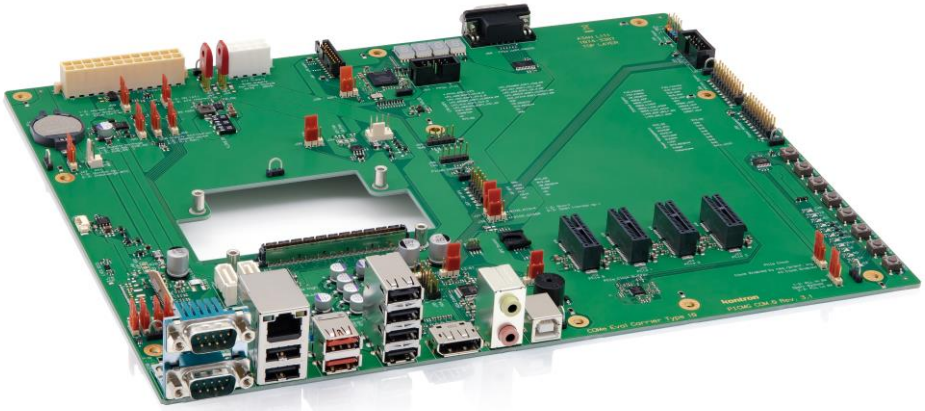
USER GUIDE



User Guide - COMe Eval Carrier G3 T10

Rev. 1.0

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User Guide - COMe Eval Carrier G3 T10

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This device and associated software are not designed, manufactured or intended for use or resale for the operation of nuclear facilities, the navigation, control or communication systems for aircraft or other transportation, air traffic control, life support or life sustaining applications, weapons systems, or any other application in a hazardous environment, or requiring fail-safe performance, or in which the failure of products could lead directly to death, personal injury, or severe physical or environmental damage (collectively, "high risk applications").

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NOTICE	You find the most recent version of the "General Safety Instructions" online in the download area of this product on our JUMPtec website.

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 JUMPtec Support.

Revision History

Revision	Brief Description of Changes	Date of Issue	Author
1.0	Release version	2025-1218	IH

Terms and Conditions

JUMPtec warrants products in accordance with defined regional warranty periods. For more information about warranty compliance and conformity, and the warranty period in your region, visit https://www.jumptec.com/en/terms-and-conditions.
JUMPtec sells products worldwide and declares regional General Terms & Conditions of Sale, and Purchase Order Terms & Conditions. Visit https://www.jumptec.com/en/terms-and-conditions.
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Customer Support

Find JUMPtec contacts by visiting https://www.jumptec.com/en/service-support.

Customer Service

As a trusted technology innovator and global solutions provider, JUMPtec extends its embedded market strengths into a services portfolio allowing companies to break the barriers of traditional product lifecycles. Proven product expertise coupled with collaborative and highly-experienced support enables JUMPtec to provide exceptional peace of mind to build and maintain successful products.
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If you have any difficulties using this user guide, discover an error, or just want to provide some feedback, contact JUMPtec Support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Symbols

The following symbols may be used in this user guide

⚠DANGER	**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
NOTICE	**NOTICE** indicates a property damage message.
⚠CAUTION	**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 JUMPtec 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 JUMPtec 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 JUMPtec 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.

⚠CAUTION	Ensure that the battery temperature does not exceed 85 °C. The cooling concept must guarantee that the ambient temperature at the battery does not exceed 84 °C. If the ambient temperature exceeds 84°C, operation with a battery is not permitted and the battery must be removed.

General Instructions on Usage

In order to maintain JUMPtec'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 JUMPtec and described in this user guide or received from JUMPtec 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

JUMPtec 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 JUMPtec's quality and environmental responsibilities, visit https://www.jumptec.com/en/about-jumptec/quality.

Disposal and Recycling

JUMPtec'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 JUMPtec.
JUMPtec follows the WEEE directive
You are encouraged to return our products for proper disposal.

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1/General Safety Instructions

Please read this passage carefully and take careful note of the instructions, which have been compiled for your safety and to ensure to apply in accordance with intended regulations. If the following general safety instructions are not observed, it could lead to injuries to the operator and/or damage of the product; in cases of non-observance of the instructions JUMPtec is exempt from accident liability, this also applies during the warranty period.

The product has been built and tested according to the basic safety requirements for low voltage (LVD) applications and has left the manufacturer in safety-related, flawless condition. To maintain this condition and to also ensure safe operation, the operator must not only observe the correct operating conditions for the product but also the following general safety instructions:

- The product must be used as specified in the product documentation, in which the instructions for safety for the product and for the operator are described. These contain guidelines for setting up, installation and assembly, maintenance, transport or storage.
- The on-site electrical installation must meet the requirements of the country's specific local regulations.
- If a power cable comes with the product, only this cable should be used. Do not use an extension cable to connect the product.
- To guarantee that sufficient air circulation is available to cool the product, please ensure that the ventilation openings are not covered or blocked. If a filter mat is provided, this should be cleaned regularly. Do not place the product close to heat sources or damp places. Make sure the product is well ventilated.
- Only connect the product to an external power supply providing the voltage type (AC or DC) and the input power (max. current) specified on the JUMPtec Product Label and meeting the requirements of the Limited Power Source (LPS) and Power Source (PS2) of UL/IEC 62368-1 .
- Only products or parts that meet the requirements for Power Source (PS1) of UL/IEC 62368-1 may be connected to the product’s available interfaces (I/O).
- Before opening the product, make sure that the product is disconnected from the mains.
- Switching off the product by its power button does not disconnect it from the mains. Complete disconnection is only possible if the power cable is removed from the wall plug or from the product. Ensure that there is free and easy access to enable disconnection.
- The product may only be opened for the insertion or removal of add-on cards (depending on the configuration of the product). This may only be carried out by qualified operators.
- If extensions are being carried out, the following must be observed:
- all effective legal regulations and all technical data are adhered to
- the power consumption of any add-on card does not exceed the specified limitations
- the current consumption of the product does not exceed the value stated on the product label

- Only original accessories that have been approved by JUMPtec can be used.
- Please note: safe operation is no longer possible when any of the following applies:
- the product has visible damages or
- the product is no longer functioning
  In this case the product must be switched off and it must be ensured that the product can no longer be operated.

- Handling and operation of the product is permitted only for trained personnel within a work place that is access controlled.
- CAUTION: Risk of explosion if the lithium battery is replaced incorrectly (short-circuited, reverse-poled, wrong lithium battery type). Dispose of used lithium batteries according to the manufacturer’s instructions.
- This product is not suitable for use in locations where children are likely to be present

Additional Safety Instructions for DC Power Supply Circuits

- To guarantee safe operation, please observe that:
- the external DC power supply must meet the criteria for LPS and PS2 (UL/IEC 62368-1)
- no cables or parts without insulation in electrical circuits with dangerous voltage or power should be touched directly or indirectly
- a reliable functional earth connection is provided
- a suitable, easily accessible disconnecting device is used in the application (e.g. overcurrent protective device), if the product itself is not disconnect able
- a disconnect device, if provided in or as part of the product, shall disconnect both poles simultaneously
- interconnecting power circuits of different products cause no electrical hazards

- A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN62368-1 or VDE0100 or EN60204 or UL61010-1 regulations.

For the General Safety Instruction in German or French, visit JUMPtec's product web page> Downloads> Manuals> General Safety Instructions.

