



**DM&P Vortex86MX+ Panel
PC with 9" TFT LCD**

■ **Model:**

PMX-090T-5A / PMX-090T-8A

PMX-090T-5A-512 / PMX-090T-8A-512

User's Manual

(Revision 1.5A)



CE



FCC



VCCI



VIBRATION



IP 65



TOUCH



Wi-Fi



FANLESS

Revision

| <i>Date</i> | <i>Version</i> | <i>Description</i> |
|-------------|----------------|---|
| 2012/11/20 | Version 1.0 | Initial Release |
| 2015/11/16 | Version 1.1 | Correct the weight on page-3 |
| 2016/01/06 | Version 1.2 | <ol style="list-style-type: none">1. Correct CPU frequency to 933MHz2. Correct Operation & Storage Temp3. Add more Certifications4. Correct LED backlight lifetime |
| 2016/06/24 | Version 1.3 | Correct the operating temperature |
| 2016/08/19 | Version 1.4 | Add panel mounting instruction |
| 2019/07/30 | Version 1.5 | Add Section 1.3 [Note 5] instruction |

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Safety Information

- Read these Safety instructions carefully.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Do not expose your Panel PC to rain or moisture, in order to prevent shock and fire hazard.
- Keep PMX-090T away from humidity.
- Do not open the cabinet to avoid electrical shock. Refer to your nearest dealer for qualified personnel servicing.
- Never touch un-insulated terminals or wire unless your power adaptor is disconnected.
- Locate your Panel PC as close as possible to the socket outline for easy access and to avoid force caused by entangling of your arms with surrounding cables from the Panel PC.
- USB connectors are not supplied with Limited Power Sources.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

DO NOT ATTEMPT TO OPEN OR TO DISASSEMBLE THE CHASSIS (ENCASING) OF THIS PRODUCT. PLEASE CONTACT YOUR DEALER FOR SERVICING FROM QUALIFIED TECHNICIAN.

Table of Contents

| | | |
|------------------------|---|-----------|
| Table of Contents..... | | iii |
| 1 | .General Information | 1 |
| | 1.1 Product Description..... | 1 |
| | 1.2 Product Specification | 2 |
| | 1.3 Inspection standard for TFT-LCD Panel | 4 |
| | 1.4 Product Dimension..... | 9 |
| | 1.5 Panel Mounting Instruction..... | 10 |
| | 1.6 Ordering Information | 12 |
| | 1.7 Packing List | 12 |
| 2 | .System Installation | 13 |
| | 2.1 CPU Board Outline..... | 13 |
| | 2.2 Connector Summary | 14 |
| | 2.3 Connector Pin Assignments..... | 15 |
| | 2.4 External I/O Overview | 18 |
| | 2.5 External I/O Pin Assignment..... | 19 |
| | 2.6 System Mapping | 21 |
| | 2.7 Watchdog Timer | 25 |
| 3 | .Driver Installation | 26 |
| | 3.1 PMX-090T Development Note | 27 |
| | 3.2 BIOS Default setting | 29 |
| Warranty..... | | 30 |



1.General Information

1.1 Product Description

PMX-090T is an ultra-compact platform for the present demanding embedded and productive applications. It has new Vortex86MX+ SoC CPU which consumes only minimum power requirement when running at 933MHz, and DDR2 memory provides faster data transfer rate. By using 9" TFT LCD, PMX-090T becomes the perfect choice for a limited budget. In additional, the integrated 10/100M Ethernet port supplies the communication capability which makes PMX-090T can be more widely used when running with Linux, Windows CE, and Windows XP environment to become the perfect solution for system integration.

1.2 Product Specification

Table 1-1 Product Specification

| CPU Board Specifications | |
|--------------------------|---|
| CPU | DM&P Vortex86MX+ 933MHz |
| Cache | L1:16KB I-Cache, 16KB D-Cache L2: 256KB Cache |
| BIOS | AMI BIOS |
| Memory | 512MB/1GB DDR2 onboard |
| Watchdog Timer | Software programmable from 30.5u to 512 seconds x 2 sets |
| LAN | Integrated 10/100M Ethernet |
| Audio | HD Audio-Realtek ALC262 CODEC |
| Internal Drives | Compact Flash Type I / II slot Micro SD slot 1GB or 2GB Flash Memory onboard (Optional) |
| I/O | RS-232/422/485 x 1 USB ports (Ver2.0) x 2 RJ-45 Port x 1 |
| Mechanical & Environment | |
| Power Requirement | Single Voltage +5VDC (5A) Multi Voltage +8~+35VDC (8A) |
| Power Consumption | 1.5A@5VDC |
| Operating Temp. | 0 ~ +50°C (32 ~ +122°F) |
| Storage Temp. | -10 ~ +60°C (14 ~ +140°F) |
| Operating Humidity | 0% ~ 90% relative humidity, non-condensing |

