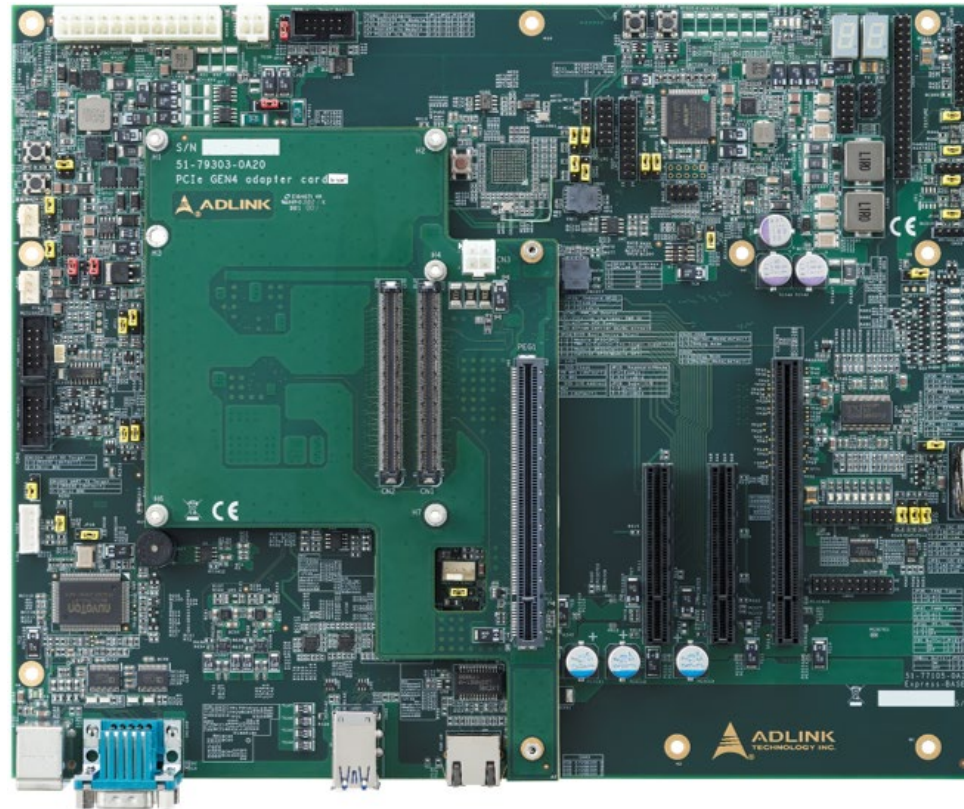


Express-BASE7 Plus

User's Guide



Revision: Rev. 0.2
Date: 2024-07-12
Part Number: 50M-77105-1000



Revision History


Revision	Description	Date	Author
0.1	Preliminary release	2023-12-20	CC
0.2	Adapter card spec added	2024-07-12	CC

Preface

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Safety Instructions

For user safety, please read and follow all Instructions, **WARNINGS**, **CAUTIONS**, and **NOTES** 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.

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

Leveraging the COM Express standard, providing off-the-shelf silicon, for custom carriers relieves developers the need to design their own system core, thereby not only accelerating their proof of concept significantly but also empowers them to upgrade to later-generation processors without having to redesign. It fits most system integration projects with production volumes ranging from 500 to 10,000 pcs per year. The COM Express concept reduces engineering complexity, lowers the threshold for total project quantity, and last but not least brings your product to the market in no time. The average time to design a carrier board is less than half the time of a full custom OEM board.

The Express-BASE7 Plus, based on PICMG COM-Express R3.1, is a standard ATX size carrier board. Together with a COM Express Type 7 module of your choice and off-the-shelf adapter cards, you can quickly emulate the functionality of your desired end product for software development and hardware verification.

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

- a COM Express Type 7 module (based on COM.0 R3.1 specification)
- an Express-BASE7 Plus carrier board (based on COM.0 R3.1 specification)
- a 10GbE Ethernet adapter card (2 options available, dedicated to each COM Express Type 7 module)
 - 10G SFP+ card (10GBASE-KR to 10G SFP+, based on COM.0 R3.1 specification)
 - 10GBASE-T card (10GBASE-KR to 10GBASE-T, based on COM.0 R3.1 specification)
- a SATA drive storage or flash disk solution

The Express-BASE7 Plus carrier is compatible with Basic size and Compact size COMe Type 7 modules, and accommodates:

- 1x PCI Express x16 slot with proprietary pinout for inserting a 10GbE Ethernet adapter card (up to 4x 10G signals, dependent on module)
- 1x PCI Express **Gen4** x16 slot, 2x PCI Express x8 slots



Note: An adapter card is pre-assembled on the carrier board for PCIe Gen4 enabling. Please see Appendix for details.

2. Special Features

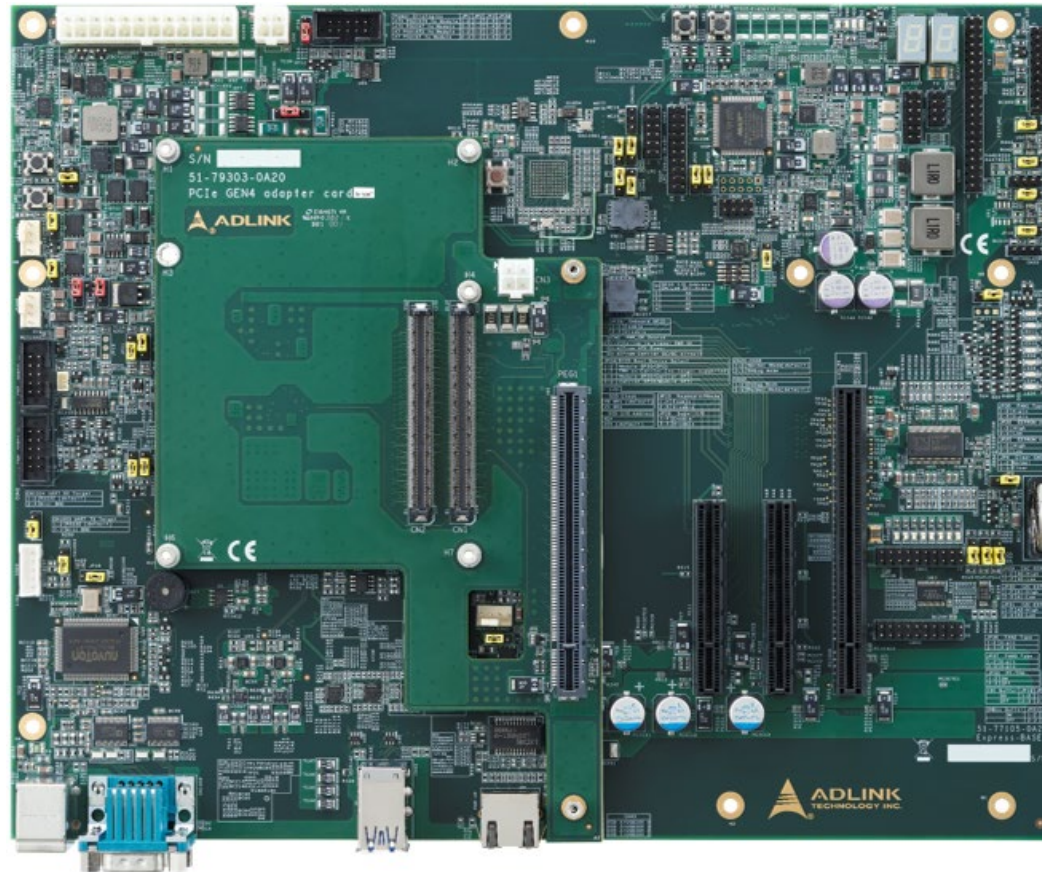



Figure 1 – Carrier top view

2.1. Core System

The Express-BASE7 Plus features a PCI Express x16 slot with proprietary pinout for COM Express COM.0 R3.1 Type 7 modules. This slot can route up to four 10GBASE-KR signals from the COM Express Type 7 R3.1 module to a 10GbE Ethernet adapter card for up to four SFP+ signals or 10GBASE-T ports.


Two optional 10GbE Ethernet adapter cards are available for prototyping:

- **10G SFP+ Card:** converts up to 4x 10GBASE-KR signals to 4x SFP+ signals through high-end optical fiber PHY
- **10GBASE-T Card:** converts up to 4x 10GBASE-KR signals to 4x 10GBASE-T signals through high-end copper PHY

 **Note:** 10GbE Ethernet adapter cards are specifically designed and unique to each COM Express Type 7 module, due to the required communication between PHY and 10GbE MAC being defined by silicon vendor.

2.2. 32x PCI Express Lanes

1x PCI Express x16 (up to Gen4) slot, 2x PCI Express x8 slots for peripheral expansion such as data acquisition cards


 **Note:** PCI Express speed support is dependent on the COM Express module used.

2.3. NC-SI and IPMI BMC (optional)

An IPMI BMC (MiniBMC) connecting to an Ethernet controller through NC-SI for remote management functions such as:

- Checking the power state, monitoring voltage (12V, 5V, 3.3V), powering on/off, resetting the module, using Serial over LAN

Local management supported through a KCS interface

 **Note:** MiniBMC feature and NC-SI interface are supported by project basis.

2.4. Primary LPC-based Super I/O

A Super I/O is placed on the carrier board as an optional item (due to COMe modules not having a Super I/O chip onboard).

The carrier provides a Winbond W83627DHG-PT with the following features:

- Supports COM and PS/2 keyboard and mouse
- -40°C to 85°C temperature range
- Pin compatible with W83627DHG-P

2.5. Secondary BIOS

Supports Serial Peripheral Interface (SPI) for COM Express R3.1 Type 7 modules

BIOS selection can be made by jumper settings. The location of the secondary BIOS is U55 (see 3. *Component Location*).

2.6. Integrated Debug Port with Single-Step Execution

In addition to a 2-digit POST code display, the board also provides a 4-digit address display. By jumper selection, the board can be switched into single-step BIOS execution mode. Steps are executed using a manually operated onboard mini switch.

