**NEXCOM International**

# VTC 3300, ICEB 3300, ICES 101, NAK 3300
## User Manual

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## Chapter 4: VTC 3300 Reference

## Chapter 5: NAK 3300 Module Reference

# 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 3200 has an ICES 101 ETX module with an Intel® Celeron® M low power processor and Intel® 852GM chipset. The VTC 3220 has an ETX module with an AMD Geode™ LX800 processor and AMD Geode™ CS5536 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. ICES 120 provides cost effective, versatile functionality and is an ideal ETX module for 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

## 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 enclosureproducts.

### 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 commercialenvironment.

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.

## 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.

For example, PEAK 7220VL2G RoHS version will become PEAK 7220VL2G(LF).

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 ofthe 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

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Email: sales@nexcom.cn

## 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

| Drive HDD (P/N:73H1400G18X00) | HDD 2.5" IDE Drives, 40GB, 5400/8MB/12.5ms, Seagate: ST940814AM, PBFREE |
|---|---|
| Wireless MiniPCI Card (P/N:7510LAN001X00) | Wireless MiniPCI card,802.11 a/b/g AboCom:WCM6002 w/antenna& cable WCM6002 |
| Wireless MiniPCI Card (P/N:7510LAN002X00) | Wireless MiniPCI card, 802.11 b/g AboCom: WMG2502 w/ antenna & cable WMG2502 |
| GPS antenna (P/N:60233SAM05X00) | GPS antenna/5m/SMA180P, Stars Navigation: STR-3 |
| GSM Antenna (P/N:60233SAM06X00) | GSM Antenna/5m/ SMA180P/900/1800, Stars Navigation: TLM-3 |
| Adapter (P/N:7400065005X00) | NICE3300/3330 POWER ADAPTER FSP:065-AAC(N09003),65W 19V/3.42A |
| Industrial SO-DIMM (P/N:7234M25608X00) | DDR400 SO-DIMM,PROMOS,industrial,-40°C to +85°C,32Mx8,256MB,200PIN,W/O ECC & REG,H:1.25", Apacer:76.8325G.105,PBFREE |

# CHAPTER 2: ICES 101 ETX MODULE REFERENCE

## ICES 101 Function Block Diagram

*ICES 101 Function Block Diagram*

- Pentium M Processor 478 uFCPGA / 479 uFCBGA
- Host Bus
- CRT Out LVDS Bus
- X3 Connector
- Intel 852-GM GMCH 732 uFCBGA
- DRAM Bus
- DDR SO-DIMM
- Power Gen
  - VTT: 1.05V
  - 3.3V
  - 1.5V
  - CPU VCCA: 1.8V
  - DDR I/O: 2.5V
  - VCORE: 0.7V~1.708V
  - DDR Pull Hi: 1.25V
  - GMCH 1.35V or 1.5V
- Clock Gen CK-408
- Hub Bus
- PCI to ISA Bridge
- ISA Bus
- X2 Connector
- X4 Connector
- IDE
- ICH4 421 BGA
- PCI Bus
- X1 Connector
- USB x 4
- MII
- Intel 82562ET LAN X1
- X4 Connector
- X1 Connector
- Low Pin Count Bus
- AC97 (ALC655)
- FWH
- Super I/O IT8712F/HX
- COM COM2
- PIO
- KB/MS
- IR
- X3 Connector

# 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℃ 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")

# Watchdog Timer Programming

```
         ┌─────────────┐
         │    Start    │
         └─────────────┘
                │
   ┌────────────────────────────┐
   │         Setup WDT          │
   │ #Setup Watchdog Timer      │
   │         Environment        │
   └────────────────────────────┘
                │
   ┌────────────────────────────┐
   │          InitWDT           │
   │   #Initial Watchdog Timer  │
   │ Users can select second or │
   │        minute timer        │
   │ at this procedure line 8   │
   └────────────────────────────┘
                │
   ┌────────────────────────────┐
   │        SetWDTTime          │
   │ #Set Watchdog Timer        │
   │     Time-out Value.        │
   │ Users can set time-out     │
   │    value at this           │
   │    procedure line 3.       │
   └────────────────────────────┘
                │
   ┌────────────────────────────┐
   │         ExitSetup          │
   │ #Exit Setup Environment    │
   └────────────────────────────┘
                │
         ┌─────────────┐
         │     End     │
         └─────────────┘
```
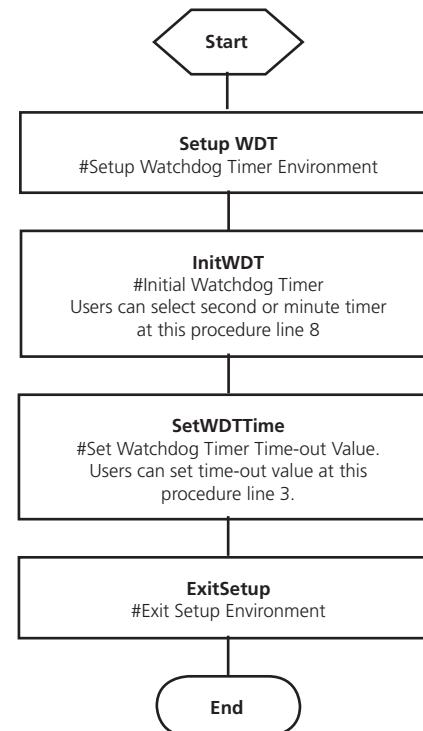
## P.S. Common Library

| 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 |

# ICES 101 Board Layout

*ICES 101 Board (Top View)*



Intel® Celeron® M

852GM

PCI-ISA Bridge

ICH4

SODIMM

Super I/O
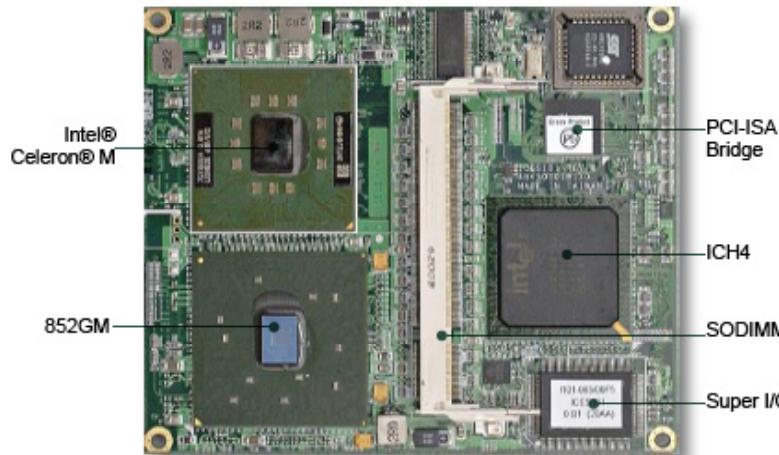
# ICES 101 Board Dimensions

*ICES 101 Board Dimensions*
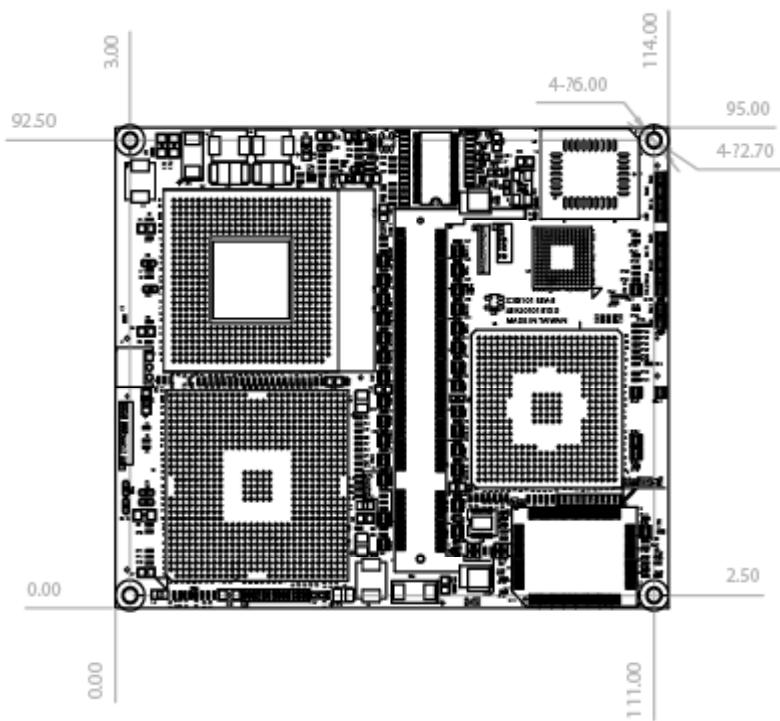
# IRQ Assignments

