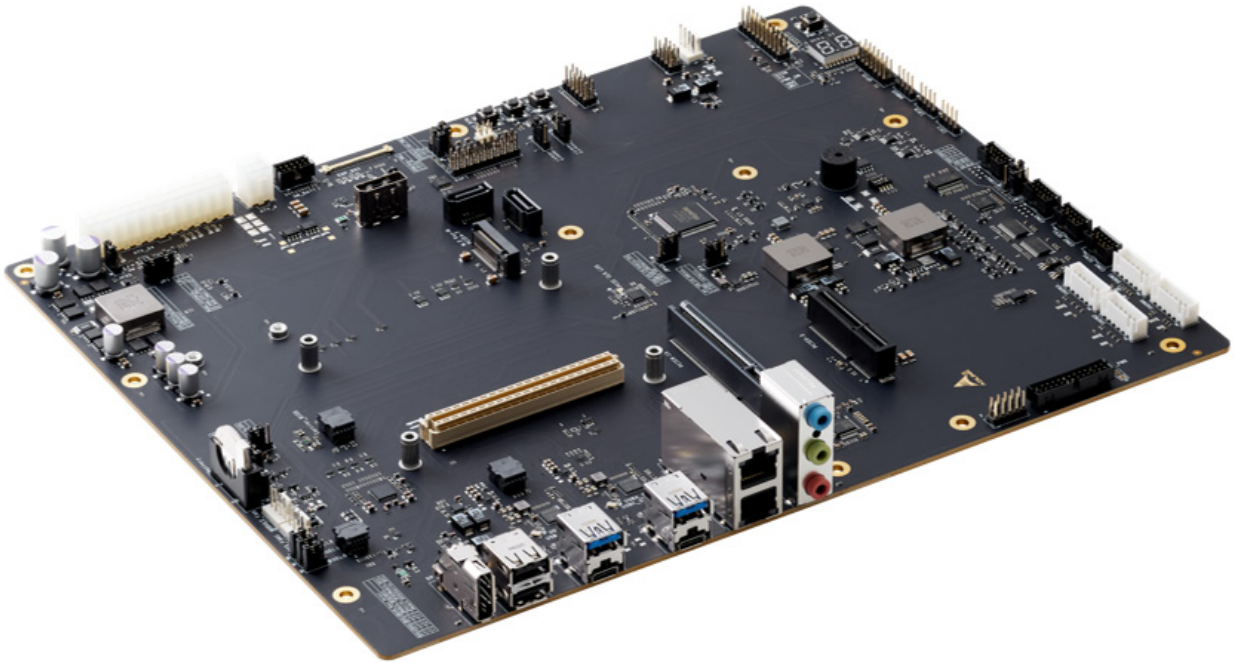
COM-HPC Mini Base-ATX | User's Guide



COM-HPC™

Revision:	0.3 Preliminary
Date:	2025-06-25
Part Number:	50M-77110-1000

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Revision History

Revision	Description	Date	Author
0.1	Preliminary release	2025-06-17	AL
0.2	Connectors and pinouts and power input connection updated	2025-06-23	AL
0.3	Power input connection updated	2025-06-25	AL

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Preface

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Safety Instructions

For user safety, please read and follow all Instructions, **WARNING**s, **CAUTION**s, and **NOTE**s marked in this manual and on the associated equipment before handling/operating the equipment.

Read these safety instructions carefully.

- Keep this manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- Turn off power and unplug any power cords/cables when installing/mounting or un-installing/removing equipment.
- To avoid electrical shock and/or damage to equipment:
- Keep equipment away from water or liquid sources;
- Keep equipment away from high heat or high humidity;
- Keep equipment properly ventilated (do not block or cover ventilation openings);
- Make sure to use recommended voltage and power source settings;
- Always install and operate equipment near an easily accessible electrical socket outlet;
- Secure the power cord (do not place any object on/over the power cord);
- Only install/attach and operate equipment on stable surfaces and/or recommended mountings;
- If the equipment will not be used for long periods of time, turn off the power source and unplug the equipment.

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Conventions

The following conventions may be used throughout this manual, denoting special levels of information

Note: This information adds clarity or specifics to text and illustrations.

Caution: This information indicates the possibility of minor physical injury, component damage, data loss, and/or program corruption.

Warning: This information warns of possible serious physical injury, component damage, data loss, and/or program corruption.

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1. Introduction

The COM-HPC modular approach, which combines a custom carrier with off-the-shelf system cores, relieves developers and manufacturers from the need to design their own system cores. This not only significantly accelerates their proof of concept but also empowers them to upgrade to later-generation processors without a complete redesign. The COM-HPC concept reduces engineering complexity, lowers the minimum project quantity threshold, and—most importantly—gets your product to market in no time. On average, designing a carrier board takes less than half the time of creating a full custom board.

The COM-HPC Mini Base-ATX, based on PICMG COM-HPC R1.2, is an ATX-sized carrier board intended for validation purposes. With power input via a 24+4 pin power connector (or a 4-pin connector, TBC), and support for a COM-HPC Mini Type module of your choice along with off-the-shelf add-on cards, you can quickly emulate the functionality of your target end product for software development and hardware verification.

To build a functional prototype of your target system, you will need:

- COM-HPC Mini Type module
- COM-HPC Mini Base-ATX carrier
- PCI Express-based storage or SATA storage (SATA storage solutions are dependent on module specifications)

The COM-HPC Mini Base-ATX is compatible with COM-HPC Mini Type modules and may accommodate:

- 1x PCI Express x8 slot, up to Gen5 (x4 or x8 configuration depends on module specifications)
- 1x PCI Express x4 slots and 1x M.2 M-key connector (supports up to 22110 M.2 M-key device)
- 1x DP ports, 1x eDP connector, and a 3-in-1 Audio port
- 2x USB4 Type-C, 2x USB3.x Type-A, 2x USB2.0 Type-A, and multiple USB headers for front panel use
- 2x Ethernet RJ45 connectors, up to 10GBASE-T (speed depends on module specifications)
- Headers for I2C, SMBus, GPIO, COM ports, and more

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2. Special Features

2.1. PCI Express x8 Gen5

FHFL PCI Express cards in the PCIE8-15 slot can support up to 2-slot-width PCI Express cards. The capability of PCI Express Gen5 and link configuration depend on the module specifications.

2.2. Two Ethernet RJ45

2x RJ45 connectors are capable of 10GbE speed, depending on the module specifications.

2.3. Two USB4 Type-C

2x USB4 Type-C connectors support up to USB3.x and DP alternative mode, depending on the module specifications.

