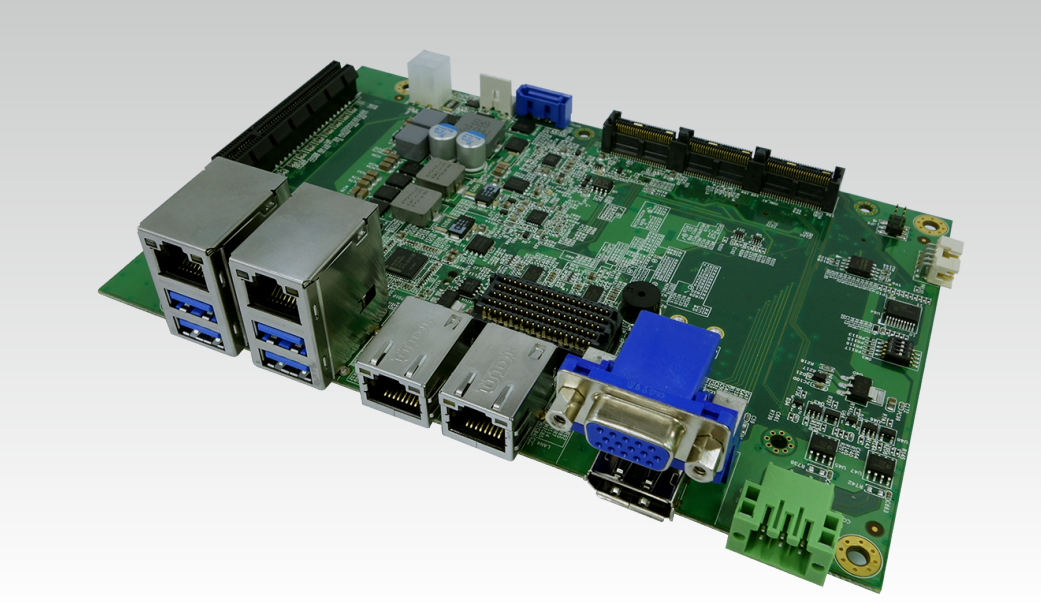
SK507

StackPC Carrier Board
QIG



Safety Information

1. Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

2. Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

Revision History

Revision	Date (yyyy/mm/dd)	Changes
1.0	2014/07/11	Initial release
1.1	2015/12/14	PCBA change to V.A4

Packing list

- ☐ SK507 Carrier Board
- ☐ CD (Driver + user's manual)

Optional Accessories

- ☐ Terminal block 2*3P
- ☐ VGA Cable

If any of the above items is damaged or missing, please contact your local distributor.

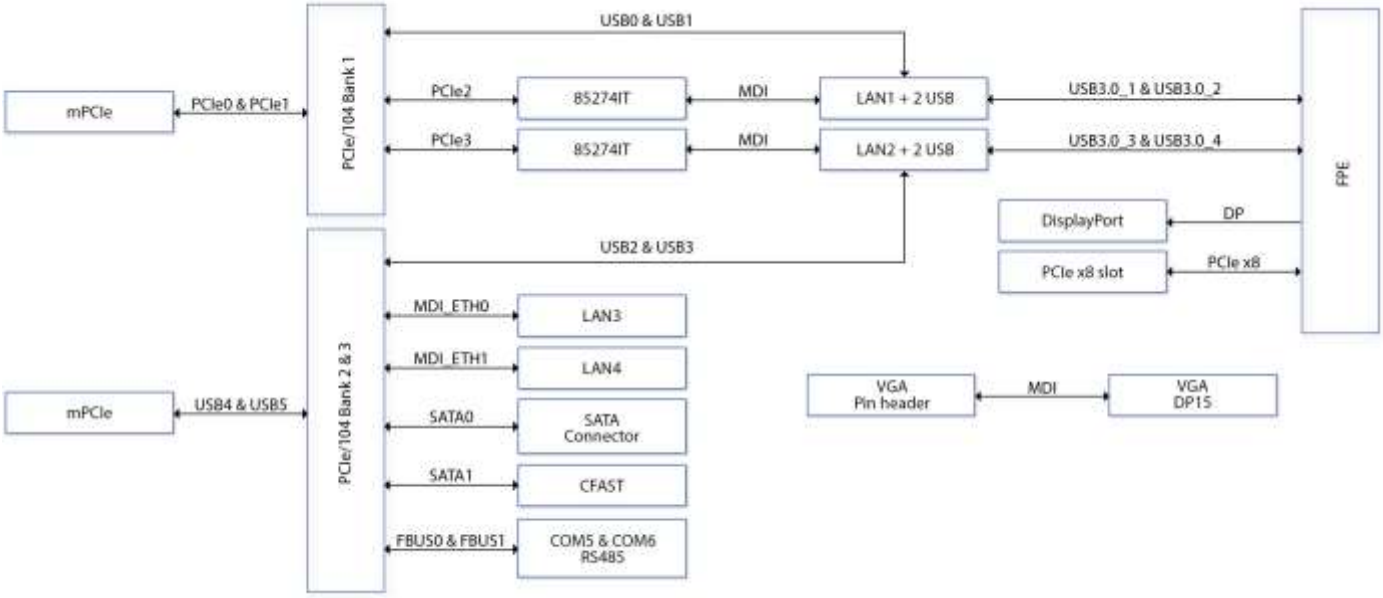
Ordering information

Model Number	Description
SK507	StackPC-FPE Reference Carrier Board in EPIC Form Factor

