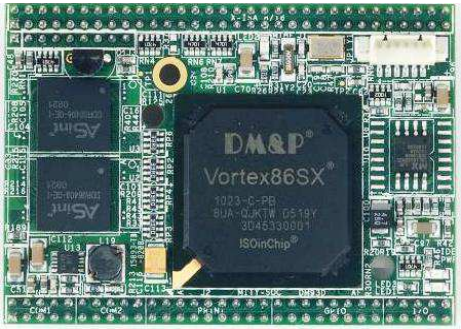
intelligent control on processor




# Mity-SoC Development Kit

# &

# Mity-SoC CPU Module

## with 2S/USB/GPIO 256MB DDR2 Onboard

## (Onboard EmbedDisk 512MB)

## User's Manual

**(Revision 1.0A)**

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# Chapter 1

# Introduction

## 1.1 Packing List

| Product Name | Package |
|---|---|
| VSX-6119-1 | • Vortex86SX/ DX CPU Mity-SoC Development board x1<br>• Manual & Drivers CD x 1<br>• RS232 cable x 3<br>• PRINTER cable x1<br>• IDE cable x 1<br>• USB cable x 1 (USB port x 2)<br>• GPIO cable x 1<br>• YKB for PS/2 Keyboard & Mouse x 1 |

| Product Name | Package |
|---|---|
| VSX-6119-FB-D-V2 (Onboard EmbedDisk 512MB) | • Embedded Vortex86SX Mity-SoC CPU Module x1 |

| Product Name | Package |
|---|---|
| ICOP-6019-VGA | • Mity-SoC VGA/LCD development Kit x1 |

## 1.2 Product Description

The VSX-6119-FB-D-V2 family of low-power x86 embedded controller is designed to meet Mity-SoC specification, and integrated with the following features.

- 300MHz Vortex86SX System-On-Chip
- 256MB DDR2 system memory
- 1 USB 2.0 (host)
- Up to 2 serial ports
- 16-bit GPIO x1
- x-ISA bus
- 2 watchdog timer
- JTAG interface
- AMI BIOS
- Onboard EmbedDisk 512MB
- 2MB SPI flash
- Single voltage +5V DC
- Support extended operating temperature range of -20°C to +70°C

The VSX-6119-FB-D-V2 Mity-SoC family of embedded controller is designed as the kernel of your own application, to provide migration path for projects facing end-of-life challenges with their existing x86 based Mity-Mite controller. The VSX-6119-FB-D-V2 family of controller 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.

VSX-6119-FB-D-V2 is suitable for broad range of data-acquisition, Industrial automation, Process control, Automotive controller, AVL, Intelligent Vehicle management devic,Medical device, Human machine interface, Robotics, machinery control And more…application that required small footprint, low-power and low-cost hardware with open industry standard such as Mity-SoC.

## 1.3 Specifications

### ■ VSX-6119-1 (Mity-SoC ISA bus Development board)

| Features | VSX-6119-1 |
|---|---|
| Bus Interface | 16-bit x-ISA interface<br>PC/104 standard compliant |
| Status indicator | Digit Type 7-Segment LED Display for POST Code x2<br>GPIO LED x16 |
| Connectors | • 2.54mm 26-pin box header for Printer x1<br>• 2.54mm 20-pin box header for 16-bit GPIO x1<br>• 2.54mm 10-pin box header for RS-232 x1<br>• 2.54mm 5-pin box header for Keyboard x1<br>• 2.54mm 10-pin box header for USB x1<br>• 2.54mm 2-pin header for Reset x1<br>• External 15-pin D-Sub female connector for VGA<br>• External 9-pin D-Sub male connector for RS-232 x1<br>• External Mini DIN connector for Keyboard/Mouse x1<br>• 4-pin Molex connector for Power input x1<br>• 2-pin Terminal strip for Power input x1<br>• DC Jack for Power input x1 |
| Power Requirement | Single Voltage +5V @150mA |
| Dimension | 185 x 122mm (7.28 x 4.8 inches) |
| Weight | 172g |
| Operating Temperature | -20°C ~ +70°C<br>-40°C ~ +85°C (Optional) |

## ■ VSX-6119-FB-D-V2

| Features | VSX-6119-FB-D-V2 |
|---|---|
| CPU | DM&P SoC CPU Vortex86SX- 300MHz<br>Real Time Clock with Lithium Battery Backup |
| Cache | L1:16K I-Cache, 16K D-Cache |
| BIOS | AMI BIOS |
| Bus Interface | 16-bit x-ISA interface |
| System Memory | 256MB DDR2 onboard |
| Watchdog Timer | Software programmable from 30.5 us to 512 seconds x2 sets(Watchdog 1 fully compatible with M6117D) |
| I /O Interface | • RS-232 port x2 (TTLx2)<br>• USB port (ver2.0) x1<br>• Parallel port x1<br>• 16-bit GPIO port x1 |
| Connectors | • 2.00 mm ∅ 64-pin header for 16-bit x-ISA x1<br>• 2.00 mm ∅ 64-pin header for I/O interface x1<br>• 2.00 mm ∅ 9-pin header for DMA x1<br>• 1.25mm ∅ 6-pin Wafer for JTAG x1 |
| Flash Disk Support | • Onboard 2MB SPI Flash Disk (Driver: A)<br>• Onboard EmbedDisk 512MB (Driver: C) |
| Power Requirement | Single Voltage +5V @ 320mA |
| Dimension | 65mm X 45mm (2.56 x1.77 inches) |
| Weight | 30g |
| Operating Temperature | -20°C ~ +70°C<br>-40°C ~ +85°C (Optional) |

## ■ ICOP-6019-VGA

| Features | ICOP-6019-VGA |
|---|---|
| Chipset | TOPRO TP6508IQ<br>VGA and Mono/STN/DSTN/TFT Flat Panel interface support |
| Bus | 16-bit x-ISA interface |
| Video Memory | Onboard 1MB EDO RAM, support resolution up to 1024x768, 256 colors |
| Bus Interface | PC/104+ standard compliant |
| Connectors | • 2.0mm 44-pin box header for LCD x1<br>• 2.0mm 10-pin box header for VGA x1<br>• 2.54mm 4-pin wafer for +12V, -12V, -5V DC-in x1 |
| Power Requirement | Single Voltage +5V@200mA |
| Dimension | 80 x 50mm (3.14 x 1.96 inches) |
| Weight | 32g |
| Operating Temperature | -20°C ~ +60°C |