| | |
|---------------------------------|--|
| Dimensions | 236.6 x 146 x 35mm (9.31 x 5.75 x 1.38 inches) |
| Weight | 790g |
| Front Panel Protection | IP 65 |
| Certification | CE / FCC / VCCI / TUV / Vibration / Shock |
| LCD Specifications | |
| Display Type | 9" TFT LCD |
| Backlight Unit | LED |
| Display Resolution | 1024(W) x 600(H) |
| Brightness (cd/m ²) | 300 nits |
| Contrast Ratio | 500 : 1 |
| Display Color | 262, 144 |
| Pixel Pitch (mm) | 190.5 (H) x 189 (V) |
| Viewing Angle | Vertical 120°, Horizontal 140° |
| Backlight Lifetime | 18,000 hrs |
| Touchscreen | |
| Type | Analog Resistive |
| Resolution | Continuous |
| Transmittance | 80% |
| Controller | PS / 2 interface |
| Software Driver | Linux / WinCE / WinXP |
| Durability | 1 million |

1.3 Inspection standard for TFT-LCD Panel

Table 1-2 Inspection Standard

| DEFECT TYPE | | LIMIT | | Note | | | | |
|----------------------------|-------------------|--|-----------------|-----------------|-----------------|-----------------|-----------------|-------|
| VISUAL DEFECT | SPOT | $\phi < 0.15\text{mm}$ | Ignore | Note1 | | | | |
| | | $0.15\text{mm} \leq \phi \leq 0.5\text{mm}$ | $N \leq 4$ | | | | | |
| | | $0.5\text{mm} < \phi$ | $N=0$ | | | | | |
| | INTERNAL FIBER | $0.03\text{mm} < W \leq 0.1\text{mm}, L \leq 5\text{mm}$ | $N \leq 3$ | Note1 | | | | |
| | | $1.0\text{mm} < W, 1.5\text{mm} < L$ | $N=0$ | | | | | |
| | POLARIZER BUBBLE | $\phi < 0.15\text{mm}$ | Ignore | Note1 | | | | |
| | | $0.15\text{mm} \leq \phi \leq 0.5\text{mm}$ | $N \leq 2$ | | | | | |
| | | $0.5\text{mm} < \phi$ | $N=0$ | | | | | |
| | Mura | It' OK if mura is slight visible through 6%ND filter | | | | | | |
| | ELECTRICAL DEFECT | BRIGHT DOT | A Grade | | | B Grade | | |
| C Area | | | O Area | Total | C Area | O Area | Total | |
| $N \leq 0$ | | | $N \leq 2$ | $N \leq 2$ | $N \leq 2$ | $N \leq 3$ | $N \leq 5$ | Note2 |
| DARK DOT | | $N \leq 2$ | $N \leq 3$ | $N \leq 3$ | $N \leq 3$ | $N \leq 5$ | $N \leq 8$ | |
| TOTAL DOT | | $N \leq 4$ | | | $N \leq 5$ | $N \leq 6$ | $N \leq 8$ | Note2 |
| TWO ADJACENT DOT | | $N \leq 0$ | $N \leq 1$ pair | $N \leq 1$ pair | $N \leq 1$ pair | $N \leq 1$ pair | $N \leq 1$ pair | Note4 |
| THREE OR MORE ADJACENT DOT | | NOT ALLOWED | | | | | | |
| LINE DEFECT | NOT ALLOWED | | | | | | | |

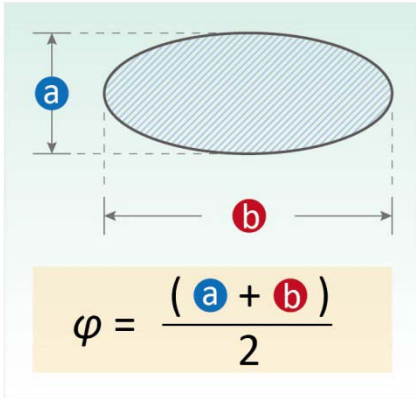
(1) One pixel consists of 3 sub-pixels, including R, G, and B dot.

(Sub-pixel = Dot)

(2) LITTLE BRIGHT DOT ACCEPTABLE UNDER 6 % ND-Filter

(3) If require G0 grand (Total dot $N \leq 0$), please contact region sales.

[Note 1] W : Width[mm], L : Length[mm], N : Number, ϕ : Average Diameter.



1. White / Black Spot
2. Polarizer Bubble

Fig 1-1

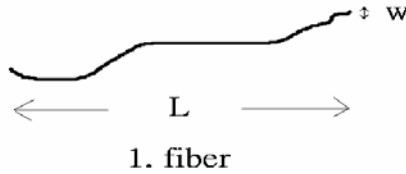


Fig 1-2

[Note 2] Bright dot is defined through 6% transmission ND Filter as following.