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3. Component Location Layout

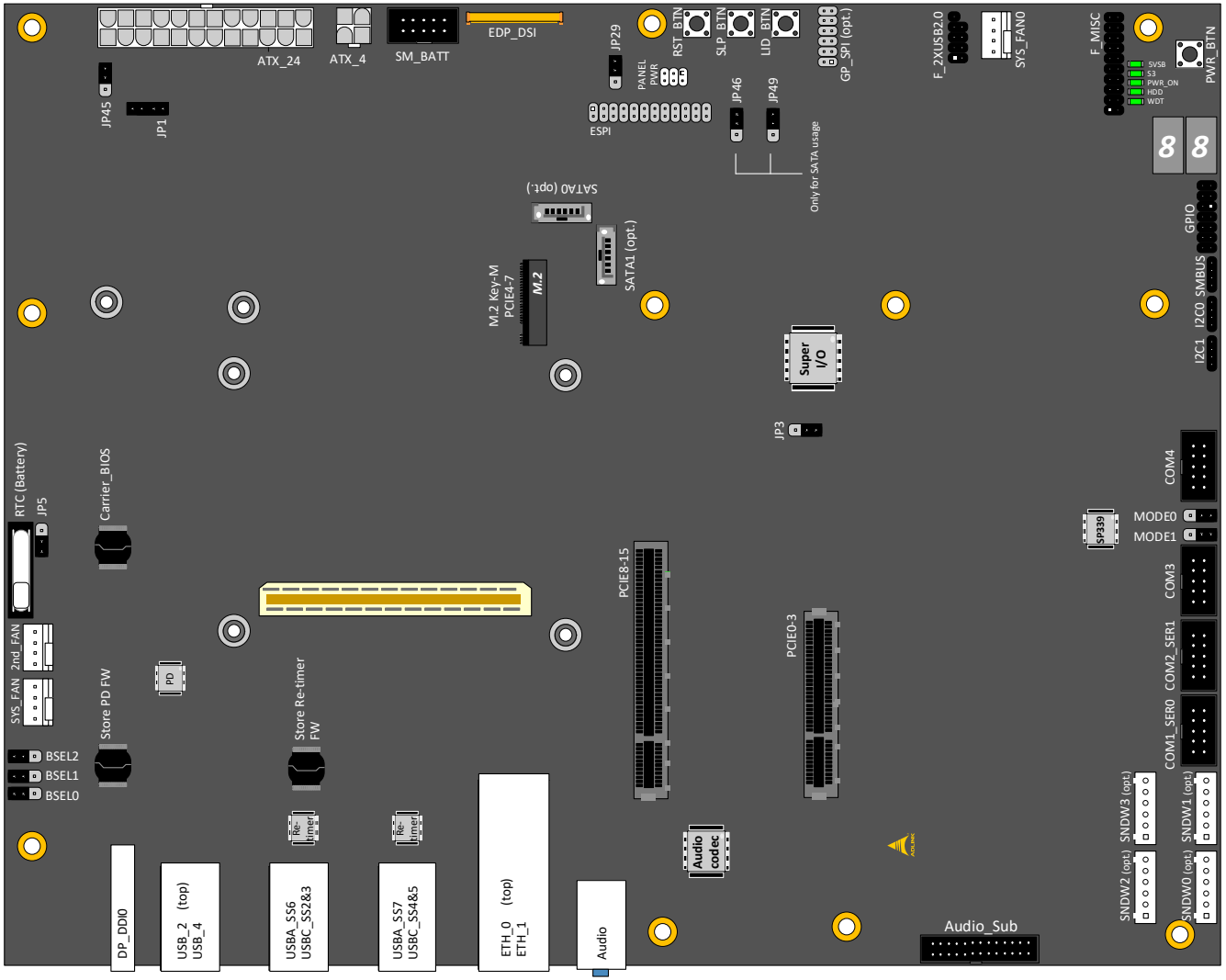


Figure 1 – Component location

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4. Functional Diagram

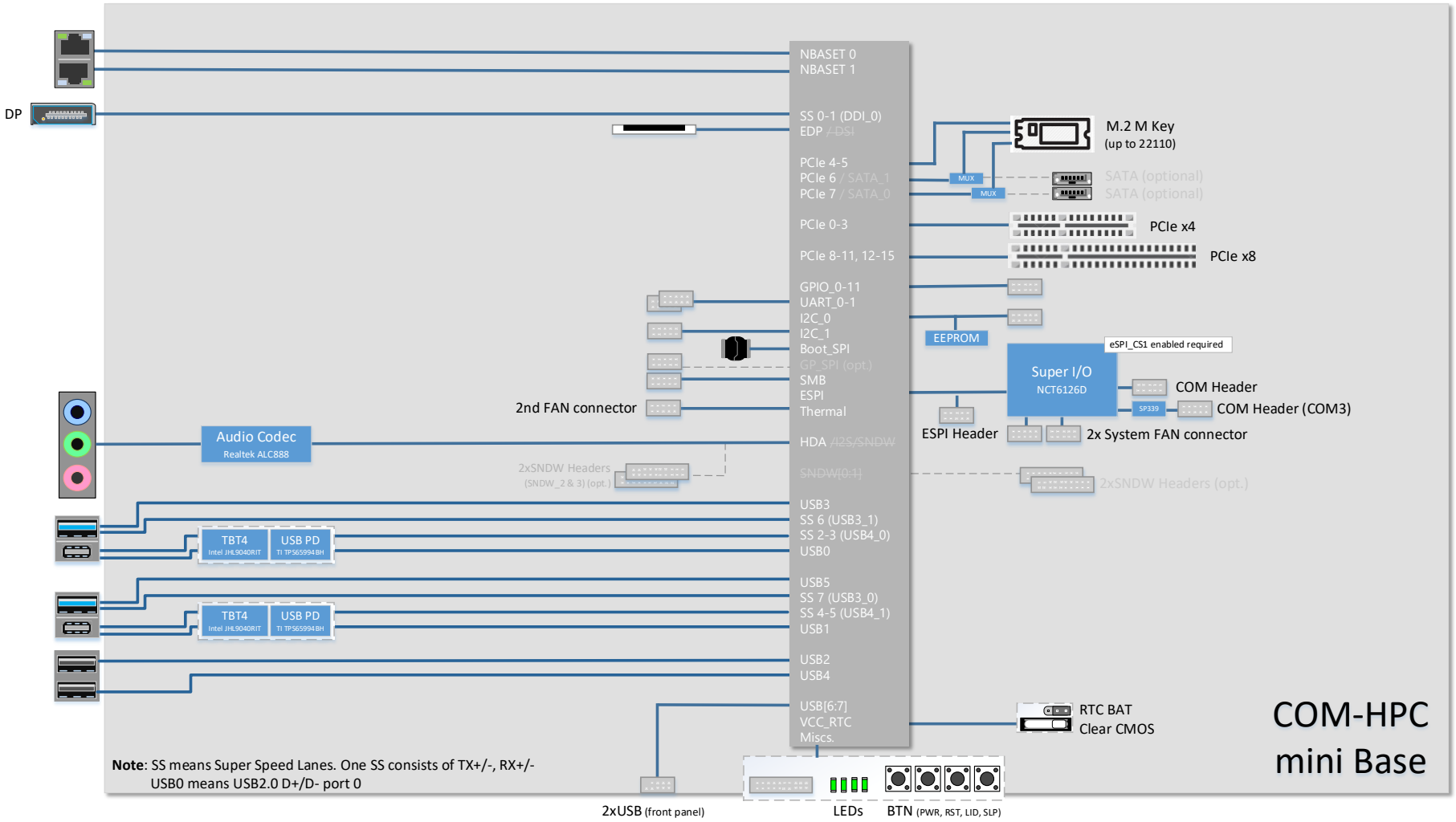


Figure 2 – Functional diagram

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5. Connectors and Pinouts

5.1. Carrier Board Signals — Mini Type

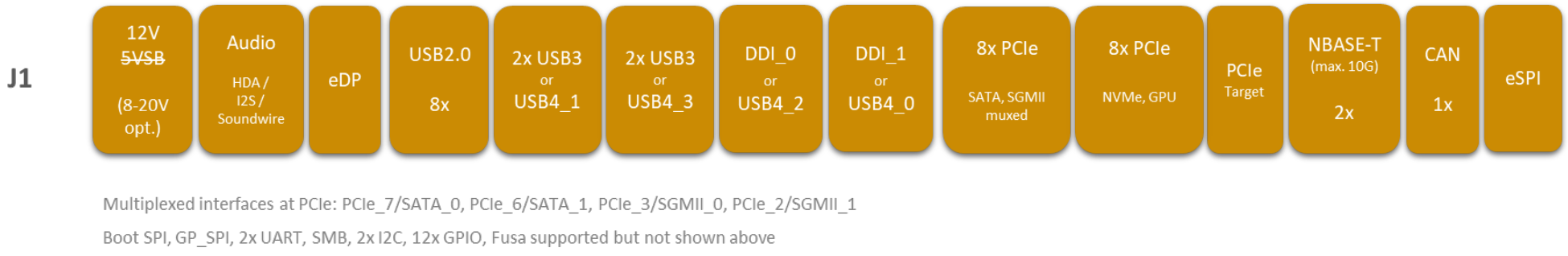


Figure 3 – Carrier board signals – mini-type Pinout

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5.2. Connector Location and Pinout Compatibility

Connector positions and pinouts comply with the pinout and signal descriptions defined in the *PICMG COM-HPC Carrier Design Guide R2*. This document includes descriptions of pinouts, signals, and mechanical characteristics specified by the COM-HPC specification. The COM-HPC Mini Base-ATX carrier is compatible with COM-HPC Mini modules and the COM-HPC Module Base Specification R1.2.

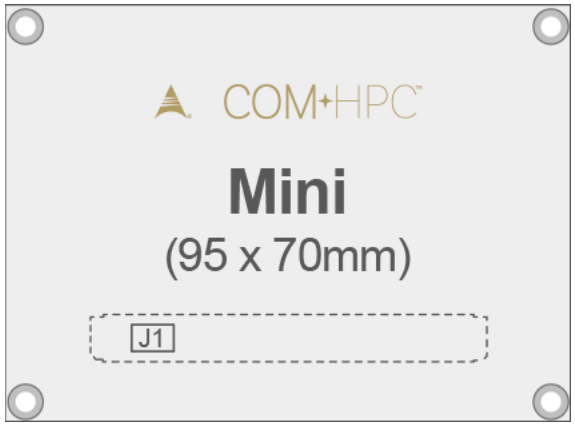


Figure 4 – COM-HPC mini connector location and pinout compatibility

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5.3. Carrier Board Design

COM-HPC Mini Base-ATX follows the PICMG COM-HPC Carrier Design Guide where applicable, and its design and schematics have been fully verified. It is recommended to utilize them as references for your carrier board design. COM-HPC Mini Base-ATX schematics and mechanical files, as well as the CDG, can be downloaded from ADLINK COM's webpage or contact your local ADLINK representative.