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 feature description | |
| 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 |

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# JP1: ETX Connector (X1)~PCI BUS, Audio Out, USB



| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 1 | GND | 2 | GND |
| 3 | PCICLK2 | 4 | PCICLK3 |
| 5 | GND | 6 | GND |
| 7 | PCICLK0 | 8 | PCICLK1 |
| 9 | REQ3# | 10 | GNT3# |
| 11 | GNT2# | 12 | +3V |
| 13 | REQ2# | 14 | GNT1# |
| 15 | REQ1# | 16 | +3V |
| 17 | GNT0# | 18 | NC |
| 19 | VCC | 20 | VCC |
| 21 | SERIRQ | 22 | REQ0# |
| 23 | AD0 | 24 | +3V |
| 25 | AD1 | 26 | AD2 |
| 27 | AD3 | 28 | AD4 |
| 29 | AD6 | 30 | AD5 |
| 31 | CBE0# | 32 | AD7 |
| 33 | AD8 | 34 | AD9 |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 35 | GND | 36 | GND |
| 37 | AD10 | 38 | AUXAL |
| 39 | AD11 | 40 | MIC |
| 41 | AD12 | 42 | AUXAR |
| 43 | AD13 | 44 | NC |
| 45 | AD14 | 46 | SNDL |
| 47 | AD15 | 48 | ASGND |
| 49 | CBE1# | 50 | SNDR |
| 51 | VCC | 52 | VCC |
| 53 | PAR | 54 | SERR# |
| 55 | GPERR# | 56 | NC |
| 57 | PME# | 58 | USB2# |
| 59 | LOCK# | 60 | DEVSEL# |
| 61 | TRDY# | 62 | USB3# |
| 63 | IRDY# | 64 | STOP# |
| 65 | FRAME# | 66 | USB2 |
| 67 | GND | 68 | GND |
| 69 | AD16 | 70 | CBE2# |
| 71 | AD17 | 72 | USB3 |
| 73 | AD19 | 74 | AD18 |
| 75 | AD20 | 76 | USB0# |
| 77 | AD22 | 78 | AD21 |
| 79 | AD23 | 80 | USB1# |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 81 | AD24 | 82 | CBE3# |
| 83 | VCC | 84 | VCC |
| 85 | AD25 | 86 | AD26 |
| 87 | AD28 | 88 | USB0 |
| 89 | AD27 | 90 | AD29 |
| 91 | AD30 | 92 | USB1 |
| 93 | PCIRST# | 94 | AD31 |
| 95 | INTC# | 96 | INTD# |
| 97 | INTA# | 98 | INTB# |
| 99 | GND | 100 | GND |

## JP2: ETX Connector (X2) ~ ISA BUS
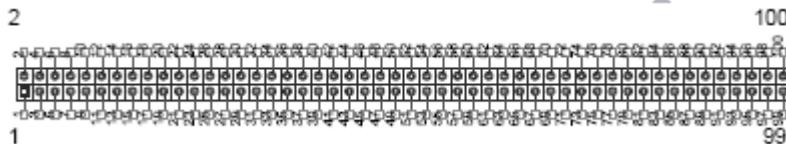


| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 1 | GND | 2 | GND |
| 3 | SD14 | 4 | SD15 |
| 5 | SD13 | 6 | MASTER# |
| 7 | SD12 | 8 | DREQ7 |
| 9 | SD11 | 10 | DACK7# |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 11 | SD10 | 12 | DREQ6 |
| 13 | SD9 | 14 | DACK6# |
| 15 | SD8 | 16 | DREQ5 |
| 17 | MEMW# | 18 | DACK5# |
| 19 | MEMR# | 20 | DREQ0 |
| 21 | LA17 | 22 | DACK0# |
| 23 | LA18 | 24 | IRQ14 |
| 25 | LA19 | 26 | IRQ15 |
| 27 | LA20 | 28 | IRQ12 |
| 29 | LA21 | 30 | IRQ11 |
| 31 | LA22 | 32 | IRQ10 |
| 33 | LA23 | 34 | IO16# |
| 35 | GND | 36 | GND |
| 37 | SBHE# | 38 | M16# |
| 39 | SA0 | 40 | OSC |
| 41 | SA1 | 42 | BALE |
| 43 | SA2 | 44 | TC |
| 45 | SA3 | 46 | DACK2# |
| 47 | SA4 | 48 | IRQ3 |
| 49 | SA5 | 50 | IRQ4 |
| 51 | VCC | 52 | VCC |
| 53 | SA6 | 54 | IRQ5 |
| 55 | SA7 | 56 | IRQ6 |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 57 | SA8 | 58 | IRQ7 |
| 59 | SA9 | 60 | SYSCLK |
| 61 | SA10 | 62 | REFSH# |
| 63 | SA11 | 64 | DREQ1 |
| 65 | SA12 | 66 | DACK1# |
| 67 | GND | 68 | GND |
| 69 | SA13 | 70 | DREQ3 |
| 71 | SA14 | 72 | DACK3# |
| 73 | SA15 | 74 | IOR# |
| 75 | SA16 | 76 | IOW# |
| 77 | SA18 | 78 | SA17 |
| 79 | SA19 | 80 | SMEMR# |
| 81 | IOCHRDY | 82 | AEN |
| 83 | VCC | 84 | VCC |
| 85 | SD0 | 86 | SMEMW# |
| 87 | SD2 | 88 | SD1 |
| 89 | SD3 | 90 | NOWS# |
| 91 | DREQ2 | 92 | SD4 |
| 93 | SD5 | 94 | IRQ9 |
| 95 | SD6 | 96 | SD7 |
| 97 | IOCHK# | 98 | RSTDRV |
| 99 | GND | 100 | GND |

## JP4: ETX (X3)~VGA, CLK, VIDEO, COM, LPT, IR, MS/KB
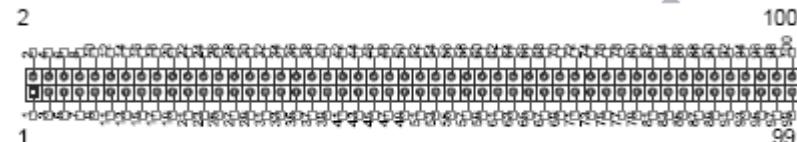


| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 1 | GND | 2 | GND |
| 3 | R | 4 | B |
| 5 | HSY | 6 | G |
| 7 | VSY | 8 | DDCK |
| 9 | | 10 | DDDA |
| 11 | LVDS_CLKBM | 12 | LVDS_YBM3 |
| 13 | LVDS_CLKBP | 14 | LVDS_YBP3 |
| 15 | GND | 16 | GND |
| 17 | LVDS_YBP1 | 18 | LVDS_YBP2 |
| 19 | LVDS_YBM1 | 20 | LVDS_YBM2 |
| 21 | GND | 22 | GND |
| 23 | LVDS_YAM3 | 24 | LVDS_YBP0 |
| 25 | LVDS_YAP3 | 26 | LVDS_YBM0 |
| 27 | GND | 28 | GND |
| 29 | LVDS_YAM2 | 30 | LVDS_CLKAP |
| 31 | LVDS_YAP2 | 32 | LVDS_CLKAM |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 33 | GND | 34 | GND |
| 35 | LVDS_YAP0 | 36 | LVDS_YAP1 |
| 37 | LVDS_YAM0 | 38 | LVDS_YAM1 |
| 39 | VCC | 40 | VCC |
| 41 | NC | 42 | |
| 43 | NC | 44 | BLON# |
| 45 | BIASON | 46 | DIGON |
| 47 | NC | 48 | NC |
| 49 | NC | 50 | NC |
| 51 | NC | 52 | NC |
| 53 | VCC | 54 | GND |
| 55 | STB# | 56 | AFD# |
| 57 | NC | 58 | PD7 |
| 59 | IRRX | 60 | ERR# |
| 61 | IRTX | 62 | PD6 |
| 63 | RXD2 | 64 | INIT# |
| 65 | GND | 66 | GND |
| 67 | RTS2# | 68 | PD5 |
| 69 | DTR2# | 70 | SLIN# |
| 71 | DCD2# | 72 | PD4 |
| 73 | DSR2# | 74 | PD3 |
| 75 | CTS2# | 76 | PD2 |
| 77 | TXD2 | 78 | PD1 |