Table of Contents

Chapter 1: Product Information

1.1 Block Diagram

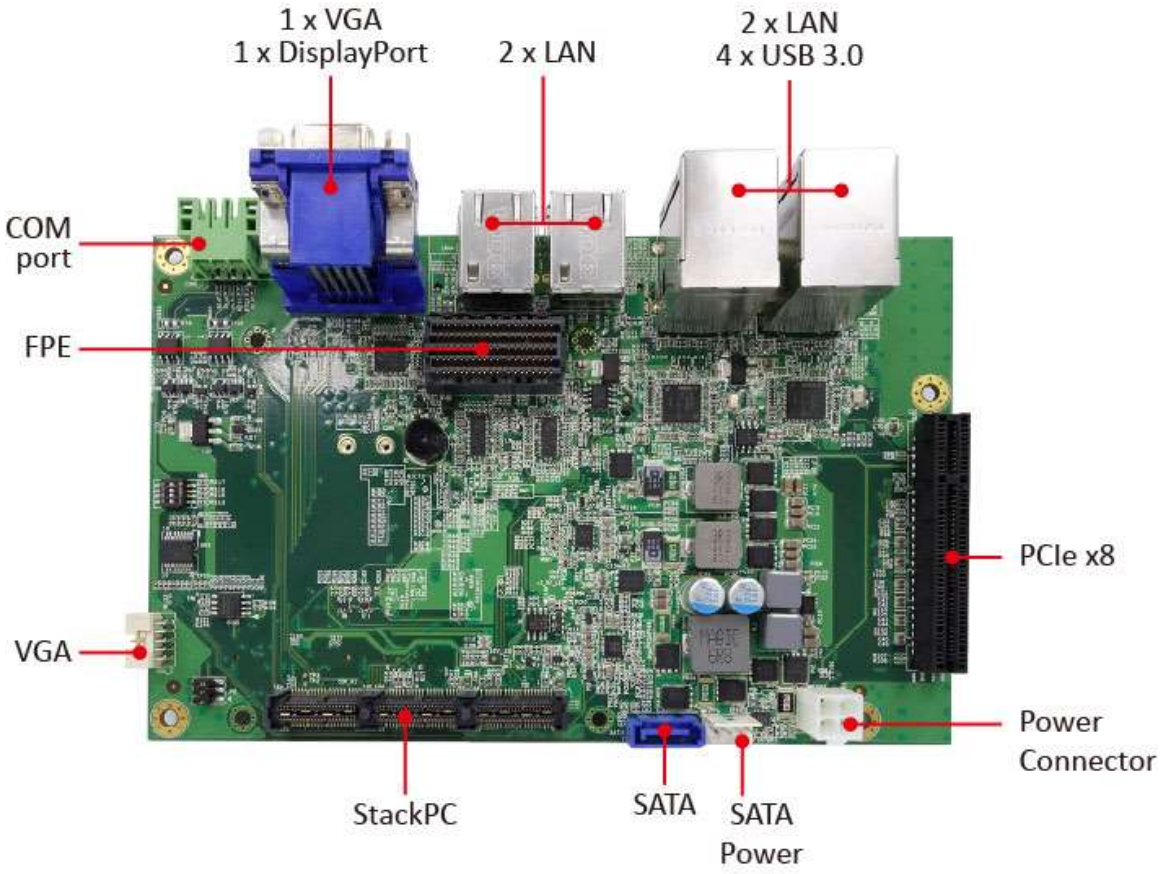


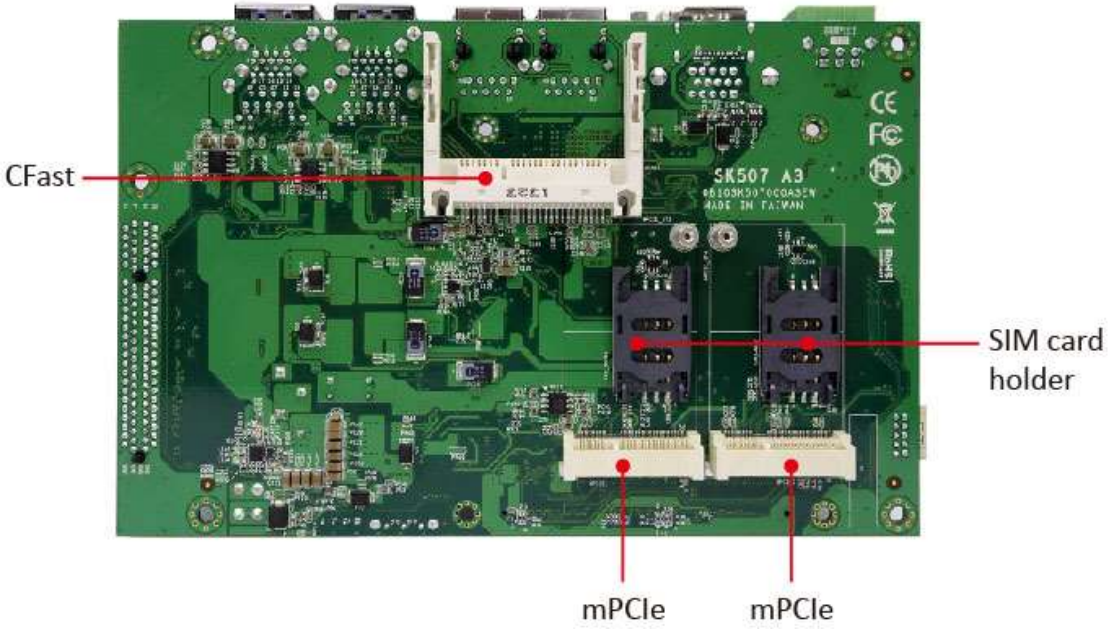
1.2 Key Features

System	
Expansion Slot	2 x mPCIe 2 x SIM card holder 1 x PCIe x 8
Rear I/O	
DisplayPort	1 (through FPE)
VGA	1 (through cable connecting to CPU module)
GbE	2 x RJ45 through StackPC (from CPU module) 2 x RJ45 through StackPC PCIex1 (Intel 82574IT)
USB 3.0	4 (through FPE)