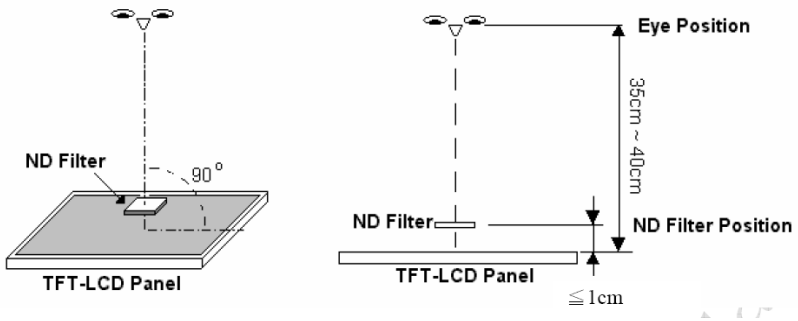
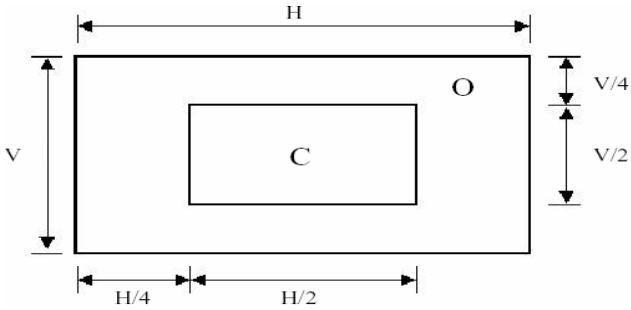


Fig 1-3

[Note 3]

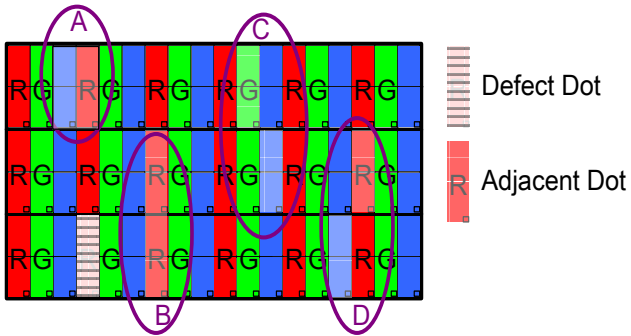


C Area: Center of display area

O Area: Outer of display area

[Note 4]

Judge defect dot and adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dart adjacent dot. And they will be counted 2 defect dots in total quantity.



- (1) The defects that are not defined above and considered to be problem shall be reviewed and discussed by both parties.

Defects on the Black Matrix, out of Display area, are not considered as a defect or counted.

[Note 5]

According to the technical information from LCD manufacturer, the image retention may happen on LCD display if the static image is kept for a period of time without any change. ICOP will suggest customers not to have static image on LCD for over 4 hours without any image movement and also enable screensaver to avoid image sticking issue if LCD displays need to be kept on for a long time.

Some Image retention issue will disappear when LCD display is turned off for a period of time, but some image retention may be not reversible when LCD encounters screen burn.

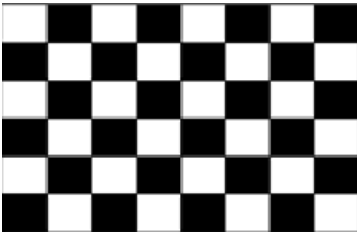
The following is LCD manufacturer's test result for customers' reference.

| TEST ITEMS | CONDITIONS | NOTE |
|--|--|-------------------------------|
| High Temperature Operation | 70°C ;240hrs | |
| High Temperature Storage | 80°C ; 240hrs | |
| High Temperature High Humidity Operation | 60°C ; 90%RH ;240hrs | No condensation |
| Low Temperature Operation | -20°C ; 240hrs | Backlight unit always turn on |
| Low Temperature Storage | -30°C ; 240hrs | |
| Thermal Shock | -30°C (0.5hr) ~ 80°C (0.5hr) ; 200 Cycles | |
| Image Sticking | 25°C ; 4hrs | Note 5-1 |
| MTBF | 20,000Hrs | |

Note 5-1

1. Condition of Image Sticking test : 25 °C ± 2 °C.
2. Operation with test pattern sustained for 4 hrs, then change to gray pattern immediately.