5.4. COM-HPC Board-to-board Connectors

Signals and Pinouts for COM-HPC **Mini Type**

Signals described in the specification but not supported on the COM-HPC-mini carrier are marked by ~~STRIKETHROUGH~~.

In addition, the overall feature set also depends on the module specifications.

Row A			Row B			Row C			Row D	
A1	VCC		B1	VCC		C1	VCC		D1	VCC
A2	VCC		B2	PWRBTN#		C2	RSTBTN#		D2	VCC
A3	VCC		B3	VCC		C3	VCC		D3	VCC
A4	VCC		B4	~~THERMTRIP#~~		C4	~~CARRIER_HOT#~~		D4	VCC
A5	~~RAPID_SHUTDOWN~~		B5	~~CAN_TX~~		C5	~~CAN_RX~~		D5	PLTRST#
A6	~~FUSA_SPI_ALERT~~		B6	TAMPER#		C6	VIN_PWR_OK		D6	~~FUSA_SPI_CS#~~
A7	~~FUSA_STATUS0~~		B7	~~PROCHOT#~~		C7	~~CATERR#~~		D7	~~FUSA_SPI_CLK~~
A8	~~FUSA_STATUS1~~		B8	SUS_S3#		C8	SUS_S4_S5#		D8	~~FUSA_SPI_MISO~~
A9	~~PCIe_PERST_IN0#~~		B9	~~FUSA_VOLTAGE_ERR#~~		C9	~~FUSA_ALERT#~~		D9	~~FUSA_SPI_MOSI~~
A10	GND		B10	~~WD_STROBE#~~		C10	BATLOW#		D10	WAKE0#
A11	~~PCIe_REFCLKIN0-~~		B11	WD_OUT		C11	FAN_PWMOUT		D11	WAKE1#
A12	~~PCIe_REFCLKIN0+~~		B12	GND		C12	FAN_TACHIN		D12	GND
A13	GND		B13	USB5-		C13	GND		D13	USB1-
A14	USB7-		B14	USB5+		C14	USB3-		D14	USB1+
A15	USB7+		B15	GND		C15	USB3+		D15	GND
A16	GND		B16	USB4-		C16	GND		D16	USB0-
A17	USB6-		B17	USB4+		C17	USB2-		D17	USB0+
A18	USB6+		B18	GND		C18	USB2+		D18	GND