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 79 | RI2# | 80 | PD0 |
| 81 | VCC | 82 | VCC |
| 83 | RXD1 | 84 | ACK# |
| 85 | RTS1# | 86 | BUSY |
| 87 | DTR1# | 88 | PE |
| 89 | DCD1# | 90 | SLCT# |
| 91 | DSR1# | 92 | MSCLK |
| 93 | CTS1# | 94 | MSDAT |
| 95 | TXD1 | 96 | KBCLK |
| 97 | RI1# | 98 | KBDAT |
| 99 | GND | 100 | GND |

# JP3: ETX Connector (X4)~IDE, LAN, I2C, SMBUS, MISC



| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | GND | 2 | GND |
| 3 | 5V_SB | 4 | PWGIN |
| 5 | PS_ON | 6 | SPEAKER |
| 7 | PWRBTN# | 8 | BATT |
| 9 | NC | 10 | LILED# |
| 11 | RSMRST# | 12 | ACTLED# |
| 13 | NC | 14 | SPEEDLED# |
| 15 | NC | 16 | I2CLK |
| 17 | VCC | 18 | VCC |
| 19 | OVCR# | 20 | NC |
| 21 | EXTSMI# | 22 | I2DAT |
| 23 | SMBCLK | 24 | SMBDATA |
| 25 | SIDE_CS3# | 26 | SMBALRT# |
| 27 | SIDE_CS1# | 28 | NC |
| 29 | SIDE_A2 | 30 | PIDE_CS3# |
| 31 | SIDE_A0 | 32 | PIDE_CS1# |

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 33 | GND | 34 | GND |
| 35 | PDIAG_S | 36 | PIDE_A2 |
| 37 | SIDE_A1 | 38 | PIDE_A0 |
| 39 | SIDE_INTRQ | 40 | PIDE_A1 |
| 41 | BATLOW# | 42 | GPE1# |
| 43 | SIDE_AK# | 44 | PIDE_INTRQ |
| 45 | SIDE_RDY | 46 | PIDE_AK# |
| 47 | SIDE_IOR# | 48 | PIDE_RDY |
| 49 | VCC | 50 | VCC |
| 51 | SIDE_IOW# | 52 | PIDE_IOR# |
| 53 | SIDE_DRQ | 54 | PIDE_IOW# |
| 55 | SIDE_D15 | 56 | PIDE_DRQ |
| 57 | SIDE_D0 | 58 | PIDE_D15 |
| 59 | SIDE_D14 | 60 | PIDE_D0 |
| 61 | SIDE_D1 | 62 | PIDE_D14 |
| 63 | SIDE_D13 | 64 | PIDE_D1 |
| 65 | GND | 66 | GND |
| 67 | SIDE_D2 | 68 | PICD_D13 |
| 69 | SIDE_D12 | 70 | PICD_D2 |
| 71 | SIDE_D3 | 72 | PIDE_D12 |
| 73 | SIDE_D11 | 74 | PIDE_D3 |
| 75 | SIDE_D4 | 76 | PIDE_D11 |
| 77 | SIDE_D10 | 78 | PIDE_D4 |

| Pin | Definition | Pin | Definition |
| --- | --- | --- | --- |
| 79 | SIDE_D5 | 80 | PIDE_D10 |
| 81 | VCC | 82 | VCC |
| 83 | SIDE_D9 | 84 | PIDE_D5 |
| 85 | SIDE_D6 | 86 | PIDE_D9 |
| 87 | SIDE_D8 | 88 | PIDE_D6 |
| 89 | NC | 90 | CBLID_P |
| 91 | RXD# | 92 | PIDE_D8 |
| 93 | RXD | 94 | SIDE_D7 |
| 95 | TXD# | 96 | PIDE_D7 |
| 97 | TXD | 98 | HDRST# |
| 99 | GND | 100 | GND |

# Chapter 3: ICEB 3300 Carrier Board Reference

## ICEB 3300 Board Layout

*ICEB 3300 Board Layout*

//Jeffrey will provide photo

# ICEB 3300 Jumpers and Switches

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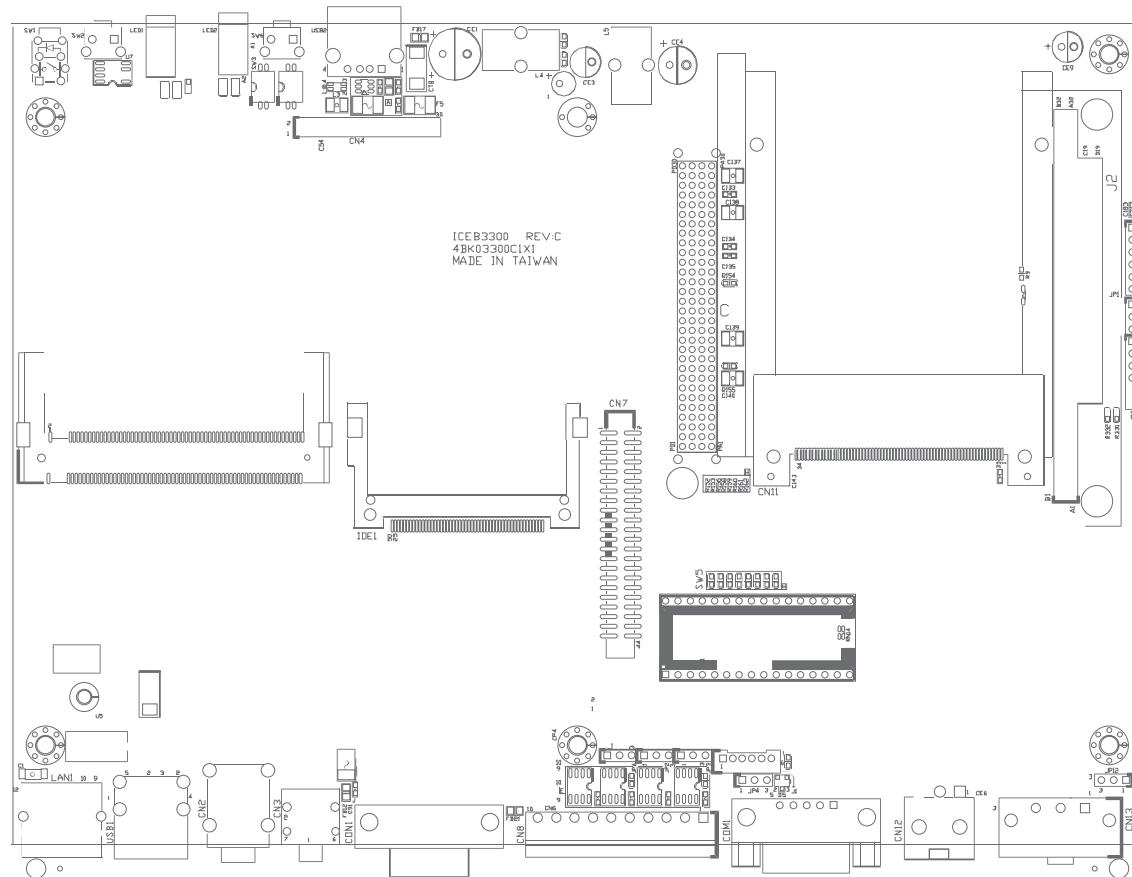
# ICEB 3300 Board Dimensions

xxx Missing information

# ICEB 3300 Specifications

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

**I/O Ports**

*Front I/O ports*

- Power status LEDs, HDD status LEDs
- One LED that connects to GPO, programmable for alarm or other purposes defined by developer
- USB 2.0 x 1
- Power reset button
- Internal and external CF socket2
- PCMCIA socket
- Power-on switch

