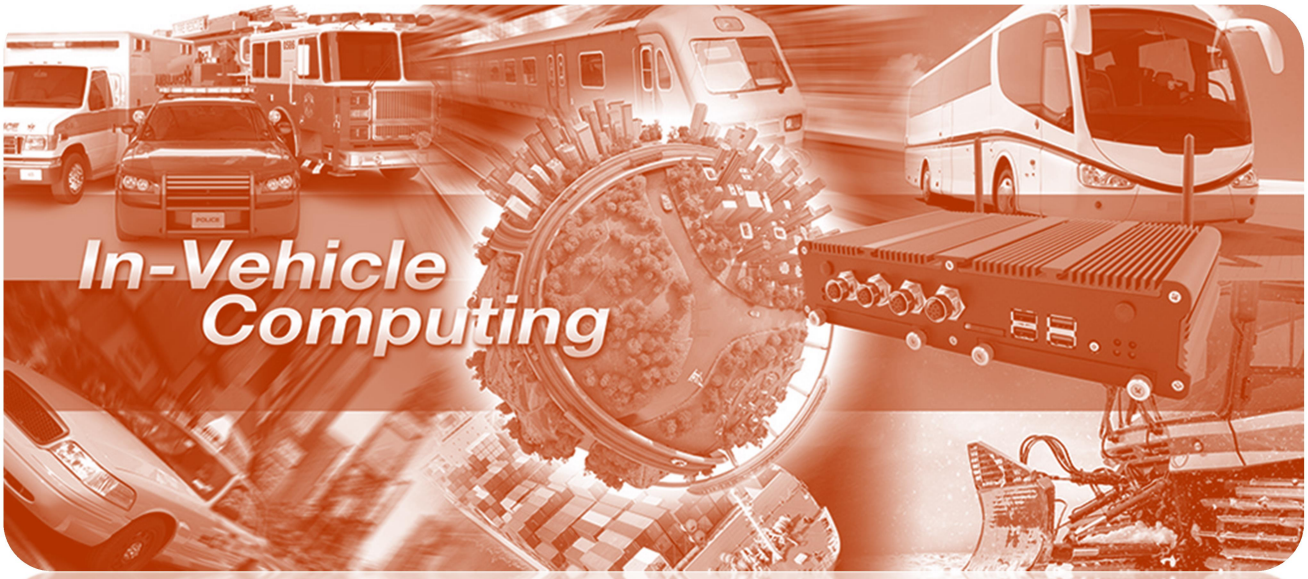

FleetPC-7-B

IN-VEHICLE COMPUTING

User's manual

User Manual

Copyright

Disclaimer

CarTFT.com e.K. shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.

CarTFT.com e.K. makes no representation or warranty regarding the content of this manual. Information in this manual had been carefully checked for accuracy; however, no guarantee is given as to the correctness of the contents. For continuing product improvement, CarTFT.com e.K. reserves the right to revise the manual or make changes to the specifications of this product at any time without notice and obligation to any person or entity regarding such change. The information contained in this manual is provided for general use by customers.

This device complies to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must withstand any background interference including those that may cause undesired operation.

Safety Information

Read the following precautions before setting up a CarTFT.com Product.

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 retailer.

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 technical problems with the product, contact a qualified service technician or your retailer.

CAUTION

Incorrectly replacing the battery may damage this computer. Replace only with the same or its equivalent as recommended by CarTFT.com e.K. Dispose used battery according to the manufacturer's instructions.

Technical Support

Please do not hesitate to call or e-mail our customer service when you still cannot fix the problems.

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Fax : +49-7121-3878265

E-mail : sales@cartft.com

Website : www.cartft.com

Content

INTRODUCTION

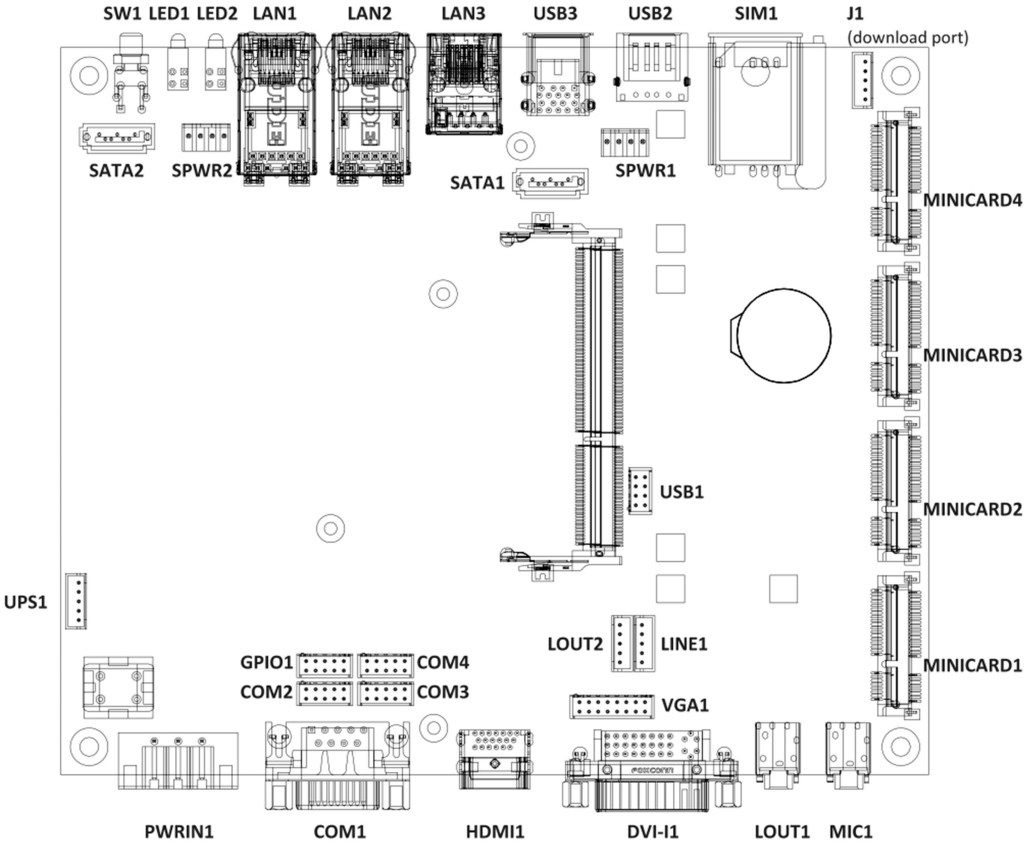
Specification

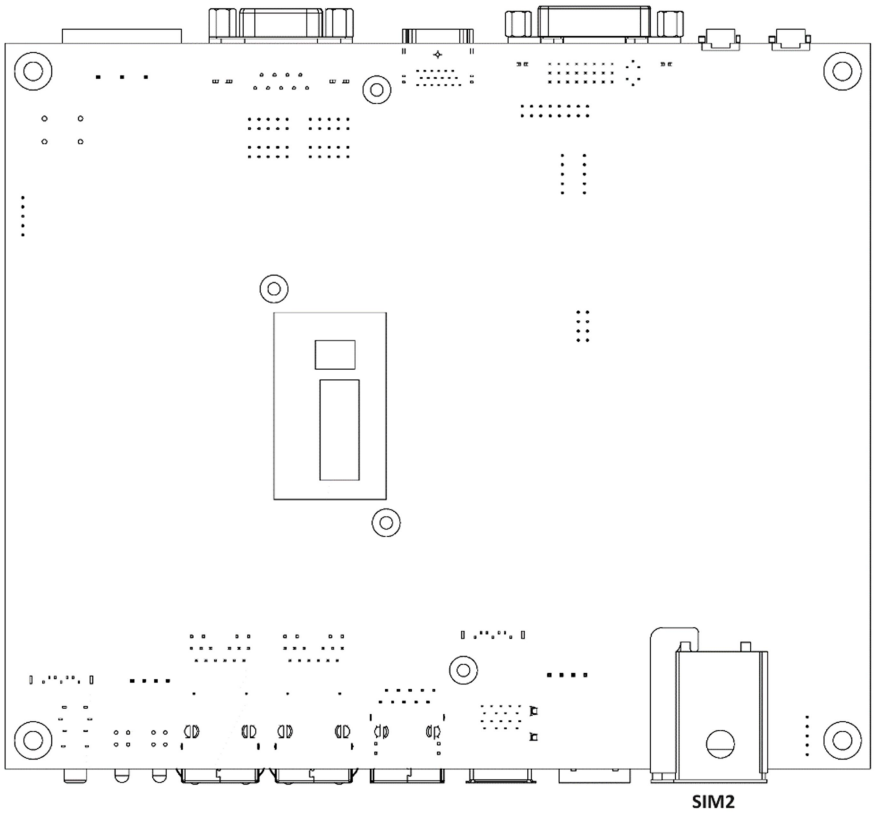
System	
CPU	Intel Gen4 Core i3-4010U 1.7GHz Intel Gen4 Dual Core 2980U 1.6 GHz (Optional i5, i7)
Memory	1 x DDR3L-1600 SO-DIMM up to 8GB
LAN Chipset	2 x Intel i210-AT Gigabit Ethernet with PoE 802.3af 1 x Intel i-218LM GbE support vPro (iAMT9.5 w/ i5, i7 only)
Audio	Mic-in/Line-out (option 2 x Line--out)
Watchdog	1 ~ 255 Level Reset
Power Requirement	
Power Input	9V - 36V DC Power Input
Power Protection	
Power Management	Vehicle Power Ignition for Variety Vehicle
Power Off Control	Power off Delay Time Setting by BIOS and Software
Battery (UPS)	Internal Battery Kit for 10 Mins Operating (Optional) Patent No. : M447854 - Build-in Battery
Storage	
Type	1 x 2.5” Drive Bay for SATA Type Hard Disk Drive / SSD 1 x SATA DOM
Graphics	
Graphics	Intel HD Graphics
Resolution	
Qualification	

Certifications	CE, FCC Class A, E-13
I/O	
Serial Port	4 x RS-232 (2 with RS-232/422/485)
USB Port	2 x USB 3.0 and 1 x USB 2.0 Ports
LAN	3 x RJ45 Ports for GbE (2 x PoE 802.3at, 1 x support vPro)
Video Port	1 x HDMI, 1 x DVI-I and 1 x VGA
DIO Port	4 In and 4 Out
Audio	Mic-in/Line-out (option 2 x Line--out)
SIM Card Socket	2 x SIM Card Sockets Supported Onboard with eject
Environment	
Operating Temp.	-40 ~ 70ºC (SSD), ambient w/ air
Storage Temp.	-40 ~ 80ºC
Relative Humidity	10 ~ 90% (non-condensing)
Vibration (random)	2.5g@5~500 Hz with SSD
Vibration Operating	MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle-Highway
Truck Storage	MIL-STD-810F, Method 514.5, Category 24, Integrity Test
Shock	Operating: MIL-STD-810F, Method 516.5, Procedure I, Trucks and semi-trailers=15G (11ms) with SSD
Crash Hazard	MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=100g
Mechanical	
Construction	Aluminum Alloy
Mounting	Wall-mount, VESA-mount, Din Rail Mounting Kit
Weight	1406 g
Dimensions	229 x 161 x 65 mm

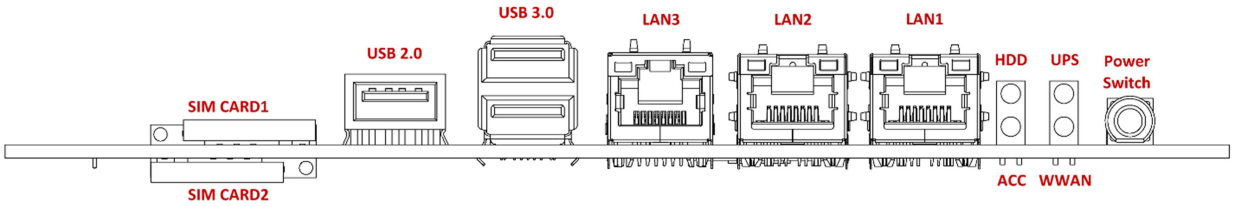
ILLUSTRATION (MB/SYSTEM)

