COM336

COM Express® Carrier Board
User's Manual

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

This manual can be downloaded from the website.

The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

Warranty

1. Warranty does not cover damages or failures that occur from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

> **Important:**
> Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

• To avoid damage to the system, use the correct AC input voltage range.

• To reduce the risk of electric shock, unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 COM336 board•

- 1 Serial ATA data cable (Length: 500mm)

- Standoff (M2.5*12)

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance with the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

When installing the system board in a new system, you will need at least the following internal components.

- Memory module

- Storage device such as a hard disk drive.

- Power supply

External system peripherals may also be required for navigation and display, including at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

▶ Specifications

GRAPHICS	Processor	AST2500 (non-BMC sku optional by request)
	SDRAM	8Gb memory down DDR4 2400 512M x16 SDRAM
	Display Interface	Through BMC to convert VGA signal VGA display resolution up to 1920x1200
	Ethernet	RTL8211F LAN PHY Support 10/100/1000M Ethernet MAC Speed RJ45 x1
	UART	COM port protocol: RS232 Connector type: DB9
	SMBus (for slave)	From COMe BTB connector reserve pin
EXPANSION	Interface	1 x PCIe x8 2 x PCIe x4 1 x PCIe x16 1 x SDIO
I/O	Ethernet	1 x CEI 10Gb LAN Mini MEZZ slot, support 10GBASE-KR Ethernet MAC Speed 2 x 1GbE LAN (RJ-45) (one from module; another from BMC for remote management)
	USB	4 x USB 3.2 type A 4 x USB 2.0
INTERNAL I/O	Serial	1 x Serial Interface Connector (TX/RX)
	Display	1 x VGA from BMC
	SATA	2 x SATA 3.0
	DIO	1 x 8-bit DIO
	LPC	1 x LPC
	SMBus	1 x SMBus
	I2C	1 x I2C
POWER	Type	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
	Connector	4-pin ATX 12V power 24-pin ATX power
	RTC Battery	CR2032 Coin Cell

| ENVIRONMENT	Temperature	Operating: -20 to 70°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
	MTBF	TBD
MECHANICAL	Dimensions	microATX Form Factor 244mm (9.6") x 244mm (9.6")
	Compliance	PICMG COM Express® R3.1, Type 7 basic & compact modules
CERTIFICATIONS	Certifications	CE, FCC, RoHS

▶ **Block Diagram**
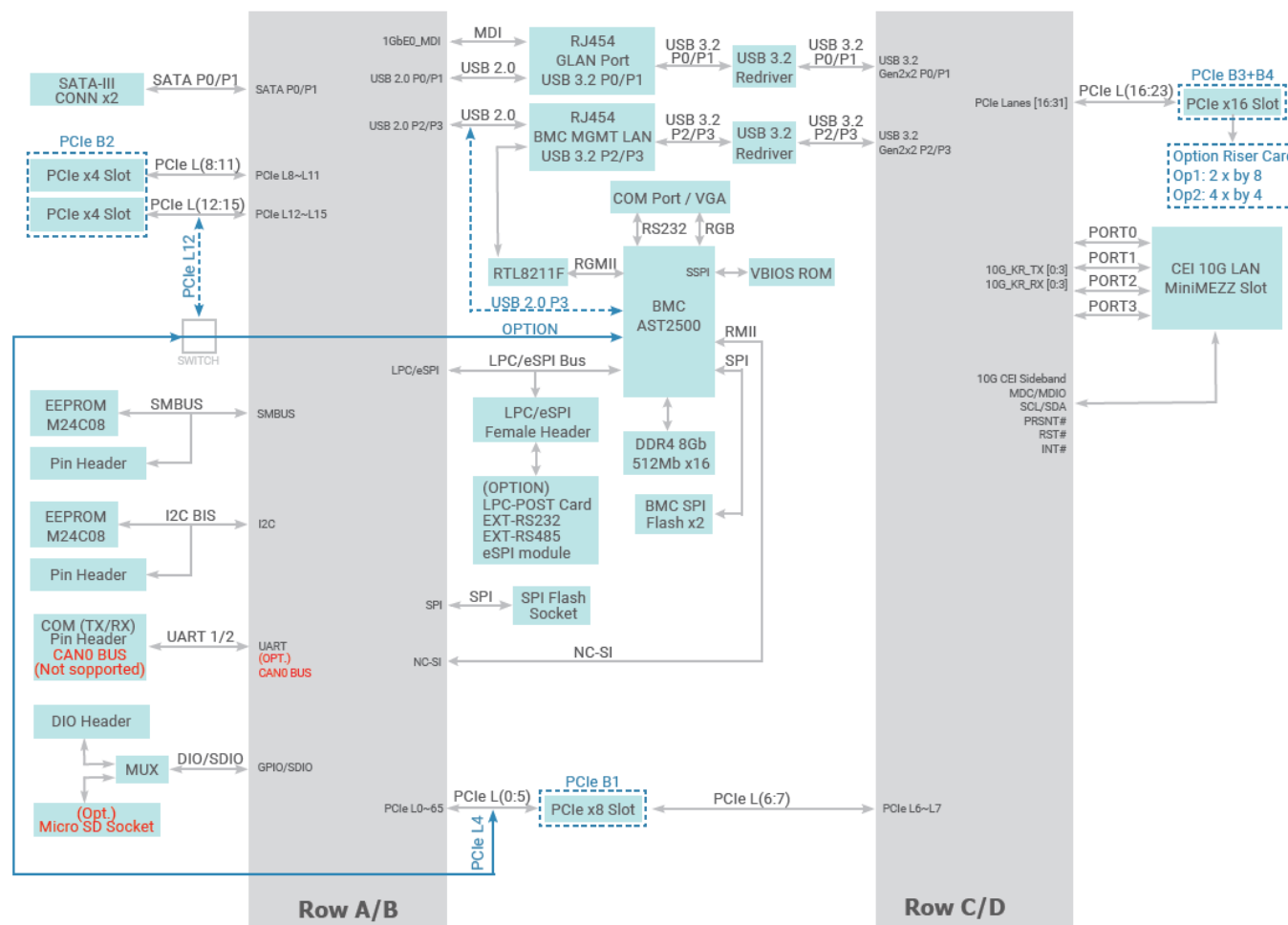
Chapter 2 - Hardware Installation

▶ **Board Layout**
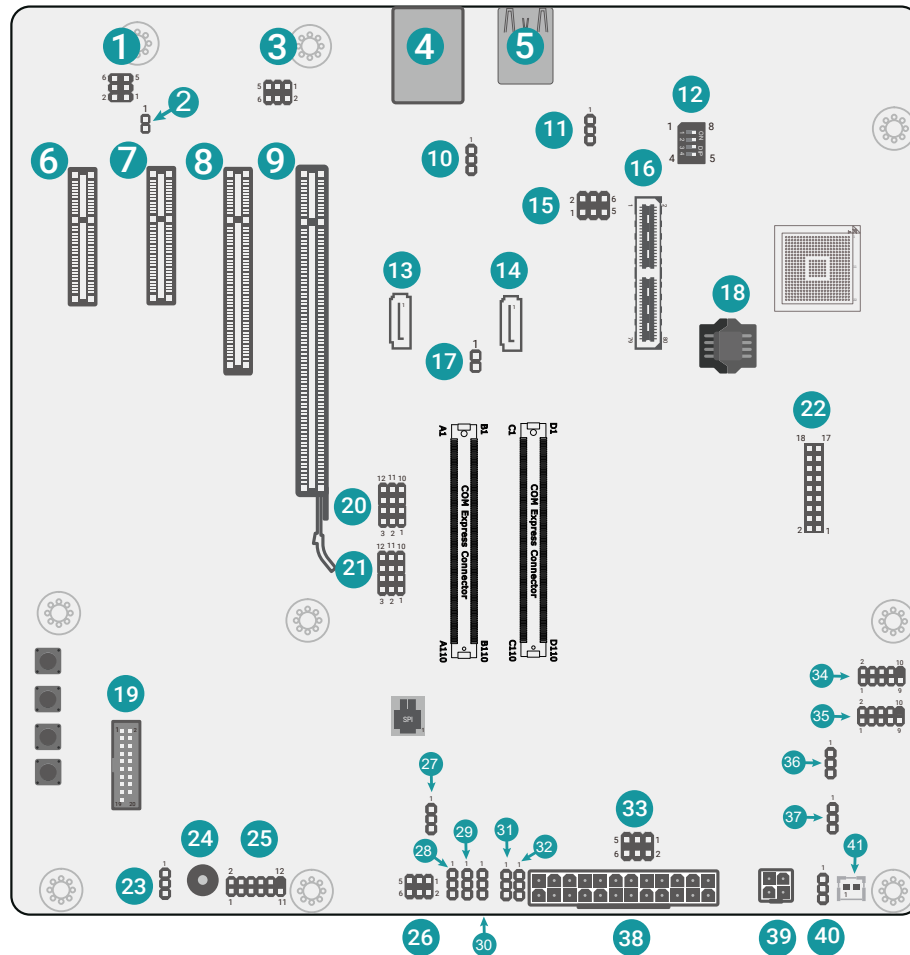
1	I2C_HDR	21	PCIe Lane4 Path Select
2	BMC VGA	22	LPC/ESPI HDR
3	SMBUS_HDR	23	ESPI
4	▲LAN1 ▼USB3_1/2 USB2_1/2	24	Buzzer
5	▲USB3_3/4 ▼USB2_3/4	25	Front Panel
6	PCIex4	26	BIOS BOOT
7	PCIex4	27	MUX_BMC_PCIe Select
8	PCIex8	28	TPM_PP on CB Select
9	PCIex16	29	10G PHY CAP2/3 Select
10	USB1/2_PWR	30	CEI_PRESENT#
11	USB3/4_PWR	31	PSON# Select
12	BMC Hardware Strap	32	PWROK Select
13	SATA3_P0	33	VCC_5V_SBY Source
14	SATA3_P1	34	COM1
15	USB2_P4_Mode	35	COM2
16	MiniMEZZ Slot (Defined by DFI)	36	BMC System Fan2
17	BAT_LOW# Indicator	37	System Fan1
18	SPI	38	ATX Power
19	DIO HDR	39	+12 Power
20	PCIe Lane12 Path Select	40	Clear CMOS
		41	Battery

