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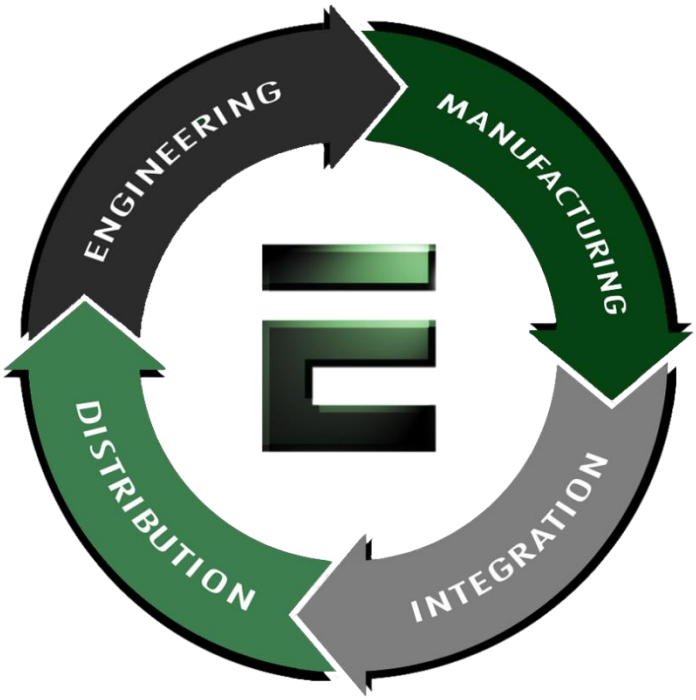


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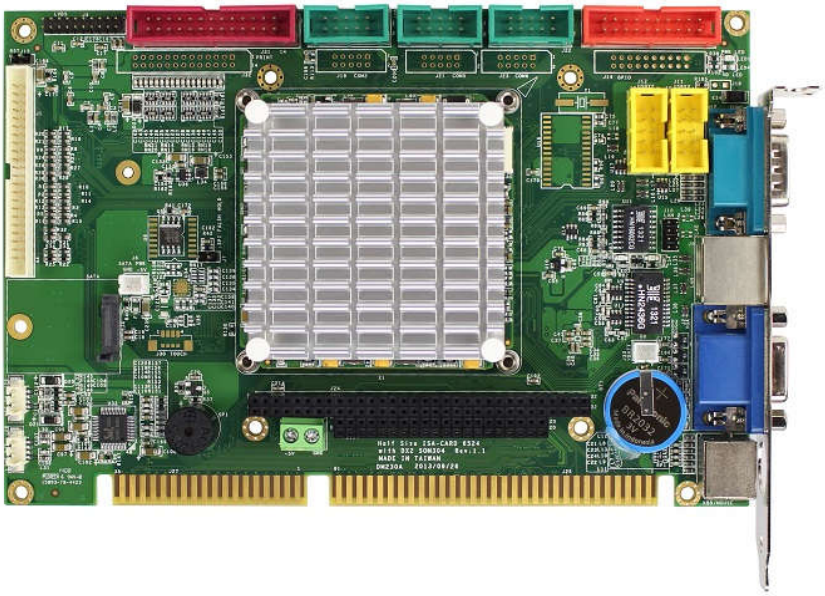
# User Manual



# VDX3-6724

with

## DM&P Vortex86DX3 1GHz processor

## Half-Size CPU Module with

## 4S/4USB/VGA/LCD/LVDS/

## AUDIO/2LAN/GPIO/

## 1/2GB DDR3 Onboard

Version 2.0

ICOP Technology Inc.

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# Revision History

| Revision | Date | Remark |
|---|---|---|
| 1.0 | June 13, 2016 | First release |
| 2.0 | June 8, 2016 | New Add:<br>(1) Working temperature for Dual Core version<br>(2) Cable set for VDX3-6724 with Compact Flash |

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# 1 General Information

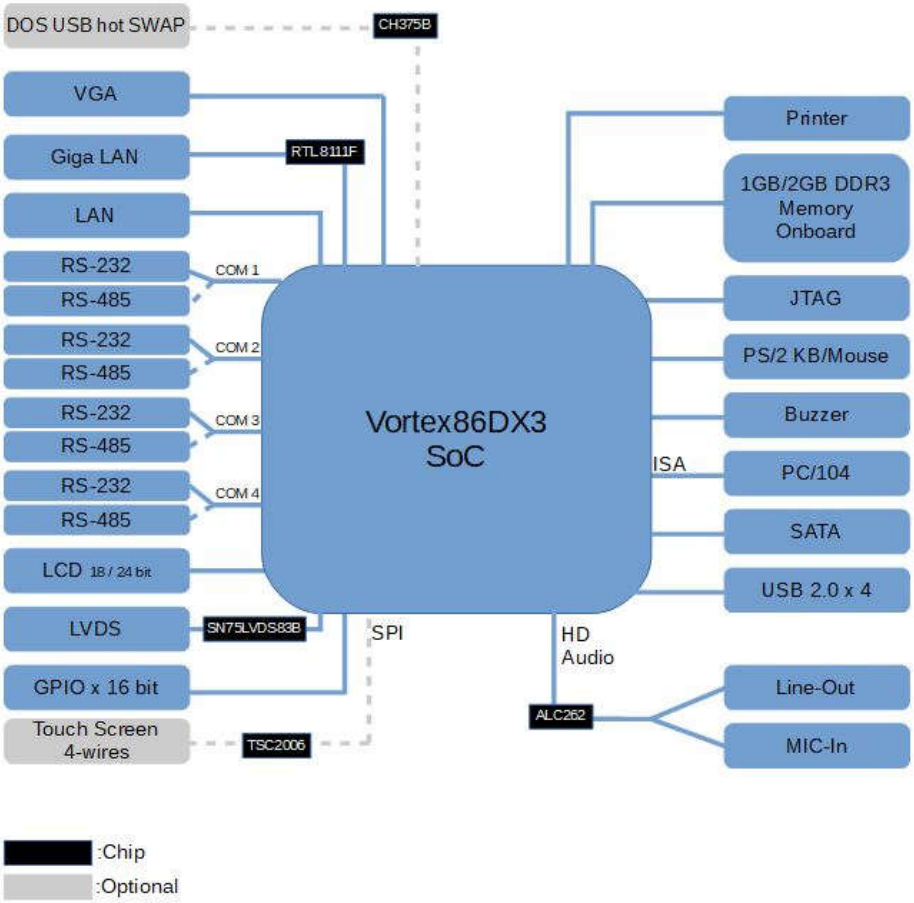
## 1.1 Overview

The VDX3-6724 is a low-power CPU module which compliant with ISA standard. It takes the advantage of Vortex86DX3 1GHz x86 CPU which integrate the SATA, I2C, VGA, LVDS, PS/2, USB, HD Audio and even with 16-bit ISA bus support.

The VDX3-6724 is designed as a plug in replacement, with backward compatibility to support legacy software to help extend existing product life cycle without heavy re-engineering.

## 1.2 Block diagram

Board Block Diagram



# 1.3 Specifications

| | | |
|---|---|---|
| Processor | DM&P SoC CPU Vortex86DX3 - 1GHz<br>L1:32K I-Cache, 32K D-Cache, L2 Cache:512KB | |
| RAM | 1GB/2GB DDR3 Onboard | |
| BIOS | AMI BIOS | |
| Bus | PC/104 Standard Compliant | |
| Display | Integrated 2D VGA chip with dual display support<br>(VGA + TTL / VGA + LVDS)<br>VGA: Maximum resolution up to 1920x1080 @ 60Hz<br>LVDS: Maximum resolution up to 1024x768 @ 60Hz<br>Single channel 24-bit LVDS | |
| LAN | Integrated 10/100Mbps Ethernet x1<br>Realtek 81111F GbE x1 | |
| Disk Support | SATA DOM<br>Compact Flash (Optional) | Onboard eMMC 512MB/4GB (Optional) |
| I/O Interface | RS232 x4<br>USB (ver. 2.0) x4<br>Parallel x1<br>HD Audio | 16-bit GPIO x1<br>PS/2 touch controller x1 (Optional)<br>DOS hot SWAP x1 (Optional) |
| Connectors | 2.54mm 26-pin box header for Parallel x1<br>2.54mm 20-pin box header for GPIO x1<br>2.54mm 10-pin box header for USB x2<br>2.54mm 10-pin box header for RS232 x3<br>2.54mm 2-pin pin header for Reset x1<br>2.54mm 104-pin PC/104 connector x1<br>2.0mm 44-pin box header for LCD x1<br>2.0mm 20-pin pin header for LVDS x1<br>2.0mm 8-pin pin header for Ethernet x1<br>1.25mm 4-pin wafer connector for Line-out/MIC-in x2<br>7-pin SATA connector for SATA DOM x1<br>2-pin box header for DC +5V output x1<br>15-pin D-Sub female connector for VGA x1<br>9-pin D-Sub male connector for RS232 x1<br>Type I/II Compact Flash slot x1 (Optional)<br>Terminal block for DC input x1<br>PS/2 connector for Keyboard/Mouse x1 | |