1.1. Electrostatic Discharge (ESD)

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

ESD Sensitive Device!
Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace. Always be properly grounded when touching a sensitive board, component, or assembly.

For more Information, see the Special Handling and Unpacking Instruction within this user guide and the following Chapter Grounding Methods.

1.2. Grounding Methods

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

- Cover workstations with approved antistatic material. Always wear a wrist strap connected to the workplace, as well as properly grounded tools and equipment.
- Use antistatic mats, heel straps, or air ionizers for more protection.
- Always handle electrostatically sensitive components by their edge or by their casing.
- Avoid contact with pins, leads, or circuitry.
- Switch off power and input signals before inserting and removing connectors or connecting test equipment.
- Keep the work area free of non-conductive materials such as ordinary plastic assembly aids and styrofoam.
- Use field service tools such as cutters, screwdrivers, and vacuum cleaners that are conductive.
- Always place drives and boards with the PCB-assembly-side down on the foam.

1.3. Instructions for Lithium Battery

If the product is equipped with a lithium battery, there is a risk of explosion if the lithium battery is replaced incorrectly (short-circuited, reverse-poled, wrong lithium battery type). Dispose of used batteries according to the manufacturer's instructions.

⚠CAUTION	Risk of Explosion if the lithium battery is replaced by an incorrect Type. Dispose of used batteries according to the instructions.

⚠CAUTION	Ensure that the battery temperature does not exceed 85 °C. The cooling concept must guarantee that the ambient temperature at the battery does not exceed 84 °C. If the ambient temperature exceeds 84°C, operation with a battery is not permitted and the battery must be removed.

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

2/Introduction

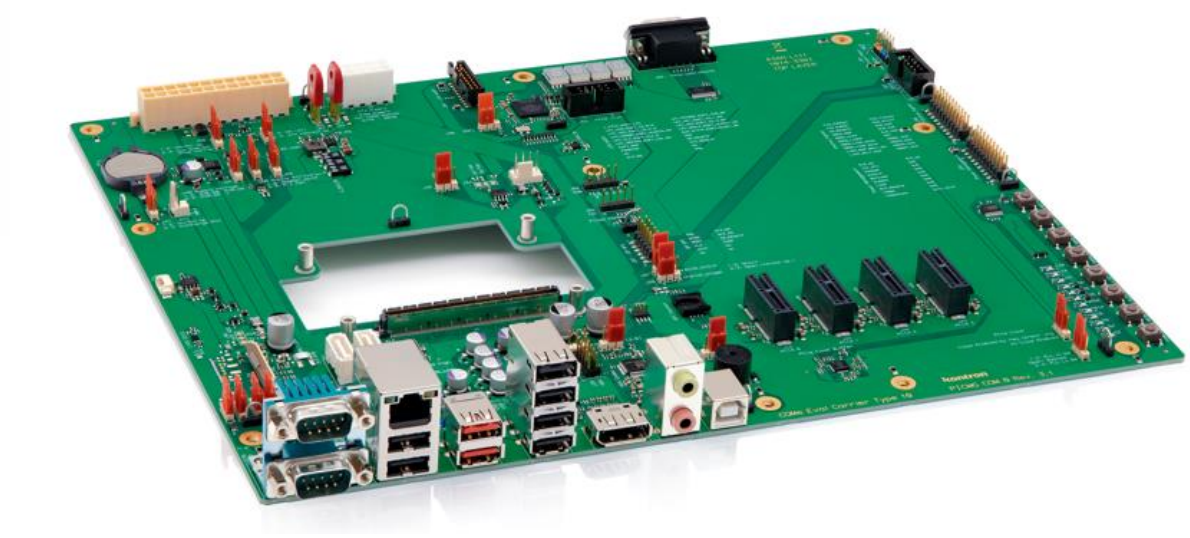
2.1. Product Description

The COMe Evaluation Carrier T10 G3 A3AN is an evaluation backplane for COM Express® Computer-on-Modules following the PICMG COM.0 Rev. 3.1 with pin-out Type 10 (COM® Express mini)
It is designed to allow embedded application developers to get up and running quickly COM Express® mini platforms, giving them a head start on the total system design. Simply select a COM Express® mini CPU module, then Plug & Go.

The key features are:

- COM Express® Rev. 3.1, Pin-out Type 10 backwards compatible
- ATX Form Factor (305mm x 244mm)
- 4x PCIe x1, 1x GbE
- 2x USB 3.1, 6x USB 2.0, (alternatively 1x USB Client)
- 1x DisplayPort, 1x LVDS (alternatively eDP)
- Full support for Type 10 featureset

Figure 1: COMe Eval Carrier T10 Gen3



3/Product Specification

3.1. Feature Summary

The table below summarizes the features of the evaluation carrier.

Table 1: Feature List

COMe Evaluation Carrier T10	
Specification	PICMG COM.0 R3.1 backwards compatible
Form factor	Evaluation Carrier with 244.0 mm x 305.0 mm (ATX)
Memory	
EEPROM	PICMG EEPROM
Front/Rear I/O	
LAN	1x 1/2.5Gbit-Ethernet port
USB	2x USB 3.2/2.0, front panel 6x USB 2.0 (alternatively 1x USB Client of USB 2.0 #0 or #7), front panel
DisplayPort	1x DP
COM 0/1	2x DSUB-9
COM from FPGA	1x DSUB-9
Onboard I/O	
LVDS	1x LVDS, (alternatively 1x eDP)
PCIe	4x PCIe x1 onboard connectors
SATA	2x SATA onboard connectors
CAN	1x CAN (optionally instead of UART1)
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/3-pin fan connector, Voltage can be 5 V or 12 V (default 4-pin)
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

