



**NEXCOM International**

# **VTC 3300, ICEB 3300, ICES 101, NAK 3300**

## **User Manual**

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# PREFACE

Thank you for purchasing NEXCOM's application ready ETX modular solutions that are comprised of a choice of two ETX embedded computing modules, two chassis configurations that include custom carrier board, as well as chassis expansion capability when more room is needed.

NEXCOM's high performance, robust and fanless VTC 3300 has an ICES 101 ETX module with an Intel® Celeron® M, Pentium M low power processor and Intel® 852GM chipset. Encased in a self contained and extremely robust cast aluminum chassis, the VTC Series offer flexible I/O expansion (customization support available), few moving parts and a smart design that makes mounting, maintenance and upgrades faster and more efficient. The chassis protects all components well and is extremely vibration resistant.

The four ETX connectors on the ETX module provides various signals to your carrier board that can be designed for different applications. Support includes ISA, PCI, IDE, LPT, VGA, LVDS, serial, USB interfaces and others. ICES 101 provides cost effective versatile functionality and high performance using Intel processors, and is an ideal ETX module for high-end embedded applications.

With integrated graphics and audio support, plus a generous amount of I/O flexibility, these low-power VTC Series target industrial automation applications such as logistics, field controllers, data acquisition, equipment PC, access control and other industrial automation applications such as embedded system applications for machine automation, and industrial plant and cabinet integration.

## Copyright Notice

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## Acknowledgements

VTC 3300 is a trademark of NEXCOM International Co., Ltd.

Intel and Pentium are trademarks of Intel Corporation. Microsoft Windows® is a registered trademark of Microsoft Corporation. All other product names or trademarks are properties of their respective owners.

## Declaration of Conformity

### CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. Please contact your local supplier for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

### FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### 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.

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 compli-

ant. They will use the usual NEXCOM naming convention. For example, PEAK 870VL2, NBP14570, EBC 420 etc.

All RoHS compliant model and component manufacturing part numbers will be suffixed "XO". For Example: 73AI064M03X0 CF CARD INDUS-TRY, 64MB, T: 0-70°C, PQI:AC47-0640-0442, PBFREE71A5500301X0 CPU+NB, AMD LX800, 500MHz/128K ,BGU481, AMD:ALXC800EETJ2VD 1E00042001X0 EBC420-LX8.

## 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.

## Handling Precautions

- Always disconnect the unit from the power outlet whenever you are installing or fixing a component inside the chassis.
- If possible, always wear a grounded wrist strap when you are installing or fixing a component inside the chassis. 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. Do not flex or stress the circuit board.
- Use the correct screws and do not overly tighten them.
- Keep the original packaging and static-protective bag in case the unit has to be returned.

# 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 24 months 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, cables, etc.) and any unnecessary components from the card, such as CPU and DRAM. If the components were suspected as part of the problems, please note clearly that which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible to for the safe packaging of defective products are durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during the 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 is not able to be repaired. Ex: motherboard, power supply, etc.
- Replaced with 3rd party products if needed.
- If RMA goods cannot be repaired, NEXCOM will return it to 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 customer without any charge.



## Global Service Contact Information

### Headquarters

NEXCOM International Co, Ltd.  
18F, No. 716, Chung-Cheng Road  
Chung-Ho City, Taipei County, 235  
Taiwan, R.O.C.  
Tel: 886-2-8228-0606  
Fax: 886-2-8228-0501  
Email: sales@nexcom.com.tw  
Web: www.nexcom.com.tw

### USA

NEXCOM USA  
3758 Spinnaker Court  
Fremont, CA 94538 USA  
Tel: 1-510-656-2248  
Fax: 1-510-656-2158  
Email: sales@nexcom.com  
Web: www.nexcom.com

### France

NEXCOM 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  
Web: www.nexcom.com

### Germany

NEXCOM UK  
10 Vincent Avenue,  
Crownhill Business Centre  
Milton Keynes, Buckinghamshire  
MK8 0AB, United Kingdom  
Tel: 44-1908-267121  
Fax: 44-1908-262042  
Email: sales@nexcomuk.co.uk  
Web: www.nexcomuk.co.uk

### United Kingdom

NEXCOM UK  
10 Vincent Avenue, Crownhill  
Milton Keynes, Buckinghamshire  
MK8 0AB, United Kingdom  
Tel: 44-1908-267121  
Fax: 44-1908-262042  
Email: sales@nexcomuk.co.uk  
Web: www.nexcomuk.co.uk

### Japan

NEXCOM 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  
Email: sales@nexcom-jp.com  
Web: www.nexcom-jp.com



## China

NEXCOM China  
Room 301, Block E  
Power Creative Building  
No. 1 Shangdi East Rd.  
Haidian District  
Beijing, 100085, China  
Tel: 86-10-5885-6655  
Fax: 86-10-5885-1066  
Email: [sales@nexcom.cn](mailto:sales@nexcom.cn)  
Web: [www.nexcom.cn](http://www.nexcom.cn)



# CHAPTER 1: PRODUCT INTRODUCTION

## VTC 3300 Fanless System

The VTC 3300 fanless system provides an out-of-the-box solution that can be quickly and easily deployed to transportation projects. With rugged design structure, the VTC fanless system is design to withstand dramatic vibration and varying ranges of temperature. It has multiple built-in communication and I/O ports for the transport environment. VTC 3300 also has space reserved for GSM/GPRS or GPS module.

The VTC 3300 series is designed to operated in automobile, train, and marine environment with reserved space for integrating optional GPS/GSM/GPRS module for data communications. VTC 3300 has a built-in power ignition control through a hardware setting. VTC 3300 has also passed e-Mark Certification in Europe.

## ICES 101 ETX CPU Board

The ICES 101 is an ETX CPU module with Intel® 852GM chipset supports Intel® Celeron® M or Pentium® M processor with 400 MHz FSB and one unbuffered non-ECC SODIMM 200/266 up to 1 GB. The Intel® 852GM chipset supports ISA, PCI, IDE, LPT, VGA, LVDS, LAN, Serial, USB interfaces and more.

ICES 101 follows the ETX standard x 1, x 2, x 3, x 4 connections between the ETX CPU module and I/O carried board, thus it is compatible with the carried boards from other brands like Kontron and Advantech. The ICES 101-C65 ETX CPU Module can easily integrated into most of the limited

space projects, such as industrial automation, data acquisition and equipment computers.

The ICES 101 supports three types of CPUs – C65, 373, and SKT.

## ICEB 3300 Carrier Board

Key features of ICEB 3300 include:

- Quick customizable ETX/SOM architecture platform
- Wide varieties of built-in communication and I/O ports specially designed for Transport Application
- Reserved NVRAM socket for the optional 512 KB NVRAM
- Customizable delay time for power-on and power-off
- Four external serial port interfaces with 2 x RS232 and 2 x RS422/485
- Supports 10/100 LAN,VGA Console, LVDS, GPIO
- 4 x USB 2.0 ports
- Supports PC/104 Plus expansion

## Physical Features

## VTC 3300 Package Contents

Before continuing, verify that the VTC 3300 package that you received is complete. Your VTC 3300 package should have all the items listed in the

following table.

Qty	Item	Part Number
1	CD with driver and user manual	
1	IDE cable	60233IDE54X00
1	3-pin power terminal block	4NCPM00302X00
1	10-pin RS422/485 terminal block	4NCPF01002X00
4	I-head bolts screw for HDD installation	50311F0090X000

If any of these items are missing or damaged, contact your local NEXCOM distributor or sales representative immediately. Your NEXCOM products should be free of defects and in perfect working order upon receipt.

While unpacking, check for signs of shipping damage (for example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify the NEXCOM service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier.

After inspection, NEXCOM will make arrangements for repair or replacement.

## VTC 3300 Hardware Specifications

The following are the hardware specifications of VTC 3300.

### Main Board

- ICES 101 ETX Module
- Supports ETX Module with Intel® Pentium® M/ Celeron® M processor, VGA/ISA/PCI/IDE/LVDS/Audio/COM/LPT/USB2.0/LAN interface

### Main Memory

- 1 x 200-pin SO-DIMM socket for up to 1GB Non-ECC Non-Registered DDR
- SDRAM memory

### I/O Interface on Front Panel

- Power / HDD Status LEDs
- 1 LED, connect to GPIO, programmable for alarm or other application specific purposes
- 1 LED for GSM status
- 1 x PCMCIA
- 1 x External access CompactFlash socket (2nd CompactFlash)
- 1 x USB 2.0
- 1 x System Reset button
- 1 x System Power-on Switch
- Line-Out and Mic-In with 1 x RJ-11 to headset
- 1 x GSM SIM-Card socket
- 1 x Reset button for integrated GSM/GPRS and GPS Module
- Antenna Mounting Holes for 3x SMA-type (WLAN and GPS and GSM)

## I/O Interface on Rear Panel

- 4x COM ports:
    - 2 x DB9 for COM3 and COM4 (Support RS-232).
    - 1 x screw terminal for COM5 and COM6 (Support RS-422/485)
- Note: Before using COM3/4, please install the PCI954 driver. This driver is available on the Driver CD-ROM.*
- 1 x screw terminal for COM5 and COM6 (Support RS-422/485)
  - 1 x RJ45 with LED for 10/100M bps Ethernet
  - 2 x USB 2.0 ports
  - 1 x DB15 VGA
  - 1 x DB26 for LVDS, 1x USB 2.0 and 12V DC output
  - 1 x DB9 Female for digital I/O with 4-input and 4-output
  - Audio interface with Line-in, Line-out, and Mic-in
  - +6 to +36V DC 3-pin power input connector with power input, ignition and ground

*Note: VTC 3300 has integrated an overvoltage circuit protection design to protect the system from excess current.*

- +5 VDC and +12VDC power output

## Storage Device

- 1 x External CompactFlash socket
- 1 x Internal CompactFlash socket
- 1 x Internal 1.8"/2.5" HDD drive bay
- 1 x NVRAM socket

## Expansion

- 1 x External PCMCIA socket
- 1 x PC/104+, with PC/104 x1 (ISA) and PCI 104 x1 (PCI)
- 1 x Mini-PCI socket

## Dimension

- 260 mm (W) x 176 mm (D) x 70 mm (H)

## Construction

- Aluminum chassis with fan-less design

## Environment

- Operating temperature: Ambient with air flow : -10°C to 50°C (with CF)  
T-case (Surface Temperature of Chassis): -10 °C ~ 55 °C (CF)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 90% (Non-condensing)
- Vibration:
  - Operating: MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle –Highway Truck (within Anti-vibration bracket)
  - Storage: MIL-STD-810F, Method 514.5, Category 24, Integrity Test (within Antivibration bracket)

▪ Shock:

- Operating: MIL-STD-810F, Method 516.5, Procedure I, Trucks and semitrailers=20g (within Anti-vibration bracket)
- Crash Hazard: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment= 75g (within anti-vibration bracket)

### Certifications

- CE approval
- FCC
- e13 Mark

### PCI Device Interrupt and IDSEL

Chipset	PCI INT#	REQ# /GNT#	IDSEL
Mini PCI	ABCD	REQ0,GNT0	AD19
PC-104+	BCDA	REQ1,GNT1	AD20
PCMCIA	CDAB	REQ2,GNT2	AD21
MPCI954	DABC	REQ3,GNT3	AD22

## Ordering Information

NEXCOM provides two ordering options for VTC 3300 VTC 3300 (bare-bone) and VTC 3300 + NAK. Refer to the tables below for the appropriate ordering information.