2.7. Information LEDs

General information is obtained through LEDs, indicating the HDD, power, and Watchdog statuses (see 8.3 *POST & Indicator LEDs*).

Additionally, the carrier board also gives information about the type of module installed (see 8.2 *Module Type Display*).

2.8. Power, Reset, Lid, and Sleep Switches

4 mini switches S1, S2, S3, S4 respectively for ATX power, Reset, and COM.0 R3.1 specified 'Lid' and 'Sleep' functions.

3. Component Location

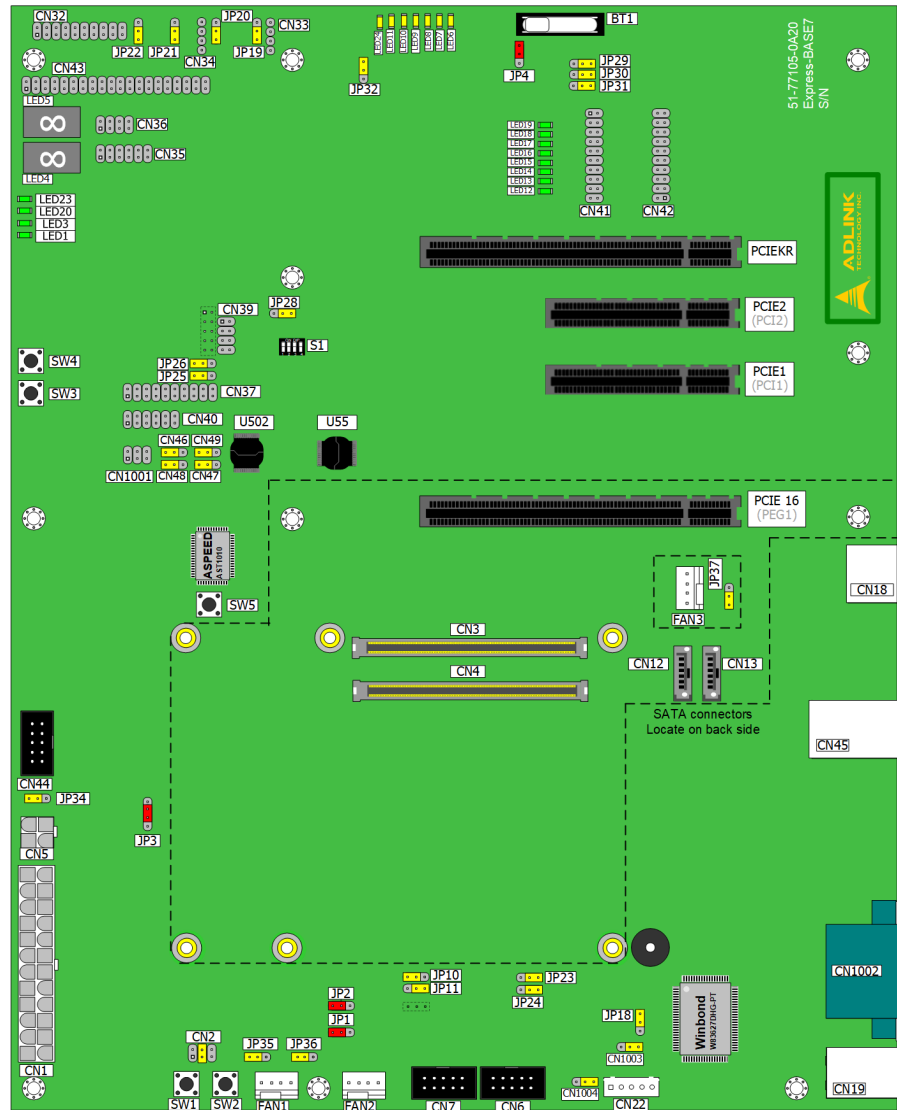


Figure 2 – Express-BASE7 Plus component locations

4. Functional Diagram

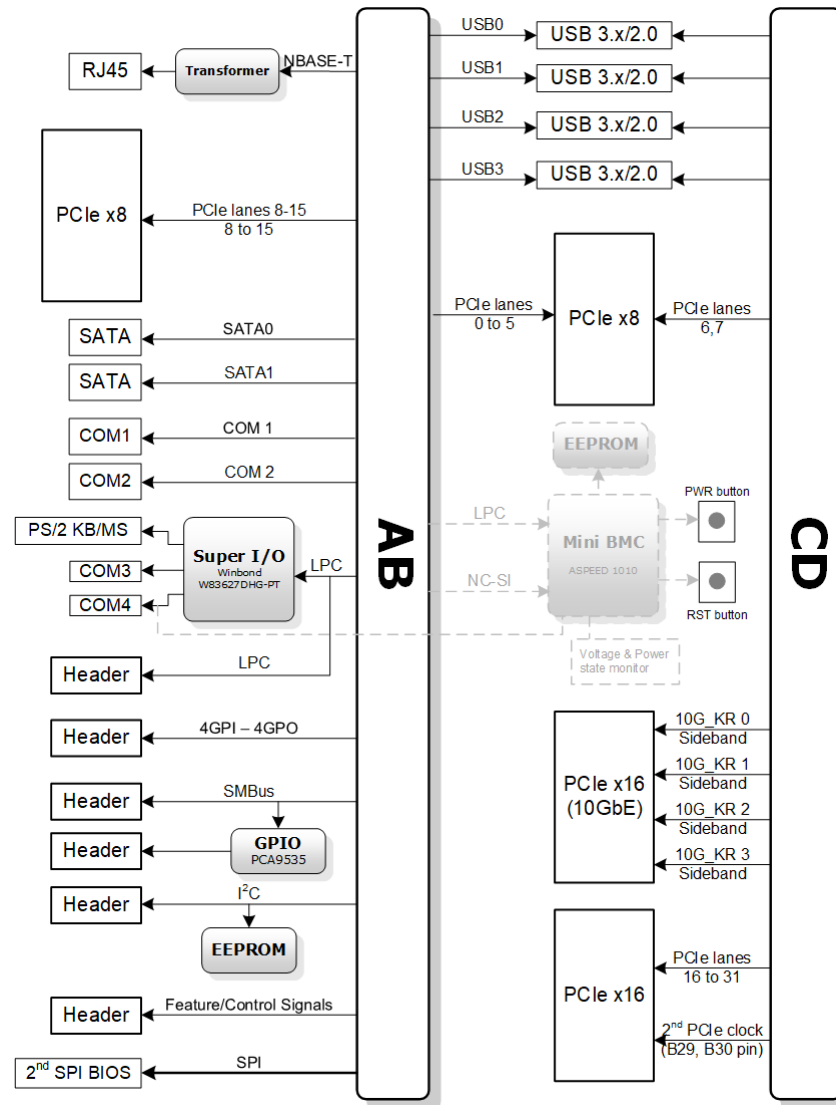


Figure 3 – Express-BASE7 Plus functional diagram

5. Mechanical Dimension

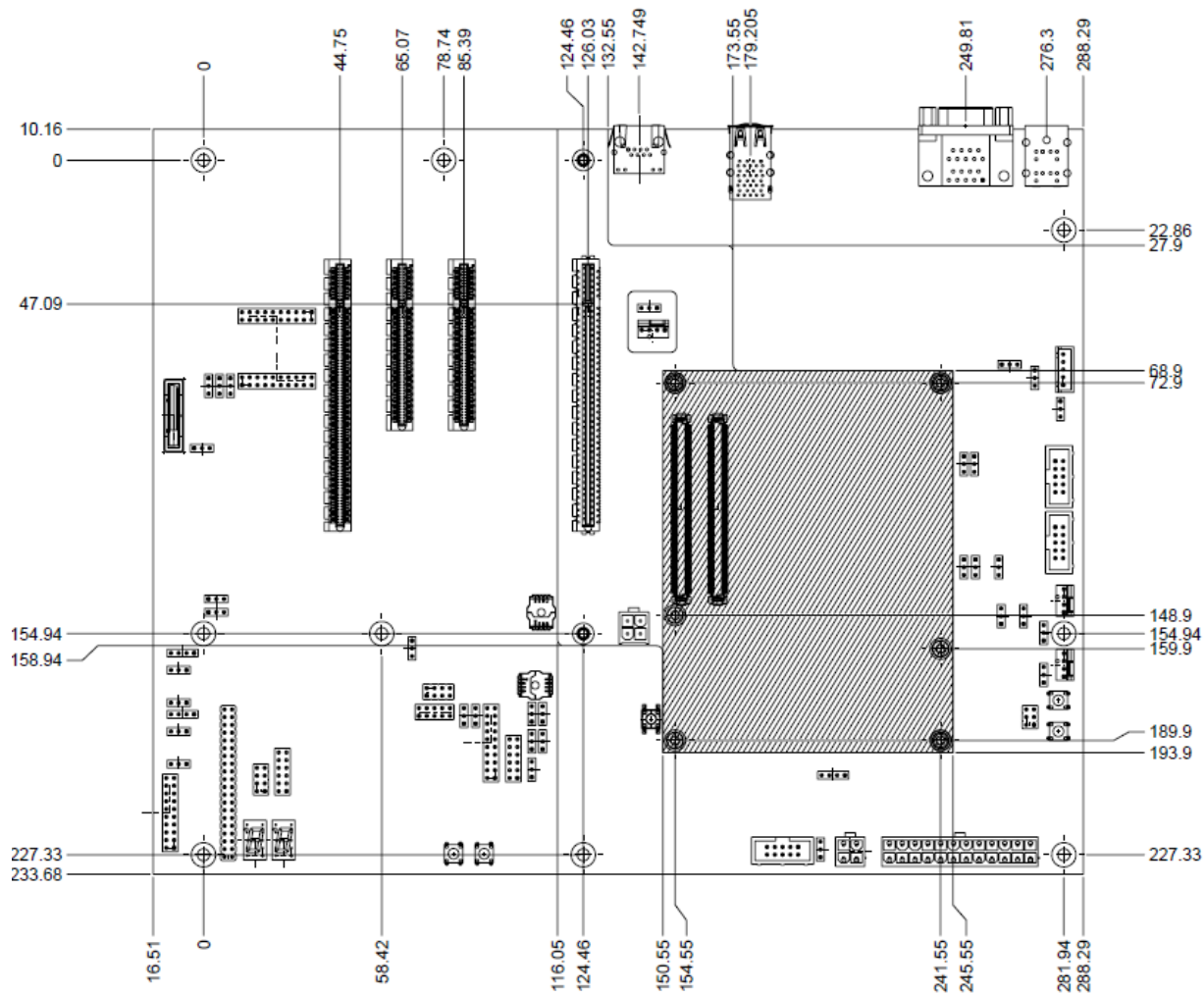


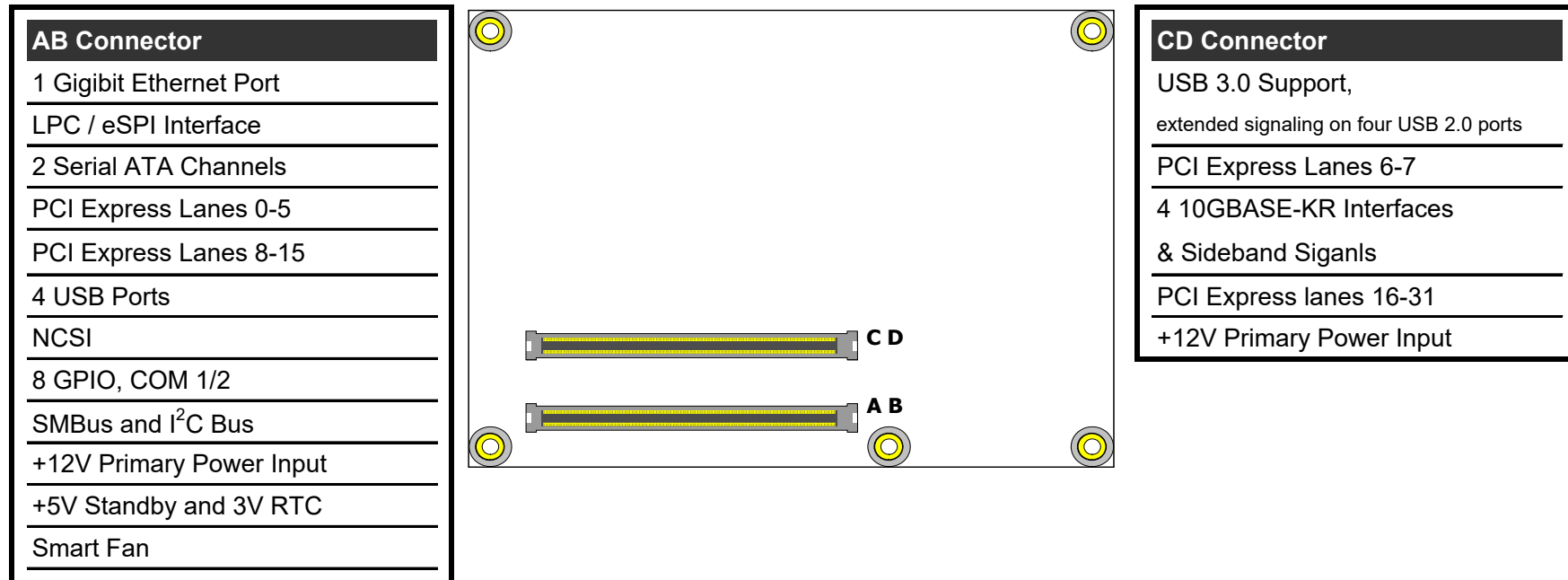
Figure 4 – Express-BASE7 Plus mechanical dimensions



Note: All dimensions are shown in millimeters with a tolerance of $\pm 0.25\text{mm}$ unless otherwise noted. Module connector locating peg holes (dimensions [16.50, 6.00] and [16.50, 18.00]) shall have tolerances of $\pm 0.10\text{mm}$.

6. Connectors, Pinouts, and Jumpers

6.1. Carrier Board Signals — Type 7



6.2. Connector and Pinout Compatibility

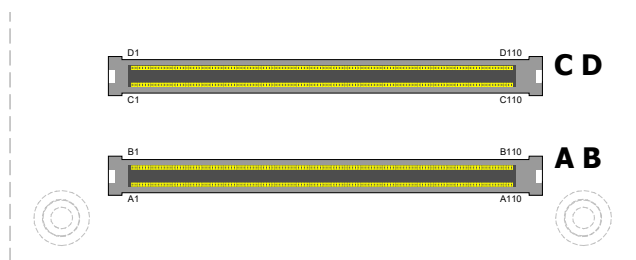
Connector positions and pinouts comply with the pinout and signal descriptions within *PICMG® COM.0 - COM Express Module Base specification, Revision 3.1*. This document includes description of pinouts, signal descriptions and mechanical characteristics of the COM Express specification. The Express-BASE7 Plus carrier board is compatible with COM Express modules in **Basic and Compact form factor, Type 7 pinout, COM.0 Rev. 3.1**.

6.3. Carrier Board Design

Express-BASE7 Plus follows the PICMG COM Express Carrier Design Guide where possible, and its design and schematic have been fully verified. It is recommend to utilize them as references for your carrier board design. Express-BASE7 Plus schematics and mechanical files can be downloaded from its [ADLINK product page](#).

6.4. COM Express R3.1 Type 7 Board-to-board Connectors

Signals and Pinout for
COM Express Type 7



Express-BASE7 Plus is a type-7 module reference carrier board supporting up to 32 PCIe lanes and 10G Ethernet on the CD connection and NC-SI on the AB connector. The following table describes all standard pins of the COM Express specification, including those not supported on Express-BASE7 Plus.