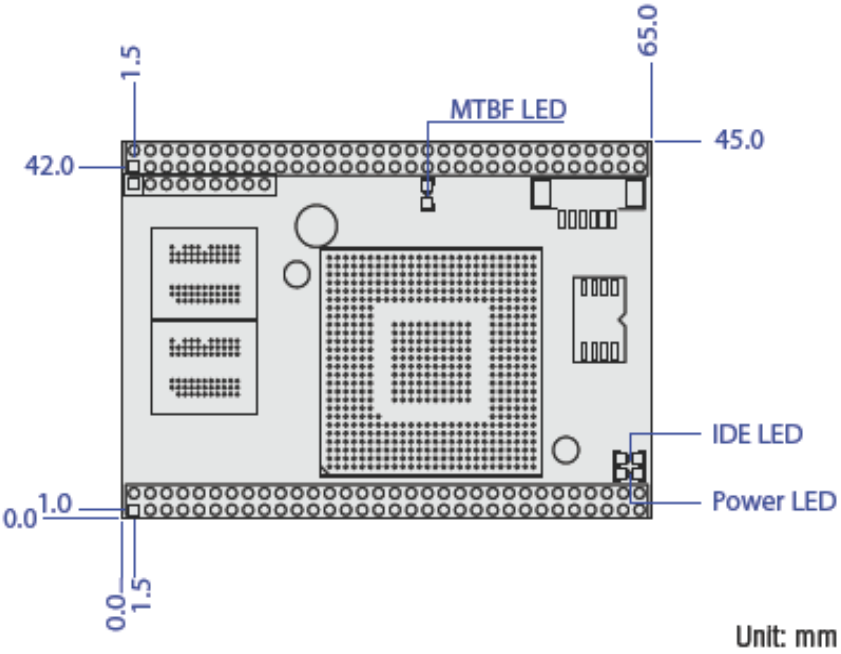
## 1.4 Order Selection

Mity-SoC CPU Module Ordering Selection

| Ordering Type No. | SST-512MB | SPI-2MB | TTL | RS-232 |
|---|---|---|---|---|
| VSX-6119-FB-A-V2 | V | | V | |
| VSX-6119-FB-B-V2 | V | | | V |
| VSX-6119-FB-C-V2 | V | V | V | |
| VSX-6119-FB-D-V2 | V | V | | V |

