



COMe-9X90 COM Express Module and COMEDB4 Carrier Board

Quick Guide

Key Features:

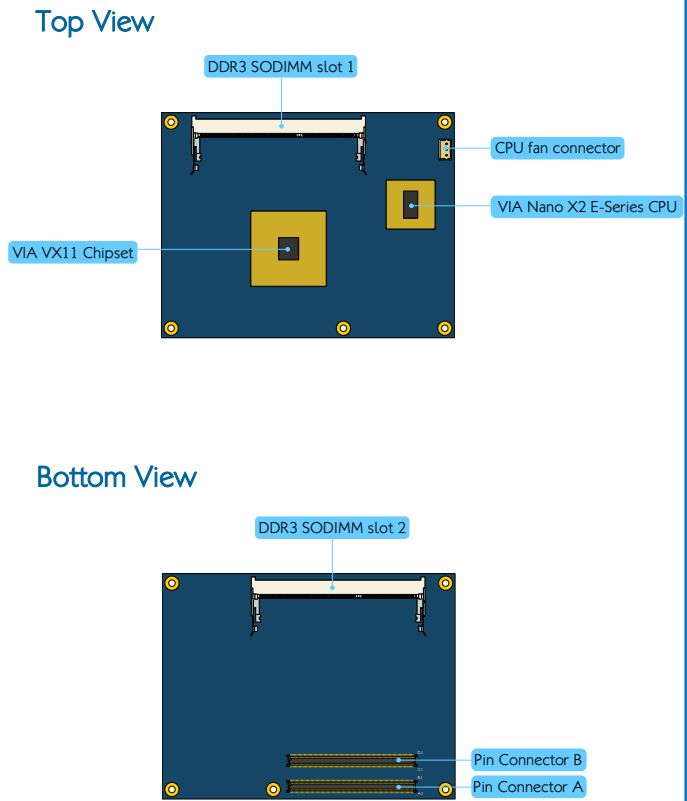
- 1.2GHz VIA Nano® X2 E-Series processor
- Supports up to 16GB 1333 DDR3 SDRAM
- DX11 3D/2D graphics with MPEG-2, WMV9, VC1 and H.264 decoding acceleration
- Supports 18/24-bit dual-channel LVDS panel, two DisplayPort ports, or two HDMI® ports
- Supports two USB 3.0 and six USB 2.0 ports

COMe-9X90 Module Specifications

| Core | |
|---|---|
| Processor | <ul style="list-style-type: none"> • 1.2GHz VIA Nano® X2 E-Series • 1.0GHz VIA QuadCore E-Series (manufacturing optional) |
| Chipset | • VIA VX11 Media System Processor |
| System Memory | <ul style="list-style-type: none"> • 2 x DDR3 1333/1066 SODIMM slots • Supports up to 16GB memory size |
| BIOS | <ul style="list-style-type: none"> • AMI eEFI BIOS • 32Mbit SPI flash memory |
| Operating System | <ul style="list-style-type: none"> • Windows 7, XP, XPe and CE 6.0 • Windows Embedded System 7 • Linux |
| Hardware Monitoring | <ul style="list-style-type: none"> • CPU temperature reading • CPU fan speed reading • System voltage monitoring |
| System Monitoring and Management | <ul style="list-style-type: none"> • Wake-on-LAN • System power management • AC power failure recovery • Watchdog Timer (software programmable) |
| Expansion Bus | • 4 x PCIe x1 |
| Video | |
| Graphics | • Integrated VIA C-645/640 DX11 3D/2D graphics processor and video decoding acceleration |
| Graphics memory | • Optimized Unified Memory Architecture (UMA) supports frame buffer size from 64MB to 1GB (BIOS) |
| CRT Interface | • 1 x VGA port supports up to 2048 x 1536 resolution |
| LVDS Interface | • 1 x LVDS channel supports dual-channel 18-bit or 24-bit LVDS panel (VIA VT1636 or Chrontel CH7305) |
| DisplayPort Interface | <ul style="list-style-type: none"> • DisplayPort 1: Support DisplayPort/HDMI interface • DisplayPort 2: Support DisplayPort/HDMI interface |