### VTC 3300 Standard Ordering Information

Vehicle Fanless PC Barebone VTC 3300-SKT (P/N:10V00330000X0 )	<ul style="list-style-type: none"> <li>▪ Intel® Pentium® M/ Celeron® M processor vehicle fanless PC</li> <li>▪ Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>▪ Independent dual display for CRT and LVDS output</li> <li>▪ Build-in Power Ignition control</li> <li>▪ Type I/II PC Card (PCMCIA)</li> <li>▪ Wide Range DC input from +6V to +36V</li> </ul>
Vehicle Fanless PC w/ 600MHZ CPU VTC 3300-C65 (P/N:10V00330001X0 )	<ul style="list-style-type: none"> <li>▪ Celeron M 600MHZ w/512KB L2 fanless system</li> <li>▪ Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>▪ Independent dual display for CRT and LVDS output</li> <li>▪ Build-in Power Ignition control</li> <li>▪ Type I/II PC Card (PCMCIA)</li> <li>▪ Wide Range DC input from +6V to +36V</li> </ul>
Vehicle Fanless PC w/ 1GHZ CPU VTC 3300-373 (P/N:10V00330002X0 )	<ul style="list-style-type: none"> <li>▪ Celeron M 1GHZ w/512KB L2 fanless system</li> <li>▪ Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>▪ Independent dual display for CRT and LVDS output</li> <li>▪ Build-in Power Ignition control</li> <li>▪ Type I/II PC Card (PCMCIA)</li> <li>▪ Wide Range DC input from +6V to +36V</li> </ul>

## VTC 3300 with NAK 3300 Ordering Information

Vehicle Fanless PC Barebone w/ NAK3300 VTC 3300-SKT-NAK (P/N: 10V00330003X0)	<ul style="list-style-type: none"> <li>Intel® Pentium® M/ Celeron® M processor fanless Bare-Bone System w/ Integrated NAK3300</li> <li>NAK3300 (Siemens MC55 GSM/GPRS tri-band module and U-blox LEA-4S GPS module)</li> <li>Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>Independent dual display for CRT and LVDS output</li> <li>1x SO-DIMM socket for up to 1GB</li> <li>Type I/II PC Card (PCMCIA)</li> <li>Wide Range DC input from +6V to +36V</li> </ul>
Vehicle Fanless PC w/ 600MHZ CPU w/ NAK3300 VTC 3300-C65-NAK (P/N: 10V00330004X0 )	<ul style="list-style-type: none"> <li>Celeron M 600MHZ w/512KB L2 fanless system w/ Integrated NAK3300</li> <li>NAK3300(Siemens MC55 GSM/GPRS tri-band module and U-blox LEA-4S GPS module)</li> <li>Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>Independent dual display for CRT and LVDS output</li> <li>Build-in Power Ignition control</li> <li>Type I/II PC Card (PCMCIA)</li> <li>Wide Range DC input from +6V to +36V</li> </ul>

Vehicle Fanless PC w/ 1GHZ CPU w/ NAK3300 VTC 3300-373-NAK (P/N: 10V00330005X0)	<ul style="list-style-type: none"> <li>Celeron M 1GHZ w/512KB L2 fanless system w/ Integrated NAK3300</li> <li>NAK3300(Siemens MC55 GSM/GPRS tri-band module and U-blox LEA-4S GPS module)</li> <li>Two RS232 and Two RS422/485 (Automatic Flow Control and Isolation)</li> <li>Independent dual display for CRT and LVDS output</li> <li>Build-in Power Ignition control</li> <li>Type I/II PC Card (PCMCIA)</li> <li>Wide Range DC input from +6V to +36V</li> </ul>
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## ICES Series Ordering Information

Celeron M Base ICES 101-C65 (P/N: 10K00010102X0)	ETX Module with onboard Intel® Celeron® M 600 MHz 512KB L2 Cache processor, VGA/ISA/PCI/IDE/LVDS/Audio/COM/LPT/USB2.0/LAN Interface
Celeron M Base ICES 101-373 (P/N: 10K00010101X0)	ETX Module with onboard Intel® Celeron® M 1GHz 512KB L2 Cache processor, VGA/ISA/PCI/IDE/LVDS/Audio/COM/LPT/USB2.0/LAN Interface
Celeron M/ Pentium M Base ICES 101-SKT (P/N: 10K00010103X0)	ETX Module supporting socket Intel® Celeron® M / Pentium® M processor, VGA/ISA/PCI/IDE/LVDS/Audio/COM/LPT/USB2.0/LAN Interface

## Optional Accessories Ordering Information

Wireless MiniPCI Card (P/N:7510LAN001X00)	Wireless MiniPCI card,802.11 a/b/g AboCom: WCM6002 w/antenna& cable WCM6002
GPS antenna (P/N:60233SAM05X00)	GPS antenna/5m/SMA180P, STR-3
GSM/GPRS Antenna (P/N:60233SAM07X00)	GSM/GPRS antenna/SMA, supports 850/900/1800/1900
Adapter (P/N:7400120002X00)	VTC3300/3330 POWER ADAPTER FSP:120- AAB(N09001),120W 19V/6.3A
Adapter w/ US type power cord (P/N:7400120003X00)	VTC3300/3330 POWER ADAPTER w/ US type power cord FSP:120-AABC(N09002),120W 19V/6.3A
Adapter w/ Schuko type power cord (P/N:7400120004X00)	VTC3300/3330 POWER ADAPTER w/ Schuko- type power cord FSP:120-AAB(N09003),120W 19V/6.3A
Adapter w/ UK type power cord (P/N:7400120005X00)	VTC3300/3330 POWER ADAPTER w/ UK type power cord FSP:120-AAB(N09004),120W 19V/6.3A
GSM/GPRS/GPS Function Board (P/ N:1Z00330000X0)	NAK 3300, Siemens MC55 GSM/GPRS tri- band module and U-blox LEA-4S GPS module with Front Panel
Vibration/Fan Kit (P/N: 79V0332001X00)	Vibration/Fan Kit



# CHAPTER 2: VTC 3300 HARDWARE FUNCTIONALITY

## System Layout

Front Panel



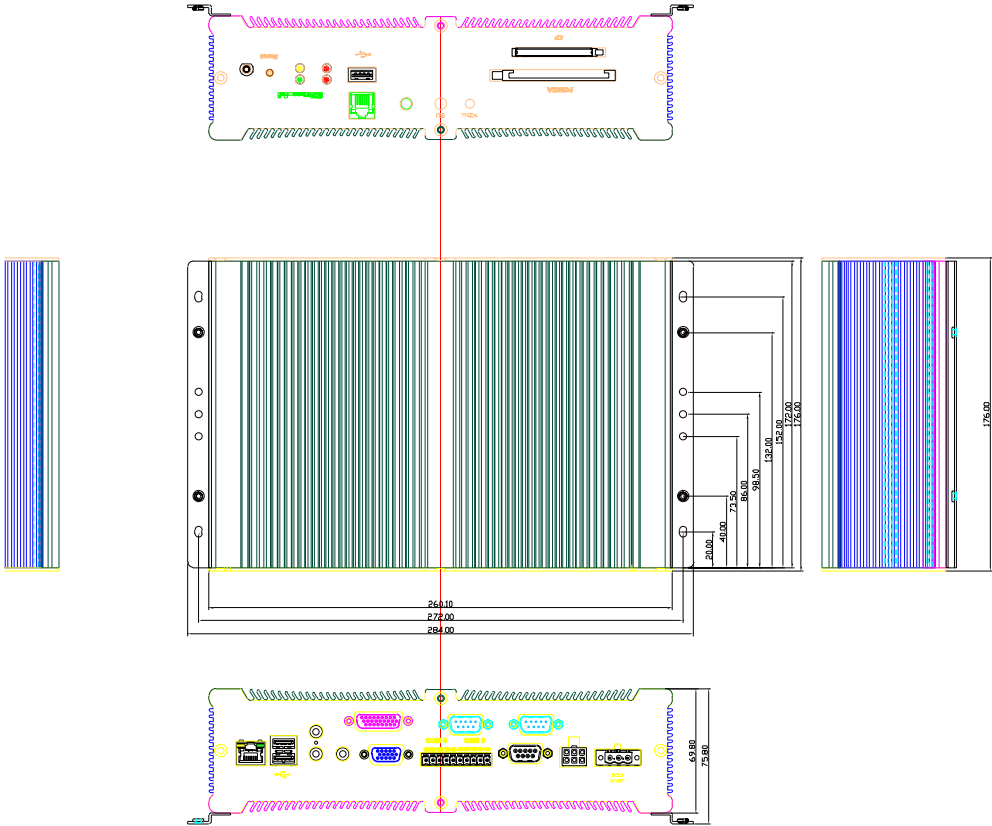
Front Panel (with NAK 3300)



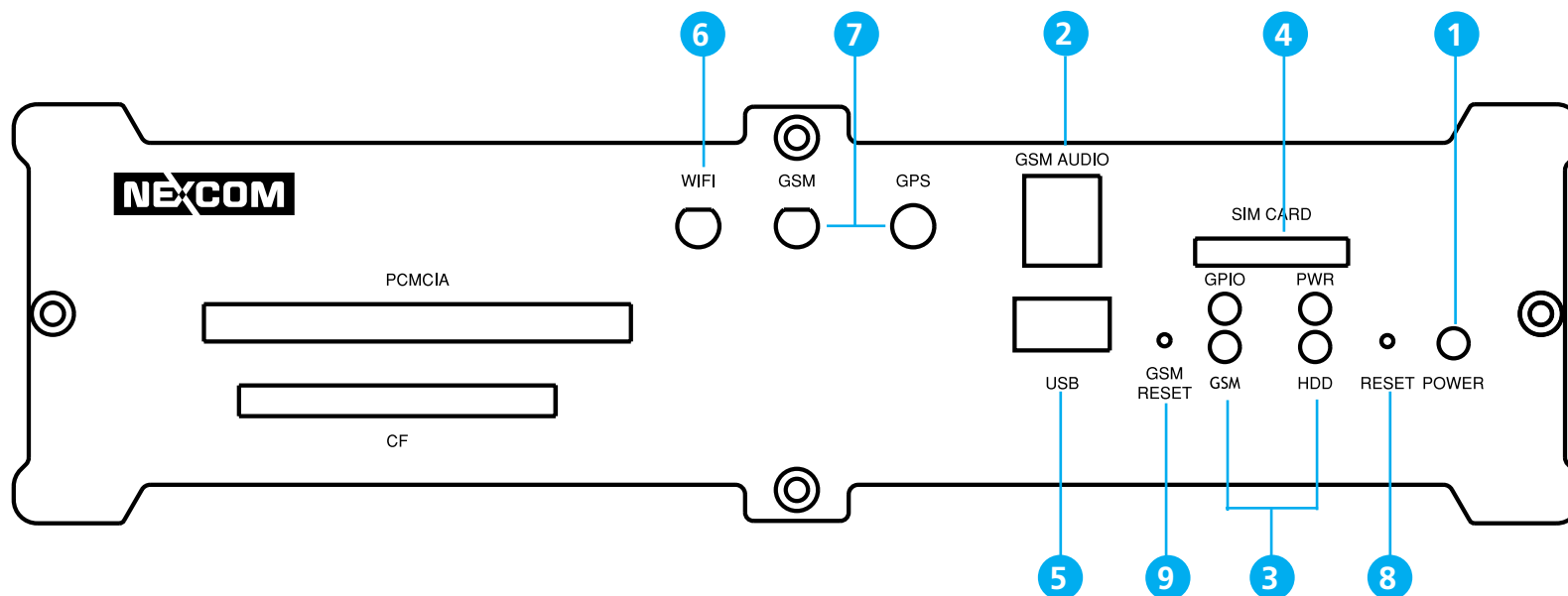
### *Rear Panel*



# System Dimension



## Front Panel External Connectors



## (1) Power Button

### (Vehicle PC Mode)

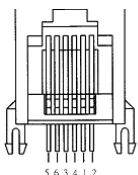
If Pin 1 and Pin 2 are shorted (default) on JP12, ignition signal is needed to turn VTC 3300 on or off. VTC 3300 cannot be turned on by power button.

User can turn the system on or off regardless whether the delay timer is enabled and configured. If the delay timer is on and the power button is pressed, VTC 3300 will turn on immediately, even if the delay timer is still counting down. If the delay timer is off and the power button is pressed, VTC 3300 will turn off immediately, even if the delay timer is still counting down.

### (Normal PC Mode)

If Pin 2 and Pin 3 are shorted on JP12, user can turn the system on or off regardless whether the ignition signal is on or off.

## (2) GSM Audio

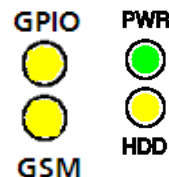


Pin 1	MIC-P
Pin 2	MIC-N
Pin 3	NC

Pin 4	NC
Pin 5	Audio-P
Pin 6	Audio-N

The GSM audio connector is of RJ11 type. Pin 1 and Pin 2 are connected to Mic-In, while Pin 5 and Pin 6 are connected to Line-Out.

## (3) LED



GPIO	Reserved for GPO - I/O PORT Address : EEH DATA1 : 0(LIGHT) 1(DART)
GSM	GSM STATUS

## (4) SIM Card Bracket

VTC 3300 can be integrated a GPS/GSM/GPRS function board internally. The SIM card bracket is on the function board. When using GSM/GPRS function, SIM card must be placed into the SIM card holder. VTC 3300 must be turned off, before inserting SIM card.

## **(5) USB Port**

This USB port complies with USB 2.0 specifications.

## **(6) WiFi Module Antenna Hole**

If WLAN module (Mini PCI type) is installed, an external hole on front panel for WiFi antenna is available.

## **(7) GSM/GPS Module Antenna Holes**

If NAK 3300 function board is integrated, there are two antenna holes on front panel for the GSM and GPS modules.