⚠CAUTION

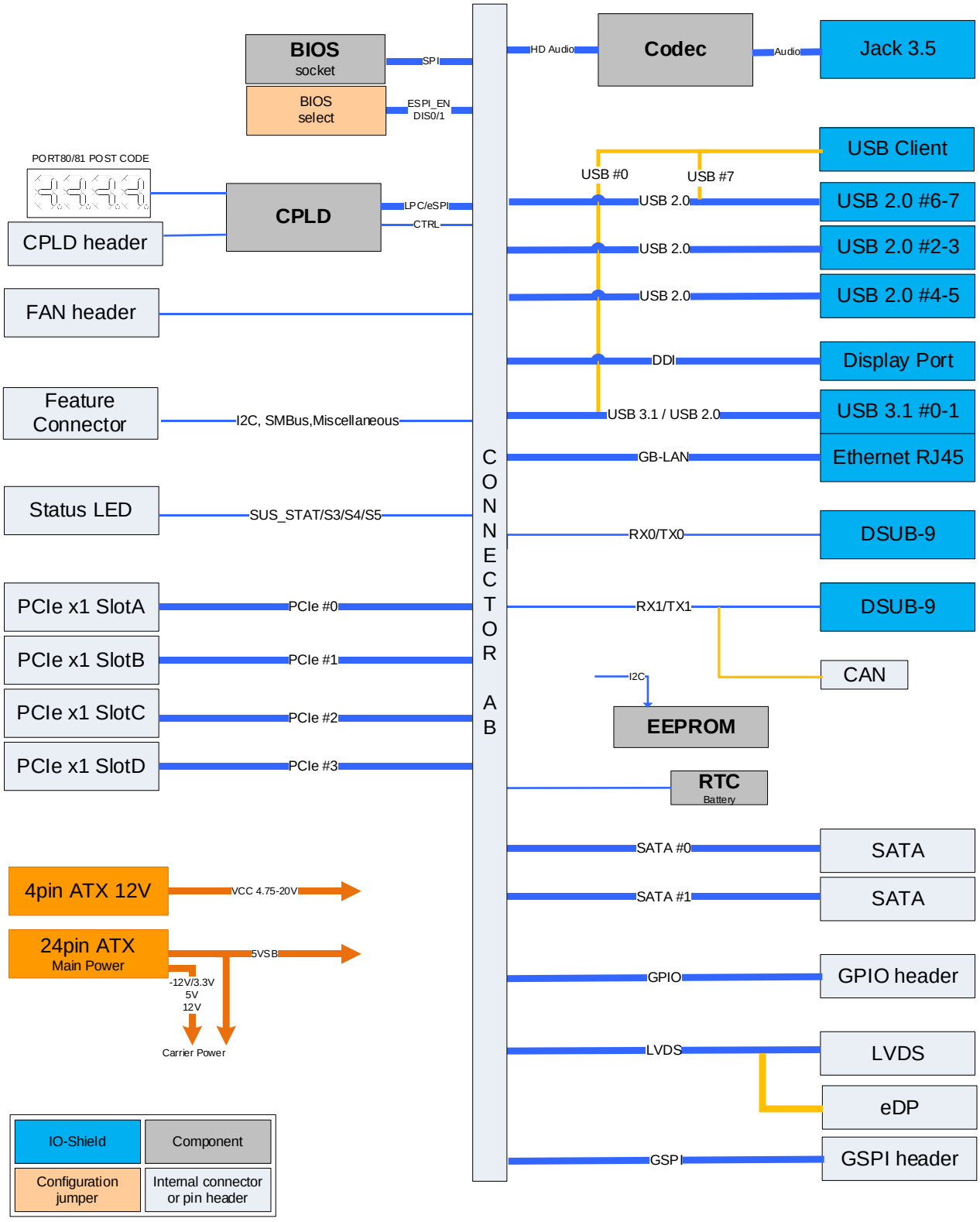
Danger of explosion if the lithium battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer
Dispose of used batteries according to the manufacturer's instructions

⚠CAUTION

To avoid the risk of damaged components, use only type 10 compliant COMe modules.

3.2. Block diagram

Figure 2: Block Diagram COMe Eval Carrier T10



3.3. Product Variants

Table 2: Product Variant

Product Number	Description
34101-0000-00-3	COMe Evaluation Carrier for Type 10 - connector height: 8 mm

3.4. Environmental Conditions

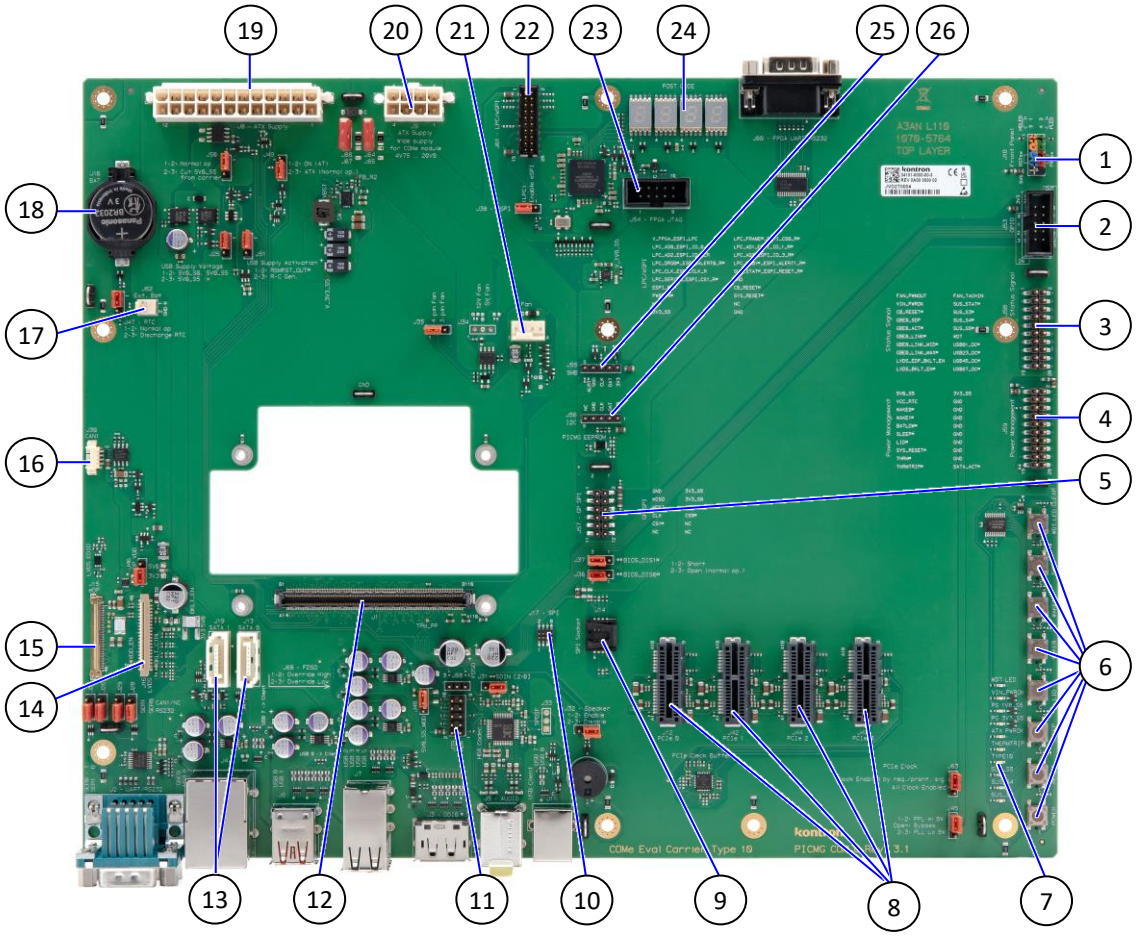
Table 3: Environmental Conditions

Operating	-40°C to +85°C Some connectors and Codecs have 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

4/Mainboard Views

4.1. Top View

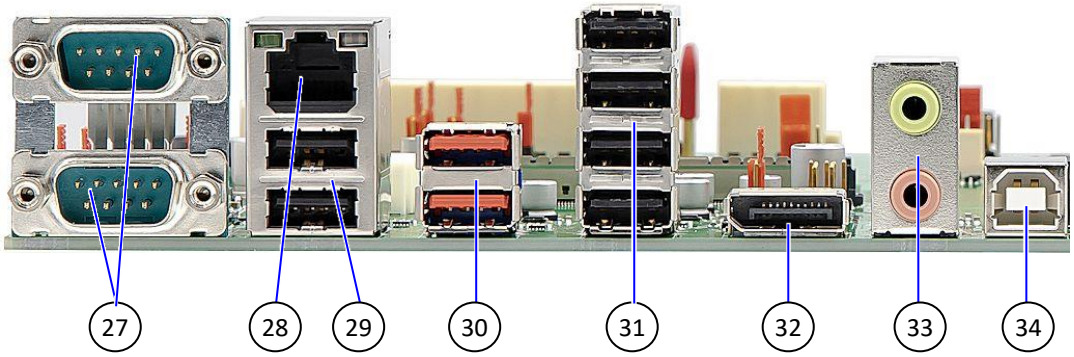
Figure 3: Top View of COMe Eval Carrier T10 G3