*Rear I/O Ports*

- 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 ~+30V DC Power Input with 3-pin power connector (power, ignition, ground)
- +5/+12V DC Power Output

- VGA Connector (DB15)
- DB26 female for LVDS with backlight power and USB 2.0
- Audio output for Line-in, Line-out, Mic-in and Speaker-out with phone-jack connectors x 4
- Digital IO DB9 connector x 1 (female)

**IDE**

- 44-pin IDE Connector x 1 (Primary IDE )
- Compact Flash Socket x1 (external)

**COM Ports**

- COM 3~4 : External DB9 RS232
- COM 5~6 : RS422/485 with 10pin Screws Terminal Connector
- COM 1~2 : RS232 for GSM/GPS module, Reserved Board to Board connector

**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 Ports x 2 in the Rear

**PIO**

- LPT Port x 1: 25-pin Box Header Supporting bi-directional, EPP and ECP modes

## Audio

- 4x Phone Jack connectors for Line-in, Line-out, Mic-in and Speaker-out in the Rear
- Mic-in with internal pin-header to connect with GSM/GPS module's

## 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 x1 in the Front

## Power Supply

- On board DC to DC circuit support Power Input Range from +6V to +36VDC.
- Reserved one Connector with 2x5 pin Mate-N-Lock connector (AMP_770971-1) for DC output with external
- Power Device connection. For example, the optional External Active cooling FAN Kit or External Panel power.
- The DC Output include +12V and +5V together in the pin definition at

Max.10W

- Power-on Delay Time is selectable for Disable and Enable with 10sec / 30sec / 1min / 3min / 10min / 30min
- Power-off Delay time is selectable for Disable and Enable with 1min /10min / 30min / 60min / 120min
- Ignition enable/disable is jumper selectable.
- Over-Voltage Protection: for over than 75V(must have)(VTC to have to 100V above), system shut down

## SRAM

- Reserved NVRAM Socket for the Optional 512 KB battery backed SRAM (NVRAM )

## Digital I/O

- 4 Input & 4 Output Isolated Digital I/O (+5V TTL Level)
- DB9 Female in the Rear

## LED and Others

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

# ICEB 3300 External Connectors

## GPIO Connector

- Connector size: DSUB-9 PIN
- Connector location
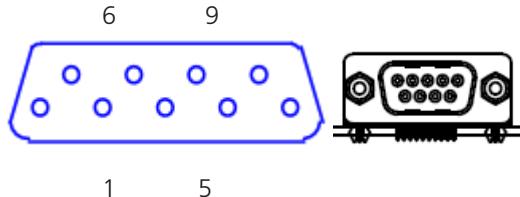


- Connector pin definition (COM1)

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

## VGA Connector (CON1)

- Connector size: DSUB-15
- Connector location
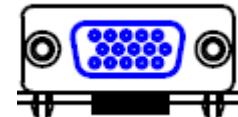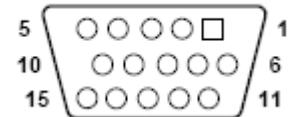


- Connector pin definition

| 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/C1 |
| 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 location



| 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 Power Connector (J1)

• Connector location

6  1

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

## External 12V & 5V Power and Fan Sensor (CN12)

6        4
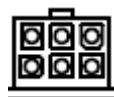


3        1

| PIn | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | 5V | 2 | 12V |
| 3 | SEN+ | 4 | GND |
| 5 | GND | 6 | SEN- |

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

• Connector location

1  10

• 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 (CN2)
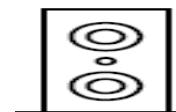


• Connector pin definition

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | NC | 2 | SOUND_SNDR |
| 3 | \GND | 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 (CN3)
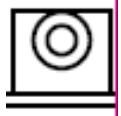


• Connector pin definition

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

## Power Input (CN13)

DC Power Input Connecto



## DC Power input Voltage (CN13)

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

## Power On & IDE Active (LED1)



## GPIO & GSM LED (LED2)

# ICEB 3300 Internal Connectors

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

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

- Connector location



CN6    BOX-2.0mm-M-180

CN5    BOX-2.0mm-M-180
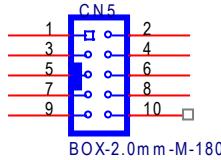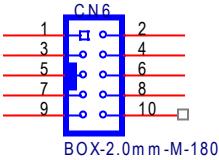
- Connector pin definition

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

## IDE Connector (CN7)

- Connector size: 2 x 22 = 44 Pins Box Header, (2.0 mm Pitch)

- Connector location



2                                44

1                                43
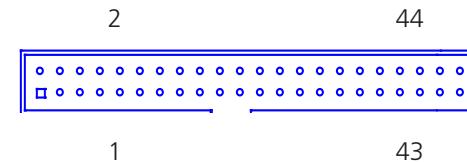
- Connector pin definition

| Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|
| 1 | Rstdrv- | 2 | Gnd |
| 3 | Ided7 | 4 | Ided 8 |
| 5 | Ided6 | 6 | Ided 9 |
| 7 | Ided5 | 8 | Ided 10 |
| 9 | Ided4 | 10 | Ided 11 |
| 11 | Ided3 | 12 | Ided 12 |
| 13 | Ided2 | 14 | Ided 13 |
| 15 | Ided1 | 16 | Ided 14 |
| 17 | Ided0 | 18 | Ided 15 |
| 19 | Gnd | 20 | NC |
| 21 | Idereq- | 22 | Gnd |
| 23 | Ideiow- | 24 | Gnd |
| 25 | Ideior- | 26 | Gnd |
| 27 | Iderdy | 28 | IDE-PD1 |

| 29 | Ideack- | 30 | Gnd |
|----|---------|----|-----|
| 31 | Ideirq | 32 | NC |
| 33 | DA1 | 34 | 66 Detect |
| 35 | DA0 | 36 | DA2 |
| 37 | SCS1 | 38 | SCS3 |
| 39 | Ideact- | 40 | Gnd |
| 41 | VCC5 | 42 | VCC |
| 43 | Gnd | 44 | NC |

## CompactFlash Connector (IDE1, IDE2)

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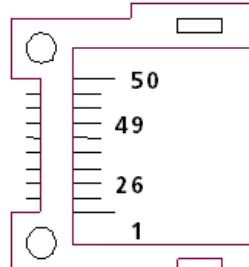


| PIn | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | Gnd | 2 | Data 3 |
| 3 | Data 4 | 4 | Data 5 |
| 5 | Data 6 | 6 | Data 7 |
| 7 | HDC CS100 | 8 | Gnd |
| 9 | Gnd | 10 | Gnd |
| 11 | Gnd | 12 | Gnd |
| 13 | +5V | 14 | Gnd |
| 15 | Gnd | 16 | Gnd |
| 17 | Gnd | 18 | 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)
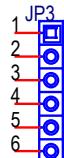


PIN-2.54mm-M-180

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

## Microchip Programmer PIN Header (JP7)



PIN-2.54mm-M-180

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

## PIO Connector (CN10)

- Connector size: Box header 2x13 = 26-pin (2.0mm)

- Connector location: CN10



BOX-2.0mm-M-180
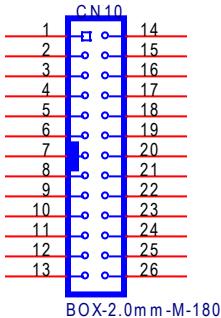
- Connector pin definition

| PIn | Definition | Pin | Definition |
| --- | --- | --- | --- |
| 1 | Line Print Strobe | 2 | Parallel Data 0 |
| 3 | Parallel Data 1 | 4 | Parallel Data 2 |
| 5 | Parallel Data 3 | 6 | Parallel Data 4 |
| 7 | Parallel Data 5 | 8 | Parallel Data 6 |
| 9 | Parallel Data 7 | 10 | Acknowlege |
| 11 | Busy | 12 | Pape Empty |
| 13 | Select | 14 | Auto Feed |
| 15 | Error | 16 | Initialize |
| 17 | Select Input | 18 | Chassis Gnd |
| 19 | Chassis GND | 20 | Chassis GND |
| 21 | Chassis GND | 22 | Chassis GND |
| 23 | Chassis GND | 24 | Chassis GND |
| 25 | Chassis GND | 26 | Chassis GND |

