



# User's Manual

# HMI-043T Open Frame

DMP Vortex86 EXm Processor

Compact Panel PC with 4.3" Touchscreen

HMI-043T-EM41N-O

HMI-043T-EM41B-O

HMI-043T-EM42N-O

HMI-043T-EM42B-O

(Version 1.5A)

## REVISION

| DATE       | VERSION      | DESCRIPTION  |
|------------|--------------|--|
| 2014/07/31 | Version 1.0A | New Release  |
| 2015/01/02 | Version 1.1A | Update GPIO Function Pin   |
| 2015/12/11 | Version 1.2A | Update GPIO Function Pin   |
| 2016/01/27 | Version 1.3A | 1. Correct LED luminance<br>2. Add ordering part numbers                                       |
| 2016/09/09 | Version 1.4A | 1. Correct the website Section 3.1<br>2. Correct Memory description of Hardware Specifications |
| 2016/12/21 | Version 1.5A | Specification correction   |

# COPYRIGHT

The information in this manual is subject to change without notice for continuous improvement in the product. All rights are reserved. The manufacturer assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the information contained in this manual.

No part of this manual may be reproduced, copied, translated or transmitted, in whole or in part, in any form or by any means without the prior written permission of the ICOP Technology Inc.

©Copyright 2016 ICOP Technology Inc.  
Manual # IUMHMI043T-01 Ver.1.5A Dec, 2016

# TRADEMARKS ACKNOWLEDGMENT

Vortex86EXm™ is the registered trademark of DMP Electronics Inc. Other brand names or product names appearing in this document are the properties and registered trademarks of their respective owners. All names mentioned herewith are served for identification purpose only.

For more detailed information or if you are interested in other ICOP products, please visit our official websites at:

- Global: [www.icop.com.tw](http://www.icop.com.tw)
- USA: [www.icoptech.com](http://www.icoptech.com)
- Japan: [www.icop.co.jp](http://www.icop.co.jp)
- GmbH: [www.icoptech.eu](http://www.icoptech.eu)
- China: [www.icop.com.cn](http://www.icop.com.cn)

For technical support or demo images of operating systems download, please visit our websites at:

- ICOP Technical Resource: <http://tech.icop.com.tw/>
- Software Support: <http://www.icoptech.net/>

This Manual is for the HMI-043T. Open Frame Series

# SAFETY INFORMATION

- Read these Safety instructions carefully.
- Please carry the unit with both hands, handle 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.
- Input voltage rated +5VDC (HMI-043T Open Frame Series)
- Operating temperature between -20~+60°C (-4F~+140°F).
- Keep HMI-043T away from humidity.
- 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.

## **WARNING!**



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

# Content

|   |    |
|---|----|
| Content .....                                   | iv |
| Ch. 1 General Information .....                 | 1  |
| 1.1 Product Description .....                   | 2  |
| 1.2 Product Specifications .....                | 3  |
| 1.3 Inspection standard for TFT-LCD Panel ..... | 5  |
| 1.4 Product Dimensions .....                    | 7  |
| 1.5 Ordering Information.....                   | 8  |
| Ch. 2 System Installation .....                 | 9  |
| 2.1 CPU Board Outline .....                     | 10 |
| 2.2 Connector Summary.....                      | 11 |
| 2.3 Connector Pin Assignments .....             | 12 |
| 2.4 Connector I/O Overview .....                | 15 |
| Ch. 3 Driver Installation.....                  | 16 |
| 3.1 HMI-043T Development Note .....             | 18 |
| Warranty.....                                   | 19 |



# Ch. 1

## General Information

[1.1 Product Description](#)

[1.2 Product Specifications](#)

[1.3 Inspection standard for TFT-LCD Panel](#)

[1.4 Product Dimensions](#)

[1.5 Odering Information](#)

# 1.1 Product Description

ICOP Technology Inc. is proudly going to release a brand new HMI, which offers fanless design, low power consumption, and IP65 front panel. The HMI-043T is powered by DMP Vortex86Exm SoC, the new generation SoC of Vortex86 family, which is included 128MB/256MB memory and eMMC Flash memory. The resistive touch panel with LED backlight TFT LCD increases operation convenience and visibility in outdoor environments. The ultra-compact and thin exterior design is perfect for the present demanding embedded and productive applications.

The new HMI-043T inherited PDX/PMX-series' smooth appearance and ultra-texture aluminum exterior design to make your industrial applications look more stylish. The versatile I/O ports, 10/100Mbps Ethernet, RS/232/485 , GPIO and Can bus etc. can fulfill fundamental functions. Our consistent advantages feature stable performance, extended working temperature support, low power consumption and fanless design. The open frame model can be accommodated connectivity requirements to industrial machine platforms and industrial automation equipment's needs.

HMI-043T is not only supporting DOS, Linux, and Windows Embedded CE, but also compatible with Arduino platform, which is an open-source electronics prototyping platform based on flexible, easy to use hardware and software to meet ready-to-market demand and provide competitive advantages for customers.