▶ **Jumper Settings**

USB1/2_PWR (JP1)

USB3/4_PWR (JP2)

- 1-2 On: 5V (default)
- 2-3 On: 5VDU
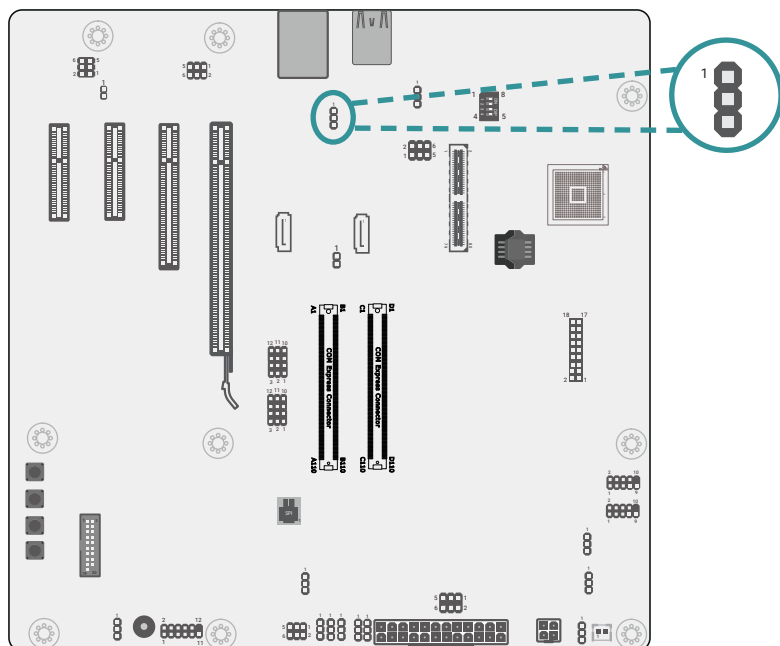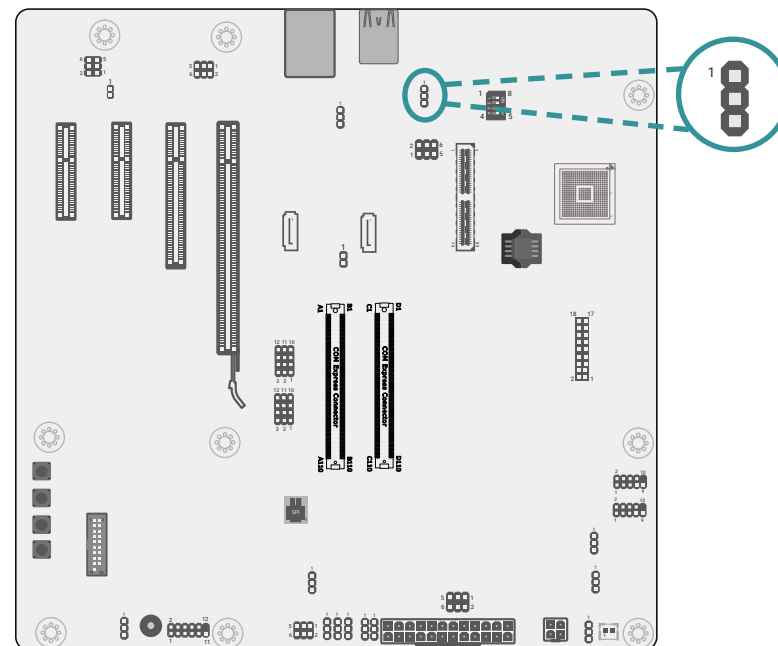
- 1-2 On: 5V (default)
- 2-3 On: 5VDU

USB2_P4_Mode (JP4)
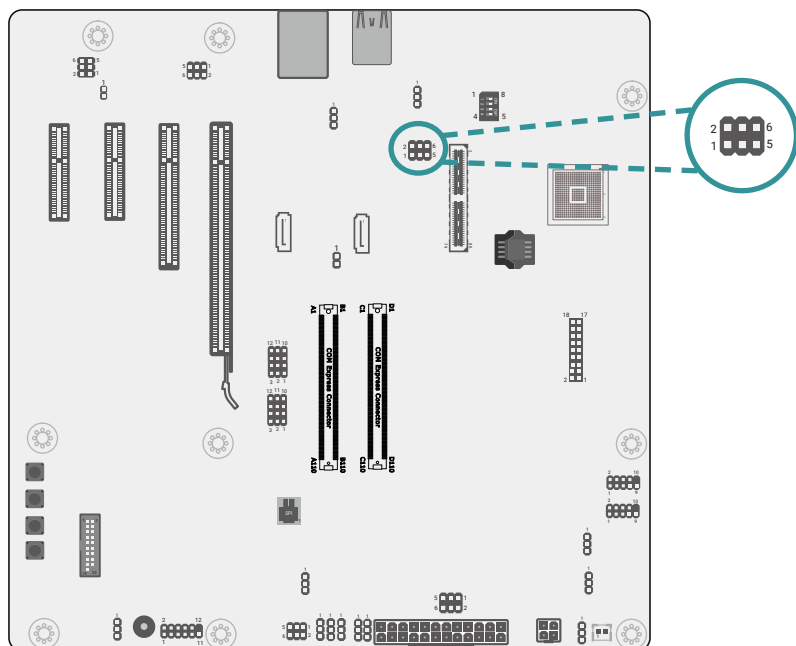
- 1-3, 2-4 On: ETCN2_USB2_P4 (default)

