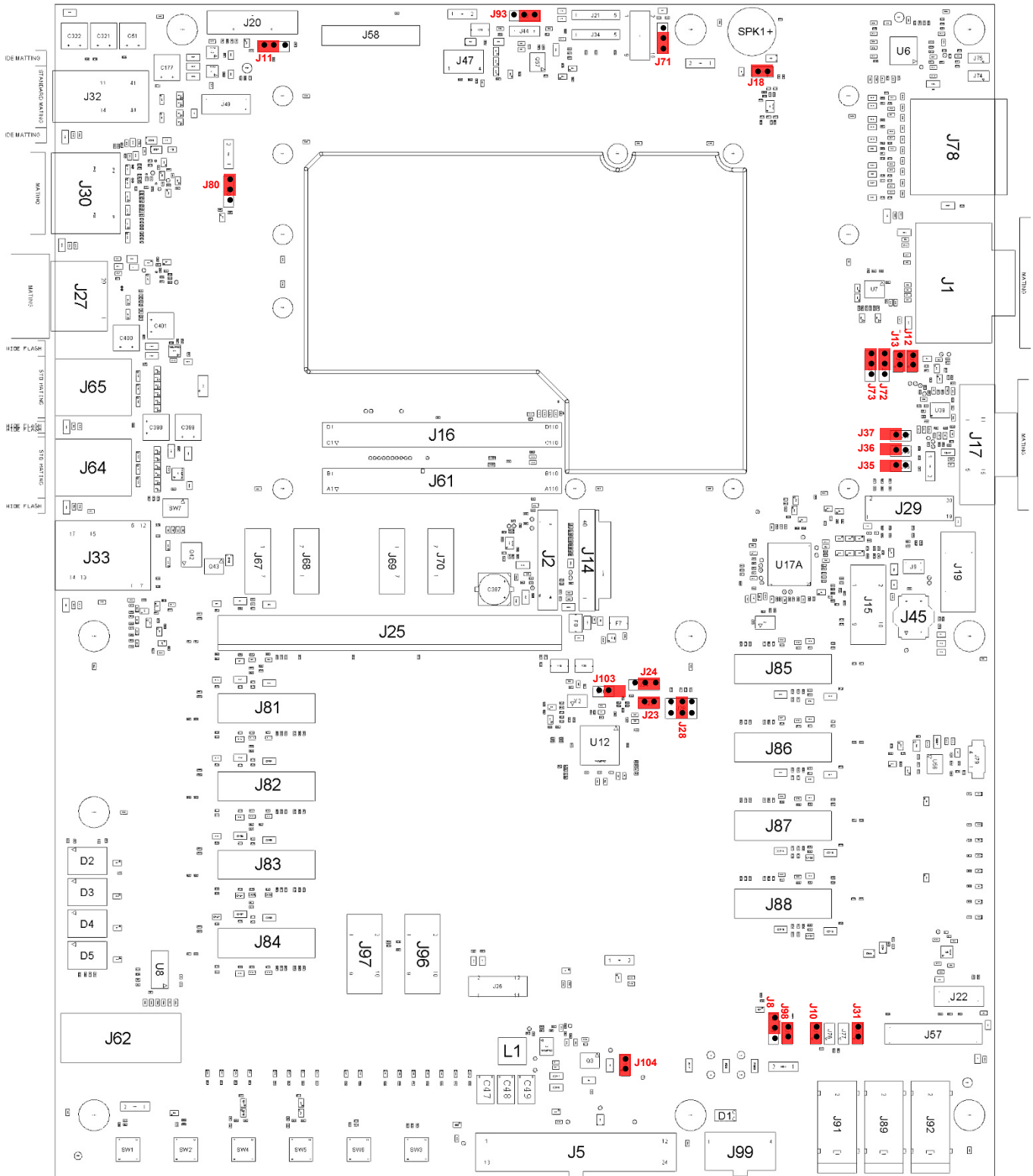
- 35. VGA Port (J17)
- 36. 2x COM Ports (J1)
- 37. Audio Connector (J78)

4/Mechanical Specification

4.1. Dimensions and Jumper Positions

The dimensions of the carrier board are 244.0 mm x 305.0 mm.

Figure 6: Board Dimensions and Default Jumper Positions



For detailed pinout information, please refer to the Kontron [EMD Customer Section](#) by selecting the product.

5/Interfaces and Connectors

5.1. NBase-T Connector (J33)

Table 4: NBase-T connector

Pin	Signal	Ethernet 10 BaseT/100BaseT	Gigabit-Ethernet
1	MDI0+	TX+	DA+
2	MDI0-	TX-	DA-
3	MDI1+	RX+	DB+
4	MDI2+ ¹		DC+
5	MDI2-		DC-
6	MDI1-	RX-	DB-
7	MDI3+		DD+
8	MDI3-		DD-

Table 5: Signals

LED	Signal
1	Green (right): Activity
2	Green (left): Link Max
2	Yellow (left): Link Mid

5.2. USB Connectors (J32, J64, J65)

For every USB 3.1 port, one USB2 and one USB31 lane has to be bonded. Therefore the number of available USB 2.0 ports decreases with every used 3.1 port. Available are:

- › up to 8x USB 2.0
- › up to 4x USB 3.1

Table 6: USB Connectors

Connector Position	COMe USB 2.0	COMe USB 3.1
J64 Bottom	USB0	USB_SS0
J64 Top	USB1	USB_SS1
J65 Bottom	USB2	USB_SS2
J65 Top	USB3	USB_SS3
J32 Bottom	USB4	
J32 Lower Middle	USB5	
J32 Higher Middle	USB6	
J32 Top	USB7	

Intel starts counting USB Ports with 1 while COMe Specification starts counting with 0

NOTICE

USB Overcurrent: USB_OC_LED# indicates Overcurrent event on USB_OC_0_1#, USB_OC_2_3#, USB_OC_4_5#, USB_OC_6_7#. Overcurrent event can be measured on Debug Header. USB0_HOST_PRSENT can be pulled up by J77. USB OTG Client is not supported.