COM	2 x RS485 (FBUS) Terminal Blocks. Driver with Isolation, the same as on CPU board.
Internal I/O	
SATA	1
SATA Power	1
CFast	1
SIM card holder	2
Mechanical and Environment	
Form Factor	EPIC with StackPC-FPE
Power Type	9 to 36V DC-in
Dimension	115 x 180mm
Operating Temp.	-40 to 85°C
Storage Temp.	-55 to 90°C
Relative Humidity	10% to 90%, non-condensing

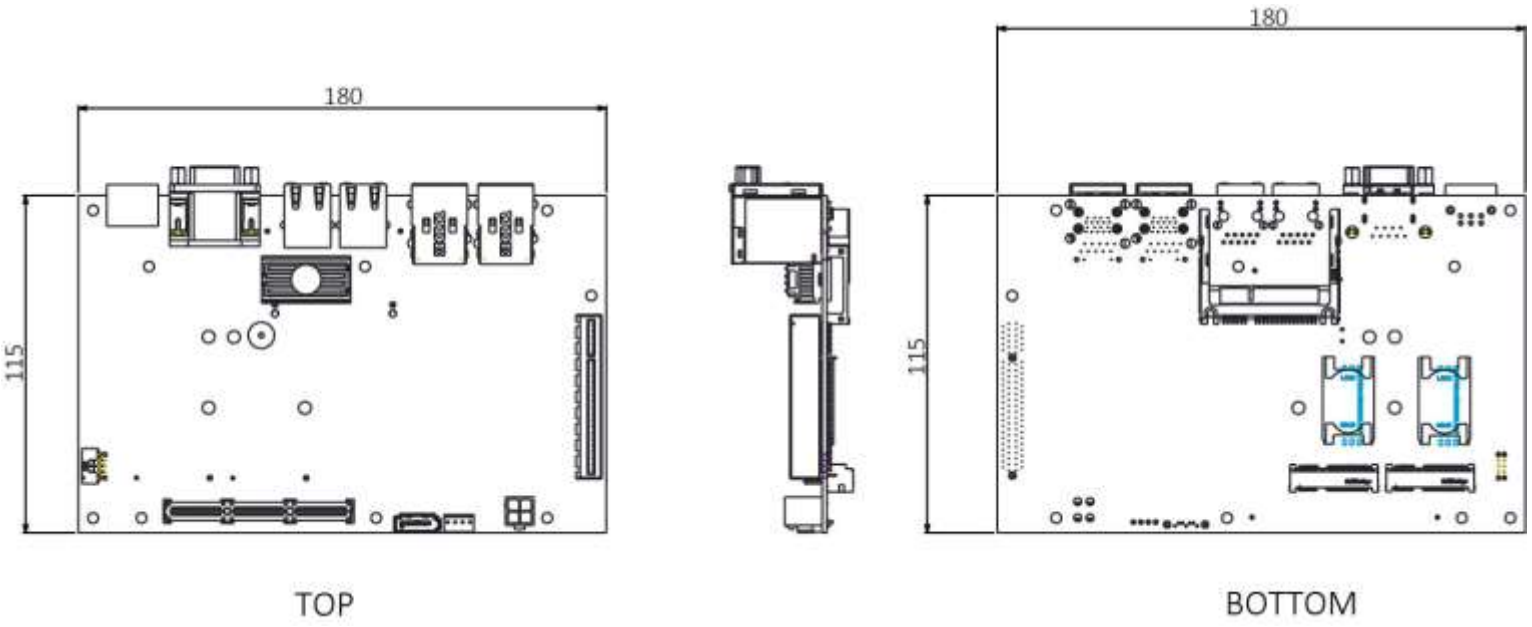
*All specifications and photos are subject to change without notice.