## 1.5 Board Dimension

- **VSX-6119-FB-D-V2**

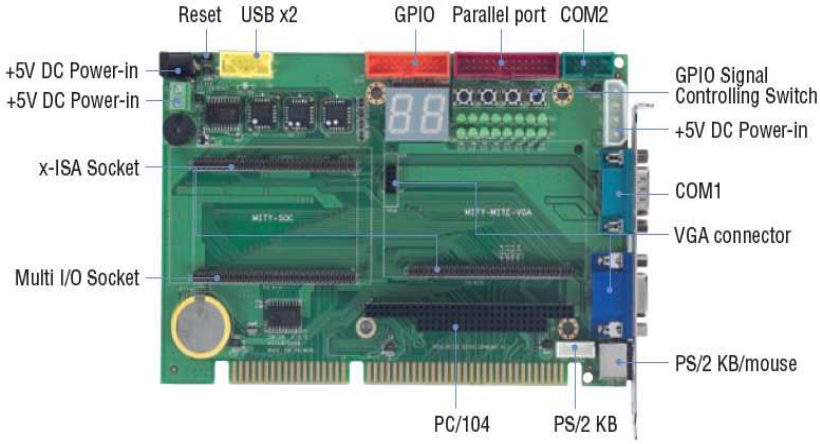


# Chapter 2

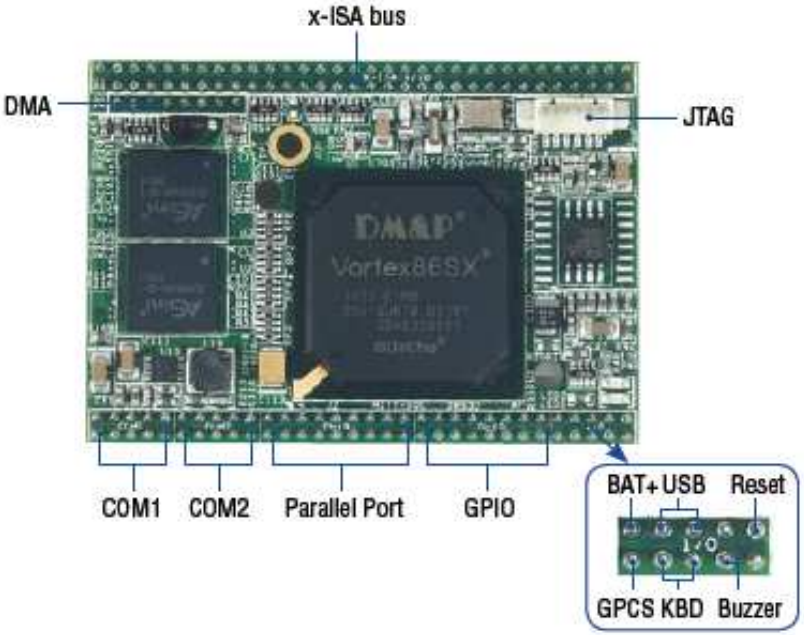
# Installation

## 2.1 Board Outline

■**VSX-6119-1 (Mity-SoC ISA bus Development board)**



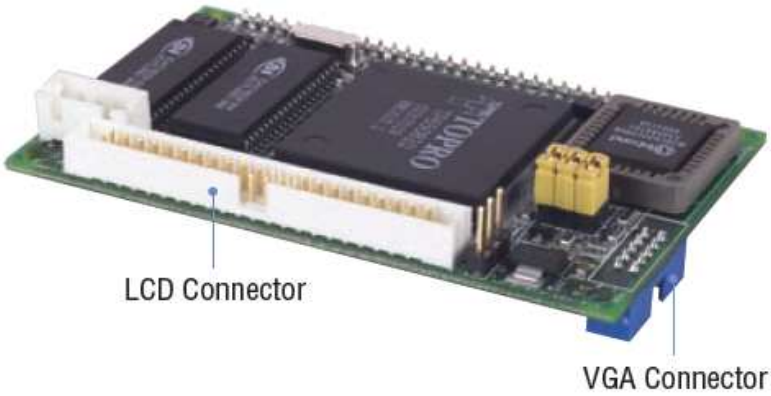
## ■VSX-6119-FB-D-V2




**Note: VGA function support (ICOP-6019-VGA) via x-ISA Interface**

**http://www.icop.com.tw/DB/upload/manual/ICOP-2820_Manual.pdf**

## ■ ICOP-6019-VGA

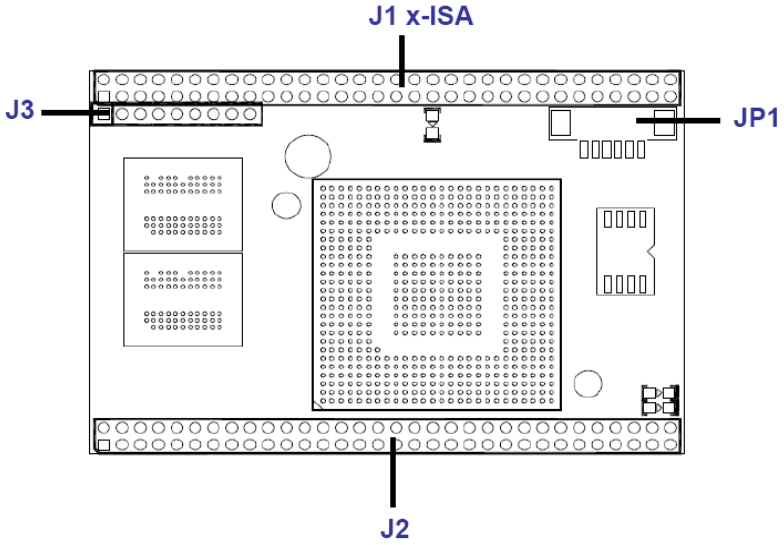



**If you need more information about ICOP-6019-VGA, please visit our website:**

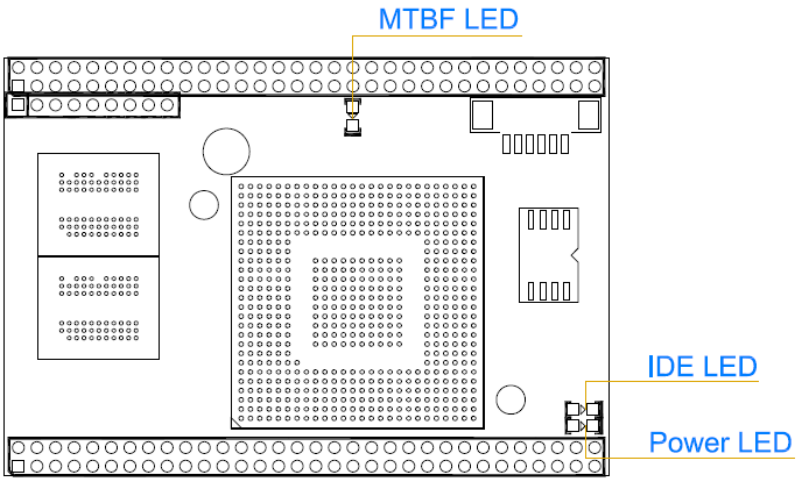
**http://www.icop.com.tw/DB/upload/manual/ICOP-2820_Manual.pdf**

## 2.2 Connectors & Jumpers Location

### Connectors



## Jumpers & LEDs



## 2.3 Connectors & Jumpers Summary

### ■ VSX-6119-1 (Mity-SoC ISA bus Development board)

**Summary Table**

| Nbr | Description | Type of Connections | Pin nbrs. |
|---|---|---|---|
| J1 | x-ISA Connector – 64 pin | Box Header, 2.0∅, 32x2 | 64-pin |
| J2 | ISA bus Connector, SL62 | 62-pin Gold finger | 62-pin |
| J3 | ISA bus Connector, SL36 | 36-pin Gold finger | 36-pin |
| J4 | PC104 Connector – 64 pin | Box Header, 2.54∅ ,32x2 | 64-pin |
| J5 | PC104 Connector – 40 pin | Box Header, 2.54∅ ,20x2 | 40-pin |
| J6 | Mity-Mite VGA Connector | Box Header, 2.0∅, 32x2 | 64-pin |
| J7 | USB | Pin Header, 2,54∅,5x2 | 10-pin |
| J8 | Multi I/O Connector – 64 pin | Box Header, 2.0∅, 32x2 | 64-pin |
| J9 | GPIO Port | Box Header, 2.54∅ ,10x2 | 20-pin |
| J10 | COM1 | D-Sub Connector | 9-pin |
| J11 | COM2 | Box Header, 2.54∅, 5x2 | 10-pin |
| J12 | Reset | Pin Header, 2.54∅, 1x2 | 2-pin |
| J13 | PS/2 Keyboard | Box Header,2.54∅, 1x5 | 5-pin |
| J14 | VGA | D-Sub female connector | 15-pin |
| J15 | Power Connector | Terminal Block 5.0∅ , 2x1 | 2-pin |
| J16 | Power Connector | DC -JACK | 3-pin |
| J17 | Power Connector | Box Header, 5.0∅ Molex | 4-pin |
| J18 | VGA connector | Box Header, 2.54∅ , 5x2 | 10-pin |
| J19 | PS/2 Keyboard | Mini-Din Connector | 9-pin |
| J20 | PRINT | Box Header, 2.54∅ ,13x2 | 26-pin |
| S1~S4 | Switch Input | | |
| U5 | 80 PORT (7Segment Display) | 18-pin DIP SSD | 18-pin |
| SP1 | BUZZER | | |
| GP0~GP15 | LED Display | | |

## 2.4 Pin Assignments & Jumper Settings

### ■ VSX-6119-1 (Mity-SoC ISA bus Development board)

#### J1: x-ISA Connector – 64pin

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | SBHE |
| 3 | RSTDRV | 4 | SD7 |
| 5 | VCC | 6 | SD6 |
| 7 | SD8 | 8 | SD5 |
| 9 | SD9 | 10 | SD4 |
| 11 | SD10 | 12 | SD3 |
| 13 | SD11 | 14 | SD2 |
| 15 | SD12 | 16 | SD1 |
| 17 | SD13 | 18 | SD0 |
| 19 | GND | 20 | IOCHRDY |
| 21 | SMEMW | 22 | AEN |
| 23 | SMEMR | 24 | SA19 |
| 25 | IOW | 26 | SA18 |
| 27 | IOR | 28 | SA17 |
| 29 | SD14 | 30 | SA16 |
| 31 | SD15 | 32 | SA15 |
| 33 | MEMCS16 | 34 | SA14 |
| 35 | ICOS16 | 36 | SA13 |
| 37 | REFRESH | 38 | SA12 |
| 39 | SYSCLK | 40 | SA11 |
| 41 | IRQ7 | 42 | SA10 |
| 43 | IRQ6 | 44 | SA9 |
| 45 | IRQ5 | 46 | SA8 |
| 47 | IRQ4 | 48 | SA7 |
| 49 | IRQ3 | 50 | SA6 |
| 51 | IRQ10 | 52 | SA5 |
| 53 | IRQ11 | 54 | SA4 |
| 55 | BALE | 56 | SA3 |
| 57 | VCC | 58 | SA2 |
| 59 | OSC | 60 | SA1 |
| 61 | GND | 62 | SA0 |
| 63 | IRQ12 | 64 | IRQ14 |

## J2: ISA Bus SL62 – 62-pin Gold finger (Total 98 pins)

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 (A1) | IOCHCK | 2 (B1) | GND |
| 3 | SD7 | 4 | RSTDRV |
| 5 | SD6 | 6 | VCC |
| 7 | SD5 | 8 | IRQ9 |
| 9 | SD4 | 10 | -5V |
| 11 | SD3 | 12 | DRQ2 |
| 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 |