5.3. Graphic Interfaces (J27, J30, J2, J14, J17)

Table 7: Graphic Interfaces

COMe Signal	Connector
DDI1	J30 (DisplayPort) (J30 Bottom)
DDI2	J30 (DisplayPort) (J30 Top)
DDI3	J27
LVDS	J2
eDP	J14
VGA	J17

Table 8: Graphic Interfaces DDI

COMe Connector DDI1	COMe Connector DDI2	COMe Connector DDI3
DDI1_PAIR[0:3]	DDI2_PAIR[0:3]	DDI3_PAIR[0:3]
DDI1_PAIR[4:6]	DDI2_PAIR[4:6]	DDI3_PAIR[4:6]
DDI1_CTRLCLK_AUX+	DDI2_CTRLCLK_AUX+	DDI3_CTRLCLK_AUX+
DDI1_CTRLDATA_AUX-	DDI2_CTRLDATA_AUX-	DDI3_CTRLDATA_AUX-
DDI1_DDC_AUX_SEL	DDI2_DDC_AUX_SEL	DDI3_DDC_AUX_SEL
DDI1_HPD	DDI2_HPD	DDI3_HPD

Table 9: Graphic Interfaces LVDS and eDP

COMe Connector LVDS	COMe Connector eDP
LVDS_A*	LVDS_A_CK
LVDS_B*	LVDS_A2
LVDS_I2C_CK	LVDS_A1
LVDS_I2C_DAT	LVDS_A0
LVDS_VDD_EN	LVDS_I2C_CK
LVDS_BKLT_EN	LVDS_I2C_DAT
LVDS_BKLT_CTRL	EDP_HPD
	LVDS_VDD_EN
	LVDS_BKLT_EN
	LVDS_BKLT_CTRL

NOTICE

In order to comply with the required EMC Interference Immunity class A, a suitable hinged ferrite must be attached to each connected DP cable (e.g. Würth Elektronik 74271131).

Table 10: Graphic Interfaces VGA (J17)

Signal	Pin	HDSUB 15	Description	I/O	Comment
VGA_RED	B89	1	Red component of analog DAC monitor	O Analog	Analog output
VGA_GRN	B91	2	Green component of analog DAC monitor	O Analog	Analog output
VGA_BLU	B92	3	Blue component of analog DAC monitor	O Analog	Analog output
VGA_HSYNC	B93	13	Horizontal sync output to VGA monitor.	O 3.3V CMOS	
VGA_VSYNC	B94	14	Vertical sync output to VGA monitor.	O 3.3V CMOS	
VGA_I2C_CLK	B95	15	DDC clock line	O 3.3V CMOS	Level shifter
VGA_I2C_DAT	B96	12	DDC data line	I/O 3.3V CMOS	Level shifter
GND		5..8, 10	Analog and Digital GND		
DDC_POWER		9	5 V DDC supply voltage for monitor EEPROM		Power
N.C.		4, 11	Reserved (Testpads MTP70, MTP71)		

5.4. HD Audio (J78)

HDA Audio Codec is U6 ALC888S-VD.

Figure 7: HD Audio**Table 11: Colorscheme HD Audio**

Color	Connector
Light Blue	Analog line level audio input
Lime (Green)	Analog line level audio output for the main stereo signal (front speakers or headphones)
Pink	Analog microphone audio input
Orange	Analog line level audio output for center channel speaker and subwoofer
Black	Analog line level audio output for surround speakers, typically rear stereo
Toslink	Analog line level audio output for surround speakers, typically rear stereo

5.5. HD Audio Internal (J48)

HDA Audio Codec is U6 ALC888S.

Table 12: HD Audio internal

Pin	Connector
1	HDA_BITCLK
2	V_5V0_S5
3	GND
4	HDA_SDIN1
5	HDA_SDINO
6	HDA_SDIN2
7	GND
8	HDA_SYNC
9	HDA_SDOUT
10	HDA_RST#

5.6. COM Ports (J1)

Table 13: COM Ports (J1)

Pin	J1 Bottom	J1 Top
2	SER0_RX	SER1_RX
3	SER0_TX	SER2_TX
5	GND	GND
1, 4, 6-9	N.C.	N.C.

NOTICE

- Jumper J72 and J73 to 1/2 for SER 1 (J1 Top).
- Jumper J72 and J73 to 2/3 for CAN (J79) option.
- Jumper J12 and J13 to 1/2 for SER 0 (J1 Bottom).
- CAN option can be added on customer request. Disconnect Jumper to measure SER0/SER1.

5.7. Fan Connector (J47)

Table 14: Fan Connector with 4 pins (J47)

Pin	Description
1	GND
2	V_Fan Power (up to 12V)
3	FAN_TACH_CON (sense)
4	FAN_PWM_CON (drive)

5.7.1. Fan 3-Pin/4-Pin Jumper (J93)

NOTICE

J93 jumpered to 2/3: Regulated 3 Pole Fan, J93 jumpered to 1/2: 4 Pole Fan with 12 V.

The analog output voltage on this connector is generated via a discrete linear voltage regulator from the PWM signal of the HWM. V_FAN voltage range can be varied from 0 V to 12 V.

5.8. I2C and SMBus (J21, J34)

- › I2C: B33, B34 connected to J21, U17 FPGA , U32 EEPROM
- › VGA_I2C: B95, B96 connected to J17, MTP12/72
- › LVDS_I2C: A83, A84 connected to J2, J14, (U13 EEPROM), MTP60/61
- › SMB: B13, B14 connected to J34, J25 (PEG), U12 (PCIe CLK), J81..J88 (PCIe), U17 (FPGA)

Table 15: I2C

Pin	I2C Header J21
1	3V3
2	I2C_DAT
3	I2C_CLK
4	GND
5	N.C.