## LVDS Connector + USB0 (CN9)

- Connector size: 2 X 15 (2.0mm)

- Connector location



BOX-2.0mm-M-180
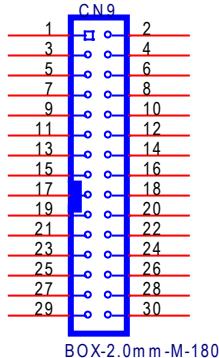
- Connector pin definition

*CN9*

| PIn | Definition | Pin | Definition |
| --- | --- | --- | --- |
| 1 | LVDS_CLK | 2 | LVDS_DAT |
| 3 | Panel_VDD | 4 | LVDS_1 |
| 5 | LVDS_9 | 6 | LVDS_0 |
| 7 | LVDS_8 | 8 | Panel_VDD |

| 9 | LVDS_GND | 10 | LVDS_GND |
|---|---|---|---|
| 11 | LVDS_7 | 12 | LVDS_3 |
| 13 | LVDS_6 | 14 | LVDS_2 |
| 15 | LVDS_GND | 16 | LVDS_GND |
| 17 | LVDS_5 | 18 | Panel_backlight |
| 19 | LVDS_4 | 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 Pin Defined (U34)



1X16_2.54MM
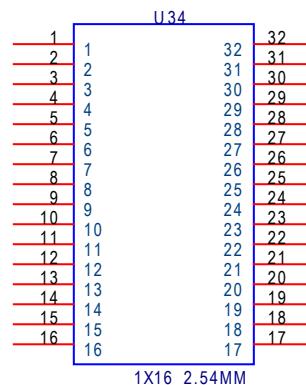
| PIn | Definition | Pin | Definition |
|---|---|---|---|
| 1 | ISA A18 | 17 | ISA D3 |
| 2 | ISA A16 | 18 | ISA D4 |
| 3 | ISA A14 | 19 | ISA D5 |
| 4 | ISA A12 | 20 | ISA D6 |
| 5 | ISA A7 | 21 | ISA D7 |
| 6 | ISA A6 | 22 | ROM CS# |
| 7 | ISA A5 | 23 | ISA A10 |
| 8 | ISA A4 | 24 | BMEMR# |
| 9 | 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 location and pin definition
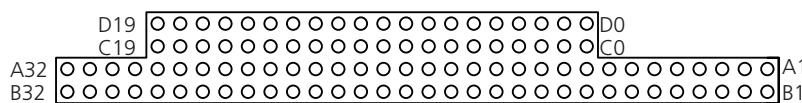


| Pin | D | C |
|-----|---|---|
| 0 | GND | GND |
| 1 | MEMCS16* | SBHE* |
| 2 | IOCS16* | LA23 |
| 3 | IRQ10 | LA22 |
| 4 | IRQ11 | LS21 |
| 5 | IRQ12 | LS20 |
| 6 | IRQ15 | LS19 |
| 7 | IRQI4 | LA18 |
| 8 | DACK0* | LA17 |
| 9 | DRQ0 | MEMR* |
| 10 | DACK5* | MEMW* |
| 11 | DRQ5 | SD8 |

| 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 location
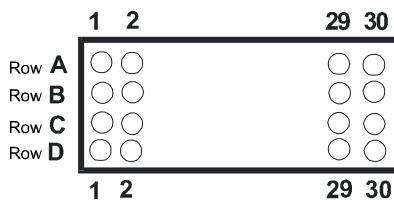


| Pin | Definition | | | |
|-----|------------|---|---|---|
| | A | B | C | D |
| 1 | Gnd/5.0V KEY | Reserved | +5V | AD00 |
| 2 | VI/O | AD02 | AD01 | +5V |
| 3 | AD05 | Gnd | AD04 | AD03 |
| 4 | C/BE0# | AD07 | Gnd | AD06 |
| 5 | Gnd | AD09 | AD08 | Gnd |
| 6 | AD11 | VI/O | AD10 | M66EN |
| 7 | AD14 | 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 location
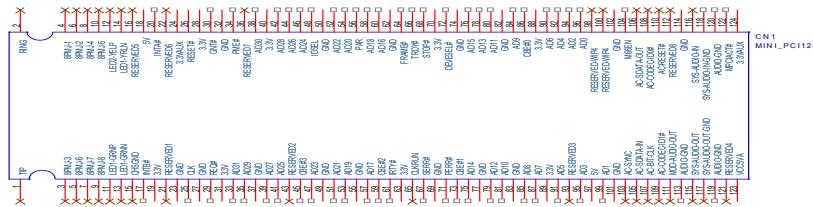


xxx I need the Word or Excel version of this table.

| 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[3, 4] | 4 | 8PMJ-1[3, 4] | 67 | SERR# | 68 | STOP# |
| 5 | 8PMJ-6[3, 4] | 6 | 8PMJ-2[3, 4] | 69 | GROUND | 70 | 3.3V |
| 7 | 8PMJ-7[3, 4] | 8 | 8PMJ-4[3, 4] | 71 | PERR# | 72 | DEVSEL# |
| 9 | 8PMJ-8[3, 4] | 10 | 8PMJ-5[3, 4] | 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] |
| 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[5] |
| 35 | AD[29] | 36 | RESERVED | 99 | AD[01] | 100 | RESERVED_WIP[5] |
| 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# |

## PCMCIA (CN11)

• Connector location
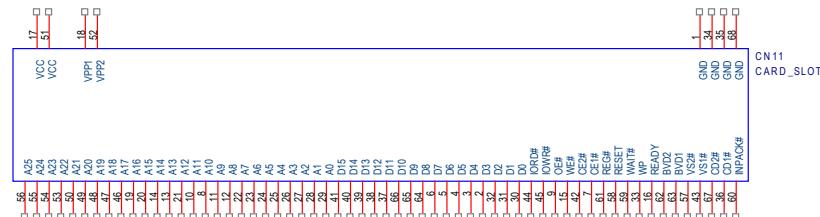


| Pin | Definition | Pin | Definition | Pin | Definition | Pin | Definition |
|-----|-----------|-----|-----------|-----|-----------|-----|-----------|
| 1 | GND | 2 | D3 | 3 | D4 | 4 | D5 |
| 5 | D6 | 6 | D7 | 7 | CE1# | 8 | A10 |
| 9 | OE# | 10 | A11 | 11 | A9 | 12 | A8 |
| 13 | A13 | 14 | A14 | 15 | 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 |

## GPS & GSM Connector (CN4)

- Connector size: 2 X 15 (2.0mm)
- Connector location



CN4

CON_2X30
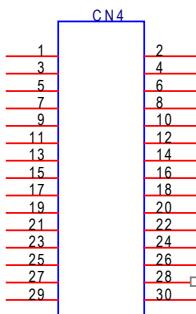
| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | GSM_LED | 2 | GPS_LED |
| 3 | GPS_RXD_A | 4 | GPS_3.3V |
| 5 | GPS_TXD_A | 6 | GND |
| 7 | GND | 8 | GSM_4.2V |
| 9 | GSM_RXD_B | 10 | GSM_DCD_B |
| 11 | GSM_DTR_B | 12 | GSM_TXD_B |
| 13 | GSM_DSR_B | 14 | GSM_RTS_B |

| 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 |

## Reset Button (SW1)

xxx Missing information

## GSM Reset Button (SW6)

xxx This is no longer in the ICEB specs that I received on 7/2. Please confirm that we're removing this.

## Power Button (SW5)

xxx Missing information

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## 954 IDSEL Select (JP3)

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

## CMOS Input Voltage Select (JP4)

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

## DC Input Voltage Select (JP12)

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

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

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

## CF (IDE2) Primary Master/Slave Select (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 | GSM STATUS |
| A2 | I/O PORT Address : EEEH  DATA1 : 0(LIGHT) 1(DART) |

## On & Off Delay Select (SW5)

Connector location



SW 5

DIP SW 2X8
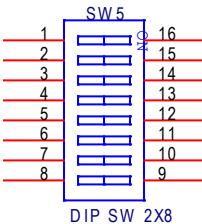
Connector pin definition

| Pin | Definition |
| --- | --- |
| 1 | On delay enable/disable |
| 2 | Off delay enable/disable |
| 3 | On delay key A |
| 4 | On delay key B |
| 5 | On delay key C |
| 6 | Off delay key D |
| 7 | Off delay key E |
| 8 | Off delay key F |

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 OFF.