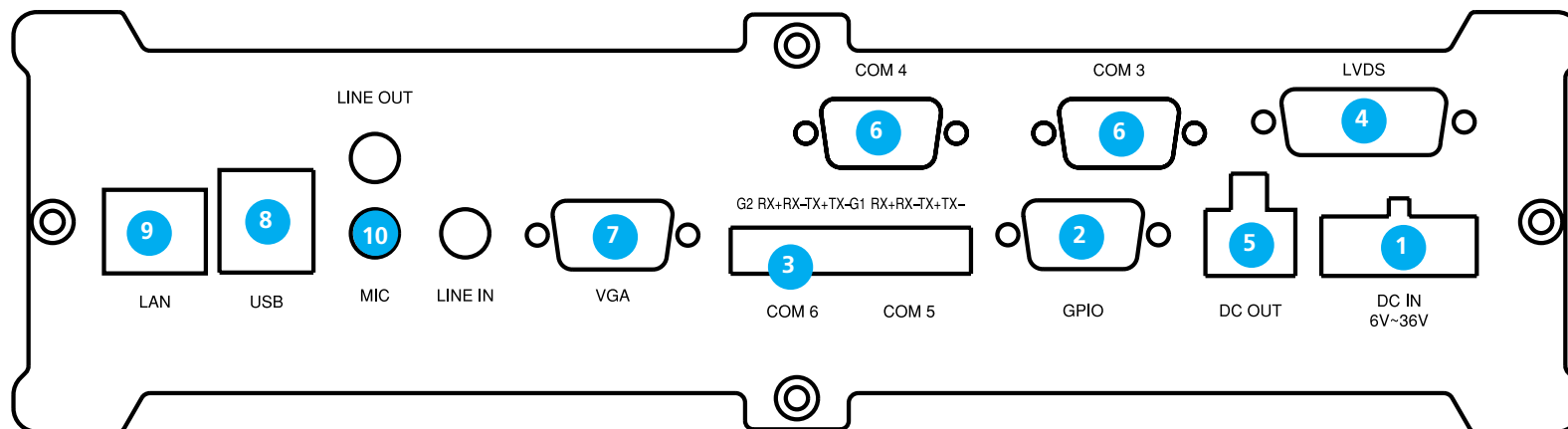
## **(8) System Reset Button**

Press this button to restart VTC 3300.

## **(9) GSM Reset Button**

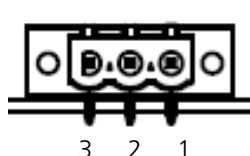
Press this button to reset the GSM module.

## Rear Panel External Connectors



## (1) Power Input

DC Power Input Connector



DC Power Input Voltage (CN13)

Pin No.	Function Description
1	GND
2	VIN(6V~36V)
3	IGNITION

If Pin 3 is connected to the vehicle's ignition signal, VTC 3300 can be turned on and turned off using the ignition signal.

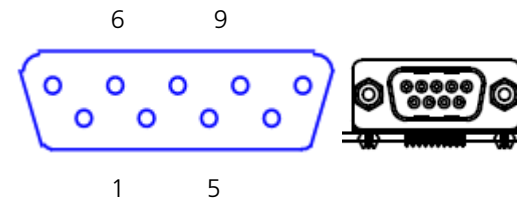
With the setting on dip switch (SW5), Delay-On and Delay-Off are available.

\*\* If Pin2-Pin3 on JP12 is already shorted, do not connect the ignition pin to the vehicle.

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

## (2) GPIO Connector

- Connector size: DSUB-9 PIN
- Connector location



- Connector pin definition (COM1)

Pin	Definition	Pin	Definition
1	GIN	2	GIN
3	GIN	4	GIN
5	GOUT	6	GOUT
7	GOUT	8	GOUT
9	GND		



(3) RS422/485 Connector COM5, COM6

- Connector location

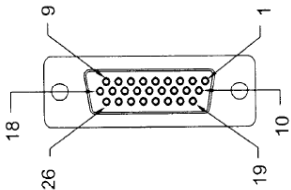


- Connector pin definition

Pin	Definition	Pin	Definition
1	COM5/RS422/485 TX-	2	COM5/RS422/485 TX+
3	COM5/RS422 RX-	4	COM5/RS422 RX+
5	GND	6	COM6/RS422/485 TX-
7	COM6/RS422/485 TX+	8	COM6/RS422 RX-
9	COM6/RS422 RX+	10	GND

To select RS422 or RS422&RS485, use SW4 dip switch.

(4) LVDS

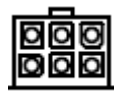


DB26 Connector

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	LCDD_GND
19	LCDD04(OUT2#)	20	Panel_backlight
21	LCDD_GND	22	Panel-Gnd
23	USB_0#	24	USB_GND
25	USB_0	26	USB_VCC

### (5) External 12V & 5V Power Output

6 4



3 1

Pin	Definition	Pin	Definition
1	5V	2	12V
3	N/C	4	GND
5	GND	6	N/C

12VDC and 5VDC are outputted from this connector.

12V: 1A output

5V: 1A output

Total: 17W

12VDC and 5VDC can be connected to external fans (or NEXCOM's Vibration/Fan Kit) to extend the temperature range of VTC 3300.

### (6) COM Port (RS232) 3-4

The 9 pin D-Sub COM 3 and COM 4 ports are configured as RS232 and provide connection for several devices.

### (7) VGA Port

This DB15 VGA port supports resolution up to 1600 x1200 at 85 Hz, 2048 x 1536 at 75Hz.

### (8) USB Port x 2

These two USB ports are compliant with USB 2.0 specifications.

### (9) LAN Port

The LAN port provides an RJ45 connector with integrated LEDs and supports 10/100Mbps Ethernet data transfer rates.

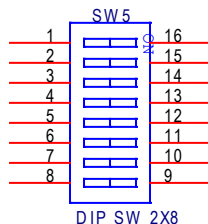
### (10) Audio Ports (MIC-In, Line-In, Line-Out)

Mic-In jack receives monophonic input from an external microphone. Line-In jack is the stereo input for connecting an external line-in source. Line-Out jack is the stereo output for connecting to external speakers.



## (1) On & Off Delay Select

Connector location



You can enable/disable and configure the delay timer by using a combination of pin settings. Use Pin 1 and Pin 2 to enable or disable the on or off delay timer, and then set the other pins to configure the timer. Refer to the table below.

For example, if you want to enable Power-On delay for 1 minute, do the following:

1. Set Pin 1 to On.
2. Set Pin 3 to On.
3. Set Pin 4 to Off.
4. Set Pin 5 to On.

Similarly, if you want to delay power off for 5 minutes, do the following:

1. Set Pin 2 to On.
2. Set Pin 6 to Off.
3. Set Pin 7 to Off.
4. Set Pin 8 to On.

### Power-On Delay

Pin 1 On: Enable

Pin 1 Off: Disable

Time-Set-ting	10 sec	30 sec	1 min	5 min	10 min	15 min	30 min	1 hour
Pin 3	on	off	on	off	on	off	on	off
Pin 4	on	on	off	off	on	on	off	off
Pin 5	on	on	on	on	off	off	off	off

### Power-Off Delay

Pin 2 On: Enable

Pin 2 Off: Disable

Time-Set-ting	10 sec	30 sec	1 min	5 min	10 min	15 min	30 min	1 hour
Pin 6	on	off	on	off	on	off	on	off
Pin 7	on	on	off	off	on	on	off	off
Pin 8	on	on	on	on	off	off	off	off

- If ignition is off and system is still on for 10 minutes, VTC 3300 will shut down automatically.
- If the ignition is turned on again, while power-off delay is in progress, VTC 3300 will cancel the delay function and VTC 3300 will continue operate normally.
- If the ignition is turned on again, while power-off delay finishes, VTC 3300 will shut down VTC 3300 completely, then VTC 3300 will power-

on again automatically.

- If the ignition is turned off again, while power-on delay is in progress, VTC 3300 will cancel the delay and keep power-off status.
- If the ignition is turned off again, while power-on delay finishes (enter OS already), VTC 3300 will continue operate normally.
- If the ignition is turned off again, while power-on delay finishes (in BIOS procedure), VTC 3300 will shut down immediately.

## (2) Vehicle PC / Normal PC Mode Select (JP12)

Pin No.	Status	Function Description
1-2	Short (default)	Vehicle PC Mode
2-3	Short	Normal PC Mode

### (Vehicle PC Mode)

If ignition signal is used to power on/off VTC 3300, shorting Pin1-2 of JP12 (default setting) is recommended.

### (Normal PC Mode)

Pin 2-3 can be shorted to make VTC 3300 function as a normal PC, and VTC 3300 can be turned on/off using the power button.

\*\* If Pin2-Pin3 on JP12 is already shorted, do not connect the ignition pin to the vehicle in Normal PC Mode.

## (3) 954 IDSEL Select (JP3)

Pin No.	Status	Function Description
1-2	Short	PCI_AD22
2-3	Short*	PCI_AD26

## (4) CMOS Input Voltage Select (JP4)

Pin No.	Status	Function Description
1-2	Short*	VBAT IN
2-3	Short	Clear CMOS

## (5) CF (IDE1) Primary Master/Slave Select (JP6)

Pin No.	Status	Function Description
1-2	Short*	Slave
2-3	Short	Master

## (6) CF (IDE2) Secondary Master/Slave Select (JP1)

Pin No.	Status	Function Description
1-2	Short	Slave
2-3	Short*	Master

## (7) LVDS Power Input Voltage Select (JP2)

Pin No.	Status	Function Description
1-2	Short	+5V IN

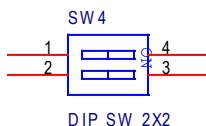
2-3	Short*	+3.3V IN
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### (8) LED I/O Port Address & Data

Pin No.	Function Description
A1	I/O PORT Address : EEEH DATA1 : 0(LIGHT) 1(DART)
A2	GSM STATUS

### (9) RS-422/485 Select (SW4)

- Connector location



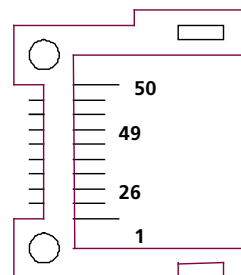
Connector pin definition

Pin	Definition	Definition
1(COM5)	OFF(RS422)	ON(RS422&RS485)
2(COM6)	OFF(RS422)	ON(RS422&RS485)

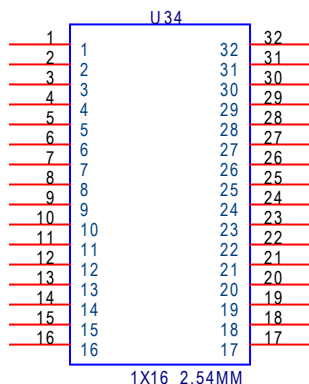
## Expansion

### (1) CompactFlash Socket (IDE1, IDE2)

- Connector size: 2 x 25 = 50 pins
- Connector location



## (2) NVRAM



For power failure protection, the VTC 3300 can back up the last unfinished transaction or transmitting data to NVRAM. The capacity of NVRAM is up to 512KB.

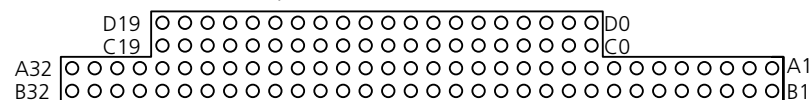
Pin	Definition	Pin	Definition
1	ISA A18	17	ISA D3
2	ISA A16	18	ISA D4
3	ISA A14	19	ISA D5
4	ISA A12	20	ISA D6
5	ISA A7	21	ISA D7
6	ISA A6	22	ROM CS#
7	ISA A5	23	ISA A10
8	ISA A4	24	BMEMR#
9	ISA A3	25	ISA A11

10	ISA A2	26	ISA A9
11	ISA A1	27	ISA A8
12	ISA A0	28	ISA A13
13	ISA D0	29	BMEMW#
14	ISA D1	30	ISA A17
15	ISA D2	31	ISA A15
16	GND	32	+5V

## (3) PC-104 Plus

### PC-104 Plus Connector (J2A~ISA)

Connector location and pin definition



Pin	D	C
0	GND	GND
1	MEMCS16*	SBHE*
2	IOCS16*	LA23
3	IRQ10	LA22
4	IRQ11	LS21
5	IRQ12	LS20
6	IRQ15	LS19
7	IRQ14	LA18

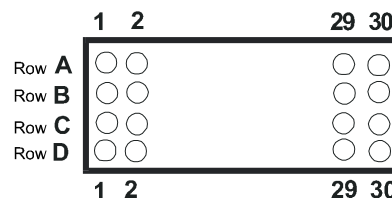
8	DACK0*	LA17
9	DRQ0	MEMR*
10	DACK5*	MEMW*
11	DRQ5	SD8
12	DACK6*	SD9
13	DRQ6	SD10
14	DACK7*	SD11
15	DRQ7	SD12
16	+5V	SD13
17	MASTER*	SD14
18	GND	SD15
19	GND	GND/KEY

Pin	A	B
1	IOCHCK*	GND
2	D7	RSTDRV
3	D6	+5V
4	D5	IRQ9
5	D4	N/A
6	D3	DRQ2
7	D2	-12V
8	D1	ENDXFR*
9	D0	+12V
10	IOCHRDY	GND/KEY
11	AEN	SMEMW*
12	A19	SMEMR*
13	A18	IOW*
14	A17	IOR*

15	A16	DACK3*
16	A15	DRQ3
17	A14	DACK1*
18	A13	DRQ1
19	A12	REFRESH*
20	A11	SYSCLK
21	A10	IRQ7
22	A9	IRQ6
23	A8	IRQ5
24	A7	IRQ4
25	A6	IRQ3
26	A5	DACK2*
27	A4	TC
28	A3	BALE
29	A2	+5V
30	A1	OSC
31	A0	GND
32	GND	GND

### PC-104 Plus Connector (J2B~PCI)

- Connector location



Pin	Definition			
	A	B	C	D

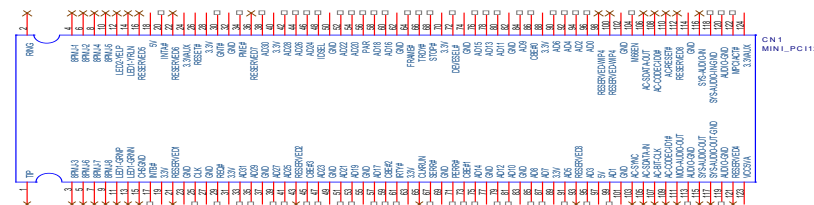


1	Gnd/5.0V KEY	Reserved	+5V	AD00
2	V/I/O	AD02	AD01	+5V
3	AD05	Gnd	AD04	AD03
4	C/BE0#	AD07	Gnd	AD06
5	Gnd	AD09	AD08	Gnd
6	AD11	V/I/O	AD10	M66EN
7	AD14	AD13	Gnd	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	SB0#	PAR
10	Gnd	PERR#	+3.3V	SDONE
11	STOP#	+3.3V	LOCK#	Gnd
12	+3.3V	TRDY#	Gnd	DEVSEL#
13	FRAME#	Gnd	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#	V/I/O	IDSE;3
20	Gnd	AD26	AD25	Gnd
21	AD29	+5V	AD28	AD27
22	+5V	AD30	Gnd	AD31
23	REQ0#	Gnd	REQ1#	V/I/O
24	Gnd	REQ2#	+5V	GNT0#
25	GNT1#	V/I/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	Reserved	Reserved	Gnd/3.3V KEY

#### (4) Mini-PCI

##### ■ Connector location



If WLAN module (Mini PCI type) is installed, a external hole on front panel for WiFi antenna is available.