Table 16: SMBus

COMe connector	SMBus Header J34	PEG, PCIe0-7	PCIe clkbuffer U12	FPGA U17
3V3	Pin 1			
SMB_DAT	Pin 2	B6	SMB_CLK_S0_CKBUF	L10
SMB_CLK	Pin 3	B5	SMB_CLK_S0_CKBUF	M10
GND	Pin 4			
SMB_Alert#	Pin 5	-	-	J8

5.9. PCIe Slots (J25, J81 – J88)

The slot for PCI Express Graphics is J25 with up to x16.

Table 17: PCIe Slots

COMe connector	Lane width	PCIe connector
PEG	x16	J25
PCIE0	x1	J81
PCIE1	x1	J82
PCIE2	x1	J83
PCIE3	x1	J84
PCIE4	x1	J85
PCIE5	x1	J86
PCIE6	x1	J87
PCIE7	x1	J88

5.9.1. PCI Express Reference Clock

Place bypass resistors for Reference Clock measurements. For x4/x8/x16 PCIe cards it might be necessary to place J98 to output the reference clock on all x1 slots.

5.10. GPIO (General Purpose Input and Output) (J49)

Table 18: GPIO (J49)

Pin	Signal	Pin	Signal
P1	V_3V3_S0_GPIO	P2	GPIO_GPO0
P3	GPIO_GPIO0	P4	GPIO_GPO1
P5	GPIO_GPI1	P6	GPIO_GPO2
P7	GPIO_GPI2	P8	GPIO_GPO3
P9	GPIO_GPI3	P10	GND

5.11. Serial ATA 3.0 (J67 – J70)

Table 19: SATA 3.0

COMe Port	PCIe connector
SATA0	J67
SATA1	J68
SATA2	J69
SATA3	J70

SATA_ACT# LED D42 indicates SATA activity.

5.12. Front Panel Header (J22)

Figure 8: Front Panel Connector (J22)



Table 20: Front Panel Header (J22)

Pin	Signal Name
1	SATA_LED+
2	POWER_LED+
3	SATA_ACT#
4	GND
5	GND
6	PWRBTN#
7	SYS_RESET#
8	GND
9	V_5V0_S0

5.13. Power Management Header (J57)

Table 21: Power Management Header (J57)

Pin	Signal	Pin	Signal
P1	V_5V0_S5_PM	P2	V_3V3_S5_PM
P3	V_3V0_RTC	P4	GND
P5	WAKE0#	P6	GND
P7	WAKE1#	P8	GND
P9	BATLOW#	P10	GND
P11	SLEEP_EXT#	P12	GND
P13	LID_EXT#	P14	GND
P15	SYS_RESET_EXT#	P16	GND
P17	THRM_EXT#	P18	GND
P19	THRMTRIP#	P20	SATA_ACT#

5.14. Status Signal Header (J58)

Table 22: Status Signal Header (J58)

Pin	Signal	Pin	Signal
P1	FAN_PWMOUT	P2	FAN_TACHIN
P3	PWR_OK	P4	SUS_STAT#_ESPI_RESET#
P5	CB_RESET#	P6	SUS_S3#
P7	GBEO_SDP	P8	SUS_S4#
P9	GBEO_ACT#	P10	SUS_S5#
P11	GBEO_LINK#	P12	WDT
P13	GBEO_LINK_MID#	P14	USB_01_OC#
P15	GBEO_LINK_MAX#	P16	USB_23_OC#
P17	LVDS_EDP_BKLT_EN	P18	USB_45_OC#
P19	LVDS_BKLT_EN#	P20	USB_67_OC#

5.15. GP SPI Header (J26)

Table 23: GP SPI Header (J26)

Pin	Signal	Pin	Signal
P1	GND	P2	V_3V3_S5
P3	GP_SPI_MISO	P4	V_3V3_S0
P5	GP_SPI_MOSI	P6	CB_RESET#
P7	GP_SPI_CK	P8	GP_SPI_CS0#
P9	N.C.	P10	N.C.
P11	N.C.	P12	N.C.

5.16. 24-pin ATX Power connector (J5)

Table 24: ATX Power connector with 24 pins

Pin	Signal	Cable Colour
1	3.3 V	Orange
2	3.3 V	Orange
3	GND	Black
4	5 V	Red
5	GND	Black
6	5 V	Red
7	GND	Black
8	PWR_OK_ATX	Grey
9	5 VSB	Purple
10	12 V	Yellow
11	12 V	Yellow
12	3.3 V	Orange
13	3.3 V/3.3 V sense	Orange/ Brown
14	N.C.	Blue
15	GND	Black
16	PS_ON_ATX	Green
17	GND	Black
18	GND	Black
19	GND	Black
20	NC	None
21	5 V	Red
22	5 V	Red
23	5 V	Red
24	GND	Black

NOTICE

If any of the supply voltages drops below the allowed operating level longer than the specified hold-up time, all the supply voltages should be shut down and left OFF for a time long enough to allow the internal board voltages to discharge sufficiently.

If the OFF time is not observed, parts of the board or attached peripherals may work incorrectly or even suffer a reduction of MTBF.

The minimum OFF time depends on the implemented PSU model and other electrical factors and needs to be measured individually for each case.

5.17. 8-pin ATX Power connector (J99)

Table 25: ATX Power connector with 8 pins

Pin	Signal
1	GND
2	GND
3	GND
4	GND
5	+12 V (V_WIDE_S0_MOD)
6	+12 V (V_WIDE_S0_MOD)
7	+12 V (V_WIDE_S0_MOD)
8	+12 V (V_WIDE_S0_MOD)

⚠ CAUTION

V_WIDE_S0_MOD = ATX +12V

J99 Pin 5..8 typically are the power supply for the module.

Some modules allow for V_WIDE_S0_MOD = 8.5V..20V other modules only allow 12V.

It is important to check what voltage the module requires before changing the voltage at J99.