Main board

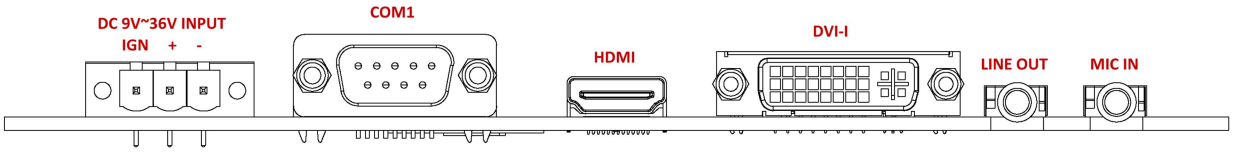




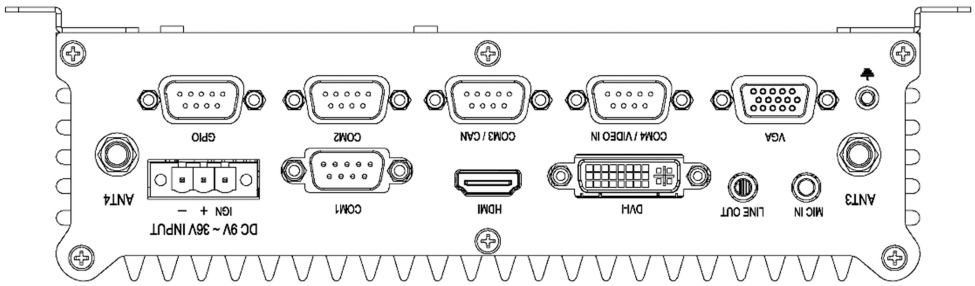
Front I/O

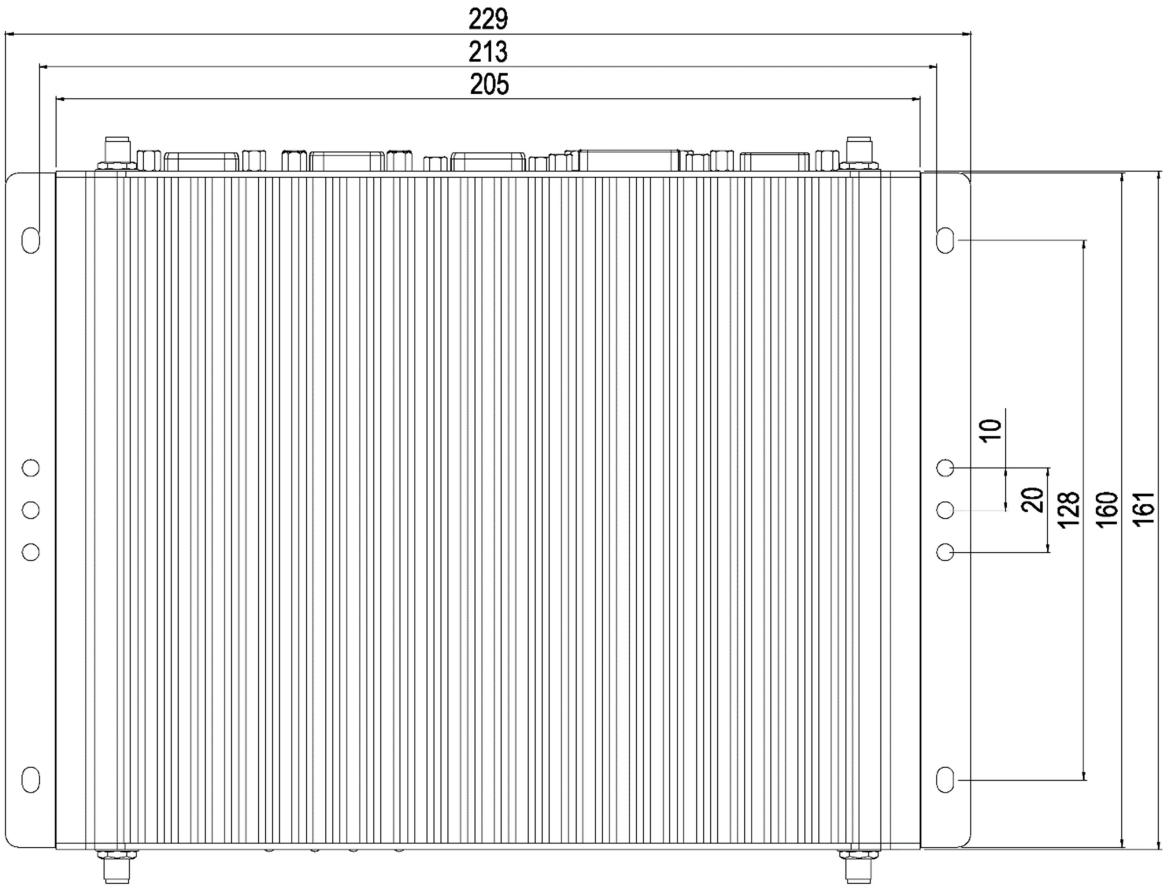


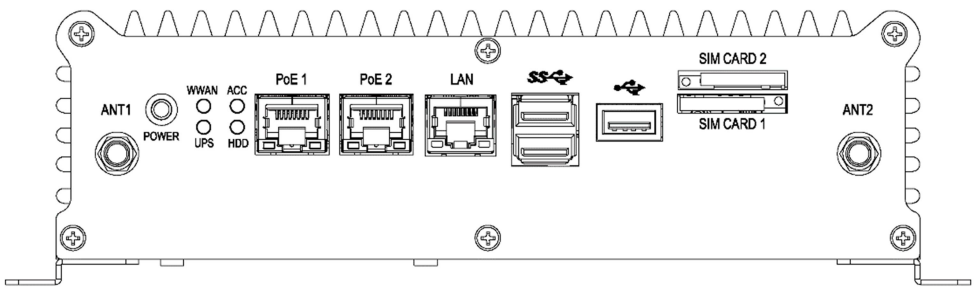
Rear I/O



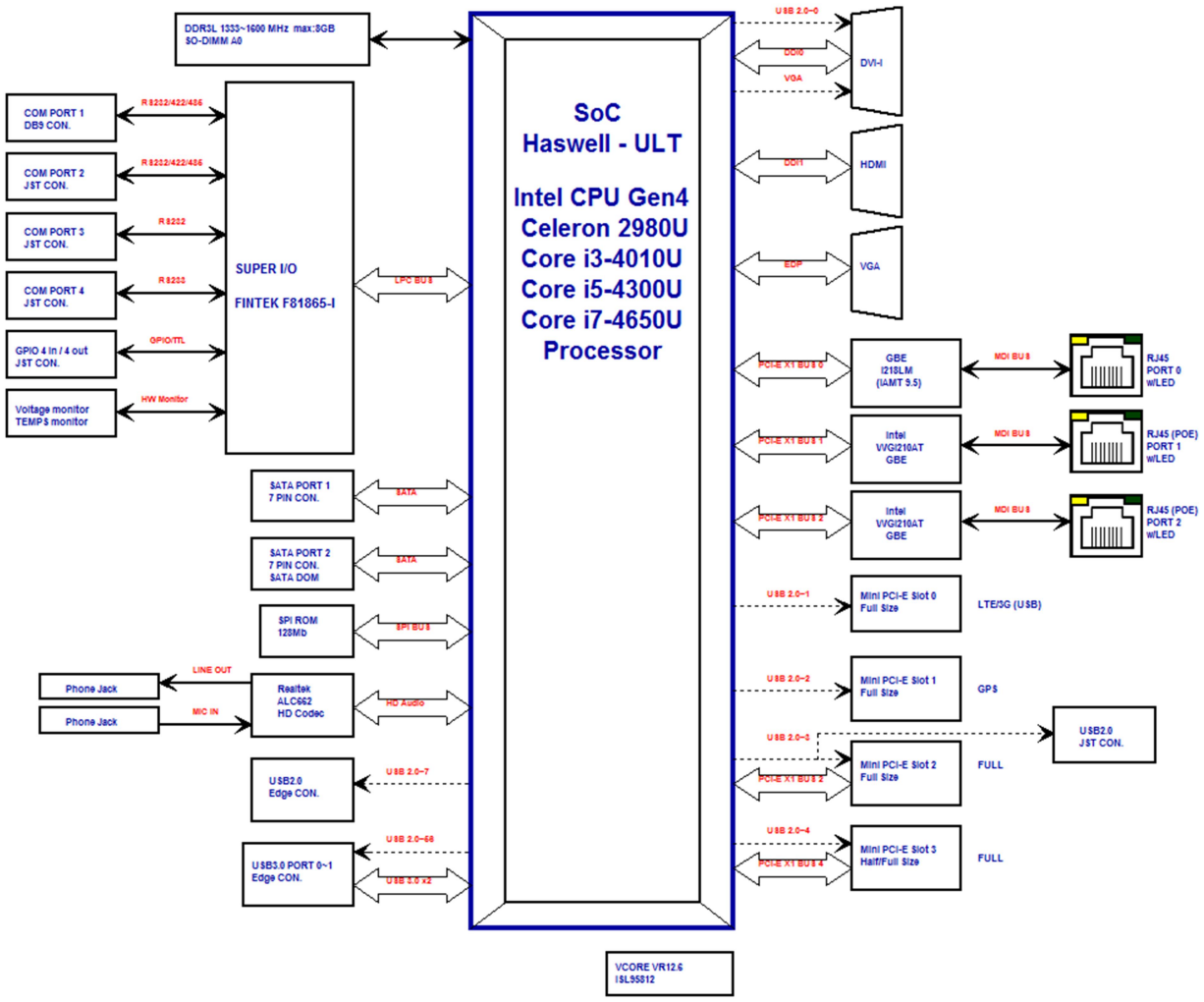
System


GPIO
COM2
COM3 / CAN
COM4 / VIDEO IN
VGA
ANT4
IGN + −
DC 9V ~ 36V INPUT
COM1
HDMI
DVI-I
LINE OUT
MIC IN
ANT3


229
213
205
10
20
128
160
161


ANT1
POWER
WWAN
ACC
UPS
HDD
PoE 1
PoE 2
LAN
SIM CARD 2
SIM CARD 1
ANT2

ARCHITECTURE



PRINCIPAL COMPONENT SPECIFICATION

CPU

Chip	Description
Intel	1. Power consumption:

Symbol	Processor Number	Core Frequency/ GHz	Thermal Design Power	Unit	Tj max(^{o}C)	Cache
	Celeron-2980U	1.6GHz	15	W	100	2M
	i3-4010U	1.7GHz	15	W	100	3M
	i5-4300U	1.9GHz	15	W	100	3M
	i7- 4650U	1.7GHz	15	W	100	4M