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A19	GND		B19	I2S_LRCLK/SNDW_CLK3/ HDA_SYNC		C19	GND		D19	SS01_SDA_AUX-
A20	SS23_SDA_AUX-		B20	I2S_DOUT/SNDW_DAT3/ HDA_SDO		C20	SNDW_DMIC_CLK1		D20	SS01_SCL_AUX+
A21	SS23_SCL_AUX+		B21	I2S_MCLK/ HDA_RST#		C21	SNDW_DMIC_DAT1		D21	GND
A22	GND		B22	I2S_DIN/SNDW_DAT2/ HDA_SDI		C22	GND		D22	SS0_TX-
A23	SS2_TX-		B23	I2S_CLK/SNDW_CLK2/ HDA_BCLK		C23	SNDW_DMIC_CLK0		D23	SS0_TX+
A24	SS2_TX+		B24	RSVD		C24	SNDW_DMIC_DAT0		D24	GND
A25	GND		B25	USB67_OC#		C25	GND		D25	SS0_RX-
A26	SS2_RX-		B26	USB45_OC#		C26	USB0_LSRX /DDI1_DDC_AUX_SEL		D26	SS0_RX+
A27	SS2_RX+		B27	USB23_OC#		C27	USB1_LSRX		D27	GND
A28	GND		B28	USB01_OC#		C28	USB0_LSTX /DDI1_HPD		D28	SS1_TX-
A29	SS3_TX-		B29	SML1_CLK		C29	USB1_LSTX		D29	SS1_TX+
A30	SS3_TX+		B30	SML1_DAT		C30	eDP_HPD		D30	GND
A31	GND		B31	PMCALERT#		C31	eDP_VDD_EN		D31	SS1_RX1
A32	SS3_RX-		B32	SML0_CLK		C32	eDP_BKLT_EN		D32	SS1_RX+
A33	SS3_RX+		B33	SML0_DAT		C33	eDP_BKLTCTL		D33	GND
A34	GND		B34	USB_PD_ALERT#		C34	GND		D34	ACPRESENT
A35	eDP_AUX-		B35	USB_PD_I2C_CLK		C35	USB3_AUX-		D35	NBASET1_SDP
A36	eDP_AUX+		B36	USB_PD_I2C_DAT		C36	USB3_AUX+		D36	GND
Row A			**Row B**			**Row C**			**Row D**	
A37	GND		B37	USB_RT_ENA		C37	GND		D37	SS6_TX-
A38	eDP_TX0-		B38	USB3_LSRX		C38	SS6_RX-		D38	SS6_TX+
A39	eDP_TX0+		B39	USB3_LSTX		C39	SS6_RX+		D39	GND
A40	GND		B40	USB2_LSRX/ DDI0_DDC_AUX_SEL		C40	GND		D40	SS7_TX-
A41	eDP_TX1-		B41	USB2_LSTX/ DDI0_HPD		C41	SS7_RX-		D41	SS7_TX+
A42	eDP_TX1+		B42	GND		C42	SS7_RX+		D42	GND
A43	GND		B43	USB1_AUX-		C43	GND		D43	SS4_TX-
A44	eDP_TX2-		B44	USB1_AUX+		C44	SS4_RX-		D44	SS4_TX+
A45	eDP_TX2+		B45	LID#		C45	SS4_RX+		D45	GND
A46	GND		B46	SLEEP#		C46	GND		D46	SS5_TX-
A47	eDP_TX3-		B47	VCC_BOOT_SPI		C47	SS5_RX-		D47	SS5_TX+
A48	eDP_TX3+		B48	BOOT_SPI_CS#		C48	SS5_RX+		D48	GND
A49	GND		B49	BSEL0		C49	GND		D49	NBASET1_MDI0-
A50	eSPI_IO0		B50	BSEL1		C50	BOOT_SPI_IO0		D50	NBASET1_MDI0+
A51	eSPI_IO1		B51	BSEL2		C51	BOOT_SPI_IO1		D51	GND
A52	eSPI_IO2		B52	eSPI_ALERT0#		C52	BOOT_SPI_IO2		D52	NBASET1_MDI1-
A53	eSPI_IO3		B53	eSPI_ALERT1#		C53	BOOT_SPI_IO3		D53	NBASET1_MDI1+
A54	eSPI_CLK		B54	eSPI_CS0#		C54	BOOT_SPI_CLK		D54	GND
A55	GND		B55	eSPI_CS1#		C55	GND		D55	NBASET1_MDI2-

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A56	PCIe_CLKREQ0_LO#		B56	eSPI_RST#		C56	PCIe_REFCLK0_HI-		D56	NBASET1_MDI2+
A57	PCIe_CLKREQ0_HI#		B57	~~PCIe_WAKE_OUT0#~~		C57	PCIe_REFCLK0_HI+		D57	GND
A58	~~PCIe_CLKREQ_OUT0#~~		B58	NBASET1_LINK_MID#		C58	GND		D58	NBASET1_MDI3-
A59	NBASET1_LINK_MAX#		B59	NBASET1LINK_ACT#		C59	PCIe_REFCLK0_LO-		D59	NBASET1_MDI3+
A60	NBASET1_CTREF		B60	GND		C60	PCIe_REFCLK0_LO+		D60	GND
A61	GND		B61	PCIe08_RX-		C61	GND		D61	PCIe00_TX-
A62	PCIe08_TX-		B62	PCIe08_RX+		C62	PCIe00_RX-		D62	PCIe00_TX+
A63	PCIe08_TX+		B63	GND		C63	PCIe00_RX+		D63	GND
A64	GND		B64	PCIe09_RX-		C64	GND		D64	PCIe01_TX-
A65	PCIe09_TX-		B65	PCIe09_RX+		C65	PCIe01_RX-		D65	PCIe01_TX+
A66	PCIe09_TX+		B66	GND		C66	PCIe01_RX+		D66	GND
A67	GND		B67	PCIe10_RX-		C67	GND		D67	PCIe02_TX- ~~/SGMII1_TX-~~
A68	PCIe10_TX-		B68	PCIe10_RX+		C68	PCIe02_RX- ~~/SGMII1_RX-~~		D68	PCIe02_TX+ ~~/SGMII1_TX+~~
A69	PCIe10_TX+		B69	GND		C69	PCIe02_RX+ ~~/SGMII1_RX+~~		D69	GND
A70	GND		B70	PCIe11_RX-		C70	GND		D70	PCIe03_TX- ~~/SGMII0_TX-~~
A71	PCIe11_TX-		B71	PCIe11_RX+		C71	PCIe03_RX- ~~/SGMII0_RX-~~		D71	PCIe03_TX+ ~~/SGMII0_TX+~~
A72	PCIe11_TX+		B72	GND		C72	PCIe03_RX+ ~~/SGMII0_RX+~~		D72	GND