1.3 Board Placement





1.4 Mechanical Drawings



Chapter 2: Jumpers and Connectors

2.1 Jumpers and connectors list

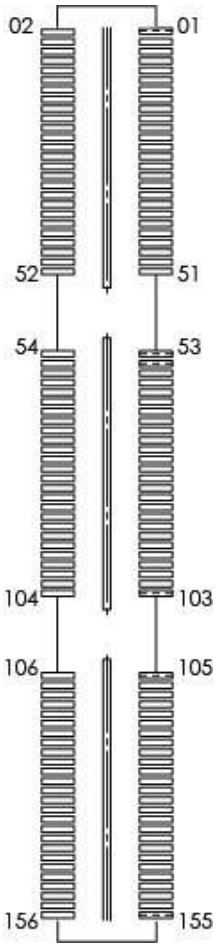
Label	Function	Jumper Settings
CON_A1	StackPC connector	
FPE1	StackPC FPE Connector	
CN2	PCI EXPRESS*8 Slot	
DP	DisplayPort connector	
VGA_O	External VGA connector	
VGA_I	Internal 2*5P connecctor	
MPCIE1	Mini PCIe slot	
MPCIE2	Mini PCIe slot	
SIM_CARD1	SIM CARD 6PIN socket	
SIM_CARD2	SIM CARD 6PIN socket	
LAN1_USB12	RJ45+USB3.0*2 connector	
LAN2_USB34	RJ45+USB3.0*2 connector	
LAN3	RJ45 connector	
LAN4	RJ45 connector	
SATA1	SATA 7P connector	
SATAP1	SATA Power pin hearder	
CFAST	CFast connector	
COM5_1	RS485 COM port by terminal block	
DC_JACK1	ATX POWER 2*2P connector	
SW3	POWER On/Off Switch	

2.2 Connector Pin Definition and Jumper Settings

CON_A1: StackPC Connector

PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
1	-USB_OC	2	-PE_RST	53	SKT0 / WAKE-	54	STK1 / SATA_ACT#
3	+3.3V	4	+3.3V	55	TYPE_DETECT#	56	GND
5	USB2_D1+	6	USB2_D0+	57	LAN3_MDI0+	58	NC
7	USB2_D1-	8	USB2_D0-	59	LAN3_MDI0-	60	NC
9	GND	10	GND	61	GND	62	GND
11	PCIE_TXP_1	12	PCIE_TXP_0	63	LAN4_MDI0+	64	NC
13	PCIE_TXN_1	14	PCIE_TXN_0	65	LAN4_MDI0-	66	NC
15	GND	16	GND	67	GND	68	GND
17	PCIE_TXP_2	18	PCIE_TXP_3	69	LAN3_MDI1+	70	NC
19	PCIE_TXN_2	20	PCIE_TXN_3	71	LAN3_MDI1-	72	NC
21	GND	22	GND	73	GND	74	GND
23	PCIE_RXP_1	24	PCIE_RXP_0	75	LAN4_MDI1+	76	NC
25	PCIE_RXN_1	26	PCIE_RXN_0	77	LAN4_MDI1-	78	NC
27	GND	28	GND	79	LAN4_ACT-	80	LAN3_ACT-
29	PCIE_RXP_2	30	PCIE_RXP_3	81	SATATXP1	82	SATATXP0
31	PCIE_RXN_2	32	PCIE_RXN_3	83	SATATXN1	84	SATATXN0
33	GND	34	GND	85	GND	86	GND
35	CLK_PCIE_1P	36	CLK_PCIE_0P	87	USB2_D3+	88	USB2_D2+
37	CLK_PCIE_1N	38	CLK_PCIE_0N	89	USB2_D3-	90	USB2_D2-
39	+5VSB	40	+5VSB	91	GND	92	GND
41	CLK_PCIE_2P	42	CLK_PCIE_3P	93	USB2_D5+	94	USB2_D4+
43	CLK_PCIE_2N	44	CLK_PCIE_3N	95	USB2_D5-	96	USB2_D4-
45	GND	46	+5V	97	GND	98	GND
47	SMB_DATA	48	NC	99	ETH_1_CTREF	100	GND
49	SMB_CLK	50	NC	101	SPI_MOSI_A	102	-SPI_CS1
51	NC	52	-PSON	103	SPI_MISO_A	104	NC

