



DM&P Vortex86DX3 Panel PC with 9" TFT LCD

# Model:

PDX3-090T-5A / PDX3-090T-8A PDX3-090T-5A-2G / PDX3-090T-8A-2G

User's Manual

(Revision 1.2A)

















# Revision

Date	Version	Description
2016/11/18	Version 1.0	Initial Release
2017/01/10	Version 1.1	Specification correction
2019/07/30	Version 1.2	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 PDX3-090T 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.

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#### 1.General Information

#### 1.1 Product Description

PDX3-090T is an ultra-compact platform for the present demanding embedded and productive applications. It has new Vortex86DX3 SoC CPU which consumes only minimum power requirement when running at 1GHz, and DDR3 memory provides faster data transfer rate. By using 9" TFT LCD, PDX3-090T becomes the perfect choice for a limited budget. In additional, the integrated 10/100M Ethernet port supplies the communication capability which makes PDX3-090T can be more widely used when running with Linux, Windows CE, Windows XP, Windows 7, Windows Embedded environments to become the perfect solution for system integration.

# 1.2 Product Specification

Table 1-1 Product Specification

CPU Board Specifications				
СРИ	DM&P Vortex86DX3 - 1GHz			
Cache	L1:16KB I-Cache, 16KB D-Cache			
Cacrie	L2: 512KB Cache			
BIOS	AMI BIOS			
Memory	1GB/2GB DDR3 onboard			
Watchdog Timer	Software programmable from			
Watchdog Timel	30.5u to 512 seconds x 2 sets			
LAN	Integrated 10/100M Ethernet			
Audio	HD Audio-Realtek ALC262 CODEC			
	Compact Flash Type I / II slot			
Internal Drives	Micro SD slot (Optional)			
	1GB or 2GB Flash Memory onboard (Optional)			
	RS-232/422/485 x 1			
1/0	USB ports (Ver2.0) x 2			
	RJ-45 Port x 1			
Mechanical & Enviro	onment			
Dowar Poquiroment	Single Voltage +5VDC ( 5A )			
Power Requirement	Multi Voltage +8~+35VDC ( 8A )			
Power Consumption	20W (Max.)			
Operating	0 ~ +50°C ( 32 ~ +122°F) /			
Temperature	-20~+60°C ( -4 ~ +140°F)			
Storage Temp.	-30 ~ +70°C ( 14 ~ +158°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	IP 65	
Protection	נס זו	
Certification	CE / FCC / VCCI / Vibration / Shock	
LCD Specifications		
Display Type	9" TFT LCD	
Backlight Unit	LED	
Display Resolution	1024(W) x 600(H)	
Brightness (cd/m²)	300 nits	
Contrast Ratio	500 : 1	
Display Color	262, 144	
Pixel Pitch (mm)	190.5 (H) x 189 (V)	
Viewing Angle	Vertical 120°,	
Viewing Angle	Horizontal 140°	
Backlight Lifetime	18,000 hrs	
Touchscreen		
Туре	Analog Resistive	
Resolution	Continuous	
Transmittance	80%	
Controller	PS / 2 interface	
Software Driver	Linux, Win CE, Win XP, Win 7, Windows Embedded	
Software Driver	Standard	
Durability	1 million	

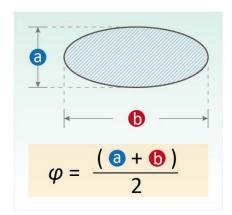
#### 1.3 Inspection standard for TFT-LCD Panel

Table 1-2 Inspection Standard

DEFECT TYPE		LIMIT				Note			
				φ<0.15mm Ignore					
		SPOT	$0.15$ mm $\leq \varphi \leq 0.5$ mm		N≦	4	Note1		
				0.5mm<φ		N=0			
VISUAL	INTER	FIBER		mm <w≦ 5m</w≦ 	0.1mm, m	L≦	N≦	<u>3</u>	Note1
DEFECT	NAL		1.01	mm <w,< td=""><td>1.5mm &lt;</td><td><l< td=""><td>N=</td><td>0</td><td></td></l<></td></w,<>	1.5mm <	<l< td=""><td>N=</td><td>0</td><td></td></l<>	N=	0	
				ф<0.1	L5mm		Igno	re	
		POLARIZER BUBBLE	0.1	.5mm≦¢	ֆ≦0.5m	m	N≦	2	Note1
		505522	0.5mm<φ			N=0			
		Mura	It' OK if mura is slight visible through			ugh 6%N	ID filter		
			A Grade			B Grade			
	ВІ	RIGHT DOT	C Area	O Area	Total	C Area	O Area	Total	Note3
			N≦0	N≦2	N≦2	N≦2	N≦3	N≦5	Note2
EL ECTRICAL		DARK DOT	N≦2	N≦3	N≦3	N≦3	N≦5	N≦8	
DEFECT	ELECTRICAL DEFECT  TWO ADJACENT DOT  THREE OR MORE  ADJACENT DOT			N≦4		N≦5	N≦6	N≦8	Note2
			N≦0	N≦1 pair	N≦1 pair	N≦1 pair	N≦1 pair	N≦1 pair	Note4
			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 ACCEPTITABLE UNDER 6 % ND-Filter
- (3) If require G0 grand (Total dot  $N \le 0$ ), please contact region sales.