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Row A			Row B			Row C			Row D	
A73	GND		B73	PCIe12_RX-		C73	GND		D73	PCIe04_TX-
A74	PCIe12_TX-		B74	PCIe12_RX+		C74	PCIe04_RX-		D74	PCIe04_TX+
A75	PCIe12_TX+		B75	GND		C75	PCIe04_RX+		D75	GND
A76	GND		B76	PCIe13_RX-		C76	GND		D76	PCIe05_TX-
A77	PCIe13_TX-		B77	PCIe13_RX+		C77	PCIe05_RX-		D77	PCIe05_TX+
A78	PCIe13_TX+		B78	GND		C78	PCIe05_RX+		D78	GND
A79	GND		B79	PCIe14_RX-		C79	GND		D79	PCIe06_TX-/SATA1_TX-
A80	PCIe14_TX-		B80	PCIe14_RX+		C80	PCIe06_RX-/SATA1_RX-		D80	PCIe06_TX+/SATA1_TX+
A81	PCIe14_TX+		B81	GND		C81	PCIe06_RX+/SATA1_RX+		D81	GND
A82	GND		B82	PCIe15_RX-		C82	GND		D82	PCIe07_TX-/SATA0_TX-
A83	PCIe15_TX-		B83	PCIe15_RX+		C83	PCIe07_RX-/SATA0_RX-		D83	PCIe07_TX+/SATA0_TX+
A84	PCIe15_TX+		B84	GND		C84	PCIe07_RX+/SATA0_RX+		D84	GND
A85	GND		B85	~~TEST#~~		C85	GND		D85	NBASET0_MDI0-
A86	VCC_RTC		B86	RSMRST_OUT#		C86	SMB_CLK		D86	NBASET0_MDI0+
A87	SUS_CLK		B87	UART1_TX		C87	SMB_DAT		D87	GND
A88	GPIO_00		B88	UART1_RX		C88	SMB_ALERT#		D88	NBASET0_MDI1-
A89	GPIO_01		B89	UART1_RTS#		C89	UART0_TX		D89	NBASET0_MDI1+
A90	GPIO_02		B90	UART1_CTS#		C90	UART0_RX		D90	GND
A91	GPIO_03		B91	~~I2C2_CLK/ETH_MDIO_CLK~~		C91	UART0_RTS#		D91	NBASET0_MDI2-
A92	GPIO_04		B92	~~I2C2_DAT/ETH_MDIO_DAT~~		C92	UART0_CTS#		D92	NBASET0_MDI2+
A93	GPIO_05		B93	~~GP_SPI_MOSI~~		C93	I2C0_CLK		D93	GND
A94	GPIO_06		B94	~~GP_SPI_MISO~~		C94	I2C0_DAT		D94	NBASET0_MDI3-
A95	GPIO_07		B95	~~GP_SPI_CS0#~~		C95	I2C0_ALERT#		D95	NBASET0_MDI3+
A96	GPIO_08		B96	~~GP_SPI_CS1#~~		C96	I2C1_CLK		D96	GND
A97	GPIO_09		B97	~~GP_SPI_CS2#~~		C97	I2C1_DAT		D97	NBASET0_LINK_MAX#
A98	GPIO_10		B98	~~GP_SPI_CS3#~~		C98	~~NBASET0_SDP~~		D98	NBASET0_LINK_MID#
A99	GPIO_11		B99	~~GP_SPI_CLK~~		C99	NBASET0_CTREF		D99	NBASET0_LINK_ACT#
A100	PINOUT_TYPE0		B100	~~GP_SPI_ALERT#~~		C100	PINOUT_TYPE1		D100	PINOUT_TYPE2

Note: SATA, SNDW, GP_SPI are optional feature and also depends on module's specifications

Note: ESPI_CS1 pin need be enabled at module's BIOS setting. Super I/O works if the ESPI_CS1 enabled

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The example below illustrates the interface or usage of each connectors/jumper.

PCIe 16-31: Group 1 Lanes 16:31 assigned PCIex16 Slot

slikscreen interface from module or IC on carrier more information

5.5. PCIe x8 Slot

PCIE8-15: Lanes 8-15 assigned to the PCIex8 slot, supporting speeds up to Gen5. The slot is open-ended and supports x8 or x4 configuration, for example one x8 or two x4, depending on the PCIe root port configuration.

The speed and configuration are dependent on the module specifications.

An additional PCIe lane-splitting add-on is required to validate two x4 signal configurations.



Pin	Signal	Pin	Signal
B1	+ 12V	A1	PRSNT
B2	+ 12V	A2	+ 12V
B3	+ 12V	A3	+ 12V
B4	GND	A4	GND
B5	SMB_CLK	A5	JTAG
B6	SMB_DAT	A6	JTAG
B7	GND	A7	JTAG
B8	+3.3V	A8	JTAG
B9	JTAG	A9	+ 3.3V
B10	+ 3.3VAUX	A10	+ 3.3V
B11	WAKE#	A11	PERST#
B12	RSVD	A12	GND

Pin	Signal	Pin	Signal
B22	GND	A22	PERn1
B23	PETp2	A23	GND
B24	PETn2	A24	GND
B25	GND	A25	PERp2
B26	GND	A26	PERn2
B27	PETp3	A27	GND
B28	PETn3	A28	GND
B29	GND	A29	PERp3
B30	RSVD	A30	PERn3
B31	PRSNT	A31	GND
B32	GND	A32	RSVD
B33	PETp4	A33	RSVD

Pin	Signal	Pin	Signal
B43	GND	A43	PERp6
B44	GND	A44	PERn6
B45	PETp7	A45	GND
B46	PETn7	A46	GND
B47	GND	A47	PERp7
B48	PRSNT	A48	PERn7
B49	GND	A49	GND
~~B50~~	~~PETp8~~	~~A50~~	~~RSVD~~

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B13	GND	A13	REFCLK+
B14	PETp0	A14	REFCLK-
B15	PETn0	A15	GND
B16	GND	A16	PERp0
B17	PRSNT	A17	PERn0
Pin	**Signal**	**Pin**	**Signal**
B18	GND	A18	GND
B19	PETp1	A19	RSVD
B20	PETn1	A20	GND
B21	GND	A21	PERp1

B34	PETn4	A34	GND
B35	GND	A35	PERp4
B36	GND	A36	PERn4
B37	PETp5	A37	GND
B38	PETn5	A38	GND
Pin	**Signal**	**Pin**	**Signal**
B39	GND	A39	PERp5
B40	GND	A40	PERn5
B41	PETp6	A41	GND
B42	PETn6	A42	GND

5.6. PCIe x4 Slot

PCIE0-3: Lanes 0:3 assigned PCIex4 slot



Pin	Signal	Pin	Signal
B1	+12V	A1	PRSNT
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMB_CLK	A5	JTAG
B6	SMB_DAT	A6	JTAG
B7	GND	A7	JTAG
B8	+3.3V	A8	JTAG
Pin	**Signal**	**Pin**	**Signal**
B9	JTAG	A9	+3.3V
B10	+3.3VAUX	A10	+3.3V
B11	WAKE	A11	PERST#