3. Set PIN4 to ON.

4. Set PIN 5 to OFF.

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 ON.

3. Set PIN7 to ON.

4. Set PIN 8 to OFF.

| Pin | Time Set | 10 sec | 30 sec | 1 min | 5 min | 10 min | 15 min | 30 min | 1 hr |
|---|---|---|---|---|---|---|---|---|---|
| 3 | On delay A | OFF | ON | OFF | ON | OFF | ON | OFF | ON |
| 4 | On delay B | OFF | OFF | ON | ON | OFF | OFF | ON | ON |
| 5 | On delay C | OFF | OFF | OFF | OFF | ON | ON | ON | ON |
| Pin | Time Set | 10 sec | 30 sec | 1 min | 5 min | 10 min | 15 min | 30 min | 1 hr |
| 4 | Off delay D | OFF | ON | OFF | ON | OFF | ON | OFF | ON |
| 5 | Off delay E | OFF | OFF | ON | ON | OFF | OFF | ON | ON |
| 6 | Off delay F | OFF | OFF | OFF | OFF | ON | ON | ON | ON |

## RS-422/485 Select (SW4)

• Connector location

SW4

```
1 ──┌──────┐── 4
2 ──│ ▭▭  │── 3
    └──────┘
```

DIP SW 2X2
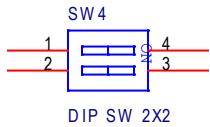
Connector pin definition

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

# CHAPTER 4: VTC 3300 REFERENCE

## 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-Front

- Power / HDD Status LEDs
- 1 LED, connect to GPIO, programmable for alarm or other application specific purposes
- 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
- Audio output with 1x RJ-11 to headset
- 1 x GSM SIM-Card socket (COM1)
- 1 x Reset button for integrated GSM/GPRS and GPS Module (COM2)
- Antenna Mounting Holes for 2x SMA-type (WLAN and GPS) and 1x FME-type
- (GSM)

**I/O Interface-Rear**

- 4x COM ports:
- 2 x DB9 for COM3 and COM4 (Support RS-232). *Before using COM3/4, please install the PCI954 driver. This driver is available in 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 back-light voltage
- 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 +36VDC power input with 3-pin power input connector ignition and ground. *VTC 3300 has integrated an overvoltage circuit protection design to protect the system from excess current.*
- +5 VDC and +12VDC power output to turn on/off fan with thermal control

**Device**

- 1 x Front Access PCMCIA socket / CompactFlash socket
- 1 x Internal CompactFlash socket
- 1 x Internal 1.8"/2.5" HDD drive bay
- 1 x NVRAM socket

**Expansion Slot**

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

**Dimensions**

- 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
- e 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 |

# VTC 3300 Power Consumption

| Model Name | OS | Memory | Storage | Others | AP |
|---|---|---|---|---|---|
| VTC 3300 | Win XP | 1G | 60GB | NAK 3300 | K Power + Burning Test |
| Value | Power Consumption | | | | |
| Theoretical Current | 32.326W | | | | |
| Real Current One | 19~21.5W | | | | |
| Real Current Two | 16~17.5W | | | | |
| Real Current Three | 17.6~18W | | | | |

**Notes**

\*        Theoretical Current means R&D designed power consideration with Onboard Devices (Does not consider the add-on devices)

\*\*       Real Current One means system with Maximum HD/CPU and Memory Loading/Usage under room temperature.

\*\*\*     Real Current Two means system with 25% HD/70% CPU and 50% Memory Loading/Usage under room temperature.

\*\*\*\*   Real Current Three means system without running K Power with OS in idle state under room temperature.

# NICE3300 Power Design Feature

**Power Ignition Control**

**Power On/Off Delay Setting**

xxx Wendy to provide details

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VTC 3300, ICES 3300, ICES 101, NAK 3300 User Manual

# VTC 3300/3220 Dimensions

*Dimension Illustration*
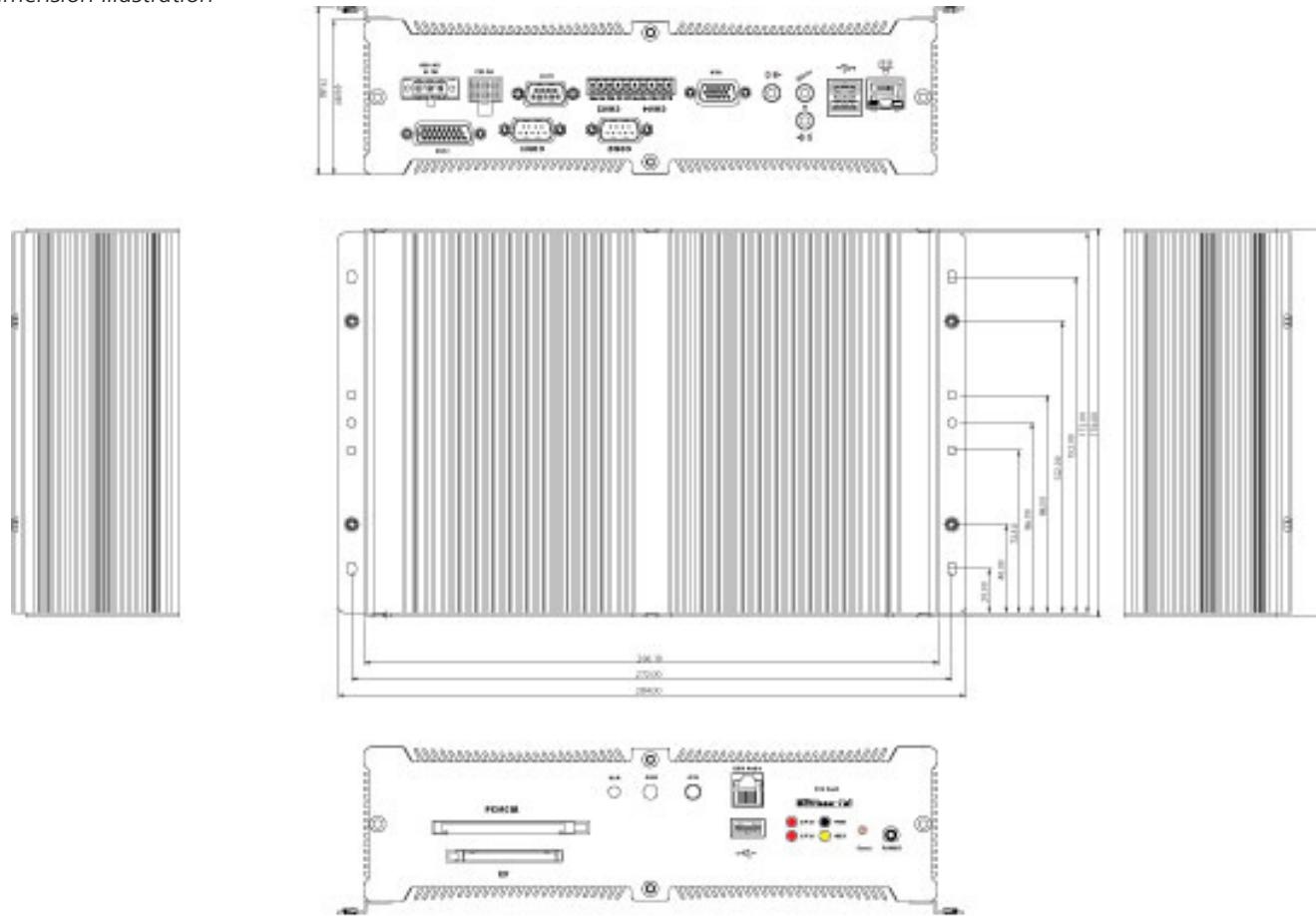
# VTC 3300 Front and Back Layout