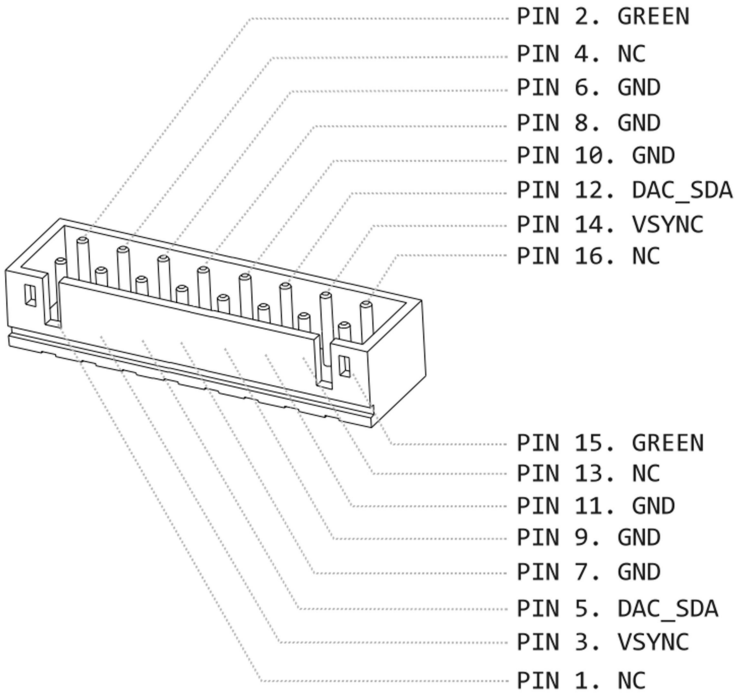
INTERNAL CONNECTOR

VGA Connector

Connector location: **VGA1**

Connector size: 2 X 8 = 16 Pin

Connector type: JST-2.0mm-M-180

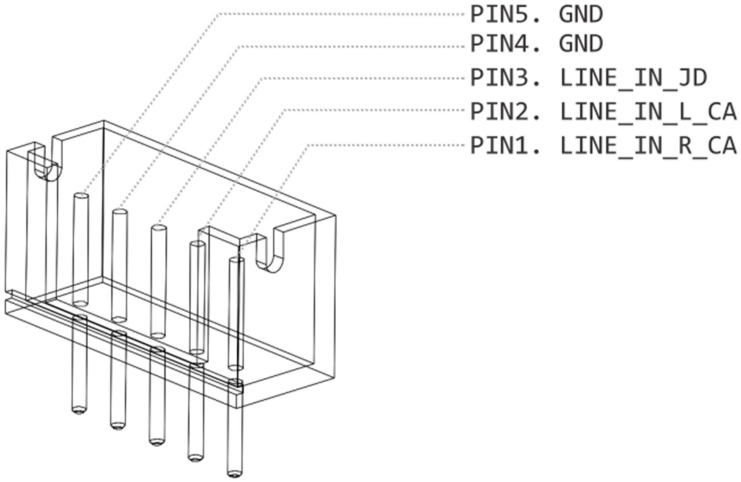


LINE Connector

Connector location: **LINE1**

Connector size: 1 X 5 = 5 Pin

Connector type: JST-2.0mm-M-180

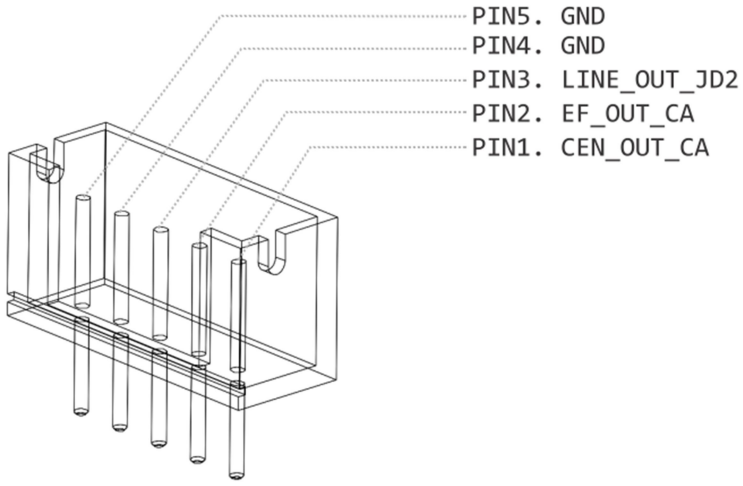


LOUT2 connector

Connector location: **LOUT2**

Connector size: 1 X 5 = 5 Pin

Connector type: JST-2.0mm-M-180

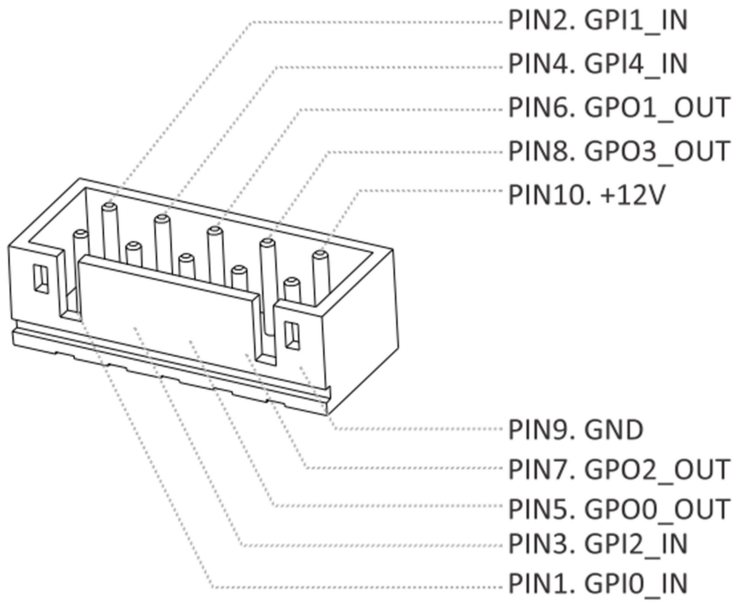


GPIO Connector

Connector location: **GPIO1**

Connector size: 2 X 5 = 10 Pin

Connector type: JST-2.0mm-M-180

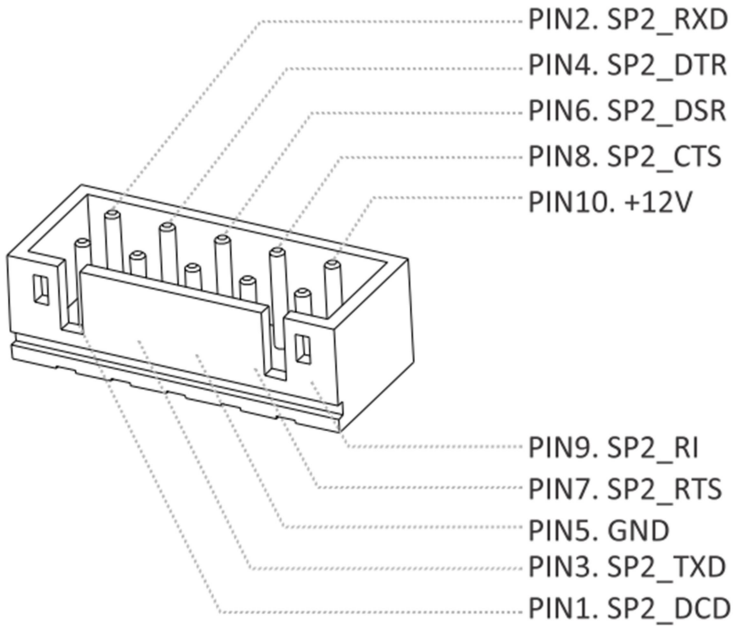


COM Port Connector

Connector location: **COM2**

Connector size: 2 X 5 = 10 Pin

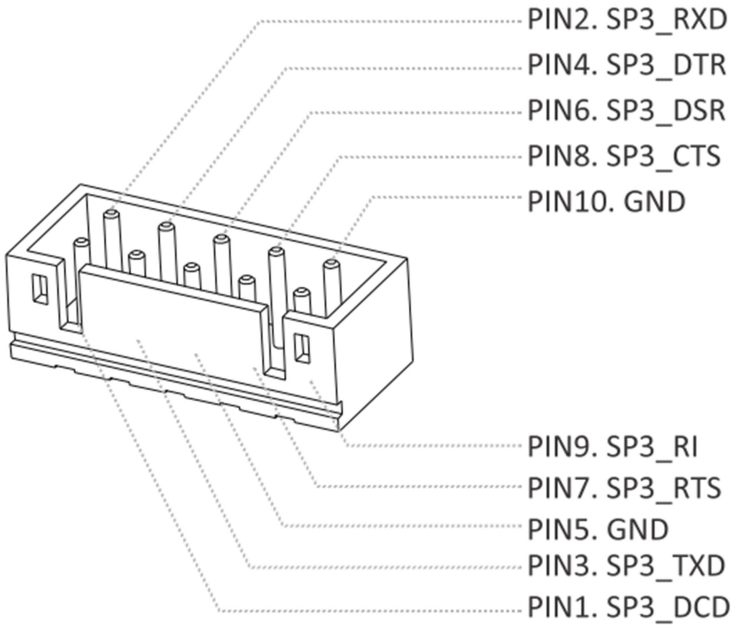
Connector type: JST-2.0mm-M-180



Connector location: **COM3**

Connector size: 2 X 5 = 10 Pin

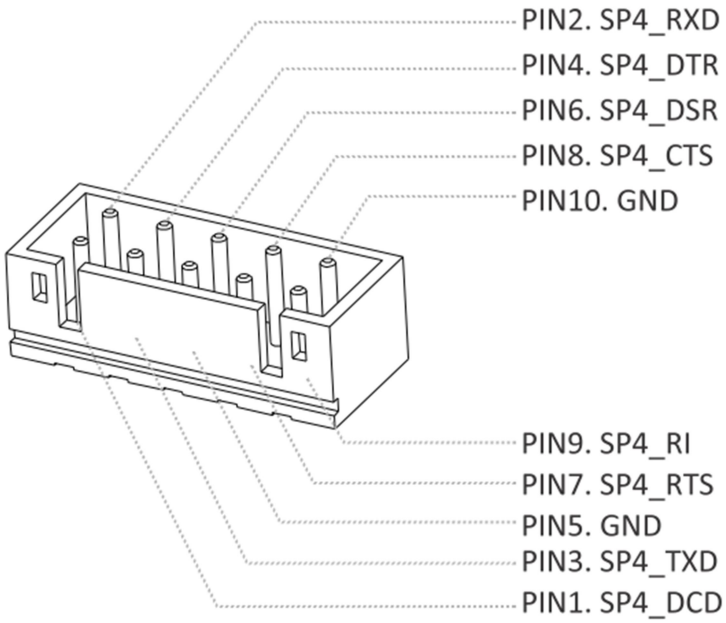
Connector type: JST-2.0mm-M-180



Connector location: **COM4**

Connector size: 2 X 5 = 10 Pin