| Audio | |
|-------------------------------|---|
| Controller | • VIA VT2021 High Definition Audio Codec |
| Ethernet | |
| Controller | • Realtek RTL8111G/GS 10/100/1000M PCIe Gigabit Ethernet Controller |
| Input/Output | |
| Audio | • 1 x High Definition audio digital interface |
| LAN | • 1 x Gigabit Ethernet port |
| USB | <ul style="list-style-type: none"> • 2 x USB 3.0 ports • 6 x USB 2.0 ports |
| SATA | • 2 x SATA 3.0 Gbps connectors |
| Serial | • 2 x Serial ports with TX and RX signals |
| DisplayPort | • 2 x DisplayPort |
| Expansion Buses | <ul style="list-style-type: none"> • 1 x System Management Bus (SMBus) interface • 1 x I²C bus • 1 x SDIO interface as default (shared with GPIO 4INs and 4 OUTs via VX11) • 1 x LPC bus • 1 x SPI • Support Express Card, speaker out, reset function, thermal protection, suspend/wake signals, power button, power good and fan control signals |
| Mechanical and Environment | |
| COM Express Compliance | • COM Express™ Type 6, basic module |
| Dimension | • 95mm x 125mm (3.73" x 4.92") |
| Storage Temperature | • -40°C ~ 70°C |
| Operating Temperature | • 0°C ~ 60°C |
| Operating Humidity | • 0% ~ 95% (relative humidity; non-condensing) |
| Compliance | • CE, FCC, BSMI and RoHS |

COMe-9X90 Module Layout Diagram



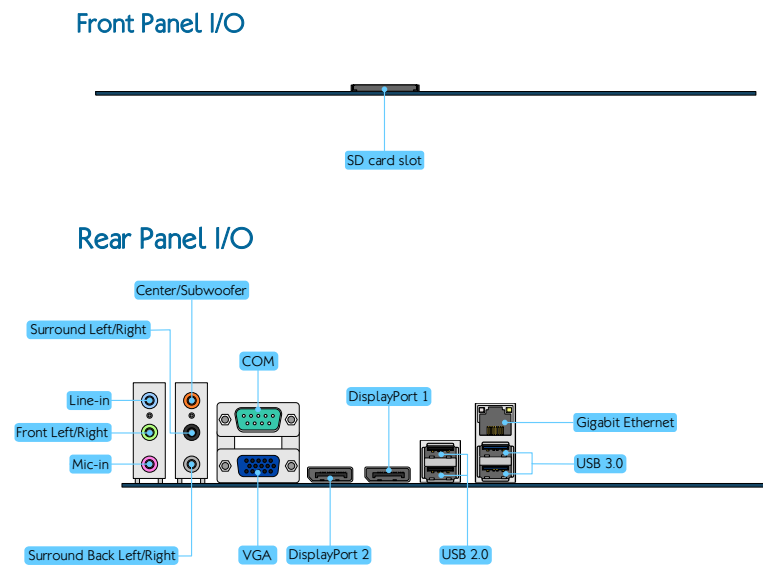
COMEDB4 Carrier Board Specifications

| COM Express Module Type | |
|---|--|
| | • Support basic/compact form factor Type 6 |
| Audio | |
| | • VIA VT2021 High Definition Audio Codec |
| Super I/O | |
| | • Fintek F71869ED |
| BIOS | |
| | <ul style="list-style-type: none"> • AMI BIOS • 32Mbit SPI BIOS for uEFI |
| Front Panel I/O | |
| | • 1 x SD card slot (SDIO), shared with DIO1 pin header |
| Rear Panel I/O | |
| | <ul style="list-style-type: none"> • 1 x VGA port • 1 x COM port • 2 x DisplayPort • 2 x USB 2.0 ports • 2 x USB 3.0 ports • 1 x Gigabit Ethernet port • 6 x Audio jacks (supports multi-channel audio outputs) |
| Onboard Slots, Buttons and Power Connectors | |
| | <ul style="list-style-type: none"> • 1 x AUX power connector (for AT mode) • 1 x ATX power connector (for ATX mode) • 1 x MiniPCIe slot • 1 x Power button • 1 x Reset button • 3 x PCIe x1 slots • 2 x SATA connectors |

