Mobile Computing Solutions
Vehicle Telematics Computer
VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK
User Manual

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Preface

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Acknowledgements

VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2002/95/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

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Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

✠ Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.

✠ Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.

✠ Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.

✠ Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."

✠ Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

✠ Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.

✠ Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.

✠ Replace with 3rd party products if needed.

✠ If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

✠ Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.

✠ If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. Do not leave this equipment in either an unconditioned environment or in a above 40°C storage temperature as this may damage the equipment.

8. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

10. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

11. All cautions and warnings on the equipment should be noted.

12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

13. Never pour any liquid into an opening. This may cause fire or electrical shock.

14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

15. If one of the following situations arises, get the equipment checked by service personnel:

    a. The power cord or plug is damaged.

    b. Liquid has penetrated into the equipment.

    c. The equipment has been exposed to moisture.

    d. The equipment does not work well, or you cannot get it to work according to the user's manual.

    e. The equipment has been dropped and damaged.

    f. The equipment has obvious signs of breakage.

16. Do not place heavy objects on the equipment.

17. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

18. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

19. The computer is provided with CD drives that comply with the appropriate safety standards including IEC 60825.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEX-COM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:

   – Product name and serial number
   – Detailed information of the peripheral devices
   – Detailed information of the installed software (operating system, version, application software, etc.)
   – A complete description of the problem
   – The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning: Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution: Information to avoid damaging components or losing data.

Note: Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the VTC 6200 / 6200-NI package that you received is complete. Your VTC 6200 / 6200-NI package should have all the items listed in the following table.

Item	P/N	Name	Specification	Qty
1	4NCPM00302X00	POWER CON 3P PHOENIX CONTACT		1
2	5060100017X00	DAMPER	6mm/OUTSIDE DIA .12mm H: 9mm TPS(BLACK)	4
3	50311F0119X00	I HEAD BOLTS SCREW LONG	I3x12.5 AXISx 8.5mm SCREWx 4mm	4
4	60233PW134X00	(N)POWER CABLE FOR VTK33B SMBUS SIGNAL		1
5	60233ATA20X00	SATA CABLE	L: 80mm	1
6	60233PW102X00	SATA POWER CABLE	SATA 15PIN TO 3022H-04 4PIN PITCH 5.08mm ,L: 80mm	1
7	5042220027X00	(N)WIRE MOUNT	19.1x8.4x1.3 NYLON66	4
8	50311F0150X00	(N)F HEAD SCREW LONG	#6-32X8 NI NYLOK	3
9	60233SAM05X00	GPS ANTENNA	5M /SMA180P	1
10	50311F0100X00	ROUND HEAD SCREW W/SPRING+FLAT WASHER LONG	P3x6 iso/SW6x0.5 NI	4
11	5043330316X00/ or 5043330354X00	HDD BASE PLATE FOR VTC6200/ or HDD BASE PLATE FOR VTC6200-NI	143.2 x 103 x 1 mm 138.2 x 103 x 1mm	1
12	5043330317X00	HDD BRACKET FOR CUSHION LEFT	123.3x44.5x 14.7mm	1
13	5043330245X00	HDD BRACKET FOR CUSHION RIGHT	128.5x17x 1mm	1
14	50344C0042X00	COPPER POST LONG	WITH MALE/FEMALE (FEMALE)12mm x (MALE) 5mm x M3	4
15	5060100012X00	HIGH-END DAMPER INSIDE	11.1mm H: 10.8mm TPS(BLACK)	4
16	50311F0107X00	I HEAD BOLTS SCREW LONG	I3x14 AXISx 10mm SCREWx 4mm (BLACK)	4
17		CD driver		1

Ordering Information

The following provides ordering information for VTC 6200 / 6200-NI.

- **VTC 6200 (P/N: 10V00620000X0)**
  - with Intel® Atom D510, 1GB DDR2 memory, GPS module and GPS antenna

- **VTC 6200-NI (P/N: 10V00620002X0)**
  - with Intel® Atom D510, 1GB DDR2 memory, GPS module and GPS antenna, without isolation

- **VTC-6200-NI-DK (P/N: 10V00620006X0)**
  - with Intel Atom D510, 1GB DDR2 memory, GPS receiver with dead reckoning feature and GPS antenna.

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Chapter 1: Product Introduction

Overview

VTC 6200 Rear View

VTC 6200/6200-NI/6200-NI-DK
Front View

VTC 6200-NI Rear View

VTC 6200-NI-DK Rear View

Key Features

- Built-in Intel® Atom D510 processor
- Fanless design with ruggedized aluminum chassis
- PCI104, SUMIT and 2 x Mini card expansion interface for PoE and Mini card module
- Wide range DC input from 8V-60V
- Power ignition on/off delay controlled by software
- Low battery power protection setting by software
- External smart battery back-up
- S3 & S4 suspend mode

- Availability of GPS, GPRS/UMTS/HSDPA
- Multiple display connections: Dual VGA and LVDS
- Optional IP65 enclosure (VTC6200-NI Only)
- Flexible chassis design for PCI104 and HDD; can be used at the same time (VTC 6200 Only)
- Supports 2 x isolated RS-232 ports (COM1 and COM2)
- Isolated GPIO (VTC 6200 Only)
- Isolated RS485 (VTC 6200 Only)
- e13 Mark certification

The VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK is an innovative in-vehicle computer for use in any car, truck, or even for maritime applications. The design itself makes the system available as a complete system allowing the user to easily define and build requirements.

VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK fulfills vehicle industry requirements. The design itself is in compliance with vehicle industrial standard such as eMark. More features required for in-vehicle operations, such as power ignition delay control, low-power protection and SMBus connection, etc., are continued from NEXCOM's other in-vehicle computer products.

The GPS function navigates drivers to ultimate the fleet management. Optional 802.11b/g/n, 3.5G, GPRS, and Bluetooth availability make VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK ready for wider coverage and future trend. Multiple display connections make VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK an ideal choice for in-vehicle signage platforms as well.

Hardware Specifications

Main Chipset

- Intel® ICH8M

CPU

- Intel® Atom™ D510 Dual Core 1.6GHz

Memory

- DDR2 667/800 SDRAM
- One 200-pin SO-DIMM up to 2GB

Expansion

- Mini PCIe socket (PCIe + USB) x 1 (for WLAN module)
- Mini PCIe socket (USB) x 1 (for 3.5G module)
- 1 x Bluetooth module (optional)
- 1 x GPS module for VTC 6200 / 6200-NI; 1 x GPS module with dead reckoning for VTC 6200-NI-DK only
- PCI-104 x 1
- SUMIT x 1 (USB + PCIe x1) - VTC 6200 only

I/O Interfaces - Front

- 5 x LEDs for power stand-by (on power button), Power Status, HDD, WLAN/HSDPA and GPIO
- Power button
- 2 x USB ports
- 1 x SIM card socket
- 1 x system reset button
- 1 x Mic-In, 1 x Line-Out
- 4 x mounting holes SMA-type for WLAN/ HSDPA/BT

I/O Interfaces - Rear

- Mounting hole reserved:
  For RF Coax to SMA Bulkhead x 1 (for GPS) reference, signal connects to the function board
- 8V~60V wide range DC power input, power ignition signal control
- Dual VGA output (clone mode)
- 5V/1A, 12V/1A DC power output, can be controlled by S/W
- 1 x Mic-In, 1 x Line-Out
- 2 x Isolated RS232 (COM1/2) - VTC 6200 Only
  2 x RS232
  1 x Isolated RS485 (COM5) - VTC 6200 only
- 2 x USB 2.0
- 1 x LVDS (DB26 female connector for LVDS with backlight, control power [+12V] and USB 2.0 x 1)
- 10/100/1000 Fast Ethernet, RJ45 with LED connector x 1
- Isolated GPIO x 1 (4 input & 4 output) - VTC 6200 only
- FUSE

Expandable Storage

- SATA 2.5" HDD Bay x 1
- SATA DOM x 1

Power Management

- Selectable boot-up & shut-down voltage for low power protection
- HW design ready for 8-level delay time on/off at user's self configuration
- Power on/off ignition, software detectable
- Supports S3/S4 suspend mode

IP Rating

- IP65 compliant with VTC series protection kit - for VTC6200-NI / 6200-NI-DK Only

Dimensions

- VTC 6200
  260mm (W) x 176mm (D) x 70mm (H) (10.24" x 6.93" x 2.75")
  Supports HDD and PCI-104 at the same time

- VTC 6200-NI / VTC 6200-NI-DK
  260mm (W) x 176mm (D) x 50mm (H) (10.24" x 6.93" x 1.97")

Construction

- Aluminum enclosure with fanless design

Environment

- Operating temperatures:
  Ambient with air:
  -30°C to 60°C (SSD)
  -30°C to 60C (HDD)
- Storage temperatures: -40°C to 80°C
- Relative humidity: 10% to 90% (Non-condensing)
- Vibration (random): 2g@5~500 Hz with SSD; 1g@5~500 Hz with HDD (in operation)
- Vibration (with SSD)
  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 (with SSD)
  - Operating: MIL-STD-810F, Method 516.5, Procedure I, Trucks and semi-trailers=20g
  - Crash Hazard: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=75g

Certifications

- CE approval
- FCC Class B
- e13 Mark
- IP65 protection (With IP65 kit) - for VTC6200-NI / 6200-NI-DK Only

Power Management

- Power-on delay time is selectable by BIOS to disable and enable in 10sec / 30sec / 1min / 5min / 10 min / 15min / 30min / 1hr.
- Power-off delay time is selectable by BIOS to disable and enable in 20sec / 1min / 5min / 10min / 30min / 1hr / 6hr / 18hr.
- S3, S4 suspend mode
- Ignition On/Off status detectable by SW
- Low battery status detectable by SW
- Ignition enable/disable is jumper selectable
- Shut down system automatically when the system's internal temperature is over 80C.
- VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will automatically shut down 5 minutes after the duration of low battery voltage is over 60 sec. User can detect this situation via software.
- If the ignition is off and the system is still on after 3 minutes, VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will shut down automatically.
- If the ignition is off, the user can detect this status via the software.
- If the ignition is turned on again and the power-off delay is in progress, VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will cancel the delay function and will continue to operate normally.
- If the ignition is turned on again and the power-off delay ended, VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will shut down completely will power-on again automatically.
- If the ignition is turned off again and power-on delay is in progress, VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will cancel the delay and stay in power-off status.
- If the ignition is turned off again and the power-on delay ended (entered OS already), VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will continue to operate normally.

- If the ignition is turned off again and the power-on delay ended (in BIOS process), VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will shut down immediately.
- If VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK is off, only below 10mA is used.

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Getting to Know VTC 6200 / VTC6200-NI VTC6200-NI-DK

Front Panel

GPRS/UMTS/HSDPA module
antenna mounting holes

WiFi/Bluetooth module
antenna mounting holes

Power button   USB   SIM card socket   Mic-in

LEDs   Reset button   Line-out
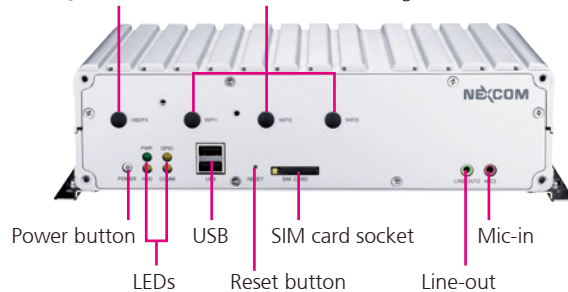
Vehicle PC Mode

Mode A (default setting). When the ignition is from "low" to "high", VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will turn on automatically. When the ignition is "high", press the power button to turn off VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK.

When the ignition is from "high" to "low", VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK will turn off automatically.

Startup and Shutdown Mode (Refer to SW2 setting)

The start up and shut down setting modes are as follows.

1. Mode A (default setting). When the input power voltage is 12V, use SW2 to select this voltage. Use the BIOS to select the start up and shut down voltages.

2. Mode B. When the input power voltage is 24V, use SW2 to select this voltage. Use the BIOS to select the start up and shut down voltages.

3. Mode C. When the input power voltage is 48V, use SW2 to select this voltage. Use the BIOS to select the start up and shut down voltages.

LEDs

GPIO	I/O PORT Address : <Read/Write> #0EE0H Bit 0 : 0(Off) 1(On).
COMM	WLAN/HSDPA Status

SIM Card Socket

VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK can be internally integrated with a 3.5G Mini Card module. The SIM card bracket is on the board. When using the GPRS/UMTS/HSDPA function, insert the SIM card into the SIM card socket. Make sure to turn off VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK before inserting the SIM card.