Connector type: JST-2.0mm-M-180

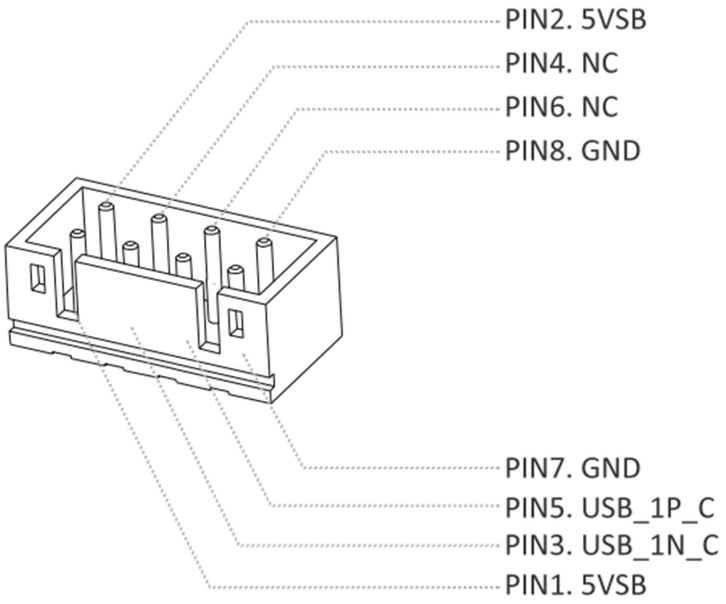


USB Connector

Connector location: **USB1**

Connector size: 2 X 4= 8Pin

Connector type: JST-2.0mm-M-180

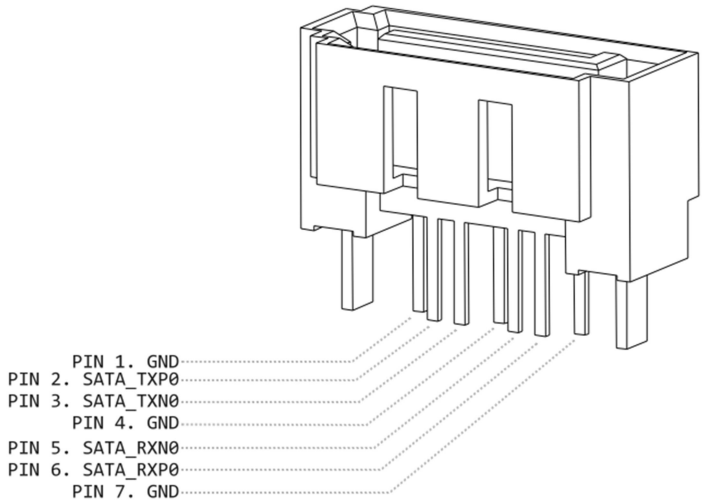


SATA Connector

Connector location: **SATA1**

Connector size: 1 X 7 7Pin

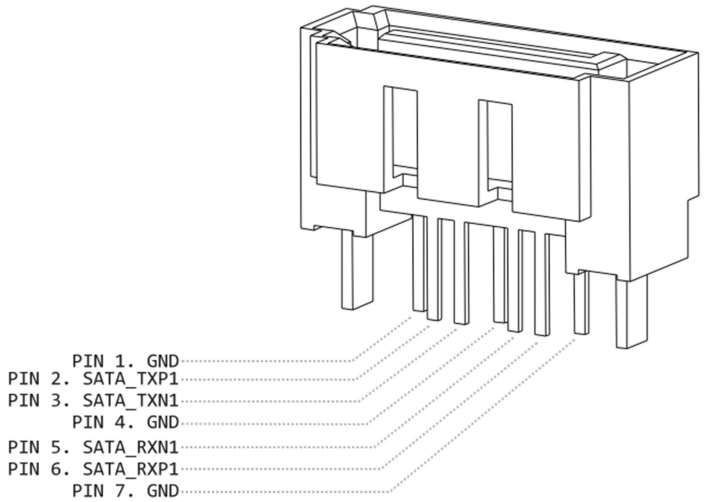
Connector type: SATA 1.27mm-M-180D



Connector location: **SATA2**

Connector size: 1 X 7 7Pin

Connector type: SATA 1.27mm-M-180D

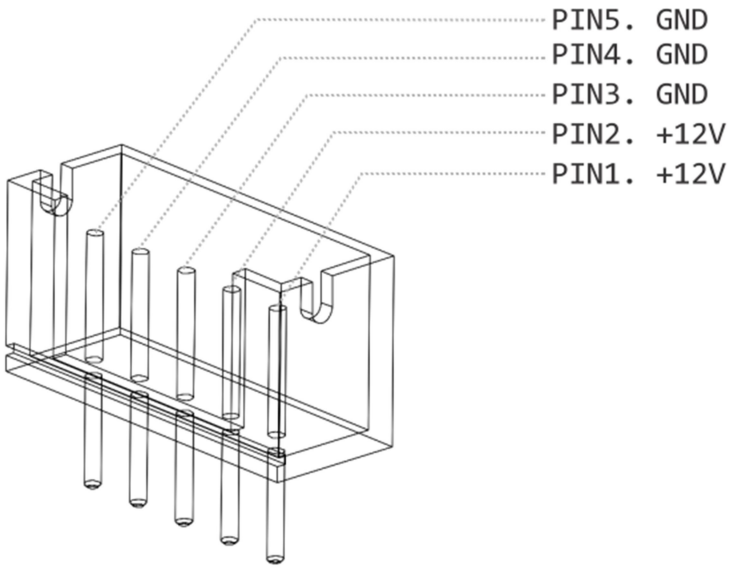


UPS Connector

Connector location: **UPS1**

Connector size: 1 X 5 7Pin

Connector type: WAFER 2.54mm-M-180

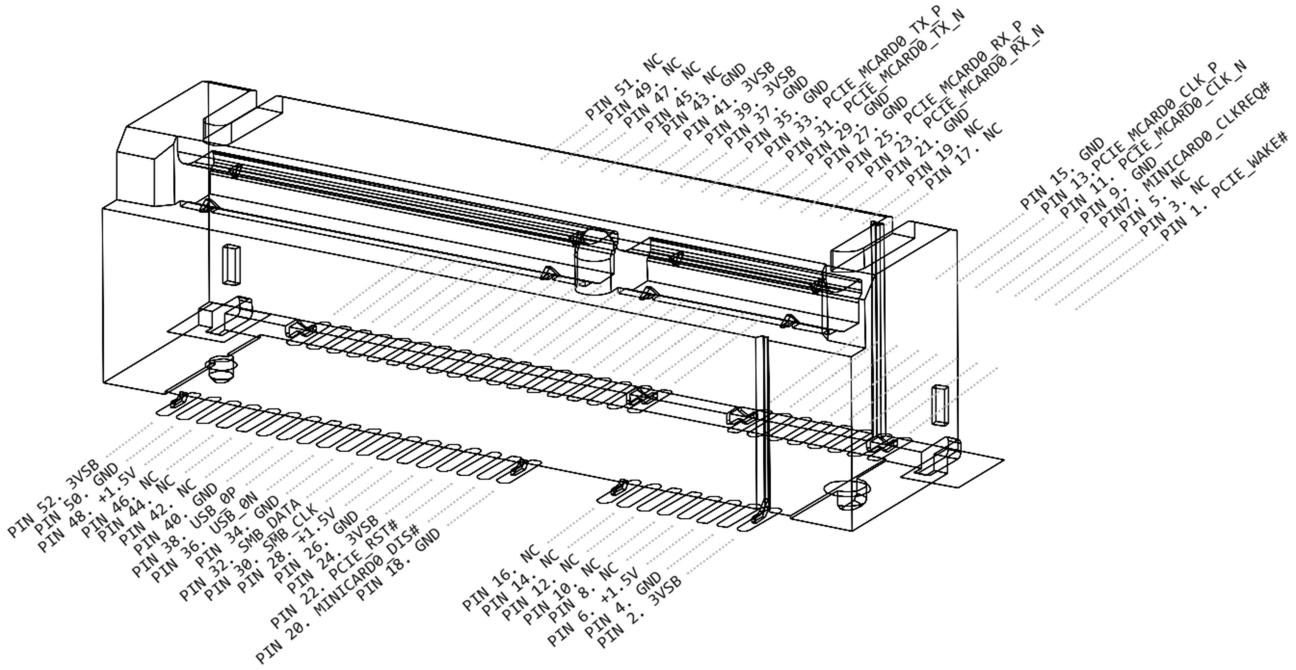

PIN5. GND
PIN4. GND
PIN3. GND
PIN2. +12V
PIN1. +12V

Mini PCI-E connector

Connector location: **MINICARD1**

Connector size: 2 X 26 = 52 Pin

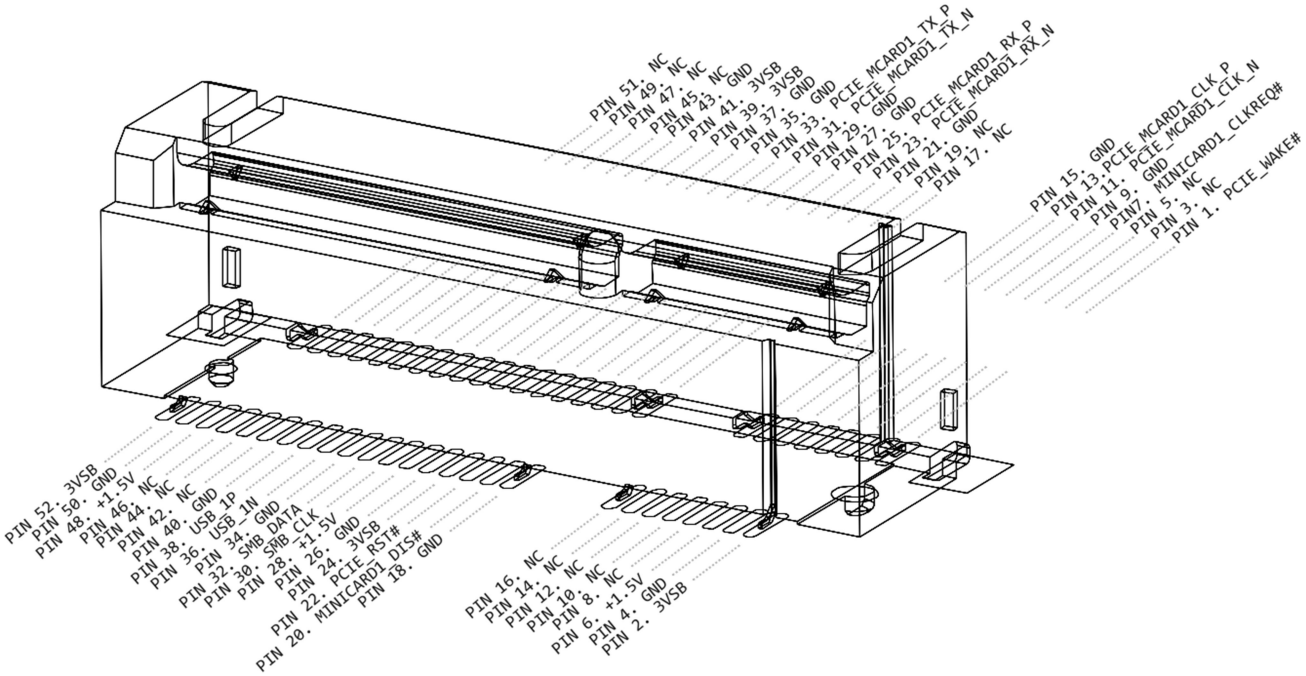
Connector type: MINI PCI-E CON 9.2mmH



Connector location: **MINICARD2**

Connector size: 2 X 26 = 52 Pin

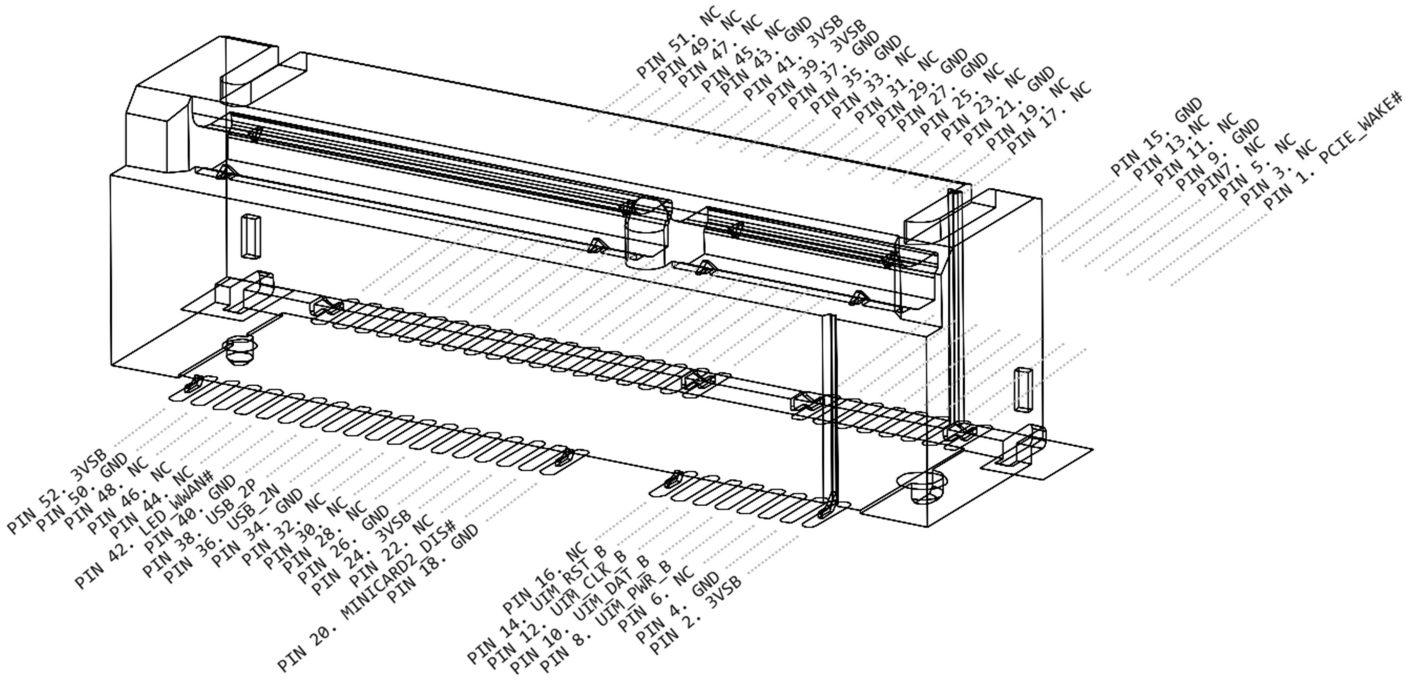