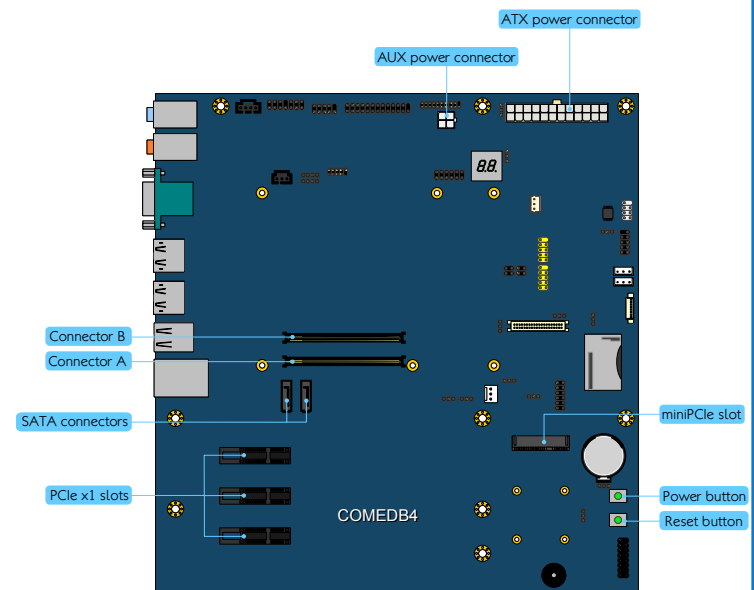
| Onboard Pin Headers and Connectors | |
|------------------------------------|---|
| | <ul style="list-style-type: none"> • 1 x CD-In connector • 1 x Front Audio pin header • 1 x COM2 pin header • 1 x LPT pin header • 1 x LPC pin header • 1 x SPI pin header • 1 x DIO1 pin header, shared with SDIO slot • 1 x DIO2 pin header (from Fintek F71869ED) • 1 x CPU fan connector • 1 x Serial Port pin header • 2 x SATA power connectors • 1 x LVDS panel connector (dual-channel 18/24-bit) • 1 x Inverter connector • 1 x System fan connector • 1 x SMBus pin header • 1 x I²C pin header • 2 x USB 2.0 pin headers for four USB 2.0 ports • 1 x Front LAN LED pin header • 1 x Front Panel pin header (for HDD LED, Power LED, Switch and Speaker) • 1 x S/PDIF connector |
| Onboard Jumpers | |
| | <ul style="list-style-type: none"> • 1 x Clear CMOS jumper • 1 x Inverter power select jumper • 1 x LCD panel power select jumper • 1 x COM1 voltage select jumper (+5V/+12V power select option) • 1 x COM2 voltage select jumper (+5V/+12V power select option) • 1 x MiniPCIe slot enabled select jumper • 1 x USB 2.0 port 3 enabled select jumper • 1 x BIOS select jumper (for selecting module/carrier board BIOS) • 5 x AT/ATX mode select jumpers • 1 x EDID power select jumper |
| Form Factor and Dimension | |
| | <ul style="list-style-type: none"> • Micro-ATX • 10" x 9.6" |

| Operating Temperature | |
|--------------------------------|------------------------------|
| | • 0°C ~ 60°C |
| Storage Temperature | |
| | • -40°C ~ 70°C |
| Operating and Storage Humidity | |
| | • 0% ~ 95% relative humidity |

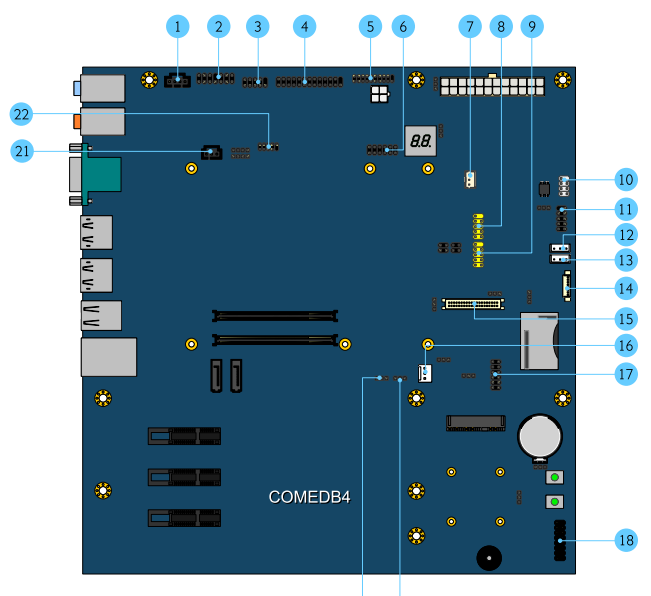
COMEDB4 Carrier Board Layout Diagram



Onboard Slots, Buttons and Power Connectors



Onboard Pin headers and Connectors



- 1 CD_IN**

| | |
|---|-----------|
| 1 | CD_IN_L |
| 2 | CD_IN_GND |
| 3 | CD_IN_GND |
| 4 | CD_IN_R |
- 2 F_AUDIO**

| | | | |
|----|--------------|----|----------|
| 1 | MIC2_FR_L | 2 | AGND |
| 3 | MIC2_FR_R | 4 | FNT_DET |
| 5 | HP_OUT_R | 6 | MIC2_JD |
| 7 | FNT_IO_SENSE | 8 | KEY |
| 9 | HP_OUT_L | 10 | LINE2_JD |
| 11 | +12V | 12 | +12V |
| 13 | AGND | 14 | AGND |
- 3 COM2**