NOTICE

Close to COM Express connector placed pinheader J102 can be used to sense "V_WIDE_MOD".

NOTICE

R29=0R and R593=0R R17=DNI → J99 supply module

R29=DNI and R593=DNI R17=0R → J5 supply module

Instead off R29 and R593, it's also possible to use high current jumper J6-J7 and J100-J101.

There is no high-current jumper for R17.

It is important to ensure that two voltages are not short-circuited, please refer to the wiring diagram.

5.18. RTC Battery holder (J20)

Figure 9: RTC Battery holder (J20)

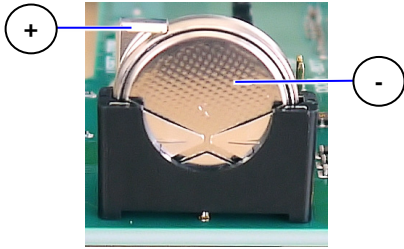


Table 26: RTC Battery holder (J20)

Pin	Signal Name
1, 2	V_3V0_BATT (V_BAT_1, V_BAT_2)
3	GND

5.19. SPI BIOS (J9, J19, J45, SW8)

SOIC8 Socket J45 for external BIOS Flash.

BIOS Emulator header J9 and J19 (for Dediprog EM100Pro).

Table 27: BIOS Flash Socket (J45)

Pin	Signal Name
1	SPI_CS#
2	SPI_MISO
3	SPI_WP#
4	GND
5	SPI_MOSI
6	SPI_CLK
7	SPI_HOLD#
8	SPI_VCC

Pin 1 of J45 is marked in chapter 4.1.

Table 28: BIOS Emulator Header (J9)

Pin	Signal	Pin	Signal
P1	SPI_CS#	P2	SPI_VCC
P3	SPI_MISO	P4	SPI_HOLD#
P5	SPI_WP#	P6	SPI_CLK
P7	GND	P8	SPI_MOSI

Pin 1 of J9 is marked on the PCB.

Table 29: BIOS Emulator Header (J19)

Pin	Signal	Pin	Signal
P1	NC	P2	NC
P3	SPI_CS#	P4	SPI_VCC
P5	SPI_MISO	P6	SPI_HOLD#
P7	SPI_WP#	P8	SPI_CLK
P8	GND	P10	SPI_MOSI

Dediprog EM100Pro original cable interface for BIOS Emulator

5.20. BIOS Jumpers (J35/H22, J36/H23, J37/H24)

Table 30: Features as SAFS together with eSPI

eSPI_EN# J37	BIOS_DIS1# J36	BIOS_DIS0# J35	Boot Bus	BBS	Chipset eSPI CS0# Destination	Chipset SPI CS1# Destination	Chipset SPI CS0# Destination	SPI Descriptor	Notes
1	0	0	SPI	0	-	Carrier	Module	Module	MAFS on Module LPC bus enabled
1	0	1	SPI	0	-	Module	Carrier	Carrier	MAFS on Carrier LPC bus enabled
1	1	0	-	0	-	-	-	-	Not used - was FWH
1	1	1	SPI	0	-	Module	Module	Module	MAFS on Module LPC bus enabled
0	0	0	SPI	0	-	Carrier	Module	Module	MAFS on Module eSPI bus enabled
0	0	1	SPI	0	-	Module	Carrier	Carrier	MAFS on Carrier eSPI bus enabled
0	1	0	eSPI	1	Module	-	-	Module	SAFS and BMC on Module eSPI bus enabled
0	1	1	eSPI	1	Carrier	-	-	Carrier	SAFS and BMC on Carrier eSPI bus enabled

5.21. LPC/eSPI Header (J29)

Table 31: LPC/eSPI Header (J29)

Pin	Signal	Pin	Signal
P1	V_CPLD_ESPI_LPC	P2	LPC_FRAME#_ESPI_CS0_R#
P3	LPC_AD0_ESPI_IO_0_R	P4	LPC_AD1_ESPI_IO_1_R
P5	LPC_AD2_ESPI_IO_2_R	P6	LPC_AD3_ESPI_IO_3_R
P7	LPC_DRQ0#_ESPI_ALERT0_R#	P8	LPC_DRQ1#_ESPI_ALERT1_R#
P9	LPC_CLK_ESPI_CLK_R	P10	SUS_STAT#_ESPI_RESET_R#
P11	LPC_SERIRQ_ESPI_CS1_R#	P12	GND
P13	ESPI_EN#	P14	CB_RESET#
P15	PWRBTN#	P16	SYS_RESET#
P17	SPARE1_NC	P18	SPARE2_NC
P19	V_3V3_S5	P20	GND

5.22. FPGA JTAG

Table 32: Altera Blaster

Pin	Signal	Pin	Signal
P1	JTAG_FPGA_TCK	P2	GND
P3	JTAG_FPGA_TDO	P4	3V3 S5 from Baseboard
P5	JTAG_FPGA_TMS	P6	N.C.
P7	N.C.	P8	N.C.
P9	JTAG_FPGA_TDI	P10	GND

5.23. FPGA UART / Debug UART

Postcodes with 8N1 115200. With default FPGA only TXD function is implemented.

Table 33: FPGA UART / Debug UART

Pin	Signal Name
1	N.C.
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	N.C.

6/Accessories

Table 34: General Accessories List

Product Number	Mounting	Description
38017-0000-00-5	COMe Mount KIT 5mm 1set	Mounting Kit for 1 module including screws for 5mm connectors
38017-0000-00-0	COMe Mount KIT 8mm 1set	Mounting Kit for 1 module including screws for 8mm connectors
Product Number	Cables	Description
96079-0000-00-0	KAB-HSP 200mm	Cable adapter to connect FAN to module (COMe basic/compact)
96079-0000-00-2	KAB-HSP 40mm	Cable adapter to connect FAN to module (COMe basic/compact)

7/Electrical Specification

7.1. Supply Voltage

one ATX Main Power 24pin



Power supply for the module: the ATX_12V P4 connector provides a wide range of input, depending on module specification

7.2. Power Supply Rise time

The input voltages shall rise from $\leq 10\%$ of nominal to within the regulation ranges within 0.1ms to 20ms.