# CHAPTER 3: HARDWARE INSTALLATION

## Removing the Chassis

1. Place the VTC 3300 on a flat surface with the front panel (side with the VTC 3300 logo on the bottom right section) towards you.

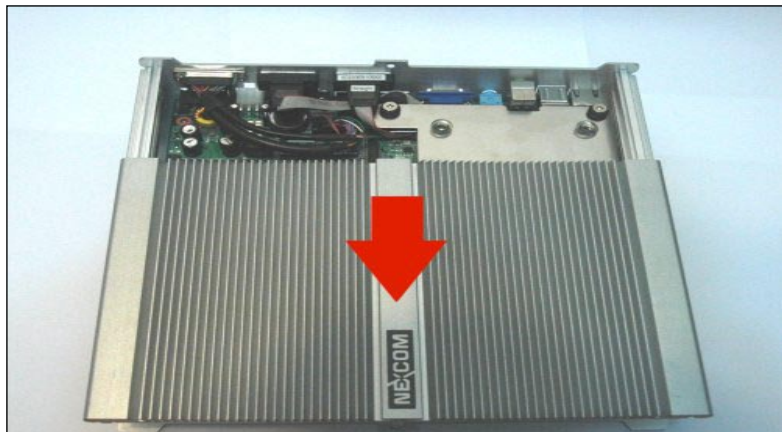


2. Using a Phillips screwdriver, remove the four screws that secure the front panel to the chassis.



3. On the back panel, remove the top screw.

4. Remove the top cover by sliding it towards you until it is released from the rails on both sides.

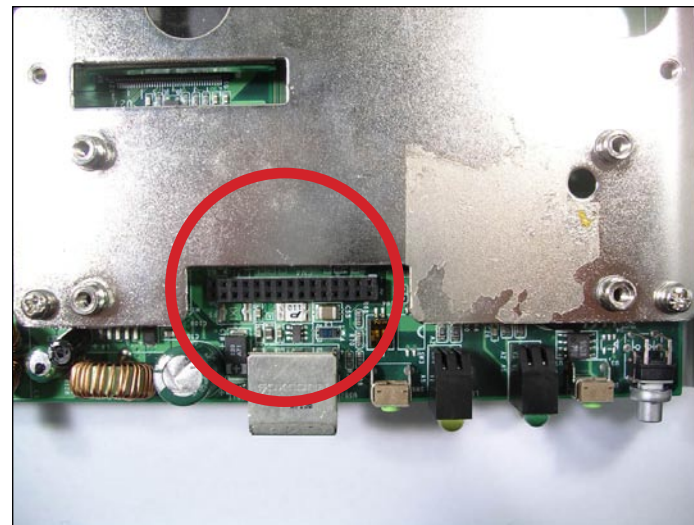


5. Put the top cover and the screws that you removed in a safe place. You will need to put them back after you have finished installing all your modules.

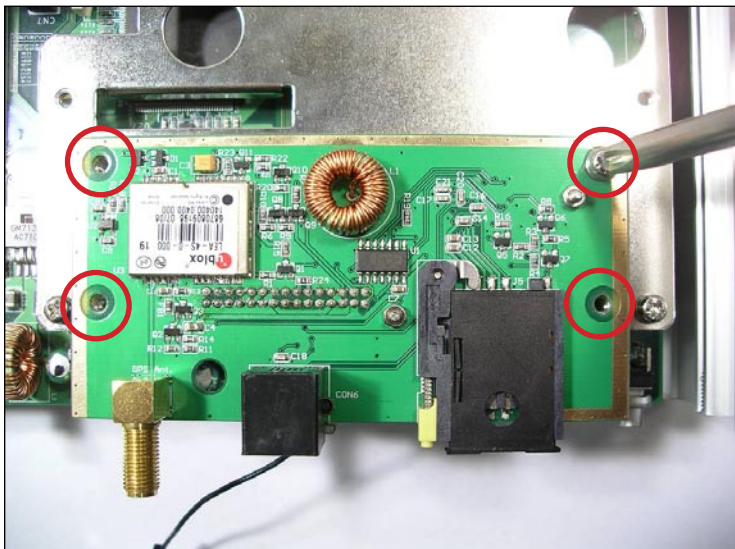
## Installing NAK 3300

The NAK 3300 module is an optional component that provides GSM/GPRS and GPS capabilities to VTC 3300.

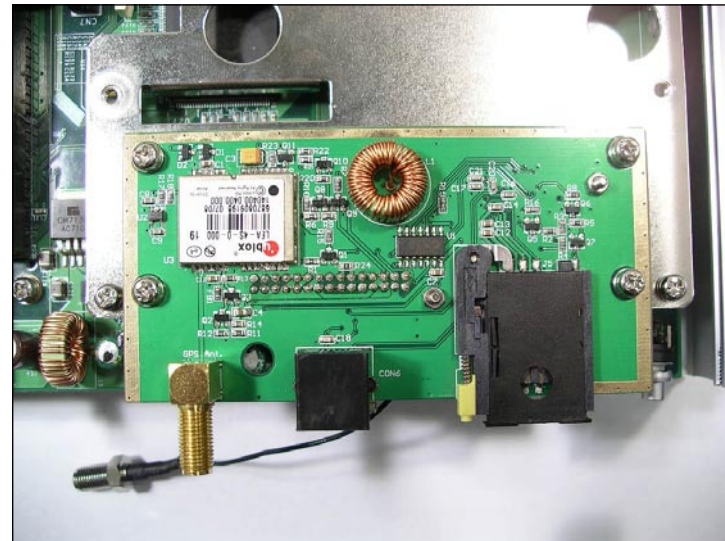
1. Connect NAK 3300 with the connector on the carrier board.



2. Secure the NAK 3300 to the bracket using the four supplied screws.

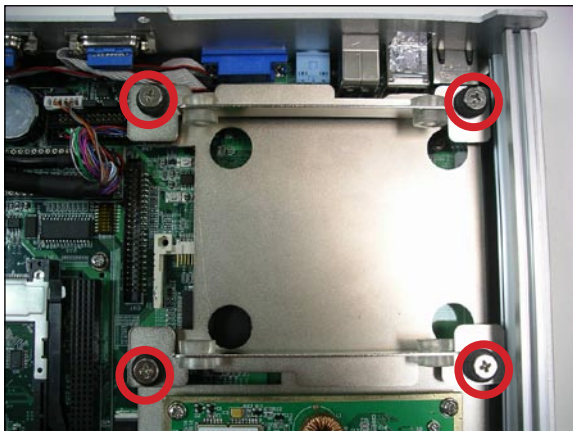


3. You have completed installing NAK 3300 function board.



## Installing the Hard Disk

1. Locate the hard disk mounting bracket on the board.
2. Remove the four screws that secure the bracket to the board.



Lift the bracket from the board, and then set aside with the four screws that you removed.

3. Place your 2.5" hard disk drive on a flat surface with the label facing up.





- Place the mounting brackets on the both sides of HDD so that the remaining four screws holes on the brackets align with the screw holes on the HDD.



- Secure the hard disk to the bracket using the four I-head bolt screws that are supplied with the VTC 3300 package. You should be able to fasten each screw all the way.

*If you are installing an internal CompactFlash card or a mini PCI module, install these other modules first before continuing with the next step. Refer to the next two sections for instructions. After you finish installing these modules, return to this section, and then continue with the next step.*



6. Replace the mounting bracket on to the board, ensuring that the screw holes on the bracket are aligned with the screw holes on the board.



7. Secure the mounting bracket to the board using the four screws that you removed in Step 2.
8. You have completed installing the HDD.

## Installing the Mini PCI Module

1. Locate the mini PCI card slot on the board.



2. Insert the mini PCI card into the slot at a 45-degree angle, and then push it in until the gold-plated connector is seated firmly in the slot.

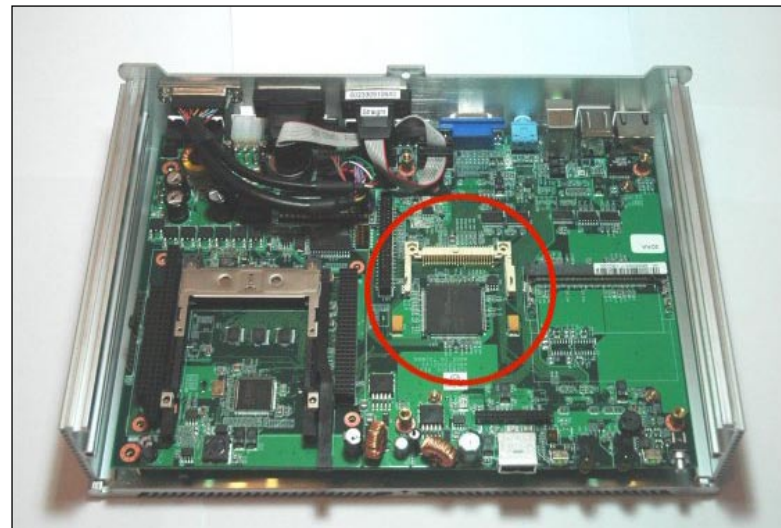


3. With the card still at a 45-degree angle, press it down until the locks on the sides snap into place.



## Installing the Internal CF Card

1. Locate the CompactFlash (CF) card slot on the board.



2. Insert the CF card into the socket with the label facing up.



3. Firmly but gently push the CF card into the slot until it is fully seated in the slot.



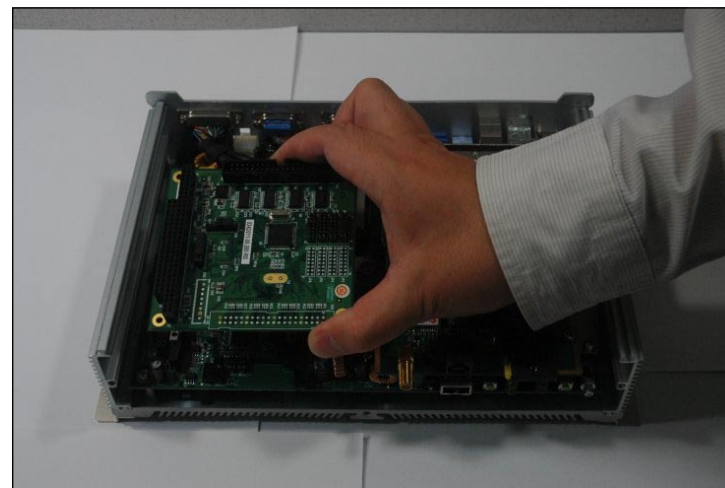
4. You have completed installing the internal CF card.

## Installing the PC104+ Module

1. Locate the PC104+ slot on the board. Take note of the four mounting points around the PC104+ connector.



2. Take your PC104+ module and align the pins with the PC104+ connector holes on the board.



3. Once the pins are aligned, press the PC104+ module firmly but gently on to the board until the module is completely seated in the connector.