Connector type: MINI PCI-E CON 9.2mmH



Connector location: **MINICARD3**

Connector size: 2 X 26 = 52 Pin

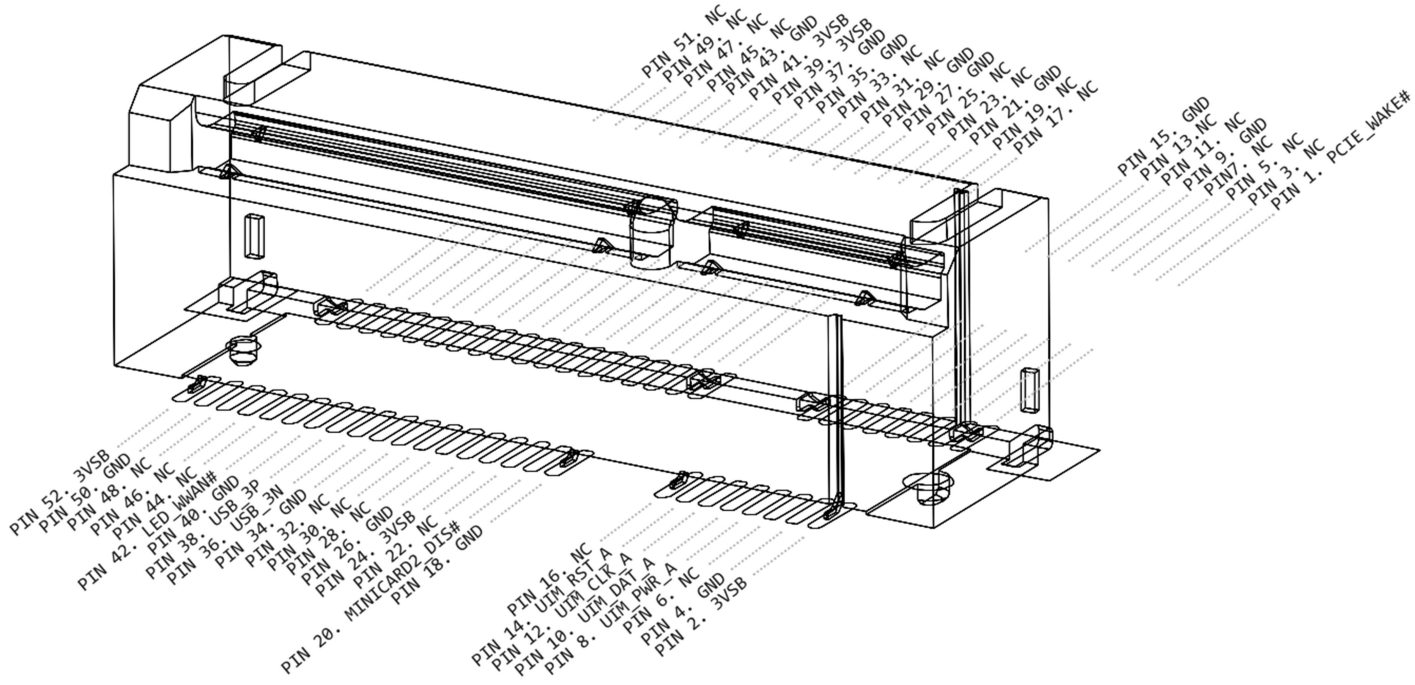
Connector type: MINI PCI-E CON 9.2mmH



Connector location: **MINICARD4**

Connector size: 2 X 26 = 52 Pin

Connector type: MINI PCI-E CON 9.2mmH

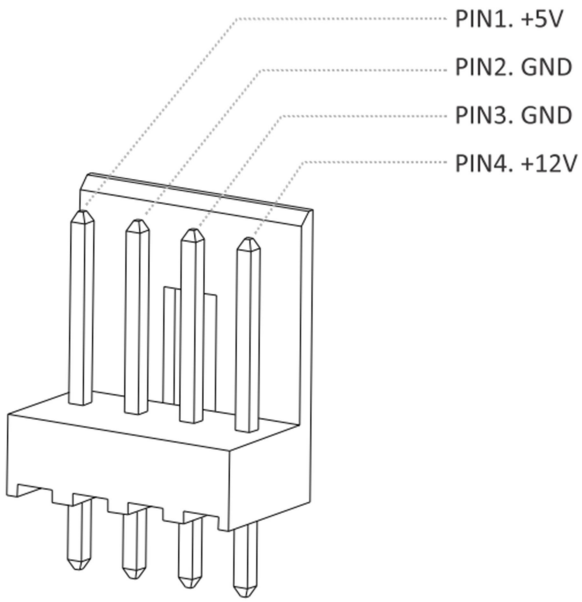


SATA Power Connector

Connector location: **SPWR1/ SPWR2**

Connector size: 1 X 4 = 4 Pin

Connector type: WAFER 2.54mm-M-180



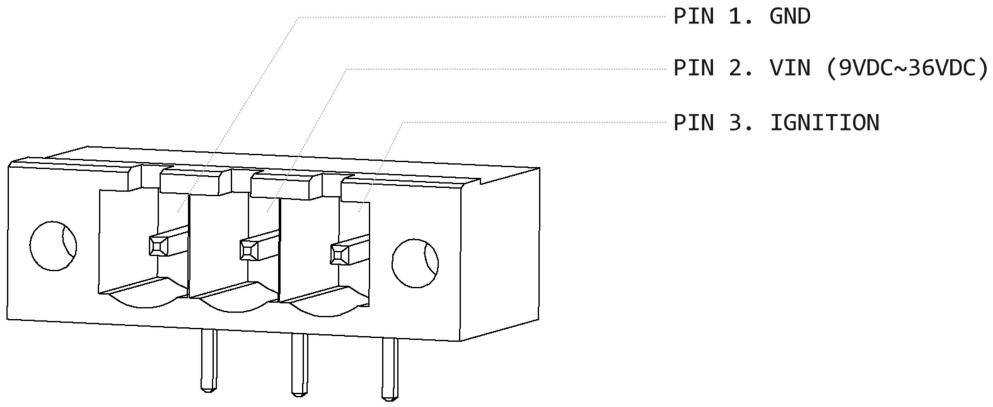
EXTERNAL CONNECTOR SPECIFICATION

Power Input connector

Connector location: **PWRIN1**

Connector size: 1 X 3 = 3 Pin

Connector type: Terminal block 3PIN pitch :5.08mm

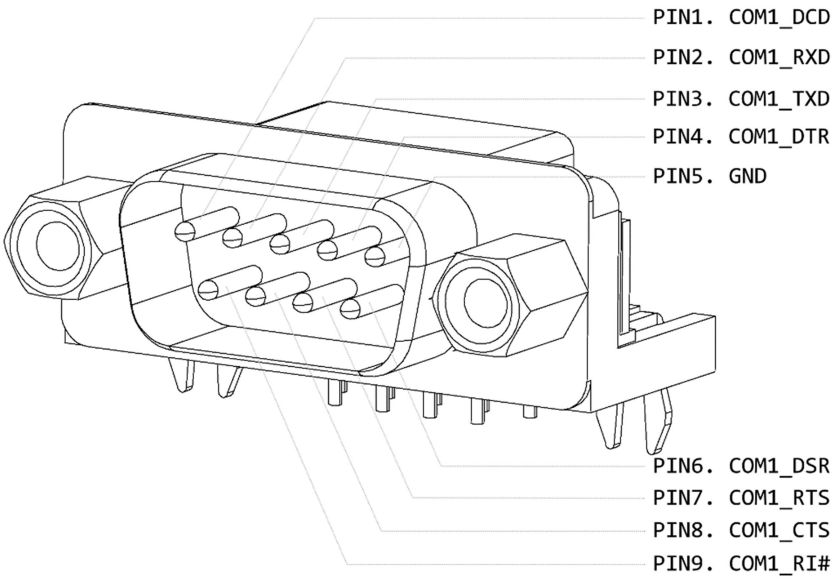


COM connector

Connector location: **COM1**

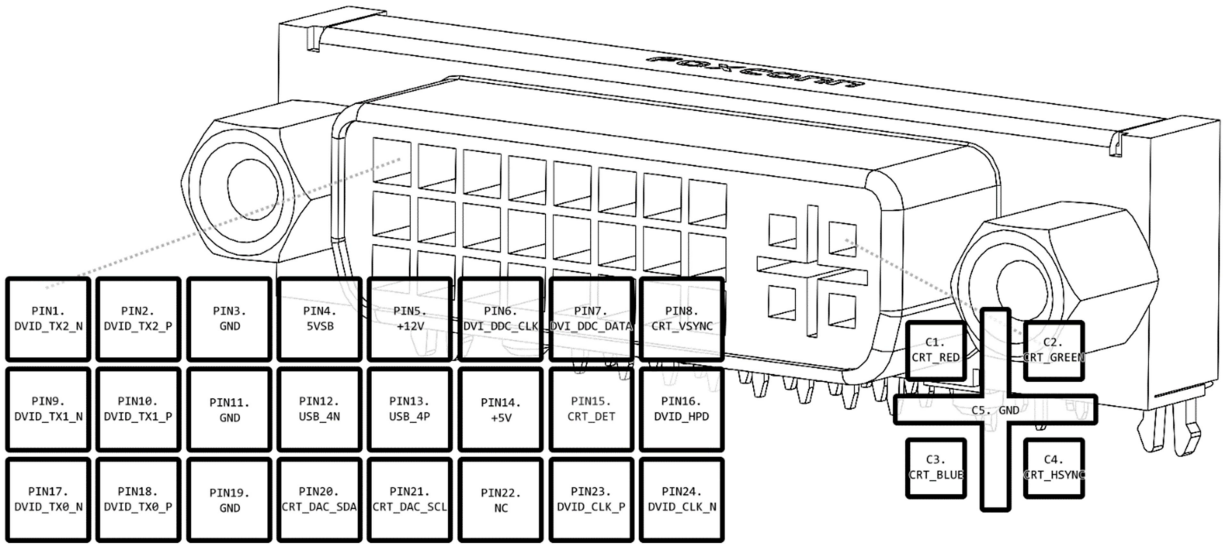
Connector size: 9 Pin

Connector type: DSUB



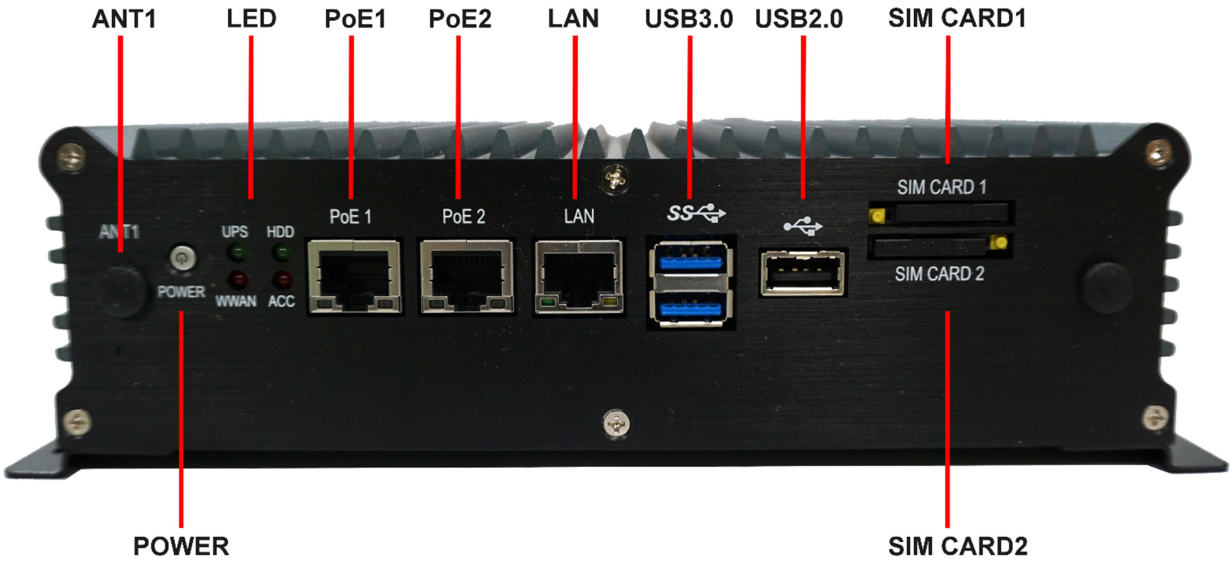
DVI-I connector

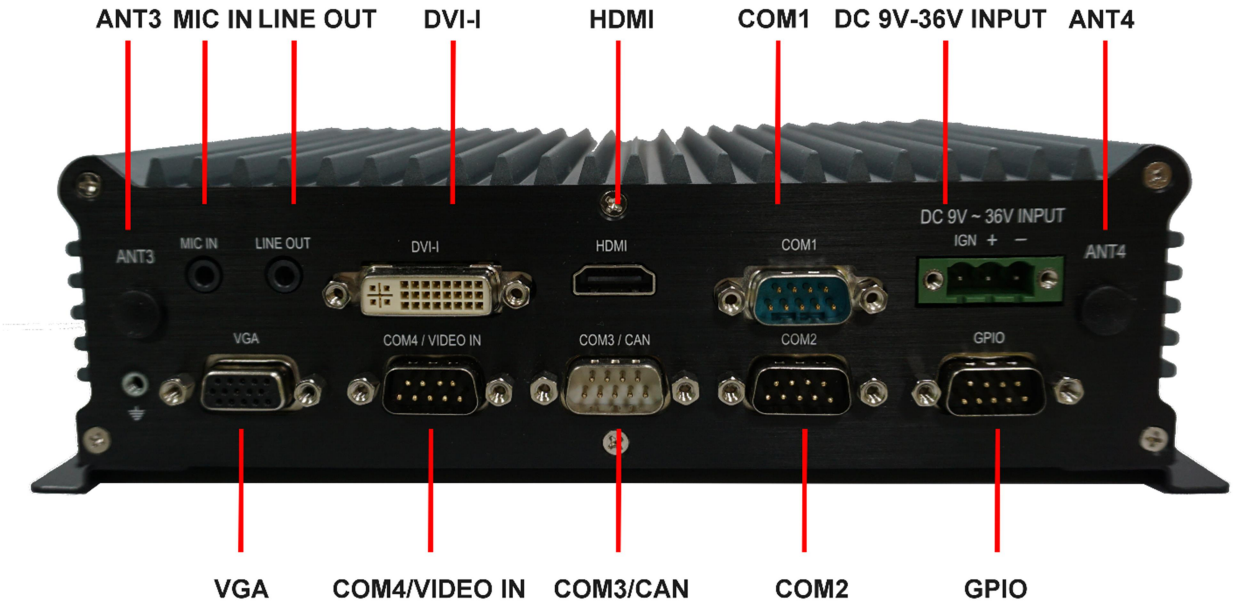
Connector location: **DVI-I1**
Connector size: 29 Pin
Connector type: DVI-I