- 3-5, 4-6 On: BMC_USB2

CEI_PRESENT# (JP19)
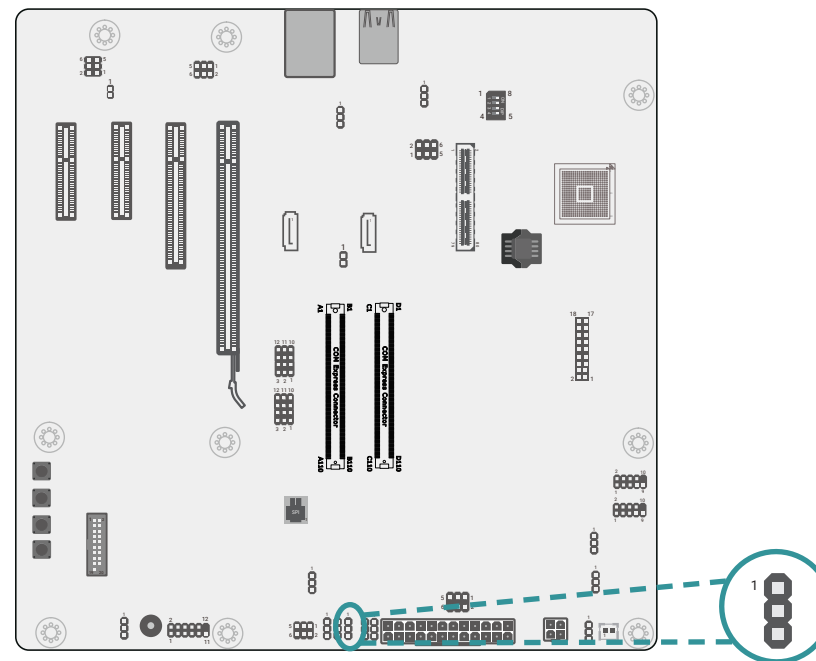
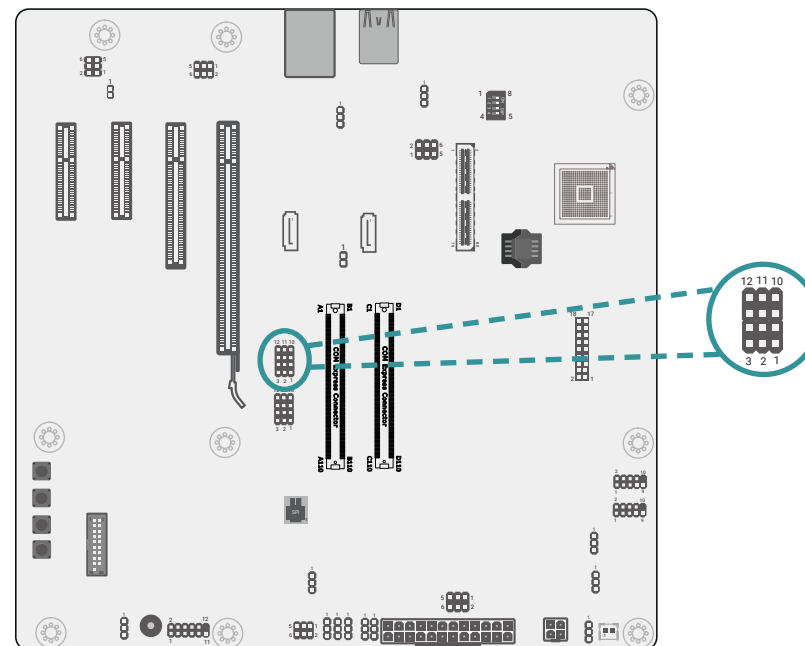- 1-2 On: NC (default)

- 2-3 On: CEI_PRESENT#

MUX_BMC_PCIe Select (JP35)
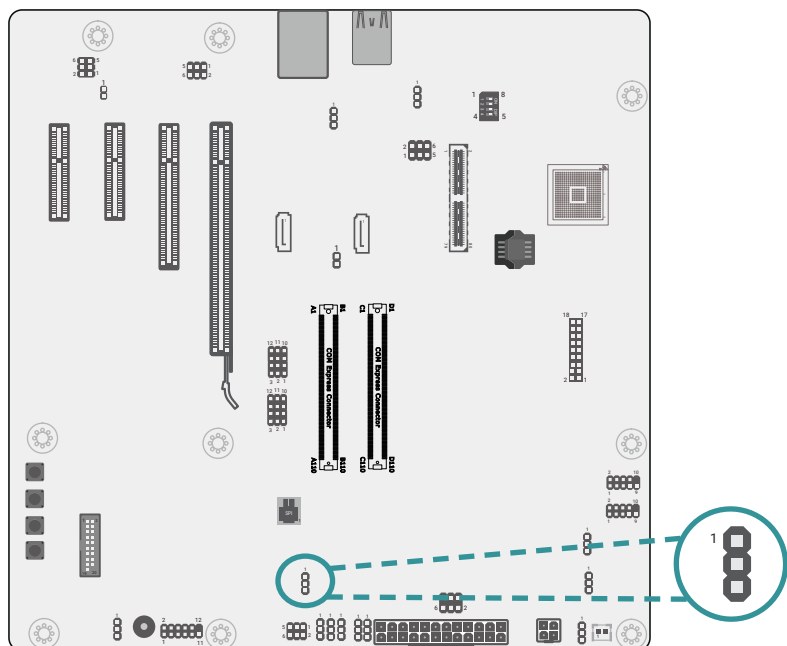
- 1-2 On:
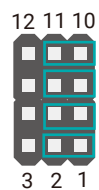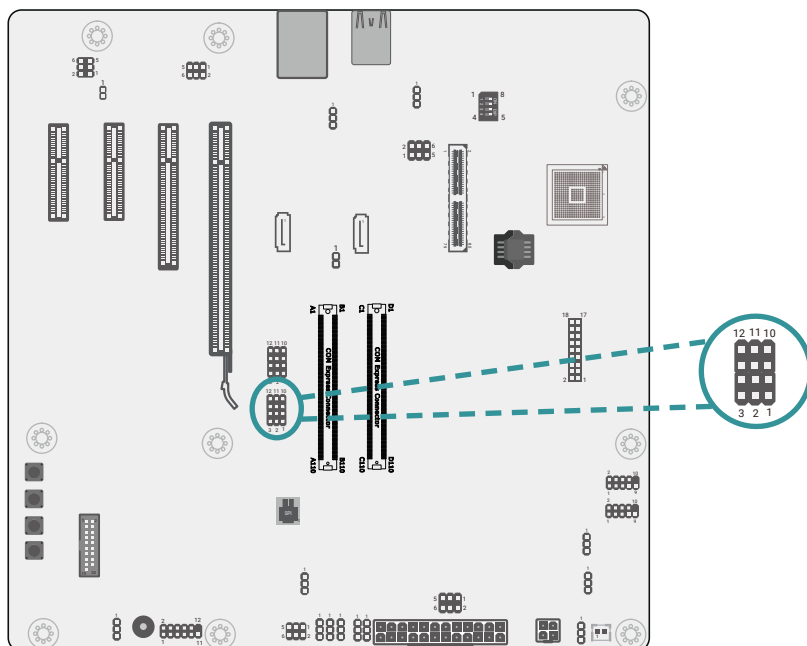 PCIe_Port_12 (default)

- 2-3 On:
  PCIe_Port_4

PCIe Lane12 Path Select (JP18)

- 1-2,4-5,7-8,10-11 On:
  MUX_BMC (default)

- 2-3,5-6,8-9,11-12 On: PCIe_Slot

PCIe Lane4 Path Select (JP34)


```
12 11 10



3  2  1
```
- 1-2,4-5,7-8,10-11 On: MUX_BMC (default)
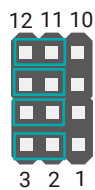
```
12 11 10



3  2  1
```
- 2-3,5-6,8-9,11-12 On: PCIe_Slot

TPM_PP on CB Select (JP20)
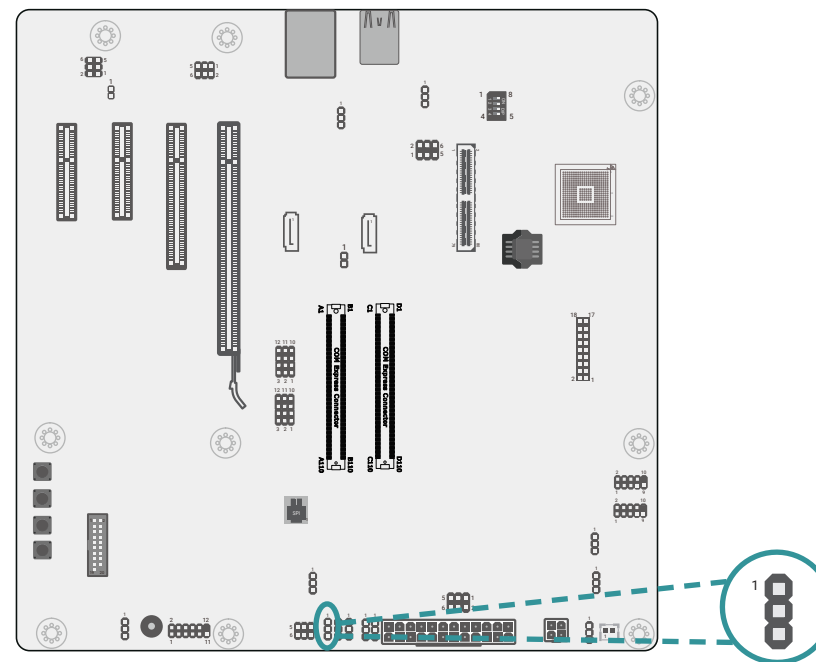

```
1
```
- 1-2 On: Physical Presence ON

```
1
```
- 2-3 On: Physical Presence OFF (default)