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



- White / Black Spot 1.
- 2. Polarizer Bubble

Fig 1-1

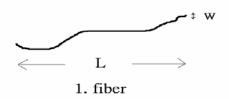


Fig 1-2

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

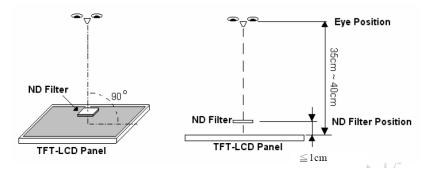
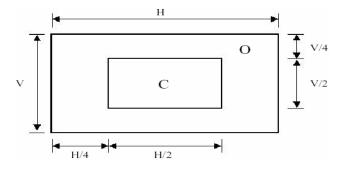


Fig 1-3

#### [Note 3]

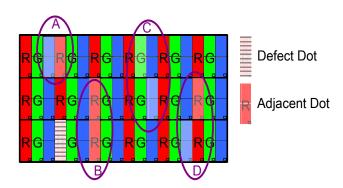


C Area: Center of display area

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.

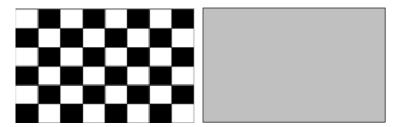
The following is LCD manufacturer's test result for customers' reference.

TEST ITEMS	CONDITIONS	NOTE
High Temperature Operation	70℃ ;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℃ ; 4hrs	Note 5-1
МТВБ	20,000Hrs	

#### Note 5-1

- Condition of Image Sticking test : 25  $^{\circ}$ C ± 2  $^{\circ}$ 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

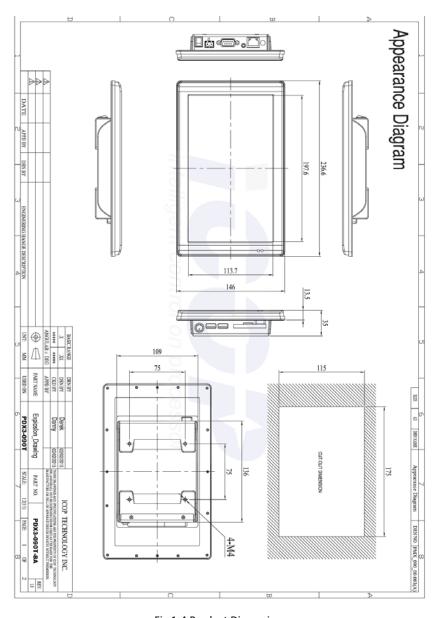
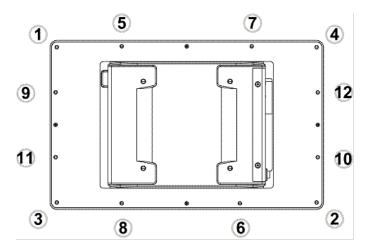
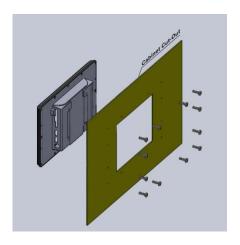