4. Secure the PC104+ module into the four mounting points using the supplied screws.

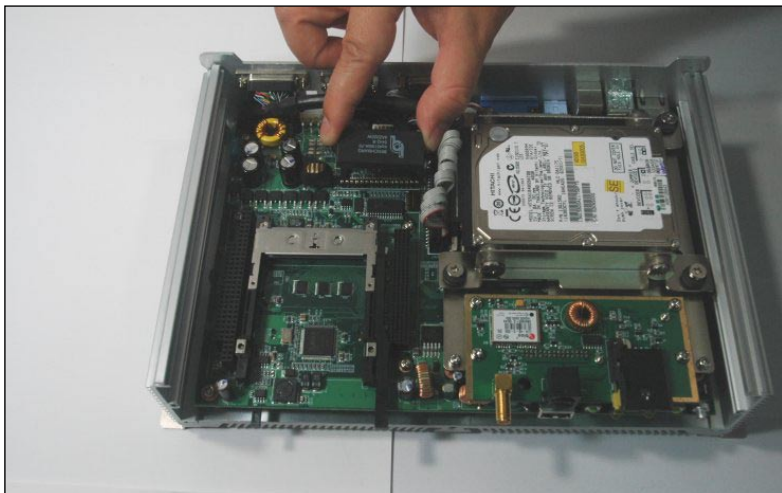


5. You have completed installing the PC104+ module.

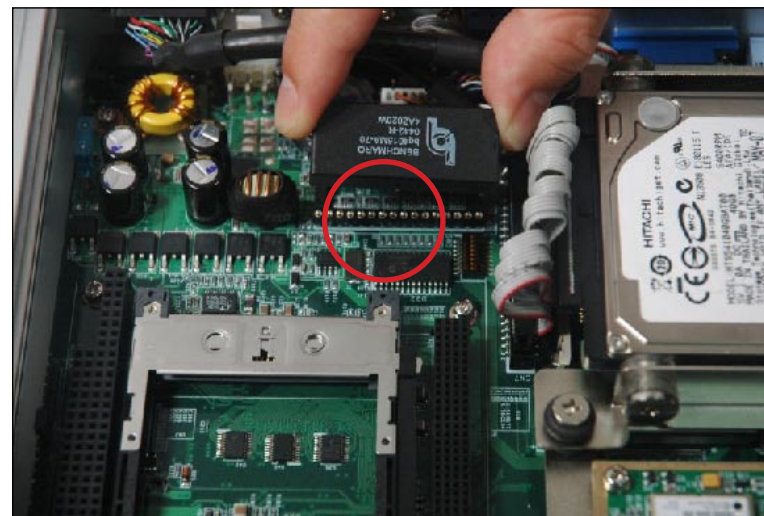


## Installing the NVRAM

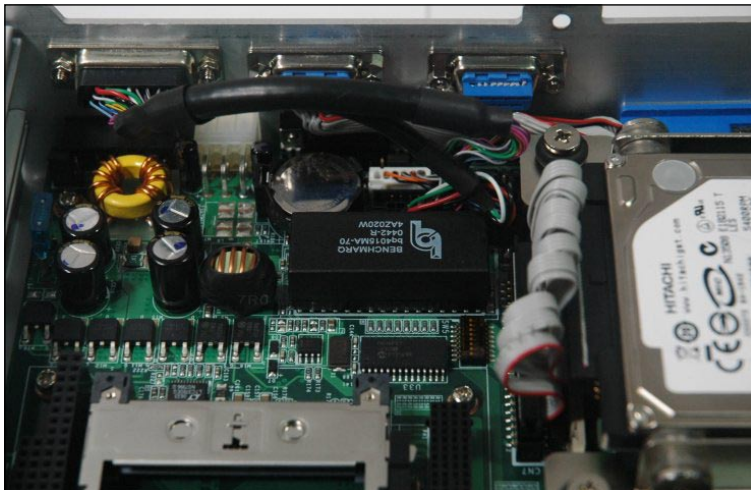
1. Locate the NVRAM connector on the board.



2. Align the NVRAM pins with the connector holes.



3. Press down the NVRAM until it is completely seated in the connector.



4. You have completed installing the NVRAM.

## Installing SODIMM

The SODIMM socket is on the ICES 101 board. NEXCOM recommends installing the ICES 101 module before you install SODIMM.

1. Locate the SODIMM socket on the board.



2. Insert the SODIMM into the slot at a 45-degree angle, and then push it in until the gold-plated connector is seated firmly in the slot.

3. With the SODIMM still at a 45-degree angle, press it down until the locks on the sides snap into place.



# CHAPTER 4: NAK 3300 MODULE REFERENCE

## GSM/GPRS Features

- Siemens GSM/GPRS Module - MC55
- Tri-Band GSM/GPRS 900/1800/1900 MHz (MC55)
- GPRS multi-slot class 10
- GPRS mobile station class B
- Compliant to GSM phase 2/2+
- Output power:
  - 2 W for GSM850/900
  - 1 W for GSM1800/1900
- Control via AT commands (GSM 07.07 and 07.05)
- SIM application toolkit
- WAP compliant
- MMS compliant
- Power consumption (average supply current)
  - 260 mA in GSM 900
  - 180 mA in GSM 1800/1900
  - 300 mA in GPRS 900 (4 Rx, 1 Tx/class 8)
  - 230 mA in GPRS 1800/1900 (4 Rx, 2 Tx/class 10)
- Ambient temperature: 20 °C to + 55 °C
- Auto switch-off at +70 °C
- Specifications for fax: Group 3, class 2
- Specifications for data:
  - GPRS class 10: max. 85.6 kbps
  - PBCCH support
  - Coding schemes CS 1, 2, 3, 4
  - CSD up to 14.4 kbps
  - USSD
  - Non transparent mode
  - V.110
  - PPP-stack
- Specifications for SMS via GSM and GPRS:
  - Point-to-point MO and MT
  - SMS cell broadcast
  - Text and PDU mode
- Specifications for voice:
  - Tricodec
  - Half rate (HR)



- Full rate (FR)
- Enhanced Full rate (EFR)
- Adaptive multi rate (AMR)
- Hands-free operation (echo cancellation)
- Noise reduction

## GPS Features

- Ublox LEA-4S GPS module
- Supports DGPS, WAAS, EGNOS and MSAS
- 16 channel ANTARIS 4 positioning engine
- Performance:
  - Update rate: 4Hz
  - 8192 time / frequency searching window
  - L1 frequency, C/A code
- Time to first fix:
  - Cold star

Fast Acquisition Mode	Normal Mode	High Sensitivity Mode	Auto Mode
34s	36s	41s	34s

- Warm star: 33s
- Hot star: < 3.5s
- Reacquisition: < 1s
- Receiver accuracy:

- Position: 2.5m CEP/5.0m SEP
- Position DGPS/SBAS: 2.0m CEP/3.0m SEP
- Dynamic condition:
  - Strong signals  $\leq 4g$
  - Weak signals typ. 1g
- Protocols:

Protocol	Type	Runs on
NMEA	Input/output, ASCII, 0183, 2.3(compatible to 3.0)	All serial ports and USB
UBX	Input/output, binary, u-blox proprietary	All serial ports and USB
RTCM	Input message 1,2,3,9	All serial ports and USB

- Operational Limits\_(COCOM):
  - Altitude: 18,000m
  - Velocity: 515m/s
  - One of the limits may be exceeded but not both.

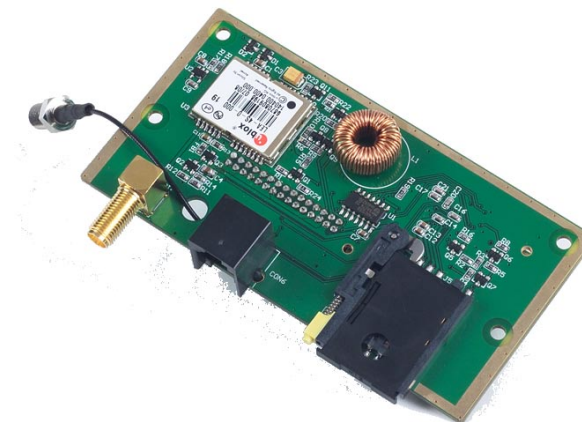
## Pin Assignment Table

Pin	Function	Pin	Function
1	TDX 1 RS232	2	RXD 1 RS232
3	ON/OFF_EXT	4	CTS 2 RS232
5	RTS 2 RS232	6	TXD 2 RS232
7	RXD 2 RS232	8	DCD 2 RS232
9	DTR 2 RS232	10	EP P1 PHONE AC97

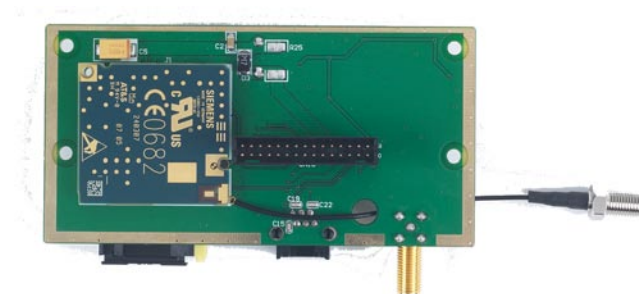
11	DSR 2 RS232	12	GND_AUDIO
13	RI 2 RS232	14	VCC_AUDIO
15	MIC P1 EXT	16	GND
17	MIC N1 EXT	18	GND
19	V_BAT	20	VCC_3V
21	VCC	22	VCC

## NAK 3300 Board Layout

*Top View*



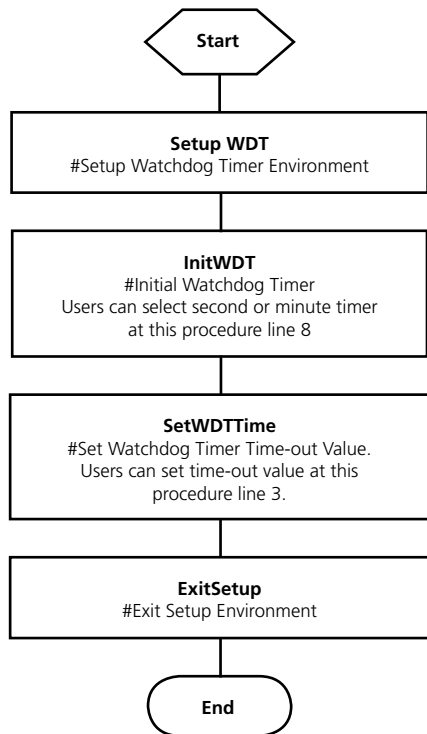
*Bottom View*





# APPENDIX A: WATCHDOG TIMER

## Watchdog Timer Programming



## P.S. Common Library

0	SetupWDT	PROC
1	mov	al,87h
2	out	2eh,al
3	mov	al,01h
4	out	2eh,al
5	mov	al,55h
6	out	2eh,al
7	out	2eh,al
8		
9	mov	al,07h
10	out	2eh,al
11	mov	al,07h
12	out	2fh,al
13	ret	
14	SetupWDT	ENDP

0	InitWDT	PROC
1	mov	al,71h

2	out	2eh,al
3	mov	al,30h
4	out	2fh,al
5		
6	mov	al,72h
7	out	2eh,al
8	mov	al,0c0h -Here!! set 0c0h for second, set 40h for minute
9	out	2fh,al
10	ret	
11	InitWDT	ENDP

0	SetWDTTime	PROC
1	mov	al,73h
2	out	2eh,al
3	mov	al,5 -Here!! Set 5 sec.(time out vale: 0x00-0xff)
4	out	2fh,al
5	ret	
6	SetWDTTime	ENDP

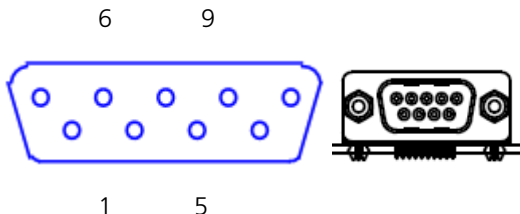
0	ExitSetup	PROC
1	mov	al,02h
2	out	2eh,al

3	mov	al,02h
4	out	2fh,al
5	ret	
6	ExitSetup	ENDP

# APPENDIX B: GPIO PROGRAMMING GUIDE

## GPIO Connector

- Connector size: DSUB-9 PIN
- Connector location



- Connector pin definition (COM1)

Pin	Definition	Pin	Definition
1	GIN	2	GIN
3	GIN	4	GIN
5	GOUT	6	GOUT
7	GOUT	8	GOUT
9	GND		

G\_IN & G\_OUT: 1 is High, 0 is Low.