1. Front Panel Header (J18)
2. GPIO Header (J53)
3. Status Signal Header (J58)
4. Power Management Header (J59)
5. GP SPI Header (J57)
6. Button Switches
7. Status LEDs
8. 4x PCI x1 (J12/J42/J44/J43)
9. SPI BIOS Flash Socket (J14)
10. SPI Flash Enumerator Header (J17)
11. HDA Header (J39)
12. COMe Connector (J1)
13. 2x SATA (J13, J19)
14. LVDS Connector (J16) ***or***
15. eDP Connector (J15) ***alternatively***
16. CAN1 Optional Connector (J30)
17. Ext. Battery Connector (J62)
18. Battery (J10)
19. 24-pin ATX Power Connector (J8)
20. 8-pin ATX Power Connector (J9)
21. Fan Connector (J40)
22. LPC/eSPI Header (J61)
23. FPGA JTAG (J54)
24. POST Code Display
25. SMB Header (J55)
26. I2C Header (J56)

4.2. Front View

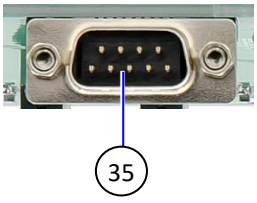
Figure 4: Front View



27. 2x COM Ports (J2)
28. 1x RJ45 NBase Ethernet Connector (J4)
29. 2x USB 2.0 (J4)
30. 2x USB 3.1 (J6)
31. 4x USB 2.0 (J7)
32. 1x DP 1.4 (J3)
33. HD Audio Connector (J5)
34. USB Client Connector1 (J60)

4.3. Rear View

Figure 5: Rear View



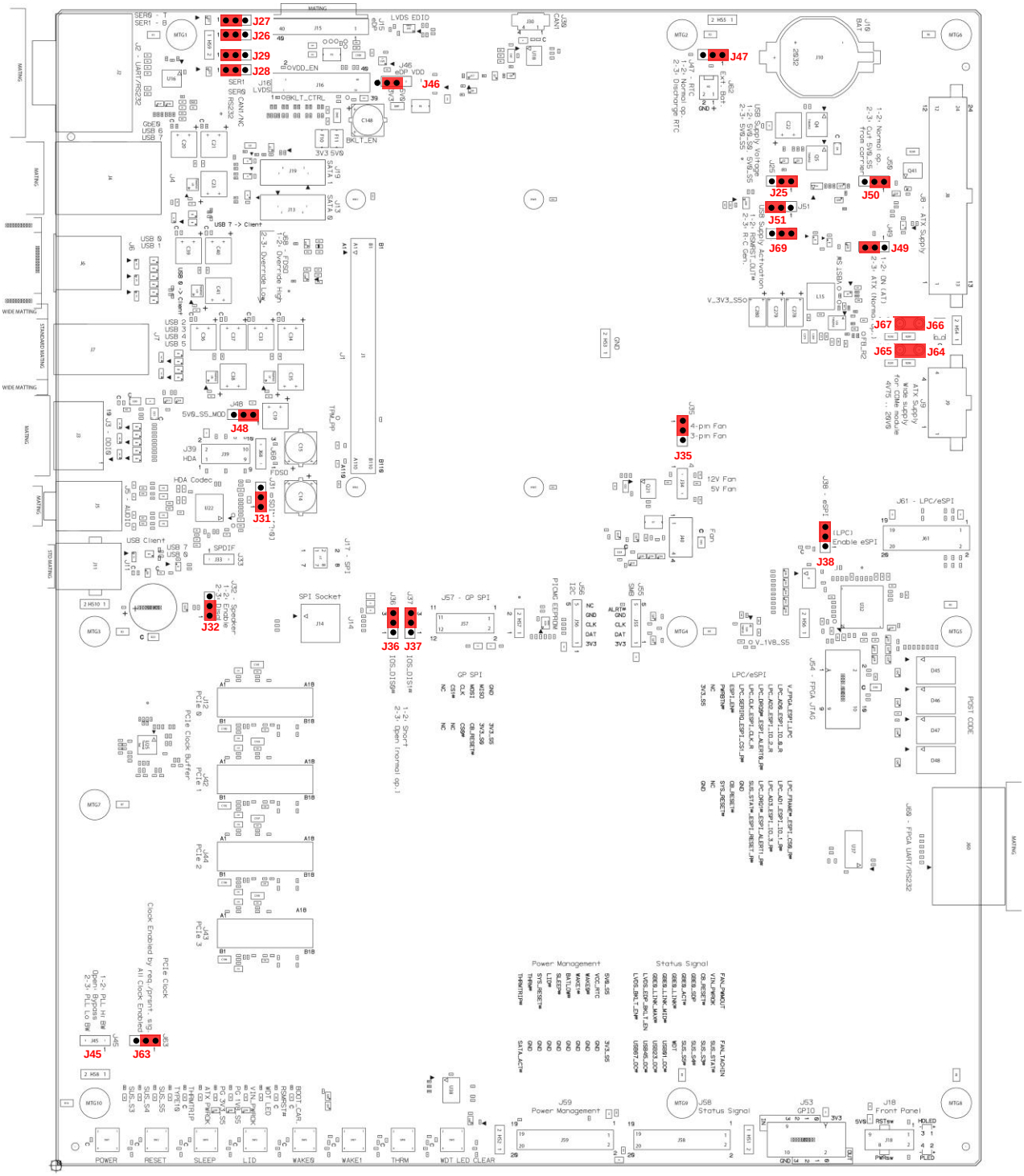
35. 1x COM Port (J60)

5/Mechanical Specification

5.1. Dimensions and Jumper Positions

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

Figure 6: Default Jumper Positions



6/Interfaces and Connectors

6.1. Front Panel Header (J18)

Figure 7: Front Panel Connector (J18)

Table 4: Front Panel Header (J18)

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

6.2. GPIO (General Purpose Input and Output) (J53)

The A3AN carrier board provides a General Purpose Input/Output (GPIO) header (J53). This header allows developers to access module-driven GPIO signals directly on the carrier.

Figure 8: GPIO Header (J53)

Table 5: GPIO (J53)

Pin	Signal	Pin	Signal
P1	V_3V3_S0_GPIO	P2	GPIO_GPO0
P3	GPIO_GPI0	P4	GPIO_GPO1
P5	GPIO_GPI1	P6	GPIO_GPO2
P7	GPIO_GPI2	P8	GPIO_GPO3
P9	GPIO_GPI3	P10	GND

6.3. Status Signal Header (J58)

This 2.54 mm pitch pin header provides access to various signals routed to and from the COM Express module.

Figure 9: Status Signal Header (J58)

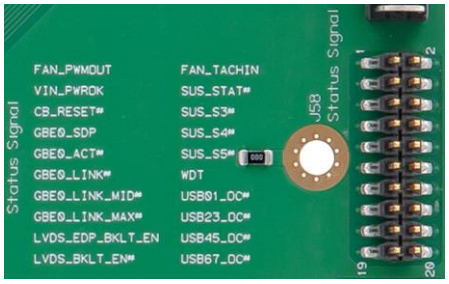


Table 6: Status Signal Header (J58)

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	GBE0_SDP	P8	SUS_S4#
P9	GBE0_ACT#	P10	SUS_S5#
P11	GBE0_LINK#	P12	WDT
P13	GBE0_LINK_MID#	P14	USB_01_OC#
P15	GBE0_LINK_MAX#	P16	USB_23_OC#
P17	LVDS_EDP_BKLT_EN	P18	USB_45_OC#
P19	LVDS_BKLT_EN#	P20	USB_67_OC#

6.4. Power Management Header (J59)

This 2.54 mm pitch pin header provides access to various signals routed to and from the COM Express module. For signals that are active-low inputs, the adjacent pin is connected to ground, allowing these signals to be easily triggered using a jumper or a push button.