USB Ports x2

The USB port complies with USB 2.0 specifications.

WiFi/Bluetooth Module Antenna Mounting Holes

The 3 external antenna mounting holes are used to mount and connect WiFi antenna to a WLAN module (Mini Card type).

GPRS/UMTS/HSDPA Module Antenna Mounting Hole

The antenna mounting hole is used to mount and connect an antenna to the GPRS/UMTS/HSDPA module.

Reset Button

Press this button to restart VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK.

Line-out

Line-out is a stereo output for connecting external speakers.

Mic-in

Mic-in receives monophonic input from an external microphone.

Rear Panel

VTC 6200
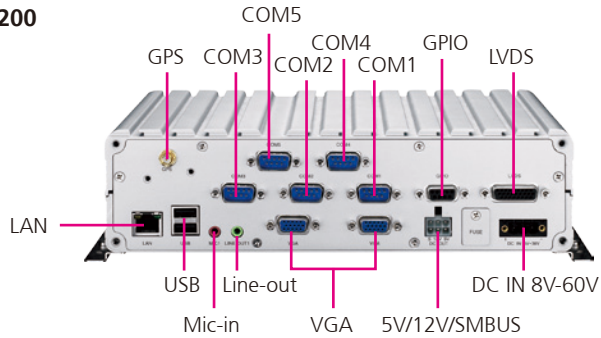
VTC 6200-NI
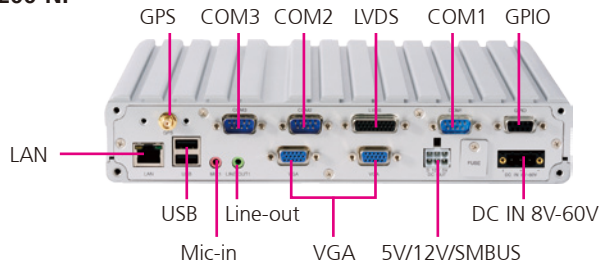
VTC 6200-NI-DK
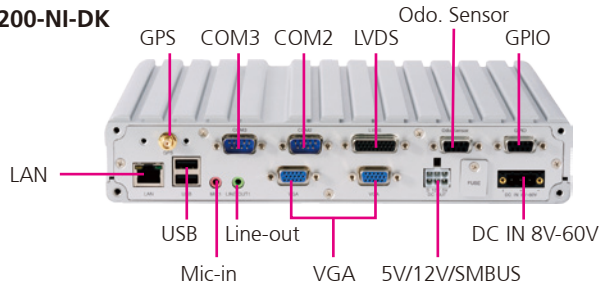
Power Input

DC Power Input Connector
Connector location: CON1
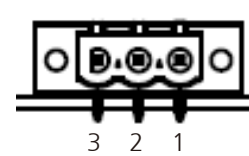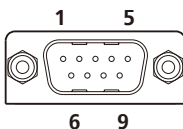

Connector pin definition (CN1)

Pin No.	Function Description
1	GND
2	8V-60V
3	IGNITION

** Use power cable (+) with fuse for system protection

RS232 Connector

Connector size: DSUB-9 PIN

Connector location

```
 1    5

6    9
```

Connector pin definition (VTC 6200 COM3/ COM4)

PIn	Definition	Pin	Definition
1	DCD (RS232)	2	RXD (RS232)
3	TXD (RS232)	4	DTR (RS232)
5	GND	6	DSR (RS232)
7	RTS (RS232)	8	CTS (RS232)
9	RI (RS232)		

Connector pin definition (VTC 6200-NI COM1/ COM2; VTC 6200-NI-DK COM2)

PIn	Definition	Pin	Definition
1	DCD (RS232)	2	RXD (RS232)
3	TXD (RS232)	4	DTR (RS232)
5	GND	6	DSR (RS232)
7	RTS (RS232)	8	CTS (RS232)
9	RI (RS232)		

Isolated RS232 Connector COM1 and COM2 (for VTC 6200 only)

Connector size: DSUB-9 PIN

Connector location

```
 1    5

6    9
```
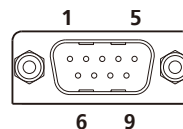
Pin	Definition	Pin	Definition
1	N/A	2	Isolated RXD
3	Isolated TXD	4	N/A
5	Isolated GND	6	N/A
7	N/A	8	N/A
9	N/A		

Isolated RS485 Connector COM5 for VTC6200 only

Connector size: DSUB-9 PIN

Connector location
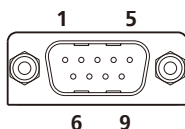
Connector pin definition (VTC 6200)

PIn	Definition	Pin	Definition
1	Isolated TX-/RX- (RS485)	2	Isolated TX+/RX+ (RS485)
3	N/A	4	N/A
5	Isolated GND	6	N/A
7	N/A	8	N/A
9	N/A		

RS485 Connector COM3 for VTC6200-NI and VTC6200-NI-DK

Connector pin definition

PIn	Definition	Pin	Definition
1	TX-/RX- (RS485)	2	TX+/RX+ (RS485)
3	N/A	4	N/A
5	GND	6	N/A
7	N/A	8	N/A
9	N/A		

COM Port mapping table (VTC6200)

Real COM Port number	I/O port address	IRQ number	COM Port number on the Rear panel
COM1	3F8H	IRQ4	COM1
COM2	2F8H	IRQ3	COM2
COM3	3E8H	IRQ5	COM3
COM4	2E8H	IRQ7	COM4
COM5	228H	IRQ6	COM5
COM6	238H	IRQ10	GPS module

COM Port mapping table (VTC6200-NI)

Real COM Port number	I/O port address	IRQ number	COM Port number on the Rear panel
COM3	3E8H	IRQ5	COM1
COM4	2E8H	IRQ7	COM2
COM5	228H	IRQ6	COM3
COM6	238H	IRQ10	GPS module

COM Port mapping table (VTC6200-NI-DK)

Real COM Port number	I/O port address	IRQ number	COM Port number on the Rear panel
COM4	2E8H	IRQ7	COM2
COM5	228H	IRQ6	COM3
COM6	238H	IRQ10	GPS module

Note: Please refer to Appendix E for the pin definition information of GPS with dead reckoning feature.

LVDS

Connector size: DB-26 PIN

Connector location
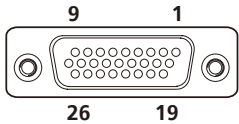
Pin	Definition	Pin	Definition
1	Panel_ EN	2	Panel_control
3	VDD	4	VDD
5	LCDD09(OUT3)	6	LCDD01(OUT0)
7	LCDD08(OUT3#)	8	LCDD00(OUT0#)
9	LCDD_GND	10	LCDD_GND
11	LCDD07(CLK)	12	LCDD03(OUT1)
13	LCDD06(CLK#)	14	LCDD02(OUT1#)
15	LVDS_GND	16	LCDD_GND
17	LCDD05(OUT2)	18	Power on push button
19	LCDD04(OUT2#)	20	Panel_backlight
21	LCDD_GND	22	Panel-Gnd
23	USB_0#	24	Contact_DET#
25	USB_0	26	USB_VCC

External SMBus, 12V and 5V Power Output

Connector location
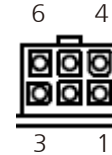
Connector pin definition

PIn	Definition	Pin	Definition
1	5V	2	12V
3	SMBus Clock	4	GND
5	GND	6	SMBus Data

+5 VDC (1A) and +12VDC (1A) power output and SMBus (w/o VTK 33M-01 connection)

+5 VDC (0.5A) and +12VDC (0.5A) power output and SMBus (w/ VTK 33M-01 connection)

VTC 6200 / VTC 6200-NI / VTC 6200-NI-DK User Manual

Isolated GPIO Connector

Connector size: DSUB-9 pin
Connector location: COM1

5   1

6   9
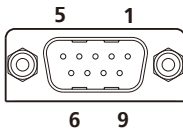
Connector pin definition (VTC 6200)

Pin	Description	Pin	Description
1	Isolated GIN1	2	Isolated GIN2
3	Isolated GIN3	4	Isolated GIN4
5	Isolated GOUT4	6	Isolated GOUT1
7	Isolated GOUT2	8	Isolated GOUT3
9	Isolated GND		

Connector pin definition (VTC 6200-NI, VTC 6200-NI-DK)

PIn	Definition	Pin	Definition
1	GIN1	2	GIN2
3	GIN3	4	GIN4
5	GOUT4	6	GOUT1
7	GOUT2	8	GOUT3
9	GND	10	GND

VGA Port x2 (Clone Mode)

The DB15 VGA port supports resolutions up to 1600x1200 @ 85 Hz, 2048x1536 @ 60Hz.

USB Port x 2

The two USB ports are compliant with USB 2.0 specifications.

LAN Port

The LAN port is an RJ45 interface with integrated LEDs and supports 10/100/1000Mbps Ethernet data transfer rates.

Audio Jacks (MIC-IN and LINE-OUT)

- MIC-IN jack receives monophonic input from an external microphone.
- LINE-OUT jack is the stereo output for connecting external speakers.

Odometer Sensor Connector (for VTC 6200-NI-DK)

Connector size: DSUB-9 PIN
Connector location

1   5

6   9
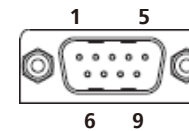
PIn	Definition	Pin	Definition
1	DIR_N	6	GND
2	DIR_P	7	NC
3	NC	8	NC
4	PULSE_P	9	GND
5	PULSE_N		

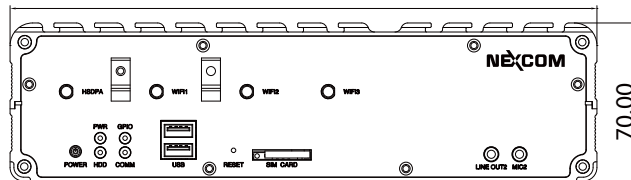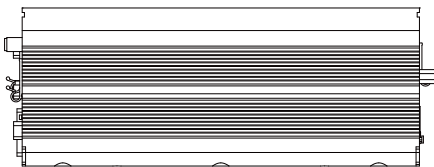Note: Please refer to Appendix E for the pin definition information of GPS with dead reckoning feature.
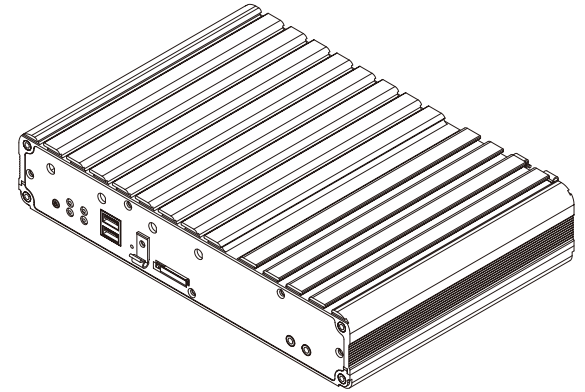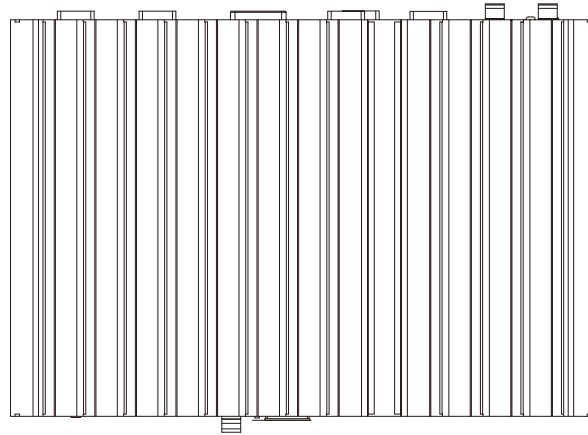
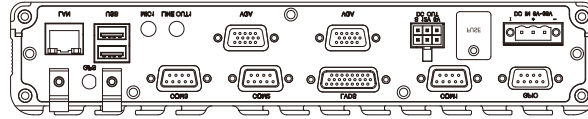# Mechanical Dimensions