3. After 5 mins, the mura must be disappeared completely.



1.4 Product Dimension

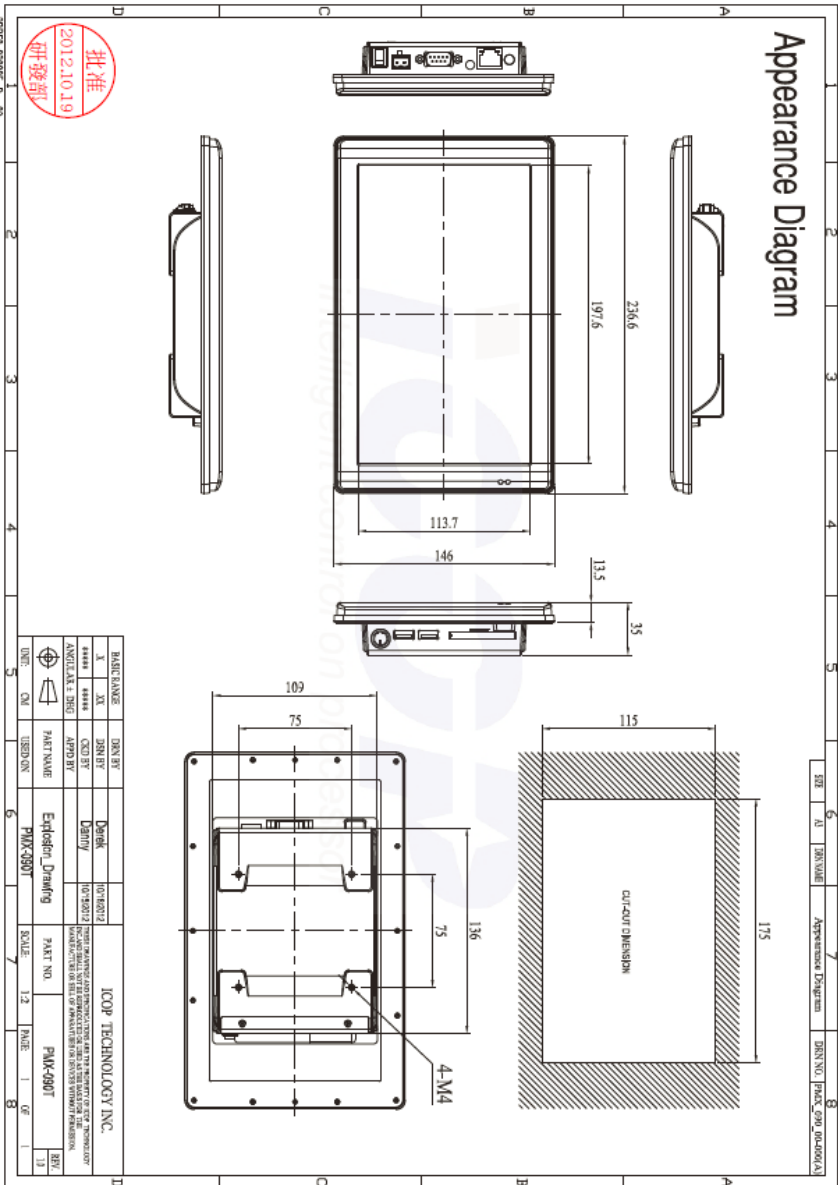
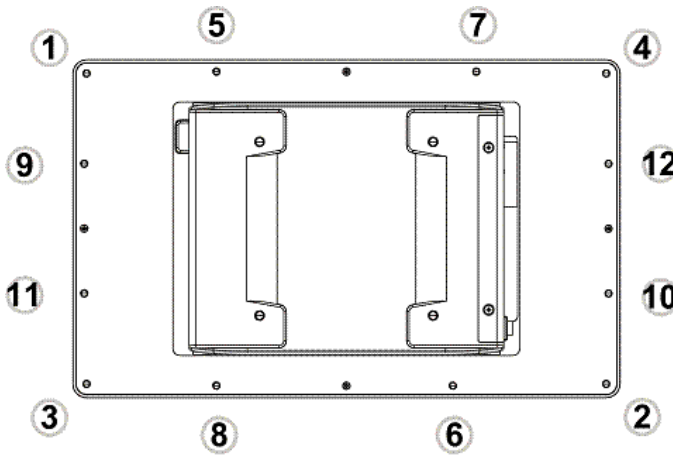
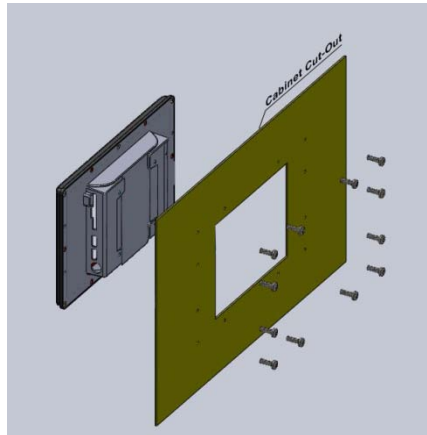