| | | |
|---|---|---|
| | RJ45 connector for GbE x1 | |
| Power Requirement | DC +5V @ 1000mA (Typical) | |
| Operating Temp. | -20°C to +70°C (Single Core)<br>-10°C to +60°C (Dual Core)<br>-40°C to +85°C (Optional for Single Core)<br>-20°C to +70°C (Optional for Dual Core) | |
| Dimensions | 184 x 122mm | |
| Weight | 180g | |
| O/S Support | Windows 7 | Linux |
| | Windows Embedded Compact 7 | DOS |
| | Windows XP Professional | POS Ready (WePOS) |
| | Windows Embedded Standard 7 | QNX |
| | Windows Embedded CE6.0 | VxWorks |
| | Windows Embedded 2009 | Free BSD |

# 1.4 Ordering Information

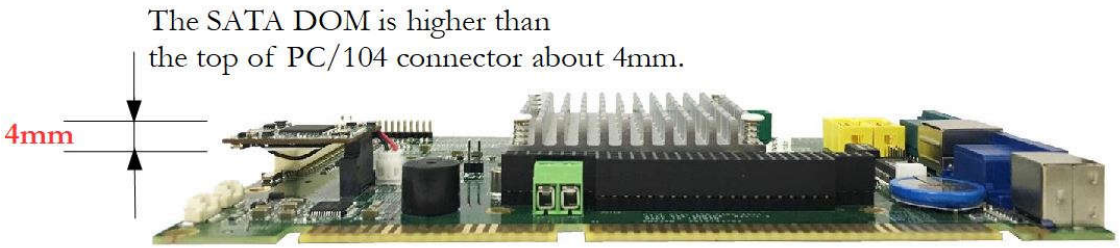
| Part Number | Product Description | |
|---|---|---|
| VDX3-6724-1G | Vortex86DX3 Half-Size CPU Module with 1GB DDR3 | |
| VDX3-6724-2G | Vortex86DX3 Half-Size CPU Module with 2GB DDR3 | |
| VDX3-6724-2C-1G | Vortex86DX3 Half-Size Dual Core CPU Module with 1GB DDR3 | |
| VDX3-6724-2C-2G | Vortex86DX3 Half-Size Dual Core CPU Module with 2GB DDR3 | |
| VDX3-6724-CF-1G | Vortex86DX3 Half-Size CPU Module with 1GB DDR3<br>with CF card slot | |
| VDX3-6724-2C-CF-1G | Vortex86DX3 Half-Size Dual Core CPU Module with 1GB DDR3<br>with CF card slot | |
| VDX3-6724-CF-2G | Vortex86DX3 Half-Size CPU Module with 2GB DDR3<br>with CF card slot | |
| VDX3-6724-2C-CF-2G | Vortex86DX3 Half-Size Dual Core CPU Module with 1GB DDR3<br>with CF card slot | |
| CABLE-6724-SET | GPIO (2.54) x1<br>RS-232 (2.54) x3<br>Audio Line x2 | Printer (2.54) x1<br>USB (2.54) x2<br>NET 4x2 (2.0) x1 |
| CABLE-6724-CF | RS-232 (2.54) x3<br>Audio Line x2 | USB (2.54) x2<br>NET 4x2 (2.0) x1 |
| ICOP-0096 | Vortex86 LVDS 18-bit Converter Kit for LCD Panel Display | |
| CABLE-LVDS-30 | 18-Bit LVDS Cable | |

*Default setting for processor on VDX3-6724 is Single-core. If Dual-core processor is required, please contact ICOP (info@icop.com.tw).

## Storages:

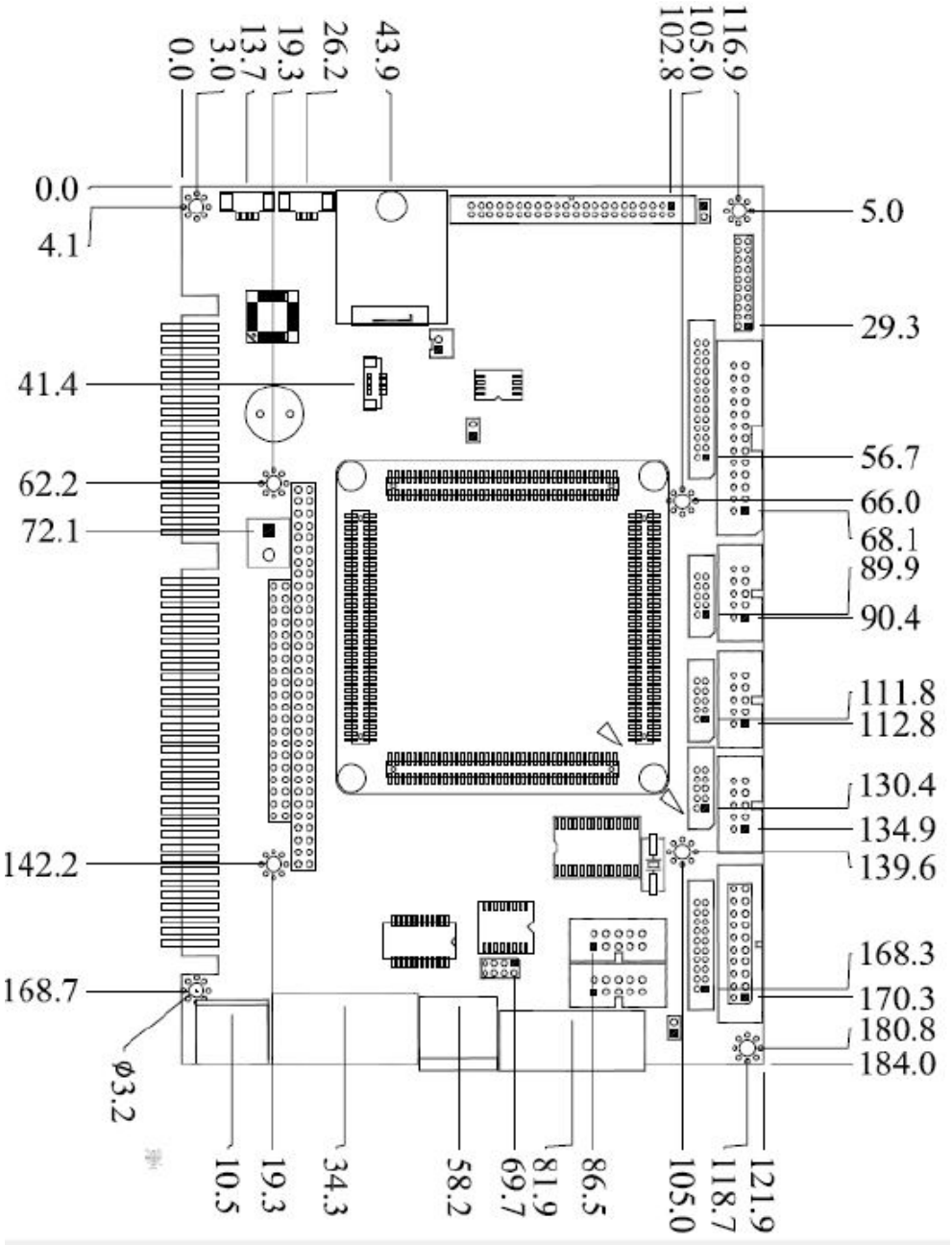
| Product Name | MLC | SLC | 0°C to +70°C | -40°C to +85°C |
|---|---|---|---|---|
| SDM-SST-2G-H-M | V | | V | |
| SDM-SST-4G-H-M | V | | V | |
| ISATA-8G-H-M | V | | V | |
| ISATA-16G-H-M | V | | V | |
| ISATA-32G-H-M | V | | V | |
| ISATA-4G-H-M-X | V | | | V |
| ISATA-8G-H-M-X | V | | | V |
| ISATA-16G-H-M-X | V | | | V |
| ISATA-32G-H-M-X | V | | | V |
| ISATA-1G-H-S | | V | V | |
| ISATA-2G-H-S | | V | V | |
| ISATA-4G-H-S | | V | V | |
| ISATA-8G-H-S | | V | V | |
| ISATA-16G-H-S | | V | V | |
| SDM-SST-2G-H-S-X | | V | | V |
| SDM-SST-4G-H-S-X | | V | | V |
| SDM-SST-8G-H-S-X | | V | | V |
| ISATA-16G-H-S-X | | V | | V |