Note: Express-BASE7 Plus supports LPC bus only and IPMB interface is not supported.

Row A		Row B		Row C		Row D	
A1	GND (fixed)	B1	GND (fixed)	C1	GND (fixed)	D1	GND (fixed)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	GND	D2	GND
A3	GBE0_MDI3+	B3	LPC_FRAME#/ESPI_CS0#	C3	USB_SSRX0-	D3	USB_SSTX0-
A4	GBE0_LINK100#	B4	LPC_AD0/ESPI_IO_0	C4	USB_SSRX0+	D4	USB_SSTX0+
A5	GBE0_LINK1000#	B5	LPC_AD1/ESPI_IO_1	C5	GND	D5	GND
A6	GBE0_MDI2-	B6	LPC_AD2/ESPI_IO_2	C6	USB_SSRX1-	D6	USB_SSTX1-
A7	GBE0_MDI2+	B7	LPC_AD3/ESPI_IO_3	C7	USB_SSRX1+	D7	USB_SSTX1+
A8	GBE0_LINK#	B8	LPC_DRQ0#/ESPI_ALERT0#	C8	GND	D8	GND
A9	GBE0_MDI1-	B9	LPC_DRQ1#/ESPI_ALERT1#	C9	USB_SSRX2-	D9	USB_SSTX2-
A10	GBE0_MDI1+	B10	LPC_CLK/ESPI_CLK	C10	USB_SSRX2+	D10	USB_SSTX2+
A11	GND (fixed)	B11	GND (fixed)	C11	GND (fixed)	D11	GND (fixed)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	USB_SSRX3-	D12	USB_SSTX3-
A13	GBE0_MDI0+	B13	SMB_CK	C13	USB_SSRX3+	D13	USB_SSTX3+
A14	GBE0_CTREF	B14	SMB_DAT	C14	GND	D14	GND
A15	SUS_S3#	B15	SMB_ALERT#	C15	RSVD10G	D15	RSVD10G
A16	SATA0_TX+	B16	SATA1_TX+	C16	RSVD10G	D16	RSVD10G
A17	SATA0_TX-	B17	SATA1_TX-	C17	10G_SDP2	D17	10G_SDP3
A18	SUS_S4#	B18	SUS_STAT#/ESPI_RESET#	C18	GND	D18	GND
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCIE_RX6+	D19	PCIE_TX6+
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCIE_RX6-	D20	PCIE_TX6-
A21	GND (fixed)	B21	GND (fixed)	C21	GND (fixed)	D21	GND (fixed)
A22	PCIE_TX15+	B22	PCIE_RX15+	C22	PCIE_RX7+	D22	PCIE_TX7+
A23	PCIE_TX15-	B23	PCIE_RX15-	C23	PCIE_RX7-	D23	PCIE_TX7-
A24	SUS_S5#	B24	PWR_OK	C24	RSVD10G	D24	RSVD10G
A25	PCIE_TX14+	B25	PCIE_RX14+	C25	GND	D25	GND
A26	PCIE_TX14-	B26	PCIE_RX14-	C26	10G_KR_RX3+	D26	10G_KR_TX3+
A27	BATLOW#	B27	WDT	C27	10G_KR_RX3-	D27	10G_KR_TX3-
A28		B28	GND	C28	GND	D28	GND
A29	RSVD	B29	PCIE_CK_REF+	C29	10G_KR_RX2+	D29	10G_KR_TX2+
A30	RSVD	B30	PCIE_CK_REF-	C30	10G_KR_RX2-	D30	10G_KR_TX2-
A31	GND (fixed)	B31	GND (fixed)	C31	GND (fixed)	D31	GND (fixed)
A32	IPMB_CLK	B32	SPKR	C32	RSVD10G	D32	RSVD10G
A33	IPMB_DAT	B33	I2C_CK	C33	RSVD10G	D33	RSVD10G
A34	BIOS_DIS0#/ESPI_SAFS	B34	I2C_DAT	C34	RSVD10G	D34	RSVD10G
A35	THRMTRIP#	B35	THRM#	C35	CEI_RST#	D35	CEI_PRSN#
A36	PCIE_TX13+	B36	PCIE_RX13+	C36	RSVD10G	D36	RSVD

