



MPC-FRE Series

Fanless Intel® Core™ i7/ i5/ i3

Rugged Embedded System with Intel® QM87

Quick Reference Guide

1ST Ed –4 December 2014

Copyright Notice

Copyright 2014 Marine PC

ALL RIGHTS RESERVED.

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" 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 COMMERCIAL ENVIRONMENT. 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.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

A Message to the Customer

Avalue Customer Services

Each and every MarinePC product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new MarinePC device is destined for the bridge or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name MarinePC has come to be known.

Content

1. Getting Started	5
1.1 Safety Precautions	5
1.2 Packing List	5
1.3 System Specifications	6
1.4 System Overview.....	8
1.4.1 Front View	8
1.4.2 Rear View.....	8
1.5 System Dimensions	10
1.5.1 Front & Top View	10
2. Hardware Configuration	11
2.1 Motherboard connector mapping	12
2.1.1 DC power-in connector (DC-IN).....	12
2.1.2 External Serial Port 1/2/3/4/5/6/7/8 connector (COM1/2/3/4/5/6/7/8)	12
2.1.3 External LPT connector (LPT1)	13
2.1.4 Digital I/O connector (GPI1).....	13
2.1.5 Digital I/O connector (GPO1)	14
2.1.6 VGA connector (VGA).....	14
2.2 EAP-CE02 Overviews	15
2.2.1 EAP-CE02.....	15
2.3 EAP-CE02 Jumper & Connector list	16
2.4 EAP-CE02 Jumpers & Connectors settings	17
2.4.1 Clear CMOS (JBAT1)	17
2.4.2 AT/ATX mode selector (SW1).....	17
2.4.3 Serial port 1~8 pin9 signal selector (JRI1~8).....	18
2.4.4 SIO ADDRESS selector (J1218SEL1).....	18
2.4.5 COM Express connector 1 (CN1A).....	19
2.4.6 COM Express connector 2 (CN1B).....	22
2.4.7 SATA Power connector 1/2/3/4 (SATAPWR1/2/3/4)	25
2.4.8 CPU Fan Connector (CFAN1)	25
2.4.9 System Fan Connector (SFAN1)	26
2.4.10 Power connector (PWR1).....	26
2.4.11 Power button connector (PWBTN1)	27
2.4.12 Power button (PWRBTN1)	27
2.4.13 USB connector (USB6).....	28
2.4.14 PS/2 Keyboard & mouse connector (KB/MS1).....	28

MPC-FRE Series

2.4.15	Intel Front Panel connector (INTBTN1).....	29
2.4.16	Chassis Intrusion connector (CASEOPEN1).....	29
2.4.17	Serial port 1-4 connector (COM1-4)	30
2.4.18	Serial port 5-8 connector (COM5-8)	31
2.5	Daughter Boards (AUX-036 – AUX-037 – AUX-049).....	32
2.6	Chassis Intrusion Sensor BIOS Installing (MPC-FRE)	33
2.7	Installing Mounting Brackets (MPC-FRE)	33
2.8	Installing Hard Disk & Memory (MPC-FRE)	34
2.9	Installing PCI devices (MPC-FRE).....	35

1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

- 1 x MPC-FRE Series Fanless Rugged Embedded System
- 1 x DVD-ROM (this manual in PDF file)
- 1 x Screw kit
- 1 x Wall mount kit



If any of the above items is damaged or missing, contact your retailer.

1.3 System Specifications

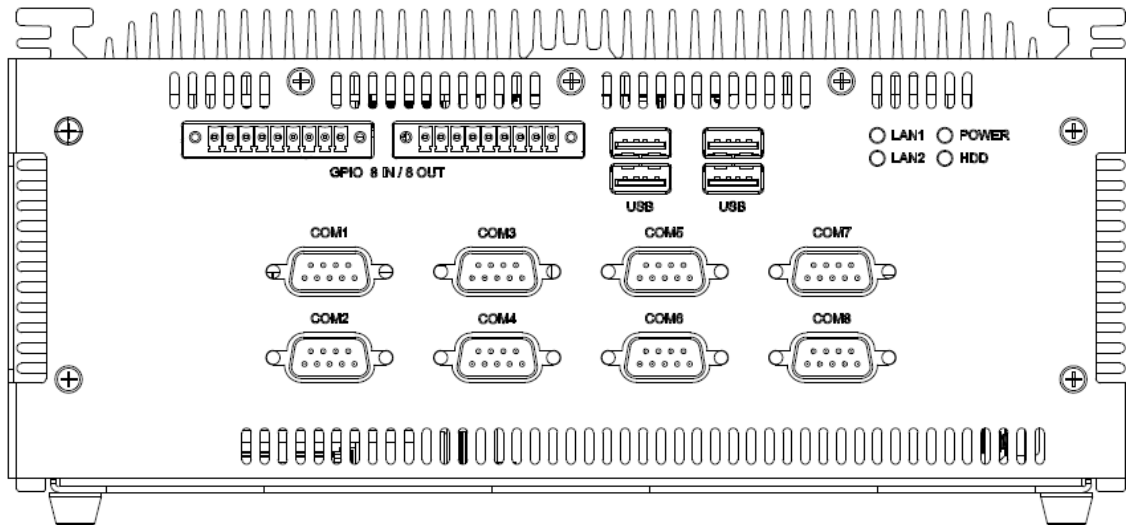
Component	
Mother Board	ESM-QM87 + EAP-CE02
CPU	Intel® Core™ i7-4700EQ, 4-Core, 2.4GHz, 6M Cache Intel® Core™ i5-4422E, 2-Core, 1.8GHz, 3M Cache Intel® Core™ i3-4110E, 2-Core, 2.6GHz, 3M Cache
BIOS	AMI 16Mbit SPI BIOS
I/O Chipset	Nuvoton NTC6776F
Memory	2 x 204-pin SODIMM Up to 16GB DDR3L 1333/1600MHz SDRAM
Power Supply	+12Vdc ~ +26Vdc Phoenix Connector (Optional with +18Vdc ~ +75Vdc Wide Range Power Module)
System Fan	Fanless
Operating System	Windows and Linux
Expansion Card	2 x PCI Slots, 2 x Mini PCIe Sockets (1 Supported SIM Card Slot), Optional with 1PCI + PCIe16 Riser Card, 1 x PCIe16 Riser Card
Storage	
Hard Disk Drive	2 x 2.5" Drive Bay (4 x 2.5" Drive Bay Bracket for Optional)
External I/O	
Serial Port	8 x RS232 (4 x COM RS-232/422/485 Setting by BIOS)
USB Port	4 x USB 2.0 on the Front; 4 USB 3.0 on the Rear
DIO Port	8 In and 8 Out GPIO
Video Port	1 x VGA, 1 x HDMI, 2 x Display Port
Audio Port	Mic-in, Line-in, Line-out
LAN Port	2 x RJ45
Wireless LAN Antenna	2 x Knockouts for Antenna Mounting (Options to Add WiFi & 3G)
Switch	1 x Power Switch
Indicator Light	1 x Power, 1 x HDD, 1x Lan1, 1x Lan2
Expansion Slots	2 x Mini PCIe, 2 x PCI
Others	1 x 2-pin Phoenix Type Connector
Mechanical	
Power Type	AT/ATX (ATX is Default Setting)
Power Connector Type	Phoenix Type Connector
Dimension	250mm x 270mm x 113mm
Weight	10lbs (5KG)
Color	Silver and Black

Quick Reference Guide

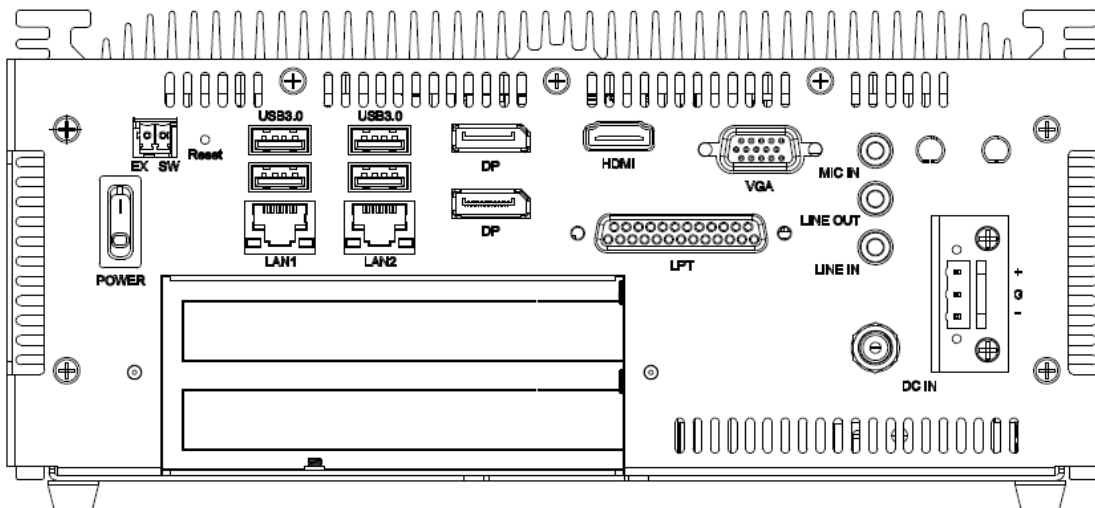
Fanless	Fanless
Reliability	
EMI Test	CE FCC Class A
Dust and Rain Test	IP 30
Vibration Test	With SSD/mSATA: 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis
Mechanical Shock Test	With SSD/mSATA: 50G, IEC 60068-2-27, Half Sine, 11ms
Drop Test	-10 ~ 60°C (w/SSD), Ambient w/Air Flow; i5/i3 -10 ~ 50°C (w/SSD), Ambient w/Air Flow; i7