## J3: ISA bus SL36 – 36-pin Gold finger (Total 98 pins)

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 (A1) | SBHE | 2 (B1) | MEMCS16 |
| 3 | LA23 | 4 | IOCS16 |
| 5 | LA22 | 6 | IRQ10 |
| 7 | LA21 | 8 | IRQ11 |
| 9 | LA20 | 10 | IRQ12 |
| 11 | LA19 | 12 | IRQ15 |
| 13 | LA18 | 14 | IRQ14 |
| 15 | LA17 | 16 | DACK0 |
| 17 | MEMR | 18 | DRQ0 |
| 19 | MEMW | 20 | DACK5 |
| 21 | SD8 | 22 | DRQ5 |
| 23 | SD9 | 24 | DACK6 |
| 25 | SD10 | 26 | DRQ6 |
| 27 | SD11 | 28 | DACK7 |
| 29 | SD12 | 30 | DRQ7 |
| 31 | SD13 | 32 | VCC |
| 33 | SD14 | 34 | MASTER |
| 35 | SD15 | 36 | GND |

## J4: PC104 Connector – 64pin

| 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 | DRQ2 |
| 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 |

## J5: PC104 Connector – 40pin

| 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 |

## J6: Mity-Mite VGA Connector

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | SBHE |
| 3 | RSTDRV | 4 | SD7 |
| 5 | VCC | 6 | SD6 |
| 7 | SD8 | 8 | SD5 |
| 9 | SD9 | 10 | SD4 |
| 11 | SD10 | 12 | SD3 |
| 13 | SD11 | 14 | SD2 |
| 15 | SD12 | 16 | SD1 |
| 17 | SD13 | 18 | SD0 |
| 19 | GND | 20 | IOCHRDY |
| 21 | SMEMW | 22 | AEN |
| 23 | SMEMR | 24 | SA19 |
| 25 | XIOW | 26 | SA18 |
| 27 | XIOR | 28 | SA17 |
| 29 | SD14 | 30 | SA16 |
| 31 | SD15 | 32 | SA15 |
| 33 | MEMCS16 | 34 | SA14 |
| 35 | TOCS16 | 36 | SA13 |
| 37 | REFRESH | 38 | SA12 |
| 39 | SYSCLK | 40 | SA11 |
| 41 | IRQ7 | 42 | SA10 |
| 43 | IRQ6 | 44 | SA9 |
| 45 | IRQ5 | 46 | SA8 |
| 47 | IRQ4 | 48 | SA7 |
| 49 | IRQ3 | 50 | SA6 |
| 51 | IRQ10 | 52 | SA5 |
| 53 | IRQ11 | 54 | SA4 |
| 55 | BALE | 56 | SA3 |
| 57 | VCC | 58 | SA2 |
| 59 | XOSC | 60 | SA1 |
| 61 | GND | 62 | SA0 |
| 63 | IRQ12 | 64 | IRQ14 |

## J7: USB

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

## J8: I /O Connector – 64pin

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | DCD1 | 2 | RXD1 |
| 3 | TXD1 | 4 | DTR1 |
| 5 | GND | 6 | DSR1 |
| 7 | RTS1 | 8 | CTS1 |
| 9 | RI1 | 10 | VCC |
| 11 | DCD2 | 12 | RX2 |
| 13 | TXD2 | 14 | DTR2 |
| 15 | GND | 16 | DSR2 |
| 17 | RTS2 | 18 | CTS2 |
| 19 | RI2 | 20 | VCC |
| 21 | PD0 | 22 | SLCT |
| 23 | PD1 | 24 | PR |
| 25 | PD2 | 26 | BUSY |
| 27 | PD3 | 28 | ACK\ |
| 29 | PD4 | 30 | SLCTIN\ |
| 31 | PD5 | 32 | INIT\ |
| 33 | PD6 | 34 | ERROR\ |
| 35 | PD7 | 36 | AUTOFD\ |
| 37 | GND | 38 | STORBE\ |
| 39 | GP0 | 40 | GP8 |
| 41 | GP1 | 42 | GP9 |
| 43 | GP2 | 44 | GP10 |
| 45 | GP3 | 46 | GP11 |
| 47 | GP4 | 48 | GP12 |
| 49 | GP5 | 50 | GP13 |
| 51 | GP6 | 52 | GP14 |
| 53 | GP7 | 54 | GP15 |
| 55 | GPCS0 | 56 | VBAT |
| 57 | KBDAT | 58 | HDCS0 |
| 59 | KBCLK | 60 | HDCS1 |
| 61 | SPKR | 62 | RESETL |
| 63 | GND | 64 | PWG |

## J9: GPIO

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | VCC |
| 3 | GP00 | 4 | GP10 |
| 5 | GP01 | 6 | GP11 |
| 7 | GP02 | 8 | GP12 |
| 9 | GP03 | 10 | GP13 |
| 11 | GP04 | 12 | GP14 |
| 13 | GP05 | 14 | GP15 |
| 15 | GP06 | 16 | GP16 |
| 17 | GP07 | 18 | GP17 |
| 19 | VCC | 20 | GND |

## J10: COM 1

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | DCD1 | 2 | RXD1 |
| 3 | TXD1 | 4 | DTR1 |
| 5 | GND | 6 | DSR1 |
| 7 | RTS1 | 8 | CTS1 |
| 9 | RI1 | 10 | GND |
| 11 | GND | | |

## J11: COM 2

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

## J12: RESET

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

## J13: PS/2 Keyboard

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | KBCLK | 2 | KBDAT |
| 3 | NC | 4 | GND |
| 5 | VCC | | |

## J14: 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 | VCC | 10 | GND |
| 11 | NC | 12 | DDCDAT |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK | | |

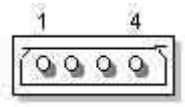
## J15: Power Connector (Terminal Block 5.0mm)

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

## J16: Power Connector (DC-JACK)

| Pin # | Signal Name |
|---|---|
| 1 | +5V |
| 2 | GND |
| 3 | NC |

## J17: Power Connector – 4-pin Header (P4 Molex 5mm)




| Pin # | Signal Name |
|---|---|
| 1 | +5V |
| 2 | GND |
| 3 | GND |
| 4 | +12V |

## J18: VGA

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | R OUT | 2 | GND |
| 3 | G OUT | 4 | GND |
| 5 | B OUT | 6 | GND |
| 7 | HSYNC | 8 | GND |
| 9 | VSYNC | 10 | GND |

## J19: PS/2 Keyboard / Mouse

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | KBDATA | 2 | NC |
| 3 | GND | 4 | VCC |
| 5 | KBCLK | 6 | NC |
| 7 | MSDATA | 8 | NC |
| 9 | GND | 10 | VCC |
| 11 | MSCLK | 12 | NC |
| 13 | GGND | 14 | GGND |
| 15 | GGND | 16 | GGND |
| 17 | GGND | | |

## ■ VSX-6119-FB-D-V2

**Summary Table**

| Nbr | Description | Type of Connections | Pin nbrs. |
|---|---|---|---|
| **J1** | x-ISA Connector – 64 pin | Pin Header, 2.0∅, 32x2 | 64-pin |
| **J2** | Multi I/O Connector – 64 pin | Pin Header, 2.0∅, 32x2 | 64-pin |
| **J3** | DMA control | Pin Header, 2,0∅,1x9 | 9-pin |
| **JP1** | JTAG | Wafer, 1.25∅ , 6x1 | 6-pin |
| **PWR-LED** | Power Active LED (Red) | LED-SMD | |
| **MTBF-LED** | MTBF-Out (Orange) | LED-SMD | |