SYSTEM INSTALLATION

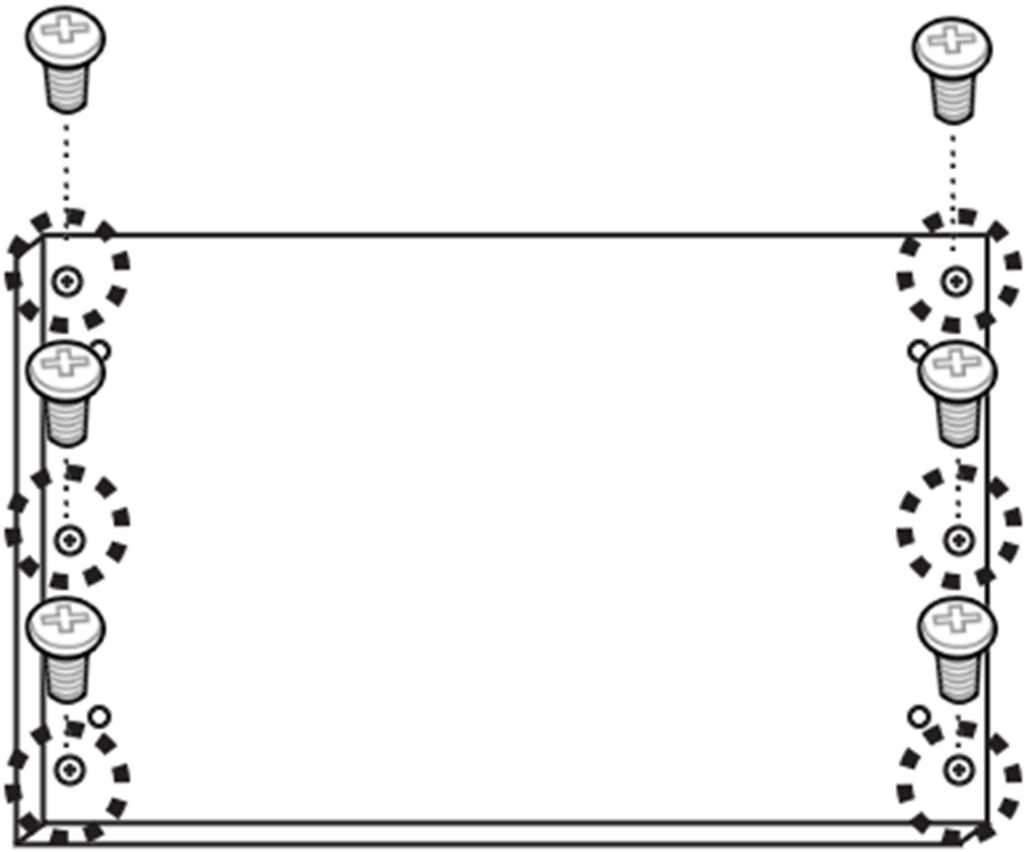
System Introduction





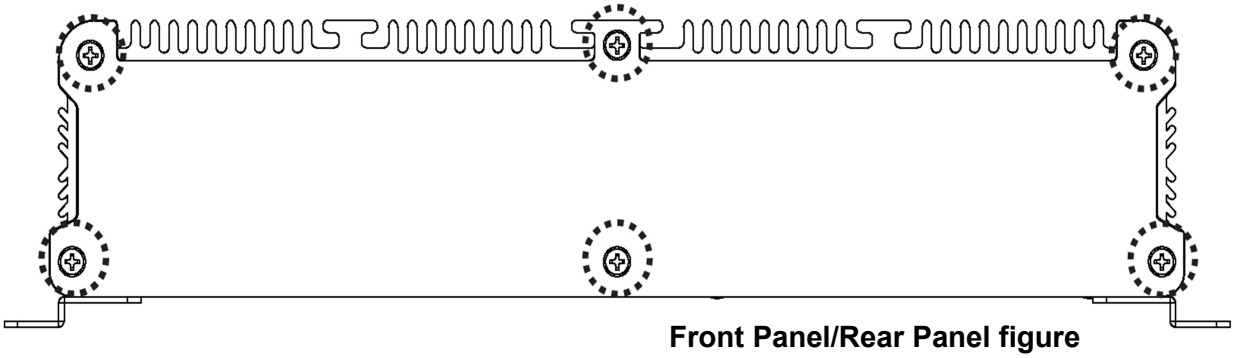
Opening Chassis

1

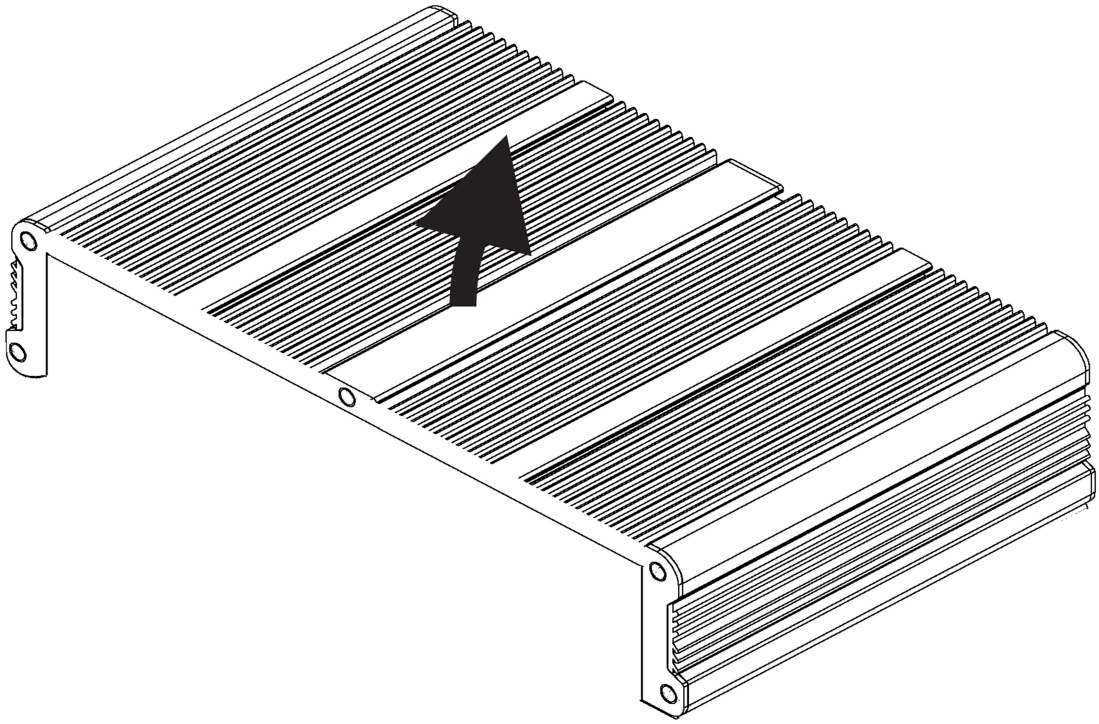


Remove the six screws on the **Back Cover** as figure 1.

2

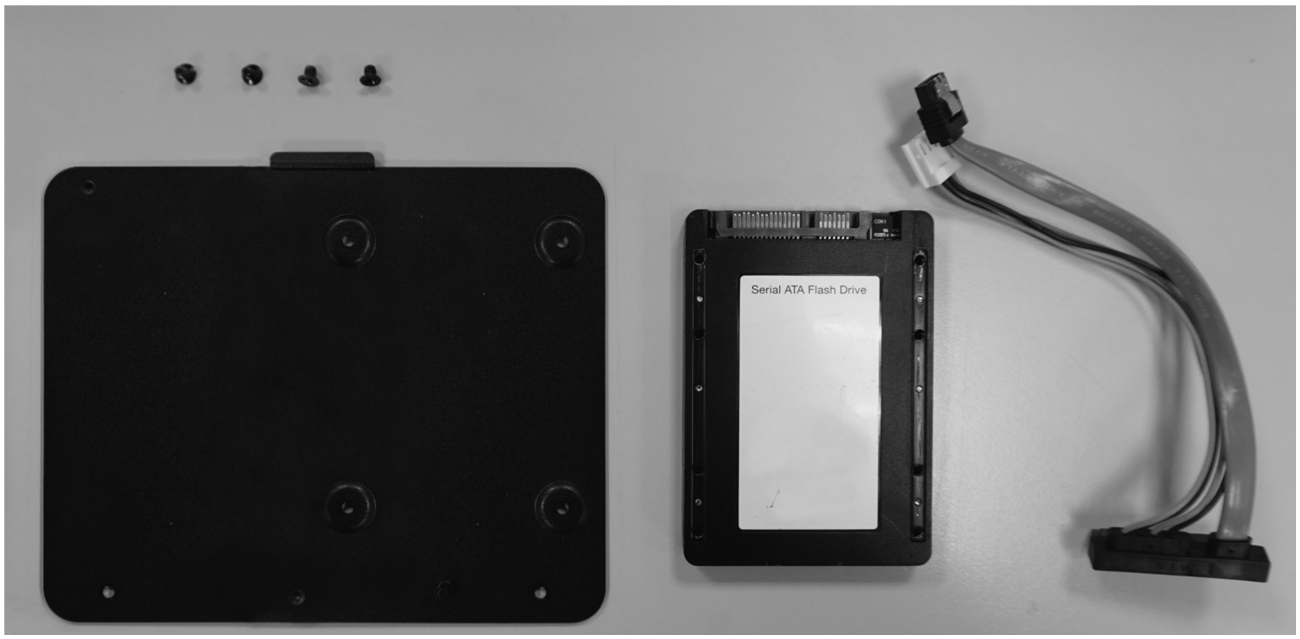


Front Panel/Rear Panel figure



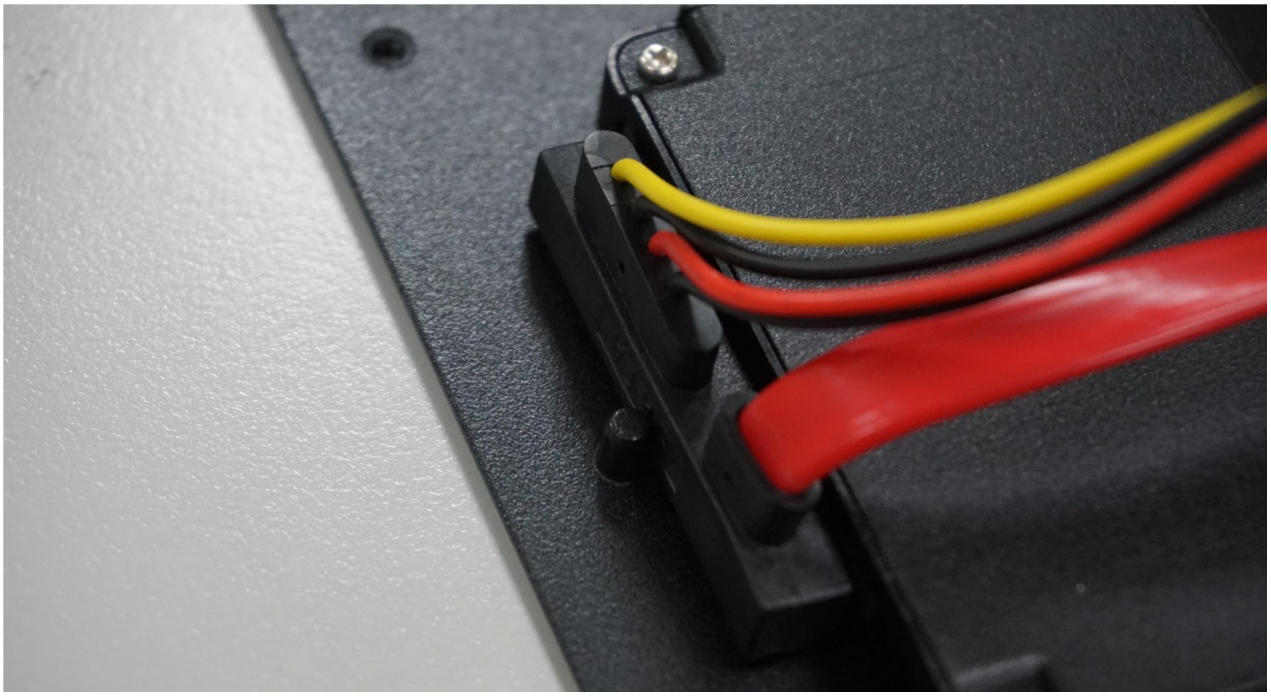
Remove the screws on the **Front Panel** (six screws) and **Rear Panel** (six screws) and open the **Top Cover** as figure 2.

Installing SSD card



Please have **screws (x4)**, **bottom plate**, **SSD card** and **connect cable** ready.