Figure 10: Power Management Header (J59)

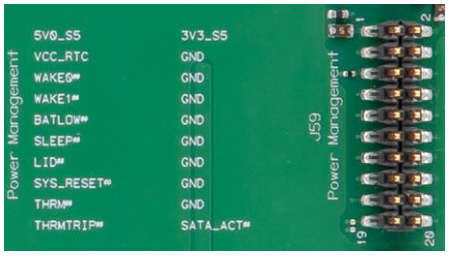


Table 7: Power Management Header (J59)

Pin	Signal	Pin	Signal
P1	V_5V0_S5_PM	P2	V_3V3_S5_PM
P3	V_VCC_RTC	P4	GND
P5	WAKE0 J#	P6	GND
P7	WAKE1#	P8	GND
P9	BATLOW#	P10	GND
P11	SLEEP#	P12	GND
P13	LID_EXT#	P14	GND

Pin	Signal	Pin	Signal
P15	SYS_RESET#	P16	GND
P17	THRM#	P18	GND
P19	THRMTRIP#	P20	SATA_ACT#

6.5. GP SPI Header (J57)

The A3AN carrier provides a general-purpose SPI interface for connecting external such as sensors, EEPROMs, or FPGA modules to communicate with the COMe module via the A3AN carrier board. The GP SPI is independent of the boot SPI used for BIOS. The interface is brought out on the GP SPI header and sources its signals directly from the COMe Type 10 module's GP_SPI pins. This allows quick prototyping and validation of SPI-based devices.

Figure 11: GP SPI Header (J57)

Table 8: GP SPI Header (J57)

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	GP_SPI_CS1#	P10	N.C.
P11	N.C.	P12	N.C.

6.6. PCIe Slots (J12, J42 – J44)

The A3AN carrier board is equipped with four PCIe CEM connectors, which are routed to the COMe connector as shown in the block diagram. The number of usable PCIe slots and the maximum supported PCIe generation depends on the feature set of the installed COM Express module. The carrier uses connectors rated for PCIe Gen4 operation. All PCIe connectors are implemented as open-end PCIe connectors, allowing the use of longer PCIe cards (e.g., x4 or x16) in slots that are electrically configured as PCIe x1.
However, when a longer card is installed in an x1 slot, the PCIe Clock Request signal (CLKREQ#) for that slot is not pulled low. To address this, jumper J63 provides an option to force all CLKREQ# signals to a low state.

Table 9: PCIe Slots

COMe Connector	Lane Width	PCIe Connector
PCIE0	x1	J12
PCIE1	x1	J42
PCIE2	x1	J44
PCIE3	x1	J43

The PCIe clock for the PCIe-CEM slots is derived from the COMe PCIe reference clock (PCIE_CLK_REF, CLK_100M_PCIE_REF) using a clock buffer (9DBL0452).
The clock behavior can be configured via jumper J63:
Position 1–2: Normal operation – each slot enables its clock based on its request/present signals.
Position 2–3: All slots have clocks enabled regardless of usage.

6.7. SPI Flash Socket (J14)

Figure 12: SPI Flash Socket (J14)

Table 10: SPI Flash Socket (J14)

Pin	Signal Name
1	SPI_CS#
2	SPI_MISO_R
3	SPI_WP#
4	GND
5	SPI_MOSI_R
6	SPI_CLK_R
7	SPI_HOLD#
8	SPI_VCC

6.8. SPI Flash Emulator Header (J17)

Figure 13: SPI Flash Emulator Header (J17)

Table 11: SPI Flash Socket (J17)

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

6.9. HDA Audio Header (J39)

HDA Audio Codec is U22 ALC888S.

Figure 14: HDA Audio Header (J39)

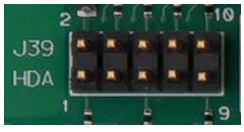


Table 12: HDA Header (J39)

Pin	Connector
1	HDA_BITCLK
2	V_5V0_S5
3	GND
4	HDA_SDIN1
5	HDA_SDIN0
6	HDA_SDIN2
7	GND
8	HDA_SYNC
9	HDA_SDOUT
10	HDA_RST#

6.10. SATA 6 GB (J13, J19)

The A3AN carrier board provides two SATA connectors (J13 and J19) for data transmission, supporting SATA0 and SATA1 differential pairs (TX± and RX±) routed directly from the COM Express Type 10 module. These connectors do not include integrated power delivery for storage devices; any connected HDD or SSD must be powered externally.

Figure 15: SATA 6 GB

Table 13: SATA 6 GB Connectors (J13, J19)

Pin	Signal Name – J13	Signal Name – J19
1	GND	GND
2	SATA0_TX+	SATA1_TX+
3	SATA0_TX-	SATA1_TX-
4	GND	GND
5	SATA0_RX-	SATA1_RX-
6	SATA0_RX+	SATA1_RX+
7	GND	GND

6.11. Display Port (J3)

The COMe DDI0 signals are implemented as DisplayPort with Dual-Mode (DisplayPort and TMDS) support.

Table 14: Display Port (J3)

Pin	Signal	Pin	Signal
1	DDI0_PAIR0_J+	13	DDI0_DDC_AUX_SEL_J
2	GND	14	DDI0_CONFIG2
3	DDI0_PAIR0_J-	15	DDI0_SCL_AUX_J+
4	DDI0_PAIR1_J+	16	GND
5	GND	17	DDI0_SCL_AUX_J-
6	DDI0_PAIR1_J-	18	DDI0_HPD_J

Pin	Signal	Pin	Signal
7	DDI0_PAIR2_J+	19	GND
8	GND	20	V_3V3_S0_DDI0
9	DDI0_PAIR2_J-	S1	GND
10	DDI0_PAIR3_J+	S2	GND
11	GND	23	GND
12	DDI0_PAIR3_J-	32	GND

6.12. LVDS Connector (J16)

Figure 16: LVDS Connector (J16)

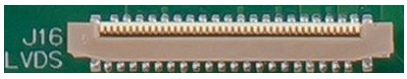


Table 15: LVDS Connector (J16)

Pin	Signal	Pin	Signal
1	LVDS_BKLT_CTRL	21	NC
2	LVDS_A0-	22	GND
3	LVDS_A0+	23	NC
4	LVDS_EDP_VDD_EN_R	24	NC
5	LVDS_A1-	25	GND
6	LVDS_A1+	26	NC
7	NC	27	NC
8	LVDS_A2-	28	GND
9	LVDS_A2+	29	NC
10	GND	30	NC
11	LVDS_A_CLK-	31	V_5V0_S0_LVDS_FI
12	LVDS_A_CLK+	32	V_5V0_S0_LVDS_FI
13	GND	33	V_5V0_S0_LVDS_FI
14	LVDS_A3_-	34	V_5V0_S0_LVDS_FI
15	LVDS_A3_+	35	LVDS_BKLT_EN#
16	LVDS_I2C_DAT	36	GND
17	NC	37	GND
18	NC	38	V_12V0_S0_LVDS
19	LVDS_I2C_CLK	39	V_12V0_S0_LVDS
20	NC	40	V_12V0_S0_LVDS
M1	NC	M3	NC
M2	NC	M4	NC