VTC 6200
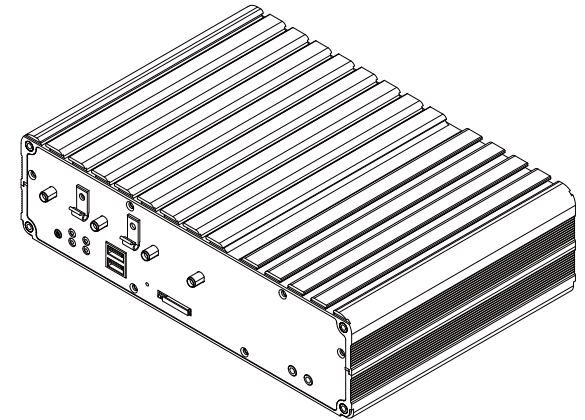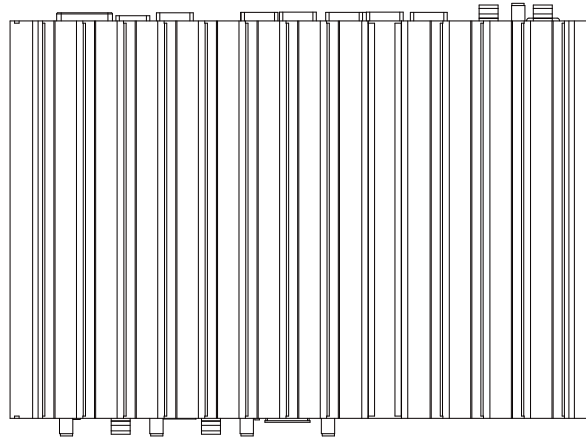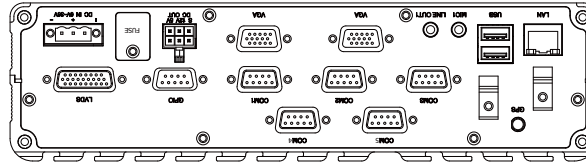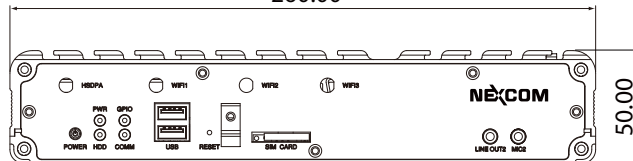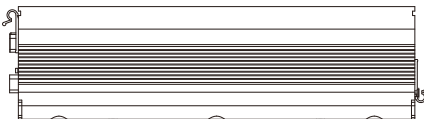

260.00

70.00
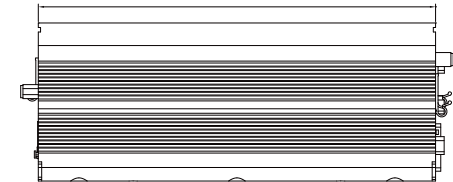
176.00

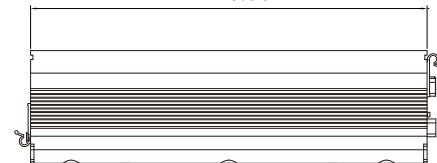## VTC 6200-NI / VTC6200-NI-DK

260.00

176.00

50.00

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers on the motherboard. Note that the following procedures are generic for all VTC 6200 series.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers Screwdrivers
  - A grounding strap
  - An anti-static pad

- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.

- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.

- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.

- Use correct screws and do not over tighten screws.

Jumper

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **short**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **open**.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

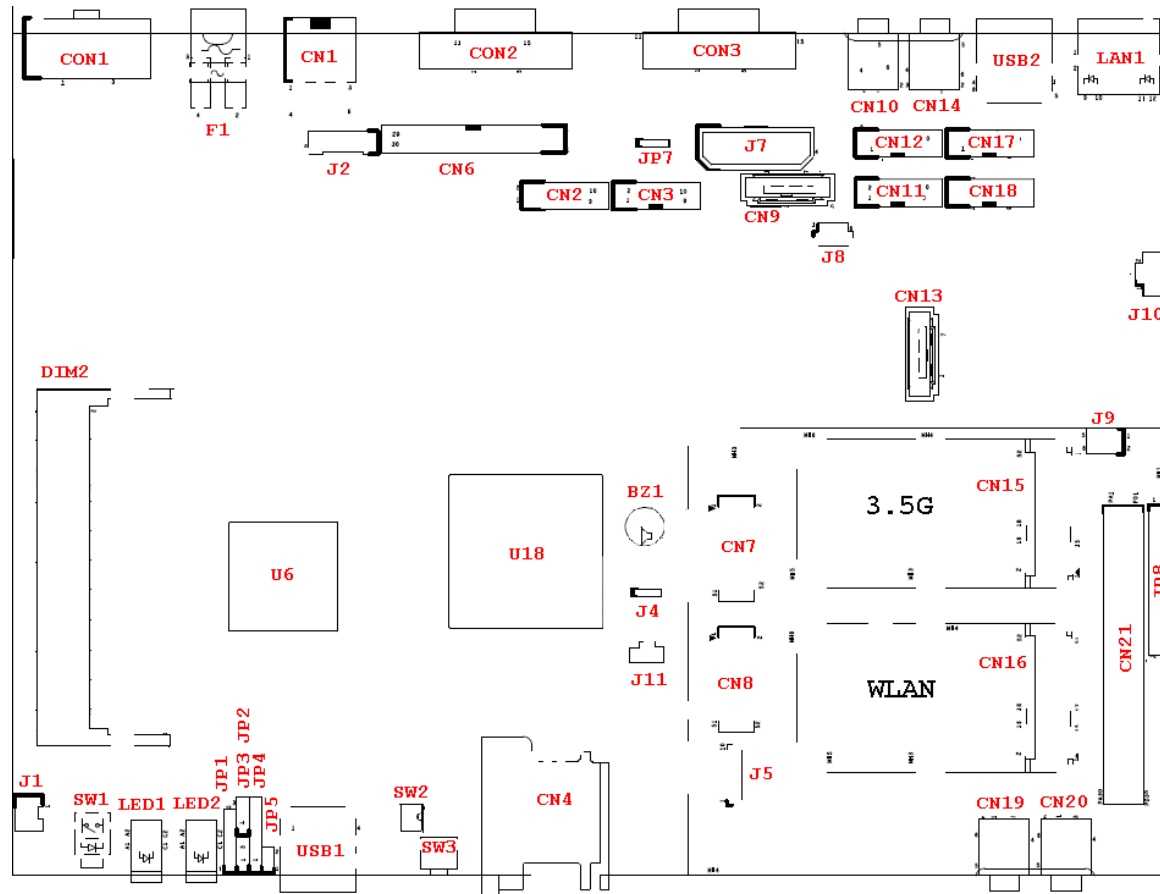Two-Pin Jumpers: Open (Left) and Short (Right)
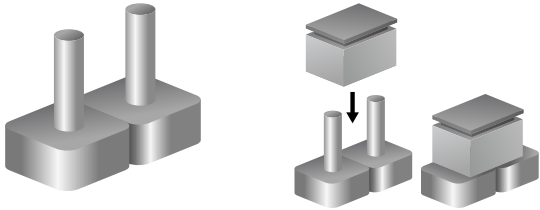
Three-Pin Jumpers: Pins 1 and 2 Are Short
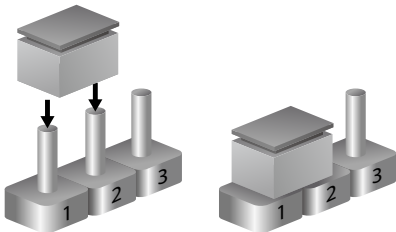
Locations of the Jumpers and Connectors

The figure below is the 4BU0DOCKB4X10 main board which is the board used in the VTC 6200 / VTC 6200-NI system. It shows the locations of the jumpers and connectors.

Jumper Settings

SW2: Input Voltage Select

SW2 / Setup Voltage	12V (default)	24V	48V	8V~60V all can start
SW2.1	OFF	OFF	ON	ON
SW2.2	OFF	ON	OFF	ON

LVDS Power Input Voltage Select (JP7)

Pin	Status	Function Description
1-2	Short	+5V IN
2-3 (default)	Short (default)	+3.3V IN

CMOS Input Voltage Select (J4)

Pin	Status	Function Description
1-2 (default)	Short (default)	VBAT IN
2-3	Short	Clear CMOS

Temp Sensor (JP5)

Pin	Function Description
1	SENSOR+
2	GND

PCI-104 VI/O Select Voltage (J9)

Pin	Status	Function Description
1-4 (default)	Short (default)	+3.3V
3-6	Short	+5V

MCU Download (JP1)

Pin	Function Description
1	+V3.3ALW
2	C2D
3	MRST
4	C2CK
5	GND

GAL Download (JP4)

Pin	Function Description
1	+V3.3S
2	GND
3	TCK
4	TDO
5	TDI
6	TMS

MCU COM Port (JP2)

Pin	Function Description
1	TX
2	RX
3	GND

Connectors

Isolated GPIO Connector

Connector size: 2x5 10-pin header, 2.0 mm
Connector location: CN2

```
1 □ ○ 2
  ○ ○
  ○ ○
  ○ ○
9 ○ ○ 10
```
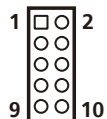
Connector pin definition (VTC 6200)

Pin	Description	Pin	Description
1	isolation GIN1	2	isolation GIN2
3	isolation GIN3	4	isolation GIN4
5	isolation GOUT4	6	isolation GOUT1
7	isolation GOUT2	8	isolation GOUT3
9	isolation GND	10	isolation GND

Connector pin definition (VTC 6200-NI)

PIn	Definition	Pin	Definition
1	GIN1	2	GIN2
3	GIN3	4	GIN4
5	GOUT4	6	GOUT1
7	GOUT2	8	GOUT3
9	GND	10	GND

Isolated RS232 Connector COM1 and COM2 (for VTC 6200 only)

Connector size: 2x5 10-pin header, 2.0 mm
Connector location: CN3 (COM1) and CN11 (COM2)

```
1 □ ○ 2
  ○ ○
  ○ ○
  ○ ○
9 ○ ○ 10
```
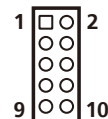
Pin	Description	Pin	Description
1	N/A	2	RXD
3	TXD	4	N/A
5	ISO_GND	6	N/A
7	N/A	8	N/A
9	N/A	10	N/A

RS232 Connectors

Connector size: 2x5 10-pin header, 2.0 mm
Connector location: CN12 (COM3) and CN17 (COM4)

```
1 □ ○ 2
  ○ ○
  ○ ○
  ○ ○
9 ○ ○ 10
```
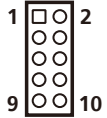
Connector pin definition (VTC 6200 COM3/ COM4)
Connector location: CN12 (COM3) and CN17 (COM4)

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

Connector pin definition (VTC 6200-NI COM1/ COM2; VTC 6200-NI-DK COM2)
Connector location: CN12 (COM1) and CN17 (COM2)

Pin	Description	Pin	Description
1	DCD (RS232)	2	RXD (RS232)
3	TXD (RS232)	4	DTR (RS232)
5	GND	6	DSR (RS232)
7	RTS (RS232)	8	CTS (RS232)
9	RI (RS232)		

Isolated RS485 COM5 Connector for VTC 6200 only

Connector size: 2x5 10-pin header, 2.0 mm
Connector location: CN18

```
1 □ ○ 2
  ○ ○
  ○ ○
  ○ ○
9 ○ ○ 10
```
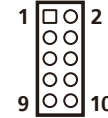
Pin	Description	Pin	Description
1	Isolated TX-/RX- (RS485)	2	Isolated TX+/ RX+ (RS485)
3	N/A	4	N/A
5	Isolated GND	6	N/A
7	N/A	8	N/A
9	N/A		

RS485 COM3 Connector for VTC6200-NI and VTC6200-NI-DK

Connector location: CN18
Connector pin definition

Pin	Definition	Pin	Definition
1	TX-/RX- (RS485)	2	TX+/RX+ (RS485)
3	N/A	4	N/A
5	GND	6	N/A
7	N/A	8	N/A
9	N/A		