Row A		Row B		Row C		Row D	
A37	PCIE_TX13-	B37	PCIE_RX13-	C37	RSVD10G	D37	RSVD
A38	GND	B38	GND	C38	RSVD10G	D38	RSVD10G
A39	PCIE_TX12+	B39	PCIE_RX12+	C39	CEI_SDA	D39	CEI_SCL
A40	PCIE_TX12-	B40	PCIE_RX12-	C40	10G_SDP0	D40	10G_SDP1
A41	GND (fixed)	B41	GND (fixed)	C41	GND (fixed)	D41	GND (fixed)
A42	USB2-	B42	USB3-	C42	10G_KR_RX1+	D42	10G_KR_TX1+
A43	USB2+	B43	USB3+	C43	10G_KR_RX1-	D43	10G_KR_TX1-
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	GND	D44	GND
A45	USB0-	B45	USB1-	C45	RSVD10G	D45	RSVD10G
A46	USB0+	B46	USB1+	C46	CEI_MDC	D46	CEI_MDIO
A47	VCC_RTC	B47	ESPI_EN#	C47	CEI_INT#	D47	ETH_PHY_INT#
A48	RSMRST_OUT#	B48	USB0_HOST_PRSN#	C48	GND	D48	GND
A49	GBE0_SDP	B49	SYS_RESET#	C49	10G_KR_RX0+	D49	10G_KR_TX0+
A50	LPC_SERIRQ/ESPI_CS1#	B50	CB_RESET#	C50	10G_KR_RX0-	D50	10G_KR_TX0-
A51	GND (fixed)	B51	GND (fixed)	C51	GND (fixed)	D51	GND (fixed)
A52	PCIE_TX5+	B52	PCIE_RX5+	C52	PCIE_RX16+	D52	PCIE_TX16+
A53	PCIE_TX5-	B53	PCIE_RX5-	C53	PCIE_RX16-	D53	PCIE_TX16-
A54	GPIO	B54	GPO1	C54	TYPE0#	D54	RSVD
A55	PCIE_TX4+	B55	PCIE_RX4+	C55	PCIE_RX17+	D55	PCIE_TX17+
A56	PCIE_TX4-	B56	PCIE_RX4-	C56	PCIE_RX17-	D56	PCIE_TX17-
A57	GND	B57	GPO2	C57	TYPE1#	D57	TYPE2#
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PCIE_RX18+	D58	PCIE_TX18+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PCIE_RX18-	D59	PCIE_TX18-
A60	GND	B60	GND (fixed)	C60	GND (fixed)	D60	GND (fixed)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PCIE_RX19+	D61	PCIE_TX19+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PCIE_RX19-	D62	PCIE_TX19-
A63	GPIO	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PCIE_RX20+	D65	PCIE_TX20+
A66	GND	B66	WAKE0#	C66	PCIE_RX20-	D66	PCIE_TX20-
A67	GPIO	B67	WAKE1#	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PCIE_RX21+	D68	PCIE_TX21+
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PCIE_RX21-	D69	PCIE_TX21-
A70	GND (fixed)	B70	GND (fixed)	C70	GND (fixed)	D70	GND (fixed)
A71	PCIE_TX8+	B71	PCIE_RX8+	C71	PCIE_RX22+	D71	PCIE_TX22+
A72	PCIE_TX8-	B72	PCIE_RX8-	C72	PCIE_RX22-	D72	PCIE_TX22-
A73	GND	B73	GND	C73	GND	D73	GND

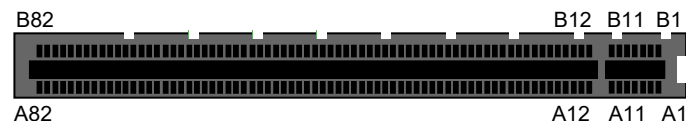
Row A		Row B		Row C		Row D	
A74	PCIE_TX9+	B74	PCIE_RX9+	C74	PCIE_RX23+	D74	PCIE_TX23+
A75	PCIE_TX9-	B75	PCIE_RX9-	C75	PCIE_RX23-	D75	PCIE_TX23-
A76	GND	B76	GND	C76	GND	D76	GND
A77	PCIE_TX10+	B77	PCIE_RX10+	C77	RSVD	D77	RSVD
A78	PCIE_TX10-	B78	PCIE_RX10-	C78	PCIE_RX24+	D78	PCIE_TX24+
A79	GND	B79	GND	C79	PCIE_RX24-	D79	PCIE_TX24-
A80	GND (fixed)	B80	GND (fixed)	C80	GND (fixed)	D80	GND (fixed)
A81	PCIE_TX11+	B81	PCIE_RX11+	C81	PCIE_RX25+	D81	PCIE_TX25+
A82	PCIE_TX11-	B82	PCIE_RX11-	C82	PCIE_RX25-	D82	PCIE_TX25-
A83	GND	B83	GND	C83	RSVD	D83	RSVD
A84	NCSI_TX_EN	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PCIE_RX26+	D85	PCIE_TX26+
A86	RSVD	B86	VCC_5V_SBY	C86	PCIE_RX26-	D86	PCIE_TX26-
A87	RSVD	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE_CLK_REF+	B88	BIOS_DIS1#	C88	PCIE_RX27+	D88	PCIE_TX27+
A89	PCIE_CLK_REF-	B89	NCSI_RX_ER	C89	PCIE_RX27-	D89	PCIE_TX27-
A90	GND (fixed)	B90	GND (fixed)	C90	GND (fixed)	D90	GND (fixed)
A91	SPI_POWER	B91	NCSI_CLK_IN	C91	PCIE_RX28+	D91	PCIE_TX28+
A92	SPI_MISO	B92	NCSI_RXD1	C92	PCIE_RX28-	D92	PCIE_TX28-
A93	GPO0	B93	NCSI_RXD0	C93	GND	D93	GND
A94	SPI_CLK	B94	NCSI_CRD_DV	C94	PCIE_RX29+	D94	PCIE_TX29+
A95	SPI_MOSI	B95	NCSI_TXD1	C95	PCIE_RX29-	D95	PCIE_TX29-
A96	TPM_PP	B96	NCSI_TXD0	C96	GND	D96	GND
A97	TYPE10#	B97	SPI_CS#	C97	RSVD	D97	RSVD
A98	SER0_TX / CAN_TX	B98	NCSI_ARB_IN	C98	PCIE_RX30+	D98	PCIE_TX30+
A99	SER0_RX / CAN_RX	B99	NCSI_ARB_OUT	C99	PCIE_RX30-	D99	PCIE_TX30-
A100	GND (fixed)	B100	GND (fixed)	C100	GND (fixed)	D100	GND (fixed)
A101	SER1_TX	B101	FAN_PWMOUT	C101	PCIE_RX31+	D101	PCIE_TX31+
A102	SER1_RX	B102	FAN_TACHIN	C102	PCIE_RX31-	D102	PCIE_TX31-
A103	LID#	B103	SLEEP#	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (fixed)	B110	GND (fixed)	C110	GND (fixed)	D110	GND (fixed)

6.5. 10GbE Slot

PCIEKR: Insert the 10GbE adapter card into PCI Express x16 slot (proprietary pinout), and route the 10G-KR and sideband signals from the module to the adapter card.

Two types of 10GbE adapter cards are available:

- **10G SFP+ Card** (10GBASE-KR to 10G SFP+ signal)
- **10GBASE-T Card** (10GBASE-KR to 10GBASE-T signal)



Pin	Signal	Pin	Signal
B1	+ 12V	A1	NC
B2	+ 12V	A2	+ 12V
B3	+ 12V	A3	+ 12V
B4	GND	A4	GND
B5	NC	A5	NC
B6	NC	A6	NC
B7	GND	A7	GND
B8	CEI_SDA	A8	NC
B9	CEI_SCL	A9	NC
B10	+ 3.3VSB	A10	NC
B11	+ 3.3VSB	A11	NC
B12	NC	A12	GND
B13	+ 5VSB	A13	NC
B14	+ 5VSB	A14	NC
B15	NC	A15	NC
B16	10G_INT1/ETH0-3_PHY_INT#	A16	NC
B17	CEI_INTN	A17	NC
B18	GND	A18	GND
B19	NC	A19	NC

Pin	Signal	Pin	Signal
B20	NC	A20	GND
B21	GND	A21	NC
B22	GND	A22	NC
B23	10G_KR_RX3_P	A23	GND
B24	10G_KR_RX3_N	A24	GND
B25	GND	A25	10G_KR_TX3_P
B26	GND	A26	10G_KR_TX3_N
B27	10G_KR_RX2_P	A27	GND
B28	10G_KR_RX2_N	A28	GND
B29	GND	A29	10G_KR_TX2_P
B30	NC	A30	10G_KR_TX2_N
B31	CEI_ResetN	A31	GND
B32	GND	A32	10G_LED_SDA
B33	10G_KR_RX1_P	A33	10G_LED_SCL
B34	10G_KR_RX1_N	A34	GND
B35	GND	A35	10G_KR_TX1_P
B36	GND	A36	10G_KR_TX1_N
B37	10G_PHY_MDIO_SDA1	A37	GND
B38	10G_PHY_MDIO_SCL1	A38	GND

Pin	Signal	Pin	Signal
B39	GND	A39	CEI_MDIO
B40	GND	A40	CEI_MDC
B41	10G_KR_RX0_P	A41	GND
B42	10G_KR_RX0_N	A42	GND
B43	GND	A43	10G_KR_TX0_P
B44	GND	A44	10G_KR_TX0_N
B45	10G_SDP3	A45	GND
B46	10G_SDP2	A46	GND
B47	GND	A47	NC
B48	10G_SDP1	A48	CEI_PresentN
B49	GND	A49	GND
B50	NC	A50	10G_SDP0
B51	NC	A51	GND
B52	GND	A52	NC
B53	GND	A53	NC
B54	NC	A54	GND
B55	NC	A55	GND
B56	GND	A56	NC
B57	GND	A57	NC