xxx Jay to add callouts



PCMCIA

CF

GPIO  PWR

GSM
RESET  GPIO

HDD  RESET  POWER

NICE 3300



COM[4]  COM[3]  LVDS

G2 RX+RX-TX+TX-G1 RX+RX-TX+TX-

VGA

COM[6]  COM[5]  GPIO  DC Out  DC IN
6V~36V
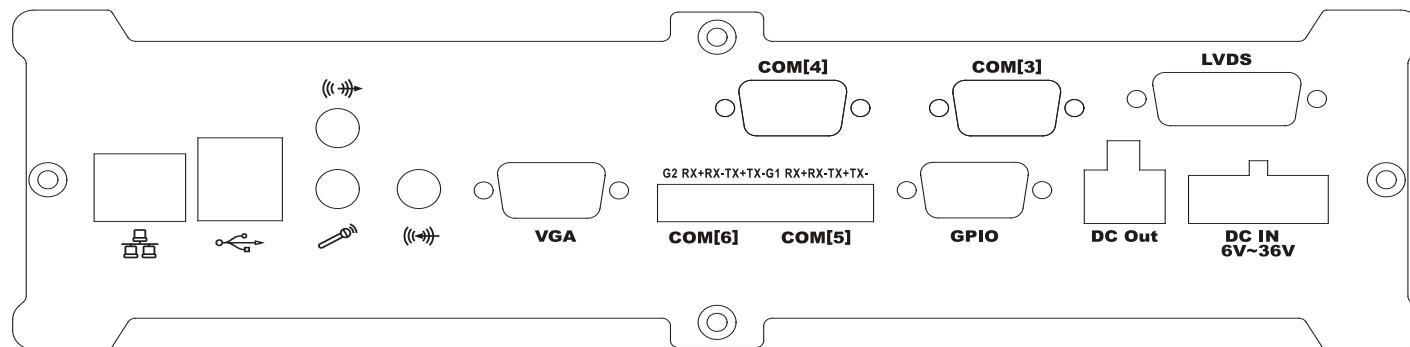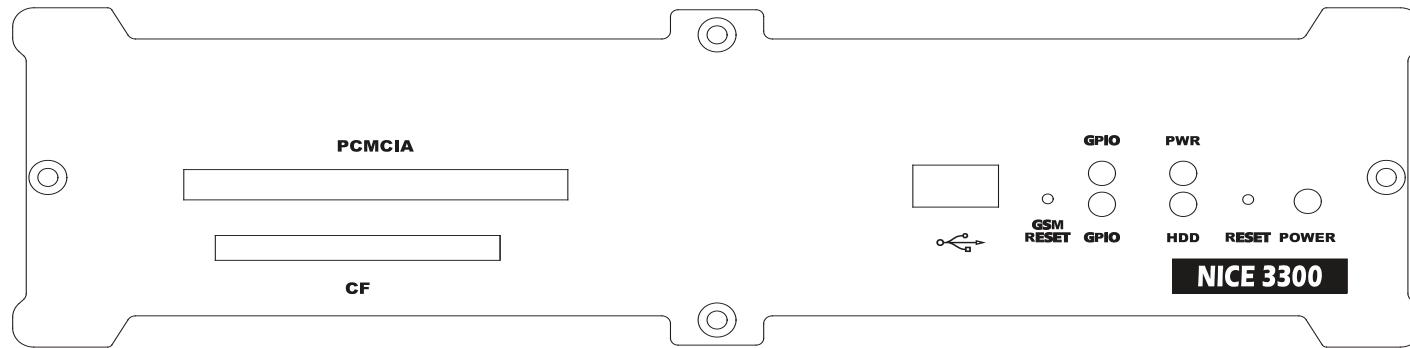
# Installing Modules

Except for the ICEB 3300 carrier board and the ICES 101 CPU board, VTC 3300 ships without any modules installed. This section provides information on how to install supported modules, which include:

- 2.5" hard disk
- Internal CompactFlash card
- Mini PCI module
- SODIMM

*For instructions on how to install the NAK 3300 module, refer to Chapter 5.*

## Removing the Cover

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.
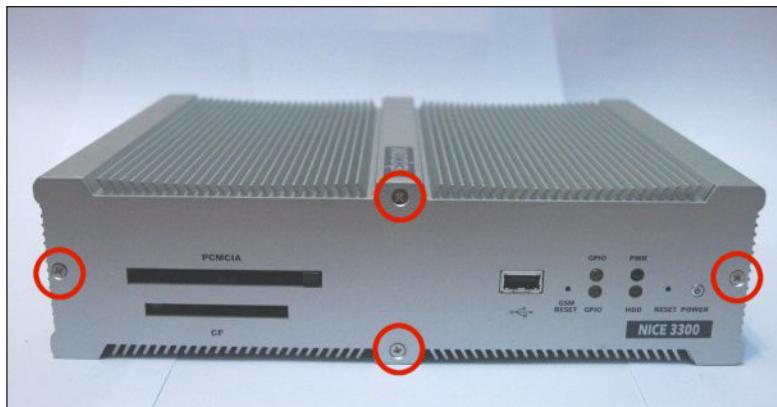


3. On the back panel, remove the top screw.

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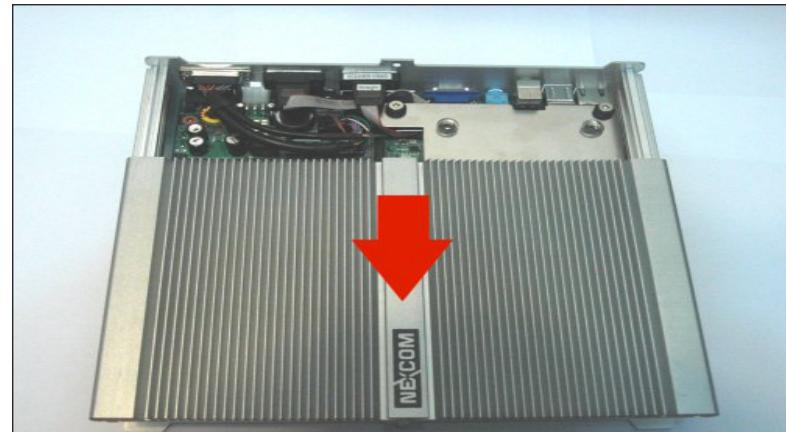


4. Put the top cover and the screws that you removed in a safe place. You will need to put them back after you have finished installing all your modules.

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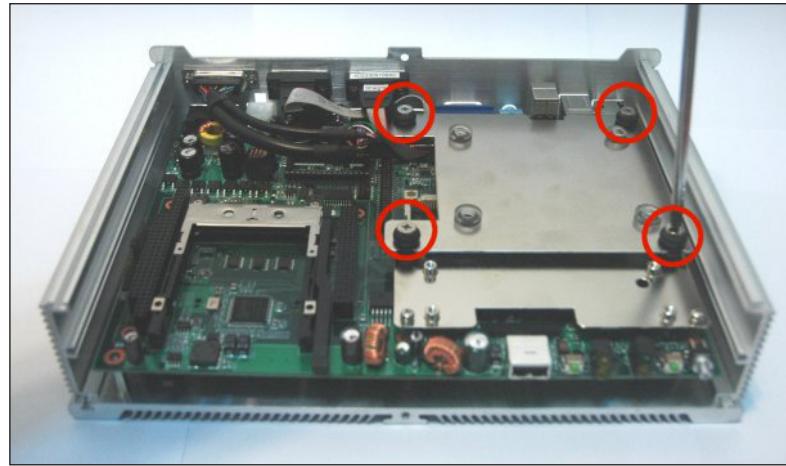
3. Lift the bracket from the board, and then set aside with the four screws that you removed.