1.4 System Overview

1.4.1 Front View



1.4.2 Rear View



Connectors

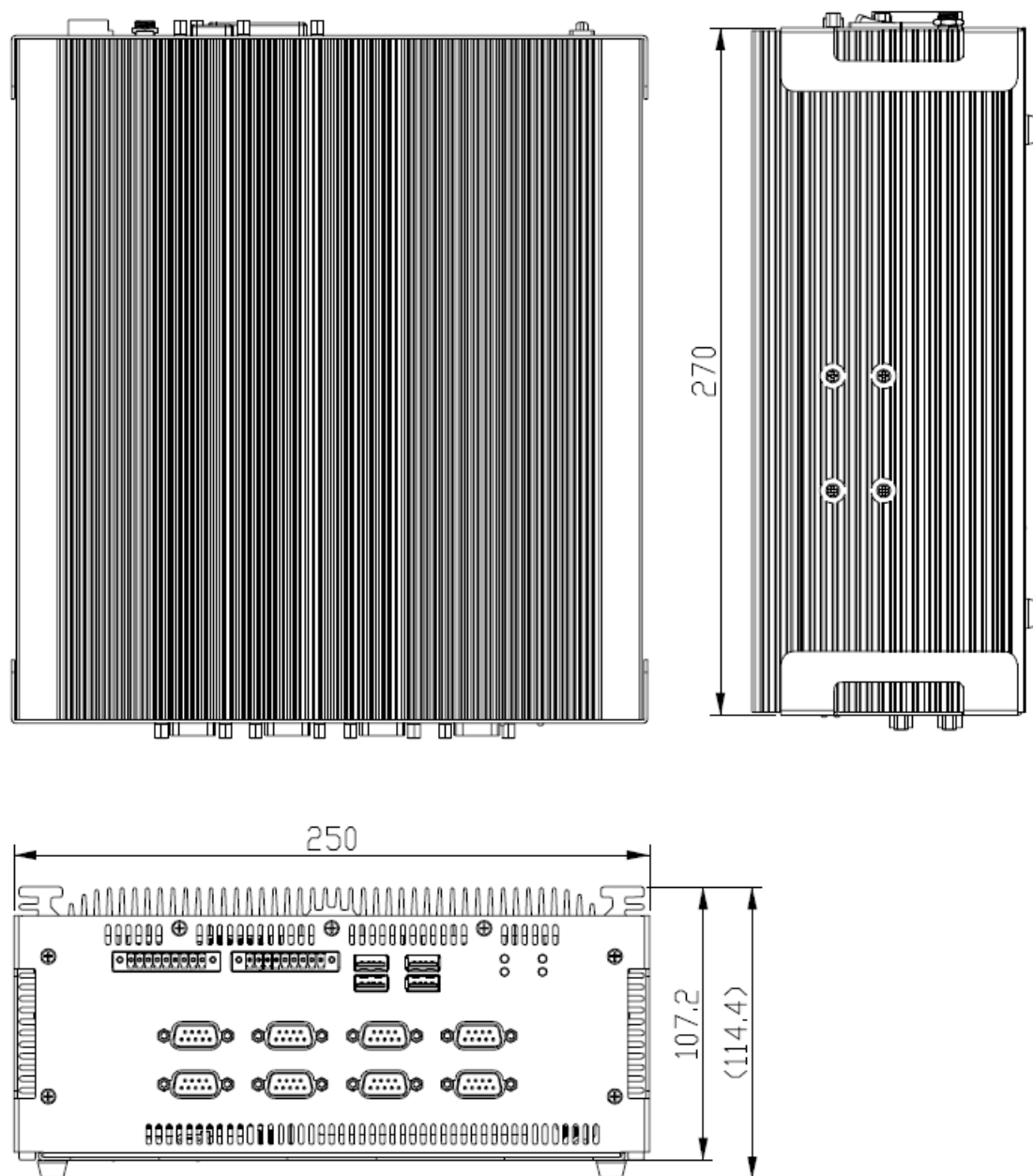
Label	Function	Note
COM1~8	Serial port connector 1~8	
DC-IN	DC power-in connector (Phoenix & Lockable DC Jack)	
EX SW	Power button Extension connector	1 x 2-pin Phoenix Type
GPIO 8IN/8OUT	Digital I/O	2 x 9-pin Phoenix Type
HDD	HDD Indicator	

Quick Reference Guide

Reset	Reset button
LAN1	RJ-45 Ethernet 1
LAN2	RJ-45 Ethernet 2
Audio Jack	MIC IN, LINE OUT and LINE IN
LPT	LPT connector
DP	DP connector
Power	System power switch
USB	USB 2.0 connector x 4
	USB 3.0 connector x 4
VGA	VGA connector
HDMI	HDMI connector

1.5 System Dimensions

1.5.1 Front & Top View



(Unit: mm)

2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

- 1- MPC-FRE Series Quick Installation Guide or User's Manual
- 2- EAP-CE02 and AUX-036/ AUX-037 (Optional)/ AUX-049 (Optional) included in this manual.

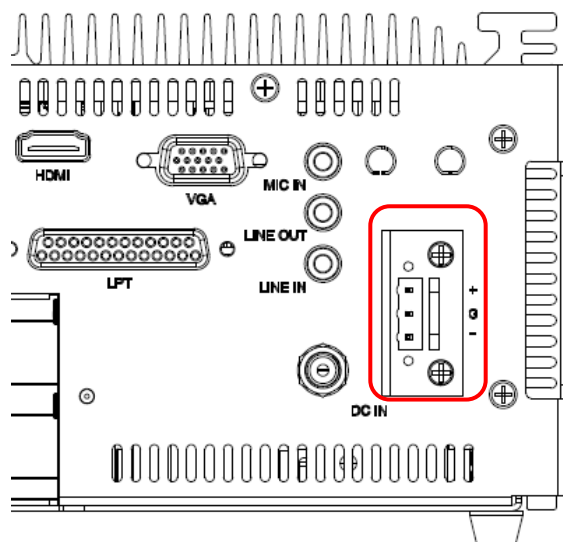


Note: If you need more information, please visit our website:

<http://www.marinepc.com>

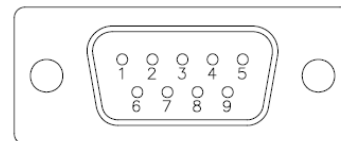
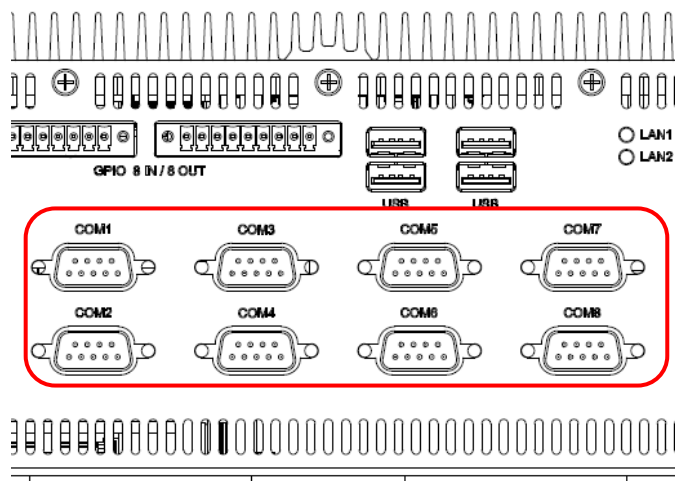
2.1 MPC-FRE connector mapping

2.1.1 DC power-in connector (DC-IN)



Note:
Phoenix and Lockable DC Jack can't be used at the same time.

2.1.2 External Serial Port 1/2/3/4/5/6/7/8 connector (COM1/2/3/4/5/6/7/8)



In RS-232 Mode

Signal	PIN	PIN	Signal
DCD	1	6	DSR
RxDD	2	7	RTS
TxDD	3	8	CTS
DTR	4	9	RI
GND	5		

In RS-422 Mode

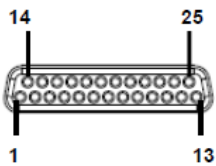
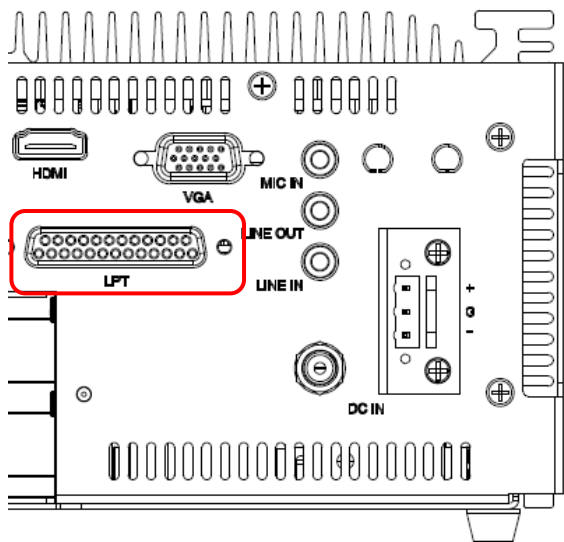
Signal	PIN	PIN	Signal
422TX-	1		
422TX+	2		
422RX+	3		
422RX-	4		
GND	5		

In RS-485 Mode

Signal	PIN	PIN	Signal
485TX-	1		
485TX+	2		
GND	5		

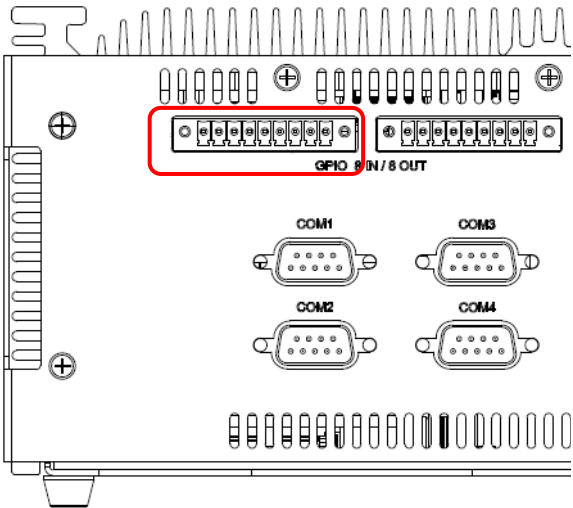
Note:
COM5, 6, 7, 8 can be changed to RS-422 and 485 through the BIOS setup.
In RS-485 mode, This differential signal pair sends and receives serial data, which is controlled through the RTS register.
Set the RTS register to LOW for transmitting, and HIGH for receiving.