There must be a smooth and continuous ramp of each DC input voltage from 10% to 90% of its final set-point following the ATX specification

NOTICE

If any of the supply voltages drops below the allowed operating level longer than the specified hold-up time, all the supply voltages should be shut down and left OFF for a time long enough to allow the internal board voltages to discharge sufficiently.
If the OFF time is not observed, parts of the board or attached peripherals may work incorrectly or even suffer a reduction of MTBF.
The minimum OFF time depends on the implemented PSU model and other electrical factors and needs to be measured individually for each case.



Laboratory power supply connector: V_5V0_S5_MOD Banana Jack J91 V_WIDE_S0_MOD (12V), Banana Jack J92, Ground Banana Jack J89.

7.3. Supply Voltage Ripple



Maximum 100 mV peak to peak: 0-20MHz

8/Features

8.1. Rapid Shutdown (SW3)

Kontron has implemented a rapid shutdown function. It works as follows:

1. An active-high shutdown signal to RAPID_SHUTDOWN (J16 Pin C67) is asserted by the COMe Eval Carrier2 T6 (ADT6) carrier through button switch SW3. The characteristics of the shutdown signal are as follows:
 - › Amplitude 5.0V +/- 5%
 - › Source impedance <= 50 ohms
 - › Rise time $\leq 1 \mu\text{s}$
 - › Duration $\geq 20 \mu\text{s}$

The assertion of this signal causes all power regulators to be disabled and the internal power supply rails to be discharged by crowbar circuits. The shutdown circuitry provides internal energy storage that maintains crowbar activation for at least 2 ms following the de-assertion of the shutdown signal.

2. Simultaneously with the leading edge of shutdown, the 12 V (main) input power to the module is removed and these input power pins are externally clamped to ground through a crowbar circuit located on the COM Express carrier board. This external clamping circuit must maintain a maximum resistance of approximately 1 ohm and be activated for a minimum of 2 ms.
3. Simultaneously with the leading edge of shutdown, the 5 V (standby) input power to the module is removed, if present. External clamping on these pins is not necessary (but recommended) because it is clamped through the module by the main 12 V rail.

NOTICE

Rapid Shutdown button is not placed on series product and can be added on customer request.

8.2. Wake Signals

Table 35: Wake Signals

COMe Signal	Description	Power Management Header (J57)	FPGA (U17)	PEG, PCIe0-7 (J25, J81-J88)
WAKE0#	PCI Express wake signal	Pin 5	B2	B11
WAKE1#	General purpose wake signal	Pin7	A2	-

8.3. LEDs and indicators

Indicators and LEDs indicate only presence of voltage on certain signal, but not necessarily a correct shape and level of the voltage. This is important especially for power supplies – power good signal would provide more accurate indication, but it is not possible to provide this for all signals (for example ATX power signals share one power good).

Table 36: LEDs

LED	Signal	Description
D39	V_5V0_S5_ATX	Power LED
D8	V_5V0_S5	
D7	V_3V3_S5	
D48	V_12V0_S0	
D50	V_5V0_S0	
D49	V_3V3_S0	
D10	PWR_OK#	
D11	PG_1V8_S5#	
D12	SUS_S3#	
D13	SUS_S4#	
D14	SUS_S5#	
D15	SUS_STAT#	
D18	TYPE1# (not used)	Type LED
D19	TYPE2# (not used)	
D20	TYPE3# (not used)	
D21	TYPE4# (not used)	
D22	TYPE Error#	
D23	TYPE6#	
D24	TYPE7#	
D16	WDT#	
D17	THRMTRIP#	
D44	USB_OC#	
D42	SATA_ACT#	
D40	CPLD1	For Debug usage, not implemented
D41	CPLD0	For Debug usage, not implemented

8.4. Jumper

For the Jumper positions, refer to chapter 4.1. “Dimensions and Jumper Positions”

Table 37: Jumper

Connector	1-2	2-3	Open
J104	Connect standby voltage with module (default)	-	-
J8	AT Mode (Always on)	ATX mode (default)	No PS_ON
J31	Connects ATX power good to COMe PWR_OK (default)		Disconnects COMe-PWR_OK pin. Module PG circuit is used only.
J103	Change SMB address of U12	-	(default)
J10	Connect 5V0_S5 with carrier (default)	-	Disconnect 5V0_S5 form carrier.
J18	Enable buzzer (default)	-	Disable buzzer
J11	Connect 3V0_BATT to module VCC_RTC (default)	Disconnect and Discharge VCC_RTC	Disconnect VCC_RTC
J93	4-pin Fan (default)	3-pin Fan adjustable	Measure FAN_PWM FAN off
J71	Connect SDIN0 to audio codec (default)	Connect SDIN1 to audio codec	Disconnect SDIN from audio codec
J37	Enable ESPI (not supported) (See chapter 5.20)	-	Enable Boot SPI (BIOS) (Default)
J76	PullUp TPM_PP	-	(default)
J77	USB0 Client	-	USB0 Host (default)
J80	USB supplied with 5V0_S0 in S0, 5V0_S5 in S5 (default)	USB supplied with V_5V0_S5 in S0 and S5	
J35	BIOS_DIS0# (See chapter 5.20)		(default)
J36	BIOS_DIS1# (See chapter 5.20)		Boot module SPI BIOS (default)
J24	Connect 3.3V to eDP connector (default)	Connect 5V to eDP connector	
J98	Enable PCIe Clk even if no PCIe card is plugged (default)		
J23	COMe PCIe REFCLK (PCIe common clock) (default)		Carrier board PCIe clock oscillator (PCIe independent clock)