Demonstration of "SDM-SST" SATA DoM on VDX3-6724



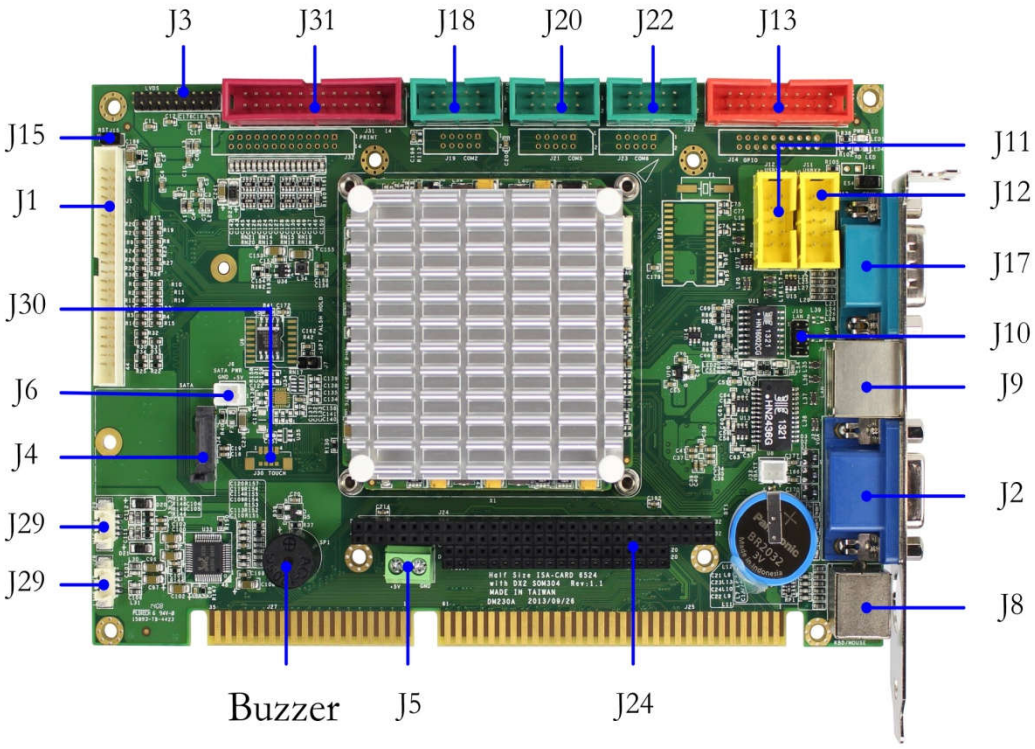
# 2 Hardware Information

## 2.1 Board Dimension



## 2.2 Board Outline

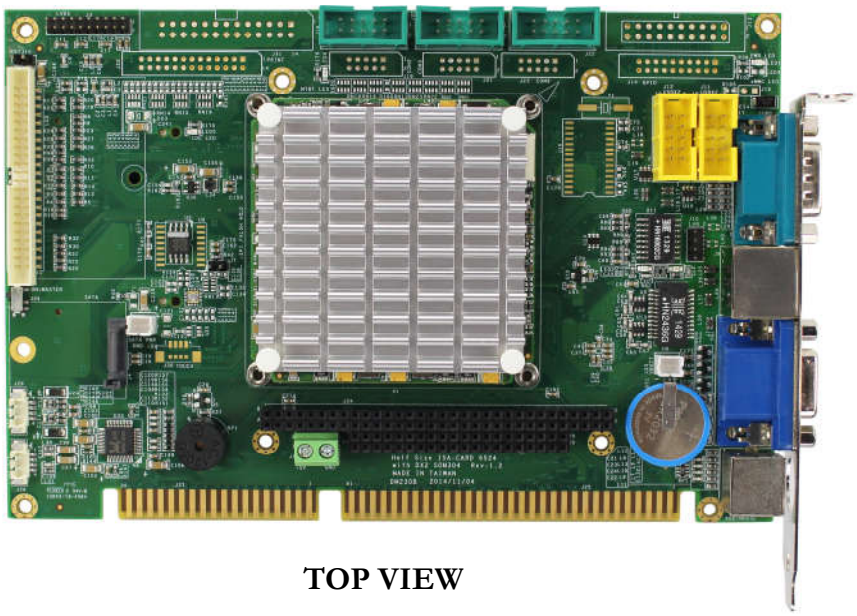
# VDX3-6724



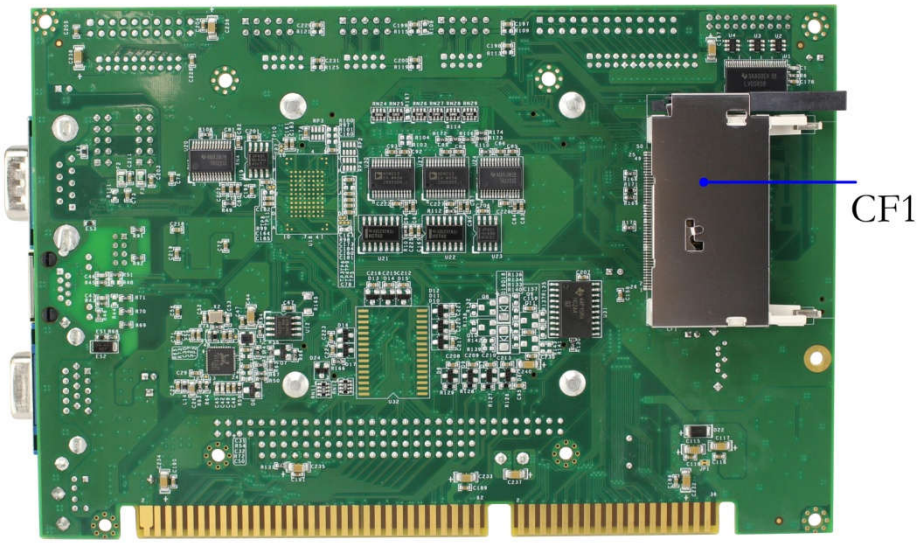

**Note:**

1. COM RS232/485 is selected by BIOS.
2. Onboard SPI ROM (optional) and PS/2 Mouse will be disabled when Touch function (optional) is selected.
3. GPIO will be occupied when eMMC is selected on VDX3-6724.
4. LPT, eMMC, and GPIO are not available on VDX3-6724-CF.
5. CF card slot is only available on VDX3-6724-CF. (see the image below)