Fig 1-4 Product Dimension

1.5 Panel Mounting Instruction

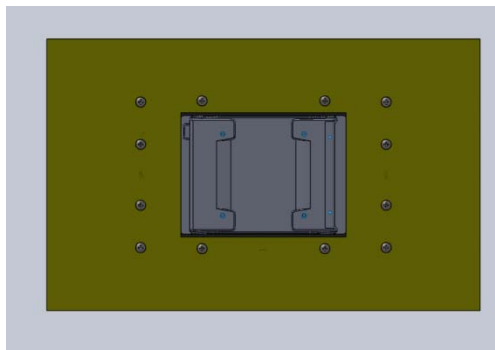
1. Cut a mounting hole in the panel. (Refer to PMX-090T Dimensions on page 7) (Note 1)
2. Check and remove the twelve M3 screws in a diagonal pattern as image below if necessary.
3. Place PMX-090T face-down on a clean, flat surface.
4. Slide the panel cutout around the back of PMX-090T, until the panel rests directly on the gasket. Make sure the screw holes align with the screw holes on PMX-090T.
5. The screw size is M3*L (L=wall thickness + 6.0mm) (Note 2)
6. Insert all twelve M3 screws into the screw holes. (Note 2)
7. Finger-tighten the M3 screws. Finish tightening the M3 screws in a diagonal pattern using an M3 screw driver (see the image as below); maximum torque 1.18Nm (12 kgf-cm).





Note 1:

It is strongly recommended that a professional machine shop cut the mounting hole in the panel.



Note 2:

The length for all twelve M3 screws will be according to the thickness of mounting panel. For example: The length of standard M3 screws for PMX-090T is 6mm. If the thickness of your mounting panel is 3mm and washer thickness is 1mm, you have to use 10mm M3 screw.

1.6 Ordering Information

Table 1-3 Ordering Information

| PART NUMBER | DESCRIPTION |
|-----------------|---|
| PMX-090T-5A | 9" Panel PC w/1GB DDR2 / 2USB / Line-Out / LAN / COM / CF / MicroSD / Power Adapter |
| PMX-090T-8A | 9" Panel PC w/1GB DDR2 / 2USB / Line-Out / LAN / COM / CF / MicroSD / 8-35 DC Support |
| PMX-090T-5A-512 | 9" Panel PC w/512MB DDR2 / 2USB / Line-Out / LAN / COM / CF / MicroSD / Power Adapter |
| PMX-090T-8A-512 | 9" Panel PC w/512MB DDR2 / 2USB / Line-Out / LAN / COM / CF / MicroSD / 8-35 DC Support |

1.7 Packing List

Table 1-4 Packing List

| PART NUMBER | PACKAGE | | |
|---------------------|-------------------|--------------------------|--------------------------|
| PMX-090T-5A | PMX-090T-5A | Power-20W-3PIN | |
| PMX-090T-8A | PMX-090T-8A | | |
| PMX-090T-5A-512 | PMX-090T-5A-512 | Power-20W-3PIN | |
| PMX-090T-8A-512 | PMX-090T-8A-512 | | |
| WLAN KIT (Optional) | USB-WLAN-IPEX-KIT | WIRELESS- ANTENNA-157 | WIRELESS- CABLE-150MM |