2.1.3 External LPT connector (LPT1)



Signal	PIN	PIN	Signal
STB-	1	14	LPT_AFD#
PD0	2	15	LPT_ERR#
PD1	3	16	LPT_INIT#
PD2	4	17	LPT_SLIN#
PD3	5	18	GND
PD4	6	19	GND
PD5	7	20	GND
PD6	8	21	GND
PD7	9	22	GND
LPT_ACK#	10	23	GND
LPT_BUSY	11	24	GND
LPT_PE	12	25	GND
LPT_SLCT	13		

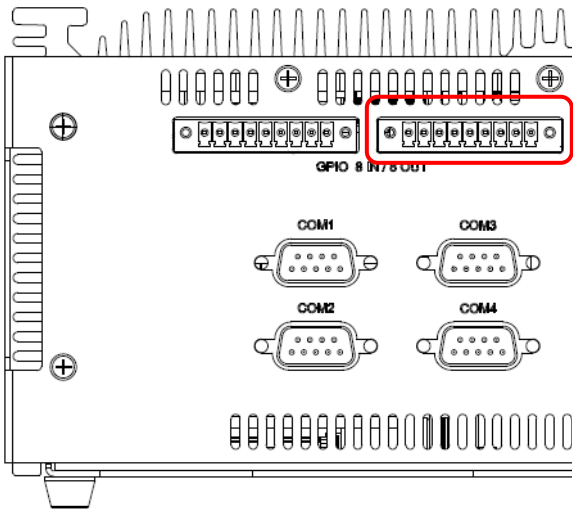
2.1.4 Digital I/O connector (GPI1)



Signal	PIN
GPI0	1
GPI1	2
GPI2	3
GPI3	4
GPI4	5
GPI5	6
GPI6	7
GPI7	8
GND	9

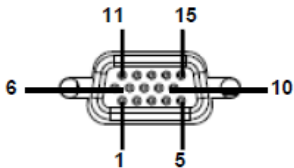
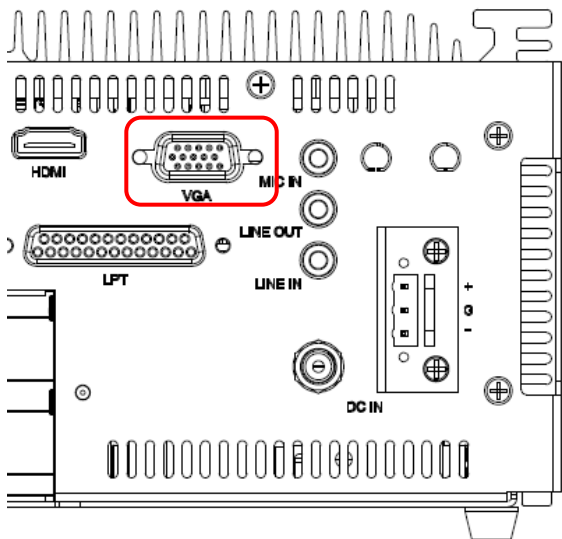
MPC-FRE Series

2.1.5 Digital I/O connector (GPO1)



Signal	PIN
GPO0	1
GPO1	2
GPO2	3
GPO3	4
GPO4	5
GPO5	6
GPO6	7
GPO7	8
GND	9

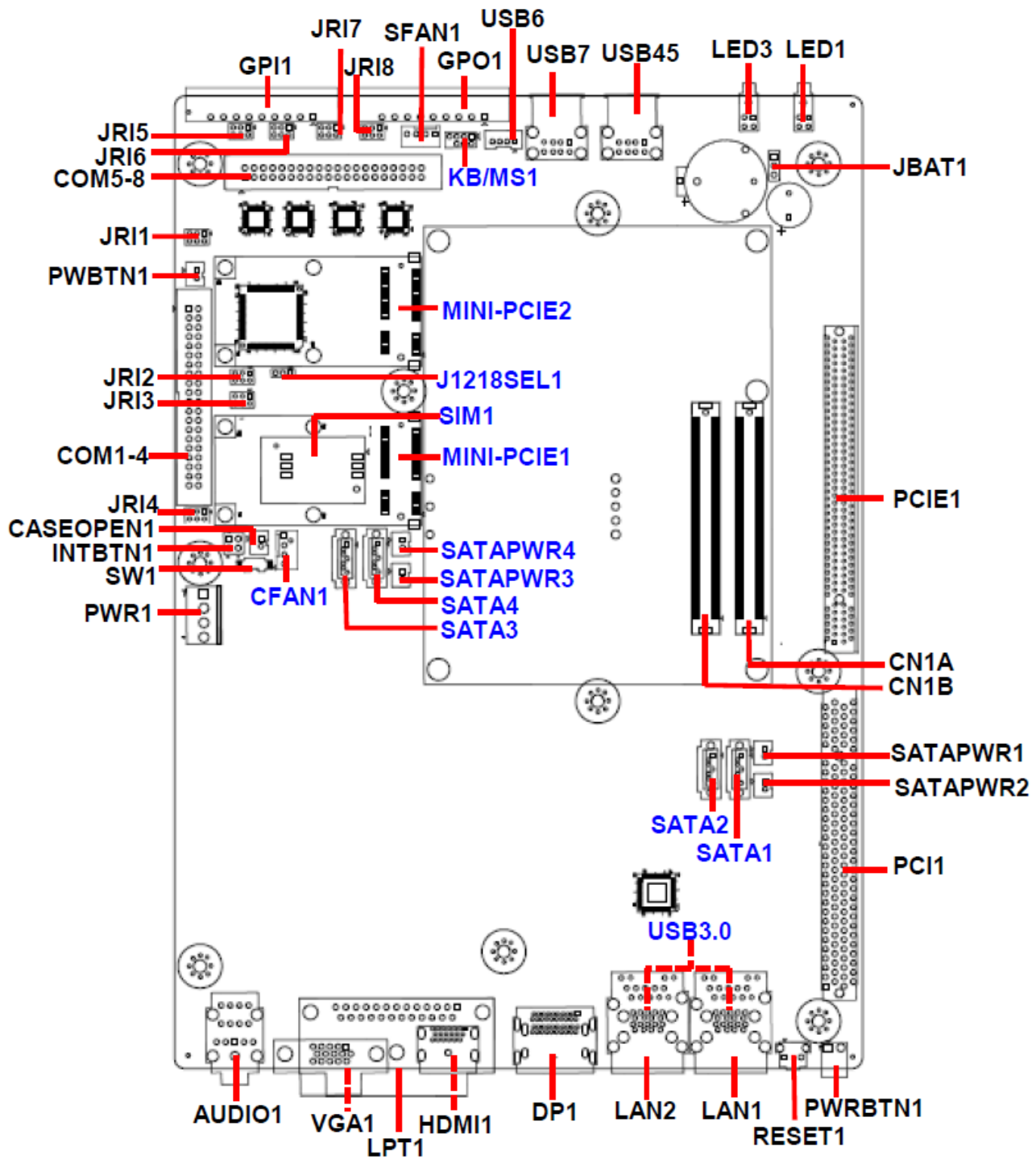
2.1.6 VGA connector (VGA)



PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	VGA_CABLE	11	NC
2	GREEN	7	GND	12	DATA
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	GND	15	CLK

2.2 EAP-CE02 Overviews

2.2.1 EAP-CE02



2.3 EAP-CE02 Jumper & Connector list

Jumpers

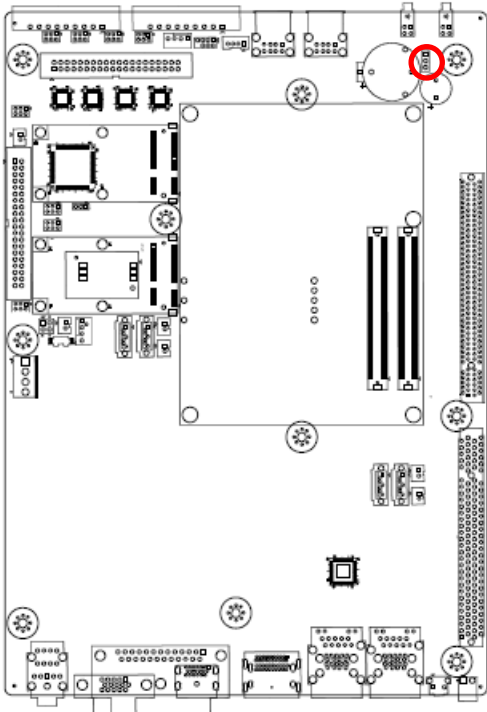
Label	Function	Note
JBAT1	Clear CMOS	3 x 1 header, pitch 2.54mm
SW1	AT/ATX mode selector	
JRI1~8	Serial port 1~8 pin9 signal selector	3 x 2 header, pitch 2.00mm
J1218SEL1	SIO ADDRESS selector	3 x 1 header, pitch 2.00mm

Connectors

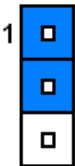
Label	Function	Note
AUDIO1	Audio connector	Phone Jack
CN1A/B	COM Express connector 1/2	
PWBTN1	Power button connector	2 x 1 wafer, pitch 2.00mm
PWRBTN1	Power button	
PWR1	Power connector	4 x 1 wafer, pitch 3.96mm
COM1-4	Serial port 1-4 connector	20 x 2 wafer, pitch 2.54mm
COM5-8	Serial port 5-8 connector	20 x 2 wafer, pitch 2.54mm
CFAN1	CPU Fan connector	4 x 1 wafer, pitch 2.54mm
SFAN1	System Fan connector	4 x 1 wafer, pitch 2.54mm
KB/MS1	PS/2 Keyboard & mouse connector	4 x 2 header, pitch 2.00mm
LAN1/2	LAN connector 1/2	
LED1	Up: SATA Active Down: Power on/off	
LED3	Up: LAN1 Active Down: LAN2 Active	
MINI-PCIE1/2	Mini PCI Express connector 1/2	52 pin
PCI1	PCI Connector 1	PCI slot
PCIE1	PCI Express connector 1	
SATA1/2/3/4	Serial ATA connector 1/2/3/4	
SATAPWR1/2/3/4	SATA Power connector 1/2/3/4	2 x 1 wafer, pitch 2.00mm
SIM1	SIM card slot	6 pin
USB45	USB 2.0 connector x 2	
USB7	USB 2.0 connector x 2	
USB3.0	USB 3.0 connector x 4	
USB6	USB connector	4 x 1 wafer, pitch 2.00mm
VGA1	VGA connector	D-sub 15-pin, female
RESET1	Reset button	
DP1	DP connector	
LPT1	LPT connector	
GPI1/GPO1	Digital I/O connector	
INTBTN1	Intel Front Panel connector	2 x 2 header, pitch 2.54mm
CASEOPEN1	Chassis Intrusion connector	2 x 1 wafer, pitch 2.00mm
HDMI1	HDMI connector	