## J1: x-ISA Connector – 64pin

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | GND | 2 | SBHE |
| 3 | RSTDRV | 4 | SD7 |
| 5 | VCC | 6 | SD6 |
| 7 | SD8 | 8 | SD5 |
| 9 | SD9 | 10 | SD4 |
| 11 | SD10 | 12 | SD3 |
| 13 | SD11 | 14 | SD2 |
| 15 | SD12 | 16 | SD1 |
| 17 | SD13 | 18 | SD0 |
| 19 | GND | 20 | IOCHRDY |
| 21 | SMEMW | 22 | AEN |
| 23 | SMEMR | 24 | SA19 |
| 25 | IOW | 26 | SA18 |
| 27 | IOR | 28 | SA17 |
| 29 | SD14 | 30 | SA16 |
| 31 | SD15 | 32 | SA15 |
| 33 | MEMCS16 | 34 | SA14 |
| 35 | ICOS16 | 36 | SA13 |
| 37 | REFRESH | 38 | SA12 |
| 39 | SYSCLK | 40 | SA11 |
| 41 | IRQ7 | 42 | SA10 |
| 43 | IRQ6 | 44 | SA9 |
| 45 | IRQ5 | 46 | SA8 |
| 47 | IRQ4 | 48 | SA7 |
| 49 | IRQ3 | 50 | SA6 |
| 51 | IRQ10 | 52 | SA5 |
| 53 | IRQ11 | 54 | SA4 |
| 55 | BALE | 56 | SA3 |
| 57 | VCC | 58 | SA2 |
| 59 | OSC | 60 | SA1 |
| 61 | GND | 62 | SA0 |
| 63 | IRQ12 | 64 | IRQ14 |

## J2: I /O Connector – 64pin

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | DCD1 | 2 | RXD1 |
| 3 | TXD1 | 4 | DTR1 |
| 5 | GND | 6 | DSR1 |
| 7 | RTS1 | 8 | CTS1 |
| 9 | RI1 | 10 | VCC |
| 11 | DCD2 | 12 | RX2 |
| 13 | TXD2 | 14 | DTR2 |
| 15 | GND | 16 | DSR2 |
| 17 | RTS2 | 18 | CTS2 |
| 19 | RI2 | 20 | VCC |
| 21 | PD0 | 22 | SLCT |
| 23 | PD1 | 24 | PR |
| 25 | PD2 | 26 | BUSY |
| 27 | PD3 | 28 | ACK\ |
| 29 | PD4 | 30 | SLCTIN\ |
| 31 | PD5 | 32 | INIT\ |
| 33 | PD6 | 34 | ERROR\ |
| 35 | PD7 | 36 | AUTOFD\ |
| 37 | GND | 38 | STORBE\ |
| 39 | GP0 | 40 | GP8 |
| 41 | GP1 | 42 | GP9 |
| 43 | GP2 | 44 | GP10 |
| 45 | GP3 | 46 | GP11 |
| 47 | GP4 | 48 | GP12 |
| 49 | GP5 | 50 | GP13 |
| 51 | GP6 | 52 | GP14 |
| 53 | GP7 | 54 | GP15 |
| 55 | GPCS0 | 56 | VBAT |
| 57 | KBDAT | 58 | HDCS0 |
| 59 | KBCLK | 60 | HDCS1 |
| 61 | SPKR | 62 | RESETL |
| 63 | GND | 64 | PWG |

## J3: DMA control

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | 40MHZ | 2 | GND |
| 3 | DACK1 | 4 | DACK3 |
| 5 | DRQ1 | 6 | DRQ3 |
| 7 | TC | 8 | MEMR |
| 9 | MEMW | | |

## JP1: JTAG

| Pin # | Signal Name | Pin # | Signal Name |
|---|---|---|---|
| 1 | VCC | 2 | GND |
| 3 | TCK | 4 | TDO |
| 5 | TDI | 6 | TMS |

## 2.5 System Mapping

### System Mapping

#### Memory Mapping

| Address | Description | Usage |
|---|---|---|
| 0000:0000-9000:FFFF | System RAM | * |
| A000:0000-A000:FFFF | EGA/VGA Video Memory | |
| B000:0000-B000:7FFF | MDA RAM, Hercules graphics display RAM | |
| B000:8000-B000:FFFF | CGA display RAM | |
| C000:0000-C000:7FFF | EGA/VGA BIOS ROM | |
| C000:8000-C000:FFFF | Boot ROM enable. | * |
| D000:0000-D700:FFFF | Expansion ROM space. | |
| D800:0000-DB00:FFFF | SPI FLASH Emulation Floppy A Enable | * |
| DC00:0000-DF00:FFFF | Expansion ROM space. | |
| E000:0000-E000:FFFF | USB Legacy SCSI ROM space. | * |
| F000:0000-F000:FFFF | Motherboard BIOS | * |

#### I/O Mapping

| I/O Address | Owner | Usage |
|---|---|---|
| 0000h - 000Fh | DMA 8237-1 | * |
| 0010h - 0017h | COM 9 | |
| 0018h - 001Fh | Empty | |
| 0020h - 0021h | PIC 8259-1 | * |
| 0022h - 0023h | 6117D configuration port | * |
| 0024h - 002Dh | Empty | |
| 002Eh - 002Fh | Forward to LPC BUS | * |
| 0030h - 003Fh | Empty | |
| 0040h - 0043h | Timer counter 8254 | * |
| 0044h - 0047h | Empty | |
| 0048h - 004Bh | PWM counter 8254 | * |
| 004Ch - 004Dh | Empty | |
| 004Eh - 004Fh | Forward to LPC BUS | * |
| 0050h - 005Fh | Empty | |
| 0060h | Keyboard data port | * |
| 0061h | Port B + NMI control port | * |
| 0062h - 0063h | 8051 download 4K address counter | * |