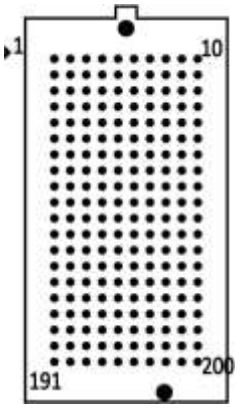
PIN	DEFINITION	PIN	DEFINITION
105	SKT2 / SPISCK	106	NC
107	NC	108	GND
109	LAN3_MDI2+	110	NC
111	LAN3_MDI2-	112	NC
113	GND	114	GND
115	LAN4_MDI2+	116	NC
117	LAN4_MDI2-	118	NC
119	GND	120	GND
121	LAN3_MDI3+	122	NC
123	LAN3_MDI3-	124	NC
125	GND	126	GND
127	LAN4_MDI3+	128	NC
129	LAN4_MDI3-	130	NC
131	NC	132	NC
133	SATARXP1	134	SATARXP0
135	SATARXN1	136	SATARXN0
137	GND	138	GND
139	UART6_SOUT	140	UART5_SOUT
141	UART6_SIN	142	UART5_SIN
143	GND	144	GND
145	NC	146	NC
147	NC	148	NC
149	GND	150	GND
151	NC	152	NC
153	NC	154	+RTCVDD_A
155	FBUS_1RTS-	156	FBUS_0RTS-



FPE1: StackPC FPE Connector

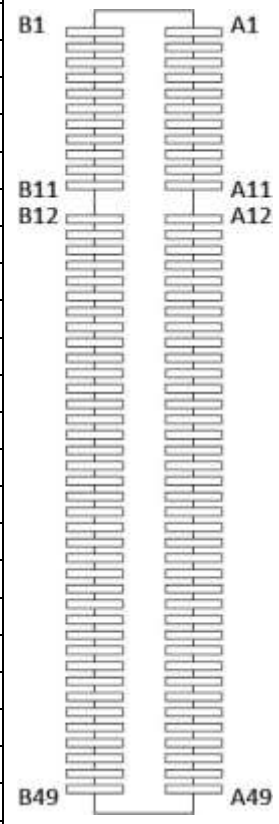
PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
1	DP_HPD	2	DPB_AUXP	3	NC	4	NC	5	NC	6	NC
11	GND	12	DPB_AUXN	13	GND	14	NC	15	GND	16	NC
21	DPB_LANP1	22	DP_PWR	23	USB3TP1	24	GND	25	USB3TP2	26	GND
31	DPB_LANN1	32	DPB_LANP3	33	USB3TN1	34	USB3RP1	35	USB3TN2	36	USB3RP2
41	GND	42	DPB_LANN3	43	GND	44	USB3RN1	45	GND	46	USB3RN2
51	DPB_LANP0	52	GND	53	NC	54	GND	55	NC	56	GND
61	DPB_LANN0	62	DPB_LANP2	63	NC	64	NC	65	NC	66	NC
71	GND	72	DPB_LANN2	73	GND	74	NC	75	GND	76	NC
81	PEG_TXP0	82	GND	83	PEG_TXP2	84	GND	85	PEG_TXP4	86	GND
91	PEG_TXN0	92	PEG_TXP1	93	PEG_TXN2	94	PEG_TXP3	95	PEG_TXN4	96	PEG_TXP5
101	GND	102	PEG_TXN1	103	GND	104	PEG_TXN3	105	GND	106	PEG_TXN5
111	PEG_RXP0	112	GND	113	PEG_RXP2	114	GND	115	PEG_RXP4	116	GND
121	PEG_RXN0	122	PEG_RXP1	123	PEG_RXN2	124	PEG_RXP3	125	PEG_RXN4	126	PEG_RXP5
131	GND	132	PEG_RXN1	133	GND	134	PEG_RXN3	135	GND	136	PEG_RXN5
141	NC	142	GND	143	NC	144	GND	145	NC	146	GND
151	NC	152	NC	153	NC	154	NC	155	NC	156	NC
161	GND	162	NC	163	GND	164	NC	165	GND	166	NC
171	NC	172	GND	173	NC	174	GND	175	NC	176	GND
181	NC	182	NC	183	NC	184	NC	185	NC	186	NC
191	GND	192	NC	193	GND	194	NC	195	GND	196	NC

PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
7	NC	8	NC	9	NC	10	NC
17	GND	18	NC	19	NC	20	NC
27	USB3TP3	28	GND	29	NC	30	LAN4_LED0
37	USB3TN3	38	USB3RP3	39	NC	40	LAN4_LED2
47	GND	48	USB3RN3	49	GND	50	NC
57	USB3TP4	58	GND	59	NC	60	LAN3_LED1
67	USB3TN4	68	USB3RP4	69	HDA_SPKR	70	LAN3_LED2
77	GND	78	USB3RN4	79	GND	80	NC
87	PEG_TXP6	88	GND	89	NC	90	CFG5
97	PEG_TXN6	98	PEG_TXP7	99	NC	100	CFG6
107	GND	108	PEG_TXN7	109	GND	110	-PE_RST_FPE
117	PEG_RXP6	118	GND	119	PEx16_x8_x4_0Clkp	120	GND
127	PEG_RXN6	128	PEG_RXP7	129	PEx16_x8_x4_0Clkn	130	NC
137	GND	138	PEG_RXN7	139	GND	140	Config_Type0
147	NC	148	GND	149	NC	150	Config_Type1
157	NC	158	NC	159	NC	160	Config_Type2
167	GND	168	NC	169	GND	170	NC
177	NC	178	GND	179	NC	180	+12V
187	NC	188	NC	189	NC	190	+12V
197	GND	198	NC	199	NC	200	+12V