ESPI (JP21)
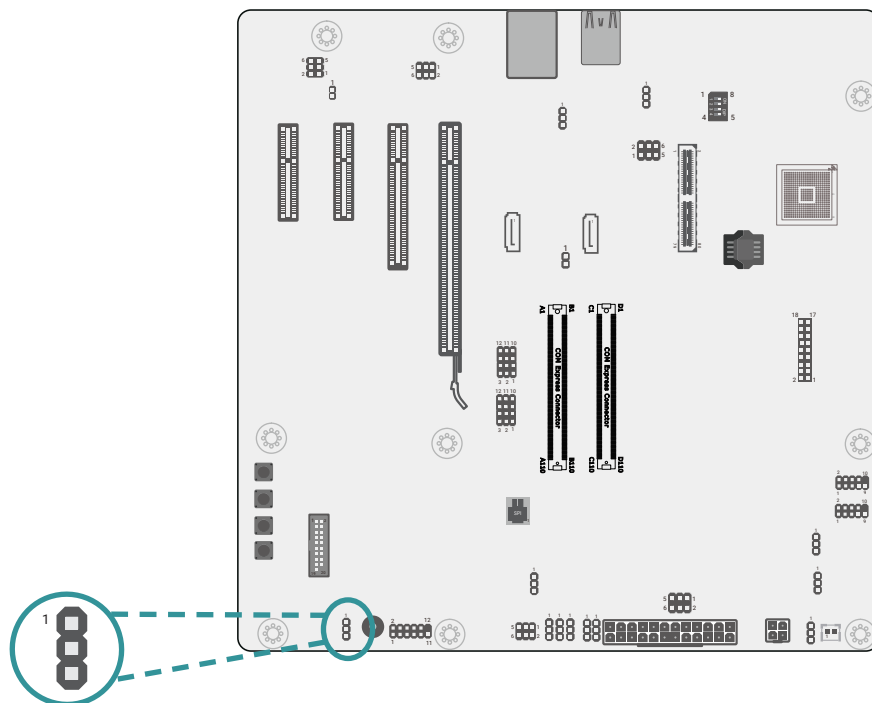
PSON# Select (JP28)

- 1-2 On: Enable LPC (default)
- 2-3 On: Enable ESPI
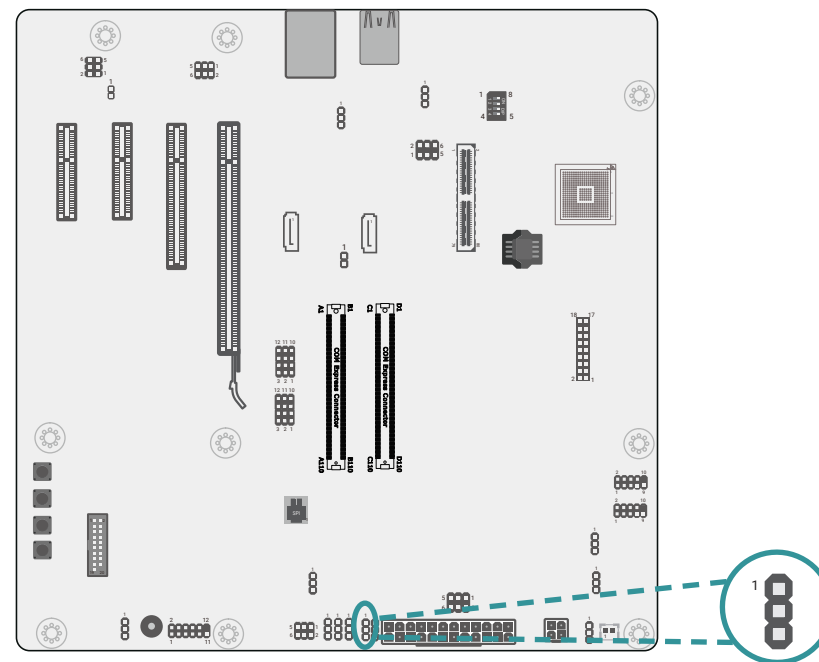
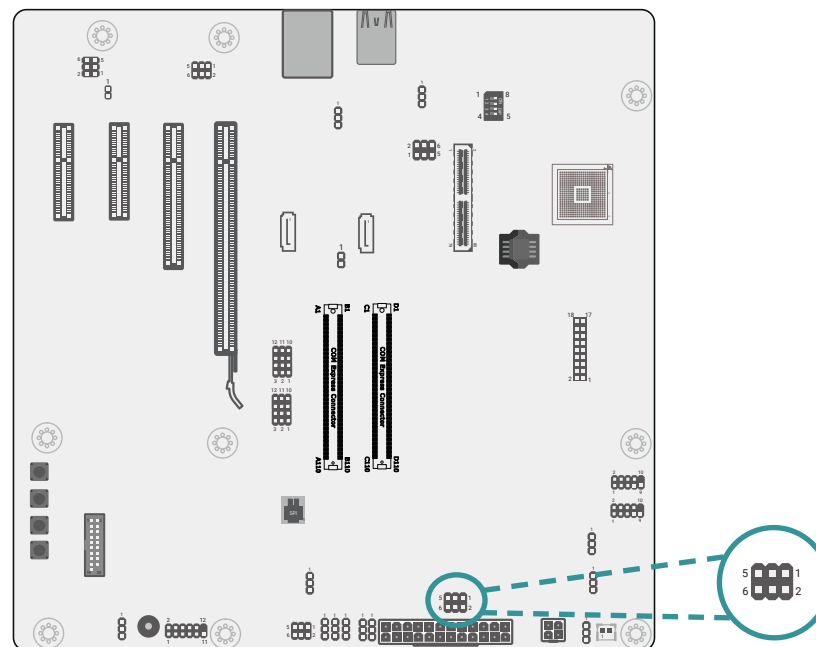- 1-2 On: ATX_SLPS3# (default)
- 2-3 On: AT Mode

PWROK Select (JP27)
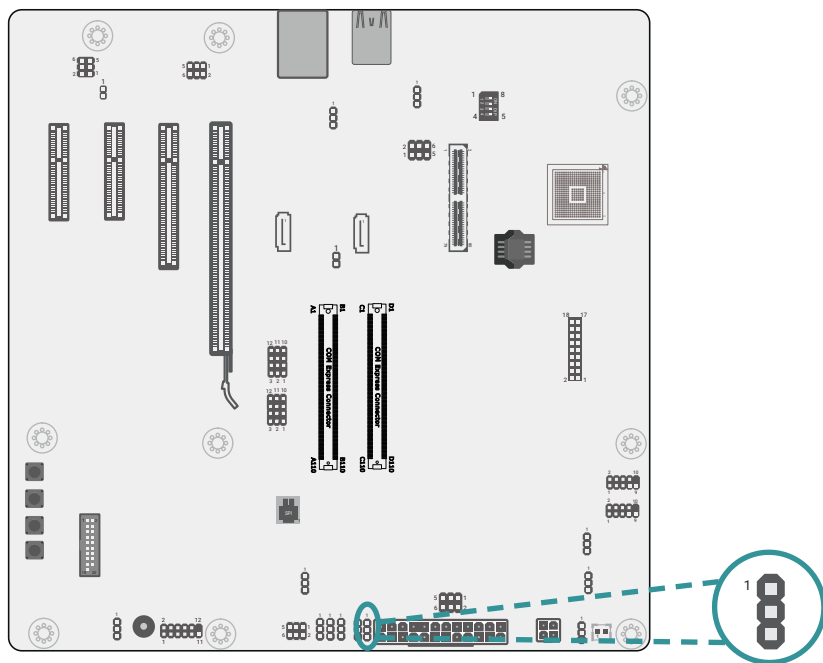
- ■ 1-2 On: PSU_PWROK (default)
- ■ 2-3 On: BMC_PWROK
- ■ 1-X On: AT Mode

VCC_5V_SBY Source (JP26)

- ■ 1-2 On: 5VSB (default)
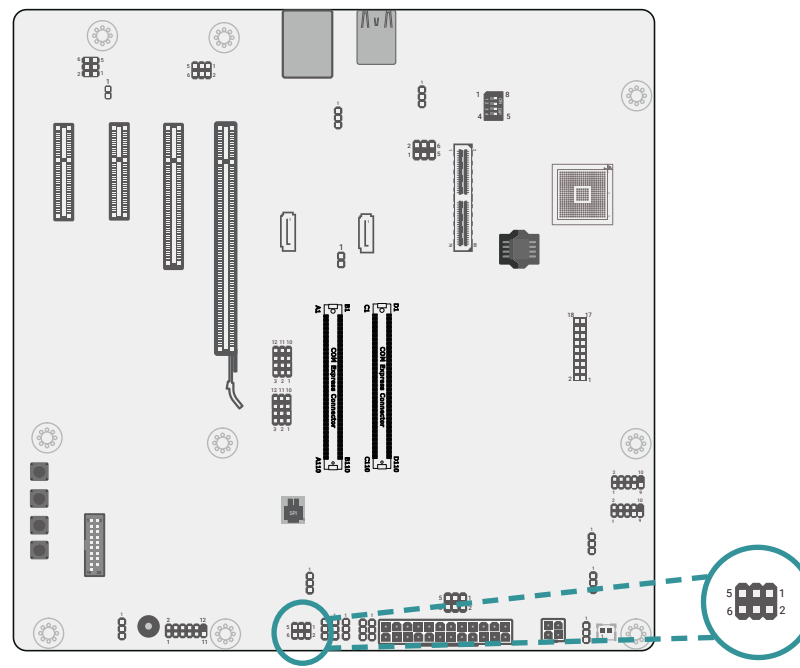- ■ 3-4 On: 5V
- ■ 5-6 On: N.C.