Table 38: PCIe clock buffer mode selection

Connector	1-2	3-4	5-6
J28	PLL high bandwidth	PLL bypass (default)	PLL low bandwidth

8.5. Button Switches

Figure 10: Button Switches

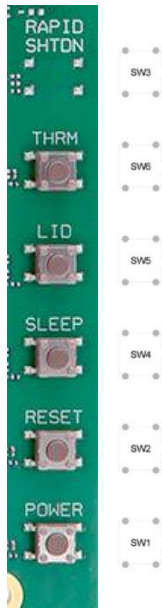
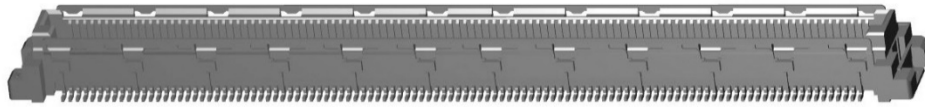


Table 39: Buttons

Button Switch	Function
SW1	Powerbutton
SW2	Sys_Reset
SW3	Rapid Shutdown (optional)
SW4	Sleep
SW5	LID
SW6	THRM#

9/COMe Connector Pin-out (J16, J61)

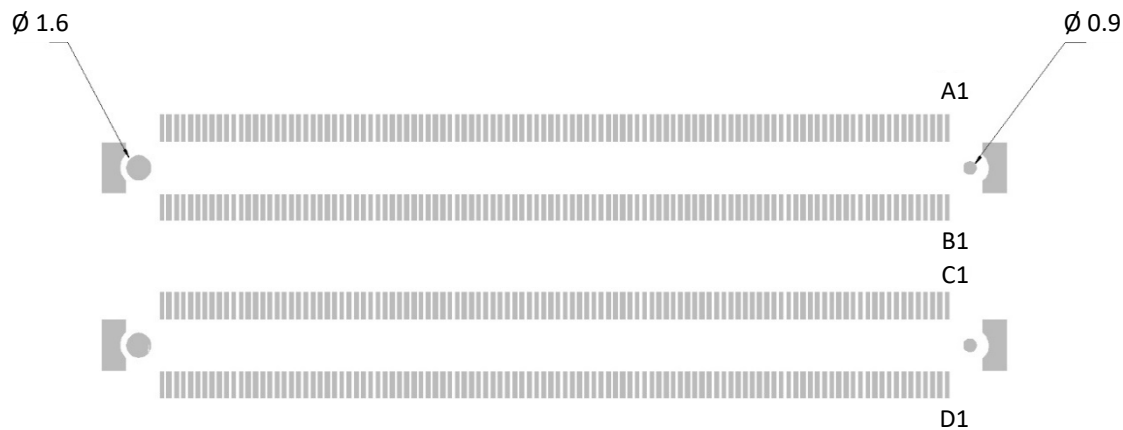
Figure 11: COMe Connector with 220 pins



This table lists the pins and signals according to the PICMG specification COM.0 Rev 3.1 Type 6 standard.

Figure 12: COMe Connector Pinout

(This shows the landings of the COMe connectors on the carrier board.)



NOTICE

To protect external power lines of peripheral devices, make sure that: the wires have the right diameter to withstand the maximum available current the enclosure of the peripheral device fulfills the fire-protection requirements of IEC/EN62368.

Table 40: Pin-out List

Pin	Row A	Row B	Row C	Row D
1	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
2	GBE0_MDI3-	GBE0_ACT#	GND	GND
3	GBE0_MDI3+	LPC_FRAME#/ESPI_CS0#	USB_SSRX0-	USB_SSTX0-
4	GBE0_LINK_MID#	LPC_AD0/ESPI_IO_0	USB_SSRX0+	USB_SSTX0+
5	GBE0_LINK_MAX#	LPC_AD1/ESPI_IO_1	GND	GND
6	GBE0_MDI2-	LPC_AD2/ESPI_IO_2	USB_SSRX1-	USB_SSTX1-
7	GBE0_MDI2+	LPC_AD3/ESPI_IO_3	USB_SSRX1+	USB_SSTX1+
8	GBE0_LINK#	LPC_DRQ0#/ESPI_ALERT0#	GND	GND
9	GBE0_MDI1-	LPC_DRQ1#/ESPI_ALERT1#	USB_SSRX2-	USB_SSTX2-
10	GBE0_MDI1+	LPC_CLK/ESPI_CK	USB_SSRX2+	USB_SSTX2+
11	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
12	GBE0_MDI0-	PWRBTN#	USB_SSRX3-	USB_SSTX3-