GAL Programmer Connector

Connector size: 1x6 6-pin header, 2.54 mm
Connector location: JP4

1 ▢○○○○○ 6

Pin	Definition
1	VCC3_3
2	GND
3	TCK
4	TDO
5	TDI
6	TMS

MCU Programmer Connector

Connector size: 1x5 5-pin header, 2.54 mm
Connector location: JP1

1 ▢○○○○ 5

Pin	Definition	Pin	Definition
1	+3.3ALW	2	C2D
3	MRST	4	C2CK
5	GND		

LVDS Connector + USB0

Connector size: 2 x 15 (2.0mm)
Connector location: CN6

Pin	Definition	Pin	Definition
17	LVDS_5(OUT2)	18	Panel_backlight(12V)
19	LVDS_4(OUT2#)	20	Panel_backlight(12V)
21	LVDS_GND	22	Power on push buttom
23	USB_4#	24	USB_GND
25	USB_4	26	USB_VCC (+5V)
27	USB_GND	28	USB_GND
29	Panel_backlight(12V)	30	GND
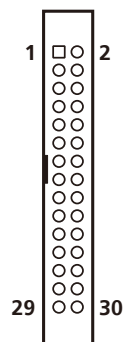
Pin	Definition	Pin	Definition
1	LVDS_CLK	2	LVDS_DAT
3	Panel_VDD	4	LVDS_1(OUT0)
5	LVDS_9(OUT3)	6	LVDS_0(OUT0#)
7	LVDS_8(OUT3#)	8	Panel_VDD
9	LVDS_GND	10	LVDS_GND
11	LVDS_7(CLK)	12	LVDS_3(OUT1)
13	LVDS_6(CLK#)	14	LVDS_2(OUT1#)
15	LVDS_GND	16	LVDS_GND

VGA Port

Connector size: DB-15 port, 15-pin D-Sub
Connector location: CON2 and CON3
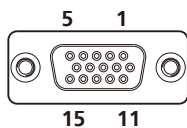
Pin	Definition	Pin	Definition
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	Gnd
11	NC	12	DDCDAT
13	Hsync	14	Vsync
15	DDCCLK		

LAN Port

Connector size: RJ45 port
Connector location: LAN1
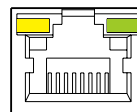
Pin	Definition	Pin	Definition
1	TX+	2	TX-
3	RX+	4	N/C1
5	N/C2	6	RX-
7	N/C3	8	N/C4
9	LAN Speed LED	10	VCC3_3
11	LAN Link LED	12	VCC3_3

USB Ports

Connector size: Dual USB port, Type A
Connector location: USB1 and USB2
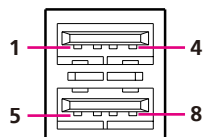
Pin	Definition	Pin	Definition
1	VCC	2	DATA1-
3	DATA1+	4	GND
5	VCC	6	DATA-
7	DATA+	8	GND

LVDS Power Connector

Connector size: JST 6-pin, 2.54 mm pitch
Connector location: J2

Pin	Definition	Pin	Definition
1	Panel_backlight	2	Panel_VDD
3	GND	4	GND
5	LVDS_PANEL	6	LVDS_BIASON

External 12V & 5V Power and SMBUS Connector

Connector location: CN1
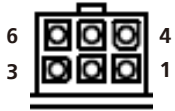
Pin	Definition	Pin	Definition
1	5V	2	12V
3	SMBCLK	4	GND
5	GND	6	SMBDATA

Mic-in Jacks

Connector size: 6-pin jack, 25.9x12.6x17.0mm
Connector location: CN14 and CN20
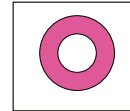
Pin	Definition	Pin	Definition
1	NC	2	MIC_JD
3	NC	4	MIC_OUT
5	GND	6	GND

Line-out Jacks

Connector size: 6-pin jack, 25.9x12.6x17.0mm
Connector location: CN10, CN19
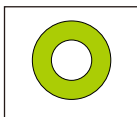
Pin	Definition	Pin	Definition
1	LINE_OUT_L	2	SURR_JD
3	NC	4	LINE_OUT_R
5	GND	6	GND

PCI-104 VI/O Voltage Setting

Connector location: J9
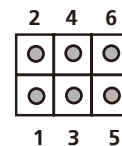
Pin No.	Status	Function Description
1-3, 2-4 (default)	Short	+3.3V
3-5, 4-6	Short	+5V

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PCI-104 Connector

Connector location: CN21

```
A1 [••••••••••••••••••••••••••••••••] A30
B1 [••••••••••••••••••••••••••••••••] B30
C1 [••••••••••••••••••••••••••••••••] C30
D1 [••••••••••••••••••••••••••••••••] D30
```
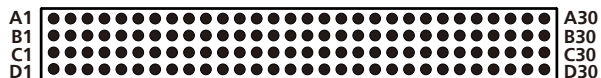
Pin	A	B	C	D
1	GND	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0#	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	Reserved	PAR
10	GND	PERR#	+3.3V	Reserved
11	STOP#	+3.3V	LOCK#	GND
12	+3.3V	TRDY#	GND	DEVSEL#
13	FRAME#	GND	IRDY#	+3.3V
14	GND	AD16	+3.3V	C/BE2#
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3#	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0#	GND	REQ1#	VI/O
24	GND	REQ2#	+5V	GNT0#
25	GNT1#	VI/O	GNT2#	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD#	+5V	RST#
29	+12V	INTA#	INTB#	INTC#
30	-12V	REQ3#	GNT3#	GND

Power Button

Connector location: SW1
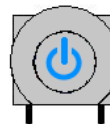
Reset Button

Connector location: SW3

MCU COM Port

Connector size: 1x3, 2.0mm
Connector location: JP2

Pin	Function Description
1	TX
2	RX
3	GND

Temp Sensor

Connector size: 1x2, 2.54mm
Connector location: JP5

Pin	Function Description
1	SENSOR+
2	GND

Power Input

DC Power Input Connector

Connector location: CON1
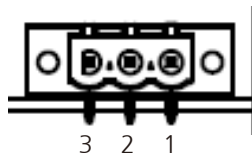
Pin No.	Function Description
1	GND
2	VIN 8V-60V
3	IGNITION

Power On and IDE Active LED

Connector location: LED1
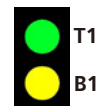
LED	Function Description
T1	POWER LED
B1	HD LED

GPIO and UMTS LEDs

Connector location: LED2

T2

B2
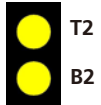
LED I/O Port Address and Data

LED	Function Description
T2	I/O PORT Address: 0EE0; Bit0: 1 (Light), 0 (Dark)
B2	UMTS STATUS

SATA Ports

Connector size: Standard Serial ATAII 7P (1.27mm)
Connector location: CN9, CN13

Pin	Definition
1	GND
2	SATA_TXP0 -
3	SATA_TXN0
4	GND
5	SATA_RXN0
6	SATA_RXP0
7	GND

SATA Power Connector

Connector size: 1x4 pin
Connector location: J7

Pin	Definition
1	12V
2	GND
3	GND
4	VCC5

SATA DOM Power Connector

Connector size: 1x2 2-pin boxed header, 2.5 mm JST
Connector location: J10

Pin	Definition
1	VCC5
2	GND

Mini-PCIe Slot (3.5G)

Connector location: CN15
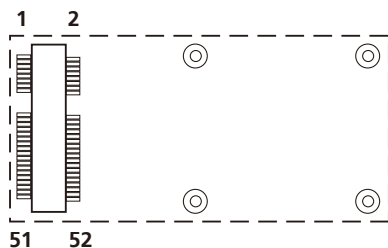
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	MIC +	2	+V3.3S	27	GND	28	NC
3	MIC -	4	GND	29	GND	30	NC
5	SPK +	6	NC	31	NC	32	NC
7	GND	8	USIM PWR	33	RESET	34	GND
9	GND	10	USIM DATA	35	GND	36	USB_D-
11	VCC_MSM26_DIG	12	USIM CLK	37	GND	38	USB_D+
13	NC	14	USIM RST	39	+V3.3S	40	GND
15	GND	16	NC	41	+V3.3S	42	LED_WWAN#
17	NC	18	GND	43	GND	44	NC
19	NC	20	W_DISABLE#	45	NC	46	NC
21	GND	22	NC	47	NC	48	NC
23	NC	24	NC	49	NC	50	GND
25	NC	26	GND	51	NC	52	+V3.3S

Mini-PCIe Slot (WLAN)

Connector location: CN16
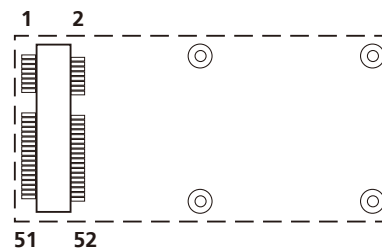
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	WAKE#	2	+V3.3S	27	GND	28	+V1.5S
3	NC	4	GND	29	GND	30	SMB_CLK
5	NC	6	+V1.5S	31	PETn0	32	SMB_DATA
7	CLKREQ#	8	NC	33	PETp0	34	GND
9	GND	10	NC	35	GND	36	USB_D-
11	REFCLK-	12	NC	37	NC	38	USB_D+
13	REFCLK+	14	NC	39	NC	40	GND
15	GND	16	NC	41	NC	42	LED_WWAN#
17	NC	18	GND	43	NC	44	LED_WLAN#
19	NC	20	DISABLE#	45	NC	46	LED_WPAN#
21	GND	22	PERST#	47	NC	48	+V1.5S
23	PERn0	24	+3.3S	49	NC	50	GND
25	PERp0	26	GND	51	NC	52	+V3.3S

GPS Connector

Connector size: JST 6-pin, 2.54 mm pitch
Connector location: J8

Pin	Definition
1	GPS_BAT
2	GPS_LED#
3	SP_TX1
4	SP_RX1
5	GND
6	VCC3_3S

Note: Please refer to Appendix E for the pin definition information of GPS with dead reckoning feature.

SIM Card Connector

Connector location: CN4
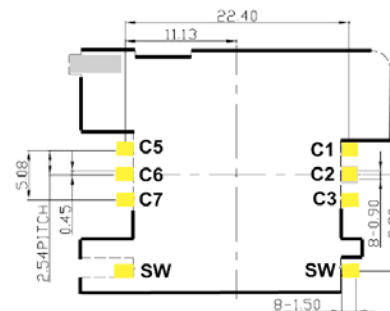
Connector Pin Definition

Pin	Definition	Pin	Definition
C1	POWER VOLTAGE	C2	RESET SIGNAL
C3	CLOCK SIGNAL	C5	GND
C6	VPP:PROGRAM VOLTAGE	C7	I/O
SW	Contact present switch		

Bluetooth Connector

Connector size: JST 10-pin, 2.54 mm pitch
Connector location: J5

Pin	Definition	Pin	Definition
1	GND	2	NC
3	BT_3.3V	4	NC
5	BT_AUDIO_EN_R	6	NC
7	NC	8	USB_9N_L
9	USB_9P_L	10	GND

SUMIT Connector A (VTC6200 Only)

Connector size: 52-pin
Connector location: CN7
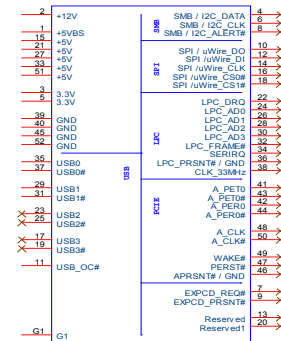
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	+5VSB	2	+12V	27	+5V	28	LPC_AD2
3	3.3V	4	SMB/I2C_DATA	29	USB1+	30	LPC_AD3
5	3.3V	6	SMB/I2C_CLK	31	USB1-	32	LPC_FRAME#
7	EXPCD_REQ#	8	SMB/I2C_ALERT#	33	+5V	34	SERIRQ#
9	EXPCD_PRSNT#	10	SPI/uWire_DO	35	USB0+	36	LPC_PRSNT#/GND
11	USB_OC#	12	SPI/uWire_DI	37	USB0-	38	CLK_33MHz
13	Reserved	14	SPI/uWire_CLK	39	GND	40	GND
15	+5V	16	SPI/uWire_CS0#	41	A_PETp0	42	A_PERp0
17	USB3+	18	SPI/uWire_CS1#	43	A_PETn0	44	A_PERn0
19	USB3-	20	Reserved	45	GND	46	APRSNT#/GND
21	+5V	22	LPC_DRQ	47	PERST#	48	A_CLKp
23	USB2+	24	LPC_AD0	49	WAKE#	50	A_CLKn
25	USB2-	26	LPC_AD1	51	+5V	52	GND

SUMIT Connector B (optional)

Connector size: 52-pin
Connector location: CN8
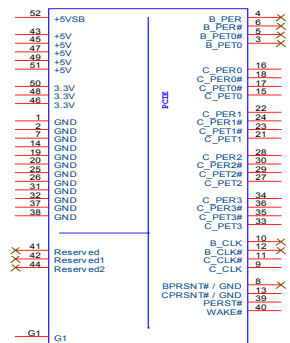
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	GND	2	GND	27	C_PETp2	28	C_PERp2
3	B_PETp0	4	B_PERp0	29	C_PETn2	30	C_PERn2
5	B_PETn0	6	B_PERn0	31	GND	32	GND
7	GND	8	BPRSNT#/GND	33	C_PETp3	34	C_PERp3
9	C_CLKp	10	B_CLKp	35	C_PETn3	36	C_PERn3
11	C_CLKn	12	B_CLKn	37	GND	38	GND
13	CPRSNT#/GND	14	GND	39	PERST#	40	WAKE#
15	C_PETp0	16	C_PERp0	41	Reserved	42	Reserved
17	C_PETn0	18	C_PERn0	43	+5V	44	Reserved
19	GND	20	GND	45	+5V	46	3.3V
21	C_PETp1	22	C_PERp1	47	+5V	48	3.3V
23	C_PETn1	24	C_PERn1	49	+5V	50	3.3V
25	GND	26	GND	51	+5V	52	+5VSB

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Chapter 3: System Setup

Removing the Chassis Cover

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. The screws on the chassis are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

Front View

Rear View
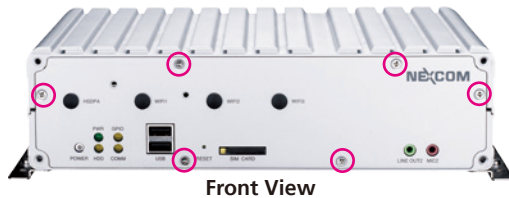
2. Lift the cover upward then remove it from the chassis.