# VDX3-6724-CF



TOP VIEW




BOTTOM VIEW

## 2.3 Connector Summary

| Nbr. | Name | Type of Connections | Nbr of Pin |
|---|---|---|---|
| J1 | LCD | Box Header, 2.0mm, 2x22 | 44 |
| J2 | VGA | 15-pin D-Sub Female | 15 |
| J3 | LVDS (24 bits) | Pin Header, 2.0mm, 10x2 | 20 |
| J4 | SATA DOM | SATA 7P Connector, 7x1 | 7 |
| J5 | Power Connector | Terminal Block, 5.0mm, 2x1 | 2 |
| J6 | SATA DOM Power | Box Header, 2.0mm, 1x2 | 2 |
| J8 | PS/2 connector (Keyboard/Mouse) | Mini-DIN Female | 6 |
| J9 | LAN1 (10/100/1000) | RJ45 Connector | 8 |
| J10 | LAN2 (10/100) | Pin Header, 2.0mm, 4x2 | 8 |
| J11 | USB0&1 | Box Header, 2.54mm, 5x2 | 10 |
| J12 | USB2&3 | Box Header, 2.54mm, 5x2 | 10 |
| J13 | GPIO (Port6/7) | Box Header, 2.54mm, 10x2 | 20 |
| J15 | Reset | Pin Header, 2.54mm, 1x2 | 2 |
| J17 | COM1(RS232/485 or optional TTL/P4) | D-Sub Male | 9 |
| J18 | COM2(RS232/485 or optional TTL/P5) | Box Header, 2.54mm, 5x2 | 10 |
| J20 | COM5(RS232/485 or optional TTL/P0) | Box Header, 2.54mm, 5x2 | 10 |
| J22 | COM6(RS232/485 or optional TTL/P1) | Box Header, 2.54mm, 5x2 | 10 |
| J24A | PC104 Connector – 64 pins | Box Header, 2.54mm, 32x2 | 64 |
| J24B | PC104 Connector – 40 pins | Box Header, 2.54mm, 20x2 | 40 |
| J28 | Line-Out | Wafer, 1.25mm, 4x1 | 4 |
| J29 | MIC-In | Wafer, 1.25mm, 4x1 | 4 |
| J30 | Touch screen Controller (Optional) | Wafer, 1.25mm, 4x1 | 4 |
| J31 | Parallel | Box Header, 2.0mm, 13x2 | 26 |
| J34 | Master/Slave for CF Card | Slide switch | 3 |
| CF1 | CF card slot | | |
| SP1 | Buzzer | | |

# 2.4 Pin Assignments & Jumper Settings

## J1: LCD

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | +3.3V | 2 | +3.3V |
| 3 | LG2 | 4 | LG3 |
| 5 | LG4 | 6 | LG5 |
| 7 | NC | 8 | NC |
| 9 | LR0 | 10 | LR1 |
| 11 | LR2 | 12 | LR3 |
| 13 | LR4 | 14 | LR5 |
| 15 | GND | 16 | NC |
| 17 | NC | 18 | NC |
| 19 | NC | 20 | GND |
| 21 | NC | 22 | NC |
| 23 | LB0 | 24 | LB1 |
| 25 | LB2 | 26 | LB3 |
| 27 | LB4 | 28 | LB5 |
| 29 | NC | 30 | NC |
| 31 | LG0 | 32 | LG1 |
| 33 | GND | 34 | GND |
| 35 | NC | 36 | LCLK |
| 37 | NC | 38 | LDE |
| 39 | NC | 40 | LHSYNC |
| 41 | NC | 42 | LVSYNC |
| 43 | LBACKL | 44 | LVDDEN |

**(Please refer to Appendix for TFT Flat Panel Data Output)**

## J2: VGA

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | R OUT | 2 | G OUT |
| 3 | B OUT | 4 | NC |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | NC | 10 | GND |
| 11 | NC | 12 | DDCDAT |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK | | |

## J3: LVDS (24-bit Support Only)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | VCC3 (+3.3V) | 2 | VCC3 (+3.3V) |
| 3 | GND | 4 | GND |
| 5 | RxIN0+ | 6 | RxIN0- |
| 7 | RxIN1- | 8 | GND |
| 9 | GND | 10 | RxIN1+ |
| 11 | RxIN2+ | 12 | RxIN2- |
| 13 | CKIN- | 14 | GND |
| 15 | GND | 16 | CKIN+ |
| 17 | RxIN3- | 18 | GND |
| 19 | GND | 20 | GxIN3+ |

## J4: SATA DOM

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | TX+ |
| 3 | TX- | 4 | GND |
| 5 | RX- | 6 | RX+ |
| 7 | GND | | |

## J5: Power Connector (Terminal Block 5.0mm)

| Pin# | Signal Name |
|---|---|
| 1 | +5V |
| 2 | GND |

## J6: SATA DOM POWER

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | VCC | 2 | GND |

## J10: LAN2 (10/100)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | ATX+ | 2 | ATX- |
| 3 | ARX+ | 4 | LED0 |
| 5 | LED0+ | 6 | ARX- |
| 7 | LED1+ | 8 | LED1 |

## J11: USB0&1

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | VCC | 2 | VCC |
| 3 | LUSBD0- | 4 | LUSBD0- |
| 5 | LUSBD0+ | 6 | LUSBD1+ |
| 7 | GND | 8 | GND |
| 9 | GGND | 10 | GGND |

## J12: USB2&3

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | VCC | 2 | VCC |
| 3 | LUSBD2- | 4 | LUSBD3- |
| 5 | LUSBD2+ | 6 | LUSBD3+ |
| 7 | GND | 8 | GND |
| 9 | GGND | 10 | GGND |

*USB3 supports DOS USB hot SWAP (Optional). For more detail, please contact ICOP sales.

## J13: GPIO (Port 6/7)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | GND | 2 | VCC |
| 3 | GP60 | 4 | GP70 |
| 5 | GP61 | 6 | GP71 |
| 7 | GP62 | 8 | GP72 |
| 9 | GP63 | 10 | GP73 |
| 11 | GP64 | 12 | GP74 |
| 13 | GP65 | 14 | GP75 |
| 15 | GP66 | 16 | GP76 |
| 17 | GP67 | 18 | GP77 |
| 19 | VCC | 20 | GND |

*When onboard eMMC is enabled, GPIO will be disabled.

**Not available on VDX3-6724-CF

## J15: RESET

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | RST_SW | 2 | GND |

## J17: COM1 RS232/485 D-Sub 9 pin

(Optional: TTL/ GPIO-P4)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | DCD1/1RS485- | 2 | RXD1/1RS485+ |
| 3 | TXD1 | 4 | DTR1 |
| 5 | GND | 6 | DSR1 |
| 7 | RTS1 | 8 | CTS1 |
| 9 | RI1 | 10 | NC |

## J18: COM2 RS232/485

(Optional: TTL/ GPIO-P5)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | DCD2/2RS485- | 2 | RXD2/2RS485+ |
| 3 | TXD2 | 4 | DTR2 |
| 5 | GND | 6 | DSR2 |
| 7 | RTS2 | 8 | CTS2 |
| 9 | RI2 | 10 | NC |

## J20: COM5 RS232

(Optional: TTL/ GPIO-P6)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | DCD5 | 2 | RXD5 |
| 3 | TXD5 | 4 | DTR5 |
| 5 | GND | 6 | DSR5 |
| 7 | RTS5 | 8 | CTS5 |
| 9 | RI5 | 10 | NC |

## J22: COM6 RS232

(Optional: TTL/ GPIO-P1)

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | DCD6 | 2 | RXD6 |
| 3 | TXD6 | 4 | DTR6 |
| 5 | GND | 6 | DSR6 |
| 7 | RTS6 | 8 | CTS6 |
| 9 | RI6 | 10 | NC |

## J24A: PC/104 Connector – 64 pin

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | IOCHCHK* | 2 | GND |
| 3 | SD7 | 4 | RESETDRV |
| 5 | SD6 | 6 | VCC |
| 7 | SD5 | 8 | IRQ9 |
| 9 | SD4 | 10 | -5V |
| 11 | SD3 | 12 | RDQ2 |
| 13 | SD2 | 14 | -12V |
| 15 | SD1 | 16 | OWS |
| 17 | SD0 | 18 | +12V |
| 19 | IOCHRDY | 20 | GND |
| 21 | AEN | 22 | SMEMW* |
| 23 | SA19 | 24 | SMEMR* |
| 25 | SA18 | 26 | IOW* |
| 27 | SA17 | 28 | IOR* |
| 29 | SA16 | 30 | DACK3* |
| 31 | SA15 | 32 | DRQ3 |
| 33 | SA14 | 34 | DACK1* |
| 35 | SA13 | 36 | DRQ1* |
| 37 | SA12 | 38 | REFRESH* |
| 39 | SA11 | 40 | SYSCLK |
| 41 | SA10 | 42 | IRQ7 |
| 43 | SA9 | 44 | IRQ6 |
| 45 | SA8 | 46 | IRQ5 |
| 47 | SA7 | 48 | IRQ4 |
| 49 | SA6 | 50 | IRQ3 |
| 51 | SA5 | 52 | DACK2* |
| 53 | SA4 | 54 | TC |
| 55 | SA3 | 56 | BALE |
| 57 | SA2 | 58 | VCC |
| 59 | SA1 | 60 | OSC |
| 61 | SA0 | 62 | GND |
| 63 | GND | 64 | GND |