2.4 EAP-CE02 Jumpers & Connectors settings

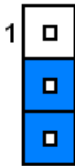
2.4.1 Clear CMOS (JBAT1)



Protect*

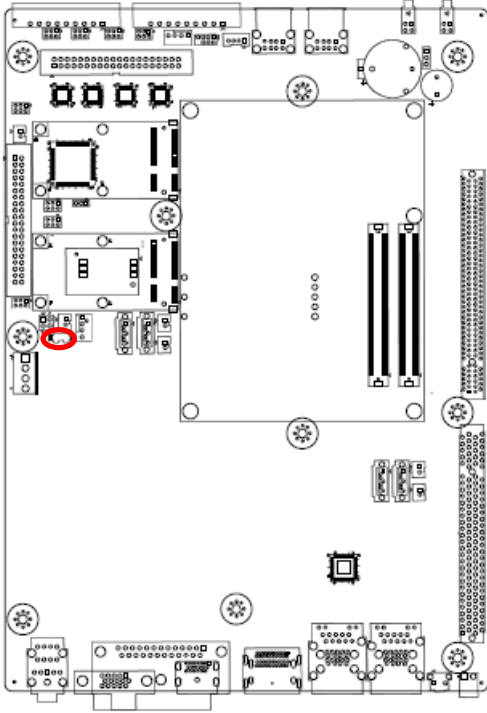


Clear CMOS



*Default

2.4.2 AT/ATX mode selector (SW1)



AT/ATX mode



ATX mode*

ON			2	OFF
			1	

AT mode

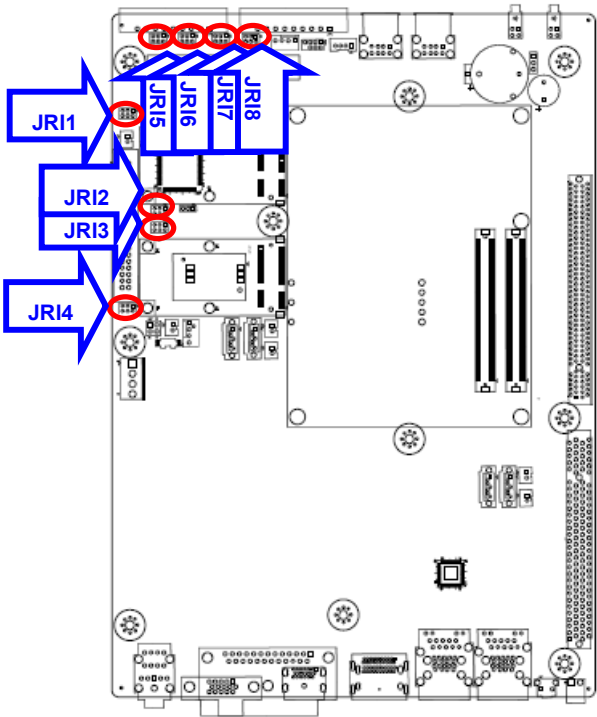
ON			2	OFF
			1	

*Default

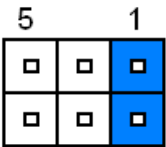
Signal	PIN	PIN	Signal
AT_BN	4	2	EXT_PWRBTN#
MU_ON#	3	1	GND

MPC-FRE Series

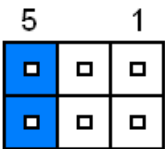
2.4.3 Serial port 1~8 pin9 signal selector (JRI1~8)



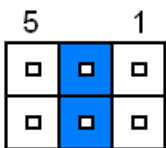
Ring*



+12V

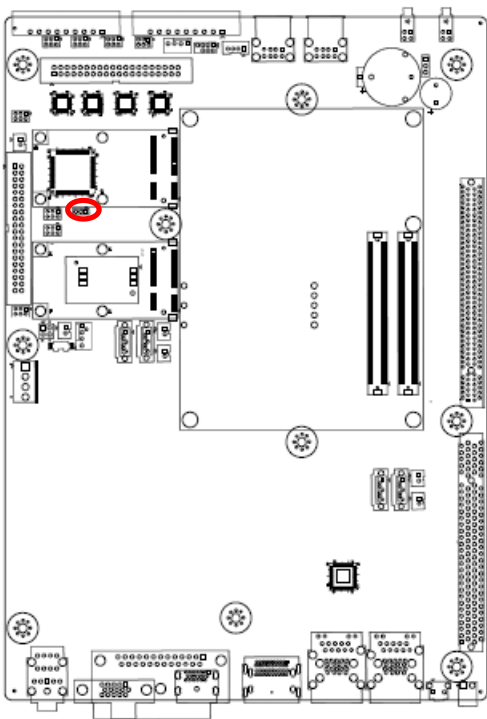


+5V



* Default

2.4.4 SIO ADDRESS selector (J1218SEL1)



For ESM-QM87*

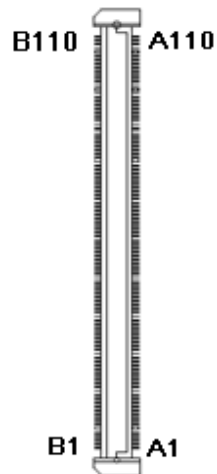
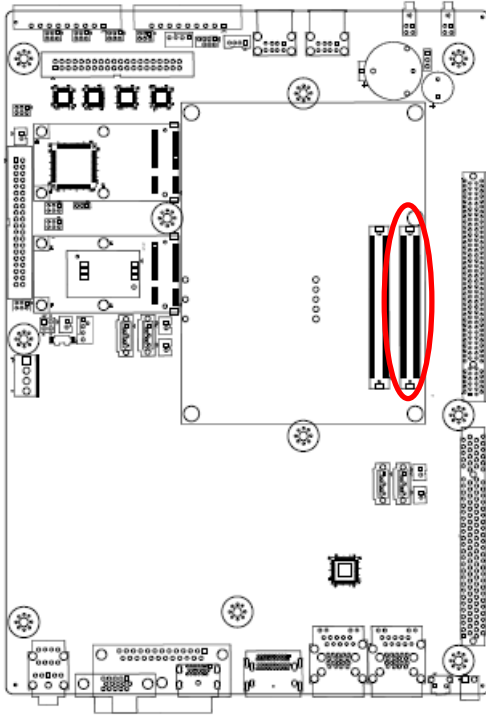


For ESM-QM77



*Default

2.4.5 COM Express connector 1 (CN1A)



Signal	PIN	PIN	Signal
GND	B1	A1	GND
GBE0_ACT#	B2	A2	GBE0_MDI3-
LPC_FRAME#	B3	A3	GBE0_MDI3+
LPC_AD0	B4	A4	GBE0_LINK100#
LPC_AD1	B5	A5	GBE0_LINK1000#
LPC_AD2	B6	A6	GBE0_MDI2-
LPC_AD3	B7	A7	GBE0_MDI2+
LPC_DRQ0#	B8	A8	GBE0_LINK#
LPC_DRQ1#	B9	A9	GBE0_MDI1-
LPC_CLK	B10	A10	GBE0_MDI1+
GND	B11	A11	GND
PWRBTN#	B12	A12	GBE0_MDI0-
SMB_CK	B13	A13	GBE0_MDI0+
SMB_DAT	B14	A14	GBE0_CTREF
SMB_ALERT#	B15	A15	SUS_S3#
SATA1_TX+	B16	A16	SATA0_TX+
SATA1_TX-	B17	A17	SATA0_TX-
SUS_STAT#	B18	A18	SUS_S4#
SATA1_RX+	B19	A19	SATA0_RX+
SATA1_RX-	B20	A20	SATA0_RX-
GND	B21	A21	GND
SATA3_TX+	B22	A22	SATA2_TX+
SATA3_TX-	B23	A23	SATA2_TX-
PWR_OK	B24	A24	SUS_S5#
SATA3_RX+	B25	A25	SATA2_RX+
SATA3_RX-	B26	A26	SATA2_RX-
WDT	B27	A27	BATLOW#
AC/HDA_SDIN2	B28	A28	(S)ATA_ACT#
AC/HDA_SDIN1	B29	A29	AC/HDA_SYNC
AC/HDA_SDIN0	B30	A30	AC/HDA_RST#

MPC-FRE Series

Signal	PIN	PIN	Signal
GND	B31	A31	GND
SPKR	B32	A32	AC/HDA_BITCLK
I2C_CK	B33	A33	AC/HDA_SDOUT
I2C_DAT	B34	A34	NC
THRM#	B35	A35	THRMTRIP#
USB7-	B36	A36	USB6-
USB7+	B37	A37	USB6+
USB_4_5_OC#	B38	A38	USB_6_7_OC#
USB5-	B39	A39	USB4-
USB5+	B40	A40	USB4+
GND	B41	A41	GND
USB3-	B42	A42	USB2-
USB3+	B43	A43	USB2+
USB_0_1_OC#	B44	A44	USB_2_3_OC#
USB1-	B45	A45	USB0-
USB1+	B46	A46	USB0+
EXCD1_PERST#	B47	A47	VCC_RTC
EXCD1_CPPE#	B48	A48	NC
SYS_RESET#	B49	A49	NC
CB_RESET#	B50	A50	LPC_SERIRQ
GND	B51	A51	GND
PCIE_RX5+	B52	A52	NC
PCIE_RX5-	B53	A53	NC
GPO1	B54	A54	NC
PCIE_RX4+	B55	A55	NC
PCIE_RX4-	B56	A56	NC
GPO2	B57	A57	GND
PCIE_RX3+	B58	A58	PCIE_TX3+
PCIE_RX3-	B59	A59	PCIE_TX3-
GND	B60	A60	GND