Fig 1-4 Product Dimension

#### 1.5 Panel Mounting Instruction

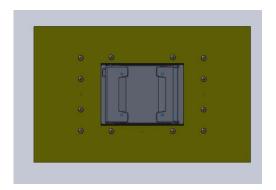
- 1. Cut a mounting hole in the panel. (Refer to PDX3-090T Dimensions on page 7) (Note 1)
- 2. Check and remove the twelve M3 screws in a diagonal pattern as image below if necessary.
- 3. Place PDX3-090T face-down on a clean, flat surface.
- 4. Slide the panel cutout around the back of PDX3-090T, until the panel rests directly on the gasket. Make sure the screw holes align with the screw holes on PDX3-090T.
- The screw size is M3\*L (L=wall thickness + 6.0mm) (Note 2) 5.
- 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 PDX3-090T 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
PDX3-090T-5A	9" Panel PC w/1GB DDR3
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	Power Adapter
PDX3-090T-8A	9" Panel PC w/1GB DDR3
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	8-35 DC Support
PDX3-090T-5A-2G	9" Panel PC w/2GB DDR3
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	Power Adapter
PDX3-090T-8A-2G	9" Panel PC w/2GB DDR3
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	8-35 DC Support
PDX3-090T-5A-I	9" Panel PC w/1GB DDR3 / Wide Temp.
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	Power Adapter
PDX3-090T-8A-I	9" Panel PC w/1GB DDR3 / Wide Temp.
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	8-35 DC Support
PDX3-090T-5A-2G-I	9" Panel PC w/2GB DDR3 / Wide Temp.
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	Power Adapter
PDX3-090T-8A-2G-I	9" Panel PC w/2GB DDR3 / Wide Temp.
	/ 2USB / Line-Out / LAN / COM / CF / MicroSD /
	8-35 DC Support

# 1.7 Packing List

Table 1-4 Packing List

PART NUMBER		PACKAGE		
PDX3-090T-5A	PDX3-090T-5A	Power-20W-3PIN		
PDX3-090T-8A	PDX3-090T-8A			
PDX3-090T-5A-2G	PDX3-090T-5A-2G	Power-20W-3PIN		
PDX3-090T-8A-2G	PDX3-090T-8A-2G			
PDX3-090T-5A-I	PDX3-090T-5A-I	Power-20W-3PIN		
PDX3-090T-8A-I	PDX3-090T-8A-I			
PDX3-090T-5A-2G-I	PDX3-090T-5A-2G-I	Power-20W-3PIN		
PDX3-090T-8A-2G-I	PDX3-090T-8A-2G-I			
WLAN KIT (Optional)	USB-WLAN-IPEX-KIT			
	WIRELESS-ANTENNA-157			
	WIRELESS-CABLE-150N	IM		

# 2.System Installation

#### 2.1 CPU Board Outline

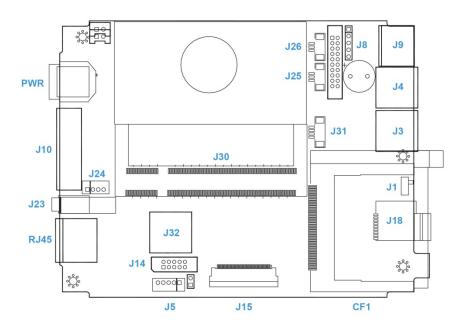


Fig 2-1 PDX3 CPU Board

# 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
18	PS/2 Keyboard	2.54mm 5-pin box header	5-pin
19	PS/2Keyboard	External Mini DIN Socket	6-pin
J10	COM1(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	
	(Optional)		
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 (WLAN 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	USBD2-
3	USBD2+	4	GND
5	GND	6	GND

## J4: USB

Pin#	Signal Name	Pin #	Signal Name
1	VCC	2	USBD3-
3	USBD3+	4	GND
5	GND	6	GND

# J5: USB (Optional)

Pin #	Signal Name
1	VCC
2	USBD1-
3	USBD1+
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
	DCD1/		RXD1/
1	422TX-/	2	422TX+/
	RS485-		RS485+
3	TXD1/	4	DTR1/
3	422RX+	4	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	Υ-
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

#### { PDX3-090T-8A / PDX3-090T-8A-2G }



Fig 2-2 PDX3-090T-8A I/O overview

## { PDX3-090T-5A / PDX3-090T-5A-2G }



Fig 2-3 PDX3-090T-5A I/O overview

- 1. WLAN is optional
- 2. COM1 RS232/422/485 is selected by BIOS setting
- 3. MicroSD Socket is optional (Either one of CF or Micro SD)

# 2.5 External I/O Pin Assignment

#### **Power Switch**



Pin #	Status
	ON
0	OFF

# Power Connector (5A)



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

#### Power Connector (8A)

<b>.</b>	Pin#	Signal Name
TOP 1	1	+8 ~ 35V
-	2	GND

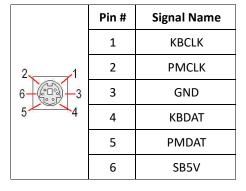
#### Audio Line-Out

	Pin#	Signal Name
	1	GND
Line-out	2	LOUTL
$\odot$	3	Open Touch
	4	Open Touch
	5	VREFOUT