GP OUT ADDRESS: D604 (Write GPO)

G_OUT4			G_OUT3			G_OUT2			G_OUT1		
Bit7	Bit6		Bit5	Bit4		Bit3	Bit2		Bit1	Bit0	
1	0	Output is 0	1	0	Output is 0	1	0	Output is 0	1	0	Output is 0
1	1	Output is 1	1	1	Output is 1	1	1	Output is 1	1	1	Output is 1

If filling in "FA", G\_OUT4 , G\_OUT3 will be " 1 " G\_OUT2, G\_OUT1will be "0"

GPIO STATUS ADDRESS: D61C (Read GPO status), D61D (Read GPI status)

## ADDRESS: D61C

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
G_OUT4 Status 0 or 1	G_OUT3 Status 0 or 1	G_OUT2 Status 0 or 1	G_OUT1 Status 0 or 1	0	0	0	0
ALWAYS = 0							



**ADDRESS: D61D**

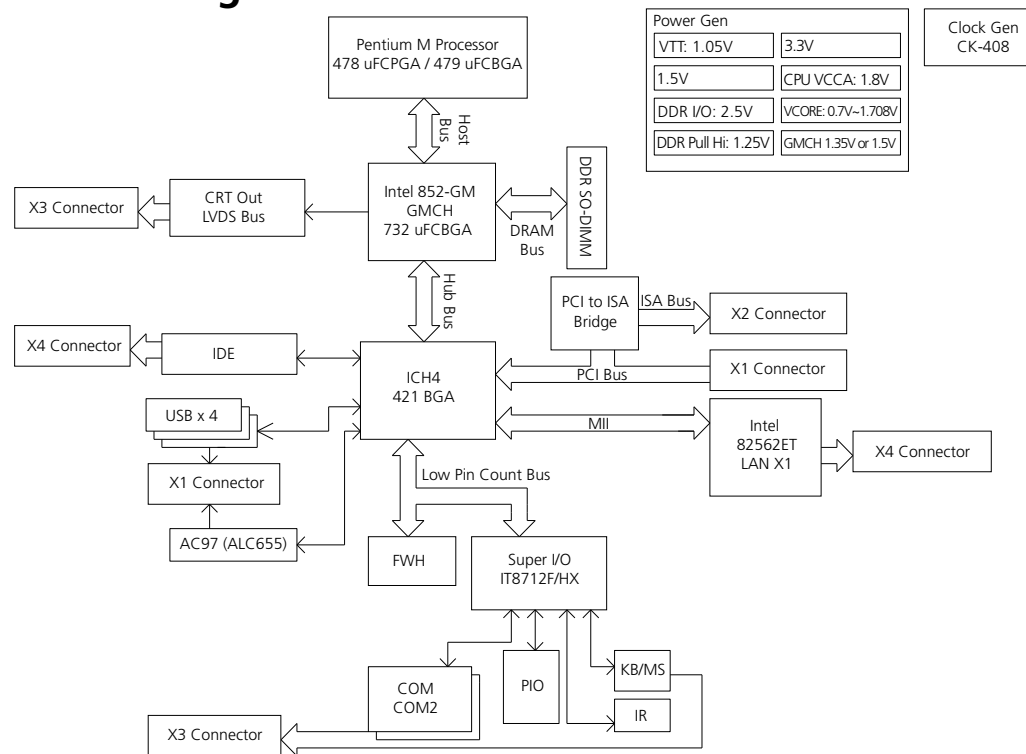
If testing GPI, connect GPO1-GPI1, GPO2-GPI2, GPO3-GPI3, and GPO4-GPI4 pins.

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	0	0	0	G_IN4 Status 0 or 1	G_IN3 Status 0 or 1	G_IN2 Status 0 or 1	G_IN1 Status 0 or 1
ALWAYS = 0							



# APPENDIX C: ICES 101 ETX MODULE REFERENCE

## ICES 101 Function Block Diagram





## ICES 101 Specifications

The following are the specifications of the ICES 101 ETX Module:

### CPU

- Intel® ULV Celeron® M 600MHz (for ICES101- C65 model)
- Intel® ULV Celeron® M 1GHz (for ICES101-373 model)
- Intel® Celeron M/Pentium M Base (for ICES101-SKT model)

Note: The Intel® 852GM integrated graphics solution up to 64MB of dynamic video memory allocation can drive a standard progressive scan analog monitor with pixel resolution up to 1600 x 1200 at 85Hz.

### Chipset

- Intel® 852GM + ICH4 chipset

### System

- Supports one unbuffered nonECC DDR SO-DIMM

### Memory

- 200/266 memory up to 1GB

### Graphics

- Intel® 852GM integrated Graphic, supports both standard VGA and TFT.
- CRT: Supports up to 1600 x 1200 at 85Hz; 2048x1536 at 75Hz, DB15 CRT VGA connector x 1
- LVDS: Supports up to 48-bit, 1600 x 1200 at 60 Hz, supports single/dual pixel LVDS panel, onboard LVDS transmitter for LVDS Interface down to I/O board.

### Ethernet

- Intel 82562ET 10/100 Fast Ethernet

- Supports PXE LAN boot function

### Audio

- ALC655 CODEC - AC97 Audio Interface

### Super I/O

- IT8712F

### ETX Connectors

- X1
  - 32-bit/33Mhz PCI x 4,
  - Audio CODEC - AC97 Audio Interface
  - USB 2.0 x 4
- X2: ISA Interface
- X3
  - VGA x 1
  - LVDS x 1 (Dual Pixels)
  - LPT x 1
  - KB/Mouse
  - COM1 and COM2
  - IrDA 1.0 SIR
- X4
  - Ethernet (10/100)
  - SMBus
  - IDE x 2

### RTC

- On-chip RTC with backup battery / external Li-ion
- Battery x 1 located on carrier board

- RTC tolerance less than 2 secs (24 hours) under 25°C environment

### Watchdog

- Watchdog timeout programmable by software from one second to 256 seconds. Tolerance 5% under room temperature 25°C.

### BIOS

- Award System BIOS
- Advanced Power Management support
- 4Mbit FlashROM

### Power Supply

- Supports both AT and ATX power supply
- +5V power only, follows ETX power and ground pin definitions

### Drivers

- Windows 2003
- Windows XP
- Windows 2000
- Linux

### Certifications

- CE approval
- FCC Class A

### Environment

- Operating temperature: 0°C to 60°C (32°F to 140°F)
- Storage temperature: -20°C to 85°C (-4°F to 185°F)
- Relative humidity: Non-operating 5%~95%, non-condensing

### Dimensions

- 95mm (W) x 114mm (L) (3.74" x 4.5")

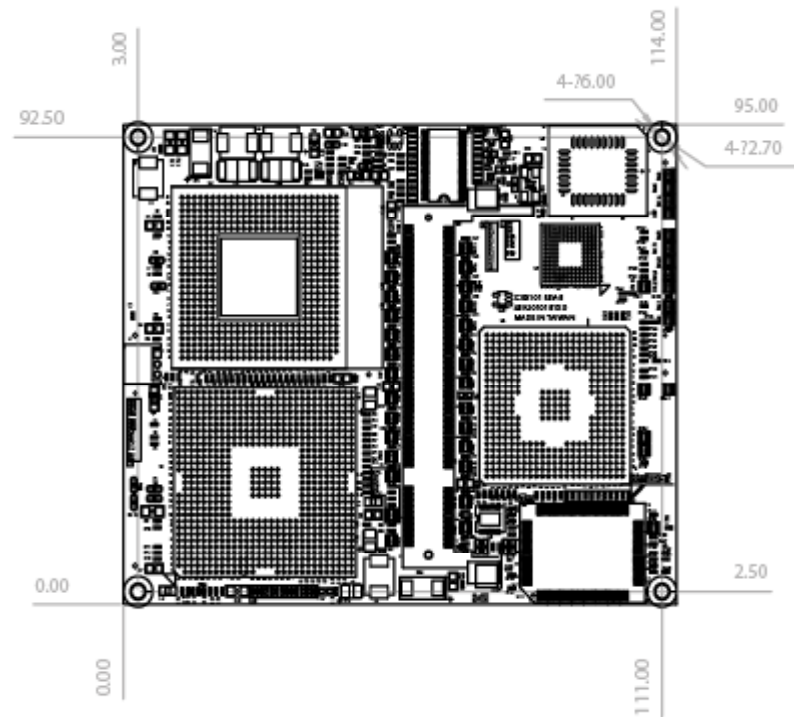
## ICES 101 Board Layout

*ICES 101 Board (Top View)*



# ICES 101 Board Dimensions

ICES 101 Board Dimensions



# IRQ Assignments

Interrupt request lines allow peripherals to communicate with the CPU for the function required. The following table lists the IRQs used.

IRQ Assignments

On board
IRQ0 Timer
IRQ1 KBC
IRQ2 Internal
IRQ3 COMA
IRQ4 COMB
IRQ5 Parallel Port / Generic
IRQ6 FDC
IRQ7 Parallel Port / Generic
IRQ8 RTC
IRQ9 Generic
IRQ10 Generic
IRQ11 Generic
IRQ12 PS/2 Mouse
IRQ13 Internal
IRQ14 IDE1
IRQ15 IDE2

## PCI Device Interrupt and BUS Assignments

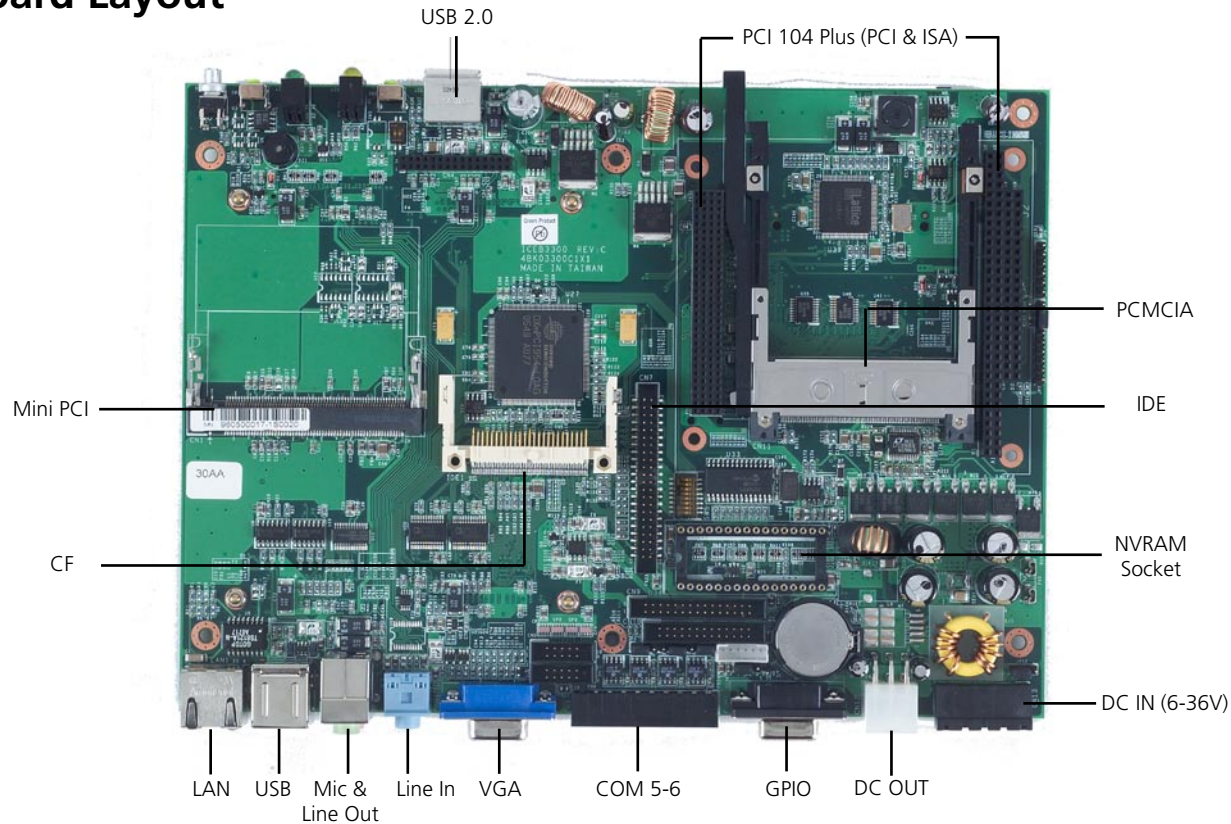
The ICES 101 ETX module supports PCI expansion fully compliant with PCI specifications.