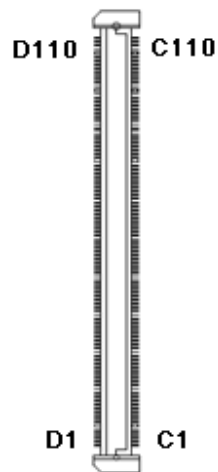
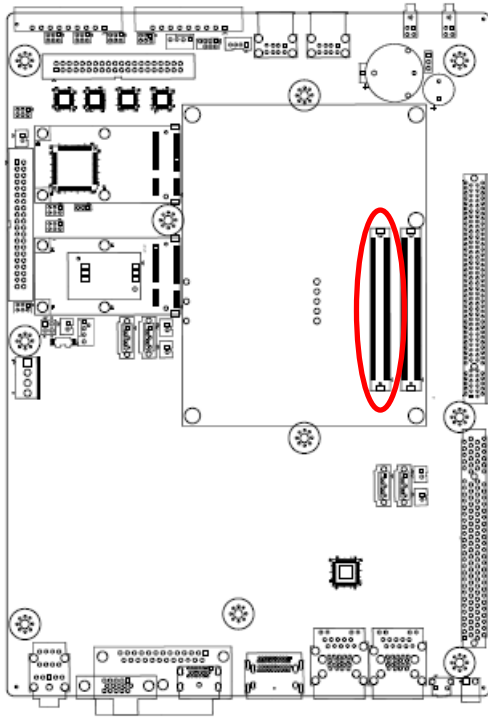
Signal	PIN	PIN	Signal
PCIE_RX2+	B61	A61	PCIE_TX2+
PCIE_RX2-	B62	A62	PCIE_TX2-
GPO3	B63	A63	NC
PCIE_RX1+	B64	A64	PCIE_TX1+
PCIE_RX1-	B65	A65	PCIE_TX1-
WAKE0#	B66	A66	GND
WAKE1#	B67	A67	NC
PCIE_RX0+	B68	A68	PCIE_TX0+
PCIE_RX0-	B69	A69	PCIE_TX0-
GND	B70	A70	GND
NC	B71	A71	NC
NC	B72	A72	NC
NC	B73	A73	NC
NC	B74	A74	NC
NC	B75	A75	NC
NC	B76	A76	NC
NC	B77	A77	NC
NC	B78	A78	NC
NC	B79	A79	NC
GND	B80	A80	GND
NC	B81	A81	NC
NC	B82	A82	NC
NC	B83	A83	NC
VCC_5V_SBY	B84	A84	NC
VCC_5V_SBY	B85	A85	NC
VCC_5V_SBY	B86	A86	RSVD1
VCC_5V_SBY	B87	A87	RSVD2
NC	B88	A88	PCIE_CLK_REF+
VGA_RED	B89	A89	PCIE_CLK_REF-
GND	B90	A90	GND

Quick Reference Guide

Signal	PIN	PIN	Signal
VGA_GRN	B91	A91	NC
VGA_BLU	B92	A92	NC
VGA_HSYNC	B93	A93	NC
VGA_VSYNC	B94	A94	NC
VGA_I2C_CK	B95	A95	NC
VGA_I2C_DAT	B96	A96	NC
NC	B97	A97	NC
NC	B98	A98	NC
NC	B99	A99	NC
GND	B100	A100	GND
FAN_PWMOUT	B101	A101	NC
FAN_TACHIN	B102	A102	NC
NC	B103	A103	NC
VCC_12V	B104	A104	VCC_12V
VCC_12V	B105	A105	VCC_12V
VCC_12V	B106	A106	VCC_12V
VCC_12V	B107	A107	VCC_12V
VCC_12V	B108	A108	VCC_12V
VCC_12V	B109	A109	VCC_12V
GND	B110	A110	GND

MPC-FRE Series

2.4.6 COM Express connector 2 (CN1B)



Signal	PIN	PIN	Signal
GND	D1	C1	GND
GND	D2	C2	GND
USB_SSTX0-	D3	C3	USB_SSRX0-
USB_SSTX0+	D4	C4	USB_SSRX0+
GND	D5	C5	GND
USB_SSTX1-	D6	C6	USB_SSRX1-
USB_SSTX1+	D7	C7	USB_SSRX1+
GND	D8	C8	GND
USB_SSTX2-	D9	C9	USB_SSRX2-
USB_SSTX2+	D10	C10	USB_SSRX2+
GND	D11	C11	GND
USB_SSTX3-	D12	C12	USB_SSRX3-
USB_SSTX3+	D13	C13	USB_SSRX3+
GND	D14	C14	GND
DDI1_CTRLCLK_AUX+	D15	C15	NC
DDI1_CTRLCLK_AUX-	D16	C16	NC
NC	D17	C17	NC
NC	D18	C18	NC
NC	D19	C19	NC
NC	D20	C20	NC
GND	D21	C21	GND
NC	D22	C22	NC
NC	D23	C23	NC
NC	D24	C24	DDI1_HPD
NC	D25	C25	NC
DDI1_PAIR0+	D26	C26	NC
DDI1_PAIR0-	D27	C27	NC
NC	D28	C28	NC
DDI1_PAIR1+	D29	C29	NC
DDI1_PAIR1-	D30	C30	NC

Quick Reference Guide

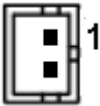
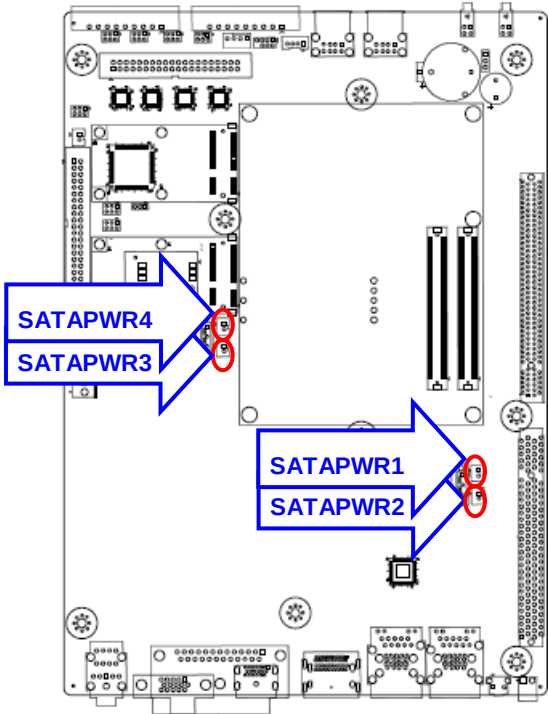
Signal	PIN	PIN	Signal
GND	D31	C31	GND
DDI1_PAIR2+	D32	C32	DDI2_CTRLCLK_AUX+
DDI1_PAIR2-	D33	C33	DDI2_CTRLDATA_AUX-
DDI1_DDC_AUX_SEL	D34	C34	DDI2_DDC_AUX_SEL
NC	D35	C35	NC
DDI1_PAIR3+	D36	C36	DDI3_CTRLCLK_AUX+
DDI1_PAIR3-	D37	C37	DDI3_CTRLDATA_AUX-
NC	D38	C38	DDI3_DDC_AUX_SEL
DDI2_PAIR0+	D39	C39	DDI3_PAIR0+
DDI2_PAIR0-	D40	C40	DDI3_PAIR0-
GND	D41	C41	GND
DDI2_PAIR1+	D42	C42	DDI3_PAIR1+
DDI2_PAIR1-	D43	C43	DDI3_PAIR1-
DDI2_HPD	D44	C44	DDI3_HPD
NC	D45	C45	NC
DDI2_PAIR2+	D46	C46	DDI3_PAIR2+
DDI2_PAIR2-	D47	C47	DDI3_PAIR2-
NC	D48	C48	NC
DDI2_PAIR3+	D49	C49	DDI3_PAIR3+
DDI2_PAIR3-	D50	C50	DDI3_PAIR3-
GND	D51	C51	GND
PEG_TX0+	D52	C52	PEG_RX0+
PEG_TX0-	D53	C53	PEG_RX0-
PEG_LANE_RV#	D54	C54	NC
PEG_TX1+	D55	C55	PEG_RX1+
PEG_TX1-	D56	C56	PEG_RX1-
TYPE2#	D57	C57	NC
PEG_TX2+	D58	C58	PEG_RX2+
PEG_TX2-	D59	C59	PEG_RX2-
GND	D60	C60	GND

Signal	PIN	PIN	Signal
PEG_TX3+	D61	C61	PEG_RX3+
PEG_TX3-	D62	C62	PEG_RX3-
NC	D63	C63	NC
NC-	D64	C64	NC
PEG_TX4+	D65	C65	PEG_RX4+
PEG_TX4-	D66	C66	PEG_RX4-
GND	D67	C67	NC
PEG_TX5+	D68	C68	PEG_RX5+
PEG_TX5-	D69	C69	PEG_RX5-
GND	D70	C70	GND
PEG_TX6+	D71	C71	PEG_RX6+
PEG_TX6-	D72	C72	PEG_RX6-
GND	D73	C73	GND
PEG_TX7+	D74	C74	PEG_RX7+
PEG_TX7-	D75	C75	PEG_RX7-
GND	D76	C76	GND
NC	D77	C77	NC
PEG_TX8+	D78	C78	PEG_RX8+
PEG_TX8-	D79	C79	PEG_RX8-
GND	D80	C80	GND
PEG_TX9+	D81	C81	PEG_RX9+
PEG_TX9-	D82	C82	PEG_RX9-
NC	D83	C83	NC
GND	D84	C84	GND
PEG_TX10+	D85	C85	PEG_RX10+
PEG_TX10-	D86	C86	PEG_RX10-
GND	D87	C87	GND
PEG_TX11+	D88	C88	PEG_RX11+
PEG_TX11-	D89	C89	PEG_RX11-
GND	D90	C90	GND