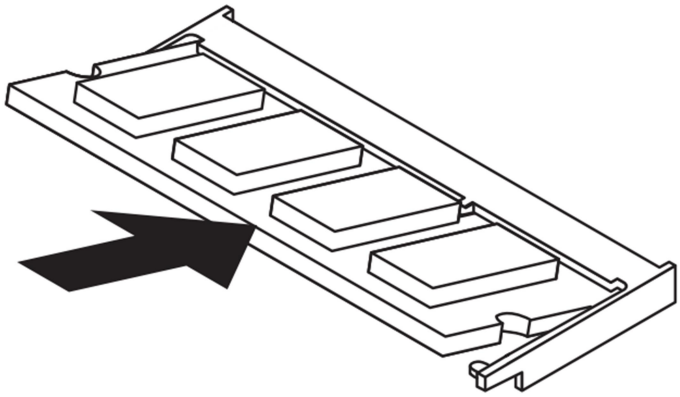
Connect **SSD card** and **cable**.



Secure **SSD card** onto **bottom plate** with **screws (x4)** at the side of standoff.

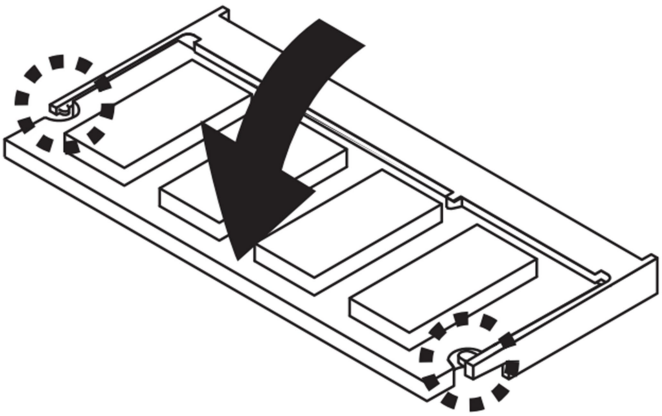
Installing Memory

1



Hold the Memory with its notch aligned with the Memory socket of the board and insert it at a 30-degree angle into the socket as figure 1.

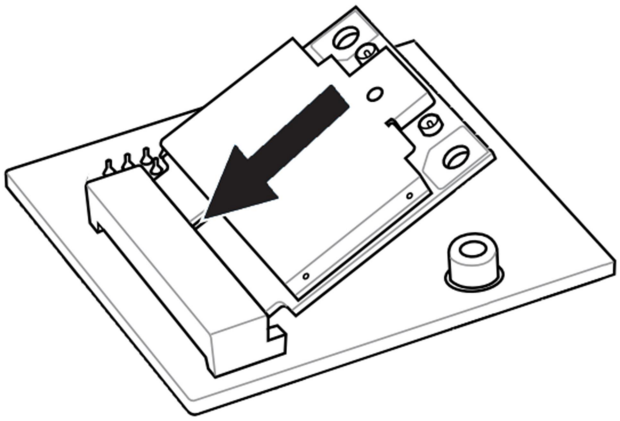
2



Press down on the Memory so that the tabs of the socket lock on both sides of the module as figure 2.

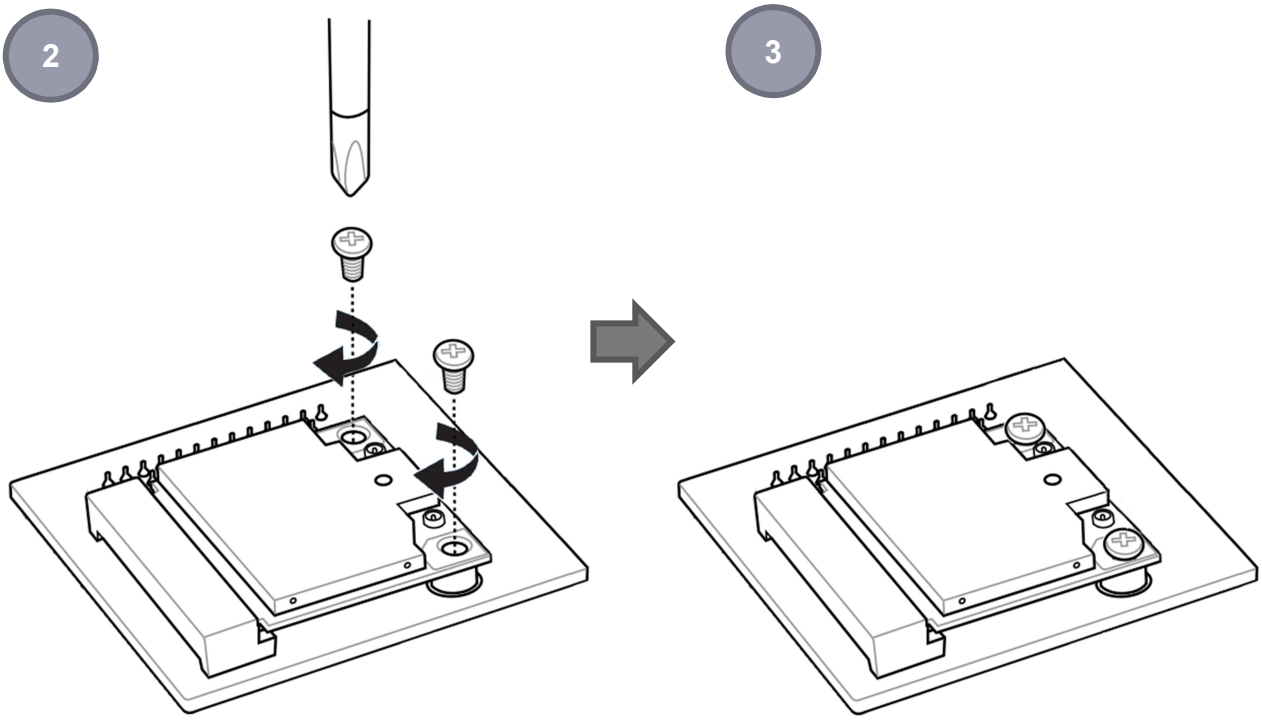
Installing MINI PCIe Expansion Card (MINICARD1)

1



Hold the Module with its notch aligned with the socket of the board and insert it at a 30-degree angle into the socket as shown in the picture.

2

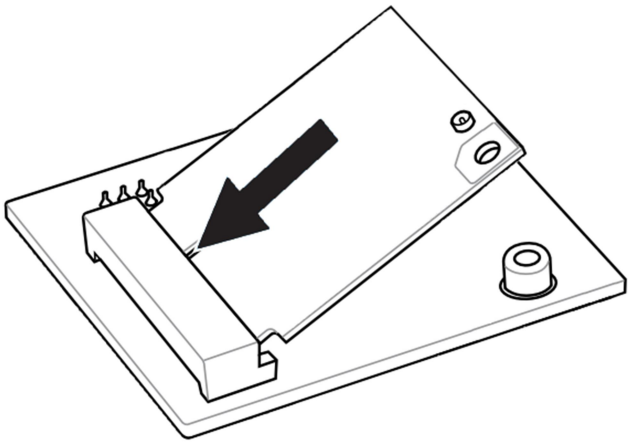


3

Secure the card with screw(s) as figure 2 and finish as figure 3.

Installing MINI PCIe Expansion Card (MINICARD2, 3, 4)

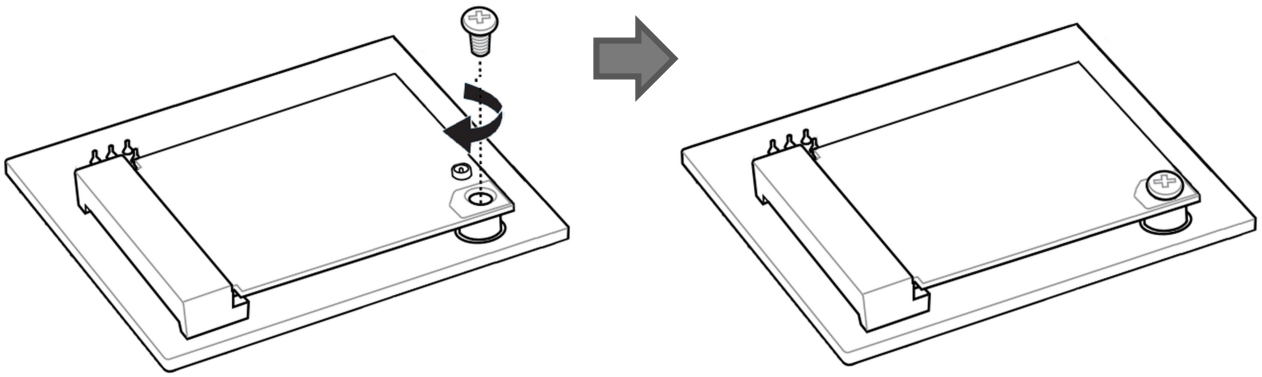
1



Hold the Module with its notch aligned with the socket of the board and insert it at a 30-degree angle into the socket as shown in the picture.

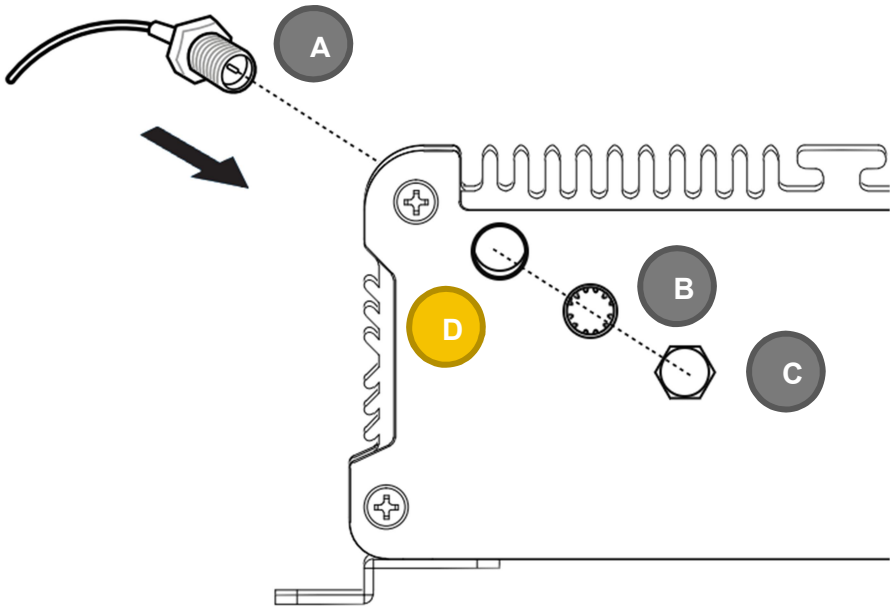
2

3

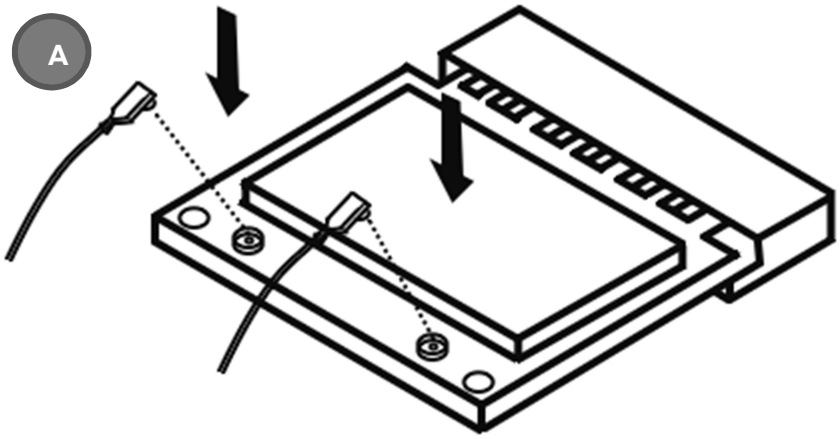


Secure the card with screw(s) as figure 2 and finish as figure 3.