Installing a GPRS/UMTS/HSDPA Module

1. The Mini PCI Express slot shown below is used to install a 3.5G communication module such as GPRS, UMTS or HSDPA module.
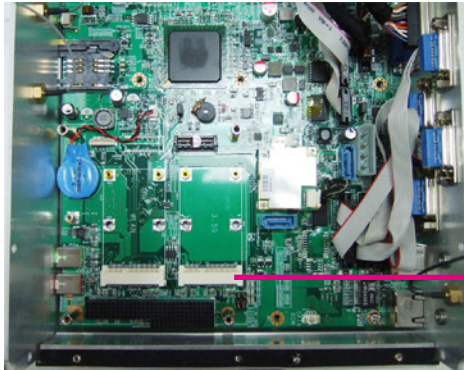
Mini PCI Express slot

2. Insert the module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

GPRS/UMTS/ HSDPA module

Mini PCI Express slot

3. Push the module down then secure it with mounting screws.

4. Attach one end of the RF cable onto the module.

Attach RF cable to the module

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5. The photo below shows one end of the RF cable properly attached onto the module.

6. Mount the other end of the cable to the antenna mounting hole located at the front panel of the chassis.
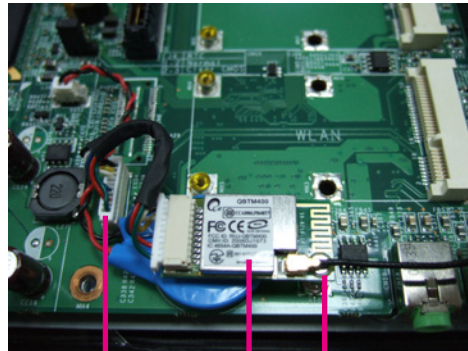

RF cable mounted at the front panel

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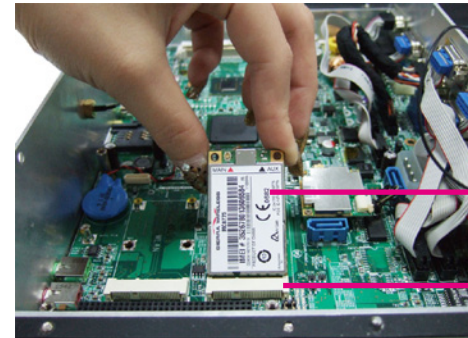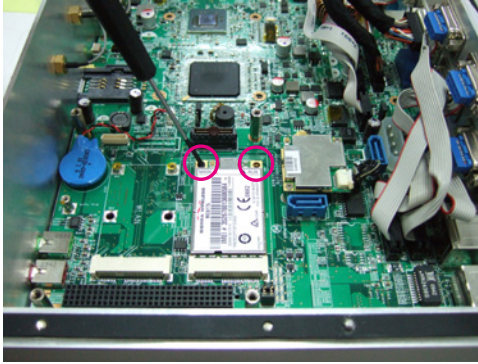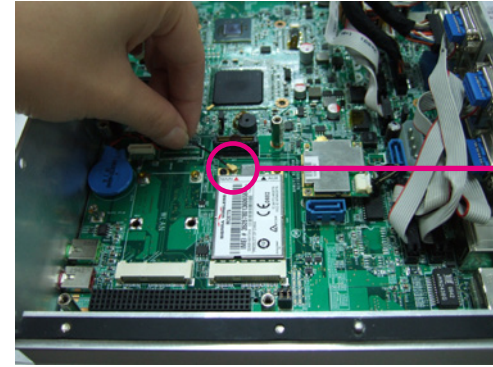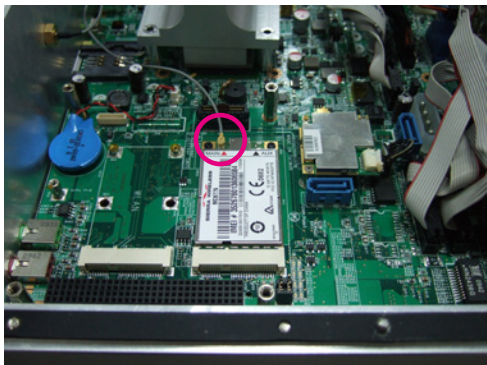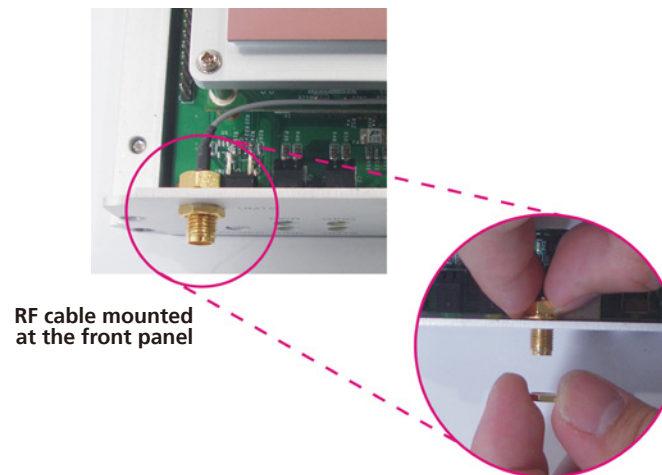
Installing a Wireless LAN Module

1. The Mini PCI Express slot shown below is used to install a wireless LAN module.

Mini PCI Express slot
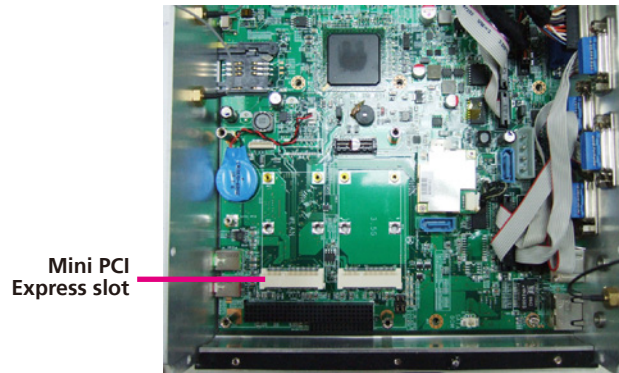
2. Insert the wireless LAN module into the Mini PCI Express slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.

Wireless LAN module

Mini PCI Express slot

3. Push the module down then secure it with mounting screws.

4. Attach one end of the RF cable onto the module.

Attach RF cable to the module

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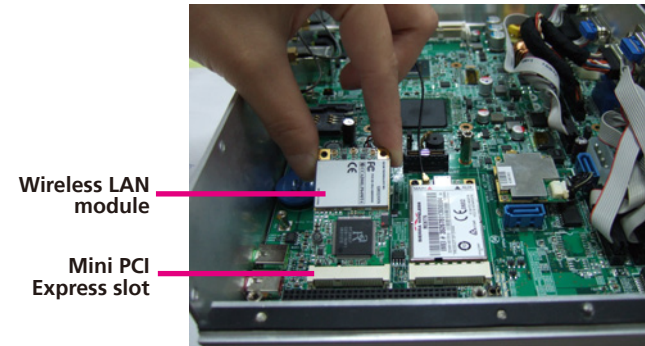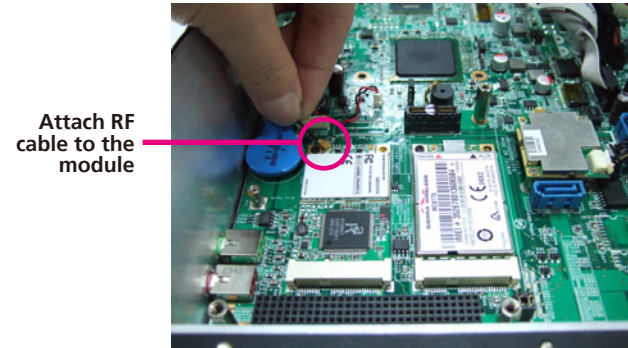
5. The photo below shows one end of the RF cable properly attached onto the module.
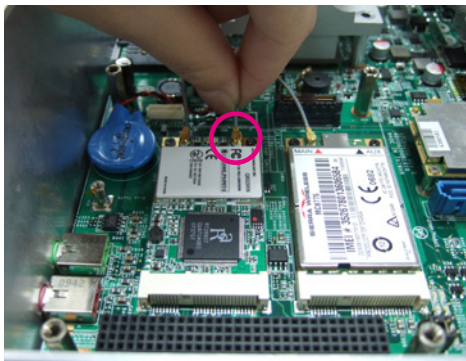
6. Mount the other end of the cable to the antenna mounting hole located at the front panel of the chassis.
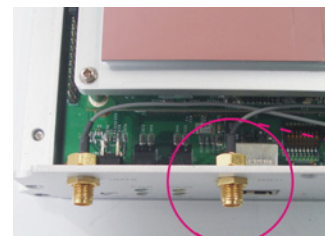
RF cable mounted at the front panel
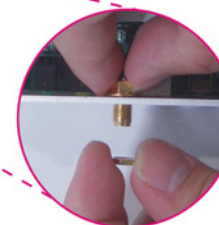
Installing a Bluetooth Module

1. The USB header shown below is used to install a Bluetooth module.
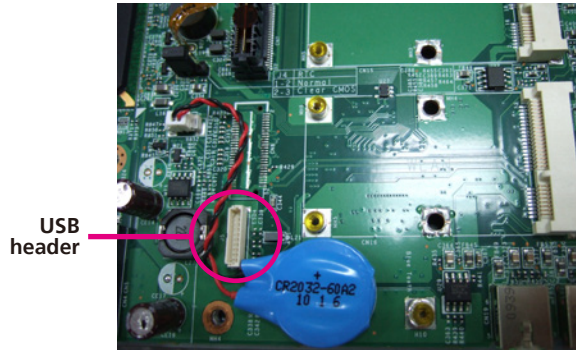
USB header

2. Install the provided mounting stud as shown in the illustration below.

Mounting stud

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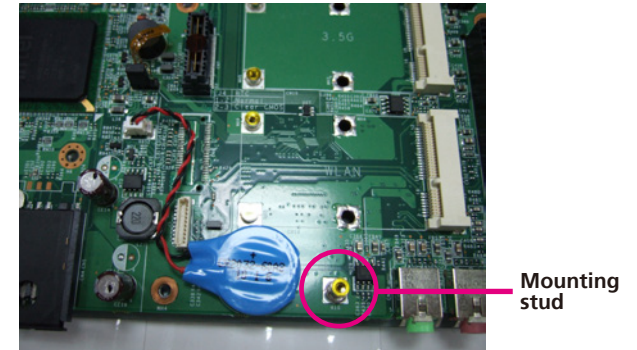
3. Insert the Bluetooth module's cable connector into the USB header. Push the module down then secure it with a mounting screw.