Clear CMOS (JP29)
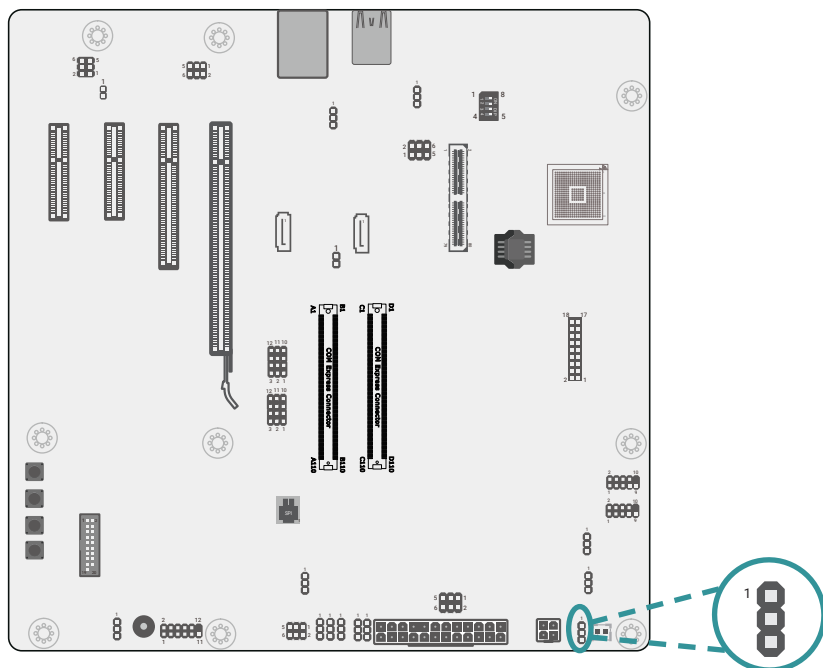
1 ■ 1-2 On: Normal (default)
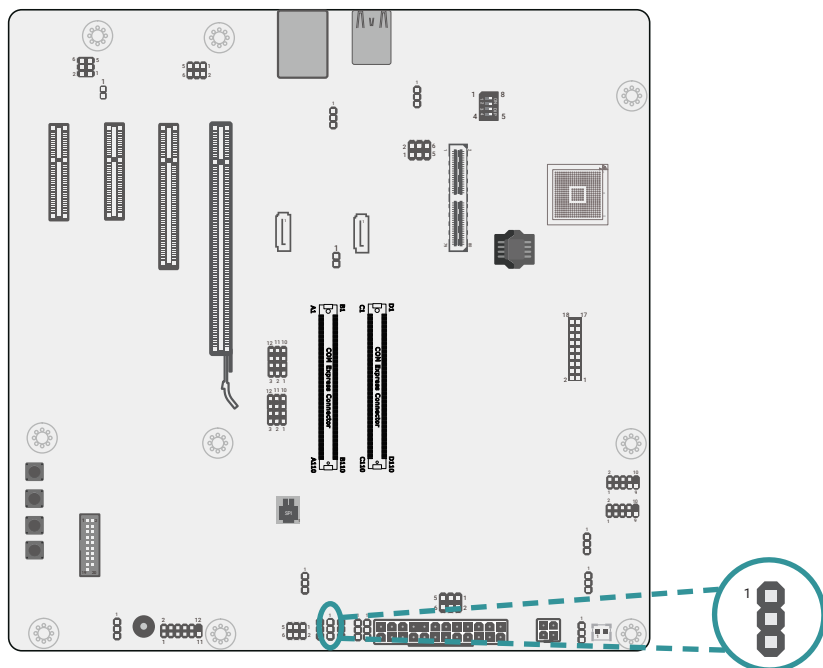
1 ■ 2-3 On: Clear CMOS

BIOS BOOT (J10)

5 ■ 1
6 ■ 2 ■ 3-5,4-6 On: Module SPI (default)

5 ■ 1
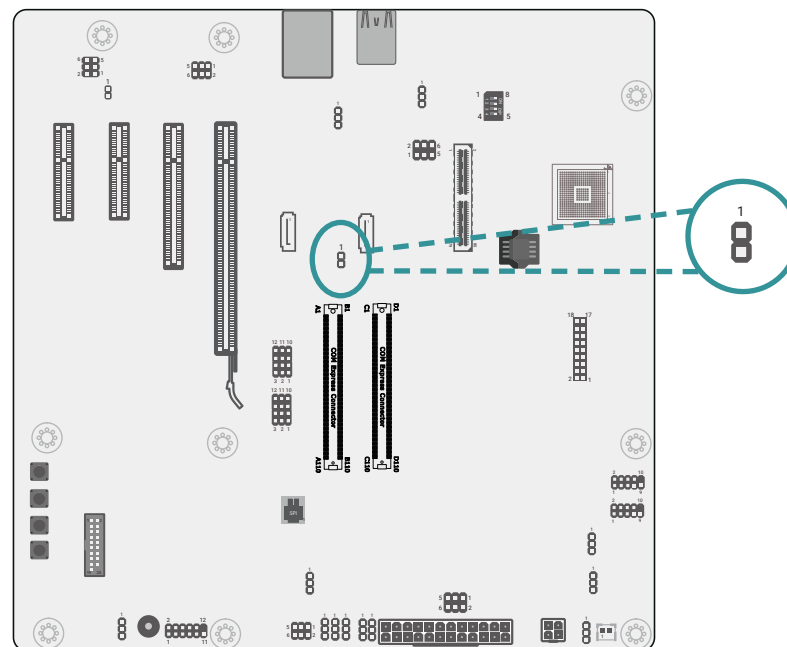6 ■ 2 ■ 3-5,2-4 On: Carrier SPI

10G PHY CAP2/3 Select (JP9)
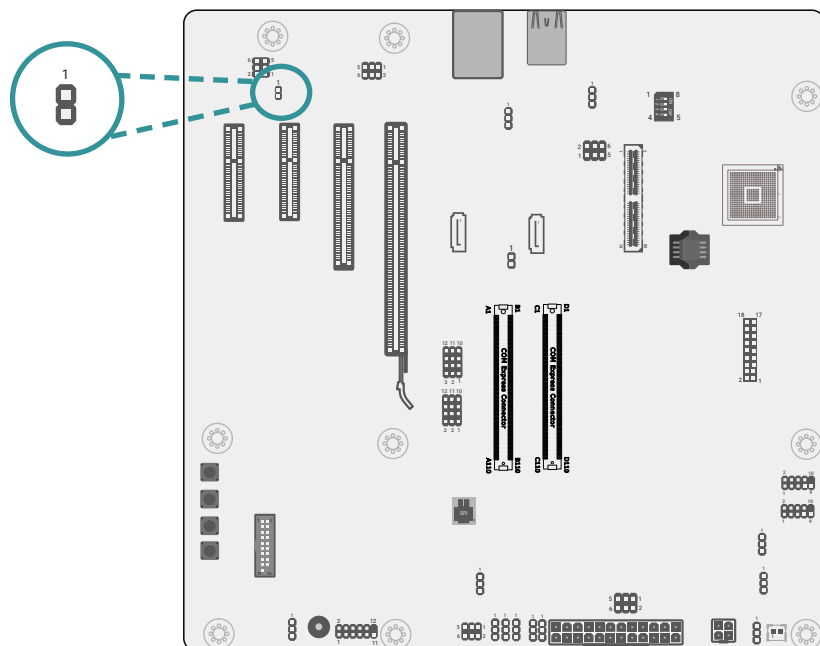

■ 1-2 On: MDIO only (default)

■ 2-3 On: I2C or MDIO

BAT_LOW# Indicator (J4)