Pin	Signal	Pin	Signal
B12	RSVD	A12	GND
B13	GND	A13	REFCLK+
B14	PETp0	A14	REFCLK-
B15	PETn0	A15	GND
B16	GND	A16	PERp0
B17	PRSNT	A17	PERn0
B18	GND	A18	GND
B19	PETp1	A19	RSVD
Pin	**Signal**	**Pin**	**Signal**
B20	PETn1	A20	GND
B21	GND	A21	PERp1
B22	GND	A22	PERn1

Pin	Signal	Pin	Signal
B23	PETp2	A23	GND
B24	PETn2	A24	GND
B25	GND	A25	PERp2
B26	GND	A26	PERn2
B27	PETp3	A27	GND
B28	PETn3	A28	GND
B29	GND	A29	PERp3
B30	RSVD	A30	PERn3
Pin	**Signal**	**Pin**	**Signal**
B31	PRSNT	A31	GND
B32	GND	A32	RSVD

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5.7. M.2 M-KEY

M.2 Key-M: Lanes 4-7 assigned M.2 slot

Up to 22110 M.2 dimension



Pin	Signal	Pin	Signal
1	CONFIG	2	+3.3V
3	GND	4	+3.3V
5	PERn3	6	N.C
7	PERp3	8	N.C
9	GND	10	DAS/DSS#
11	PETn3	12	+3.3V
13	PETp3	14	+3.3V
15	GND	16	+3.3V
17	PERn2	18	+3.3V
19	PERp2	20	N.C
21	CONFIG	22	N.C
23	PETn2	24	N.C

Pin	Signal	Pin	Signal
25	PETp2	26	N.C
27	GND	28	N.C
29	PERn1	30	N.C
31	PERp1	32	N.C
33	GND	34	N.C
35	PETn1	36	N.C
37	PETp1	38	DEVSLP
39	GND	40	N.C
41	PERn0	42	N.C
43	PERp0	44	N.C
45	GND	46	N.C
47	PETn0	48	N.C

Pin	Signal	Pin	Signal
49	PETp0	50	PETST#
51	GND	52	CLKREQ#
53	REFCLKN	54	PEWAKE#
55	REFCLKP	56	N.C
57	GND	58	N.C
67	N.C	68	SUSCLK
69	CONFIG	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CONFIG		

5.8. DisplayPort

DP connector at Rear I/O

- **DP_DDI0**: DDI0 channel assigned. DDI0 consist of SS 0-1 high speed signals and its relative sideband signals

  DP++ function depends on the module specifications

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5.9. eDP

EDP_DSI: 4 lanes eDP signal assigned

40-pin connectors

DSI not supported



Pin	Signal	Pin	Signal
1	N.C	2	BKL_PWR
3	BKL_PWR	4	BKL_PWR
5	BKL_PWR	6	N.C
7	N.C	8	BKL_CTRL
9	BKL_ENABLE	10	GND
11	GND	12	GND
13	GND	14	HPD
15	GND	16	GND
17	GND	18	GND
19	N.C	20	Panel_PWR
21	Panel_PWR	22	Panel_PWR
23	Panel_PWR	24	GND

Pin	Signal	Pin	Signal
25	AUX_N	26	AUX_P
27	GND	28	eDP_LANE0_P
29	eDP_LANE0_N	30	GND
31	eDP_LANE1_P	32	eDP_LANE1_N
33	GND	34	eDP_LANE2_P
35	eDP_LANE2_N	36	GND
37	eDP_LANE3_P	38	eDP_LANE3_N
39	GND	40	N.C

Note: BKL_PWR (backlight power) defaults to 5V, and Panel_PWR defaults to 3.3V. Both can be adjusted using JP28, JP29, as shown in the table below.

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PANEL_PWR: power for eDP panel

6-pin head

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	+3.3V	4	+3.3V
5	GND	6	GND



JP28: panel power setting

Jumper	Status
1-2	3.3V (default)
2-3	5V

JP29: backlight power setting

Jumper	Status
1-2	12V
2-3	5V (default)

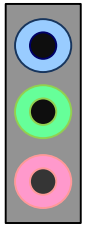
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5.10. Audio HDA

Audio_HDA: HDA assigned at Rear I/O

3-in-1 audio jack

Color	Signal
BLUE	LINE-IN
GREEN	LINE-OUT
PINK	MIC-IN



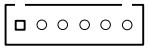
5.11. Audio SNDW

SNDW0: SNDW0 signal assigned

SNDW1: SNDW1 signal assigned

SNDW2: SNDW2 signal assigned

SNDW3: SNDW3 signal assigned



SNDW function is not enabled. The readiness of SNDW devices and drivers are low.

Pin	Signal	Pin	Signal
1	+5V	2	+3.3V
3	+1.8V	4	SNDW_CLK
5	SNDW_DATA	6	GND

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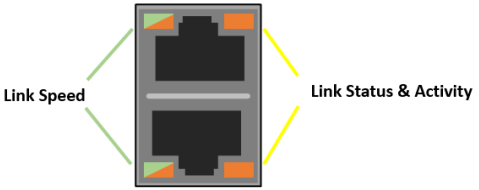
5.12. Ethernet NBASE-T

2-in-1 Ethernet Connector at Rear I/O

ETH_0: NBASET_0 assigned (upper one)

ETH_1: NBASET_1 assigned (lower one)

Up to 10GbE, depending on the module specifications



LED Function	LED Color	LED State	Description
Status & Activity	Orange	Off	No Link
		Steady On	Link established, no activity detected
		Blinking	Link established, activity detected
Speed	Green/Orange	Off	10M
		Green	100M/1G link speed
		Orange	Max. link speed (2.5GbE based on current existing module specification)

5.13. USB

USB Type-A / Type-C Combo connector at Rear I/O

- **USBA_SS6**: 1x USB3.x/2.0 assigned, Type-A connector, up to 10Gbit/s
- **USBC_SS2&3**: USB4_0 (USB4 port 0) assigned, Type-C connector, USB4 capable



USBA_SS6 consists of SS lane 6 (USB3.x SSTX/RX pairs, sometimes called as USB3.x port 1), USB3 (USB2.0 D+/D- from port 3)

USBC_SS2&3 consists of SS lane 2-3 (SSTX/RX pairs, sometimes called as USB4 port 0), USB0 (USB2.0 D+/D- from port 0) and sidebands

USB4 at Type-C depends on module specification (HW/BIOS configuration)

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USB Type-A / Type-C Combo connector at Rear I/O



- **USBA_SS7**: 1x USB3.x/2.0 assigned, Type-A connector, up to 10Gbit/s
- **USBC_SS4&5**: USB4_1 (USB4 port 1) assigned, Type-C connector, USB4 capable