6.13. eDP Connector (J15)

Figure 17: eDP Connector (J15)

Table 16: eDP Connector (J15)

Pin	Signal	Pin	Signal
1	NC	21	V_3V3_5V0_S0_EDP_OUT_F
2	V_12V0_S0_EDP-LVDS	22	V_3V3_5V0_S0_EDP_OUT_F
3	V_12V0_S0_EDP-LVDS	23	V_3V3_5V0_S0_EDP_OUT_F
4	V_12V0_S0_EDP-LVDS	24	GND
5	V_12V0_S0_EDP-LVDS	25	EDP_AUX_-
6	EDP_TP6	26	EDP_AUX_+
7	EDP_TP7	27	GND
8	EDP_BKLT_CTRL-	28	EDP_TX0_+
9	LVDS_EDP_BKLT_EN	29	EDP_TX0_-
10	GND	30	GND
11	GND	31	EDP_TX1_+
12	GND	32	EDP_TX1_-
13	GND	33	GND
14	EDP_HPD	34	EDP_TX2_+
15	GND	35	EDP_TX2_-
16	GND	36	GND
17	GND	37	EDP_TX3_+
18	GND	38	EDP_TX3_-
19	EDP_SELFTEST	39	GND
20	V_3V3_5V0_S0_EDP_OUT_F	40	NC
S1	GND	S3	GND
S2	GND	S4	GND

6.14. CAN1 Connector (J30)

The SER1 line can be configured as either UART or CAN by adjusting jumpers J27 and J26 - see chapter 7.3 Jumpers
Position 2–3 on both jumpers: selects the CAN interface, available on the J30 CAN1 connector
Position 1–2 on both jumpers: Selects the UART interface, available on the bottom side of the J2 UART connector

Figure 18: CAN1 Connector (J30)

Table 17: CAN1 Connector (J30)

Pin	Signal Name
1	CAN1_L
2	CAN1_H
3	V_5V0_S0_S5_CAN1_R
4	GND

6.15. External Battery Connector (J62)

Figure 19: External Battery Connector (J62)

Table 18: External Battery Connector (J10)

Pin	Signal Name
1	V_VCC_RTC
2	GND

6.16. RTC Battery holder (J10)

Figure 20: RTC Battery holder (J10)

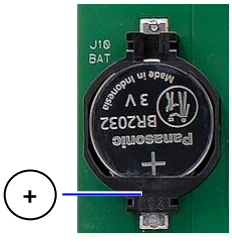


Table 19: RTC Battery holder (J10)

Pin	Signal Name
1	V_3V0_BATT (top side)
2	GND (bottom side)

6.17. 24-pin ATX Power connector (J8)

Figure 21: 6.16. 24-pin ATX Power connector (J8)

Table 20: ATX Power connector with 24 pins (J8)

Pin	Signal
1	3.3 V
2	3.3 V
3	GND
4	5 V
5	GND
6	5 V
7	GND
8	PWR_OK_ATX
9	5 VSB
10	12 V
11	12 V
12	3.3 V
13	3.3 V
14	N.C.
15	GND
16	PS_ON_ATX
17	GND
18	GND
19	GND
20	NC
21	5 V
22	5 V
23	5 V
24	GND

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.

6.18. 8-pin ATX Power connector (J9)

Figure 22: 8-pin ATX Power connector (J9)

Table 21: ATX Power connector with 8 pins (J9)

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

J9 Pin 5..8 typically are the power supply for the module.

Some modules allow for V_WIDE_S0_MOD = 4.75V..20V other modules only allow 12V.

It is important to check what voltage the module requires before changing the voltage at J9.

6.19. Fan Connector (J40) and Fan 3-Pin/4-Pin Jumper (J35)

The A3AN carrier provides a four-pin fan header (J40) for active cooling. It supports standard PWM fans and also allows the use of three-pin fans without a dedicated PWM input. When a four-pin fan is connected, speed control is achieved through the PWM signal FAN_PWMOUT from the COMe module, while FAN_TACHIN provides tachometer feedback.
Both signals are also routed to the Status Signal Header J58 for monitoring.

For three-pin fans, Jumper J35 must be set to position 2–3. In this mode, the fan voltage is modulated according to the PWM signal, enabling basic speed control even without a PWM input.
The fan header supplies +12 V in the current design.

Although there is an untested stuffing option for switching between 5 V and 12 V, this feature is not populated, so only 12 V fans are supported.
FAN_TACHIN is converted to an open-drain signal between the fan header and the COMe connector, requiring the module to provide the pull-up.

Figure 23: Fan Jumper (J35) and Fan Connector (J40)

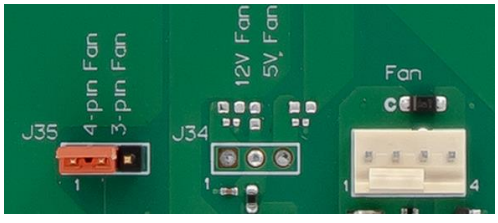


Table 22: Fan Connector with 4 pins (J40)

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

6.20. LPC/eSPI Header (J61)

The A3AN carrier board provides connectivity for Low Pin Count (LPC) signals as defined by the COM Express Type 10 specification and includes provisions for Enhanced SPI (eSPI) introduced in COM Express Revision 3.1. LPC remains the default implementation, while eSPI is offered as an optional mechanism for future compatibility.

On the A3AN carrier, LPC signals are routed to the LPC/eSPI header (J61) for debug and optional device connection. The header exposes standard LPC signals (LPC_FRAME#, LPC_AD[0:3], LPC_CLK, LPC_SERIRQ, LPC_DRQ[0:1]#) plus power and ground.

Figure 24: LPC/eSPI Header (J61)

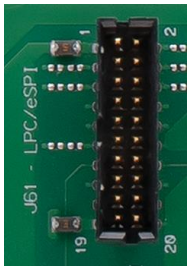


Table 23: LPC/eSPI Header (J61)

Pin	Signal	Pin	Signal
P1	V_FPGA_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

6.21. FPGA JTAG (J54)

Figure 25: FPGA JTAG Header (J54)

Table 24: FPGA JTAG (Altera Blaster, J54)

Pin	Signal	Pin	Signal
P1	JTAG_FPGA_TCK	P2	GND
P3	JTAG_FPGA_TDO	P4	3V3 S5 from Baseboard

Pin	Signal	Pin	Signal
P5	JTAG_FPGA_TMS	P6	N.C.
P7	N.C.	P8	N.C.
P9	JTAG_FPGA_TDI	P10	GND

6.22. I2C and SMBus (J56, J55)

The A3AN carrier board provides a SMBus header J55. SMBus signals originate from the COMe module and are routed to a header for optional use.
The I²C interface provides a two-wire serial communication channel for low-speed peripherals such as sensors or configuration EEPROMs. It is routed from the COMe module to an internal header and to an onboard EEPROM.
The onboard EEPROM U24 is connected to the I²C bus through series resistors R93 (SDA) and R94 (SCL):
Default address: 0xAE (write), 0xAF (read).