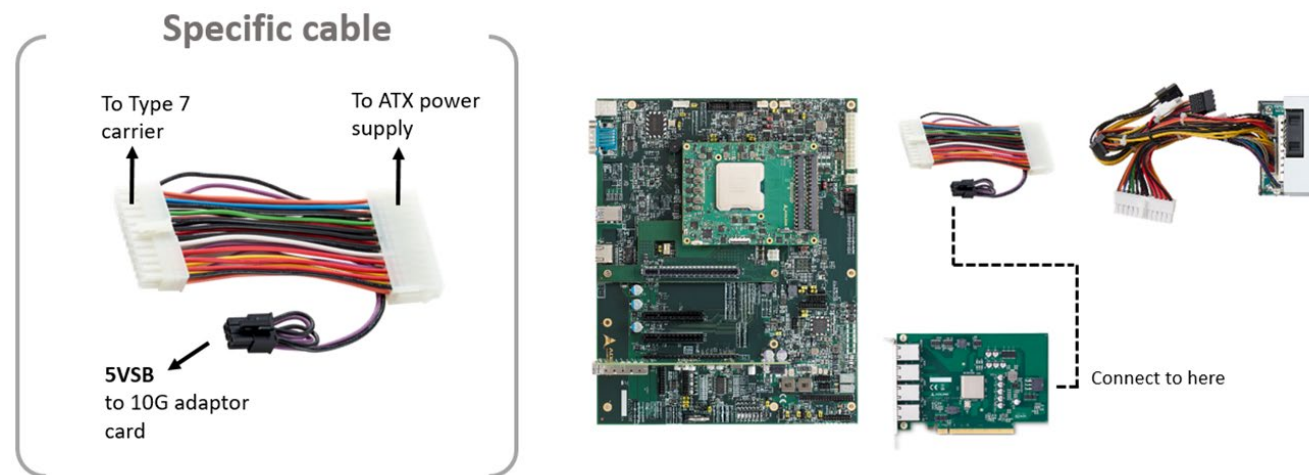
B58	NC	A58	GND
B59	NC	A59	GND
B60	GND	A60	NC
B61	GND	A61	NC
B62	NC	A62	GND
B63	NC	A63	GND
B64	GND	A64	NC
B65	GND	A65	NC
B66	NC	A66	GND

B67	NC	A67	GND
B68	GND	A68	NC
B69	GND	A69	NC
B70	NC	A70	GND
B71	NC	A71	GND
B72	GND	A72	NC
B73	GND	A73	NC
B74	NC	A74	GND
B75	NC	A75	GND

B76	GND	A76	NC
B77	GND	A77	NC
B78	NC	A78	GND
B79	NC	A79	GND
B80	GND	A80	NC
B81	NC	A81	NC
B82	NC	A82	GND

**Note:**

- When power jumper is set to ATX mode, additional cable for the 10GbE adapter card for Express-ID7 connecting to the standby power of the ATX power supply is required. If power jumper is set to AT mode, no additional cable is needed. Please contact an ADLINK representative for details.

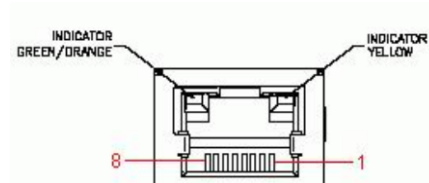


- Pins B16, B37, B38 are for the 10GbE adapter card for Express-VR7. Please contact an ADLINK representative for details.

6.6. GbE

CN18: RJ-45 GbE

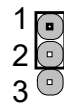
Pin	Signal
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-



6.7. MiniBMC (optional)

CN46/47/48: MiniBMC mode selection

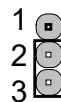
Jumper	Status
1-2	Normal Mode (default)
2-3	Debug Mode



CN49: MiniBMC mode selection

Enables Debug mode of MiniBMC for firmware development through CN46/47/48/49 selection

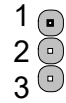
Jumper	Status
1-2	Debug Mode
2-3	Normal Mode (default)



CN1001: Communication port

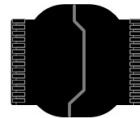
Sends out debug message(s) for firmware development

Pin	Signal
1	UART0_RXD
2	UART0_TXD
3	GND

**U502: MiniBMC SPI socket**

EEPROM for storing MiniBMC firmware

Jumper	Status
1	IPMC_SPICS0
2	IPMC_SPIMISO
3	IPMC_WP-L
4	GND
5	IPMC_SPIMOSI
6	IPMC_SPICK
7	IPMC_HOLD-L
8	+ 3.3V



Note: MiniBMC is supported by project basis.

6.8. PCI Express Slots

PCI Express x8

PCIE 8(1): PCIe 0-7

Pin	Signal	Pin	Signal
B1	+ 12V	A1	GND
B2	+ 12V	A2	+ 12V
B3	NC	A3	+ 12V
B4	GND	A4	GND
B5	SMB_CLK	A5	TCK
B6	SMB_DAT	A6	TDI
B7	GND	A7	NC
B8	+ 3.3V	A8	TMS
B9	TRST#	A9	+ 3.3V
B10	+ 3.3VSB	A10	+ 3.3V
B11	WAKE0#	A11	RST_PCIE
B12	NC	A12	GND
B13	GND	A13	REFCLKP
B14	PCIE0_TXP	A14	REFCLKN
B15	PCIE0_TXN	A15	GND
B16	GND	A16	PCIE0_RXP
B17	NC	A17	PCIE0_RXN

Pin	Signal	Pin	Signal
B18	GND	A18	GND
B19	PCIE1_TXP	A19	NC
B20	PCIE1_TXN	A20	GND
B21	GND	A21	PCIE1_RXP
B22	GND	A22	PCIE1_RXN
B23	PCIE2_TXP	A23	GND
B24	PCIE2_TXN	A24	GND
B25	GND	A25	PCIE2_RXP
B26	GND	A26	PCIE2_RXN
B27	PCIE3_TXP	A27	GND
B28	PCIE3_TXN	A28	GND
B29	GND	A29	PCIE3_RXP
B30	NC	A30	PCIE3_RXN
B31	NC	A31	GND
B32	GND	A32	NC
B33	PCIE4_TXP	A33	NC
B34	PCIE4_TXN	A34	GND

Pin	Signal	Pin	Signal
B35	GND	A35	PCIE4_RXP
B36	GND	A36	PCIE4_RXN
B37	PCIE5_TXP	A37	GND
B38	PCIE5_TXN	A38	GND
B39	GND	A39	PCIE5_RXP
B40	GND	A40	PCIE5_RXN
B41	PCIE6_TXP	A41	GND
B42	PCIE6_TXN	A42	GND
B43	GND	A43	PCIE6_RXP
B44	GND	A44	PCIE6_RXN
B45	PCIE7_TXP	A45	GND
B46	PCIE7_TXN	A46	GND
B47	GND	A47	PCIE7_RXP
B48	NC	A48	PCIE7_RXN
B49	GND	A49	GND

PCIE 8(2): PCIe 8-15

Pin	Signal	Pin	Signal
B1	+ 12V	A1	GND
B2	+ 12V	A2	+ 12V
B3	NC	A3	+ 12V
B4	GND	A4	GND
B5	SMB_CLK	A5	TCK
B6	SMB_DAT	A6	TDI
B7	GND	A7	NC
B8	+ 3.3V	A8	TMS
B9	TRST#	A9	+ 3.3V
B10	+ 3.3VSB	A10	+ 3.3V
B11	WAKE0#	A11	RST_PCIE
B12	NC	A12	GND
B13	GND	A13	REFCLKP
B14	PCIE8_TXP	A14	REFCLKN
B15	PCIE8_TXN	A15	GND
B16	GND	A16	PCIE8_RXP
B17	NC	A17	PCIE8_RXN

Pin	Signal	Pin	Signal
B18	GND	A18	GND
B19	PCIE9_TXP	A19	NC
B20	PCIE9_TXN	A20	GND
B21	GND	A21	PCIE9_RXP
B22	GND	A22	PCIE9_RXN
B23	PCIE10_TXP	A23	GND
B24	PCIE10_TXN	A24	GND
B25	GND	A25	PCIE10_RXP
B26	GND	A26	PCIE10_RXN
B27	PCIE11_TXP	A27	GND
B28	PCIE11_TXN	A28	GND
B29	GND	A29	PCIE11_RXP
B30	NC	A30	PCIE11_RXN
B31	NC	A31	GND
B32	GND	A32	NC
B33	PCIE12_TXP	A33	NC
B34	PCIE12_TXN	A34	GND

Pin	Signal	Pin	Signal
B35	GND	A35	PCIE12_RXP
B36	GND	A36	PCIE12_RXN
B37	PCIE13_TXP	A37	GND
B38	PCIE13_TXN	A38	GND
B39	GND	A39	PCIE13_RXP
B40	GND	A40	PCIE13_RXN
B41	PCIE14_TXP	A41	GND
B42	PCIE14_TXN	A42	GND
B43	GND	A43	PCIE14_RXP
B44	GND	A44	PCIE14_RXN
B45	PCIE15_TXP	A45	GND
B46	PCIE15_TXN	A46	GND
B47	GND	A47	PCIE15_RXP
B48	NC	A48	PCIE15_RXN
B49	GND	A49	GND

PCI Express x16 (up to Gen4 speed)**PCIE 16:** PCIe 15-31

Pin	Signal	Pin	Signal
B1	+ 12V	A1	NC
B2	+ 12V	A2	+ 12V
B3	NC	A3	+ 12V
B4	GND	A4	GND
B5	SMB_CLK	A5	TCK
B6	SMB_DAT	A6	TDI
B7	GND	A7	NC
B8	NC	A8	TMS
B9	TRST#	A9	+ 3.3V
B10	+ 3.3VSB	A10	+ 3.3V
B11	WAKE0#	A11	RST_PCIE
B12	NC	A12	GND
B13	GND	A13	REFCLKP
B14	PCIE16_TXP	A14	REFCLKN
B15	PCIE16_TXN	A15	GND
B16	GND	A16	PCIE16_RXP
B17	NC	A17	PCIE16_RXN
B18	GND	A18	GND
B19	PCIE17_TXP	A19	NC
B20	PCIE17_TXN	A20	GND
B21	GND	A21	PCIE17_RXP
B22	GND	A22	PCIE17_RXN
B23	PCIE18_TXP	A23	GND