| | | | |
|---|----------|----|----------|
| 1 | COM_DCD2 | 2 | COM_RXD2 |
| 3 | COM_TXD2 | 4 | COM_DTR2 |
| 5 | GND | 6 | COM_DSR2 |
| 7 | COM_RTS2 | 8 | COM_CTS2 |
| 9 | COM_RI2 | 10 | KEY |
- 4 LPT**

| | | | |
|----|---------|----|----------|
| 1 | -LP_STB | 2 | -LP_AFD |
| 3 | LP_D0 | 4 | -LP_ERR |
| 5 | LP_D1 | 6 | -LP_INIT |
| 7 | LP_D2 | 8 | -LP_SLIN |
| 9 | LP_D3 | 10 | GND |
| 11 | LP_D4 | 12 | GND |
| 13 | LP_D5 | 14 | GND |
| 15 | LP_D6 | 16 | GND |
| 17 | LP_D7 | 18 | GND |
| 19 | -LP_ACK | 20 | GND |
| 21 | LP_BUSY | 22 | GND |
| 23 | LP_PE | 24 | GND |
| 25 | LP_SLCT | 26 | KEY |

- 5 LPC**

| | | | |
|----|------------|----|-------------|
| 1 | LPC_AD1 | 2 | LPC_33M_CLK |
| 3 | -LPC_RESET | 4 | GND |
| 5 | LPC_AD0 | 6 | NC |
| 7 | LPC_AD2 | 8 | -LPC_FRAME |
| 9 | LPC_SERIRQ | 10 | LPC_AD3 |
| 11 | -LPC_DRQ1 | 12 | NC |
| 13 | +5V | 14 | +3.3V |
| 15 | +5V | 16 | +3.3V |
| 17 | GND | 18 | GND |
| 19 | GND | 20 | KEY |
- 6 DIO2**

| | | | |
|----|---------|----|----------|
| 1 | 5V_DIO2 | 2 | 12V_DIO2 |
| 3 | GPO34 | 4 | GPI50 |
| 5 | GPO35 | 6 | GPI51 |
| 7 | GPO36 | 8 | GPI52 |
| 9 | GPO37 | 10 | GPI53 |
| 11 | GND | 12 | GND |
- 7 CPUFAN**

| | |
|---|--------|
| 1 | FANIO |
| 2 | FANPWM |
| 3 | GND |
- 8 USB2_2/3**

| | | | |
|---|----------|----|----------|
| 1 | VUSB | 2 | VUSB |
| 3 | USBD_T2- | 4 | USBD_T3- |
| 5 | USBD_T2+ | 6 | USBD_T3+ |
| 7 | GND | 8 | GND |
| 9 | KEY | 10 | GND |
- 9 USB2_0/1**

| | | | |
|---|----------|----|----------|
| 1 | VUSB | 2 | VUSB |
| 3 | USBD_T0- | 4 | USBD_T1- |
| 5 | USBD_T0+ | 6 | USBD_T1+ |
| 7 | GND | 8 | GND |
| 9 | KEY | 10 | GND |
- 10 SPI**

| | | | |
|---|----------|---|---------|
| 1 | SPI_VCC | 2 | GND |
| 3 | -SPI_SS0 | 4 | SPI_CLK |
| 5 | SPI_DI | 6 | SPI_DO |
| 7 | KEY | 8 | RESET |
- 11 SER_PORT**

| | | | |
|---|-------------|----|-------------|
| 1 | SER0_TX_CON | 2 | SER0_RX_CON |
| 3 | NC | 4 | NC |
| 5 | GND | 6 | NC |
| 7 | SER1_TX_CON | 8 | SER1_RX_CON |
| 9 | NC | 10 | KEY |
- 12 S_PWR2**

