



**NEXCOM International Co., Ltd.**

**Mobile Computing Solutions**

**Vehicle Telematics Computer**

**VTC 6110**

User Manual

**NEXCOM International Co., Ltd.**

Published January 2010

[www.nexcom.com](http://www.nexcom.com)

# CONTENTS

## Preface

Copyright .....	iv
Disclaimer .....	iv
Acknowledgements .....	iv
Regulatory Compliance Statements .....	iv
Declaration of Conformity.....	iv
RoHS Compliance .....	v
Warranty and RMA .....	vi
Safety Information .....	vii
Installation Recommendations.....	vii
Safety Precautions.....	viii
Technical Support and Assistance.....	ix
Conventions Used in this Manual.....	ix
Global Service Contact Information.....	x
Package Contents.....	xii
Ordering Information.....	xiv

## Chapter 1: Product Introduction

Overview .....	1
Key Features .....	2
Hardware Specifications.....	2
COM Express CPU Module and Carrier Board.....	5
Physical Features.....	6
Front Panel .....	6
Rear Panel .....	8
Mechanical Dimensions.....	12

## Chapter 2: Jumpers And Connectors

Before You Begin .....	13
Precautions.....	13
Jumper .....	14
Locations of the Jumpers and Connectors.....	15
VTCB6110.....	15
Jumper Settings.....	16
SW5: Input Voltage Selection.....	16
SW6: COM Port Mode Selection.....	16
CF (IDE0) Primary Master/Slave Select (JP4).....	16
LVDS Power Input Voltage Select (JP9).....	16
CMOS Input Voltage Select (J6).....	16
BIOS Function Select (J1).....	16
DC Input Voltage Select (JP1).....	16
Temp Sensor (JP8).....	17
Auto Power Select (JP2).....	17
PCI-104 V/I/O Select Voltage (J13).....	17
MCU Download (JP6).....	17
GAL Download (JP5).....	17
MCU COM Port (JP3).....	17
Connectors.....	18
COM Express Row A and Row B.....	18
COM Express Row C and Row D.....	20
CompactFlash Connector.....	22
GPIO Connector .....	23
RS232 Connector: COM1, COM2.....	23

RS232/485 Connector: COM3 .....	24
GAL Programmer PIN Header .....	24
MCU Programmer Pin Header .....	25
VGA Connector .....	25
LVDS Connector + USB0 .....	26
LAN Connector .....	27
USB Connector USB 1 .....	27
USB Connector USB 2 .....	28
LVDS Power Connector .....	28
External 12V & 5V Power and SMBUS Connector .....	29
Mic-in .....	29
Line-out .....	30
PCI-104 V/I/O Voltage Setting .....	30
PCI-104 Connector .....	31
Power Button .....	31
Reset Button .....	31
MCU COM Port .....	32
ACC_ON LED .....	32
Temp Sensor .....	33
DC Power Input Connector .....	33
Power On and IDE Active LED .....	34
GPIO and UMTS LEDs .....	34
Serial ATA .....	35
Serial ATA Power Input .....	35
Mini-PCIe Socket (for 3.5G module) PCIe Interface .....	36
Mini-PCIe Socket (for WLAN module) USB + PCIe Interface .....	36
SIM Card Connector .....	37
Bluetooth Connector .....	37

### Chapter 3: System Setup

Removing the Chassis Cover .....	38
Installing a GPRS/UMTS/HSDPA Module .....	39
Installing a Wireless LAN Module .....	42

Installing a Bluetooth Module .....	45
Installing a CompactFlash Card .....	47
Installing the PCI-104 Module .....	49
Installing a SATA Hard Drive .....	51
Installing the SODIMM .....	55
Installing the USB Cable Holder .....	57
Rackmount Brackets .....	58

### Appendix A: I/O Address Function

I/O Address Function .....	59
----------------------------	----

### Appendix B: ICES200-L24 COM Express CPU Module

Overview .....	62
Key Features .....	62
Specifications .....	62
Mechanical Dimensions .....	65
PCI Routing .....	66
Connectors .....	67

### Appendix C: VTCB6110 Carrier Board

Specifications .....	72
Jumpers and Connectors .....	73
Jumper Settings .....	74
Connectors .....	76

### Appendix D: Vehicle Power Management Setup

Vehicle Power Management Setup .....	96
--------------------------------------	----

### Appendix E: Power Consumption

Power Consumption .....	103
-------------------------	-----

# PREFACE

## Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written consent from NEXCOM International Co., Ltd.

## Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: <http://www.nexcom.com>. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

## Acknowledgements

VTC 6110 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 B 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 B 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.

## e13 Mark

The “e” mark is the proof of compliance with directives (laws) required by the European Union. The Council of European communities in Brussels issues these directives and all members must accept approved products.

e13 - Luxembourg

For more information, visit [http://www.tuv.com/jp/en/\\_e\\_mark\\_and\\_e\\_mark\\_homologation\\_for\\_vehicles\\_vehicle\\_components\\_.html](http://www.tuv.com/jp/en/_e_mark_and_e_mark_homologation_for_vehicles_vehicle_components_.html).

## 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.

### 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.

# 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 NEXCOM's website at [www.nexcom.com](http://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.

# Global Service Contact Information

## Headquarters

### Taiwan

18F, No. 716, Chung-Cheng Rd. Chung-Ho City,  
Taipei County 235, Taiwan, R.O.C.  
Tel: +886-2-8228-0606  
Fax: +886-2-8228-0501  
<http://www.nexcom.com.tw>

### USA

3758 Spinnaker Court,  
Fremont, CA 94538, USA  
Tel: +1-510-656-2248  
Fax: +1-510-656-2158  
<http://www.nexcom.com>

### France

Z.I. des Amandiers, 17, Rue des entrepreneurs  
78420 Carrières sur Seine, France  
Tel: +33 (0)1 71 51 10 20  
Fax: +33 (0)1 71 51 10 21  
<http://www.nexcom.eu>

### Germany

Leopoldstrase Business Centre, Leopoldstrase 244 80807  
Munich, Germany  
Tel: +49-89-208039-278  
Fax: +49-89-208039-279  
<http://www.nexcom.eu>

### Italy

Via Gaudenzio Ferrari 29, 21047 Saronno (VA) Italia  
Tel: +39 02 9628 0333  
Fax: +39 02 9619 8846  
<http://www.nexcom.eu>

### United Kingdom

10 Vincent Avenue, Crownhill Business Centre  
Milton Keynes, Buckinghamshire, MK8 0AB  
United Kingdom  
Tel: +44-1908-267121  
Fax: +44-1908-262042  
<http://www.nexcom.eu>

### **China-Beijing**

Room 301, Block E, Power Creative Building, No. 1  
Shangdi East Rd. Haidian Dist., Beijing, 100085, China  
Tel: +86-10-5885-6655  
Fax: +86-10-5885-1066  
<http://www.nexcom.cn>

### **China-Shanghai Office**

Room 1505, Greenland He Chuang Building, No. 450  
Caoyang Rd. Shanghai, 200063, China  
Tel: +86-21-6150-8008  
Fax: +86-21-3251-6358  
<http://www.nexcom.cn>

### **China-Nanjing Office**

Room 1206, Hongde Building, No. 20 Yunnan Rd.  
Nanjing, 210018, China  
Tel: +86-25-8324-9606  
Fax: +86-25-8324-9685  
<http://www.nexcom.cn>

### **China-Shenzhen Office**

Western Room 708, Block 210, Tairan Industry & Trading Place,  
Futian Area, Shenzhen, China 518040  
TEL: +86-755-833 27203  
FAX: +86-755-833 27213  
<http://www.nexcom.cn>

### **Japan**

10F, Nakagin-Shiroyama Building, 8-16-13.  
Ginza Chuou-ku, Tokyo 104-0061, Japan  
Tel: +81-3-3524-4250  
Fax: +81-3-3524-4252  
<http://www.nexcom-jp.com>

# PACKAGE CONTENTS

Before continuing, verify that the VTC 6110 package that you received is complete. Your VTC 6110 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	13x12.5 AXISx 8.5mm SCREWx 4mm	4
4	60233PW134X00	(N)POWER CABLE FOR VTK33B SMBUS SIGNAL		1
5	60233ATA10X00	SATA CABLE	L: 70mm	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	3
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

Item	P/N	Name	Specification	Qty
11	5043330247X00	HDD BRACKET	129.5x97x 1mm	1
12	5043330246X00	HDD BRACKET FOR CUSHION LEFT	123.3x44.5x 14.7mm	1
13	5043330245X00	HDD BRACKET FOR CUSHION RIGHT	128.5x17x 1mm	1
14	50344C0067X00	COPPER POST LONG	WITH MALE/FEMALE (FEMALE)16mmx(MALE)5mmxM3	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	602DCD0256X00	CD driver		1

# ORDERING INFORMATION

The following provides ordering information for VTC 6110.