## J24B: PC/104 Connector – 40 pin

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1. | GND | 2 | GND |
| 3 | MEMCS16* | 4 | SBHE* |
| 5 | IOCS16* | 6 | SA23 |
| 7 | IRQ10 | 8 | SA22 |
| 9 | IRQ11 | 10 | SA21 |
| 11 | IRQ12 | 12 | SA20 |
| 13 | IRQ15 | 14 | SA19 |
| 15 | IRQ14 | 16 | SA18 |
| 17 | DACK0* | 18 | SA17 |
| 19 | DRQ0 | 20 | MEMR* |
| 21 | DACK5* | 22 | MEMW* |
| 23 | DRQ5 | 24 | SD8 |
| 25 | DACK6* | 26 | SD9 |
| 27 | DRQ6 | 28 | SD10 |
| 29 | DACK7 | 30 | SD11 |
| 31 | DRQ7 | 32 | SD12 |
| 33 | VCC | 34 | SD13 |
| 35 | MASTER* | 36 | SD14 |
| 37 | GND | 38 | SD15 |
| 39 | GND | 40 | NC |

## J28: Line-out

| Pin# | Signal Name |
|---|---|
| 1. | LOUTR |
| 2 | GND |
| 3 | GND |
| 4 | LOUTL |

## J29: MIC-in

| Pin# | Signal Name |
|---|---|
| 1 | MICVREF |
| 2 | GND |
| 3 | GND |
| 4 | MIC-IN |

## J30: Touch screen (Optional)

| Pin# | Signal Name |
|---|---|
| 1 | Y- |
| 2 | X- |
| 3 | Y+ |
| 4 | X+ |

*Onboard SPI ROM (optional) and PS/2 Mouse will be disabled when Touch function (optional) is selected.

## J31: Parallel

| Pin# | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | STB- | 14 | AFD- |
| 2 | PD0 | 15 | ERR- |
| 3 | PD1 | 16 | INIT- |
| 4 | PD2 | 17 | SLIN- |
| 5 | PD3 | 18 | GND |
| 6 | PD4 | 19 | GND |
| 7 | PD5 | 20 | GND |
| 8 | PD6 | 21 | GND |
| 9 | PD7 | 22 | GND |
| 10 | ACK- | 23 | GND |
| 11 | BUSY | 24 | GND |
| 12 | PE | 25 | GND |
| 13 | SLCT | 26 | NC |

*Not available on VDX3-6724-CF

# System Mapping

| Memory Mapping | | |
|---|---|---|
| **Address** | **Description** | **Usage** |
| 00000000 – 0009FFFF | System RAM | * |
| 000A0000 – 000AFFFF | EGA/VGA Video Memory | * |
| 000B0000 – 000B7FFF | MDA RAM, Hercules graphics display RAM | * |
| 000B8000 – 000BFFFF | CGA display RAM | * |
| 000C0000 – 000C7FFF | EGA/VGA BIOS ROM | * |
| 000C8000 – 000CFFFF | Boot ROM enable | |
| 000CC000 – 000CFFFF | Console Redirection enable | |
| 000D0000 – 000D7FFF | Expansion ROM space | |
| 000D8000 – 000D8FFF | SPI Flash Emulation Floppy A Enable | |
| 000DC000 – 000DFFFF | Expansion ROM Space | |
| 000E0000 – 000EFFFF | USB Legacy SCSI ROM space | |
| 000F0000 – 000FFFFF | Motherboard BBIOS | * |
| FEFDBC00 – FEFDBCFF | Standard OpenHCD USB Host Controller | * |
| FEFBB400 – FEFBB4FF | Onboard Ethernet Adapter | * |
| FEFDB800 – FEFDBFFF | Standard Enhanced PCI to USB Host Controller | * |

| I/O Mapping | | |
|---|---|---|
| **Address** | **Description** | **Usage** |
| 0000h – 000Fh | DMA 8237-1 | * |
| 0020h – 0021h | PIC 8259-1 | * |
| 0022h – 0023h | Indirect Access Registers (6117D configuration port) | * |
| 0040h –0043h | Timer Counter 8254 | * |
| 0060h | Keyboard / Mouse data port | |
| 0061h | Port B + NMI control port | * |
| 0062h – 0063h | 8051 download 4k address counter | |
| 0064h | Keyboard/ Mouse status/ command port | |
| 0065h | WatchDog0 reload counter | |
| 0070h – 0071h | CMOS RAM port | * |
| 0072h – 0075h | MTBF control register | * |
| 0078h – 007Ch | GPIO port 0,1,2,3,4 default setup | * |
| 0080h – 008Fh | DMA page register | |
| 0092h | System control register | * |
| 0093h – 0097h | GPIO port 6,7,8,9,A direction control | * |
| 0098h – 009Dh | GPIO port 0,1,2,3,4,5 direction control | * |
| 00A0h – 00A1h | PIC 8259-2 | * |
| 00A8h – 00ADh | WatchDog1 control counter | * |
| 00AEh | WatchDog1 reload counter | * |
| 00C0h – 00DFh | DMA 8237-2 | * |
| 00E0h – 00EFh | DOS 4G Page access | * |
| 0100h – 0105h | GPIO port 5,6,7,8,9,A default setup | * |
| 0170h – 0177h | IDE 1(IRQ 15) | * |
| 0278h – 027Fh | Printer port (IRQ7, DMA 0) | * |
| 02E8h – 02EFh | COM4 (IRQ 11) | * |
| 02F8h – 02EFh | COM2 (IRQ 3) | * |
| 03E8h – 03EFh | COM3 (IRQ 10) | * |
| 03F6h | IDE1 ATAPI device control write only register | * |
| 03F8h – 03FFh | COM1 (IRQ 4) | * |
| 0480h – 048Fh | DMA High page register | * |
| 0490h – 0499h | Instruction counter register | * |
| 04D0h – 04D1h | 8259 Edge / level control register | * |
| 0CF8h – 0CFFh | PCI configuration port | * |
| DE00h – DEFFh | On board LAN | * |
| FC00h – FC05h | SPI Flash BIOS control register | * |

| | | |
|---|---|---|
| FC08h – FC0Dh | External SPI BUS control register | * |

| IRQ Mapping | | |
|---|---|---|
| **Address** | **Description** | **Usage** |
| IRQ0 | System Timer | * |
| IRQ1 | Keyboard Controller | * |
| IRQ2 | Cascade for IRQ8~15 | |
| IRQ3 | Serial port 2 | * |
| IRQ4 | Serial port 1 | * |
| IRQ5 | USB | * |
| IRQ6 | USB | |
| IRQ7 | Printer Port | * |
| IRQ8 | Real Timer Clock | * |
| IRQ9 | ACPI | * |
| IRQ10 | Serial Port 3 | * |
| IRQ11 | Serial Port 4 | * |
| IRQ12 | Mouse | * |
| IRQ13 | Math Coprocessor | * |
| IRQ14 | Multimedia Device | * |
| IRQ15 | Hard Disk Controller #2 | * |

| DMA Mapping | | |
|---|---|---|
| **Address** | **Description** | **Usage** |
| DMA0 | | |
| DMA1 | | |
| DMA2 | | |
| DMA3 | | |
| DMA4 | | |
| DMA5 | | |
| DMA6 | | |
| DMA7 | | |

# 3 Software Resources

## 3.1 ICOP Technical Resource Website

In the following website, you will find our latest user manuals, including OS support resources systems such as evaluation images for Windows Embedded Compact 7, Windows Embedded CE6.0, and Windows XP Embedded (Win XPe), etc. For details, please visit
http://tech.icop.com.tw/.

# 4 Basic BIOS Setting

## 4.1 Introduction

Featuring AMI BIOS, the VDX3-6724 module is a one stable module board for your applications. In this section, we will introduce you some basic AMI BIOS setting such as CPU speed adjusting, console redirection, and IDE configuration, etc.