| | |
|---|------|
| 1 | +5V |
| 2 | +12V |
| 3 | GND |
- 13 S_PWR1**

| | |
|---|------|
| 1 | +5V |
| 2 | +12V |
| 3 | GND |
- 14 Inverter**

| | |
|---|------------|
| 1 | IVDD_IN |
| 2 | IVDD_IN |
| 3 | BAKLITE_EN |
| 4 | BLT_CLK |
| 5 | BAKLITE_EN |
| 6 | BLT_CTRL |
| 7 | GND |
| 8 | GND |
- 15 LVDS**

| | | | |
|----|---------|----|---------|
| 1 | -A4_L | 2 | PVDD |
| 3 | A4_L | 4 | PVDD |
| 5 | GND | 6 | GND |
| 7 | -A5_L | 8 | GND |
| 9 | A5_L | 10 | -A0_L |
| 11 | GND | 12 | A0_L |
| 13 | -A6_L | 14 | GND |
| 15 | A6_L | 16 | -A1_L |
| 17 | GND | 18 | A1_L |
| 19 | -CLK2_L | 20 | GND |
| 21 | CLK2_L | 22 | -A2_L |
| 23 | GND | 24 | A2_L |
| 25 | -A7_L | 26 | GND |
| 27 | A7_L | 28 | -CLK1_L |
| 29 | NC | 30 | CLK1_L |
| 31 | NC | 32 | GND |
| 33 | DDC_PWR | 34 | -A3_L |
| 35 | NC | 36 | A3_L |
| 37 | NC | 38 | SPCLK |
| 39 | NC | 40 | SPD |
- 16 SYSFAN**

| | |
|---|--------|
| 1 | FANIO |
| 2 | FANPWM |
| 3 | GND |
- 17 DIO1**

| | | | |
|----|----------|----|----------|
| 1 | 5V_DIO1 | 2 | 12V_DIO1 |
| 3 | COM_GPO0 | 4 | COM_GPI0 |
| 5 | COM_GPO1 | 6 | COM_GPI1 |
| 7 | COM_GPO2 | 8 | COM_GPI2 |
| 9 | COM_GPO3 | 10 | COM_GPI3 |
| 11 | GND | 12 | GND |
- 18 F_PANEL**

| | | | |
|----|-------|----|-----------|
| 1 | FP_5V | 2 | FP_5V |
| 3 | FP_5V | 4 | -SATA_LED |
| 5 | -PLED | 6 | -PW_BTN |
| 7 | FP_5V | 8 | GND |
| 9 | NC | 10 | RST_SW |
| 11 | NC | 12 | GND |
| 13 | SPEAK | 14 | FP_5V |
| 15 | KEY | 16 | NC |
- 19 I2C_BUS**

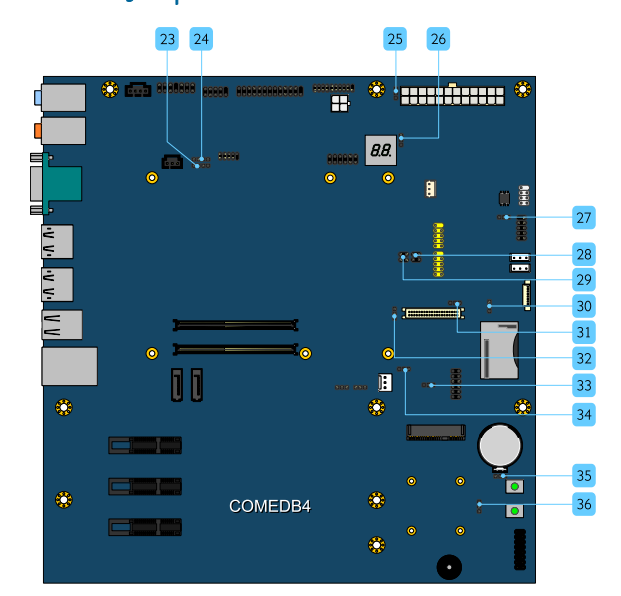
| | |
|---|----------|
| 1 | I2C_CLK |
| 2 | I2C_DATA |
| 3 | GND |
- 20 SMBUS**

| | |
|---|----------|
| 1 | SMB_CLK |
| 2 | SMB_DATA |
| 3 | GND |
- 21 SPDIF**

| | |
|---|--------|
| 1 | +5V |
| 2 | SPDIFO |
| 3 | GND |
- 22 FLAN_LED**

| | | | |
|---|-------|----|-----------|
| 1 | 3VSUS | 2 | -LAN_ACT |
| 3 | 3VSUS | 4 | NC |
| 5 | GND | 6 | W_LAN_LED |
| 7 | 3VSUS | 8 | GND |
| 9 | KEY | 10 | GND |