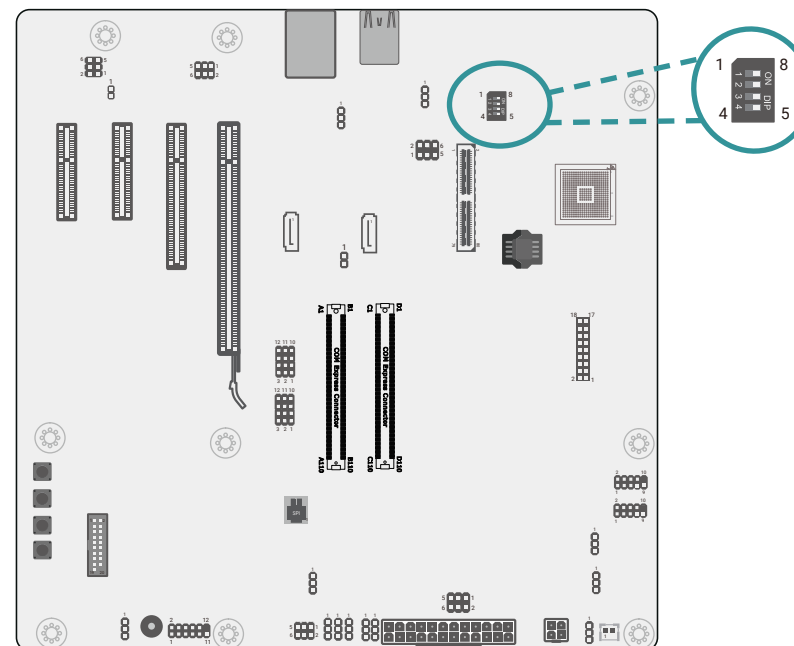■ 1-X On: Normal (default)

■ 1-2 On: Battery Low

BMC VGA (J20)

BMC Hardware Strap (SW1)

- 1-X On: Normal VGA/2D (default)
- 1-2 On: Disable

BMC SPI Mode Strap (BIOS BOOT Select)	PIN1 2
Disable SPI Interface (default)	1-8 OFF , 2-7 OFF
Enable SPI Master	1-8 OFF, 2-7 ON
RSVD	1-8 ON, 2-7 OFF
Enable SPI pass through	1-8 ON, 2-7 ON

MAC#1 Interface Type	PIN4
RMII/NCSI	4-5 OFF
RGMII (default)	4-5 ON

BMC 2nd Boot Watchdog Timer	PIN3
Disable	3-6 OFF
Enable (default)	3-6 ON

▶ Pin Assignment

Battery (J14)
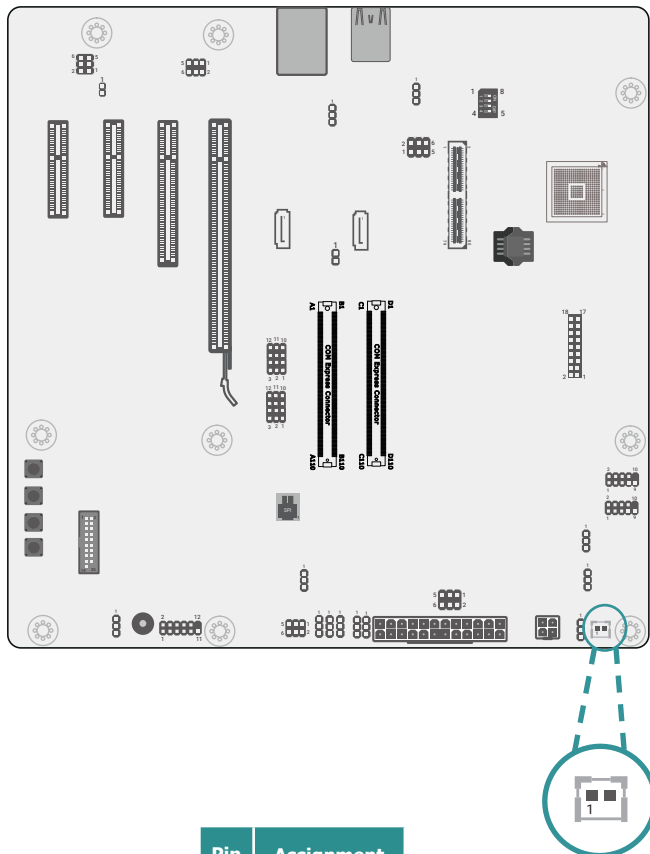
Pin	Assignment
1	BAT_PWR
2	GND

BMC System Fan2 (J8)
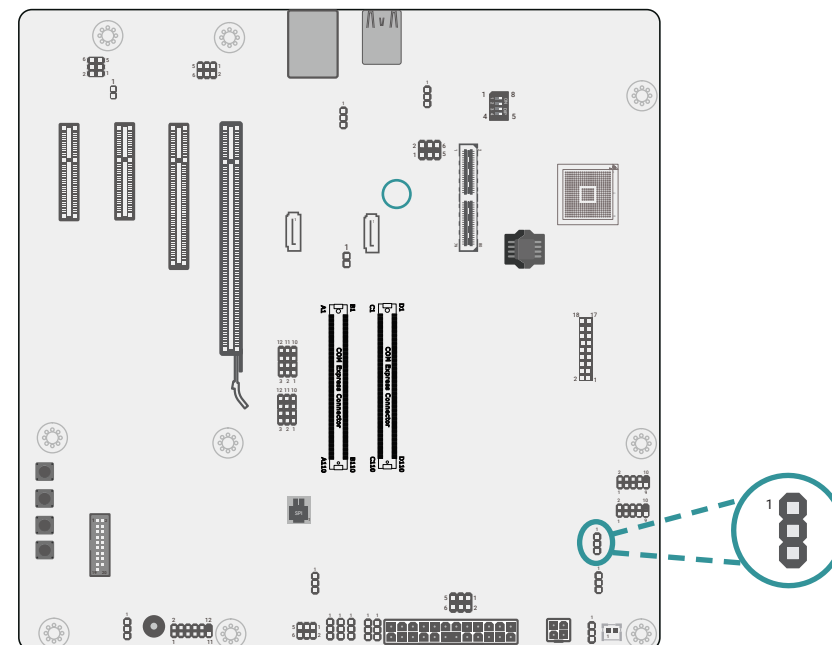
Pin	Assignment
1	GND
2	FAN_PWM
3	FAN_TACH

System Fan1 (J9)
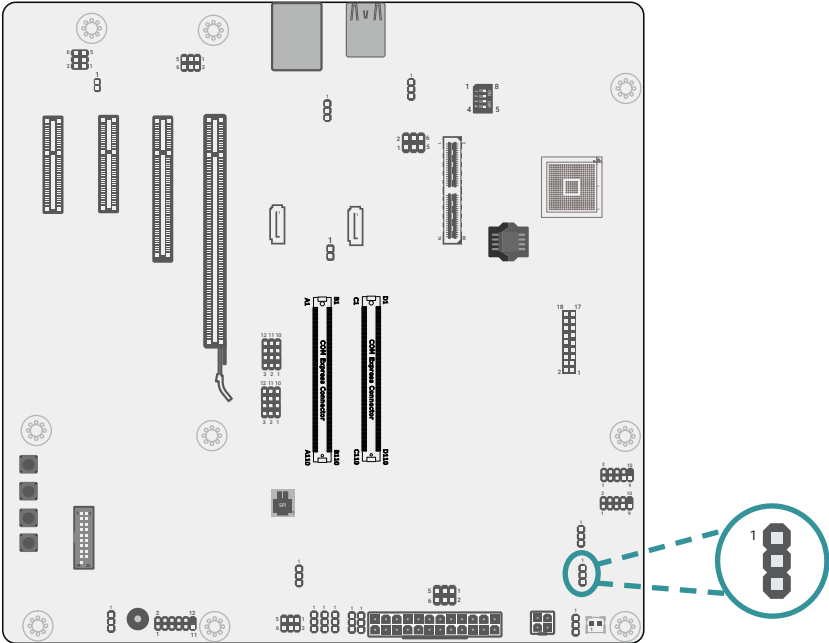
Pin	Assignment
1	GND
2	FAN_PWM
3	FAN_TACH