Pin	Row A	Row B	Row C	Row D
13	GBE0_MDI0+	SMB_CK	USB_SSRX3+	USB_SSTX3+
14	GBE0_CTREF	SMB_DAT	GND	GND
15	SUS_S3#	SMB_ALERT#	USB4_1_LSTX	DDI1_CTRLCLK_AUX+/ USB4_1_AUX+
16	SATA0_TX+	SATA1_TX+	USB4_1_LSRX	DDI1_CTRLDATA_AUX-/ USB4_1_AUX-
17	SATA0_TX-	SATA1_TX-	USB4_RT_ENA	USB4_PD_I2C_ALERT#
18	SUS_S4#	SUS_STAT#/ ESPI_RESET#	GND	PMCALERT#
19	SATA0_RX+	SATA1_RX+	PCIE_RX6+	PCIE_TX6+
20	SATA0_RX-	SATA1_RX-	PCIE_RX6-	PCIE_TX6-
21	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
22	SATA2_TX+	SATA3_TX+	PCIE_RX7+	PCIE_TX7+
23	SATA2_TX-	SATA3_TX-	PCIE_RX7-	PCIE_TX7-
24	SUS_S5#	PWR_OK	DDI1_HPD	GND
25	SATA2_RX+	SATA3_RX+	SML0_CLK	GND
26	SATA2_RX-	SATA3_RX-	SML0_DAT	DDI1_PAIR0+/ USB4_1_SSTX0+
27	BATLOW#	WDT	SML1_CLK	DDI1_PAIR0-/ USB4_1_SSTX0-
28	SATA_ACT#	HDA_SDIN2/ SNDW0_CLK	SML1_DAT	GND
29	HDA_SYNC	HDA_SDIN1/ SNDW0_DAT	USB4_PD_I2C_CLK	DDI1_PAIR1+/ USB4_1_SSRX0+
30	HDA_RST#	HDA_SDIN0	USB4_PD_I2C_DAT	DDI1_PAIR1-/ USB4_1_SSRX0-
31	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
32	HDA_BITCLK	SPKR	DDI2_CTRLCLK_AUX+/ USB4_2_AUX+	DDI1_PAIR2+/ USB4_1_SSTX1+
33	HDA_SDOUT	I2C_CK	DDI2_CTRLDATA_/ AUX-/USB4_2_AUX-	DDI1_PAIR2-/ USB4_1_SSTX1-
34	BIOS_DIS0#/ ESPI_SAFS	I2C_DAT	DDI2_DDC_AUX_SEL	DDI1_DDC_AUX_SEL
35	THRMTRIP#	THRM#	USB4_2_LSTX	USB4_2_LSRX
36	USB6-	USB7-	DDI3_CTRLCLK_AUX+	DDI1_PAIR3+/ USB4_1_SSRX1+
37	USB6+	USB7+	DDI3_CTRLDATA_/ AUX-	DDI1_PAIR3-/ USB4_1_SSRX1-
38	USB_6_7_OC#	USB_4_5_OC#	DDI3_DDC_AUX_SEL	GND
39	USB4-	USB5-	DDI3_PAIR0+	DDI2_PAIR0+/ USB4_2_SSTX0+
40	USB4+	USB5+	DDI3_PAIR0-	DDI2_PAIR0-/ USB4_2_SSTX0-
41	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
42	USB2-	USB3-	DDI3_PAIR1+	DDI2_PAIR1+/ USB4_2_SSRX0+

Pin	Row A	Row B	Row C	Row D
43	USB2+	USB3+	DDI3_PAIR1-	DDI2_PAIR1- /USB4_2_SSRX0-
44	USB_2_3_OC#	USB_0_1_OC#	DDI3_HPD	DDI2_HPD
45	USB0-	USB1-	GP_SPI_CS0#	GND
46	USB0+	USB1+	DDI3_PAIR2+	DDI2_PAIR2+ /USB4_2_SSTX1+
47	VCC_RTC	ESPI_EN#	DDI3_PAIR2-	DDI2_PAIR2- /USB4_2_SSTX1-
48	RSMRST_OUT#	USB0_HOST_PRSENT	RSVD	GND
49	GBE0_SDP	SYS_RESET#	DDI3_PAIR3+	DDI2_PAIR3+ /USB4_2_SSRX1+
50	LPC_SERIRQ/ ESPI_CS1#	CB_RESET#	DDI3_PAIR3-	DDI2_PAIR3- /USB4_2_SSRX1-
51	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
52	PCIE_TX5+	PCIE_RX5+	PEG_RX0+	PEG_TX0+
53	PCIE_TX5-	PCIE_RX5-	PEG_RX0-	PEG_TX0-
54	GPIO	GPO1	TYPE0#	PEG_LANE_RV#
55	PCIE_TX4+	PCIE_RX4+	PEG_RX1+	PEG_TX1+
56	PCIE_TX4-	PCIE_RX4-	PEG_RX1-	PEG_TX1-
57	GND	GPO2	TYPE1#	TYPE2#
58	PCIE_TX3+	PCIE_RX3+	PEG_RX2+	PEG_TX2+
59	PCIE_TX3-	PCIE_RX3-	PEG_RX2-	PEG_TX2-
60	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
61	PCIE_TX2+	PCIE_RX2+	PEG_RX3+	PEG_TX3+
62	PCIE_TX2-	PCIE_RX2-	PEG_RX3-	PEG_TX3-
63	GPI1	GPO3	GND	GND
64	PCIE_TX1+	PCIE_RX1+	GND	GND
65	PCIE_TX1-	PCIE_RX1-	PEG_RX4+	PEG_TX4+
66	GND	WAKE0#	PEG_RX4-	PEG_TX4-
67	GPI2	WAKE1#	RAPID_SHUTDOWN	GND
68	PCIE_TX0+	PCIE_RX0+	PEG_RX5+	PEG_TX5+
69	PCIE_TX0-	PCIE_RX0-	PEG_RX5-	PEG_TX5-
70	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
71	LVDS_A0+	LVDS_B0+	PEG_RX6+	PEG_TX6+
72	LVDS_A0-	LVDS_B0-	PEG_RX6-	PEG_TX6-
73	LVDS_A1+	LVDS_B1+	GND	GND
74	LVDS_A1-	LVDS_B1-	PEG_RX7+	PEG_TX7+
75	LVDS_A2+	LVDS_B2+	PEG_RX7-	PEG_TX7-
76	LVDS_A2-	LVDS_B2-	GND	GND
77	LVDS_VDD_EN	LVDS_B3+	GND	GND
78	LVDS_A3+	LVDS_B3-	PEG_RX8+	PEG_TX8+
79	LVDS_A3-	LVDS_BKLT_EN	PEG_RX8-	PEG_TX8-
80	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)