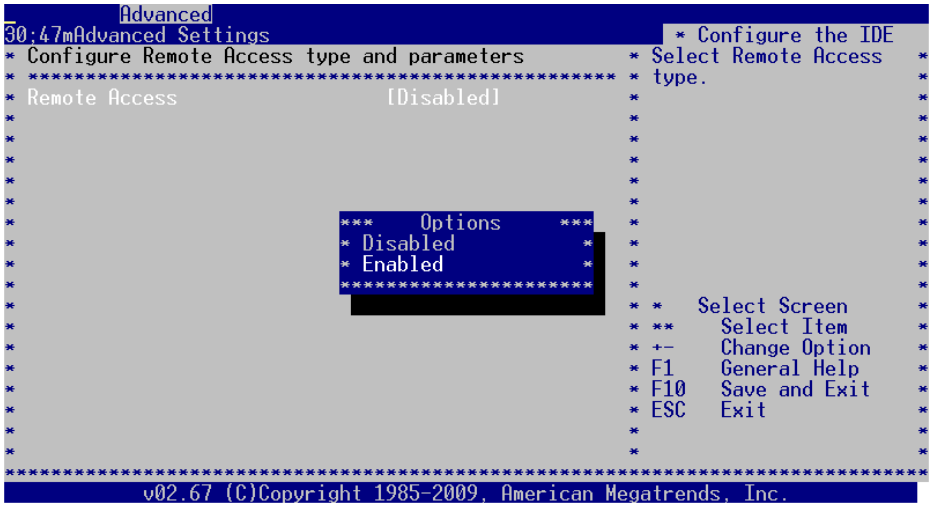
## 4.2 CPU Clock Adjusting

For CPU clock adjusting, please contact your contact window directly or mail info@icop.com.tw.

## 4.3 Console Redirection

Access to computer board through serial port, you can work on VDX3-6724 without VGA display or monitor. The default access port is COM1 and disabled. If you would like to use this function, please go to the path below to enable Console Redirection.

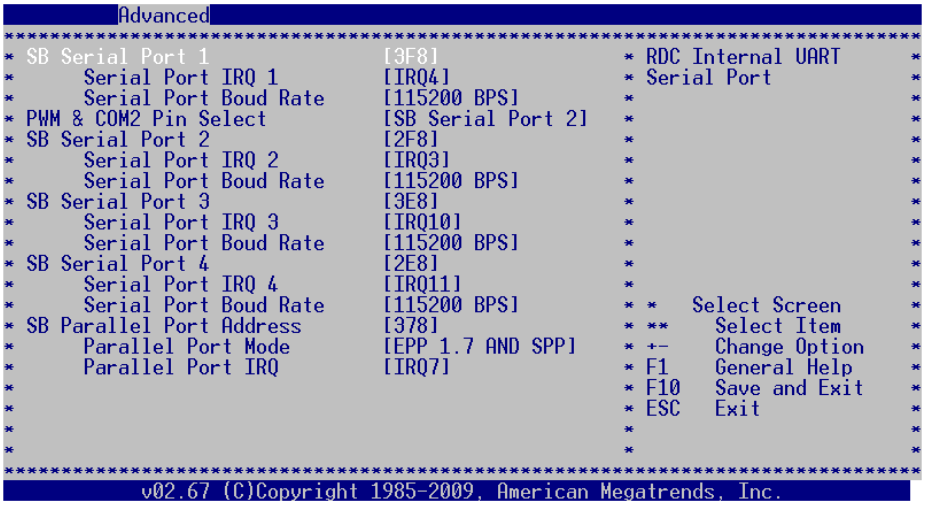
**Path: Advanced >Remote Access Configuration >Remote Access [Enabled]**



# 4.4 Serial Ports Switching

Serial ports on VDX3-6724 are set RS232 as default. If you need RS485 be your default serial ports. Please contact your contact window directly or mail info@icop.com.tw. And you can refer to the below instruction to select the IRQ mode according to your demands.

**Path: Advanced >Serial/Parallel Port Configuration**



## 4.5 IDE Configuration

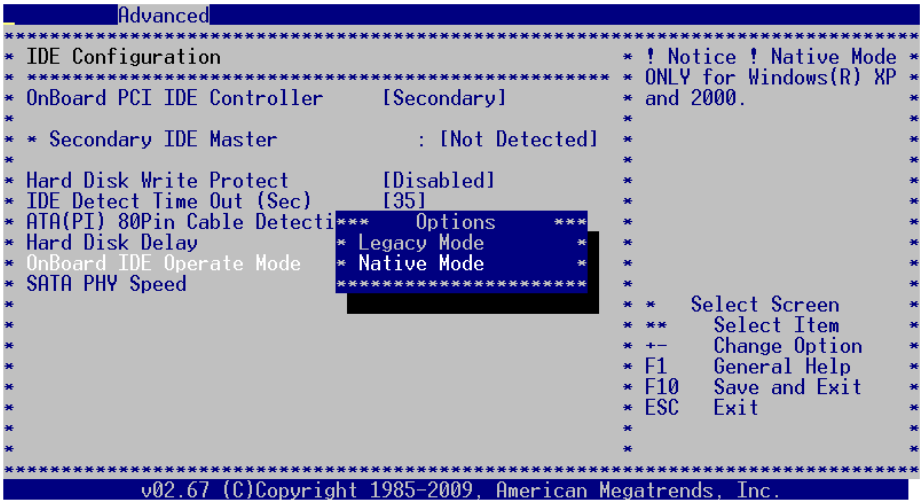
The default IDE configuration is for Windows Operating System, and the setting as below:

**Onboard IDE Operate Mode: [Legacy Mode]**
**IDE Compatibility: [Disabled]**.

If you would like to use Linux on VDX3-6724, please follow below instructions:

**Onboard IDE Operate Mode: [Native Mode]**
**IDE Compatibility: [Enabled]**.

**Path of Onboard IDE Operate Mode:**
**Advanced >IDE Configuration >Onboard IDE Operate Mode [Native Mode]**

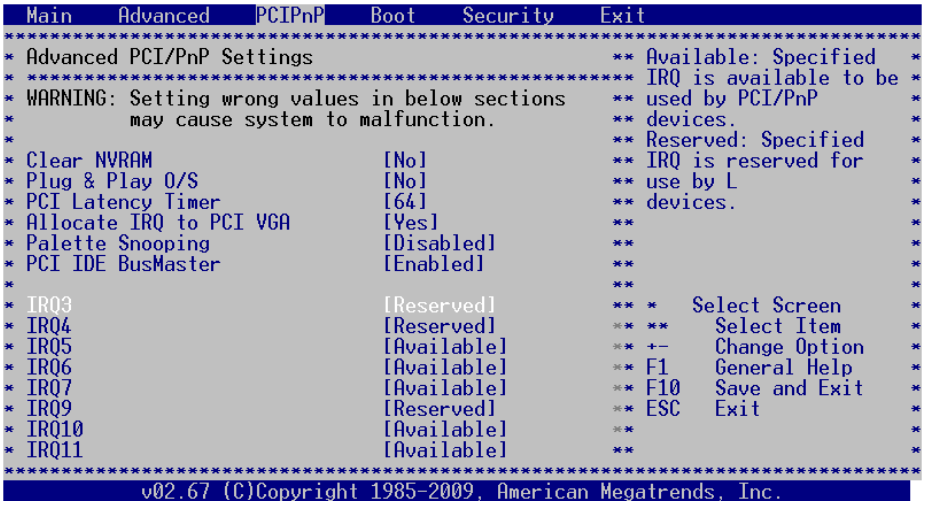


# 4.6 Advanced PCI-PnP Setting

Two statuses for IRQ setting:

[Reserved]: IRQ will free to be allocated by PnP BIOS.
[Available]: IRQ will not free to be allocated by PnP BIOS.

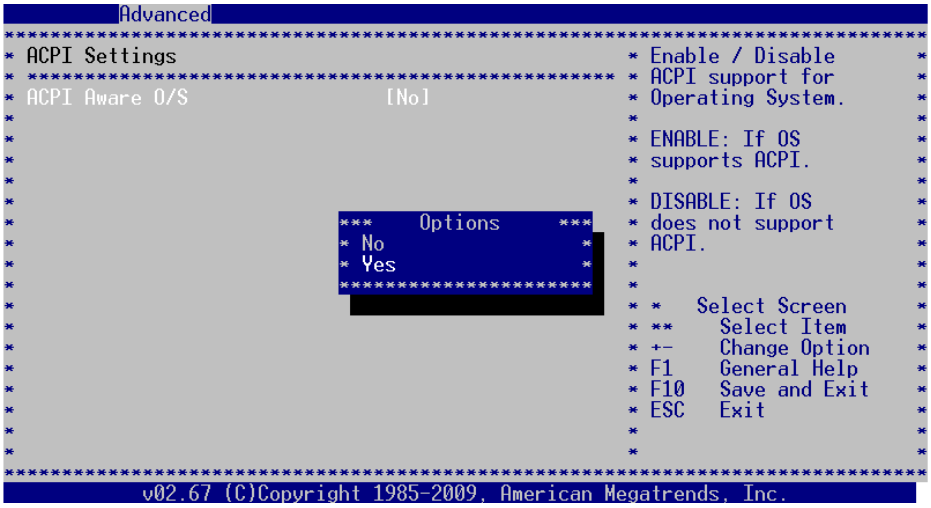
**Path: PCIPnP >IRQ**



# 4.7 ACPI Enable

To install Windows 7 on ICOP computer boards, please enable ACPI as the following instruction.