Cable connector

Mounting screw

Bluetooth module

4. Attach one end of the RF cable onto the module.

Attach RF cable to the module

5. Mount the other end of the cable to the Bluetooth mounting hole located at the front panel of the chassis.

Installing the PCI-104 Module

1. Locate for the PCI-104 slot on the board.

PCI-104 slot
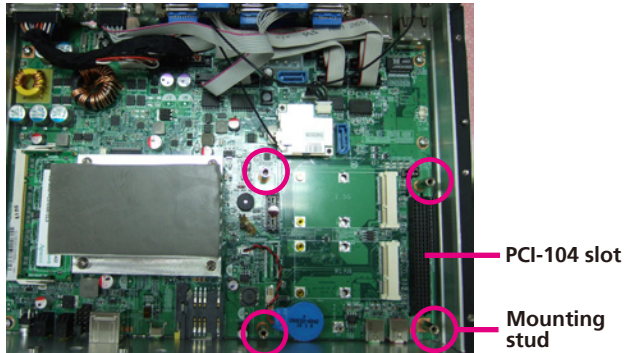
Mounting stud

2. Position the PCI-104 module above the slot then press it down firmly until it is completely seated in the slot. This will at the same time align the module's mounting holes to the mounting studs on the board.

PCI-104 module

Mounting hole
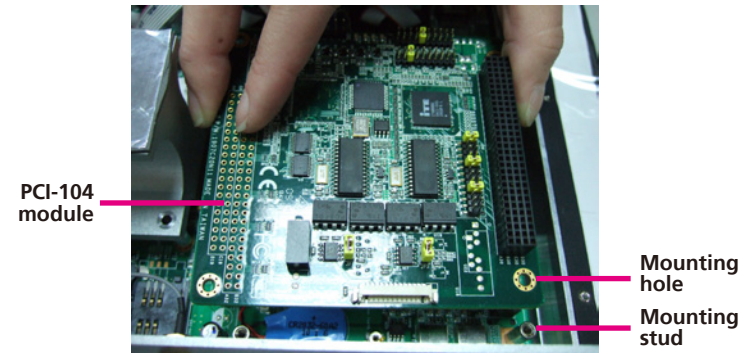
Mounting stud

3. Secure the module with mounting screws.
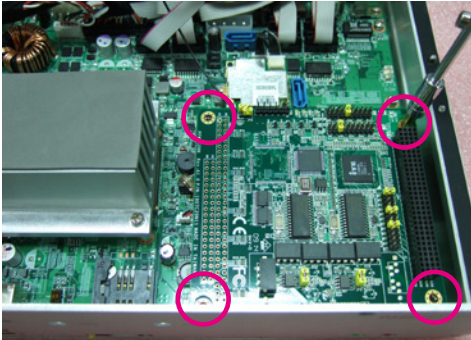
Installing a SATA Hard Drive

1. The metal bracket is used to hold a SATA hard drive. First, remove the screws that secure the metal bracket to the board then remove the bracket.

Metal bracket

If you intend to install a Mini PCI Express module or a bluetooth module, please install these devices first before proceeding to the next step. Refer to their respective sections in this chapter for instructions on installing a Mini PCI Express module or a bluetooth module.

2. Position the HDD brackets on each side of the SATA drive. Align the mounting holes that are on the sides of the SATA drive with the HDD brackets' mounting screws.
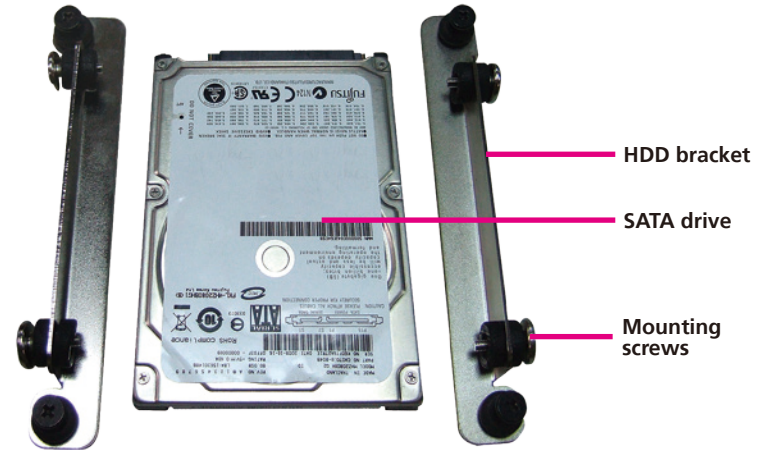
HDD bracket

SATA drive

Mounting screws

3. Tighten the mounting screws to secure the HDD brackets in place.

HDD bracket ——— ——— HDD bracket

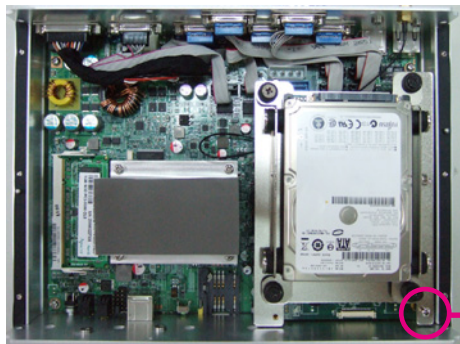**Top View**

HDD bracket ——— ——— HDD bracket

Bottom View
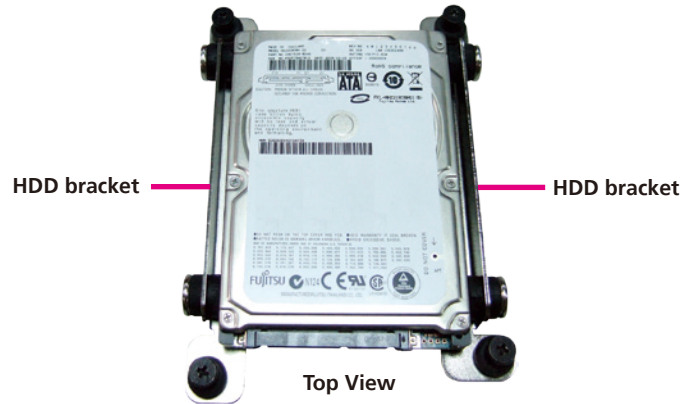
4. Now place the SATA drive on the metal bracket then tighten the head bolt screws to secure the drive on the metal bracket.

Head bolt screw

Metal bracket
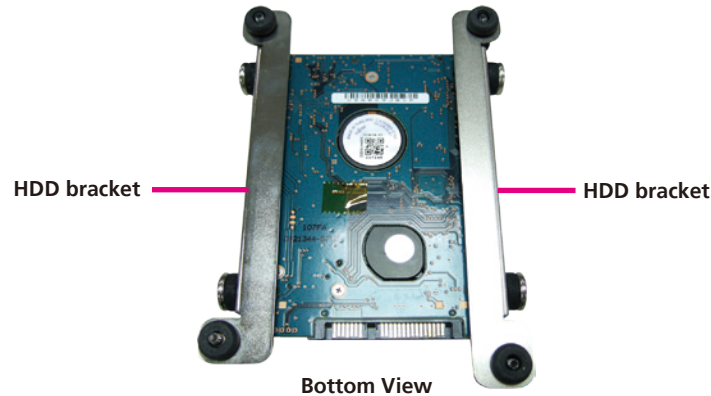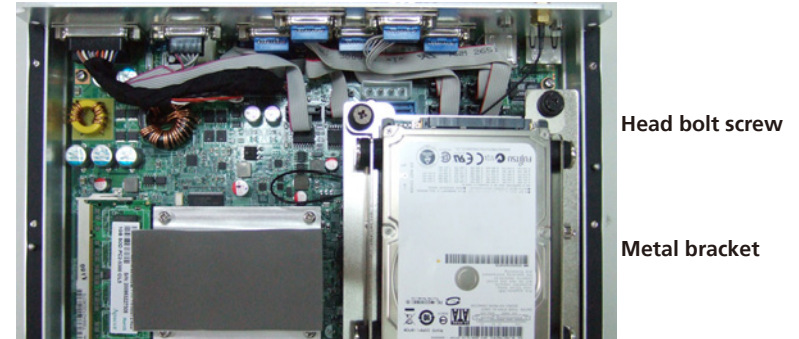
5. Align the head bolt screws with the mounting studs on the main board or PCI104 Module. Tighten the head bolt screws to secure the drive to the chassis.
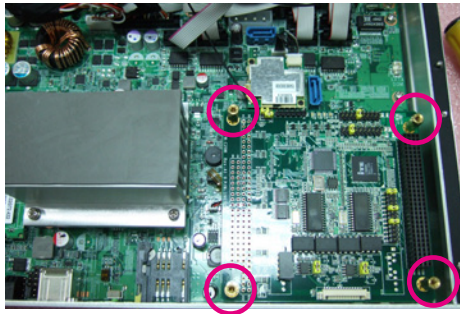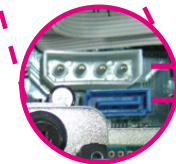

Mounting stud

Head bolt screw

6. Locate for the SATA connector and the power connector. on the board.

Power connector
SATA connector

7. Connect one end of the SATA data cable to the SATA connector that is on the board then connect the other end of the cable to the SATA connector at the rear of the SATA drive.

SATA data cable

Cable connected to the SATA connector on the board

Cable connected to the SATA drive
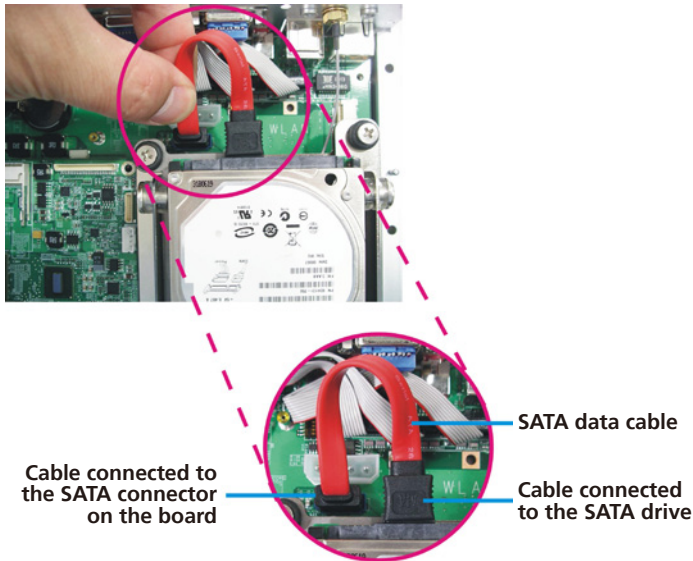
8. Connect one end of the SATA power cable to the SATA power connector that is on the board then connect the other end of the cable to the SATA power connector at the rear of the SATA drive.

SATA power cable

Cable connected to the SATA power connector on the board

Cable connected to the SATA drive
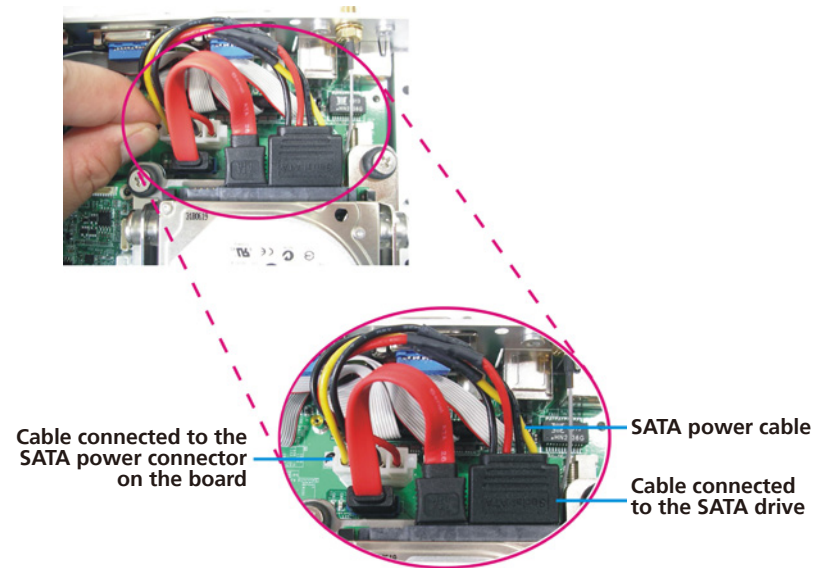
Installing the SODIMM

1. Insert the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips into the socket. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.