MPC-FRE Series

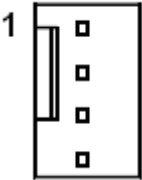
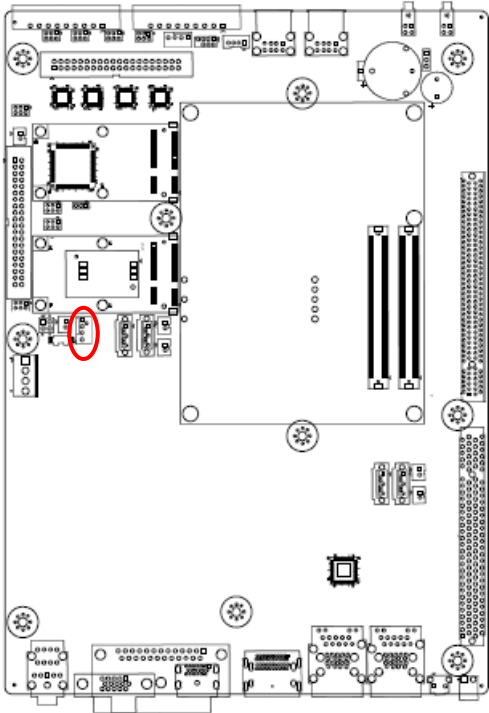
Signal	PIN	PIN	Signal
PEG_TX12+	D91	C91	PEG_RX12+
PEG_TX12-	D92	C92	PEG_RX12-
GND	D93	C93	GND
PEG_TX13+	D94	C94	PEG_RX13+
PEG_TX13-	D95	C95	PEG_RX13-
GND	D96	C96	GND
NC	D97	C97	NC
PEG_TX14+	D98	C98	PEG_RX14+
PEG_TX14-	D99	C99	PEG_RX14-
GND	D100	C100	GND
PEG_TX15+	D101	C101	PEG_RX15+
PEG_TX15-	D102	C102	PEG_RX15-
GND	D103	C103	GND
VCC_12V	D104	C104	VCC_12V
VCC_12V	D105	C105	VCC_12V
VCC_12V	D106	C106	VCC_12V
VCC_12V	D107	C107	VCC_12V
VCC_12V	D108	C108	VCC_12V
VCC_12V	D109	C109	VCC_12V
GND	D110	C110	GND

2.4.7 SATA Power connector 1/2/3/4 (SATAPWR1/2/3/4)



Signal	PIN
GND	1
+5V	2

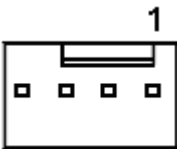
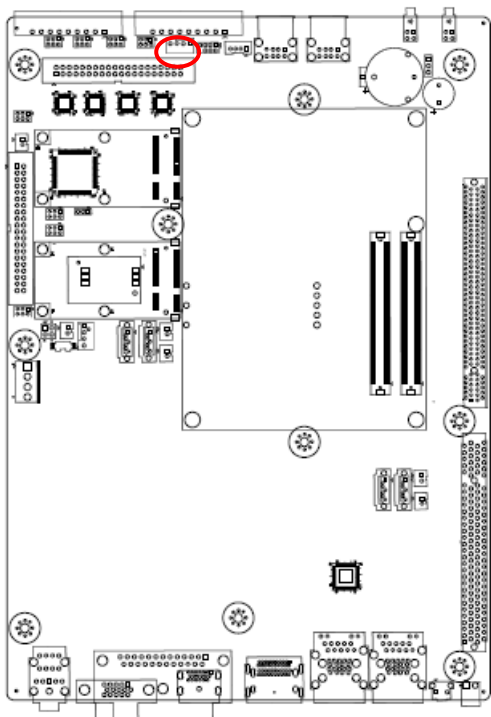
2.4.8 CPU Fan Connector (CFAN1)



Signal	PIN
GND	1
+12V	2
+5V	3
CPUFANOUT	4

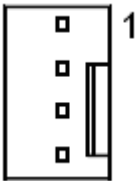
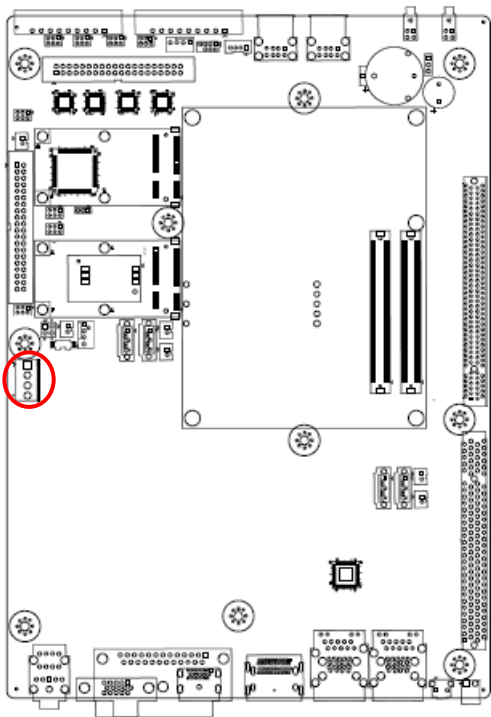
MPC-FRE Series

2.4.9 System Fan Connector (SFAN1)



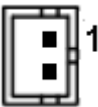
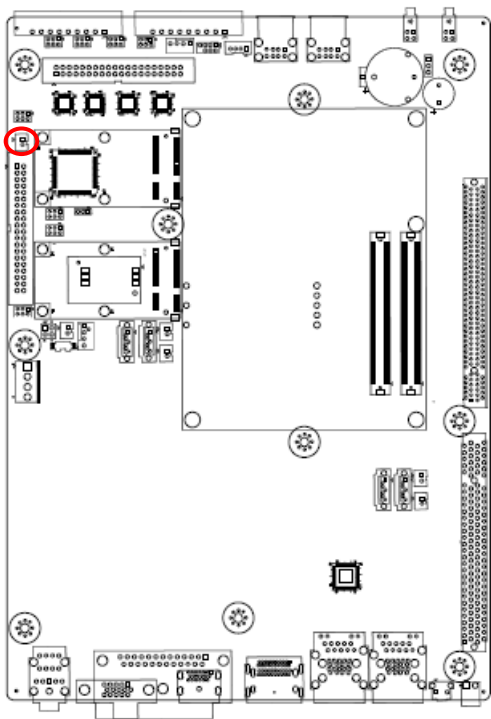
Signal	PIN
GND	1
+12V	2
+5V	3
SYSFANOUT	4

2.4.10 Power connector (PWR1)



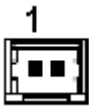
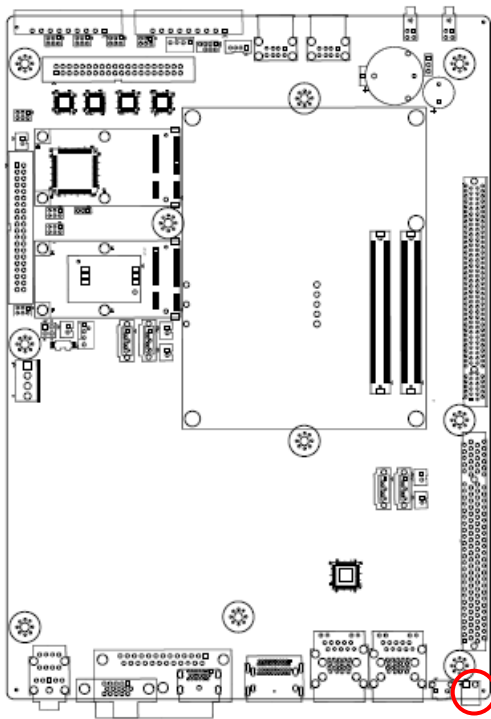
Signal	PIN
GND	1
GND	2
+PWRIN	3
+PWRIN	4

2.4.11 Power button connector (PWBTN1)



Signal	PIN
GND	1
EXT_PWRBTN#	2

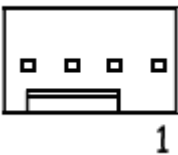
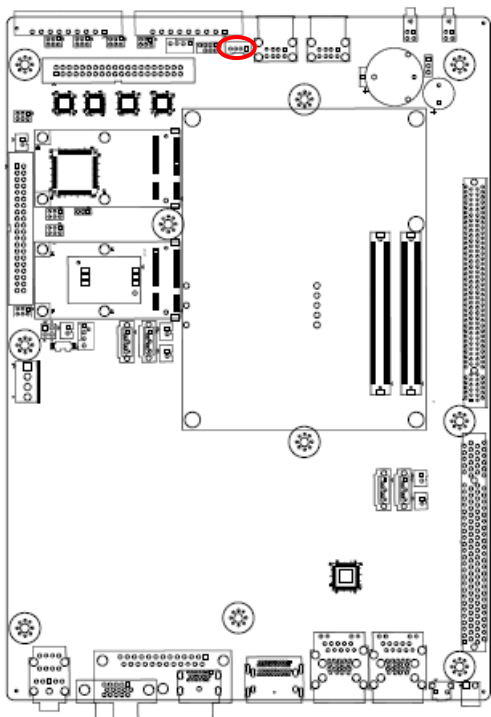
2.4.12 Power button (PWRBTN1)



Signal	PIN
EXT_PWRBTN#	1
GND	2

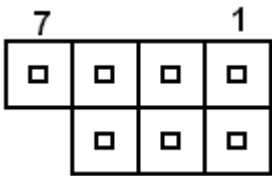
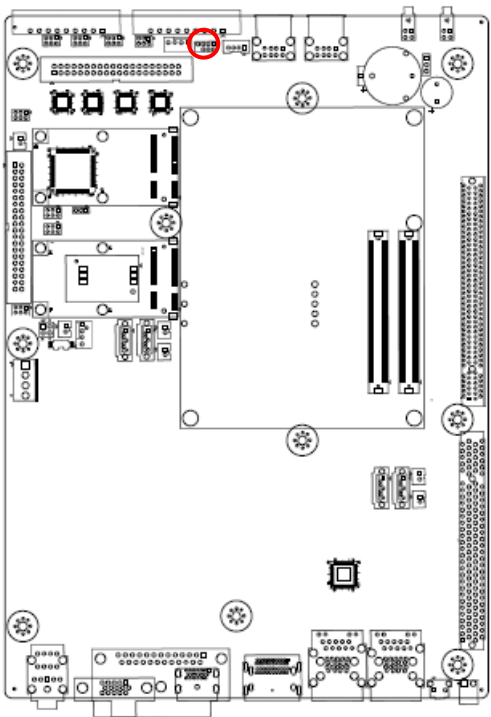
MPC-FRE Series