2.System Installation

2.1 CPU Board Outline

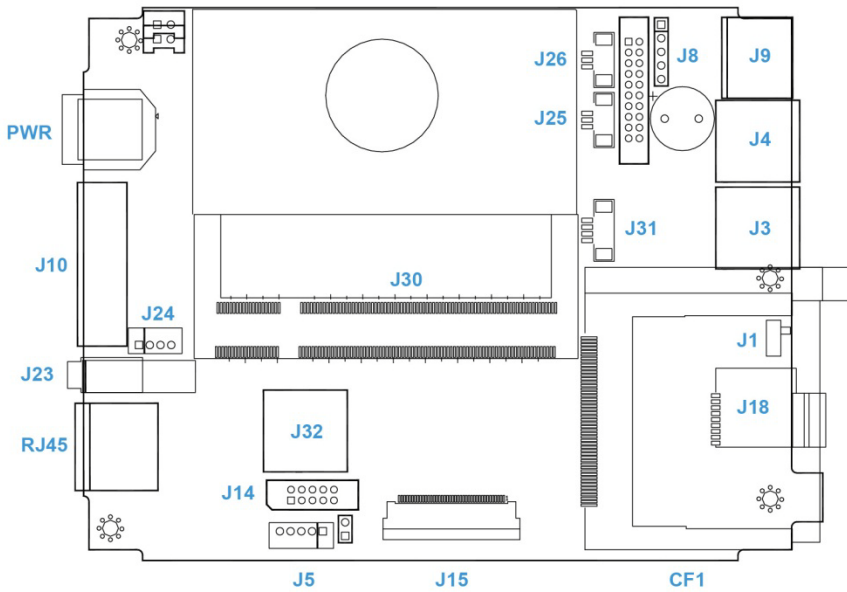


Fig 2-1 PMX CPU Board

2.2 Connector Summary

Table 2-1 Summary Table

| Nbr | Description | Type of Connections | Pin nbrs. |
|------|-------------------------|-------------------------------|-----------|
| J1 | CF Master/Slave Switch | Slide Switch | ON/OFF |
| J3 | USB | External USB Connector | 6-pin |
| J4 | USB | External USB Connector | 6-pin |
| J5 | USB (Optional) | 2.0mm 5-pin wafer | 5-pin |
| J8 | PS/2 Keyboard | 2.54mm 5-pin box header | 5-pin |
| J9 | PS/2 Keyboard | External Mini DIN Socket | 6-pin |
| J10 | COM2(RS232/422/485) | External D-Sub Male Connector | 9-pin |
| J14 | VGA | 2.0mm 10-pin box header | 10-pin |
| J18 | Micro SD Card Socket | Micro SD socket | |
| J23 | Audio Line-Out | 1.25mm Phone Jack | |
| J24 | Audio Mic-In | 2.0mm 4-pin wafer | 4-pin |
| J25 | COM3 (TX, RX) | 1.25mm 3-pin wafer | 3-pin |
| J26 | COM4 (TX, RX) | 1.25mm 3-pin wafer | 3-pin |
| J30 | SOM CPU Board Socket | SOM CPU Board Socket | 200-pin |
| J31 | 4-Wires Touch connector | 1.25mm 4-pin wafer | 4-pin |
| J32 | USB (Wi-Fi Optional) | Internal USB Connector | 6-pin |
| RJ45 | Ethernet | External RJ45 Connector | 8-pin |
| PWR | Power Connector (5A) | External Mini DIN Socket | 3-pin |
| PWR | Power Connector (8A) | External Power Plug | 2-pin |
| CF1 | CF Card Socket | CF Type I/II Socket | |

2.3 Connector Pin Assignments

J1: CF Master/Slave Switch

| Pin # | Signal Name |
|-------|-------------|
| On | Master |
| OFF | Slave |

J3: USB

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1 | VCC | 2 | USB2- |
| 3 | USB2+ | 4 | GND |
| 5 | GND | 6 | GND |

J4: USB

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1 | VCC | 2 | USB3- |
| 3 | USB3+ | 4 | GND |
| 5 | GND | 6 | GND |

J5: USB (Optional)

| Pin # | Signal Name |
|-------|-------------|
| 1 | VCC |
| 2 | USB1- |
| 3 | USB1+ |
| 4 | GND |
| 5 | GND |

J8: PS/2 Keyboard

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

J9: PS/2 Keyboard

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1 | KBCLK | 2 | MSCLK |
| 3 | GND | 4 | KBDATA |
| 5 | MSDATA | 6 | VCC |
| 7 | GND | 8 | GND |
| 9 | GND | | |

J10: COM1 RS232/422/485 (Change setting by BIOS)

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-----------------------------|-------|------------------------------|
| 1 | DCD1/ 422TX- / RS485- | 2 | RXD1 / 422TX+ / RS485+ |
| 3 | TXD1 / 422RX+ | 4 | DTR1 / 422RX- |
| 5 | GND | 6 | DSR1 |
| 7 | RTS1 | 8 | CTS1 |
| 9 | RI1 | | |

J14: 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 | VSYNCD | 10 | GND |

J24: MIC-IN

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

J25: COM3 (TX, RX)

| Pin # | Signal Name |
|-------|-------------|
| 1 | GND |
| 2 | TXD3 |
| 3 | RXD3 |

J26: COM4 (TX, RX)

| Pin # | Signal Name |
|-------|-------------|
| 1 | GND |
| 2 | TXD4 |
| 3 | RXD4 |

J31: 4-Wires Touch connector

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

J32: USB (WLAN Optional)

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1 | VCC | 2 | USBD2- |
| 3 | USBD2+ | 4 | GND |
| 5 | GND | 6 | GND |

PWR: Power Connector (5A)