- **VTC 6110 (P/N: 10V00611000X0)**
  - with Intel Core™ Duo L2400, 1GB DDR2 memory, GPS module and GPS antenna

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



Front View



Rear View

The VTC6110 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.

VTC6110 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 VTC6110 ready for wider coverage and future trend. Multiple display connections make VTC6110 an ideal choice for in-vehicle signage platforms as well.

## Key Features

- Built-in Intel® Core™ Duo LV processor
- Fanless design with ruggedized aluminum chassis
- 2 Mini PCI Express and 1 PCI-104 expansions
- Wide range DC input from 6V to 36V
- Power ignition on/off delay controlled by software
- Low battery power protection setting by software
- External smart battery back-up support
- S3 & S4 suspend mode support
- Availability of GPS, GPRS/UMTS/HSDPA
- Multiple display connections thru VGA, DVI-D and LVDS
- Optional IP65 enclosure
- e13 Mark certification

## Hardware Specifications

### COM Express CPU Module (ICES200-L24)

- Intel® Core™ Duo L2400
- VGA/PCI/PCIe/LVDS/Audio/COM/LPT/USB2.0/LAN interface

### Memory

- Supports DDR2 533/667 non-ECC, non-registered SDRAM
- One 200-pin SO-DIMM supports up to 2GB memory

### Chipset

- Intel 945GME / ICH7M

### Expansion

- 2 Mini PCI Express slots
  - 1 x (PCIe + USB) for WLAN card
  - 1 x PCIe for HSDPA module or GPRS module
- 1 PCI-104 slot
- 1 Bluetooth module (optional)

### I/O Interfaces - Front

- Logo plate
- 1 x Power button (w/ LED)
- 1 x Reset button
- 1 x SIM card socket
- 1 x USB 2.0
- 1 x Power LED
- 1 x HDD LED
- 1 x GPIO LED - programmable for alarm or other application specific purposes
- 1x LED for COMM (WLAN/HSDPA) status
- Antenna mounting holes for 4x SMA-type (WLAN, HSDPA and Bluetooth)
- 1 x Line-out
- 1 x Mic-in

### I/O Interfaces - Rear

- COM ports
  - 1 x DB9 COM1 RS232
  - 1 x DB9 COM2 RS232
  - 1 x DB9 COM3 RS232/485 w/ auto flow control
- 1 x DB26 LVDS (w/ +12V for backlight power and USB2.0)
- 1 x DB15 VGA
- 1 x DVI-D
- 2 x USB
- 1 x Realtek 10/100/1000 Ethernet
- 2 x Mic-in and 2 Line-out (ALC888-VC2-GR HD Codec, AC'97 Compatible)



- 6V (15A) to 36V (5A) thru DC 3-pin power input connector (ignition, power input and ground)
- 1 x DB9 Female for digital I/O with 4-input and 4-output
- +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)

### Expandable Storage

- 1 x 2.5" SATA HDD drive bay
- 1 Type II CompactFlash socket (IDE)-

### Construction

- Aluminum enclosure with fanless design

### Protection Class

- IP65 compliant (w/ optional IP65 kit)

### Certifications

- CE, FCC Class B, e13 Mark, EN50155

### Dimensions

- 260mm(W) x 176mm(D) x 50mm(H) (10.24" x 7" x 1.97")

### Environment

#### W/O Vibration Kit

- Operating Temperatures:  
Ambient with air: -30°C to 50°C (CF/SSD); -30°C to 50°C (HDD)
- Storage temperature: -40°C to 80°C
- Relative humidity: 10% to 90% (Non-condensing)
- Vibration (random): 2g @ 5~500 Hz with CF/SSD; 1g @ 5~500 Hz with Automotive HDD (in operation)
- Vibration  
Operating: MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle – Highway Truck  
C-17, 0.04 g2/Hz at 20-1000 Hz, -6 dB/Octave at 1000-2000 Hz  
Tested MIL-STD-810F method 514.5  
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=20g  
Crash Hazard: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment = 75g

### OS Support

- Vista, XP, XPe, Linux 2.6

## 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 6110 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 6110 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 6110 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 6110 will shut down completely will power-on again automatically.
- If the ignition is turned off again and power-on delay is in progress, VTC 6110 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 6110 will continue to operate normally.
- If the ignition is turned off again and the power-on delay ended (in BIOS process), VTC 6110 will shut down immediately.
- If VTC 6110 is off, only below 10mA is used.