2.4.13 USB connector (USB6)



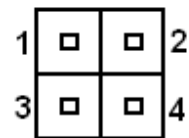
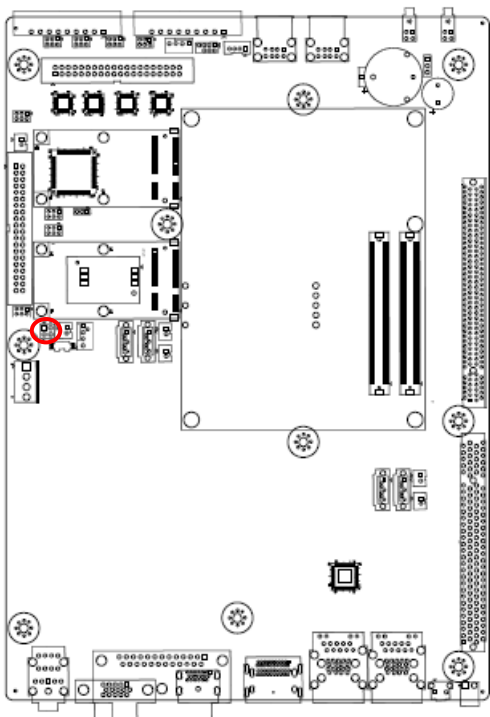
Signal	PIN
USBVCC5	1
USB_Z_PN6	2
USB_Z_PP6	3
GND	4

2.4.14 PS/2 Keyboard & mouse connector (KB/MS1)



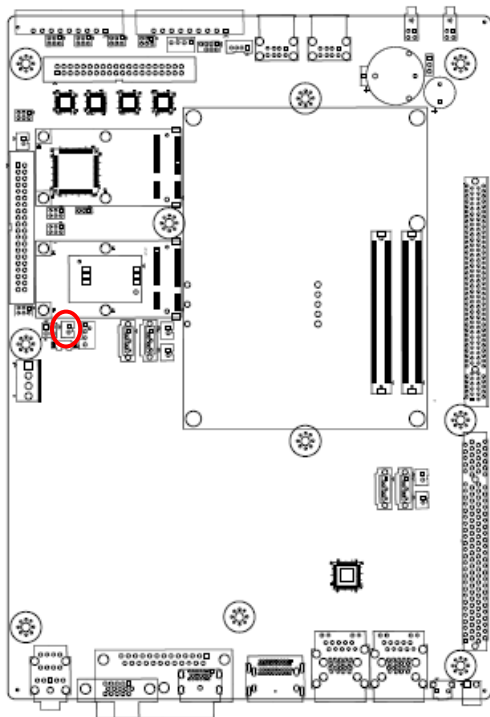
Signal	PIN	PIN	Signal
KBDT	1	2	KBCK
GND	3	4	PS2PWR
MSDT	5	6	MSCK
NC	7		

2.4.15 Intel Front Panel connector (INTBTN1)



Signal	PIN	PIN	Signal
GND	1	2	EXT_PWRBTN#
GND	3	4	SYS_RERST#

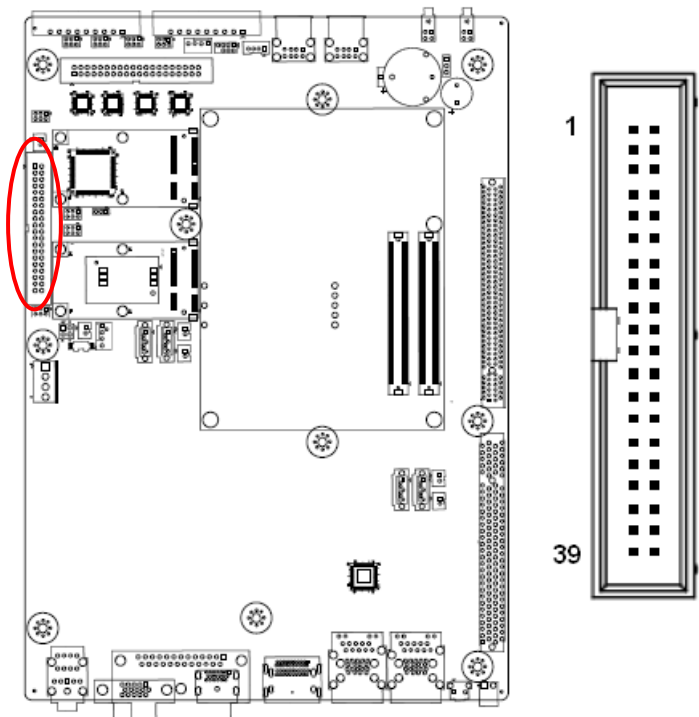
2.4.16 Chassis Intrusion connector (CASEOPEN1)



Signal	PIN
GND	1
+3.3V	2

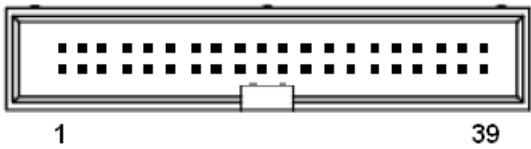
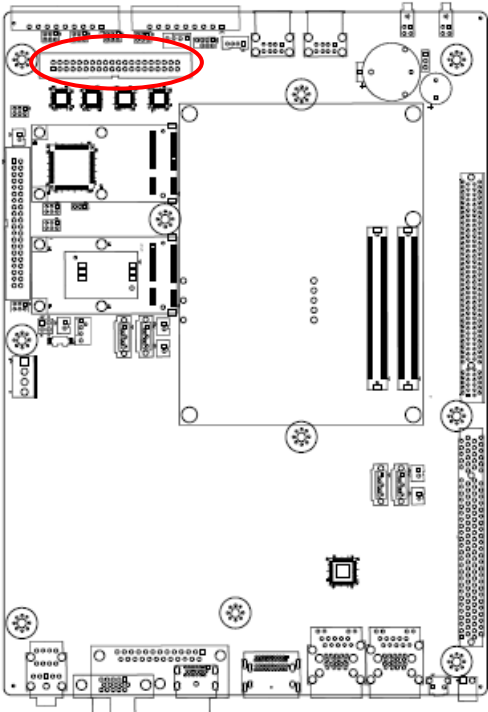
MPC-FRE Series

2.4.17 Serial port 1-4 connector (COM1-4)



Signal	PIN	PIN	Signal
UDCDA#	1	2	USINA
USOUTA	3	4	UDTRA#
GND	5	6	UDSRA#
UR TSA#	7	8	UCTSA#
URI1	9	10	NC
UDCDB#	11	12	USINB
USOUTB	13	14	UDTRB#
GND	15	16	UDSRB#
UR TSB#	17	18	UCTSB#
URI2	19	20	NC
DCD3	21	22	RxDD3
TxDD3	23	24	DTR3
GND	25	26	DSR3
RTS3	27	28	CTS3
URI3	29	30	NC
DCD4	31	32	RxDD4
TxDD4	33	34	DTR4
GND	35	36	DSR4
RTS4	37	38	CTS4
URI4	39	40	NC

2.4.18 Serial port 5-8 connector (COM5-8)



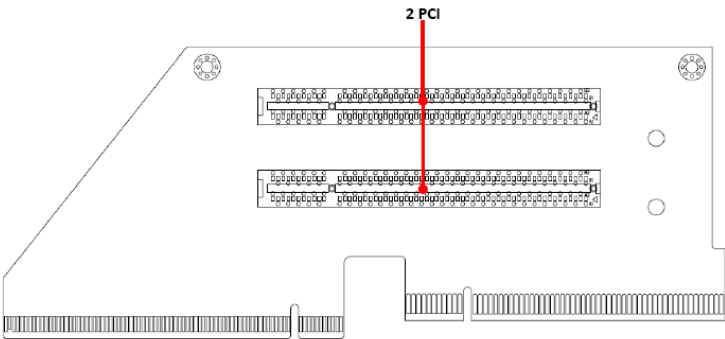
Signal	PIN	PIN	Signal
DCD5_485TXN	1	2	RxDD5_485TXP
TxDD5_485RXP	3	4	DTR5_485RXN
GND	5	6	DSR5
RTS5	7	8	CTS5
URI5	9	10	NC
DCD6_485TXN	11	12	RxDD6_485TXP
TxDD6_485RXP	13	14	DTR6_485RXN
GND	15	16	DSR6
RTS6	17	18	CTS6
URI6	19	20	NC
DCD7_485TXN	21	22	RxDD7_485TXP
TxDD7_485RXP	23	24	DTR7_485RXN
GND	25	26	DSR8
RTS7	27	28	CTS7
URI7	29	30	NC
DCD8_485TXN	31	32	RxDD8_485TXP
TxDD8_485RXP	33	34	DTR8_485RXN
GND	35	36	DSR8
RTS8	37	38	CTS8
URI8	39	40	NC

2.5 Daughter Boards (AUX-036 – AUX-037 – AUX-049)

2.5.1 AUX-036

Connectors

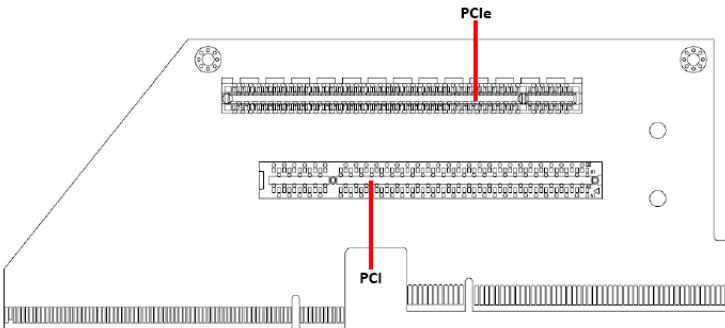
Label	Function	Note
PCI1/2	PCI connector 1/2	