SATA3_P0 (J3)
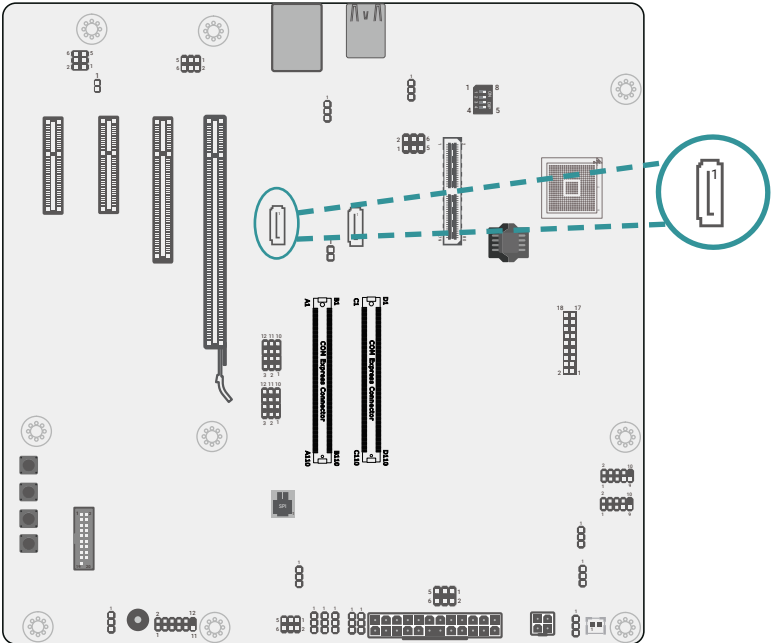
Pin	Assignment
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SATA3_P1 (J2)
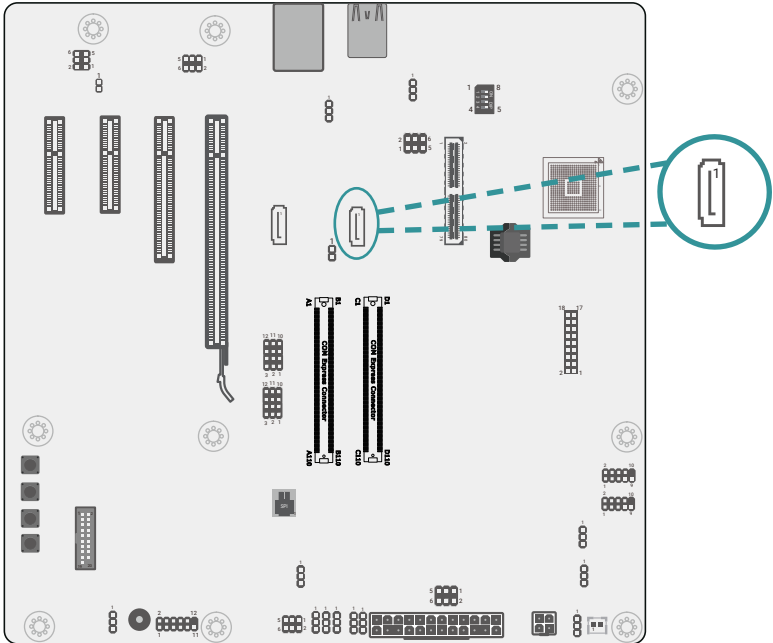
Pin	Assignment
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

SMBUS_HDR (J16)
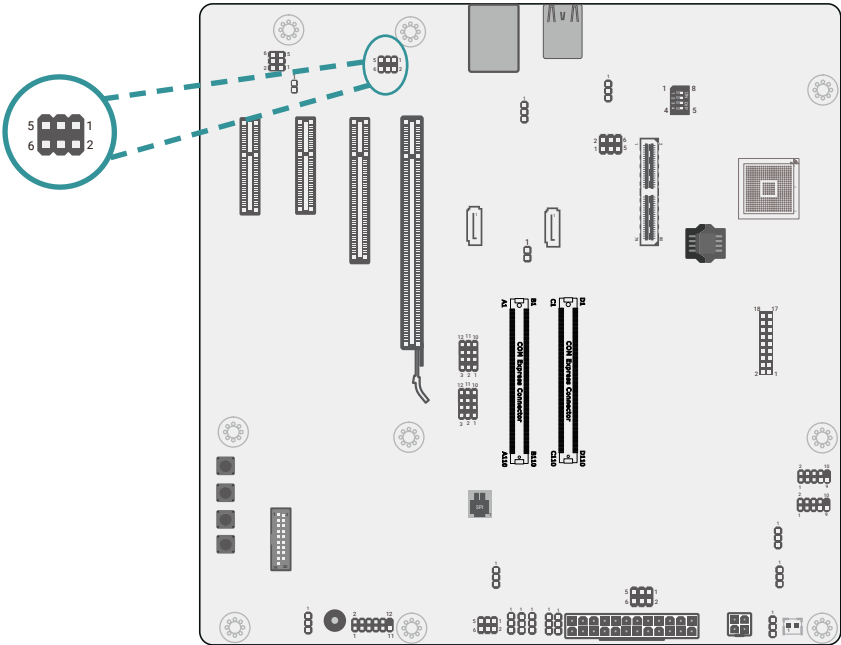
Pin	Assignment	Pin	Assignment
1	3VDU	2	GND
3	SMB_CLK_RESUME	4	SMB_DATA_RESUME
5	SMB_ALERT-	6	NC_KEY

I2C_HDR (J15)
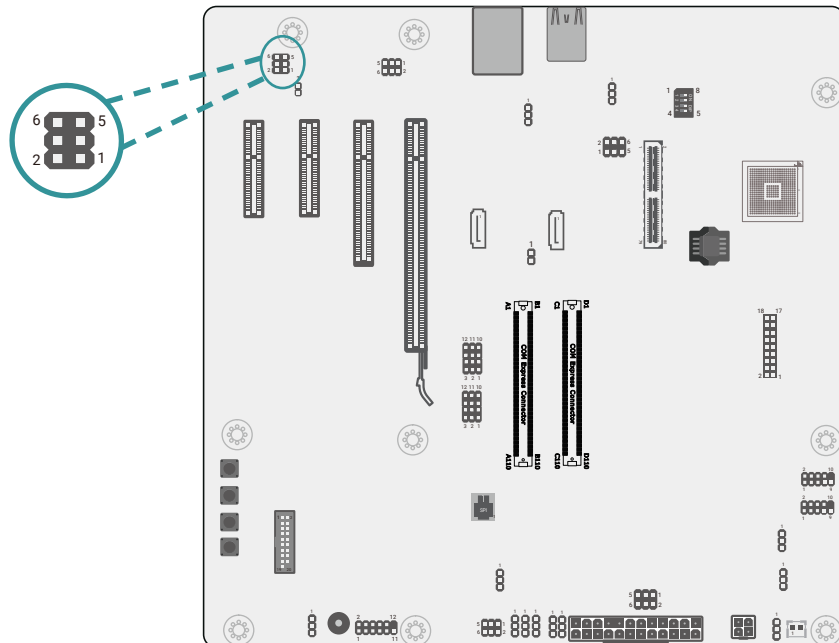
Pin	Assignment	Pin	Assignment
1	3VDU	2	GND
3	I2C_CLK_RESUME	4	I2C_DAT_RESUME
5	NC	6	NC_KEY

Front Panel (J17)
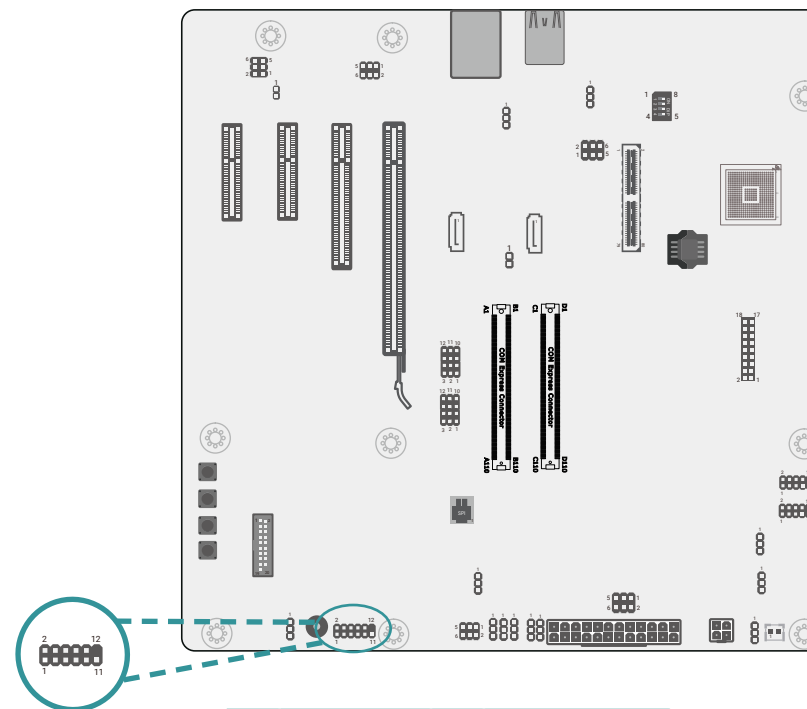
Pin	Assignment	Pin	Assignment
1	NC	2	3V3SB
3	3.3V	4	3V3SB
5	HDD_LED#	6	PWR_LED
7	GND	8	GND
9	RESET#	10	PWR_BTN#
11	NC	12	NC_KEY