SODIMM

SODIMM socket

2. Push the module down until the clips on both sides of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.
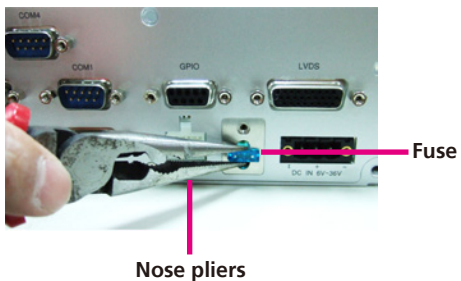

Clip

Clip
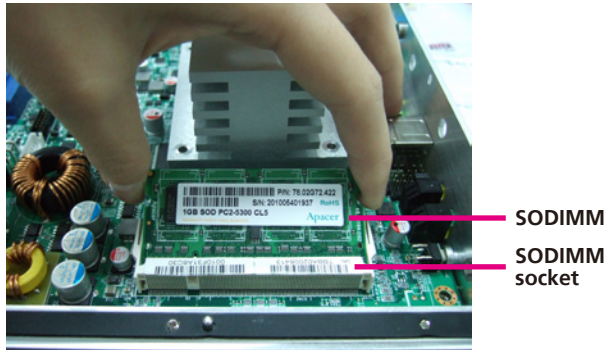
Removing the Fuse

1. Remove the screw of the fuse panel and then remove the panel.

Screw

Fuse panel
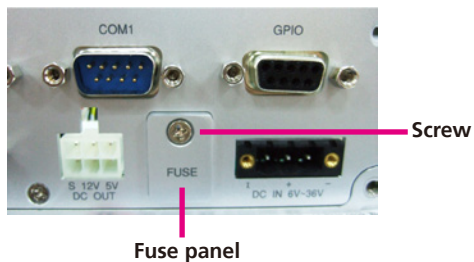
2. Use nose pliers to remove the fuse.

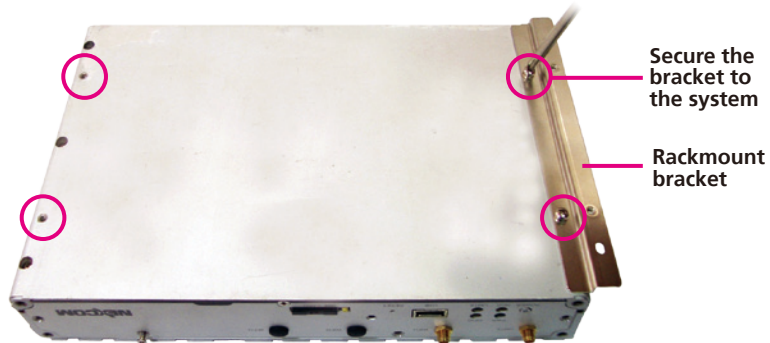**Fuse**

Nose pliers

The rackmount brackets provide a convenient and economical way of mounting the system on the wall.

1. The mounting holes are located at the bottom of the system. Secure the brackets on each side of the system using the provided mounting screws.

Secure the bracket to the system

Rackmount bracket

2. Now mount the system on the wall by fastening screws through the bracket's mounting holes.

Fasten screws to mount the system to the wall
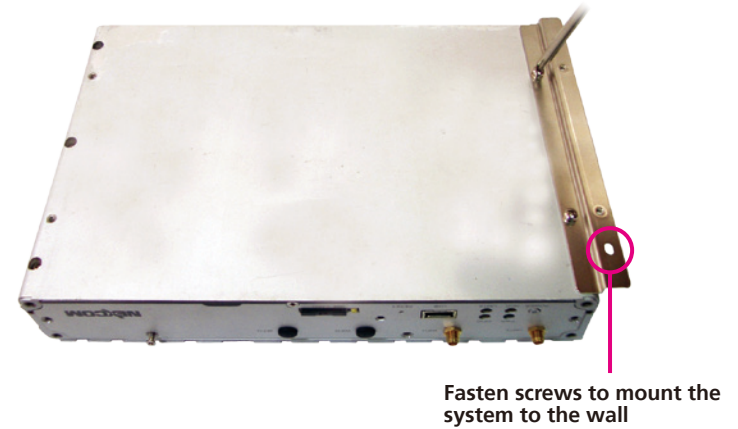
Appendix A: I/O Address Function

GPIO LED / UMTS LED / Ignition Status
I/O port : 0EE0H

Bit	Function Description
Bit 0	GPIO LED 0: OFF (default) 1: ON
Bit 1	UMTS LED 0: LED for WLAN (default) 1: LED for 3.5G and WLAN
Bit 2	Ignition (read only) 0: OFF 1: ON
Bit 3	Status of Vehicle Battery 0: Vehicle Battery is Low Voltage 1: Vehicle Battery is OK

Capacity of NEXCOM battery (8 bits)
I/O port : 0EE1H

	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Description	8 bits data (Bit 7 is highest bit of data)							

Voltage of NEXCOM battery (8 bits)
I/O port : 0EE2H

	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7
Description	8 bits data (Bit 7 is highest bit of data)							

Status of NEXCOM battery (8 bits)
I/O port : 0EE3H

Bit	Function Description
Bit 0	Status for G sensor detection 0: Normal 1: Abnormal (X-axis or Y-axis degree is about 90 or -90)
Bit 1	Power mode 0: 24V system 1: 12V system
Bit 2	Fan mode 0: Auto 1: Always on
Bit 3	Status of Smart battery 0: No discharging 1: Discharging
Bit 4	Status of Fan R 0: Well 1: Failed
Bit 5	Status of Fan R 0: Action 1: Inaction
Bit 6	Status of Fan L 0: Well 1: Failed
Bit 7	Status of Fan L 0: Action 1: Inaction

GPIO
I/O port : 0EE4H

Bit	Function Description
Bit 0-3	GPO 1-4
Bit 4-7	GPI 1-4

WDT
I/O port : 0EE5H

Bit	Function Description
Bit 3	WDT Disable/Enable 0: Disable (default) 1: Enable

Bit 2, 1, 0: Time Setting

Bit 2~0	Time (sec)
000	1 (default)
001	2
010	4
011	8
100	16
101	32
110	64
111	128

Auto clear WDT timer when reading/writing I/O port 0EE5H.

Onboard Module Disable/Enable
I/O port : 0EE6H

Bit	Function Description
Bit 0	3.5G module 0: Disable 1: Enable (default)
Bit 1	WLAN module 0: Disable 1: Enable (default)
Bit 2	External +12V power 0: Disable 1: Enable (default)
Bit 3	External +5V power 0: Disable 1: Enable (default)

Appendix B: VTCB6200/ VTCB6200-NI Main Board

VTCB6200 Specifications

Expansion

- 1 GPS Module
- 1 SUMIT (USB + PCIe x1)
- 1 PCI-104 socket
- 1 Bluetooth module (optional)
- 2 Mini PCI Express socket
  - 1 PCIe interface for WLAN module
  - 1 PCIe + USB interface for 3.5G module

Storage

- One SATA 2.5" HDD bay
- One SATA DOM

I/O Interfaces - Front

- 4 SMA-type mounting holes for WLAN, HSDPA and Bluetooth
- 1 power button
- 1 reset switch
- 1 SIM card socket
- 2 USB 2.0
- 4 LEDs for Standby, HDD, WLAN/HSDPA and GPO
- 1 line-out
- 1 mic-in

I/O Interfaces - Rear

- Mounting hole reserved:
  For RF Coax to SMA Bulkhead x 1 (For GPS) reference, signal connect to function board
- 8V~60V wide range DC power input, power ignition signal control
- Dual VGA output (Clone mode)
- 5V/1A, 12V/1A DC power output, can be controlled by S/W
- Audio Mic-In x 1, Line-Out x 1
- 2 x Isolated RS232 (COM1/2)
- 2 x RS232 (COM3/4)
- 1 x Isolated RS485 (COM5)
- USB 2.0 x 2
- LVDS x 1 (DB26 female connector for LVDS with backlight, control power (+12V) and USB 2.0 x 1)
- 10/100/1000 Fast Ethernet, RJ45 with LED connector x 1
- Isolated GPIO x 1 (4 input & 4 output)
- FUSE

VTCB6200-NI Specifications

Expansion

- 1 GPS Module
- 1 PCI-104 socket
- 1 Bluetooth module (optional)
- 2 Mini PCI Express socket
  - 1 PCIe interface for WLAN module
  - 1 PCIe + USB interface for 3.5G module

Storage

- One SATA 2.5" HDD bay
- One SATA DOM

I/O Interfaces - Front

- 4 SMA-type mounting holes for WLAN, HSDPA and Bluetooth
- 1 power button
- 1 reset switch
- 1 SIM card socket
- 2 USB 2.0
- 4 LEDs for Standby, HDD, WLAN/HSDPA and GPIO
- 1 line-out
- 1 mic-in

I/O Interfaces - Rear

- Mounting hole reserved:
  For RF Coax to SMA Bulkhead x 1 (For GPS) reference, signal connect to function board
- 8V~60V wide range DC power input, power ignition signal control
- Dual VGA output (Clone mode)
- 5V/1A, 12V/1A DC power output, can be controlled by S/W
- Audio Mic-In x 1, Line-Out x 1
- 2 x RS232 (COM1/2)
- 1 x RS485 (COM3)
- USB 2.0 x 2
- LVDS x 1 (DB26 female connector for LVDS with backlight, control power (+12V) and USB 2.0 x 1)
- 10/100/1000 Fast Ethernet, RJ45 with LED connector x 1
- GPIO x 1 (4 input & 4 output)
- FUSE

Appendix C: Vehicle Power Management Setup

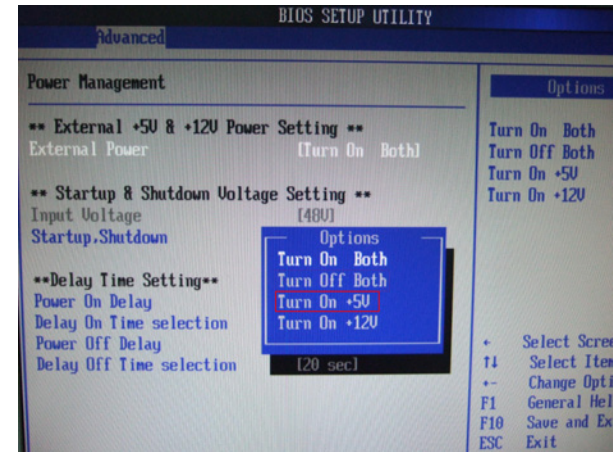## External Power Output Setting

External +12V and +5V Turn On Simultaneously
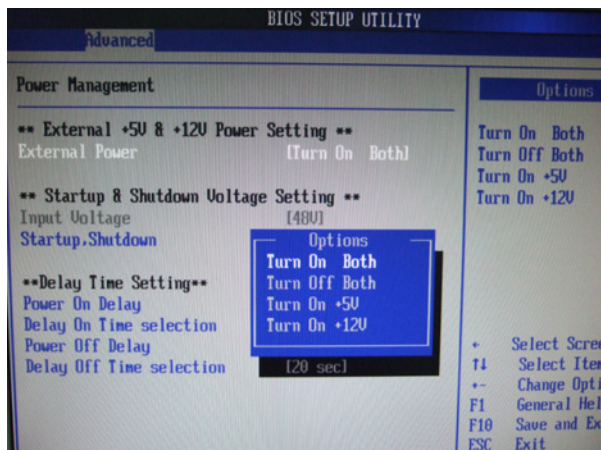
External +12V and +5V Turn Off Simultaneously
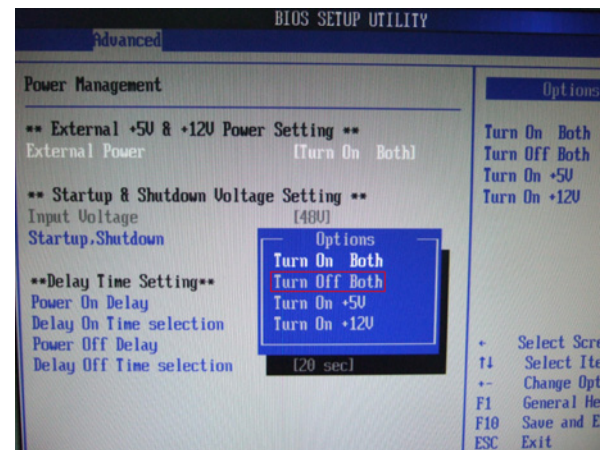
External +12V Turn On Only