Pin	Signal	Pin	Signal
B24	PCIE18_TXN	A24	GND
B25	GND	A25	PCIE18_RXP
B26	GND	A26	PCIE18_RXN
B27	PCIE19_TXP	A27	GND
B28	PCIE19_TXN	A28	GND
B29	GND	A29	PCIE19_RXP
B30	NC	A30	PCIE19_RXN
B31	NC	A31	GND
B32	GND	A32	NC
B33	PCIE20_TXP	A33	NC
B34	PCIE20_TXN	A34	GND
B35	GND	A35	PCIE20_RXP
B36	GND	A36	PCIE20_RXN
B37	PCIE21_TXP	A37	GND
B38	PCIE21_TXN	A38	GND
B39	GND	A39	PCIE21_RXP
B40	GND	A40	PCIE21_RXN
B41	PCIE22_TXP	A41	GND
B42	PCIE22_TXN	A42	GND
B43	GND	A43	PCIE20_RXP
B44	GND	A44	PCIE20_RXN
B45	PCIE23_TXP	A45	GND
B46	PCIE23_TXN	A46	GND

Pin	Signal	Pin	Signal
B47	GND	A47	PCIE23_RXP
B48	NC	A48	PCIE23_RXN
B49	GND	A49	GND
B50	PCIE24_TXP	A50	NC
B51	PCIE24_TXN	A51	GND
B52	GND	A52	PCIE24_RXP
B53	GND	A53	PCIE24_RXN
B54	PCIE25_TXP	A54	GND
B55	PCIE25_TXN	A55	GND
B56	GND	A56	PCIE25_RXP
B57	GND	A57	PCIE25_RXN
B58	PCIE26_TXP	A58	GND
B59	PCIE26_TXN	A59	GND
B60	GND	A60	PCIE26_RXP
B61	GND	A61	PCIE26_RXN
B62	PCIE27_TXP	A62	GND
B63	PCIE27_TXN	A63	GND
B64	GND	A64	PCIE27_RXP
B65	GND	A65	PCIE27_RXN
B66	PCIE28_TXP	A66	GND
B67	PCIE28_TXN	A67	GND
B68	GND	A68	PCIE28_RXP
B69	GND	A69	PCIE28_RXN

B70	PCIE29_TXP	A70	GND
B71	PCIE29_TXN	A71	GND
B72	GND	A72	PCIE29_RXP
B73	GND	A73	PCIE29_RXN
B74	PCIE30_TXP	A74	GND

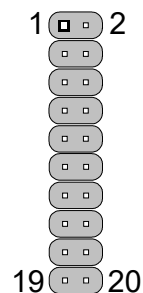
B75	PCIE30_TXN	A75	GND
B76	GND	A76	PCIE30_RXP
B77	GND	A77	PCIE30_RXN
B78	PCIE31_TXP	A78	GND
B79	PCIE31_TXN	A79	GND

B80	GND	A80	PCIE31_RXP
B81	NC	A81	PCIE31_RXN
B82	NC	A82	GND

6.9. LPC Debug

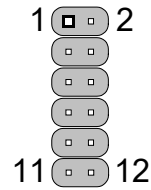
CN37: LPC Debug Header

Pin	Signal	Pin	Signal
1	LPC_CLK	2	GND
3	LPC_FRAME#	4	KEY
5	LPC_RST#	6	+ 5V
7	LPC_AD3	8	LPC_AD2
9	+ 3.3VSB	10	LPC_AD1
11	LPC_AD0	12	GND
13	SMB_CK	14	SMB_DAT
15	SPD_A1 (see JP25)	16	SPD_A0 (see JP26)
17	GND	18	LPC_SERIRQ
19	NC	20	NC



CN40: LPC Test Connector

Pin	Signal	Pin	Signal
1	LPC_DRQ0#	2	LPC_AD0
3	LPC_DRQ1#	4	LPC_AD1
5	LPC_SERIRQ	6	LPC_AD2
7	LPC_FRAME#	8	LPC_AD3
9	LPC_RST#	10	GND
11	LPC_CLK	12	GND

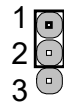
**JP26/25: External LPC EEPROM address selection**

JP25 and JP26 configure the address of the external EEPROM connected to the LPC Debug Header (CN37)

JP26: EEPROM Address A0 Selection

JP25: EEPROM Address A1 Selection

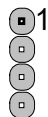
Jumper	Status
1-2	High "1" (default)
2-3	Low "0"



6.10. I²C and SMB Bus (for user access)

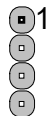
CN33: I2C Bus

Pin	Signal
1	+ 3.3V
2	I2C_DAT
3	I2C_CK
4	GND



CN34: SMBus

Pin	Signal
1	+ 3.3V
2	SMB_DAT
3	SMB_CK
4	GND



JP19-21: I2C/SMBus Buffers

These buffer settings are for isolating I2C and SMBus (test feature)

ON: I2C/SMBus passes through LTC4300A-2 buffer

OFF: Bypasses buffer

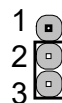
JP19: I²C buffer [data]

JP20: I²C buffer [clock]

JP21: SMB Bus buffer [data]

JP22: SMB Bus buffer [clock]

Jumper	Status
1-2	ON
2-3	OFF (default)



JP29-31: I2C EEPROM Address Selection

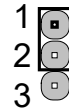
JP29 to JP31 configure the address of the A0, A1, and A2 bits of the I2C EEPROM

JP29: I2C EEPROM A0

JP30: I2C EEPROM A1

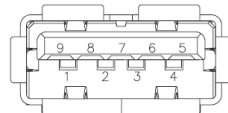
JP31: I2C EEPROM A2

Jumper	Status
1-2	A0_High "1" (default)
2-3	A0_Low "0"

**6.11. USB**

CN45: USB 3.0 x4 connector

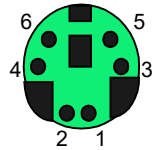
Pin	Signal
1	USB3.0_P5VA
2	USB2_CMAN
3	USB2_CMAP
4	GND
5	USB3A_CM_RXN
6	USB3A_CM_RXP
7	GND
8	USB3A_CM_TXN
9	USB3A_CM_TXP



6.12. Keyboard and Mouse

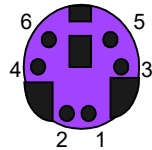
CN19: Mouse [top]

Pin	Signal
1	MSDAT
2	NC
3	GND
4	KB5V
5	MSCLK
6	NC



Keyboard [bottom]

Pin	Signal
1	KBDAT
2	NC
3	GND
4	KB5V
5	KBCLK
6	NC



6.13. SATA

CN12/13: SATA

Pin	Signal	Pin	Signal
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND	A4	



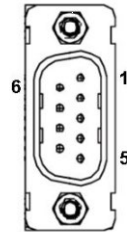
6.14. Serial Ports

CN1002: Serial ports from Super I/O

COM3 [DB9] [top]

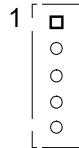
COM4 [DB9] [bottom]

Pin	Signal	Pin	Signal
1	DCD#	6	DSR
2	RXD	7	RTS#
3	TXD	8	CTS#
4	DTR#	9	RI#
5	GND		



CN22: IrDA connector

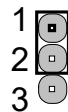
Pin	Signal
1	+ 5V
2	NC
3	IrRXD
4	GND
5	IrTXD



JP18: Super I/O

Enables/Disables the Super I/O. The onboard W83627DHG-PT Super I/O is enabled by default. To disable, short pins 2-3 of jumper JP18

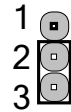
Jumper	Status
1-2	Enable (default)
2-3	Disable



JP10: Super I/O address

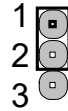
Selects Super I/O address

Jumper	Status
1-2	4Eh
2-3	2Eh (default)

**JP11: Super I/O clock**

Selects Super I/O clock

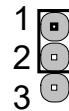
Jumper	Status
1-2	48Mhz
2-3	24Mhz (default)

**CN1003/1004: Enable of Serial over LAN (optional)**

Enables Serial over LAN through CN1003, CN1004. Connects serial signals from Super I/O (on carrier) to MiniBMC. The serial signals from Super I/O connect to CN1002 connector by default.

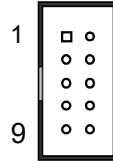
CN1003: TX setting**CN1004:** RX setting

Jumper	Status
1-2	RS232 (default)
2-3	MiniBMC

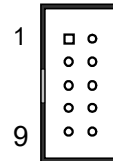


CN6-7: Serial ports from COM Express Module**CN6:** COM1 [header]. Source from SER0

Pin	Signal	Pin	Signal
1	NC	2	NC
3	SER0_RX	4	NC
5	SER0_TX	6	NC
7	NC	8	NC
9	GND	10	NC

**CN7:** COM2 [header]. Source from SER1

Pin	Signal	Pin	Signal
1	NC	2	NC
3	SER1_RX	4	NC
5	SER1_TX	6	NC
7	NC	8	NC
9	GND	10	NC

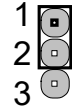


Note: CN6 and CN7 are General Purpose Serial Interface ports from the module.