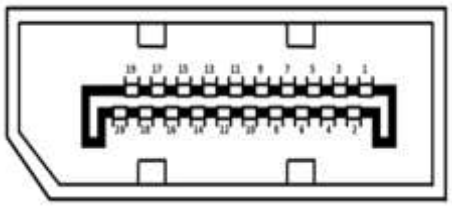
CN2: PCI EXPRESS*8 Slot

PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
B1	+12V	B26	NC	A1	GND	A26	PEG_RXN_2
B2	+12V	B27	PEG_TXP_3	A2	+12V	A27	GND
B3	+12V	B28	PEG_TXN_3	A3	+12V	A28	GND
B4	GND	B29	GND	A4	GND	A29	PEG_RXP_3
B5	SMB_CLK	B30	NC	A5	NC	A30	PEG_RXN_3
B6	SMB_DATA	B31	NC	A6	NC	A31	GND
B7	GND	B32	GND	A7	NC	A32	NC
B8	+3.3V	B33	PEG_TXP_4	A8	NC	A33	NC
B9	NC	B34	PEG_TXN_4	A9	+3.3V	A34	GND
B10	+3.3VSB	B35	GND	A10	+3.3V	A35	PEG_RXP_4
B11	-PCIE_WAKE	B36	GND	A11	PERST#	A36	PEG_RXN_4
B12	NC	B37	PEG_TXP_5	A12	GND	A37	GND
B13	GND	B38	PEG_TXN_5	A13	PEx16_x8_x4_0Clkp	A38	GND
B14	PEG_TXP_0	B39	GND	A14	PEx16_x8_x4_0Clkn	A39	PEG_RXP_5
B15	PEG_TXN_0	B40	GND	A15	GND	A40	PEG_RXN_5
B16	GND	B41	PEG_TXP_6	A16	PEG_RXP_0	A41	GND
B17	NC	B42	PEG_TXN_6	A17	PEG_RXN_0	A42	GND
B18	GND	B43	GND	A18	GND	A43	PEG_RXP_6
B19	PEG_TXP_1	B44	GND	A19	NC	A44	PEG_RXN_6
B20	PEG_TXN_1	B45	PEG_TXP_7	A20	GND	A45	GND
B21	GND	B46	PEG_TXN_7	A21	PEG_RXP_1	A46	GND
B22	GND	B47	GND	A22	PEG_RXN_1	A47	PEG_RXP_7
B23	PEG_TXP_2	B48	NC	A23	GND	A48	PEG_RXN_7
B24	PEG_TXN_2	B49	GND	A24	GND	A49	GND
B25	NC			A25	PEG_RXP_2		



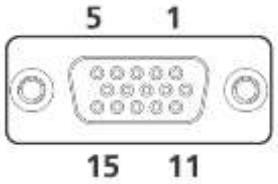
DP: DisplayPort connector

PIN	DEFINITION	PIN	DEFINITION
1	DPC_LANEP0	11	GND
2	GND	12	DPC_LANEN3
3	DPC_LANEN0	13	GND
4	DPC_LANEP1	14	GND
5	GND	15	DPC_AUXP
6	DPC_LANEN1	16	GND
7	DPC_LANEP2	17	DPC_AUXN
8	GND	18	DPC_DET
9	DPC_LANEN2	19	GND
10	DPC_LANEP3	20	DPC_PWR



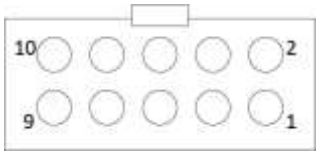
VGA_O: VGA connector

Pin	Definition	Pin	Definition
1	CRT_RED	9	VGA_VCC
2	CRT_GREEN	10	GND
3	CRT_BLUE	11	NC
4	NC	12	VGA_DDAT
5	GND	13	VGA_HS
6	GND	14	VGA_VS
7	GND	15	VGA_DCLK
8	GND		



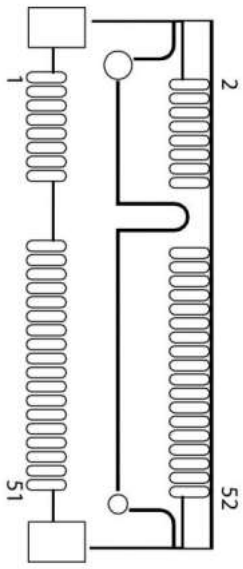
VGA_I: 2*5P pin header

Pin	Definition	Pin	Definition
1	RR	2	GND
3	GG	4	GND
5	BB	6	GND
7	VGA_HS	8	VGA_VS
9	VGA_DCLK	10	VGA_DDAT