2.5.2 AUX-037 (optional)

Connectors

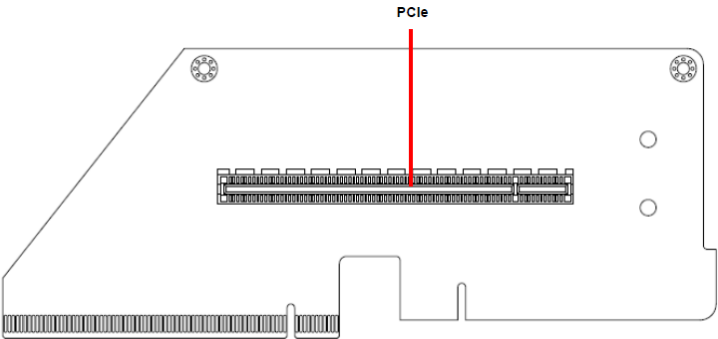
Label	Function	Note
PCI	PCI connector 1	
PCIe	PCI Express X16 connector	



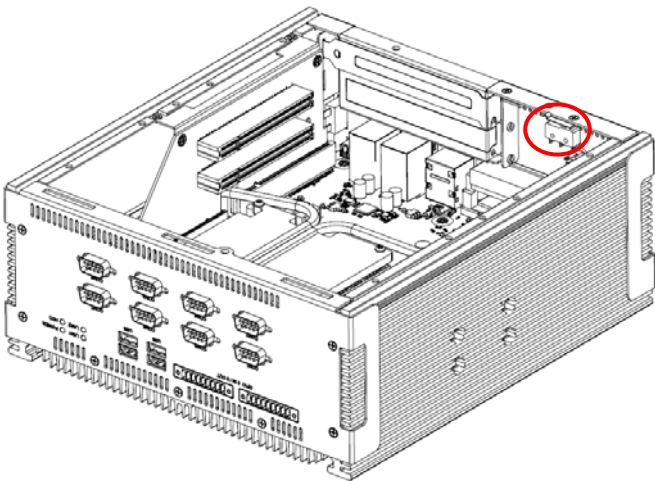
2.5.3 AUX-049 (optional)

Connectors

Label	Function	Note
PCIe	PCI Express X16 connector	

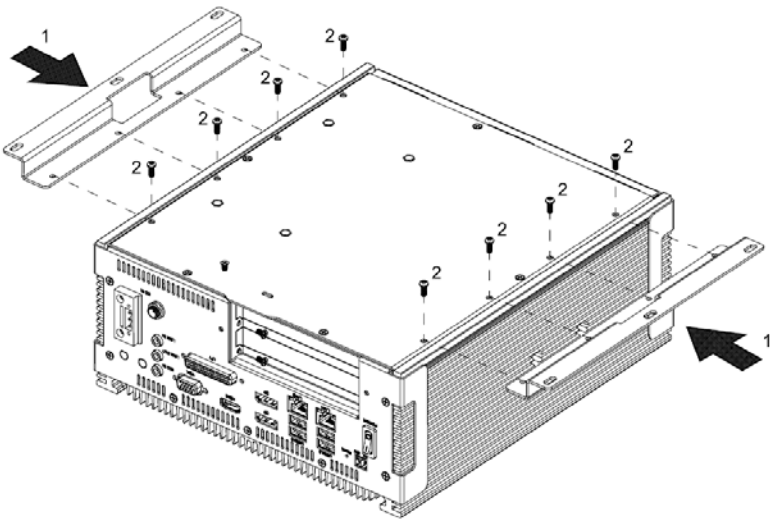


2.6 Chassis Intrusion Sensor BIOS Installing (MPC-FRE)



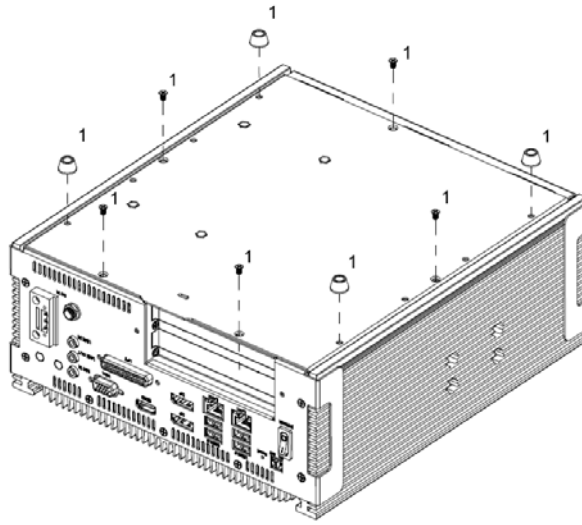
Item	Option	Description
Case open	Disabled Enabled	Enable: Showing message on the screen that “ Alert! Cover was previously removed.” When the system is turn on next time.

2.7 Installing Mounting Brackets (MPC-FRE)



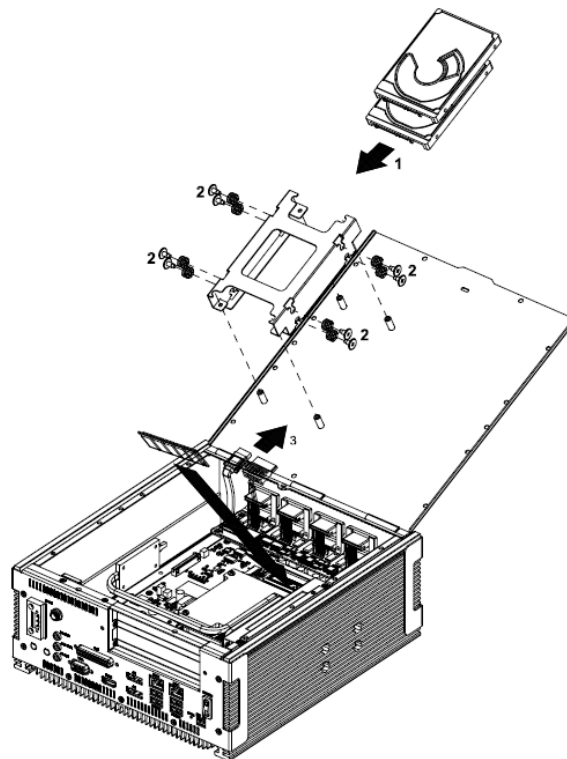
- Step 1.** Locate brackets on both sides, matching the holes on the system.
- Step 2.** Insert and fasten 4 screws on each side of the system to secure Mounting brackets.

2.8 Installing Hard Disk & Memory (MPC-FRE)



Step 1. Remove 9 screws from the bottom of your system.

Step 2. Remove the chassis cover.



Step 1. Remove 8 screws to release the HDD bracket.

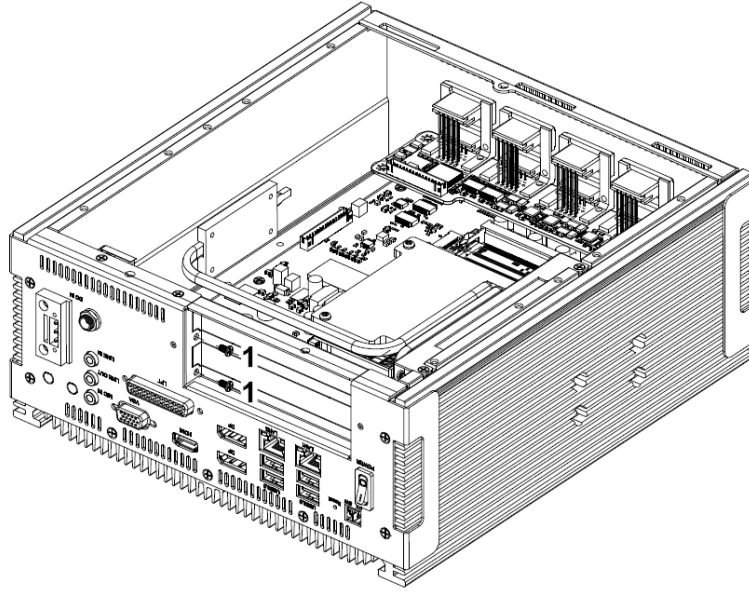
Step 2. Slide HDD into its bracket until properly seated.

Step 3. Secure HDD by means of 8 screws.

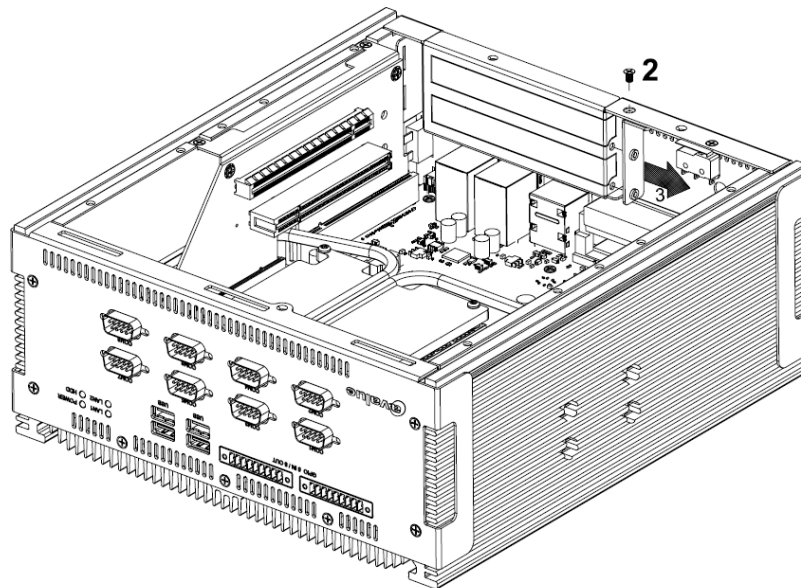
Step 4. Connect necessary cables to the HDD.

Step 5. Slide the DDR3 SODIMM into the memory socket and press it down to seat it properly.

2.9 Installing PCI devices (MPC-FRE)



Step1. Remove 2 screws to release the retention clip



Step2. Remove one screw to release the retention clip.

Step3. The retention clip can now be removed to open slot cover for PCI installation.