Figure 26: SMB Header (J55) and I2C Header (J56)

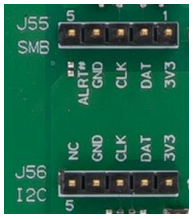


Table 25: I2C (J56)

	I2C Header J56	COMe connector
3V3	Pin 1	
I2C_DAT	Pin 2	B34
I2C_CLK	Pin 3	B33
GND	Pin 4	
N.C.	Pin 5	

Table 26: SMBus (J55)

	SMBus Header J55	COMe connector
3V3	Pin 1	
SMB_DAT	Pin 2	B14
SMB_CLK	Pin 3	B13
GND	Pin 4	
SMB_Alert#	Pin 5	B15

6.23. COM Ports (J2)

The A3AN carrier provides a DSUB-9 connector (J2) for two serial interfaces from the COMe module: SER0 and SER1. These signals are converted from 3.3 V TTL level to RS-232 voltage levels using a MAX3232 transceiver. The upper pins of J2 are assigned to SER0, the lower pins to SER1 when configured as UART.

Table 27: COM Ports (J2)

PIn	J2 Top	J2 Bottom
2	SER0_RX	SER1_RX
3	SER0_TX	SER2_TX
5	GND	GND
1, 4, 6-9	N.C.	N.C.

6.24. NBase-T Connector (J4)

With the COM.0 Rev. 3.1 update, the supported operational modes have been extended to optionally include 2.5 Gbps, 5 Gbps, and 10 Gbps Ethernet.
The selected connector is capable of supporting speeds up to 10 Gbps, however verification has been successfully completed up to 2.5 Gbps.

Table 28: NBase-T connector (J4)

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

GBE0 sideband signals (GBE0_LINK#, GBE0_LINK_MID#, GBE0_LINK_MAX#, GBE0_ACT#_GBE0_SDP) are routed to the Status Signal Header J58 for simple signal measurement and module verification.

Table 29: Signals

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

7/Features

7.1. Wake Signals

Table 30: Wake Signals

COMe Signal	Description	Power Management Header (J59)	PCIe slots 0-3
WAKE0# (B66)	PCI Express wake signal	Pin 5	B11
WAKE1# (B67)	General purpose wake signal	Pin7	-

7.2. 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).

Figure 27: LEDs

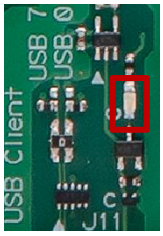


Table 31: LEDs

LED	Signal
D15	USB Client Present LED: Indicates that a USB host is connected to USB client connector
D61	BIOS_DIS1# LED: Indicates BIOS disable 1 strap status
D59	RSMRST_OUT# LED: Displays the resume-reset signal state
D50	WDT LED (Latched): Indicates watchdog timeout events
D41	VIN_PWROK#
D42	PG_1V8_S5 LED: Shows power-good status for the 1.8 V standby rail
D40	PG_3V3_S5 LED: Shows power-good status for the 3.3 V standby rail

LED	Signal
D15	USB Client Present LED: Indicates that a USB host is connected to USB client connector
D43	ATX_PWR_OK LED: Indicates that the ATX power supply reports valid outputs.
D62	THRMTRIP LED: Lights when a thermal trip event occurs
D44	TYPE10 Detection LED: Confirms detection of a COM Express Type 10 module
D30	SUS_S5 LED: Indicates the Soft-Off (S5) state
D27	SUS_S4 LED: Lights when the system is in Suspend-to-Disk (S4) state
D28	SUS_S3 LED: Lights when the system is in Suspend-to-RAM (S3) state

7.3. Jumper

For the Jumper positions, refer to chapter 5.1. “Dimensions and Jumper Positions”

Table 32: Jumper

Connector	1-2	2-3	Open
J25	USB supply: 5V0_S0 in S0, 5V0_S5 in S5 - **default**	V_5V0_S5 in S0 and S5	-
J26	SER1_RX_DRIVER - **default**	CAN1_RX	
J27	SER1_TX_DRIVER - **default**	CAN1_TX	
J28	SER0_RX_DRIVER - **default**	-	
J29	SER0_TX_DRIVER - **default**	-	
J31	HDA_SDIN0_Codec - **default**	HDA_SDIN1_Codec	
J32	SPKR - default	-	
J36	BIOS_DIS0#	default	
J37	BIOS_DIS1#	default	
J38	ESPI_EN#	default	
J35	V_FAN012V - 4-pin fan - **default**	V_FAN adjustable - 3-pin fan	
J45	PCIe Clock Buffer High: PLL Hi BW	Low: PLL Lo BW	Middle: Bypass - **default**
J46	Display Panel Voltage Selection 3.3V - **default**	5V	
J47	V_3V0_BATT_R - **default**	V_3V0_BATT_DISC	
J48	V_5V0_S5_MOD - **default**	-	
J49	AT Always ON	ATX - default	DNI: OFF
J50	Enable S5 carrier voltage, normal operation - **default**	-	Cut 5V0_S5 from carrier
J51	USB devices on the carrier that are to be active in S5/S3/S0 should not have their 5V supply applied before RSMRST_OUT# goes high	RSMRST_GEN# - **default**	
J63	Normal operation, each slot has clocks enabled by its requests/present signals - **default**	All slots have clocks enabled regardless they are used or not	
J69	-	PWROK_OD - **default**	

7.4. Button Switches

Figure 28: Button Switches

SW5

SW8

SW7

SW6

SW3

SW4

SW2

SW1

Table 33: Buttons

Button Switch	Function
SW1	PWRBTN# Used to initiate power-on or power-off events and ACPI sleep transitions.
SW2	SYS_RESET# Triggers a system reset of the COM Express module
SW3	LID# Simulates a lid switch input for ACPI-controlled sleep functionality.
SW4	SLEEP# Used to assert the sleep signal for system suspend operations.
SW5	CLEAR WDT LED Clears the latched watchdog LED indication.
SW6	WAKE0# Generates a wake event for PCIe devices
SW7	WAKE1# Generates a general-purpose wake event.
SW8	THRM# Asserts the thermal warning signal to the module.

8/Accessories

Table 34: General Accessories List

Product Number	Mounting	Description
34017-0000-00-0	COMe Mount KIT 5/8mm 1set	Mounting Kit for 1 module including screws for 5 and 8mm connectors
Product Number	**Cables**	**Description**
96079-0000-00-0	KAB-HSP 200mm	Cable adapter to connect FAN to module
96079-0000-00-2	KAB-HSP 40mm	Cable adapter to connect FAN to module

9/Electrical Specification

9.1. 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

9.2. Power Supply Rise time

- The input voltages shall rise from ≤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.

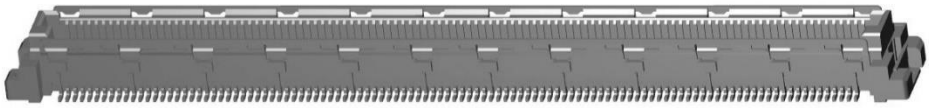
Laboratory power supply connector: V_5V0_S5_MOD Banana Jack J91 V_WIDE_S0_MOD (12V), Banana Jack J92, Ground Banana Jack J89.