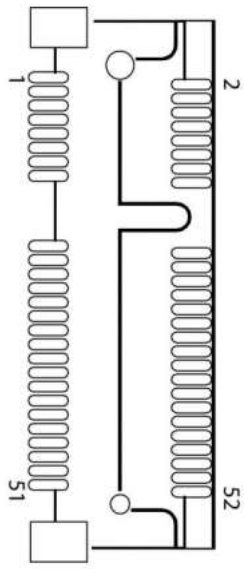
MPCIE1: Mini PCIe slot

PIN	DEFINITION	PIN	DEFINITION
1	-PCH_WAKE	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	UIM_PWR
9	GND	10	UIM_DATA
11	CLK_PCIE_0N	12	UIM_CLK
13	CLK_PCIE_0P	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	NC
21	GND	22	-RST_MPCIE1
23	PCIE_RXN_0	24	+3.3V
25	PCIE_RXP_0	26	GND
27	GND	28	GND
29	GND	30	SMB_CLK
31	PCIE_TXN_0	32	SMB_DATA
33	PCIE_TXP_0	34	GND
35	GND	36	USBD4-
37	GND	38	USBD4+
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3.3V

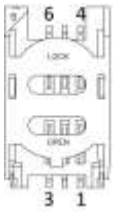


MPCIE2: Mini PCIe slot

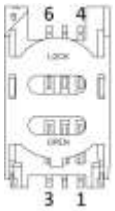
PIN	DEFINITION	PIN	DEFINITION
1	NC	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	UIM2_PWR
9	GND	10	UIM2_DATA
11	CLK_PCIE_1N	12	UIM2_CLK
13	CLK_PCIE_1P	14	UIM2_RESET
15	GND	16	UIM2_VPP
17	NC	18	GND
19	NC	20	NC
21	GND	22	-RST_MPCIE2
23	PCIE_RXN_1	24	+3.3V
25	PCIE_RXP_1	26	GND
27	GND	28	GND
29	GND	30	NC
31	PCIE_TXN_1	32	NC
33	PCIE_TXP_1	34	GND
35	GND	36	USBD5-
37	GND	38	USBD5+
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3.3V



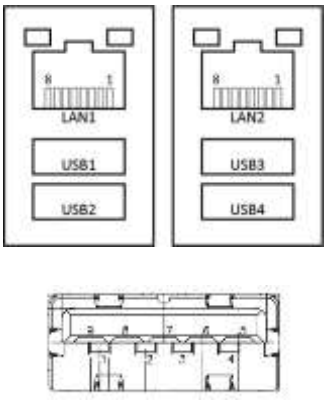
SIM_CARD1: SIM CARD 6PIN socket

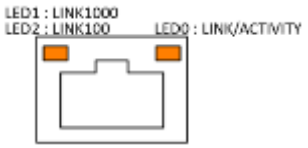
PIN	DEFINITION	
1	UIM_PWR	
2	UIM_RESET	
3	UIM_CLK_R	
4	GND	
5	UIM_VPP	
6	UIM_DATA	

SIM_CARD2: SIM CARD 6PIN socket

PIN	DEFINITION	
1	UIM2_PWR	
2	UIM2_RESET	
3	UIM2_CLK_R	
4	GND	
5	UIM2_VPP	
6	UIM2_DATA	

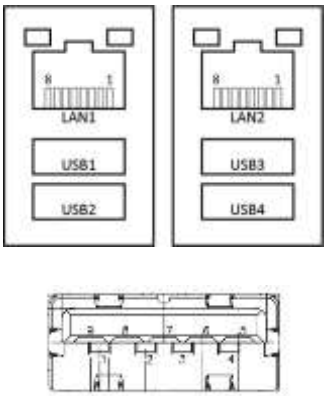
LAN1_USB12: RJ45+USB3.0*2 connector

USB1		USB2		LAN1		
Pin	Definition	Pin	Definition	Pin	Definition	
1	USBV0	1	USBV1	1	LAN1_MDI0+	
2	USBD0-	2	USBD1-	2	LAN1_MDI0-	
3	USBD0+	3	USBD1+	3	LAN1_MDI1+	
4	GND	4	GND	4	LAN1_MDI1-	
5	USB3_RN1	5	USB3_RN2	5	LAN1_MDI2+	
6	USB3_RP1	6	USB3_RP2	6	LAN1_MDI2-	
7	GND	7	GND	7	LAN1_MDI3+	
8	USB3_TN1	8	USB3_TN2	8	LAN1_MDI3-	
9	USB3_TP1	9	USB3_TP2			

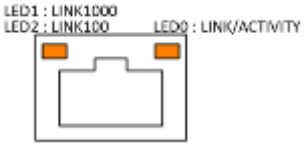
SPEED LED: (Lift)	ACTIVE LED: (Right)	
GREEN: 1000Mbps	ORANGE (BLINKING): ACTIVITY	
ORANGE: 100Mbps	No Light: NOT LINK	
No Light: 10Mbps	ORANGE (NO BLINKING): LINK	