*PCI Device Interrupts*

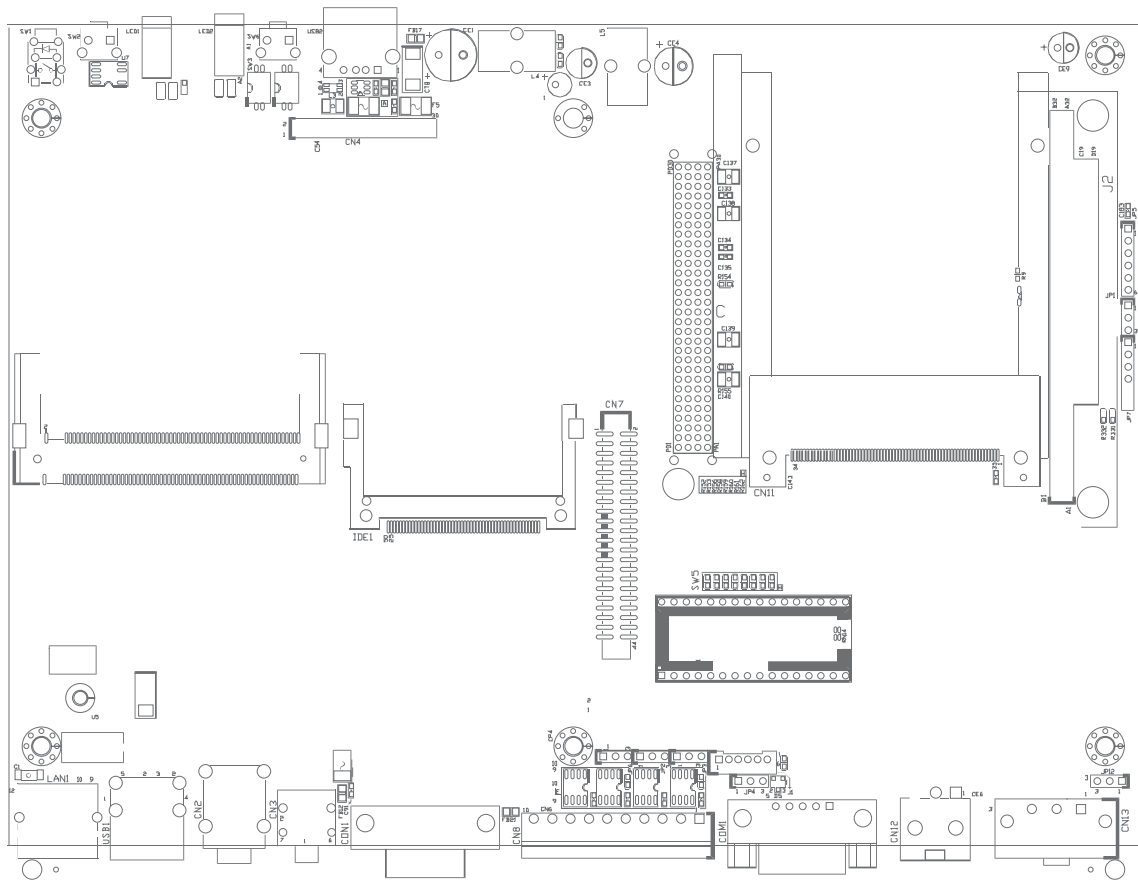
Chipset	Config. BUS /			
DEVIC/ FUNCTION	PCI INT#	IDSEL	Special fea- ture descrip- tion	
ETX PCI(1)	0 / 9 /0	ABCD	AD19	ETX
ETX PCI(2)	0 / 10 /0	BCDA	AD20	ETX
ETX PCI(3)	0 / 11 /0	CDAB	AD21	ETX
ETX PCI(4)	0 / 12 /0	ABCD	AD23	ETX
DA82562ET	0 / 8 / 0	BCDA	AD24	10/100 PHY
IT8888G	1 / 6 /0		AD22	PCI to ISA BRIDGE

# APPENDIX D: ICEB 3300 CARRIER BOARD REFERENCE

## ICEB 3300 Board Layout



The following figure identifies the locations of different jumpers on the ICEB 3300 board. Use your PDF viewer's zoom function to enhance readability.



[illegible]

## ICEB 3300 Specifications

The following are the specifications of the ICEB 3300 Carrier Board.

### I/O Ports

#### *On the Front Panel*

- USB 2.0 x 1
- Power reset button
- External CF socket
- PCMCIA socket
- Power-on switch

#### *On the Rear Panel*

- DB9 COM3 and COM4; Screw Terminal COM5 and COM6 ( RS422/485 only)
- RJ45 with LED connector x 1
- USB 2.0 Ports x 2 (USB3, USB4) with one double-stack connector
- +6V ~+36V DC power input with 3-pin power connector (power, ignition, ground)
- +5/+12V DC power output
- VGA connector (DB15)
- DB26 female for LVDS with 12V DC power output x1 and USB 2.0 x1
- Audio output for Line-in, Line-out, and Mic-in with phone-jack connectors x 3
- Digital IO DB9 connector x 1 (female)
- 4 input and 4 output isolated digital I/O (+5V TTL level)

### IDE

- 44-pin IDE connector x 1 (Primary IDE)
- CompactFlash socket x 1 (external)
- CompactFlash socket x 1 (internal)

### COM Ports

- COM 3~4 : external DB9 RS232
- COM 5~6 : RS422/485 with 10-pin screws terminal connector
- COM 1~2 : Reserved board-to-board connector. COM1: RS232 for GPS module. COM2: RS232 for GSM/GPRS module.

### USB 2.0

- USB 2.0 port x 1 in the front
- USB 2.0 port x1 with LVDS, backlight power through DB26 female connector in the rear
- USB 2.0 port x 2 in the rear

### PIO

- LPT port x 1: 25-pin box header supporting bi-directional, EPP and ECP modes

### Audio

- 3 x phone jack connectors for Line-in, Line-out, and Mic-in in the rear
- Mic-in connects to GSM/GPS module

### Graphic

- External display interface by analog CRT DB15 VGA connector in the rear



- LVDS with +12V DC backlight power output and USB 2.0 through DB26 female connector.

### Ethernet

- 10/100 Fast Ethernet, RJ45 with LED connector x 1

### Expansion

- PC/104 Plus
- Mini-PCI socket x 1
- PCI Cardbus controller RICOH R5C485 to support PCMCIA socket x 1 in the front

### Power Supply

- Onboard DC to DC circuit support Power Input Range from +6V to +36VDC.
- Power-on delay time is selectable for Disable and Enable with 10sec / 30sec / 1min / 3min / 10min / 15min / 30min / 60min options
- Power-off delay time is selectable for Disable and Enable with 10sec / 30sec / 1min / 3min / 10min / 15min / 30min / 60min options
- Ignition enable/disable is jumper-selectable
- Over-Voltage Protection: system shuts down automatically if voltage exceeds 50V

### SRAM

- Reserved NVRAM socket for up to 512 KB memory

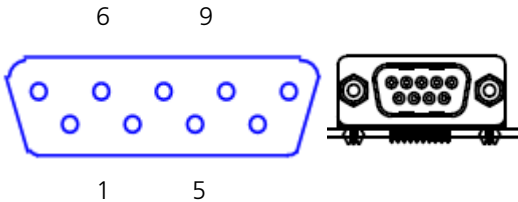
### LED and Others

LED	Definition	LED Color
Up: Power	Power Off: LED is off Power On: LED is on	Green
Down: IDE	Activity: LED blinking	Yellow
LAN	Activity: Blinking LED If link is available, LED is on	L: Yellow R: Green
Up: GPO	Programmable	Yellow
Down: GSM status		Yellow

# ICEB 3300 External Connectors

## GPIO Connector (COM1)

- Connector type: DSUB-9

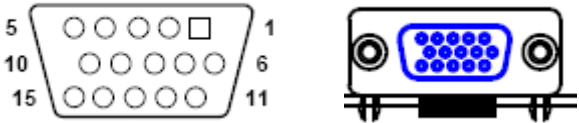


- Connector pin definition

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

## VGA Connector (CN1)

- Connector type: DSUB-15



- Connector pin definition

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 Connector (LAN1)

- Connector size: RJ-45
- Connector location



- Connector pin definition

Pin	Definition	Pin	Definition
1	TX+	2	TX-
3	RX+	4	N/C 1
5	N/C2	6	RX-
7	N/C3	8	N/C4
9	LAN Speed LED	10	Vcc3
11	LAN Link LED	12	Vcc3

USB Connector (USB2)

- Connector type: RJ-45



Pin	Definition	Pin	Definition
1	VCC	2	DATA-
3	DATA+	4	GND

(USB1)



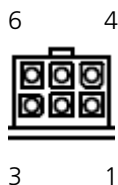
Pin	Definition	Pin	Definition
1	VCC	2	DATA-
3	DATA+	4	GND
5	VCC	6	DATA-
7	DATA+	8	GND

## LVDS Connector (J1)



Pin	Definition	Pin	Definition
1	Panel_backlight	2	Panel_VDD
3	GND	4	GND
5	4.5V	6	LVDS_BIASON

## External 12V & 5V Power Output



Pin	Definition	Pin	Definition
1	5V	2	12V
3	N/C	4	GND
5	GND	6	N/C

12VDC and 5VDC are outputted from this connector.

12V: 1A output

5V: 1A output

Total: 17W

12VDC and 5VDC can be connected to external fans (or NEXCOM's Vibration/Fan Kit) to extend the temperature range of VTC 3300.

\*\* NEXCOM plans to provide SMBus (Pin 3: Clock, Pin 6: DATA) starting in February 2008. Check with your NEXCOM sales representative for updates.

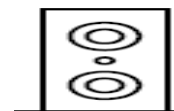
## RS422/485 Connector COM5, COM6 (CN8)



- Connector pin definition

Pin	Definition	Pin	Definition
1	COM5/RS422/485 TX-	2	COM5/RS422/485 TX+
3	COM5/RS422 RX-	4	COM5/RS422 RX+
5	GND	6	COM6/RS422/485 TX-
7	COM6/RS422/485 TX+	8	COM6/RS422 RX-
9	COM6/RS422 RX+	10	GND

## Mic and Line Out Connector (CN2)

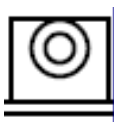


- Connector pin definition

Pin	Definition	Pin	Definition
-----	------------	-----	------------

1	NC	2	SOUND_SNDR
3	VGND	4	GND
5	SOUND_SNDL	22	MIC IN
23	GND	24	GND
25	MIC VCC	36	Gnd
37	Gnd	38	Gnd
39	Gnd		

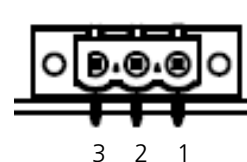
### Line In Connector (CN3)



- Connector pin definition

Pin	Definition	Pin	Definition
1	GND	2	LINE_INDL
3	GND	4	GND
5	LINE_INDR		

### Power Input Connector (CN13)



#### Connector Pin Definition

Pin No.	Description
1	GND
2	VIN(6V~36V)
3	IGNITION

### Power On & IDE Active (LED1)

**PWR**



**HDD**

### GPIO & GSM LED (LED2)

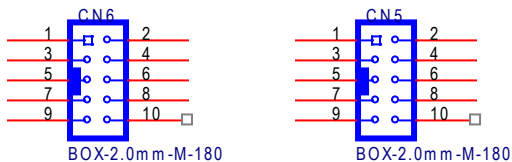
**GPIO**



**GSM**

## RS232 Connector COM3 (CN6), COM4 (CN5)

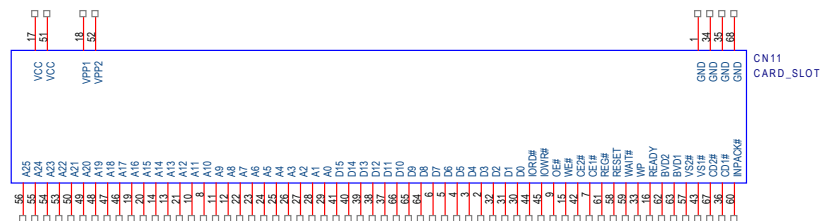
- Connector size: 2 x 10 = 20-pin pin header (2.0 mm pitch)



- Connector pin definition

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

## PCMCIA (CN11)



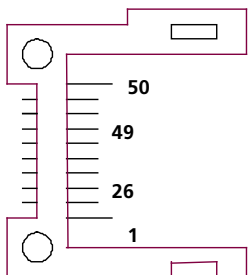
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	GND	2	D3	3	D4	4	D5

5	D6	6	D7	7	CE1#	8	A10
9	OE#	10	A11	11	A9	12	A8
13	A13	14	A14	15	WE#	16	RDY
17	VCC	18	VPP1	19	A16	20	A15
21	A12	22	A7	23	A6	24	A5
25	A4	26	A3	27	A2	28	A1
29	A0	30	D0	31	D1	32	D2
33	WP	34	GND	35	GND	36	CD1#
37	D11	38	D12	39	D13	40	D14
41	D15	42	CE2#	43	VS1	44	IORD#
45	IOW#	46	A17	47	A18	48	A19
49	A20	50	A21	51	VCC	52	VPP2
53	A22	54	A23	55	A24	56	A25
57	VS2	58	CRESET	59	WAIT#	60	INPACK#
61	REG#	62	BVD2	63	BVD1	64	D8
65	D9	66	D10	67	CD2#	68	GND

## ICEB 3300 Internal Connectors

### CompactFlash Connector (IDE1, IDE2)

- Connector size: 2 x 25 = 50 pins



Pin	Definition	Pin	Definition
1	Gnd	2	Data 3
3	Data 4	4	Data 5
5	Data 6	6	Data 7
7	HDC CS100	8	Gnd
9	Gnd	10	Gnd
11	Gnd	12	Gnd
13	+5V	14	Gnd
15	Gnd	16	Gnd
17	Gnd	18	Disk Address 2
19	Disk Address 1	20	Disk Address 0
21	Data 0	22	Data 1
23	Data 2	24	IOCS16# (NC)