**Path: Advanced >Power Management Configuration > ACPI Configuration >ACPI Aware O/S**



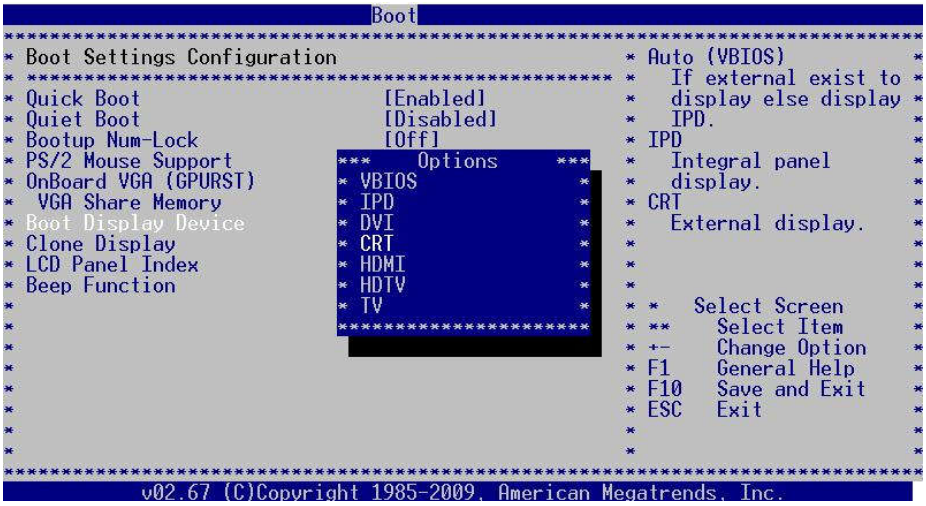
# 5 Basic LCD Panel Setting

## 5.1 Introduction

The VDX3-6724 offers two different interfaces which support maximum resolution up to 1920 x 1080 (at 60 MHz) connecting to VGA and LCD Flat Panel with 18-bit/24bit LVDS(24-bit by default).

The default setting of **Boot Display Device [VBIOS]** and **LCD Panel Index [VBIOS]** with **Clone Display [ENBALED]** support dual display (LCD and VGA) on VDX3-6724.

If your VGA display shifts because of the above setting, please switch **Boot Display Device [VBIOS] to [CRT]** as the following image:




**Boot Display Device [VBIOS]: LCD and VGA display supported with display setting based on your required LCD specification.

[CRT]: VGA display supported

## 5.2 Pin Assignment of LVDS

Please refer Page 20 for LVDS pin assignment.

## 5.3 Basic BIOS Setting for LCD

If you would like to use LCD panel with VDX3-6726, please follow below instruction:

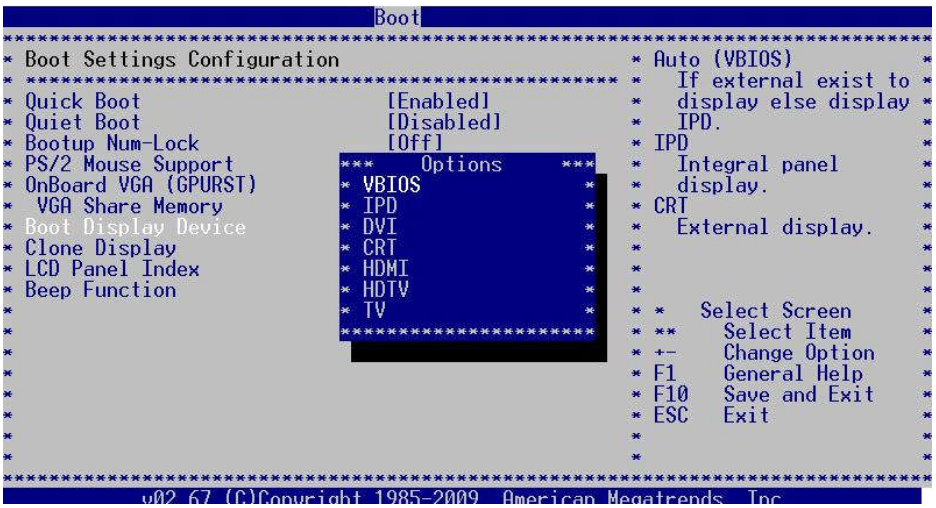
**Boot Display Device [VBIOS]**

**LCD Panel Index** according to your LCD resolution from VBIOS to 5.

| Options | Resolution of the LCD Panel |
|---|---|
| VBIOS | the Required LCD Specification |
| 1 | 640 x 480 |
| 2 | 800 x 480 |
| 3 | 800 x 600 |
| 4 | 1024 x 600 |
| 5 | 1024 x 768 |

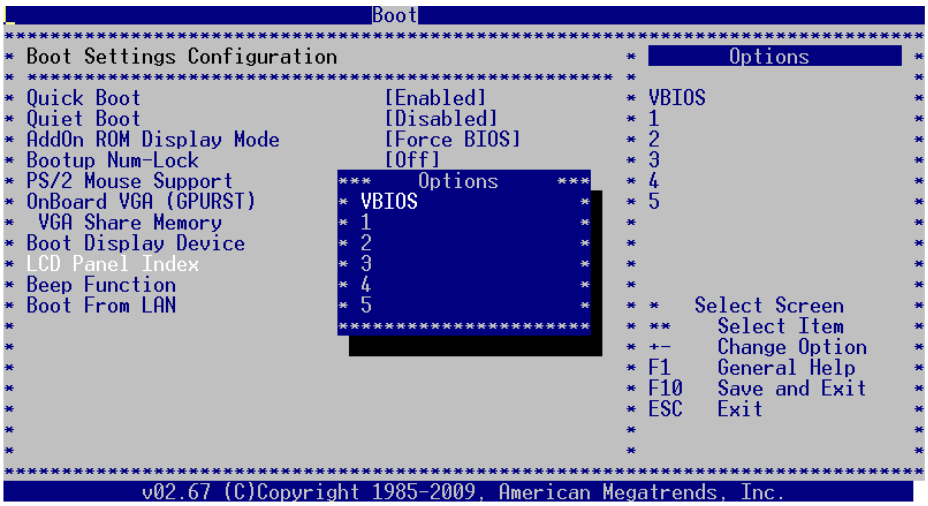
**Path of Boot Display Device setting:**

**Boot >Boot Settings Configuration >Boot Display Device [VBIOS]**



**Path of <u>LCD Panel Index setting</u>:**

**Boot >Boot Settings Configuration >LCD Panel Index [ ]**




***The **[VBIOS]** difference between **Boot Display Device** and **LCD Panel Index**:

**Boot Display Device [VBIOS]**: Display Output Setting

**LCD Panel Index [VBIOS]**: Display Resolution Setting

# Technical Support Directly from ICOP

To offer you more accurate and specific solutions for the technical situations you have, please prepare the information below before contacting ICOP:

—Product name and serial number

—Description of the H/W environment ( i.e.: working temperature, I/O board information, information of connection between main board and IO boards, and/or other devices, etc)

—Description of the S/W environment (i.e: operating system, version, application software, and/or other related information, etc.)

—A detailed description and photos of the technical situation

—Any complement or technical situations you want ICOP more focusing on

# User Manual Feedback

To make this user manual more complete, if you have any comments or feedbacks to this manual, please feel free to write to info@icop.com.tw or contact your ICOP sales representative.