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

PWR: Power Connector (8A)

| Pin # | Signal Name |
|-------|-------------|
| 1 | + 8 ~ 35V |
| 2 | GND |

2.4 External I/O Overview

{ PMX-090T-8A / PMX-090T-8A-512 }



Fig 2-2 PMX-090T-8A I/O overview

{ PMX-090T-5A / PMX-090T-5A-512 }

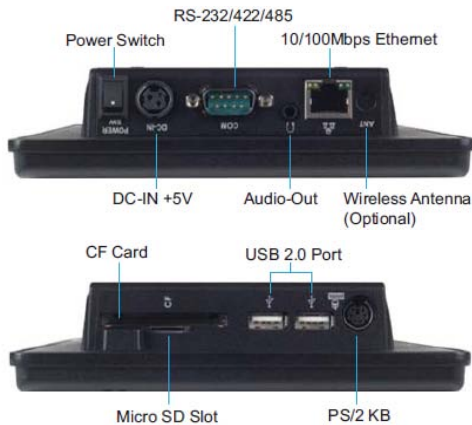



Fig 2-3 PMX-090T-5A I/O overview

{Note}

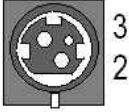
1. Wireless is optional
2. COM1 RS232/422/485 is selected by BIOS setting

2.5 External I/O Pin Assignment

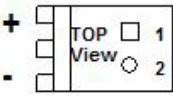
Power Switch

|  | Pin # | Status |
|---|-------|--------|
| | I | ON |
| | O | OFF |


Power Connector (5A)

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

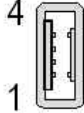
Power Connector (8A)

|  | Pin # | Signal Name |
|---|-------|-------------|
| | 1 | +8 ~ 35V |
| | 2 | GND |

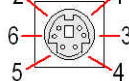
Audio Line-Out

|  | Pin # | Signal Name |
|---|-------|-------------|
| | 1 | GND |
| | 2 | LOUTL |
| | 3 | Open Touch |
| | 4 | Open Touch |
| | 5 | VREFOUT |

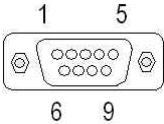
USB Port

|  | Pin # | Signal Name |
|---|-------|-------------|
| | 1 | VCC |
| | 2 | USB0- |
| | 3 | USB0+ |
| | 4 | GND |
| | 5 | GGND |
| 6 | GGND | |

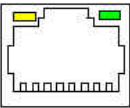
PS/2 Keyboard

|  | Pin # | Signal Name |
|--|-------|-------------|
| | 1 | KBCLK |
| | 2 | PMCLK |
| | 3 | GND |
| | 4 | KBDAT |
| | 5 | PMDAT |
| 6 | SB5V | |

J10: COM1 RS232/422/485 (Change setting by BIOS)

|  | Pin # | Signal Name | Pin # | Signal Name |
|---|-------|--------------------|-------|--------------------|
| | 1 | DCD1/422TX-/RS485- | 2 | RXD1/422TX+/RS485+ |
| | 3 | TXD1 / 422RX+ | 4 | DTR1 / 422RX- |
| | 5 | GND | 6 | DSR1 |
| | 7 | RTS1 | 8 | CTS1 |
| | 9 | RI1 | | |

RJ45

|  | Pin # | Signal Name | Pin # | Signal Name |
|---|-------|-------------|-------|-------------|
| | 1 | FTXD+ | 2 | FTXD- |
| | 3 | FRXIN+ | 4 | NC |
| | 5 | NC | 6 | FRXIN- |
| | 7 | NC | 8 | NC |

2.6 System Mapping

Table 2-2 Technical Data Sheet

| Technical Data Sheet | | | |
|----------------------|--|---------------|---------------|
| Product Name | PMX-090T-8A DM171C | Doc.No. | QMT1000014R00 |
| Product Description | 9" Vortex86MX Panel PC with 1GB DDR2 / 2USB / Line-out / LAN / 1COM / CF / MicroSD | Doc. Category | Confidential |
| | | Issued Date | 10-08-2012 |

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 | |
| 000D8000-000DBFFF | SPI FLASH Emulation Floppy A Enable | |
| 000DC000-000DFFFF | Expansion ROM Space | |
| 000E0000-000EFFFF | USB Legacy SCSI ROM Space | |
| 000F0000-000FFFFFFF | Motherboard BIOS | * |
| FEBD9000-FEBD90FF | Standard OpenHCD USB Host Controller | * |
| FEBDA000-FEBDA0FF | Standard OpenHCD USB Host Controller | * |
| FEBDB400-FEBDB4FF | On board Ethernet Adapter | * |

| | | |
|-------------------|--|---|
| FE8DB800-FE8DB8FF | Standard Enhanced PCI to USB Host Controller | * |
| FE8DBC00-FE8DBCFF | Standard Enhanced PCI to USB Host Controller | * |