COM1 (J7)
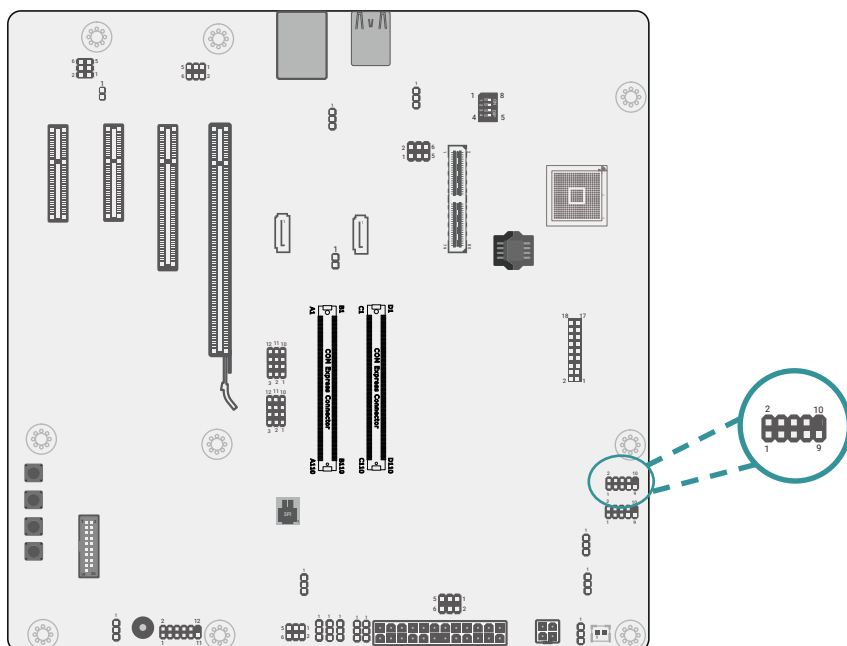
Pin	Assignment	Pin	Assignment
1	NC	2	UART0_RX
3	UART0_TX	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC

COM2 (J6)
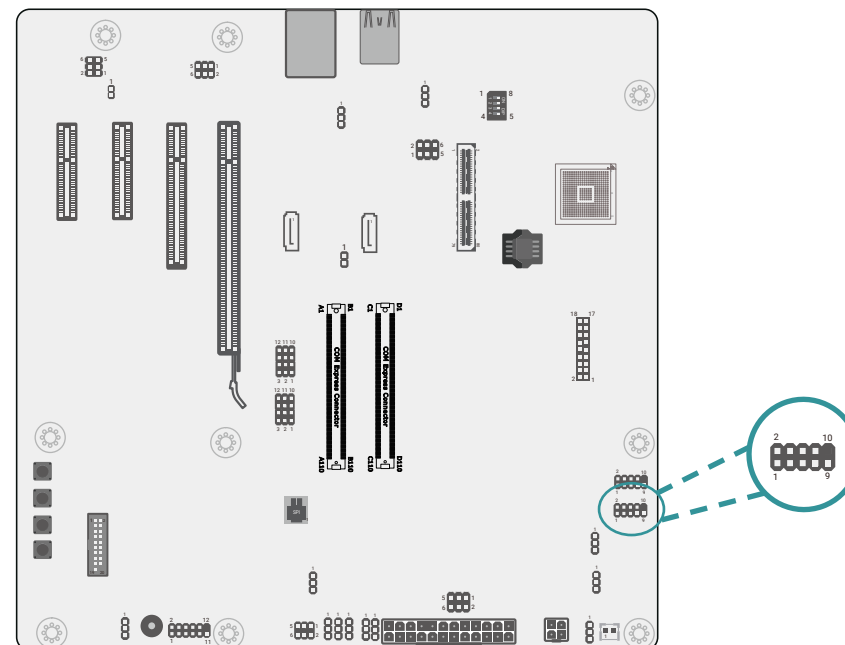
Pin	Assignment	Pin	Assignment
1	NC	2	UART1_RX
3	UART1_TX	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC

LPC/ESPI HDR (J12)
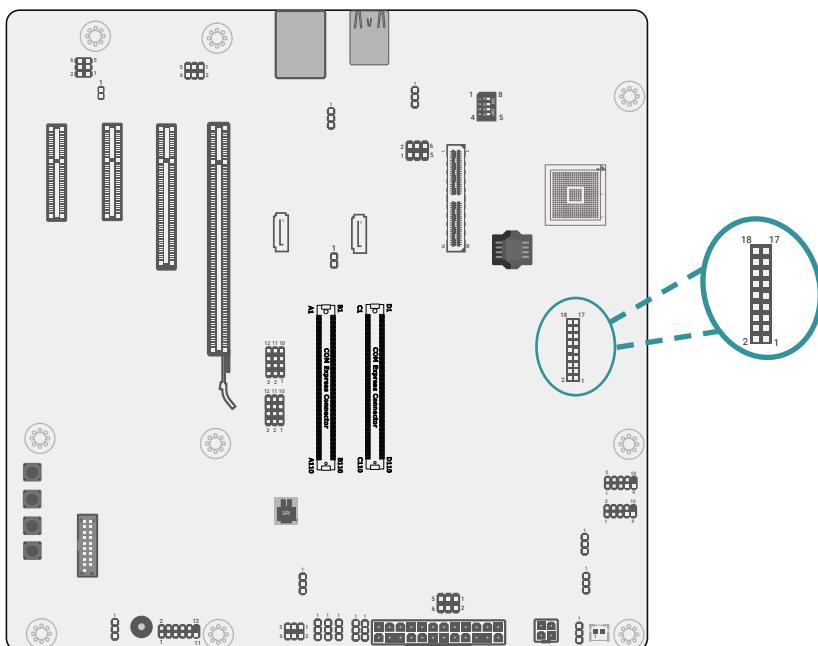
Pin	Assignment	Pin	Assignment
1	LPCCK/ESPICK	2	LPC_AD1/ESPI_IO1
3	LPCRST#	4	LPC_AD0/ESPI_IO0
5	LPC_FRAME#/ESPI_CS#	6	3V3
7	LPC_AD3/ESPI_IO3	8	GND
9	LPC_AD2/ESPI_IO2	10	NC_KEY
11	LPC_SERIRQ/ESPI_CS1#	12	GND
13	5VSB	14	5V
15	SUS_STAT#/ESPI_RESET#	16	ESPI_ALERT0#
17	+12V	18	ESPI_ALERT1#

DIO HDR (J13)
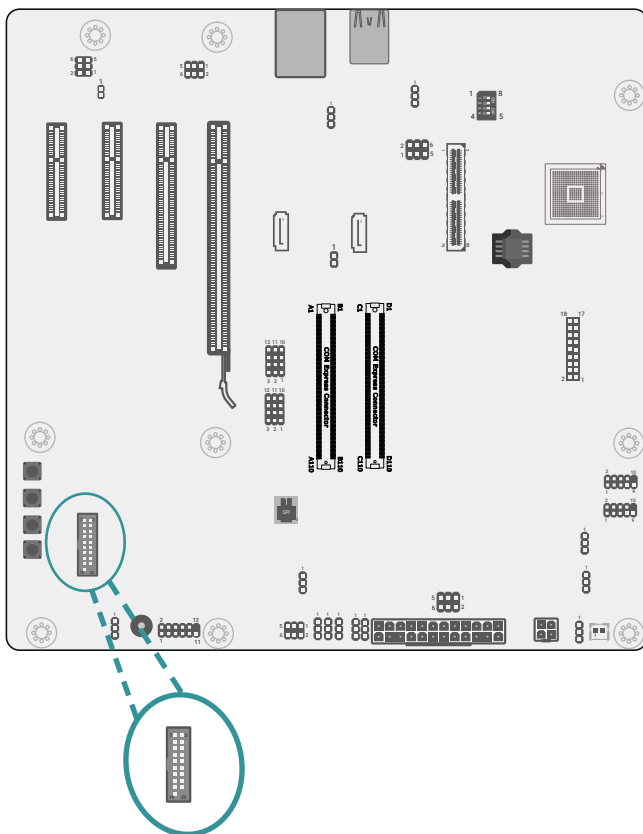
Pin	Assignment	Pin	Assignment
1	GND	2	+12V
3	GPO3	4	+12V
5	GPO2	6	GND
7	GPO1	8	+3.3V
9	GPO0	10	+3.3V
11	GPI3	12	GND
13	GPI2	14	+5VSB
15	GPI1	16	+5VSB
17	GPI0	18	GND
19	GND	20	NC_KEY