# Appendix

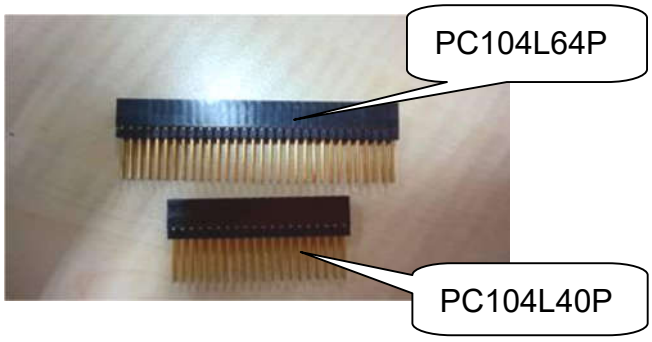
## TFT Panel Data Output

| LCD Pin# | Signal Name | Digital 18 Bits | RGB 24 Bits |
|---|---|---|---|
| 1 | LCDVCC (+3.3) | VDD | VDD |
| 2 | LCDVCC (+3.3) | VDD | VDD |
| 3 | FPD12 | G2 | G4 |
| 4 | FPD13 | G3 | G5 |
| 5 | FPD14 | G4 | G6 |
| 6 | FPD15 | G5 | 7 |
| 7 | FPD16 | / | R0 |
| 8 | FPD17 | / | R1 |
| 9 | FPD18 | R0 | R2 |
| 10 | FPD19 | R1 | R3 |
| 11 | FPD20 | R2 | R4 |
| 12 | FPD21 | R3 | R5 |
| 13 | FPD22 | R4 | R6 |
| 14 | FPD23 | R5 | R7 |
| 15 | GND | VSS | VSS |
| 16 | NC | / | / |
| 17 | NC | / | / |
| 18 | NC | / | / |
| 19 | NC | / | / |
| 20 | GND | VSS | VSS |
| 21 | FPD0 | / | B0 |
| 22 | FPD1 | / | B1 |
| 23 | FPD2 | B0 | B2 |
| 24 | FPD3 | B1 | B3 |
| 25 | FPD4 | B2 | B4 |
| 26 | FPD5 | B3 | B5 |
| 27 | FPD6 | B4 | B6 |
| 28 | FPD7 | B5 | B7 |
| 29 | FPD8 | / | G0 |
| 30 | FPD9 | / | G1 |

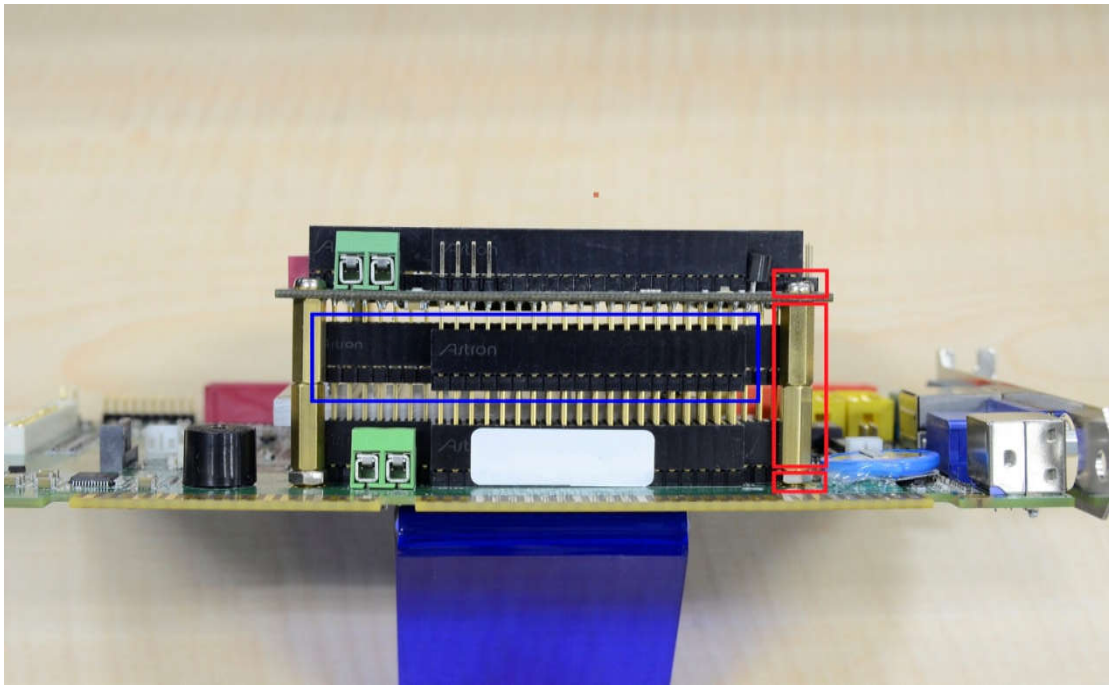
| LCD# | Signal Name | Digital 18 Bits | RGB 24 Bits |
|---|---|---|---|
| 31 | FPD10 | G0 | G2 |
| 32 | FPD11 | G1 | G3 |
| 33 | GND | VSS | VSS |
| 34 | GND | VSS | VSS |
| 35 | NC | / | / |
| 36 | FP1CLK | XCLK | XCLK |
| 37 | NC | / | / |
| 38 | FP1DE | DEN | DEN |
| 39 | NC | / | / |
| 40 | FP1HS | HSYNC | HSYNC |
| 41 | NC | / | / |
| 42 | FP1VS | VSYNC | VSYNC |
| 43 | FPENBLT | ADJ | ADJ |
| 44 | FPENVDD | VDDEN | VDDEN |

# Stacking Solution for Daughter Board

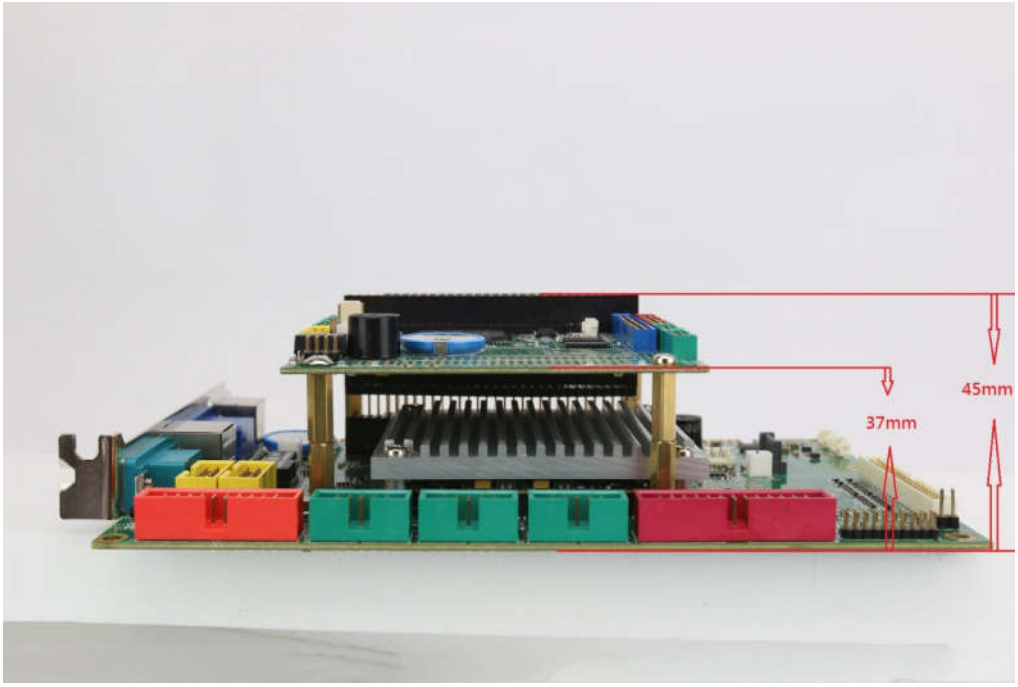
1. Please prepare PC104L40P x 1 and PC104L64P x 1 (as the image below shown).




2. Put on the nuts, pillars, screws and PC104 connector (as the image below shown)



3. As the image below shown after stacking.
   Note: Please contact ICOP if the nuts, pillars and screws are required.



# Warranty

This product is warranted to be in good working order for a period of one year (12 months) from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it without additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, originality to use this product. Vendor will not be liable for any claim made by any other related party. Return authorization must be obtained from the vendor before returned merchandise is accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description. Should you have questions about warranty and RMA service, please contact us directly.

**ICOP Technology Inc.**
Address: No. 15 Wugong 5th Road, Xinzhuang Dist.
New Taipei City, Taiwan (R.O.C.) 24890
TEL: +886-2-8990-1933
FAX: +886-2-8990-2045
Mail: info@icop.com.tw
Website: http://www.icop.com.tw