I/O Mapping

| I/O Address | Owner | Usage |
|---------------|---|-------|
| 0000h - 000Fh | DMA 8237-1 | * |
| 0010h - 0017h | COM 9 | |
| 0020h - 0021h | PIC 8259-1 | * |
| 0022h - 0023h | Indirect Access Registers (6117D configuration port) | * |
| 002Eh - 002Fh | Forward to LPC BUS | |
| 0040h - 0043h | Timer counter 8254 | * |
| 0048h - 004Bh | PWM counter 8254 | * |
| 004Eh - 004Fh | Forward to LPC BUS | |
| 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 | * |
| 0066h | 8051 Download 8bit Data Port | * |
| 0067h | WatchDog1 Reload Counter | * |
| 0068h - 006Dh | WatchDog1 Control Register | * |
| 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 | * |

| | | |
|---------------|--|---|
| 0098h - 009Ch | GPIO Direction Control | * |
| 00A0h - 00A1h | PIC 8259-2 | * |
| 00C0h - 00DFh | DMA 8237-2 | * |
| 00E0h - 00EFh | DOS 4G Page Access | * |
| 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 | * |
| DE00h - DEFFh | On Board LAN | * |
| FC00h - FC05h | SPI Flash BIOS Control Register (internal SPI Flash Base address) | * |
| 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 | USB | * |
| IRQ4 | Serial Port 1 | * |
| IRQ5 | USB | * |
| IRQ6 | Unassigned | |
| IRQ7 | Ethernet 10/100M LAN | * |
| IRQ8 | Real Time Clock | * |
| IRQ9 | USB | * |
| IRQ10 | USB | * |
| IRQ11 | Audio | * |
| IRQ12 | Mouse | * |
| IRQ13 | Math Coprocessor | * |
| IRQ14 | Hard Disk Controller#1 | * |
| IRQ15 | Hard Disk Controller#2 | * |

DMA Mapping

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



2.7 Watchdog Timer

There are two watchdog timers in PMX-090T, we also provide DOS, Linux and WinCE example for your reference. For more technical support, please visit: <http://tech.icop.com.tw> or download the PDF file: dmp.com.tw/tech

3.Driver Installation

VGA

The Vortex86MX processor is integrated RDC Display chip which is an ultra low powered graphics chipset with total power consumption at around 1-1.5 W.

LAN

The Vortex86MX+ processor is 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.

I/O and IRQ settings can be done by software with the supplied utility software, or it can be set for Plug and Play compatibility. The controller supports: Half / Full-Duplex Ethernet function to double channel bandwidth, auto media detection.

AUDIO

The ALC262 series are 4-Channel High Definition Audio Codecs with UAA (Universal Audio Architecture) featuring two 24-bit stereo DACs and three 20-bit stereo ADCs, they are designed for high performance multimedia desktop and laptop systems. The ALC262 series incorporates proprietary converter technology to achieve over 100dB Signal-to-Noise ratio playback quality; easily meeting PC2001 requirements and also bringing PC sound quality closer to consumer electronic devices.

Operating system support

The PMX-090T provides the VGA and LAN drivers for Linux, Windows CE, Windows XP Professional, and Windows Embedded standard (XPE / WES2009).

Please get the drivers from ICOP official website: tech.icop.com.tw

PMX-090T also supports most of the popular Linux distributions, for more detail information, please visit DMP official website: dmp.com.tw/tech/vortex86mx

3.1 PMX-090T Development Note

<Primary /Secondary IDE: Master or Slave>

1. Micro SD: Primary Master
2. CF Slot: Secondary IDE: Master or Slave (User can use slide switch (in side of CF slot) to adjust Master or Slave)

<Window CE6.0 development guide>


Windows Embedded CE 6.0 BSP, trial CE image and development notes, please visit technical website to get more information: tech.icop.com.tw

<Linux installation note>

Please forced the IDE setting in BIOS to PIO mode before install Linux on PMX-090

It as follows:

3. Go to the advanced BIOS setting and make the "Onboard IDE Operate Mode" is "Legacy Mode"
4. Go to the PCI/PnP and make the "PCI IDE BusMaster" is "Disable"



< XP professional /Home /Embedded and Windows 2000
installation note >

Please visit technical website to get more information: tech.icop.com.tw

<Enhance CF to run the UDMA2/4>

Please select ICOP “ICF Card” to supporting UDMA 2/4 Mode.

<How to boot up from the Micro SD card>

1. Get into the BIOS setup Utility
2. Go to the Advanced
3. Choose Primary IDE Pin Select: SD card
4. Press “F10” to save configuration changes and exit setup

3.2 BIOS Default setting

If the system cannot be booted after BIOS changes are made, Please follow below procedures in order to restore the CMOS as default setting.



Press < **End** > Key, when the power on



Press < **Del** > to enter the AMI BIOS setup



Press < **F9** > to Load Optimized defaults



Press < **F10** > to Save configuration changes and exit setup



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.

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