## COM Express CPU Module and Carrier Board

The VTC 6110 system uses the ICES200-L24 COM Express CPU module and the VTCB6110 carrier board.

### ICES200-L24 COM Express CPU Module

ICES200-L24 is a COM Express CPU module that uses the Intel® 945GME chipset and supports Intel® Core™ Duo L2400.

The module also supports one unbuffered non-ECC 533/667 DDR2 SO-DIMM with maximum memory size up to 2GB. The Intel® 945GME chipset supports the following interfaces: PCI, PCIe, SATA, VGA, LVDS, LAN, Serial, USB, etc.

The ICES200-L24 module is based on the COM Express basic form factor Type 2 standard, x2 connections between the COM Express CPU module and the I/O carrier board.

The ICES200-L24 CPU module can easily integrate into most of the limited-space devices such as industrial automation, data acquisition and equipment computers.

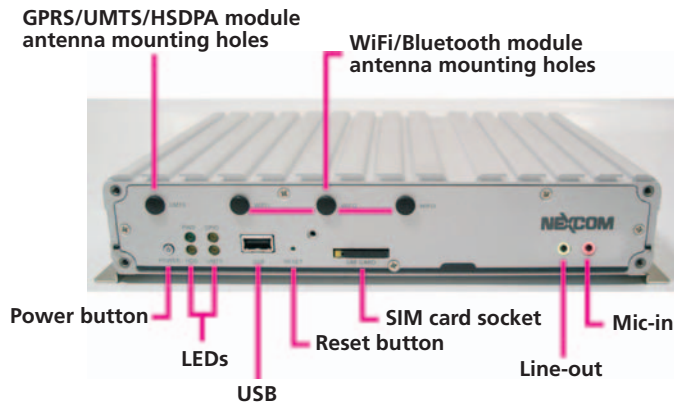
### VTCB6110 Carrier Board

Key features:

- Quick customizable COM Express architecture platform
- Wide varieties of built-in communication and I/O ports specially designed for Transport Application
- Customizable delay time for power-on and power-off
- Three external serial port interfaces with two RS232 and one RS232/485
- Supports 10/100/1000 LAN, VGA Console, LVDS and GPIO
- 3 x USB 2.0 ports
- Supports PCI-104 expansion

## Physical Features

### Front Panel



### Power Button

There are 4 types of power on/off mode. Use JP1 and JP2 to select a mode. (refer to the Internal Jumpers and Connectors section for details).

#### Vehicle PC Mode

1. Mode A (default setting). When the ignition is from “low” to “high”, VTC 6110 will turn on automatically. When the ignition is “high”, press the power button to turn on/off VTC 6110.

When the ignition is from “high” to “low”, VTC 6110 will turn off automatically. When the ignition is “low”, pressing the power button will not turn on VTC 6110.

2. Mode B. When the ignition is from “low” to “high”, you can turn on VTC 6110 only by pressing the power button. When the ignition is “high”, you can press the power button to turn on/off VTC 6110.

If the ignition is from “high” to “low”, VTC 6110 will turn off automatically. When the ignition is “low”, pressing the power button will not turn on VTC 6110.

#### Normal PC Mode

3. Mode C. When there is power input, you can turn on VTC 6110 only by pressing the power button. Ignition signal will not power on/off VTC 6110.
4. Mode D. When there is power input, VTC 6110 will turn on automatically. Ignition signal will not power on/off VTC 6110.

### Startup and Shutdown Mode (Refer to SW5 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 SW5 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 SW5 to select this voltage. Use the BIOS to select the start up and shut down voltages.
3. Mode C. The working input power voltage is 6V~36V. Start up and shut down voltages settings are disabled. When using external battery kit (VTK33B), mode C setting is required.