External +5V Turn On Only
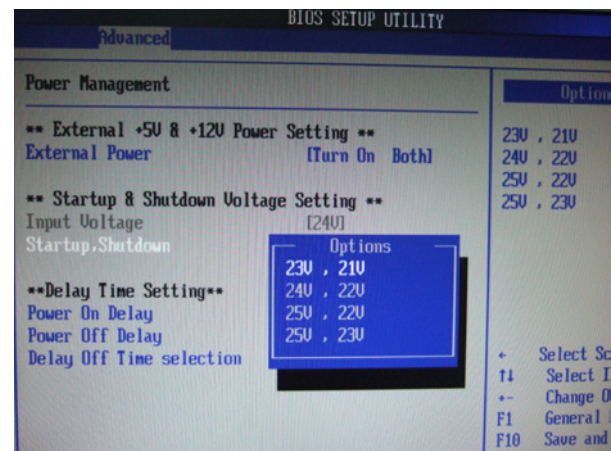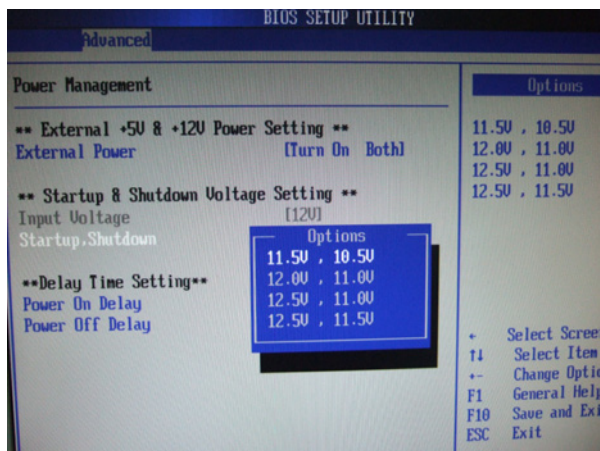
Startup and Shutdown Voltage Setting

1. If the input voltage setting is 12V: set the startup voltage to 11.5V and the shutdown voltage to 10.5V.

   If the input voltage setting is 12V: set the startup voltage to 12V and the shutdown voltage to 11V.

   If the input voltage setting is 12V: set the startup voltage to 12.5V and the shutdown voltage to 11.5V.

   If the input voltage setting is 12V: set the startup voltage to 12.5V and the shutdown voltage to 11V.

2. If the input voltage setting is 24V: set the startup voltage to 23V and the shutdown voltage to 21V.

   If the input voltage setting is 24V: set the startup voltage to 24V and the shutdown voltage to 22V.

   If the input voltage setting is 24V: set the startup voltage to 25V and the shutdown voltage to 22V.

   If the input voltage setting is 24V: set the startup voltage to 25V and the shutdown voltage to 23V.

3. If the input voltage setting is 48V: set the startup voltage to 46V and the shutdown voltage to 44V.

   If the input voltage setting is 48V: set the startup voltage to 48V and the shutdown voltage to 46V.

   If the input voltage setting is 48V: set the startup voltage to 50V and the shutdown voltage to 46V.
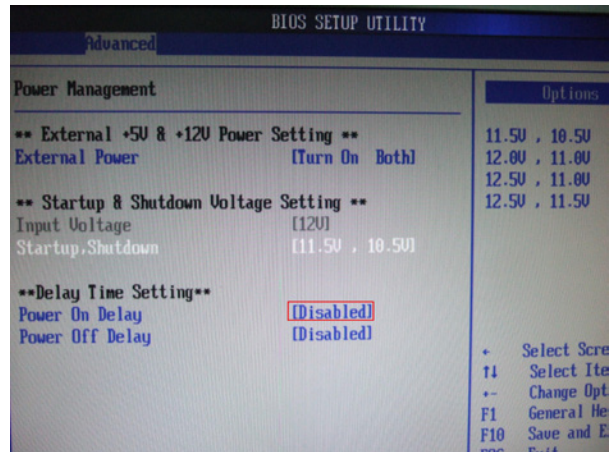
   If the input voltage setting is 48V: set the startup voltage to 50V and the shutdown voltage to 48V.

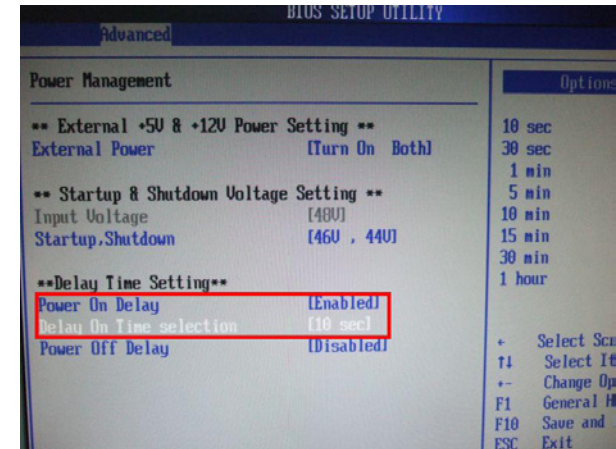

4. If the input voltage setting is 8V~60V ignore the startup/shutdown setting.
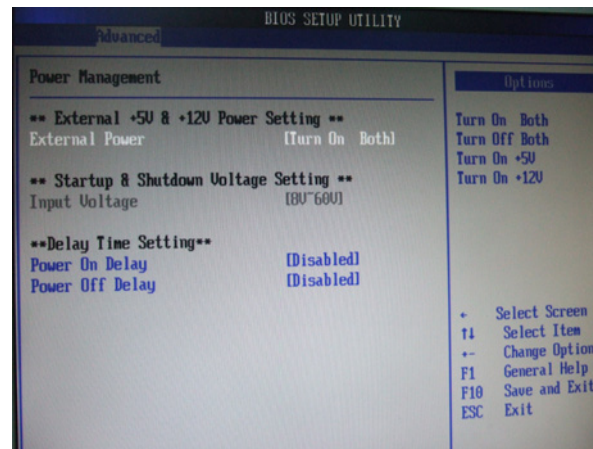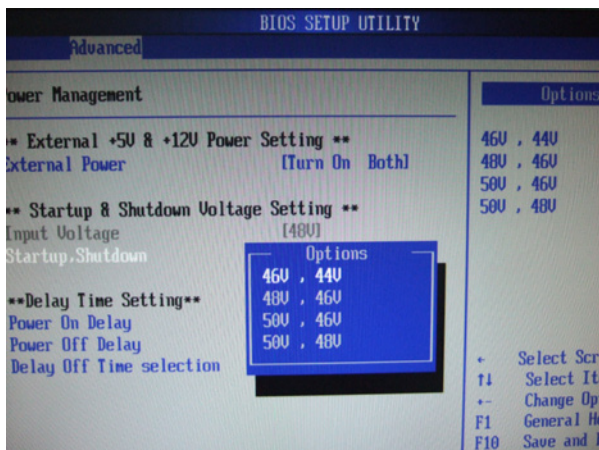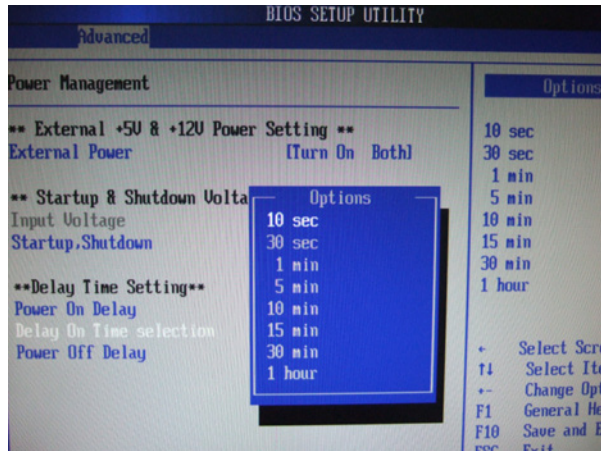
Power-on Delay Setting

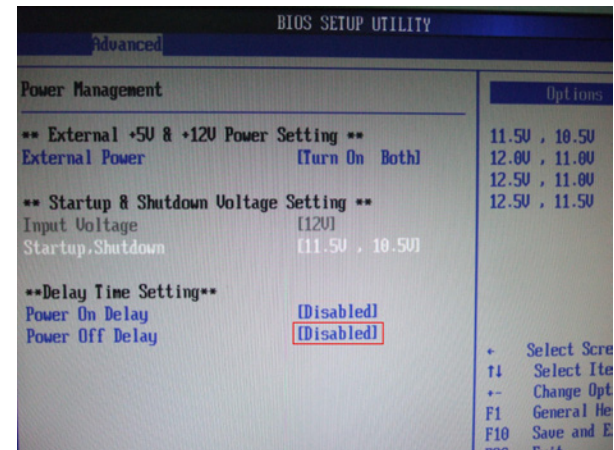**Disable Power-on Delay**

Enable Power-on Delay

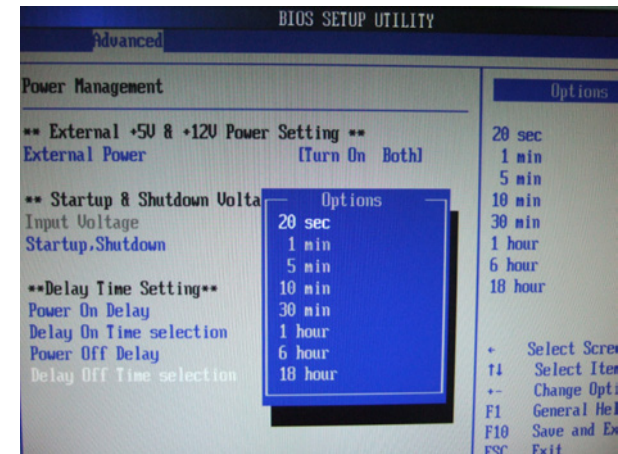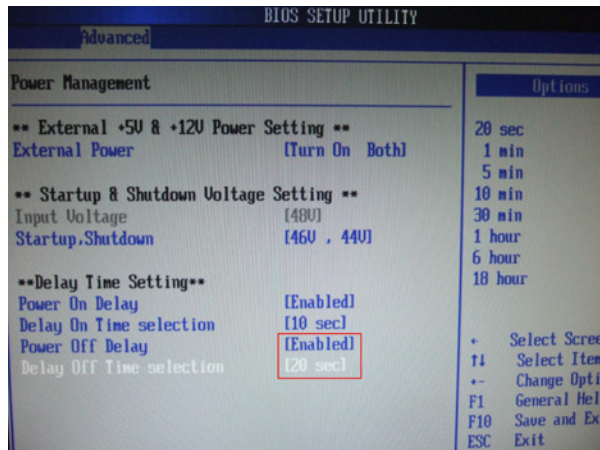Delay time can be set at 10sec/30sec/1min./5min./10min./15min./30min./ 1hour.

Power-off Delay Setting

Disable Power-off Delay

Enable Power-off Delay

Delay time can be set at 20sec/1min./5min./10min./30min./1hour/6hour/
18hour.

Appendix D: Power Consumption

OS: XP English
Burn-in Software: Version 5.0

Idle Mode	100% Burn-in Mode	S3	S4	S5
1.55A / 12V	1.81A / 12V	0.28A/12V	0.01A /12V	0.01A /12V

* Device: N/A

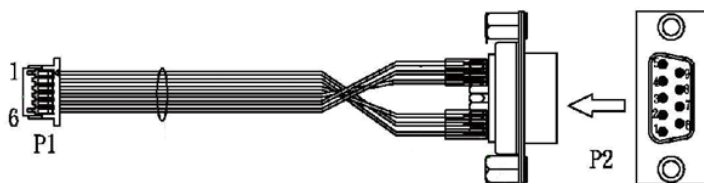# Appendix E: Pin Definition for GPS with Dead Reckoning Feature

Here are the connector and cable pin definition for VIOB-GPS-DR01.The refer order P/N is VTC1000-DK.

Connector on GPS module to Cable

A. Connector type: 1x6 6-pin header

B. Connector location: J1

C. GPS module to DB9 Cable (6P TO D-SUB-9M)

Connector pin definition of P1

Pin	Definition	Pin	Definition
1	GND	4	GPIO22
2	DIRECTION	5	1PPS
3	ODOMETER	6	GND

Connector pin definition of P2

Pin	Definition	Pin	Definition
1	1PPS	6	GND
2	GPIO22	7	NC
3	NC	8	NC
4	ODOMETER	9	GND
5	DIRECTION		