Onboard Jumpers



- 23 JP_COM1_VSEL**

| Pins | Description |
|------|---|
| 1-2 | Enabled COM1 pin header to support +5V |
| 2-3 | Normal (default) |
| 3-4 | Enabled COM1 pin header to support +12V |
- 24 JP_COM2_VSEL**

| Pins | Description |
|------|---|
| 1-2 | Enabled COM2 pin header to support +5V |
| 2-3 | Normal (default) |
| 3-4 | Enabled COM2 pin header to support +12V |
- 25 JP_AT/ATX_SEL5**

| Pins | Description |
|------|--------------------|
| 1-2 | ATX mode (default) |
| 2-3 | AT mode |
- 26 JP_AT/ATX_SEL2**

| Pins | Description |
|------|--------------------|
| 1-2 | ATX mode (default) |
| 2-3 | AT mode |
- 27 JP_AT/ATX_SEL3**

| Pins | Description |
|------|--------------------|
| 1-2 | ATX mode (default) |
| 2-3 | AT mode |
- 28 JP_USB3_SEL**

| Pins | Description |
|------|--|
| 1-2 | Enabled USB 2.0 port 3 pin header. (default) |
| 3-4 | Enabled USB 2.0 port 3 pin header. (default) |
- 29 JP_USBME_SEL**

| Pins | Description |
|------|-------------------------|
| 1-2 | Enabled Mini PCIe slot. |
| 3-4 | Enabled Mini PCIe slot. |

Note: For [29] JP_USBME_SEL to be activated, the [28] JP_USB3_SEL function has to be disabled.
- 30 IVDD**

| Pins | Description |
|------|--|
| 1-2 | Use +5V for the Inverter power. |
| 2-3 | Use +12V for the Inverter power. (default) |
- 31 EDID_PWR**

| Pins | Description |
|------|-----------------|
| 1-2 | +3.3V (default) |
| 2-3 | +5V |
- 32 JP_AT/ATX_SEL4**

| Pins | Description |
|------|--------------------|
| 1-2 | ATX mode (default) |
| 2-3 | AT mode |
- 33 BIOS_DIS1**

| Pins | Description |
|------|----------------------------------|
| 1-2 | Select module SPI BIOS (default) |
| 2-3 | Select carrier board SPI BIOS |
- 34 PVDD**

| Pins | Description |
|------|--|
| 1-2 | Use +5V for the LCD panel power. |
| 2-3 | Use +3.3V for the LCD panel power. (default) |
- 35 JP_AT/ATX_SEL1**

| Pins | Description |
|------|--------------------|
| 1-2 | ATX mode (default) |
| 2-3 | AT mode |
- 36 CLEAR_CMOS**

| Pins | Description |
|------|-----------------------------|
| 1-2 | Keep CMOS setting (default) |
| 2-3 | Clear CMOS setting |

1 Installing SODIMM memory on COMe-9X90 module

Step 1
Align the notch on the memory module with the protruding wedge on the SODIMM slot. Insert the memory module into the slot at 30 degrees angle.

Step 2
Push down until the memory module snaps into place. The memory slot has two locking mechanisms that will click once the memory module has been fully inserted.

Note:
Due to the limitation of component height at the bottom side of COMe-9X90, the SODIMM memory module installed in this side (SODIMM2 slot) cannot be bundled with heatsink or thermal pad.

2 Installing COMe-9X90 module to COMEDB4 carrier board

Step 1
Locate the carrier board mounting points (x5) and the connectors (x2).

Step 2
Install five 8mm hex spacers onto the carrier board. The hex spacer must be placed on top of the board. From the bottom of the board, tighten the hex spacers by using the M2.5x4mm screws (x5).

Step 3
Align the pin connectors and mounting points of the COMe-9X90 module into the connectors and hex spacers on the carrier board respectively. Then press down the COMe-9X90 module until the pin connectors have been fully inserted into the connectors.

Step 4
Secure the COMe-9X90 module using M2.5x4mm screw. Then apply the thermal paste on top of the processor and chipset.

Step 5
Install the heatsink on COMe-9X90 module. Secure it with four M2.5x15mm screws (with 3mm plastic washer).

Step 6
Connect the CPU fan connector cable.

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