| | | |
|---|---|---|
| 0064h | Keyboard status port | * |
| 0065h | WatchDog0 reload counter | * |
| 0066h | 8051 download 8bit data port | * |
| 0067h | WatchDog1 reload counter | * |
| 0068h - 006Dh | WatchDog1 control register | * |
| 006Eh - 006Fh | Empty | |
| 0070h - 0071h | CMOS RAM port | * |
| 0072h - 0075h | MTBF counter | * |
| 0076h - 0077h | Empty | |
| 0078h - 007Ch | GPIO port 0,1,2,3,4 default setup | * |
| 007Dh - 007Fh | Empty | |
| 0080h - 008Fh | DMA page register | * |
| 0090h - 0091h | Empty | |
| 0092h | System control register | * |
| 0093h - 0097h | Empty | |
| 0098h - 009Ch | GPIO direction control | * |
| 00A0h - 00A1h | PIC 8259-2 | * |
| 00A2h - 00BFh | Empty | |
| 00C0h - 00DFh | DMA 8237-2 | * |
| 00E0h - 00FFh | Empty | |
| 0100h - 0101h | GPCS1 default setting address | * |
| 0170h - 0177h | IDE1 (IRQ 15) | |
| 01F0h - 01F7h | IDE0 (IRQ 14) | * |
| 0220h - 0227h | COM8 Forward to LPC BUS | |
| 0228h - 022Fh | COM7 Forward to LPC BUS | |
| 0238h - 023Fh | COM6 Forward to LPC BUS | |
| 0278h - 027Fh | Printer port (IRQ 7, DMA 0) | * |
| 02E8h - 02EFh | COM4 (IRQ 11) | |
| 02F8h - 02FFh | COM2 (IRQ 3) | * |
| 0338h - 033Fh | COM5 Forward to LPC BUS | |
| 0376h | IDE1 ATAPI device control write only register | * |
| 03E8h - 03Efh | COM3 (IRQ 10) | |
| 03F0h - 03F7h | Floppy Disk (IRQ 6, DMA 2) | |
| 03F6h | IDE0 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 | * |
| D400h - D4FFh | on board LAN | |
| FC00h - FC05h | SPI Flash BIOS control register | * |
| FC08h - FC0Dh | External SPI BUS control register ( output pin configurable GPIO3[0-3] ) | * |

## IRQ Mapping

| IRQ# | Description | Usage |
|---|---|---|
| IRQ0 | System Timer | * |
| IRQ1 | Keyboard Controller | * |
| IRQ2 | Cascade for IRQ8 - 15 | |
| IRQ3 | Serial Port 2 | * |
| IRQ4 | Serial Port 1 | * |
| IRQ5 | Unassigned | |
| IRQ6 | Unassigned | |
| IRQ7 | Parallel Port | * |
| IRQ8 | Real Time Clock | * |
| IRQ9 | USB | * |
| IRQ10 | USB | * |
| IRQ11 | Unassigned | |
| IRQ12 | Unassigned | |
| IRQ13 | Math Coprocessor | * |
| IRQ14 | Hard Disk Controller#1 | * |
| IRQ15 | Unassigned | |

## DMA Mapping

| DMA# | Description | Usage |
|---|---|---|
| DMA0 | | |
| DMA1 | | |
| DMA2 | Floppy Disk Controller | |
| DMA3 | | |
| DMA5 | | |
| DMA6 | | |
| DMA7 | | |

## 2.6 Watchdog Timer

There are two watchdog timers in Vortex86SX/DX CPU. One is compatible with M6117D watchdog timer and the other is new. The M6117D compatible watchdog timer is called WDT0 and new one is called WDT1.

We also provide DOS, Linux and WinCE example for your reference. For more technical support, please visit: http://www.dmp.com.tw/tech or download the PDF file: http://www.dmp.com.tw/tech/vortex86dx/

## 2.7 GPIO (General Purpose Input / Output)

40 GPIO pins are provided by the Vortex86SX/DX for general usage in the system. All GPIO pins are independent and can be configured as inputs or outputs, with or without pull-up/pull-down resistors.

We also offer DOS, Linux and WinCE example for your reference. For more technical support, please visit: http://www.dmp.com.tw/tech or download the PDF file: http://www.dmp.com.tw/tech/vortex86dx/

## 2.8 SPI flash (Serial Peripheral Interface)

As SPI Flash (Serial Peripheral Interface) offers many benefits including: reduced controller pin count, smaller and simpler PCBs, reduced switching noise, less power consumption, and lower system cost

Many of users may consider using a formatted SPI flash to boot for the system or emulate SPI flash as Floppy (A: Driver or B: Driver). Then you must know how to set for this condition in CMOS Setup and boot up under DOS 6.22, X-DOS, DR-DOS and Free DOS.

For more technical support, please visit: http://www.dmp.com.tw/tech or download the PDF file: http://www.dmp.com.tw/tech/vortex86sx/

# Chapter 3

# SVGA Setup

### (For ICOP-6019-VGA /LCD Module)

## 3.1 Introduction

The ICOP-6019-VGA has an on-board VGA interface. The specifications and features are described as follows or please visit our website:
http://www.icop.com.tw/pddetail.aspx?id=47&pid=4

### 3.1.1 Chipset

The ICOP-6019-VGA uses a HMC HM86508 for its SVGA controller, which supports conventional analog CRT monitor or flat panel. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

### 3.1.2 Display memory

With 1 MB memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 256 colors.

## 3.2 Flat Panel Connectors

### Flat Panel Pin Assignment

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | +12V | 2 | +12V |
| 3 | GND | 4 | GND |
| 5 | PVcc | 6 | PVcc |
| 7 | ENAVEE | 8 | ENAVEE |
| 9 | P0 | 10 | P1 |
| 11 | P2 | 12 | P3 |
| 13 | P4 | 14 | P5 |
| 15 | P6 | 16 | P7 |
| 17 | P8 | 18 | P9 |
| 19 | P10 | 20 | P11 |
| 21 | P12 | 22 | P13 |
| 23 | P14 | 24 | P15 |
| 25 | P16 | 26 | P17 |
| 27 | P18 | 28 | P19 |
| 29 | P20 | 30 | P21 |
| 31 | P22 | 32 | P23 |
| 33 | GND | 34 | GND |
| 35 | SHFCLK | 36 | FLM |
| 37 | M | 38 | LP |
| 39 | GND | 40 | ENABKL |
| 41 | GND | 42 | ASHFCLK |
| 43 | Vcc | 44 | Vcc |

## Description for the Pin of the Flat Panel Connector

| Name | Description |
|---|---|
| P0~P23 | Flat panel data output |
| ENABKL | Activity Indicator and Enable Backlight outputs |
| SHFCLK | Shift clock. Pixel clock for flat panel data |
| M | M signal for panel AC drive control |
| LP | Latch pulse. Flat panel equivalent of HSYNC |
| FLM | First line marker. Flat panel equivalent of VSYNC |
| +12V | +12V power from PC power supply |
| ENAVDD | Power sequencing controls for panel LCD bias volt |
| ENAVEE | Power sequencing controls for panel LCD bias volt |
| –SHFCLK | The inverter signal of SHFCLK |
| VDDM | 3.3V or 5V selected by JP6 |

## 3.3 Flat Panel Jumper setting

**J1: LCD Type Select**

| | Type of Display | 1-2 | 3-4 | 5-6 | Address of VGA BIOS |
|---|---|---|---|---|---|
| 1 | Standard CRT | C | C | C | 00000~07FFF Hex |
| 2 | Mono DSTN 640x480 | C | C | O | 08000~0FFFF Hex |
| 3 | Color DSTN 640x480 | C | O | C | 10000~17FFF Hex |
| 4 | 16-bit TFT 640x480 | C | O | O | 18000~1FFFF Hex |
| 5 | 18/24-bit TFT 640x480 | O | C | C | 20000~27FFF Hex |
| 6 | 16-bit TFT 800x600 | O | C | O | 28000~2FFFF Hex |
| 7 | 18/24-bit TFT 800x600 | O | O | C | 30000~37FFF Hex |
| 8 | EL 640x480 | O | O | O | 38000~3FFFF Hex |

**Note: “C” means “close”; “O” means “open”**

**J3: LCD voltage select**

| Voltage | Pin1-2 | Pin 2-3 |
|---|---|---|
| 5V | close | |
| 3.3V | | close |

## 3.4 Flat Panel BIOS and Wiring

Below is a list of optional Flat Panel SVGA BIOS. The VGA BIOS is combined with the system BIOS in a single. To change to another BIOS please contact your local dealer.