Installing Internal Antenna Cable

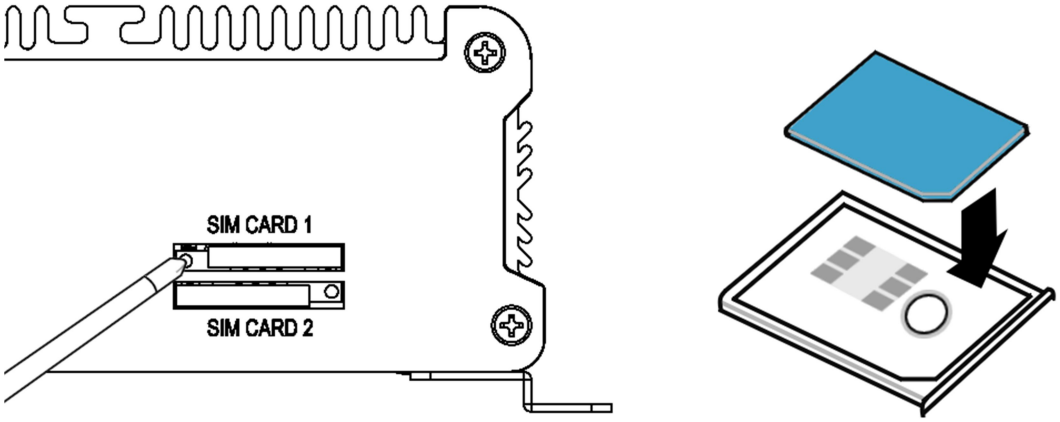


Take the **SMA Connector** (A) and plug into **IO Panel** (D). Put the **Washer**(B) into the SMA Connector (A), then put the **O-ring** (C) to SMA Connector (A) and tighten as shown in the picture.

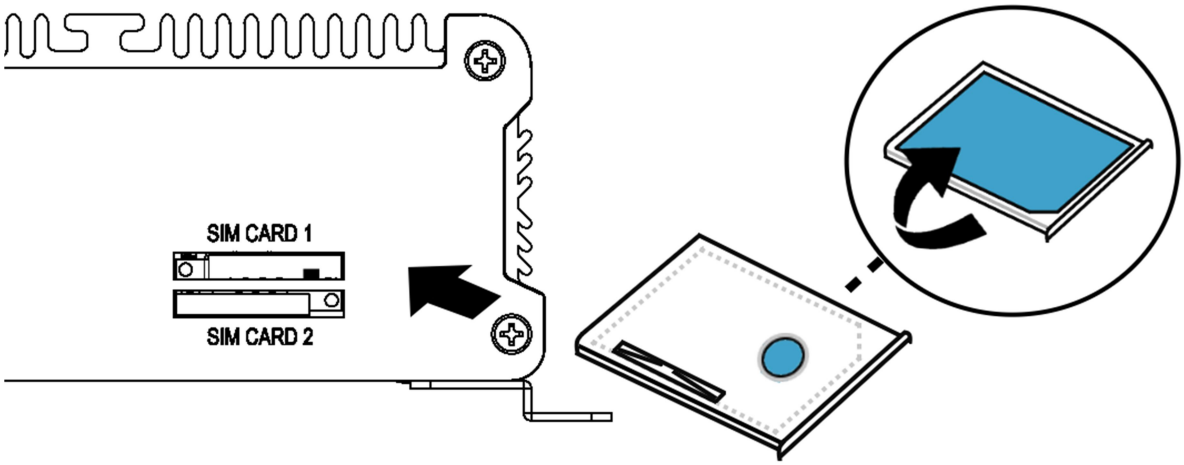


Take the **Ipex Connector** (A) and press on the Wi-Fi module/3G module/ GPS module (GPS, only support passive Antenna)

Installing SIM Card



Use thin stick to push the button, then take the holder and put your SIM Card into the it.



Take the SIM card holder and Insert it into the socket

Attention:

Please cut the main power when you insert the SIM, otherwise the SIM card will be not detected.

SYSTEM RESOURCE

Ignition Power Management Quick Guide

Startup/shutdown conditions from the IGNITION signal:

- IGNITION startup signal must be valid during 3 sec. (anti noise protection).
- IGNITION shutdown – IGNITION signal must be inactive during 3 Sec, then PIC controller initiate Power Button signal (**OS must be set to shutdown from the Power Button**). It generates Main Button shutdown event and then goes to complete power off.

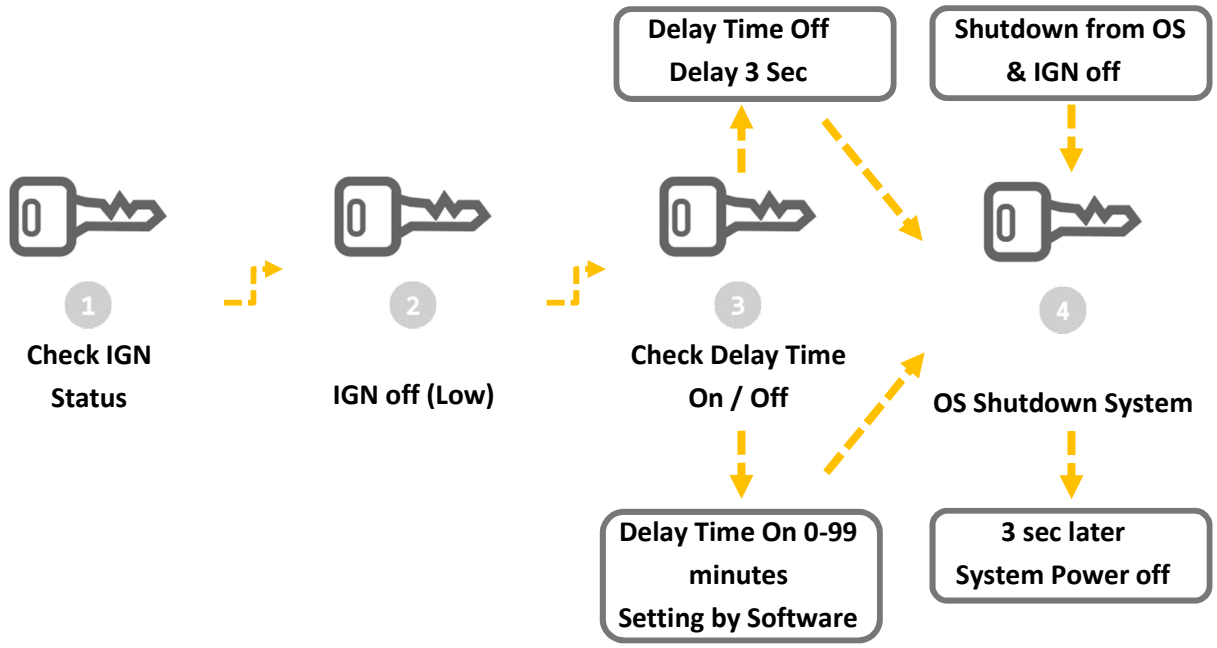
Typically, the system can start only from IGNITION signal, because startup PIC controller is disconnected from the power source.

The system can be switched off from:

- Power IGNITION OFF signal.
- ACPI OS shutdown
- Power Button – generate ACPI event (OS dependent).

Power Ignition Startup Procedure

Power Ignition Shutdown Procedure



Power Ignition Shutdown Procedure

Power Management

- Power-off delay time is selectable by Software to disable and enable in 0-99 minutes
- Ignition On/Off status detectable by SW
- If the ignition is off and the system is still on after 3 Sec, FLEETPC-7-B will shut down automatically.
- If the ignition is turned on again and the power-off delay is in progress, FLEETPC-7-B will cancel the delay function and will continue to operate normally.

If the ignition is turned on again and the power-off delay ended, FLEETPC-7-B will shut down completely will power-on again automatically.

GPIO & Delay Time Setting

GPIO and Ignition Control Register

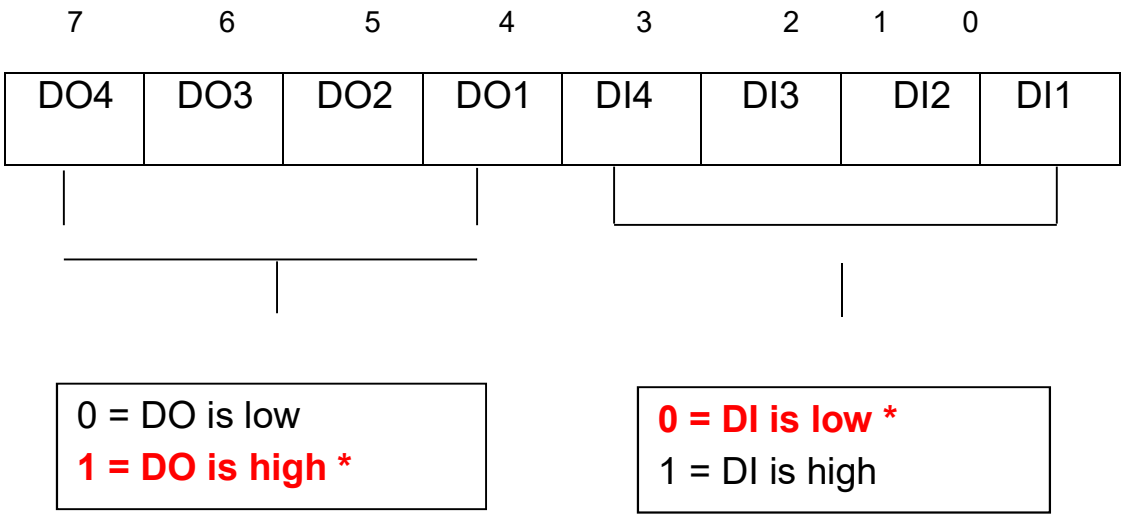
The General Purpose I/O is an interface available on some devices. These can read digital signals from other parts of a circuit, or output to control other devices. At GPIO control register, the GPI is use to receive data, the GPO is set data to send.

I/O port: 0xA35 (base address) for Control Register (Read 0xA2h / Write 0xA1h)

0xA36 (base address) for Control Data Value

Debug Command Line

- **O A35 A1**
- **O A36 0F // Set Bit 4-7 to Low**



GPIO5 Output Enable Register – Index A0h

Bit	Name	R/W	Default	Description
7	GPIO57_OE	R/W	0	0 : GPIO57 is input 1 : GPIO57 is output
6	GPIO56_OE	R/W	0	0 : GPIO56 is input 1 : GPIO56 is output
5	GPIO55_OE	R/W	0	0 : GPIO55 is input 1 : GPIO55 is output
4	GPIO54_OE	R/W	0	0 : GPIO54 is input 1 : GPIO54 is output
3	GPIO53_OE	R/W	0	0 : GPIO53 is input 1 : GPIO53 is output
2	GPIO52_OE	R/W	0	0 : GPIO52 is input 1 : GPIO52 is output
1	GPIO51_OE	R/W	0	0 : GPIO51 is input 1 : GPIO51 is output
0	GPIO50_OE	R/W	0	0 : GPIO50 is input 1 : GPIO50 is output

GPIO5 Output Data Register – Index A1h

Bit	Name	R/W	Default	Description
7	GPIO57_DATA	R/W	1	GPIO57 output data in output mode.
6	GPIO56_DATA	R/W	1	GPIO56 output data in output mode.
5	GPIO55_DATA	R/W	1	GPIO55 output data in output mode.
4	GPIO54_DATA	R/W	1	GPIO54 output data in output mode.
3	GPIO53_DATA	R/W	1	GPIO53 output data in output mode.
2	GPIO52_DATA	R/W	1	GPIO52 output data in output mode.
1	GPIO51_DATA	R/W	1	GPIO51 output data in output mode.
0	GPIO50_DATA	R/W	1	GPIO50 output data in output mode.

GPIO5 Pin Status Register – Index A2h

Bit	Name	R/W	Default	Description
7	GPIO57_ST	R	1	GPIO57 pin status.
6	GPIO56_ST	R	1	GPIO56 pin status.
5	GPIO55_ST	R	1	GPIO55 pin status.
4	GPIO54_ST	R	1	GPIO54 pin status.
3	GPIO53_ST	R	1	GPIO53 pin status.
2	GPIO52_ST	R	1	GPIO52 pin status.
1	GPIO51_ST	R	1	GPIO51 pin status.
0	GPIO50_ST	R	1	GPIO50 pin status.

GPIO5 Drive Enable Register – Index A3h

Bit	Name	R/W	Default	Description
7	GPIO57_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO57 is open drain. 1 : GPIO57 is push pull.
6	GPIO56_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO56 is open drain. 1 : GPIO56 is push pull.
5	GPIO55_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO55 is open drain. 1 : GPIO55 is push pull.
4	GPIO54_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO54 is open drain. 1 : GPIO54 is push pull.
3	GPIO53_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO53 is open drain. 1 : GPIO53 is push pull.
2	GPIO52_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO52 is open drain. 1 : GPIO52 is push pull.
1	GPIO51_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO51 is open drain. 1 : GPIO51 is push pull.
0	GPIO50_DRV_ENST	R/W	0	GPIO57 Drive Enable 0 : GPIO50 is open drain. 1 : GPIO50 is push pull.

I/O port: I/O port:

0xA35 (base address) for Control Register (Read 0xF2h bit 3)

0xA36 (base address) for Control Data Value

7	6	5	4	3	2	1	0
X	X	X	X	Ignition Status	X	X	X

0 = Ignition off
1 = Ignition on

Debug Command Line

- O A35 F2
- I A36 // Check Bit 3 Status