6.15. Fan Connectors

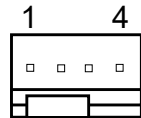
JP35, JP36, JP37

Jumper	Status
1-2	4-pin (default)
2-3	3-pin



FAN1-3: 12V Fan Power

Pin	Signal
1	GND
2	Fan Power 12V
3	Fan Speed Sense
4	Fan Speed Control (PWM)



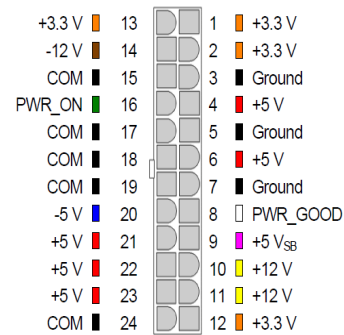
Note: FAN3 PWM is controlled by the module (B101: FAN_PWMOUT, B102: FAN_TACHIN). The "sense" and "speed" signals of FAN 1/2 are connected to the Super I/O.

6.16. Power Connectors

CN1: ATX 24-pin Power Connector

Connect the ATX 24-pin (or 20-pin) connector to supply power to the Express-Base7 Plus carrier.

Pin	Signal	Pin	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	COM
4	+5V	16	PWR_ON
5	GND	17	COM
6	+5V	18	COM
7	GND	19	COM
8	PWR_GOOD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM



CN5: ATX 12V 4-pin Connector

Connect the ATX 12V 4-pin connector to supply power to the COM Express module.

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



Note:

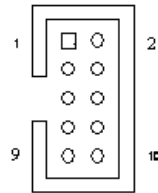
- All 12V power for the COM Express module is provided by the ATX 12V 4-pin connector.

- To avoid damage to the carrier board and installed components, be sure to connect the ATX power supply to the proper connectors. See 8.5 *ATX Power Connectors* for details.

CN44: Smart Battery (optional)

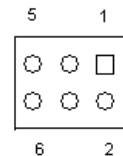
Connects to Smart Battery module

Pin	Signal	Pin	Signal
1	I2C_CK	6	SUS_S45#
2	I2C_DAT	7	+ 12V
3	PWRBTN#	8	+ 5VSB
4	BATLOW#	9	SUS_STAT#
5	PS_ON#	10	GND

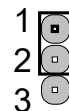
**6.17. Power Jumper Settings****CN2: PWR_OK Config**

Connect the ATX 12V 4-pin connector to supply power to the COM Express module

Jumper	Status
1-2	Add 3.3V Pull-up with 10k to signal PWR_OK
3-4	Connect PWRGOOD of ATX power supply (default)
5-6	Connect PWRGOOD of onboard DC-DC regulator

**JP1: AT/ATX Mode**In AT mode, JP1 shorts PS_ON# to ground directly, forcing power on. See 8.6 *AT Power Mode* for details.

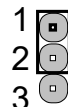
Jumper	Status
1-2	ATX Mode (default)
2-3	AT Mode



JP2: PS_ON# Signal Source

For modules that connect to S3 signal, PS_ON# should always be set to SUS_S3# as source (even when S3 mode is disabled in BIOS). For modules that do not bring out the S3 signal, PS_ON# should be set to SUS_S5# as source.

Jumper	Status
1-2	SUS_S3# (default)
2-3	SUS_S5#

**JP3: 5VSB to Module Source**

When an AT power supply is connected to the Express-BASE7 Plus, JP3 can be used to provide 5VSB to the COM Express module from the carrier board.

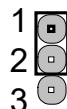
Jumper	Status
1-2	5VSB produced on carrier from Vcc
2-3	5VSB from ATX power supply
3-4	No 5VSB from module

**JP34: 12V to Module in S3/S5 mode**

JP1-2: no 12V to module in S3/S5 mode.

JP2-3: there's always 12V input to the module regardless of the module state.

Jumper	Status
1-2	12V off in S3/S5 (default)
2-3	12V on in S3/S4

**Power Strategies**

Power Strategies	JP1	JP2	JP3	JP34
ATX PSU / ATX to COM Express module	1-2	1-2	2-3	1-2
ATX PSU / AT to COM Express module	2-3	1-2	3-4	2-3
AT PSU / ATX to COM Express module	1-2	1-2	1-2	1-2

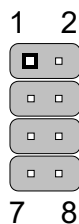
Power Strategies	JP1	JP2	JP3	JP34
AT PSU / AT to COM Express module	2-3	1-2	3-4	2-3

6.18. Other Connectors

CN36/CN39: GPIO headers

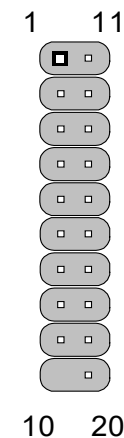
GPIOs of CN36 come from the COM Express module. GPIOs to CN39 come from Express-BASE7 Plus.

Pin	Signal	Pin	Signal
1	GPI0	2	GPO1
3	GPI1	4	GPO2
5	GPI2	6	GPO3
7	GPI3	8	GPO4



CN32: Miscellaneous connector

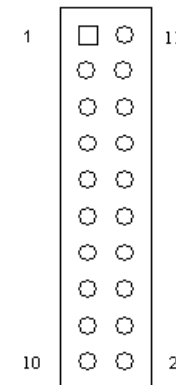
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Power_LED	6	GND	11	BUZZER	16	GND
2	WDT_LED	7	NC	12	NC	17	ATA_ACT
3	GND	8	PS_ON	13	NC	18	+ 3.3V
4	NC	9	+ 5VSB	14	+ 5V	19	PWR_BTN
5	GND	10	SIO_PME	15	SYS_RESET	20	GND



CN41/42: Digital I/O

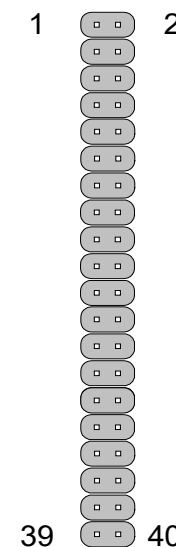
The Express-BASE7 Plus provides GPIO expansion for I2C applications via a Phillips PCA955 with 16-bit I2C I/O port and interrupt (for CN41 n=0, for CN42 n=1). See 8.4 *Digital I/O LEDs* for CN41 LED descriptions.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	I/O n.0	6	I/O n.5	11	GND	16	GND
2	I/O n.1	7	I/O n.6	12	GND	17	GND
3	I/O n.2	8	I/O n.7	13	GND	18	GND
4	I/O n.3	9	INT#	14	GND	19	BATLOW#
5	I/O n.4	10	+ 3.3V	15	GND	20	+ 3.3V



CN43: Feature connector

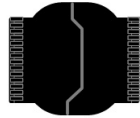
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	+ 5V	2	+ 5VSB	3	+ 5V	4	Hard Disk Activity
5	I2C_DAT	6	SMBCLK_SB	7	I2C_CLK	8	SMBDAT_SB
9	Internal Use	10	GPO0	11	Internal Use	12	GPO1
13	PS_ON#	14	GPO2	15	SUS_S3#	16	GPO3
17	GND	18	GND	19	THRMTRIP#	20	SMBALRT#
21	GPI1	22	SUS_S4#	23	SUS_STAT#	24	GPI0
25	GPI2	26	SUS_S5#	27	WDTRIG	28	THRM#
29	GPI3	30	PCI_M66EN	31	BATLOW#	32	WAKE1#
33	PEF_ENABLE#	34	PEG_LANE_RV#	35	KBINH#	36	SYS_RESET#
37	GND	38	GND	39	PWBTN#	40	PWR_OK



U55: Secondary SPI BIOS socket

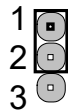
See JP23/JP24 BIOS Selection Jumpers in 6.19 Other Jumper Settings and 7.1 SPI Secondary BIOS for details.

Pin	Signal
1	CS#
2	DO
3	WP#
4	GND
5	DI
6	CLK
7	HOLD#
8	+ 3.3V

**6.19. Other Jumper Settings****JP4: Clear CMOS**

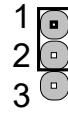
To clear CMOS, shut down the power and short pins 2 and 3 (short VBAT to ground)

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



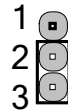
JP23/JP24: BIOS Select

JP6	JP7	Status
1-2	1-2	Module BIOS (default)
2-3	1-2	Reserved
1-2	2-3	Carrier SPI BIOS
2-3	2-3	Reserved

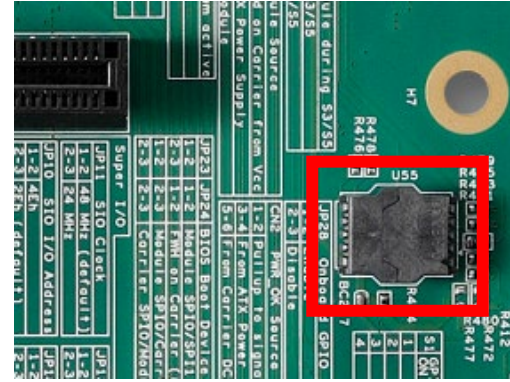
**JP32: TPM Signal jumper**

Configuring the jumper to "on" pulls the TPM signal high while "off" does nothing to the TPM signal (dependent on module used).

Jumper	Status
1-2	On
2-3	Off (default)



- To use the SPI BIOS on the carrier board, short pins 1-2 on JP23 and pins 2-3 on JP24. Then open the SPI BIOS socket and insert the secondary BIOS flash chip



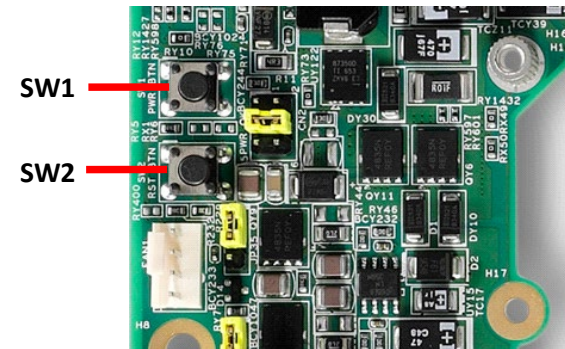
8. Switches, POST, and LEDs

8.1. Switches (S1-S5)

There are two mini switches at the upper-left corner of the carrier.

The **S1** switch is the **ATX Power button**.