25	CF_CD2# (Pull-down)	26	CF_CD1# (Pull-down)
27	Data 11	28	Data 12
29	Data 13	30	Data 14
31	Data 15	32	HDC CS300
33	CF_VS1# (NC)	34	IOR
35	IOW	36	CF_WE# (+5V)
37	Interrupt 15	38	+5V
39	CF_CSEL# (Master or Slave)	40	CF_VS2# (NC)
41	Reset #	42	IOCHRDY
43	DMA REQ / DACK (NC)	44	DMA ACK# /CF_REG# (+5V)
45	HDD Active Led	46	DMA66 Detect / CF_PDIAG#
47	Data 8	48	Data 9
49	Data 9	50	Gnd

## CPLD Programmer PIN Header (JP5)



Connector type

Pin	Definition	Pin	Definition
1	+3.3V	2	GND
3	TCK	4	TDO
5	TDI	6	TMS

## Microchip Programmer PIN Header (JP7)

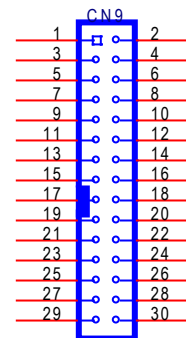


Connector type

Pin	Definition	Pin	Definition
1	+3.3V	2	ICSPDA
3	ICSPCLK	4	GND
5	5V	6	MCLR

## LVDS Connector + USB0 (CN9)

- Connector size: 2 X 15 (2.0mm)



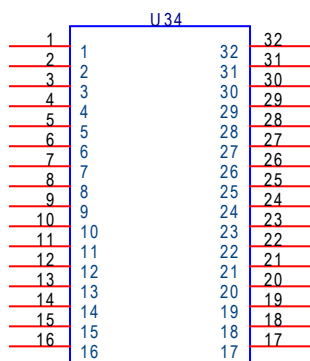
- Connector pin definition

Pin	Definition	Pin	Definition
1	LVDS_CLK	2	LVDS_DAT
3	Panel_VDD	4	LCDD01(OUT0)
5	LCDD09(OUT3)	6	LCDD00(OUT0#)
7	LCDD08(OUT3#)	8	Panel_VDD
9	LVDS_GND	10	LVDS_GND
11	LCDD07(CLK)	12	LCDD03(OUT1)
13	LCDD06(CLK#)	14	LCDD02(OUT1#)
15	LVDS_GND	16	LVDS_GND
17	LCDD05(OUT2)	18	Panel_backlight
19	LCDD04(OUT2#)	20	Panel_backlight
21	LVDS_GND	22	LVDS_GND



23	USB_0#	24	USB_GND
25	USB_0	26	USB_VCC
27	USB_GND	28	USB_GND
29	Panel_backlight	30	GND

### NVRAM Socket (U34)



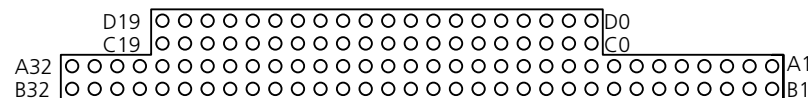
- Connector size: 2x16 (2.54mm)
- Connector pin definition

Pin	Definition	Pin	Definition
1	ISA A18	17	ISA D3
2	ISA A16	18	ISA D4
3	ISA A14	19	ISA D5
4	ISA A12	20	ISA D6
5	ISA A7	21	ISA D7
6	ISA A6	22	ROM CS#

7	ISA A5	23	ISA A10
8	ISA A4	24	BMEMR#
9	ISA A3	25	ISA A11
10	ISA A2	26	ISA A9
11	ISA A1	27	ISA A8
12	ISA A0	28	ISA A13
13	ISA D0	29	BMEMW#
14	ISA D1	30	ISA A17
15	ISA D2	31	ISA A15
16	GND	32	+5V

### PC-104 Plus Connector (J2A~ISA)

Connector pin definition



Pin	D	C
0	GND	GND
1	MEMCS16*	SBHE*
2	IOCS16*	LA23
3	IRQ10	LA22
4	IRQ11	LS21
5	IRQ12	LS20
6	IRQ15	LS19

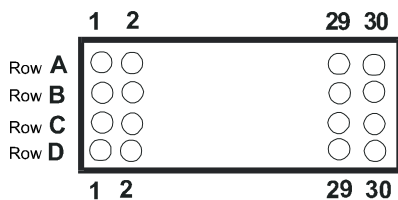
7	IRQI4	LA18
8	DACK0*	LA17
9	DRQ0	MEMR*
10	DACK5*	MEMW*
11	DRQ5	SD8
12	DACK6*	SD9
13	DRQ6	SD10
14	DACK7*	SD11
15	DRQ7	SD12
16	+5V	SD13
17	MASTER*	SD14
18	GND	SD15
19	GND	GND/KEY

Pin	A	B
1	IOCHCK*	GND
2	D7	RSTDRV
3	D6	+5V
4	D5	IRQ9
5	D4	N/A
6	D3	DRQ2
7	D2	-12V
8	D1	ENDXFR*
9	D0	+12V
10	IOCHRDY	GND/KEY
11	AEN	SMEMW*
12	A19	SMEMR*
13	A18	IOW*

14	A17	IOR*
15	A16	DACK3*
16	A15	DRQ3
17	A14	DACK1*
18	A13	DRQ1
19	A12	REFRESH*
20	A11	SYSCLK
21	A10	IRQ7
22	A9	IRQ6
23	A8	IRQ5
24	A7	IRQ4
25	A6	IRQ3
26	A5	DACK2*
27	A4	TC
28	A3	BALE
29	A2	+5V
30	A1	OSC
31	A0	GND
32	GND	GND

## PC-104 Plus Connector (J2B~PCI)

- Connector pin definition

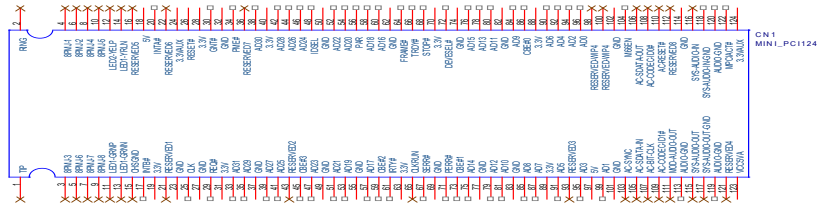


Pin	Definition			
	A	B	C	D
1	Gnd/5.0V KEY	Reserved	+5V	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	Gnd	AD04	AD03
4	C/BE0#	AD07	Gnd	AD06
5	Gnd	AD09	AD08	Gnd
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	Gnd	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	SB0#	PAR
10	Gnd	PERR#	+3.3V	SDONE
11	STOP#	+3.3V	LOCK#	Gnd
12	+3.3V	TRDY#	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	IDSE;3
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	Reserved	Reserved	Gnd/3.3V KEY

## Mini PCI (CN1)

- Connector pin definition

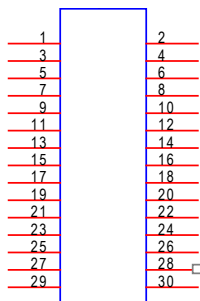


Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	TIP	2	RING	63	3.3V	64	FRAME#
	Key		Key	65	CLKRUN#	66	TRDY#
3	8PMJ-3 <sup>3,4</sup>	4	8PMJ-1 <sup>3,4</sup>	67	SERR#	68	STOP#
5	8PMJ-6 <sup>3,4</sup>	6	8PMJ-2 <sup>3,4</sup>	69	GROUND	70	3.3V
7	8PMJ-7 <sup>3,4</sup>	8	8PMJ-4 <sup>3,4</sup>	71	PERR#	72	DEVSEL#
9	8PMJ-8 <sup>3,4</sup>	10	8PMJ-5 <sup>3,4</sup>	73	C/BE[1]#	74	GROUND
11	LED1_GRNP	12	LED2_YELP	75	AD[14]	76	AD[15]
13	LED1_GRNN	14	LED2_YELN	77	GROUND	78	AD[13]
15	CHSGND	16	RESERVED	79	AD[12]	80	AD[11]
17	INTB#	18	5V	81	AD[10]	82	GROUND
19	3.3V	20	INTA#	83	GROUND	84	AD[09]
21	RESERVED	22	RESERVED	85	AD[08]	86	C/BE[0]#
23	GROUND	24	3.3VAUX	87	AD[07]	88	3.3V
25	CLK	26	RST#	89	3.3V	90	AD[06]
27	GROUND	28	3.3V	91	AD[05]	92	AD[04]

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
29	REQ#	30	GNT#	93	RESERVED	94	AD[02]
31	3.3V	32	GROUND	95	AD[03]	96	AD[00]
33	AD[31]	34	PME#	97	5V	98	RESERVED_WIP <sup>5</sup>
35	AD[29]	36	RESERVED	99	AD[01]	100	RESERVED_WIP <sup>5</sup>
37	GROUND	38	AD[30]	101	GROUND	102	GROUND
39	AD[27]	40	3.3V	103	AC_SYNC	104	M66EN
41	AD[25]	42	AD[28]	105	AC_SDATA_IN	106	AC_SDATA_OUT
43	RESERVED	44	AD[26]	107	AC_BIT_CLK	108	AC_CODEC_ID0#
45	C/BE[3]#	46	AD[24]	109	AC_CODEC_ID1	110	AC_RESET
47	AD[23]	48	IDSEL	111	MOD_AUDIO_MON	112	RESERVED
49	GROUND	50	GROUND	113	AUDIO_GND	114	GROUND
51	AD[21]	52	AD[22]	115	SYS_AUDIO_OUT	116	SYS_AUDIO_IN
53	AD[19]	54	AD[20]	117	SYS_AUDIO_OUT GND	118	SYS_AUDIO_IN_GND
55	GROUND	56	PAR	119	AUDIO_GND	120	AUDIO_GND
57	AD[17]	58	AD[18]	121	RESERVED	122	MPCIACT
59	C/BE[2]	60	AD[16]	123	VCC5VA	124	3.3VAUX
61	IRDY#	62	GROUND	125		126	

## GPS & GSM Connector (CN4)

- Connector size: 2 X 15 (2.0mm)



Pin	Definition	Pin	Definition
1	GSM_LED	2	GPS_LED
3	GPS_RXD_A	4	GPS_3.3V
5	GPS_TXD_A	6	GND
7	GSM/GPS module detection	8	GSM_4.2V
9	GSM_RXD_B	10	GSM_DCD_B
11	GSM_DTR_B	12	GSM_TXD_B
13	GSM_DSR_B	14	GSM_RTS_B
15	GSM_CTS_B	16	GSM_RI_B
17	GND	18	GSM_4.2V
19	GSM_4.2V	20	GND
21	GND	22	GSM_4.2V

23	G_LINE_C_R	24	GND
25	G_LINE_C_L	26	G_MICIN
27	GND	28	NC
29	GSM_POWER_ON	30	GND

## 954 IDSEL Select Jumper (JP3)

Pin No.	Status	Function Description
1-2	Short	PCI_AD22
2-3	Short*	PCI_AD26

## CMOS Input Voltage Select Jumper (JP4)

Pin No.	Status	Function Description
1-2	Short*	VBAT IN
2-3	Short	Clear CMOS

## Vehicle PC / Normal PC Mode Select (JP12)

Pin No.	Status	Function Description
1-2	Short*	IGNITION
2-3	Short	VIN_M

## CF (IDE1) Primary Master/Slave Select Jumper (JP6)

Pin No.	Status	Function Description
1-2	Short*	Slave
2-3	Short	Master

### CF (IDE2) Secondary Master/Slave Select Jumper (JP1)

Pin No.	Status	Function Description
1-2	Short	Slave
2-3	Short*	Master

### LVDS Power Input Voltage Select (JP2 )

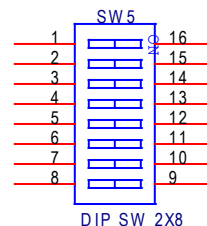
Pin No.	Status	Function Description
1-2	Short	+5V IN
2-3	Short*	+3.3V IN

### LED I/O Port Address & Data

Pin No.	Function Description
A1	I/O PORT Address : EEH DATA1 : 0(LIGHT) 1(DART)
A2	GSM STATUS

### On & Off Delay Select (SW5)

Connector size: 2x8



You can enable/disable and configure the delay timer by using a combination of pin settings. Use Pin 1 and Pin 2 to enable or disable the on or off delay timer, and then set the other pins to configure the timer. Refer to the table below.

For example, if you want to enable power on delay for one minute, do the following:

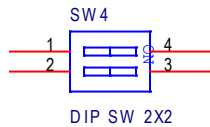
1. Set Pin 1 to ON.
2. Set PIN 3 to ON.
3. Set PIN4 to OFF.
4. Set PIN 5 to ON.

Similarly, if you want to delay power off for five minutes, do the following:

1. Set Pin 2 to ON.
2. Set PIN 6 to OFF.
3. Set PIN7 to OFF.
4. Set PIN 8 to ON.

RS-422/485 Select Dip Switch (SW4)

- Connector location



Connector pin definition

Pin	Definition	Definition
1(COM5)	OFF(RS422)	ON(RS422&RS485)
2(COM6)	OFF(RS422)	ON(RS422&RS485)