USBA_SS7 consists of SS lane 7 (USB3.x SSTX/RX pairs, sometimes called as USB3.x port 0), USB5 (USB2.0 D+/D- from port 5)

USBC_SS4&5 consists of SS lane 4-5 (SSTX/RX pairs, sometimes called as USB4 port 1), USB1 (USB2.0 D+/D- from port 1) and sidebands

USB4 at Type-C depends on module specification (HW/BIOS configuration)

USB Type-A 2-in-1 connector at Rear I/O



- **USB_2**: USB2 (USB2.0 port 2) assigned, Type-A connector, up to USB2.0 speed
- **USB_4**: USB4 (USB2.0 port 4) assigned, Type-A connector, up to USB2.0 speed

F_2XUSB_2.0: 2x USB2.0 from USB6 and USB7 (USB2.0 port 6 and port 7)

Front panel usage, 9-pin, 2.54 mm pitch

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB7_N	4	USB6_N
5	USB7_P	6	USB6_P
7	GND	8	GND
9	GND		



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5.14. GPIO

GPIO: GPIO 0-11 signal assigned

14-pin, 2.54mm pitch

Pin	Signal	Pin	Signal
1	1.8V	2	GPIO_06
3	GPIO_00	4	GPIO_07
5	GPIO_01	6	GPIO_08
7	GPIO_02	8	GPIO_09
9	GPIO_03	10	GPIO_10
11	GPIO_04	12	GPIO_11
13	GPIO_05	14	GND



5.15. I2C

I2C0: I2C0 bus assigned, 4-pin, 2.54mm pitch

I2C1: I2C1 bus assigned, 4-pin, 2.54mm pitch



Pin	Signal	Pin	Signal
1	+1.8V	2	I2C_DATA
3	I2C_CLK	4	GND

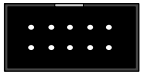
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5.16. UART / COM

COM1_SER0: UART0 signal assigned, 2.0mm pitch

COM2_SER1: UART1 signal assigned, 2.0mm pitch

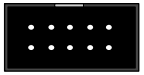
Pin	Signal	Pin	Signal
1	N.C	2	N.C
3	UART_RX	4	UART_RTS
5	UART_TX	6	UART_CTS
7	N.C	8	N.C
9	GND	10	N.C



COM3: UART from Super I/O signal assigned, 2.0mm pitch

COM4: UART from Super I/O signal assigned, 2.0mm pitch

Pin	Signal	Pin	Signal
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	N.C



MODE0/MODE1: selection of RS232/RS485/RS422 mode for COM3

Mode	MODE1	MODE0
RS232 (default)	2-3	1-2
RS485	1-2	2-3
RS422	1-2	1-2

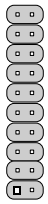


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5.17. eSPI Debug Connector

ESPI: for eSPI debugging connection purpose

Pin	Signal	Pin	Signal
1	eSPI_CLK	2	GND
3	eSPI_CS0	4	N.C
5	CB_RST	6	+5V
7	eSPI_IO_3	8	eSPI_IO_2
9	+ 3.3VSB	10	eSPI_IO_1
11	eSPI_IO_0	12	eSPI_ALERT0#
13	SMB_CK	14	SMB_DAT
15	+1.8VSB	16	eSPI_CS1
17	eSPI_RST#	18	N.C
19	+5V	20	eSPI_ALEART1#



5.18. SMB

SMBUS: SMBus assigned, 4-pin, 2.54mm pitch

Pin	Signal	Pin	Signal
1	+1.8V	2	SMB_DATA
3	SMB_CLK	4	GND



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5.19. FAN Connector

2nd_FAN (or named as MODULE_FAN): Secondary FAN control signals from module assigned, 4-pin

It can be used for module FAN control or can be used for system Fan control. The FAN table is stored in the module's EC controller, and the default FAN table is configured for module FAN usage. Refer to the module's user manual for detail.

Pin	Signal
1	GND
2	+12V_5V_FAN
3	SENSE_FAN
4	PWMOUT_FAN



SYS_FAN0: FAN control signals from Super I/O assigned, 4-pin

ESPI_CS1 need be enabled at module's BIOS setting to make Super I/O works

Pin	Signal
1	GND
2	+12V_5V_FAN0
3	SENSE_FAN0
4	PWMOUT_FAN0



SYS_FAN1: FAN control signals from Super I/O assigned, 4-pin

ESPI_CS1 need be enabled at module's BIOS setting to make Super I/O works

Pin	Signal
1	GND
2	+12V_5V_FAN1
3	SENSE_FAN1
4	PWMOUT_FAN1

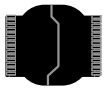


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5.20. Carrier BIOS

A SPI BIOS Socket on carrier board

- Allow boot-up from the carrier with proper jumper settings.



BSEL0/BSEL1/BSEL2: Jumpers for module boot-up selection



BESL2	BSEL1	BSEL0	BIOS Boot Select
1-2	1-2	1-2	Module SPI0/SPI1 (default)
1-2	1-2	2-3	Carrier SPI0/Module SPI1
1-2	2-3	1-2	Module SPI0/Carrier SPI1

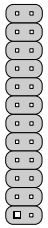
Note: Boot from Carrier SPI BIOS ROM will require specific BIOS firmware. The SPI ROM inside the socket is without any firmware

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5.21. Front Panel Control

F_MISC: Power Button, Reset Button, HDD LED, Power LED for front panel header

Pin	Signal	Pin	Signal
19	N.C	20	N.C
17	N.C	18	BUZZER
15	N.C	16	N.C
13	GND	14	N.C
11	+5VSB	12	+5V
9	N.C	10	N.C
7	SYS_RESET#	8	GND
5	GND	6	PWR_BTN#
3	HDD_LED_N	4	GND
1	HDD_LED_P	2	+5V



5.22. Other Jumpers

JP5: clear CMOS.

To clear CMOS, shut down the power and short pin 2 and pin 3 (short VBAT to ground)

Jumper	Clear CMOS
1-2	Normal (default)
2-3	Clear CMOS



JP3: Selection of Super I/O address

Jumper	Selection of Super I/O address
1-2	4Eh
2-3	2Eh (default)



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JP45: Module Type detection

Jumper	Status
1-2	Detect (default)
2-3	Undetect



The functionality of Module Type detection requires the carrier board to implement combinatorial logic that monitors the module TYPE pins and keeps the power off if an incompatible module pinout type is detected.

5.23. Power Connectors

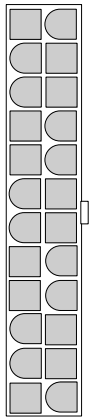
The COM-HPC Mini module requires only a **single power rail input** and does not need a standby power rail, as defined by the PICMG specification.

To make power sourcing more convenient and straightforward, the power connectors are designed based on the ATX power style and require only the main power rail.