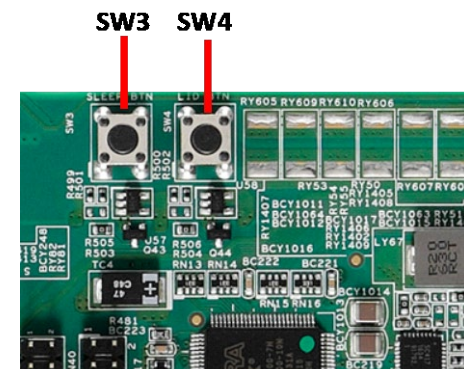
The **S2** switch is the **Reset button**.



There are two more switches at the top of the carrier.

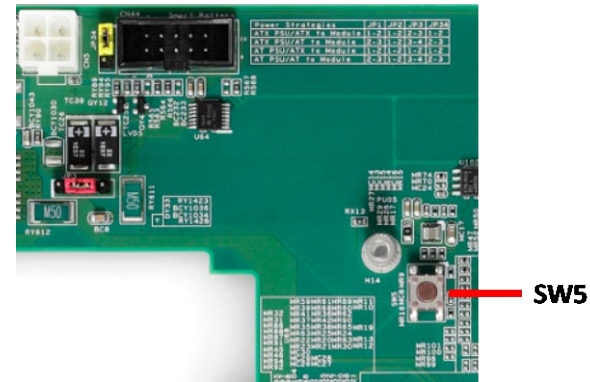
The **S3** switch is the **Sleep button**.

The **S4** switch is the **Lid button**.



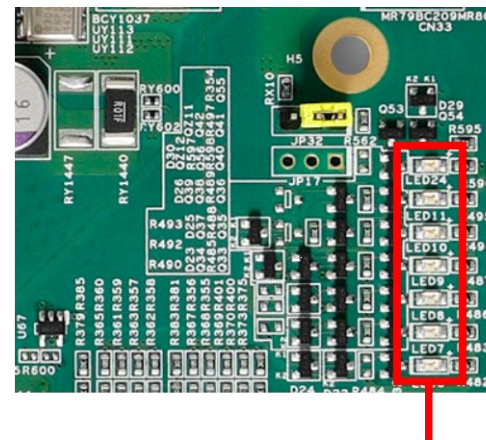
Note: Both buttons support COM Express Type 7 modules for ACPI power management settings in an OS environment.

There is another switch near the top of the carrier.
The **S5** switch is the **MiniBMC Reset button**.



8.2. Module Type Display

At the right side of the Express-BASE7 Plus carrier, 7 mini LEDs (LED 6-11 and LED24) indicate the **type of COM Express module** installed.



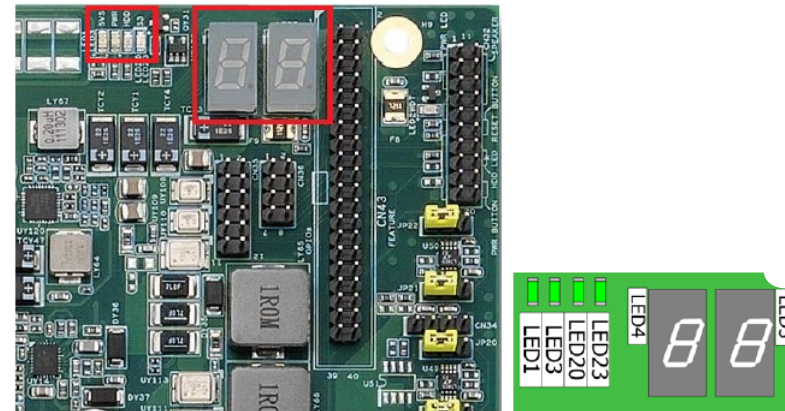
COM Express Type: 1-2, 3, 4, 5, 6, 7 or wrong pinout

8.3. POST and Indicator LEDs

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

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

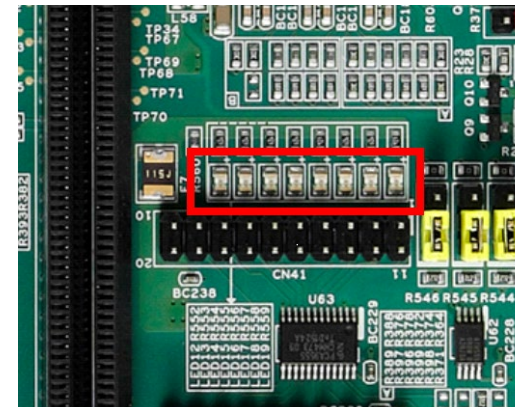
- LED1 5VSB:** ATX power attached on standby or active
- LED3 PWR:** indicates power on
- LED20 HDD:** indicates hard drive activity
- LED23 S3:** indicates S3 status



8.4. Digital I/O LEDs

LED12 to LED19 are indicators for Digital I/O connector CN41.
When the I/O signal is high, the LED is lit.

- I/O 0** corresponds to **LED19**,
- I/O 7** corresponds to **LED12**.

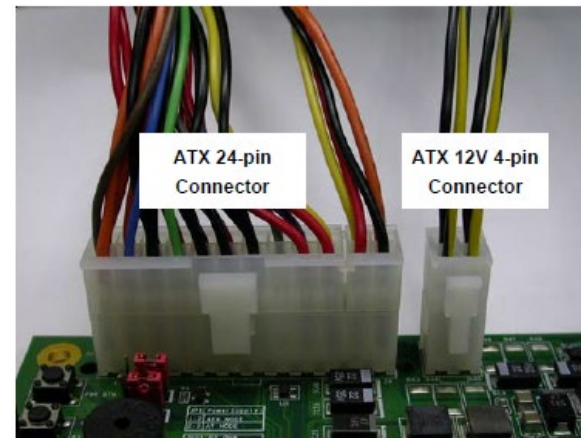


8.5. ATX Power Connectors

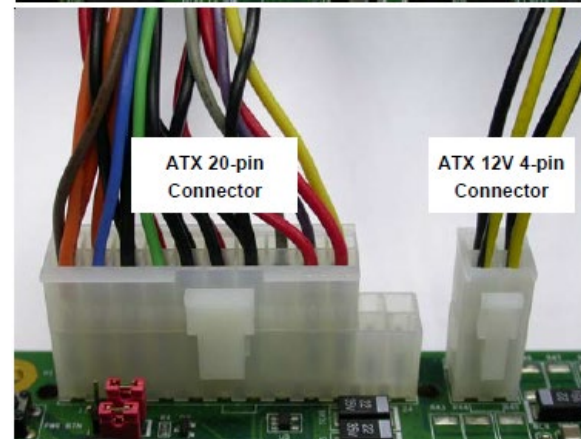
The Express-Base7 Plus carrier board has one **ATX 24-pin connector** to supply power to the carrier board and one **ATX 12V 4-pin connector** to supply power to the COM Express module. **The system will not power on unless an ATX 12V 4-pin connector is connected.**

Warning: DO NOT plug the ATX 12V 4-pin connector into the ATX 24-pin power connector.

If your power supply has a 24-pin ATX connector, then attach the connectors as shown.

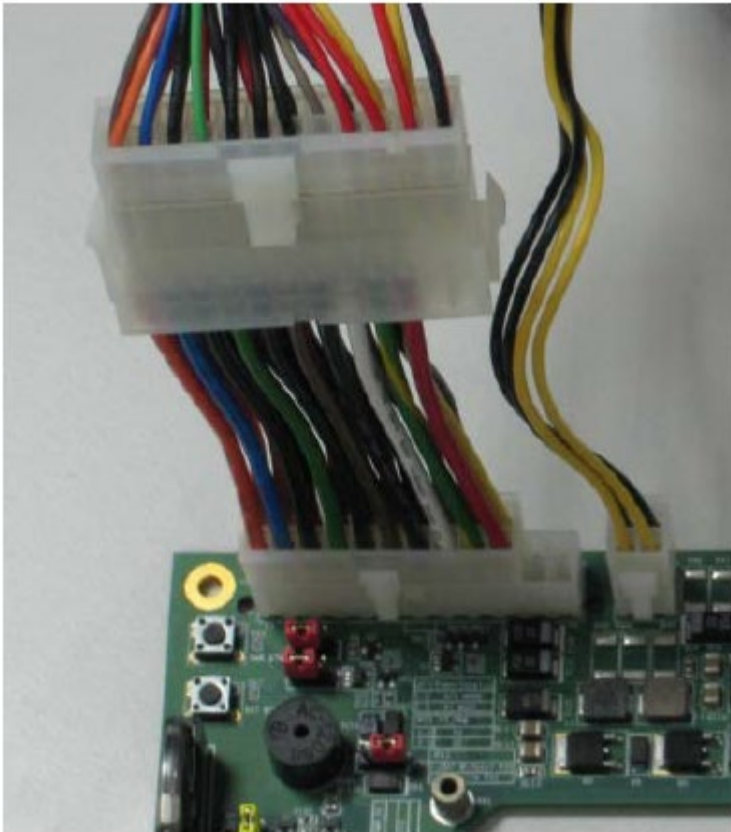


If your power supply has a 20-pin ATX connector, then attach the connectors as shown.



8.6. AT Power Mode

To operate the system in AT Mode with an ATX power supply, use the AT mode PSU converter cable (no 5VSB) to connect the ATX 20/24-pin power connector to the carrier board as shown.



Then set the ATX/AT Mode jumper JP1 to AT Mode as described in *6.17 Power Jumper Settings*.

Appendix

The main updates in the PICMG COM Express R3.1 specifications include:

- Adding support for PCIe Gen4
- Adding a second PCIe Clock (PCIE1_CK_REF+ at B29, PCIE1_CK_REF- at B30)

In order to support PCIe Gen4, an SMT-type PCIe slot shall be adopted. Additionally, some silicon platforms require the use of a second PCIe clock for PCIe lane 15-31 to fully support PCIe Gen4 speed.

For proper PCIe Gen4 validation, an adapter card is developed and pre-assembled on the Type 7 carrier board, as illustrated below. Consequently, the SATA connector is located on the back side of the carrier board.