LAN2_USB34: RJ45+USB3.0*2 connector

USB3		USB4		LAN2	
Pin	Definition	Pin	Definition	Pin	Definition
1	USBV2	1	USBV3	1	LAN2_MDI0+
2	USBD2-	2	USBD3-	2	LAN2_MDI0-
3	USBD2+	3	USBD3+	3	LAN2_MDI1+
4	GND	4	GND	4	LAN2_MDI1-
5	USB3_RN3	5	USB3_RN4	5	LAN2_MDI2+
6	USB3_RP3	6	USB3_RP4	6	LAN2_MDI2-
7	GND	7	GND	7	LAN2_MDI3+
8	USB3_TN3	8	USB3_TN4	8	LAN2_MDI3-
9	USB3_TP3	9	USB3_TP4		

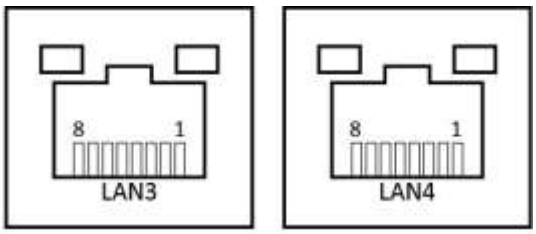


SPEED LED: (Lift)	ACTIVE LED: (Right)
GREEN: 1000Mbps	ORANGE (BLINKING): ACTIVITY
ORANGE: 100Mbps	No Light: NOT LINK
No Light: 10Mbps	ORANGE (NO BLINKING): LINK



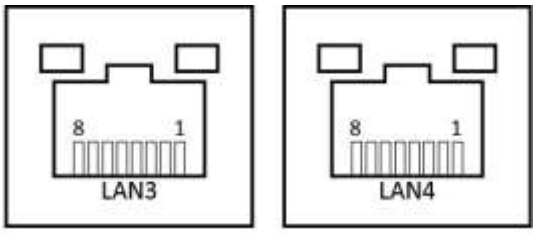
LAN3: RJ45 connector

LAN3	
Pin	Definition
1	LAN3_MDI0+
2	LAN3_MDI0-
3	LAN3_MDI1+
4	LAN3_MDI1-
5	LAN3_MDI2+
6	LAN3_MDI2-
7	LAN3_MDI3+
8	LAN3_MDI3-



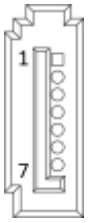
LAN4: RJ45 connector

LAN4	
Pin	Definition
1	LAN4_MDI0+
2	LAN4_MDI0-
3	LAN4_MDI1+
4	LAN4_MDI1-
5	LAN4_MDI2+
6	LAN4_MDI2-
7	LAN4_MDI3+
8	LAN4_MDI3-



SATA1: SATA 7P connector

PIN	DEFINITION
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

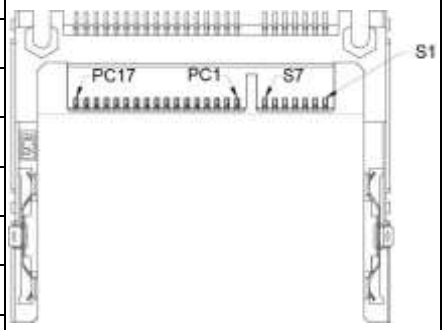


SATAP1: SATA Power pin hearder

PIN	DEFINITION
1	+5V
2	GND
3	GND
4	+12V

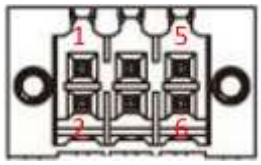
CFAST: CFast connector

PIN	DEFINITION	PIN	DEFINITION
P13	3.3V	P1	NC
P14	3.3V	P17	NC
P3	NC	NP1	GND
P4	NC	NP2	GND
P5	NC	P2	GND
P6	NC	P7	GND
P8	NC	P15	GND
P9	NC	P16	GND
P10	NC	S7	GND
P11	NC	S4	GND
P12	NC	S1	GND
S2	SATATXP1		
S3	SATATXN1		
S6	SATARXP1		
S5	SATARXN1		



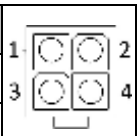
COM5_1: RS485 COM port connector by terminal block

Pin	Definition	Pin	Definition
1	NC	2	COM5_STXD
3	COM5_SDCD#	4	NC
5	COM6_STXD	6	COM6_SDCD#

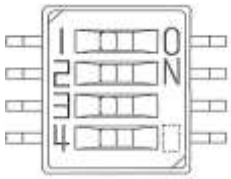


DC_JACK1: ATX POWER 2*2P connector

PIN	DEFINITION	PIN	DEFINITION
1	GND	2	GND
3	+VIN	4	+VIN



SW3: POWER On/Off Switch

SW3				Delay Timing		
#4	#3	#2	#1	Power On	Power Off	
		On	On	15s		
		On	Off	10s		
		Off	On	5s		
		Off	Off	0s (default)		
On	On				90s	
On	Off				60s	
Off	On				30s	
Off	Off				0s (Default)	
On = Switch to right Off = Switch to left						