ATX_24: 24-Pin Power Connector

Connect the ATX 24-pin (or 20-pin) connector to supply power to the COM-HPC Mini Base-ATX carrier and the COM-HPC Mini module.

Pin	Signal	Pin	Signal
1	+3.3V (not used)	13	+3.3V (not used)
2	+3.3V (not used)	14	-12V (not used)
3	GND	15	GND
4	+5V (not used)	16	PWR_ON
5	GND	17	GND
6	+5V (not used)	18	GND
7	GND	19	GND
8	PWR_GOOD	20	-5V (not used)
9	+5VSB (not used)	21	+5V (not used)
10	+12V	22	+5V (not used)
11	+12V	23	+5V (not used)



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12	+3.3V (not used)	24	GND

3.3V, 5V, 5VSB are not used even although it is connected

In addition, specific logic design on the carrier board will always ensure that PWR_ON and PWR_GOOD are enabled.

ATX_4: 4-Pin Power Connector

Connect the ATX 12V 4-pin connector to supply power to the COM-HPC Mini Base-ATX carrier and the COM-HPC Mini module

Pin	Signal
1	GND
2	GND
3	+12V
4	+12V



JP1: selection of AT source

Jumper	Module 5VSBY SOURCE
3-4	AT mode from PSU (default)
1-2	AT mode from Smart Battery (default)



Note: JP1 is for the ATX power source. JP1 sets PS_ON enabled at all times. It is recommended to keep the default jumper setting unchanged.

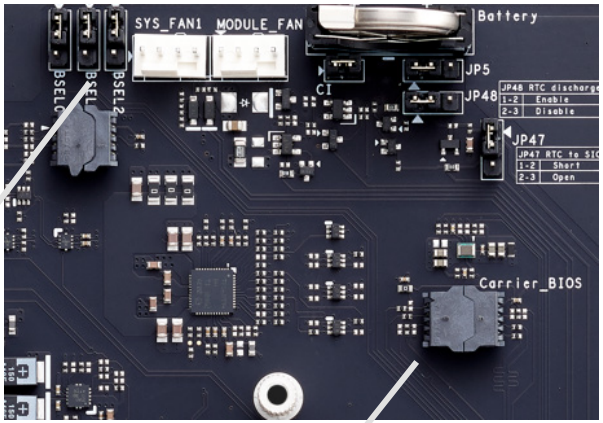
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6. Carrier BIOS

The COM-HPC Mini Base-ATX supports a Carrier BIOS, using the Boot Serial Peripheral Interface (SPI) for COM-HPC modules.

Secondary BIOS solutions can be used as an alternative to the on-module BIOS and provide support for the following:

- Testing new BIOS versions
- Development of firmware modifications
- Recovery, in case the soldered BIOS on the module is corrupted (optional)



To use the BIOS on the module:
short pins 1-2 on **BESL2, BESL1, BESL0**; reference *section 5.20*

To use the BIOS on the carrier board:
short pins 2-3 on **BESL0**, and keep pin 1-2 on BESL2, BESL1; reference *section 5.20*

Make sure that the **secondary BIOS flash chip** is properly installed into the Carrier BIOS socket before adjusting the BOOT BIOS selection.

Note: Booting from the Carrier SPI BIOS ROM requires specific BIOS firmware. The SPI ROM inside the socket does not contain any firmware by default.

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7. Switches, POST, and LEDs

7.1. Control Switches

Button	Description
PWR_BTN	Power Button
RST_BTN	Reset Button
SLP_BTN	Sleep Button
LID_BTN	Lid Button

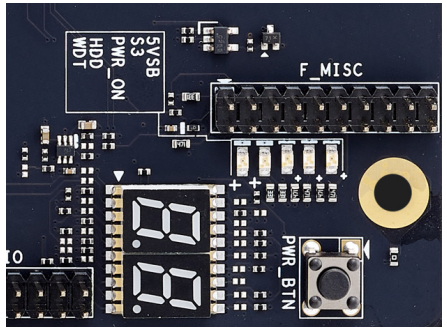
Both the SLP and LID buttons support COM-HPC modules for ACPI power management behavior setting in an OS environment. (functionality also depends on the module specifications, especially the module's BIOS configuration).

7.2. Post Display and LEDs

An I2C-based POST display is added for debugging. The two 7-SEG LEDs show the actual POST data.

A row of mini-LEDs near the POST display indicates the following:

LED	Description
5VSB	~~24+4-pin power attached on standby or active~~ (no function)
S3	Indicates S3 status
PWR_ON	Indicates power on
HDD	Indicates hard drive activity (at M.2 M-key)
WDT	Indicates WDT (watchdog timer) activity



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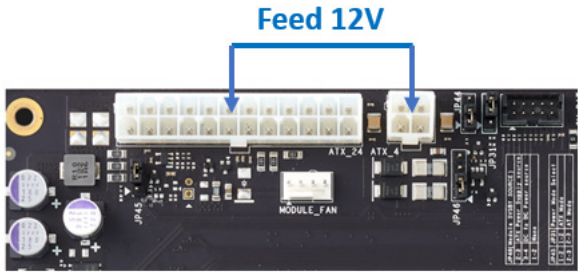
8. Power Input Connection

COM-HPC mini module only requires single power rail input, check *section 5.23* as reference

8.1. 12V Power Input at 24+4 Pin Power Connectors

For the standard **12V** power input usage: This is used to connect an ATX power supply that provides only the 12V power rail.

- It supplies 12V to the COM-HPC Mini module. **The system will not power on unless the 4-pin connector is connected.**
- Power components on the carrier board convert the 12V input to other required power rails for carrier board operation (the carrier uses both 12V and other generated power rails).



Note: Always powers on by default. It means the system will automatically power on once the mechanical switch of the power supply is switched-on.

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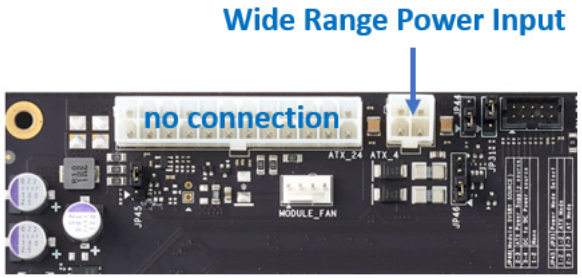
8.2. 8-20V Power Input at 4-Pin Power Connectors

Connecting a single rail (8–20V) power source to the 4-pin connector is required.

It will supply 8-20V to the COM-HPC Mini module.

- Power components located on the carrier board convert this voltage to other power rails needed for carrier board operation.

The carrier board supports single-rail wide-range DC power input (8–20V) through a standard 4-pin ATX-style power connector.



Note: Only the +12V and GND pins are used — the +5V, +3.3V, and other ATX rails are not connected internally. This connector is repurposed to accept a wide-range DC input.

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