Pin	Row A	Row B	Row C	Row D
81	LVDS_A_CK+	LVDS_B_CK+	PEG_RX9+	PEG_TX9+
82	LVDS_A_CK-	LVDS_B_CK-	PEG_RX9-	PEG_TX9-
83	LVDS_I2C_CK	LVDS_BKLT_CTRL	GND	GND
84	LVDS_I2C_DAT	VCC_5V_SBY	GND	GND
85	GPIO3	VCC_5V_SBY	PEG_RX10+	PEG_TX10+
86	GP_SPI_MOSI	VCC_5V_SBY	PEG_RX10-	PEG_TX10-
87	eDP_HPD	VCC_5V_SBY	GND	GND
88	PCIE_CLK_REF+	BIOS_DIS1#	PEG_RX11+	PEG_TX11+
89	PCIE_CLK_REF-	VGA_RED	PEG_RX11-	PEG_TX11-
90	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
91	SPI_POWER	VGA_GRN	PEG_RX12+	PEG_TX12+
92	SPI_MISO	VGA_BLU	PEG_RX12-	PEG_TX12-
93	GPO0	VGA_HSYNC	GND	GND
94	SPI_CLK	VGA_VSYNC	PEG_RX13+	PEG_TX13+
95	SPI_MOSI	VGA_I2C_CK	PEG_RX13-	PEG_TX13-
96	TPM_PP	VGA_I2C_DAT	GND	GND
97	TYPE10#	SPI_CS#	GND	GND
98	SER0_TX	GP_SPI_MISO	PEG_RX14+	PEG_TX14+
99	SER0_RX	GP_SPI_CK	PEG_RX14-	PEG_TX14-
100	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
101	SER1_TX	FAN_PWMOUT	PEG_RX15+	PEG_TX15+
102	SER1_RX	FAN_TACHIN	PEG_RX15-	PEG_TX15-
103	LID#	SLEEP#	GND	GND
104	VCC_12V	VCC_12V	VCC_12V	VCC_12V
105	VCC_12V	VCC_12V	VCC_12V	VCC_12V
106	VCC_12V	VCC_12V	VCC_12V	VCC_12V
107	VCC_12V	VCC_12V	VCC_12V	VCC_12V
108	VCC_12V	VCC_12V	VCC_12V	VCC_12V
109	VCC_12V	VCC_12V	VCC_12V	VCC_12V
110	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)

10/ Technical Support

For technical support contact our Support Department:

- › E-mail: support@kontron.com
- › Phone: +49-821-4086-888

Make sure you have the following information available when you call:

- › Product ID Number (PN),
- › Serial Number (SN)



The serial number can be found on the Type Label, located on the product's rear panel.

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

10.1. Returning Defective Merchandise

All equipment returned to Kontron must have a Return of Material Authorization (RMA) number assigned exclusively by Kontron. Kontron cannot be held responsible for any loss or damage caused to the equipment received without an RMA number. The buyer accepts responsibility for all freight charges for the return of goods to Kontron's designated facility. Kontron will pay the return freight charges back to the buyer's location in the event that the equipment is repaired or replaced within the stipulated warranty period. Follow these steps before returning any product to Kontron.

1. Visit the RMA Information website: <https://www.kontron.com/en/support/rma-information>
2. Download the RMA Request sheet for Kontron Europe GmbH and fill out the form. Take care to include a short detailed description of the observed problem or failure and to include the product identification Information (Name of product, Product number and Serial number). If a delivery includes more than one product, fill out the above information in the RMA Request form for each product. Send the completed RMA-Request form to the fax or email address given below at Kontron Europe GmbH. Kontron will provide an RMA-Number.
3. Kontron Europe GmbH
RMA Support
Phone: +49 (0) 821 4086-0
Fax: +49 (0) 821 4086 111
Email: service@kontron.com
4. The goods for repair must be packed properly for shipping, considering shock and ESD protection.



Goods returned to Kontron Europe GmbH in non-proper packaging will be considered as customer caused faults and cannot be accepted as warranty repairs.

5. Include the RMA-Number with the shipping paperwork and send the product to the delivery address provided in the RMA form or received from Kontron RMA Support.

11/ Storage and Transportation

11.1. Storage

If the product is not in use for an extended period time, disconnect the power plug from the power supply. If it is necessary to store the product then re-pack the product as originally delivered to avoid damage. The storage facility must meet the products environmental storage requirements as stated within this user guide. Kontron recommends keeping the original packaging material for future storage or warranty shipments.

11.2. Transportation

To ship the product use the original packaging, designed to withstand impact and adequately protect the product. When packing or unpacking products always take shock and ESD protection into consideration and use an EOS/ESD safe working area.

12/ Warranty

Due to their limited service life, parts that by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law. This applies to the lithium battery, for example.



If there is a protection label on your product, then the warranty is lost if the product is opened.

Appendix: List of Acronyms

ACPI	Advanced Configuration & Power Interface
BMC	Base Management Controller
COMe	COM Express® - Computer on Module Express
EMC	ElectroMagnetic Compatibility
JIDA	JUMPTec Intelligent Device Architecture. Standard. JIDA is essentially an EEPROM, a data structure for the EEPROM, and a software definition.
ME	Management Engine
NC-SI	Network controller sideband interface
PCIe	PCI-Express
PICMG	PCI Industrial Computer Manufacturers Group
POR	Power-On Reset
PSU	Power Supply Unit
RTC	Real Time Clock
S0	ACPI OS System State 0. Indicates fully on operating state.
S3	ACPI OS System State 3. Indicates Suspend to RAM.
S5	ACPI OS System State 5. Indicates Soft Off operating state.
SIO	Super I/O
SSD	Solid-State Drive
SMB	System Management Bus.
SMBIOS	System Management BIOS
SMI	System Management Interrupt
SPD	Serial Presence Detect: A standardized way to automatically access information about a computer memory module.
WEEE	Waste Electrical and Electronic Equipment



About Kontron

Kontron is a global leader in IoT/Embedded Computing Technology (ECT) and offers individual solutions in the areas of Internet of Things (IoT) and Industry 4.0 through a combined portfolio of hardware, software and services. With its standard and customized products based on highly reliable state-of-the-art technologies, Kontron provides secure and innovative applications for a wide variety of industries. As a result, customers benefit from accelerated time-to-market, lower total cost of ownership, extended product lifecycles and the best fully integrated applications.

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