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

5. Place the mounting bracket on top of the hard disk so that the remaining four screw holes on the bracket align with the screw holes on the hard disk.
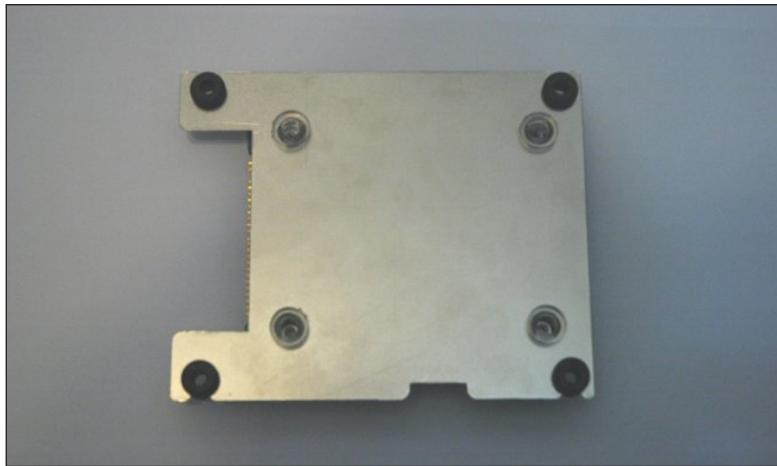


6. Secure the hard disk to the bracket using the four I-head bolt screws that are supplied with the VTC 3300 package. You should be able to fasten each screw all the way.
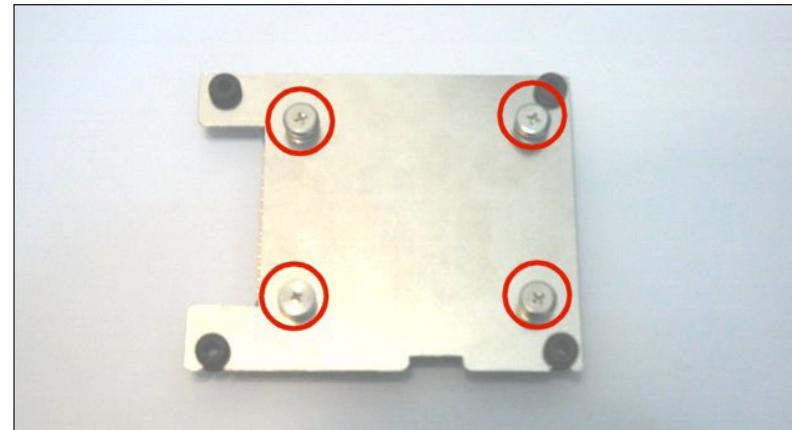


*If you are installing an internal CompactFlash card or a mini PCI module, install these other modules first before continuing with the next step. Refer to the next two sections for instructions. After you finish installing these modules, return to this section, and then continue with the next step.*

7. Gently turn the mounting bracket over so that the hard disk is on top.



8. 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.



9. Secure the mounting bracket to the board using the four screws that you removed in Step 2.

## 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.



## Installing the Mini PCI Module

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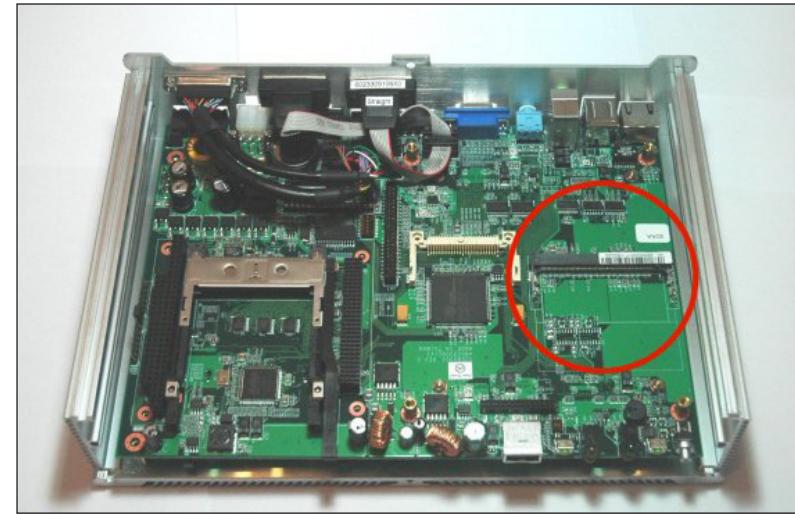


2. Insert the mini PCI card into the slot at a 45-degree angle, and then push it in until the gold-plated connector is seated firmly in the slot.

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



## Replacing the Cover

*If you are planning to install the NAK 3300 module, install the module first before replacing the chassis cover. For instructions on how to install the NAK 3300 module, refer to Chapter 5.*

1. Align the rails on the sides of the cover with the rails on the chassis.

2. Push the cover in until the other end touches the back panel.
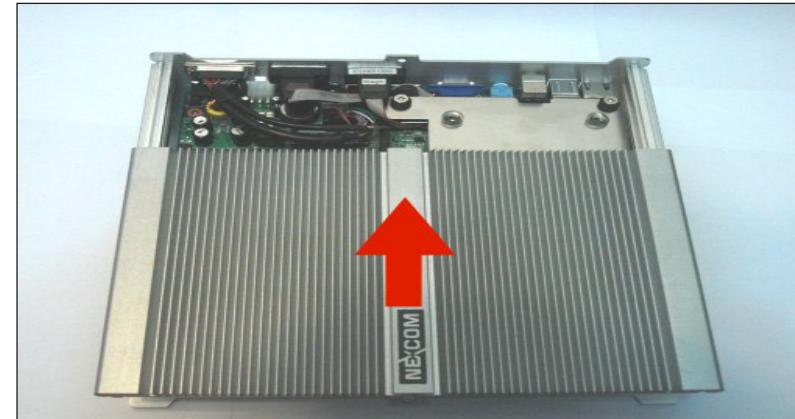
3. Secure the cover into the back panel by fastening the top screw.

4. Secure the cover into the front panel using the four screws that you removed when you first took the cover off.



## Removing the Heat Sink

1. Place the VTC 3300 chassis on a flat surface with the bottom part facing up.

2. Using a Phillips screwdriver, remove the four screws that secure the heat sink to the chassis.
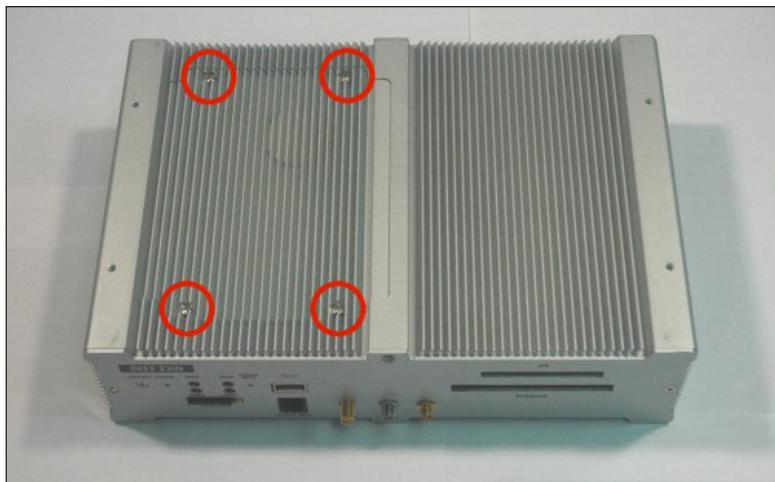


3. Use a thin, pointed object (for example, a pen) to pry and lift the hea sink from the chassis. Alternatively, hold the heat sink into place, gently turn the chassis over and put it down on a flat surface. Lift the chassis to remove the heat sink.

3. Remove the heat sink, and then put it aside along with the four screws that you removed earlier.



You are now ready to install the ICES 101 module and SODIMM. Note that there are two types of heatsink for the ICES 101 module – an onboard CPU type (C65 and 373) and a socket CPU type (SKT). Make sure you use the correct heatsink for the ICES 101 module that you are installing.

## Installing the ICES 101 Module

1. Align the four connectors on the ICES 101 module with the four slots on the carrier board. The connectors are keyed, so there is only one way to insert the module.



2. When all the connectors are aligned, firmly but gently press down the four corners of the ICES 101 module until the connectors are firmly seated in the slots.

3. Secure the module to the carrier board using the four xxx (type of screw/description) screws that are supplied with the VTC 3300 package.

**Installing SODIMM**

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

1. Locate the SODIMM slot 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.

## Replacing the Heat Sink

1. Gently place the heat sink back into its position.