#### **USB Port**

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

# PS/2 Keyboard



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

	Pin #	Signal Name	Pin #	Signal Name
1 5	1	DCD1/422TX-/RS485-	2	RXD1/422TX+/RS485+
© (°°°°) ©	3	TXD1 / 422RX+	4	DTR1 / 422RX-
6 9	5	GND	6	DSR1
9.0 NB:	7	RTS1	8	CTS1
	9	RI1		

# **RJ45**

	Pin #	Signal Name	Pin#	Signal Name
	1	FTXD+	2	FTXD-
الممممممما	3	FRXIN+	4	NC
8 2.1	5	NC	6	FRXIN-
	7	NC	8	NC

# 2.6 System Mapping

Table 2-2 Technical Data Sheet

#### 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		
000D0000-000DFFFF	Expansion ROM Space		
000E0000-000EFFFF	USB Legacy SCSI ROM Space		
000F0000-000FFFF	Motherboard BIOS	*	
FEBEE000-FEBEEFFF	Standard OpenHCD USB Host Controller	*	
FEBEFC00-FEBEFCFF	On board Ethernet Adapter	*	

I/O Mapping			
I/O Address	Owner	Usage	
0000h - 000Fh	DMA 8237-1	*	
0020h - 0021h	PIC 8259-1	*	
0022h - 0023h	Indirect Access Registers ( 6117D configuration port )	*	
0040h - 0043h	Timer counter 8254	*	
0048h - 004Bh	PWM 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	*
0098h - 009Ch	GPIO Direction Control	*
00A0h - 00A1h	PIC 8259-2	*
00A8h - 00ADh	WatchDog1 Control Register	*
00AEh	WatchDog1 Reload Counter	*
00C0h - 00DFh	DMA 8237-2	*
00E0h - 00EFh	DOS 4G Page Access	*
0170h - 0177h	IDE1 (IRQ 15)	*
02E8h - 02EFh	COM4 (IRQ 11)	
02F8h - 02FFh	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	*
EF00h - EFFFh	On Board LAN	*
FC00h - FC05h	SPI Flash BIOS Control Register (internal SPI Flash Base address)	*

IRQ Mapping			
IRQ#	Description	Usage	
IRQ0	System Timer	*	
IRQ1	Keyboard Controller	*	
IRQ2	Cascade for IRQ8 - 15		
IRQ3	Unassigned	*	
IRQ4	Serial Port 1	*	
IRQ5	VGA	*	
IRQ6	Audio		
IRQ7	Ethernet 10/100M LAN	*	
IRQ8	Real Time Clock	*	
IRQ9	Unassigned	*	
IRQ10	USB	*	
IRQ11	USB	*	
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 (Reserved)		
DMA3			
DMA5			
DMA6			
DMA7			

#### 2.7 Watchdog Timer

There are two watchdog timers in PDX3-090T, 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: <a href="mailto:dmp.com.tw/tech">dmp.com.tw/tech</a>

#### 3. Driver Installation

#### **VGA**

The Vortex86DX3 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 Vortex86DX3 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 PDX3-090T provides the VGA and LAN drivers for Linux, Windows CE, Windows XP Professional, Windows 7, and Windows Embedded standard (WES2009 / WES7).

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

PDX3-090T also supports most of the popular Linux distributions, for more detail information, please visit DMP official website: <a href="mailto:dmp.com.tw/tech/">dmp.com.tw/tech/</a>

#### 3.1 PDX3-090T Development Note

#### <Primary IDE: Master or Slave>

- 1. Primary IDE Device can be either one of CF or Micro SD and the standard version is for CF slot only.
- 2. CF Slot: Primary IDE: Master or Slave (User can use slide switch (in side of CF slot) to adjust Master or Slave
- 3. Micro SD (Optional): Primary Master only

#### <Window CE6.0 and Compact 7 development guide>

Windows Embedded CE 6.0 and Compact 7 BSPs, trial CE image and development notes, please visit technical website get more information: tech.icop.com.tw

#### <Linux installation note>

Please forced the IDE setting in BIOS to PIO mode before install Linux on PDX3-090T as follows:

Go to the advanced BIOS setting and make the "Onboard IDE Operate Mode" is "Legacy Mode"

#### < Windows XP and Windows 7 installation note >

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

#### 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.

End	Press < <b>End</b> > Key, when the power on
Del	Press < <b>Del</b> > to enter the AMI BIOS setup
<b>F9</b>	Press < <b>F9</b> > to Load Optimized defaults
F10	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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