**MLCD.dat** - Data File for MONO DSTN640*480 **(Default)**
Example: (1) HOSIDEN HLM6667
(2) HITACHI LMG5160XUFC
(3) CASIO MD650TS00-01
(4) OPTREX DMF_50260NFU-FW-8

**DSTN.dat** - Data file for Color DSTN640*480
Example: (1) Sanyo LCM-5331-22NTK
(2) SHARP LM64C35P

**TFT_S1.dat** - Data File for TFT640*480-Sync (16 BIT)
**TFT_S2.dat** - Data File for TFT640*480-Sync (18/24 BIT)

Example: (1) HITACHI TX26D60/TX24D55
(2) TOSHIBA LTM09C015A
(3) SHARP LQ10D321

**TFT_LP1.dat** - Data File For TFT640*480-LP (16 BIT)
**TFT_LP2.dat** - Data File For TFT640*480-LP (18/24 BIT)
Example: (1) Toshiba LTM09c015A)

**TFT86_S1.dat** - Data File for TFT800*600_sync (16 BIT)
**TFT86_S2.dat** Data File for TFT800*600_sync (18/24 BIT)
Example: (1) NEC NL8060AC26-05
(2) NEC NL8060AC26-04
(3) NEC NL8060BC31-02

**EL.dat** - Data File for EL640*480

Example: (1) PLANAR EL640.480-A

**PLASMA.dat** - Data File for PLASMA640*480

Example: (1) PANASONIC S817

## CRT / Flat Panel Mode

All the above BIOS support either CRT only, Flat Panel only or CRT/Flat Panel simultaneously. To set the mode a Panel Switching Utility is used.
USAGE:

At DOS prompt type >***SW508*** then Screen will show

1. CRT Only
2. Panel Only
3. CRT/Panel Simutaneous

## NEC NL6448AC33-18 wiring

| NEC NL6448AC33-18 | | ICOP-2820V CON1 | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Pin** | **Pin Name** |
| CN1-1 | GND | 3 | GND |
| CN1-2 | CLK | 35 | SHFCLK |
| CN1-3 | Hsync | 38 | LP |
| CN1-4 | Vsync | 36 | FLM |
| CN1-5 | GND | 4 | - |
| CN1-6 | R0 | 27 | P18 |
| CN1-7 | R1 | 28 | P19 |
| CN1-8 | R2 | 29 | P20 |
| CN1-9 | R3 | 30 | P21 |
| CN1-10 | R4 | 31 | P22 |
| CN1-11 | R5 | 32 | P23 |
| CN1-12 | GND | 33 | - |
| CN1-13 | G0 | 19 | P10 |
| CN1-14 | G1 | 20 | P11 |
| CN1-15 | G2 | 21 | P12 |
| CN1-16 | G3 | 22 | P13 |
| CN1-17 | G4 | 23 | P14 |
| CN1-18 | G5 | 24 | P15 |
| CN1-19 | GND | 34 | - |
| CN1-20 | B0 | 11 | P2 |
| CN1-21 | B1 | 12 | P3 |
| CN1-22 | B2 | 13 | P4 |

| | | | |
|---|---|---|---|
| CN1-23 | B3 | 14 | P5 |
| CN1-24 | B4 | 15 | P6 |
| CN1-25 | B5 | 16 | P7 |
| CN1-26 | GND | 39 | - |
| CN1-27 | ENAB | 37 | MDE |
| CN1-28 | Vcc | 43 | Vcc |
| CN1-29 | Vcc | 44 | Vcc |
| CN1-30 | NC | - | - |
| CN1-31 | NC | - | - |

## NEC NL6448AC30-10 wiring

| **NEC NL6448AC30-10** | | **ICOP-2820V CON1** | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Pin** | **Pin Name** |
| CN1-1 | CLK | 42 | SHFCLK |
| CN1-2 | Hsync | 38 | LP |
| CN1-3 | Vsync | 36 | FLM |
| CN1-4 | DE | 37 | MDE |
| CN1-5 | - | - | P0 |
| CN1-6 | B0 | 10 | P1 |
| CN1-7 | B1 | 11 | P2 |
| CN1-8 | B2 | 12 | P3 |
| CN1-9 | B3 | 13 | P4 |
| CN1-10 | - | 14 | P5 |
| CN1-11 | - | 15 | P6 |
| CN1-12 | G0 | 16 | P7 |

| | | | |
|---|---|---|---|
| CN1-13 | G1 | 17 | P8 |
| CN1-14 | G2 | 18 | P9 |
| CN1-15 | G3 | 19 | P10 |
| CN1-16 | - | 20 | P11 |
| CN1-17 | R0 | 21 | P12 |
| CN1-18 | R1 | 22 | P13 |
| CN1-19 | R2 | 23 | P14 |
| CN1-20 | R3 | 24 | P15 |
| CN1-21 | - | - | P16 |
| CN1-22 | - | - | P17 |
| CN1-23 | - | 27 | P18 |
| CN1-24 | - | 28 | P19 |
| CN1-25 | - | 29 | P20 |
| CN1-26 | - | 30 | P21 |
| CN1-27 | - | 31 | P22 |
| CN1-28 | - | 32 | P23 |
| CN1-29 | PVcc | 5 | LCD Vdd |
| CN1-30 | Vcc | 43 | Vcc |
| CN1-31 | MODE | 44 | Vcc |
| CN1-32 | GND | 3 | GND |
| CN1-33 | GND | 4 | GND |
| CN1-34 | Vdd +12 | 1 | +12 |
| CN1-35 | ENABKL | 40 | ENABKL |
| CN1-36 | GND | 39 | GND |

## LJ32H028 wiring

| LJ32H028 | | ICOP-2820V CON1 | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Pin** | **Pin Name** |
| CN1-1 | D1 | 11 | P2 |
| CN1-2 | D0 | 12 | P3 |
| CN1-3 | D3 | 9 | P0 |
| CN1-4 | D2 | 10 | P1 |
| CN1-5 | CP2 | 35 | SHF_CLK |
| CN1-6 | GND | 3,4 | GND |
| CN1-7 | CP1 | 38 | LP |
| CN1-8 | GND | 33,34 | GND |
| CN1-9 | S | 36 | FLM |
| CN1-10 | - | - | - |
| CN1-11 | - | - | - |
| CN1-12 | - | - | - |
| CN1-13 | +5V | 43,44 | +5V(Vdd) |
| CN1-14 | - | - | - |
| CN1-15 | +12V | 1,2 | +12V |