9.3. Supply Voltage Ripple

Maximum 100 mV peak to peak: 0-20MHz

10/ COMe Connector Pin-out (J1)

Figure 29: 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 30: 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 35: Pin-out List

Pin	Row A	Row B
1	GND(FIXED)	GND(FIXED)
2	GBE0_MDI3-	GBE0_ACT#
3	GBE0_MDI3+	LPC_FRAME#/ESPI_CS0#
4	GBE0_LINK_MID#	LPC_AD0/ESPI_IO_0
5	GBE0_LINK_MAX#	LPC_AD1/ESPI_IO_1
6	GBE0_MDI2-	LPC_AD2/ESPI_IO_2
7	GBE0_MDI2+	LPC_AD3/ESPI_IO_3
8	GBE0_LINK#	LPC_DRQ0#/ESPI_ALERT0#
9	GBE0_MDI1-	LPC_DRQ1#/ESPI_ALERT1#
10	GBE0_MDI1+	LPC_CLK/ESPI_CK
11	GND(FIXED)	GND(FIXED)
12	GBE0_MDI0-	PWRBTN#
13	GBE0_MDI0+	SMB_CK
14	GBE0_CTREF	SMB_DAT
15	SUS_S3#	SMB_ALERT#
16	SATA0_TX+	SATA1_TX+
17	SATA0_TX-	SATA1_TX-
18	SUS_S4#	SUS_STAT#/ESPI_RESET#
19	SATA0_RX+	SATA1_RX+
20	SATA0_RX-	SATA1_RX-
21	GND(FIXED)	GND(FIXED)

Pin	Row A	Row B
22	USB_SSRX0-	USB_SSTX0-
23	USB_SSRX0+	USB_SSTX0+
24	SUS_S5#	PWR_OK
25	USB_SSRX1-	USB_SSTX1-
26	USB_SSRX1+	USB_SSTX1+
27	BATLOW#	WDT
28	(S)ATA_ACT#	HDA_SDIN2/SNDW0_CLK
29	HDA_SYNC	HDA_SDIN1/SNDW0_DAT
30	HDA_RST#	HDA_SDIN0
31	GND(FIXED)	GND(FIXED)
32	HDA_BITCLK	SPKR
33	HDA_SDOUT	I2C_CK
34	BIOS_DIS0#/ESPI_SAFS	I2C_DAT
35	THRMTRIP#	THRM#
36	USB6-	USB7-
37	USB6+	USB7+
38	USB_6_7_OC#	USB_4_5_OC#
39	USB4-	USB5-
40	USB4+	USB5+
41	GND(FIXED)	GND(FIXED)
42	USB2-	USB3-
43	USB2+	USB3+
44	USB_2_3_OC#	USB_0_1_OC#
45	USB0-	USB1-
46	USB0+	USB1+
47	VCC_RTC	ESPI_EN#
48	RSMRST_OUT#	USB0_HOST_PRSNT
49	GBE0_SDP	SYS_RESET#
50	LPC_SERIRQ/ESPI_CS1#	CB_RESET#
51	GND(FIXED)	GND(FIXED)
52	RSVD	RSVD
53	RSVD	RSVD
54	GPI0	GPO1
55	GP_SPI_CS0#	GP_SPI_MISO
56	GP_SPI_CK	GP_SPI_MOSI
57	GND	GPO2
58	PCIE_TX3+	PCIE_RX3+
59	PCIE_TX3-	PCIE_RX3-
60	GND(FIXED)	GND(FIXED)
61	PCIE_TX2+	PCIE_RX2+
62	PCIE_TX2-	PCIE_RX2-
63	GPI1	GPO3
64	PCIE_TX1+	PCIE_RX1+
65	PCIE_TX1-	PCIE_RX1-
66	GND	WAKE0#
67	GPI2	WAKE1#
68	PCIE_TX0+	PCIE_RX0+
69	PCIE_TX0-	PCIE_RX0-
70	GND(FIXED)	GND(FIXED)

Pin	Row A	Row B
71	LVDS_A0+	DDI0_PAIR0+
72	LVDS_A0-	DDI0_PAIR0-
73	LVDS_A1+	DDI0_PAIR1+
74	LVDS_A1-	DDI0_PAIR1-
75	LVDS_A2+	DDI0_PAIR2+
76	LVDS_A2-	DDI0_PAIR2-
77	LVDS_VDD_EN	N.C.(DDI0_PAIR4+)
78	LVDS_A3+	N.C.(DDI0_PAIR4-)
79	LVDS_A3-	LVDS_BKLT_EN
80	GND(FIXED)	GND(FIXED)
81	LVDS_A_CK+	DDI0_PAIR3+
82	LVDS_A_CK-	DDI0_PAIR3-
83	LVDS_I2C_CK	LVDS_BKLT_CTRL
84	LVDS_I2C_DAT	VCC_5V_SBY
85	GPI3	VCC_5V_SBY
86	RSVD	VCC_5V_SBY
87	eDP_HPD	VCC_5V_SBY
88	PCIE_CLK_REF+	BIOS_DIS1#
89	PCIE_CLK_REF-	DDI0_HPD
90	GND(FIXED)	GND(FIXED)
91	SPI_POWER	N.C.(DDI0_PAIR5+)
92	SPI_MISO	N.C.(DDI0_PAIR5-)
93	GPO0	N.C.(DDI0_PAIR6+)
94	SPI_CLK	N.C.(DDI0_PAIR6-)
95	SPI_MOSI	DDI0_DDC_AUX_SEL
96	TPM_PP	USB7_HOST_PRSNT
97	TYPE10#	SPI_CS#
98	SER0_TX	DDI0_CTRLCLK_AUX+
99	SER0_RX	DDI0_CTRLDATA_AUX-
100	GND(FIXED)	GND(FIXED)
101	SER1_TX	FAN_PWMOUT
102	SER1_RX	FAN_TACHIN
103	LID#	SLEEP#
104	VCC_12V	VCC_12V
105	VCC_12V	VCC_12V
106	VCC_12V	VCC_12V
107	VCC_12V	VCC_12V
108	VCC_12V	VCC_12V
109	VCC_12V	VCC_12V
110	GND(FIXED)	GND(FIXED)

11/ Technical Support

For technical support contact our Support Department:

- E-mail: techsupport@jumptec.com

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

- Product ID Number (P/N),
- Serial Number (SN) Module's revision
- Operating System and Kernel/Build version
- Software modifications
- Additional connected hardware/full description of hardware set up

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.

11.1. 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.

11.2. Returning Defective Merchandise

All equipment returned to JUMPtec must have a Return of Material Authorization (RMA) number assigned exclusively by JUMPtec. JUMPtec 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 JUMPtec's designated facility. JUMPtec 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 JUMPtec.

1. Visit the RMA Information website: https://www.jumptec.com/en/support/rma-information
2. **Download the RMA Request sheet for JUMPtec 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.
3. Send the completed RMA-Request form to the email address given at JUMPtec GmbH. JUMPtec will provide an RMA-Number.
4. The goods for repair must be packed properly for shipping, considering shock and ESD protection.

Goods returned to JUMPtec 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 JUMPtec RMA Support.

12/ Storage and Transportation

12.1. 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. JUMPtec recommends keeping the original packaging material for future storage or warranty shipments.

12.2. 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.

About JUMPtec

JUMPtec specializes its technical expertise in designing both - standard and highly customized compute products. Our newly optimized structure enables us to take customers from prototyping and design through to mass production faster than ever before.

JUMPtec serves a diverse range of markets, providing innovative solutions tailored to the unique needs of each industry. Find out more about our offering!

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