## SHARP LQ10D42 wiring
## (640 X 480 TFT Color)

| SHARP LQ10D42 | | ICOP-2820V CON1 | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Pin** | **Pin Name** |
| CN1-1 | GND | 3,4 | GND |

| | | | |
|---|---|---|---|
| CN1-2 | CLK | 42 | SHFCLK |
| CN1-3 | Hsync | 38 | LP |
| CN1-4 | Vsync | 36 | FLM |
| CN1-5 | GND | 3,4 | GND |
| CN1-6 | R0 | 21 | P12 |
| CN1-7 | R1 | 22 | P13 |
| CN1-8 | R2 | 23 | P14 |
| CN1-9 | R3 | 24 | P15 |
| CN1-10 | R4 | 25 | P16 |
| CN1-11 | R5 | 26 | P17 |
| CN1-12 | GND | 3,4 | GND |
| CN1-13 | G0 | 15 | P6 |
| CN1-14 | G1 | 16 | P7 |
| CN1-15 | G2 | 17 | P8 |
| CN1-16 | G3 | 18 | P9 |
| CN1-17 | G4 | 19 | P10 |
| CN1-18 | G5 | 20 | P11 |
| CN1-19 | GND | 3,4 | GND |
| CN1-20 | B0 | 9 | P0 |
| CN1-21 | B1 | 10 | P1 |
| CN1-22 | B2 | 11 | P2 |
| CN1-23 | B3 | 12 | P3 |
| CN1-24 | B4 | 13 | P4 |
| CN1-25 | B5 | 14 | P5 |
| CN1-26 | GND | 3,4 | GND |
| CN1-27 | ENAB | 40 | M |

| | | | |
|---|---|---|---|
| CN1-28 | Vcc | 43,44 | Vcc +5V |
| CN1-29 | Vcc | 43,44 | Vcc +5V |
| CN1-30 | R/L | - | - |
| CN1-31 | U/D | - | - |

## SHARP LQ12S31 wiring (800 X 600 TFT Color)

| SHARP LQ12S31 | | ICOP-2820V CON1 | |
|---|---|---|---|
| **Pin** | **Pin Name** | **Pin** | **Pin Name** |
| CN1-1 | GND | 3 | GND |
| CN1-2 | CLK | 35 | SHFCLK |
| CN1-3 | GND | 4 | GND |
| CN1-4 | Hsync | 38 | LP |
| CN1-5 | Vsync | 36 | FLM |
| CN1-6 | GND | 8 | GND |
| CN1-7 | GND | 8 | GND |
| CN1-8 | GND | 8 | GND |
| CN1-9 | R0 | 27 | P18 |
| CN1-10 | R1 | 28 | P19 |
| CN1-11 | R2 | 29 | P20 |
| CN1-12 | GND | 8 | GND |
| CN1-13 | R3 | 30 | P21 |
| CN1-14 | R4 | 31 | P22 |
| CN1-15 | R5 | 32 | P23 |
| CN1-16 | GND | 39 | GND |

| | | | |
|---|---|---|---|
| CN1-17 | GND | 39 | GND |
| CN1-18 | GND | 39 | GND |
| CN1-19 | G0 | 19 | P10 |
| CN1-20 | G1 | 20 | P11 |
| CN1-21 | G2 | 21 | P12 |
| CN1-22 | GND | 39 | |
| CN1-23 | G3 | 22 | P13 |
| CN1-24 | G4 | 23 | P14 |
| CN1-25 | G5 | 24 | P15 |
| CN1-26 | GND | 41 | GND |
| CN1-27 | GND | 41 | GND |
| CN1-28 | GND | 41 | GND |
| CN1-29 | B0 | 11 | P2 |
| CN1-30 | B1 | 12 | P3 |
| CN1-31 | B2 | 13 | P4 |
| CN1-32 | GND | 41 | GND |
| CN1-33 | B3 | 14 | P5 |
| CN1-34 | B4 | 15 | P6 |
| CN1-35 | B5 | 16 | P7 |
| CN1-36 | GND | 41 | GND |
| CN1-37 | ENAR | 37 | M |
| CN1-38 | TST | - | - |
| CN1-39 | Vcc | 43 | +5Vcc |
| CN1-40 | Vcc | 44 | +5Vcc |
| CN1-41 | TST | - | - |

# Chapter 4

# Driver Installation

**LAN**

The Vortex86SX processor also integrated 10/100Mbps Ethernet controller that supports both 10/100BASE-T and allows direct connection to your 10/100Mbps Ethernet based Local Area Network for full interaction with local servers, wide area networks such as the Internet.

The controller supports: Half / Full-Duplex Ethernet function to double channel bandwidth, auto media detection.

**Operating system support**

The VSX-6119-FB-D-V2 Mity-SoC CPU board supports Embedded software: Free DOS, DOS 6.22, PCDOS 7.1, DR-DOS,x-DOS,OS/2, Windows CE 5.0 / 6.0.

Please get the drivers from the Driver CD which attached with the standard packing of Vortex86SX-6119-FB-D-V2 board or please get it from DMP official website: http://www.dmp.com.tw/tech/vortex86sx/

Vortex86SX-6119-FB-D-V2 also supports most of the popular Linux distributions, for more detail information, please visit DMP official website: http://www.dmp.com.tw/tech/vortex86sx/

# Appendix

## A. TCP/IP library for DOS real mode

DSock is a TCP/IP library for DOS real mode, which is used by RSIP. It provides simple C functions for programmer to write Internet applications. ICOP also provide Internet examples using DSock: BOOTP/DHCP, FTP server, SMTP client/server, HTTP server, TELNET server, Talk client/server, etc.

DSock provides a lot of example source code. Programmer can add Internet functions to their project easily and save development time. With a utility "MakeROM", programmer also can make a ROM image to fit their application, those examples can be seen in the following Application systems: Mity-Mite Serial Server, Web Camera Tiny Server and RSIP Serial Server.

DSock is free for All ICOP products using M6117D/Vortex86/Vortex86SX/Vortex86DX CPU and ICOP also provide the business version of DSock for those customers who are using other x86 CPUs.
If you would like to use DSock or business version of DSock, Please mail to info@icop.com.tw or contact your regional sales.

Please download the trial DSock software and Utilities from our website:
http://www.dmp.com.tw/tech/dmp-lib/dsock/

# B. VSX-6119-FB-D-V2 & VSX-6119-1 Schematic

Schematic information can help baseboard designer to optimize exactly how each of these functions implements physically. Designer can place connectors precisely where needed for the application on a baseboard designed to optimally fit a system's packaging.

Please contact or e-mail our regional sales to get VSX-6119-FB-D-V2 & VSX-6119-1 Schematic.

# Warranty

This product is warranted to be in good working order for a period of one year 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 at no 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 will be 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.