# 1.2 Product Specifications

## CPU BOARD SPECIFICATIONS

|                  |  |
|------------------|--|
| CPU              | DMP Vortex86EXm 400MHz                                     |
| BIOS             | Coreboot BIOS  |
| Cache            | L1:16KB I-Cache, 16KB D-Cache<br>L2: 4-way, 128KB L2 Cache |
| Memory           | Integrated 128MB / 256MB DDRIII                            |
| Nand-Flash       | 512MB/4GB eMMC onboard (Optional)                          |
| Network          | Integrated 10/100Mbps Ethernet                             |
| Audio            | HD Audio-Realtek ALC262 CODEC                              |
|                  | Mic-in x 1   |
|                  | SPK-L , SPK-R (connector) x 1                              |
| Serial Interface | RS-232 x 1   |
|                  | RS-485 x 2   |
|                  | Can bus x 1  |
| USB              | USB ports (Ver2.0) x 2                                     |
| Digital I/O      | 8-bit GPIO x 1   |

## MECHANICAL & ENVIRONMENT

|                       |   |
|-----------------------|---|
| Power Requirement     | +5VDC   |
| Power Consumption     | +5V@2A  |
| Operating Temperature | 0~+50°C (+32~+122°F) /<br>-20~+60°C (-4~+140°F)   |
| Storage Temperature   | -30~+70°C (-22~ +158°F)                           |
| Operating Humidity    | 0% ~ 90% Relative Humidity, Non-Condensing        |
| Dimensions            | 105.5 x 67.2 x 13.6mm (4.15 x 2.65 x 0.54 inches) |
| Weight                | 250g  |

## LCD SPECIFICATIONS

|                                |                                |
|--------------------------------|--------------------------------|
| Display Type                   | 4.3" WQVGA TFT LCD             |
| Backlight life                 | 20,000 hrs                     |
| Display Resolution             | 480(W) x 272(H)                |
| Luminance (cd/m <sup>2</sup> ) | 280 cd/m <sup>2</sup>          |
| Contrast Ratio                 | 450 : 1                        |
| Display Color                  | 16.7M                          |
| Pixel Configuration            | R.G.B Vertical Stripe          |
| Viewing Direction              | 6 o'clock                      |
| Viewing Angle                  | Vertical 120°, Horizontal 140° |

## TOUCHSCREEN

|                    |                     |
|--------------------|---------------------|
| Type               | Analog Resistive    |
| Resolution         | Continuous          |
| Surface Properties | 3H / Anti-Glare     |
| Transmittance      | 80%                 |
| Controller         | PS/2 interface      |
| Software Driver    | DOS / Linux / WinCE |
| Durability         | 1 million           |

# 1.3 Inspection standard for TFT-LCD Panel

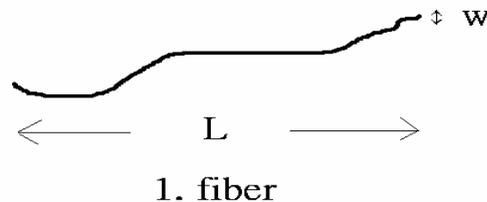
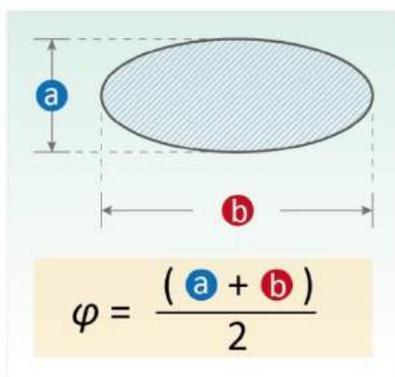
| DEFECT TYPE                |             | LIMIT             |  | Note   |                 |                 |                 |       |
|----------------------------|-------------|-------------------|--|--|-----------------|-----------------|-----------------|-------|
| VISUAL DEFECT              | INTERNAL    | SPOT              | $\varphi < 0.15\text{mm}$                                | Ignore   |                 |                 |                 |       |
|                            |             |                   | $0.15\text{mm} \leq \varphi \leq 0.5\text{mm}$           | $N \leq 4$   | Note1           |                 |                 |       |
|                            |             |                   | $0.5\text{mm} < \varphi$                                 | $N = 0$  |                 |                 |                 |       |
|                            |             | 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  | $\varphi < 0.15\text{mm}$                                | Ignore   |                 |                 |                 |       |
|                            |             |                   | $0.15\text{mm} \leq \varphi \leq 0.5\text{mm}$           | $N \leq 2$   | Note1           |                 |                 |       |
|                            |             |                   | $0.5\text{mm} < \varphi$                                 | $N = 0$  |                 |                 |                 |       |
|                            |             |                   | 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           | Note2 |
|                            | $N \leq 0$  |                   | $N \leq 2$   | $N \leq 2$   | $N \leq 2$      | $N \leq 3$      | $N \leq 5$      |       |
| 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.

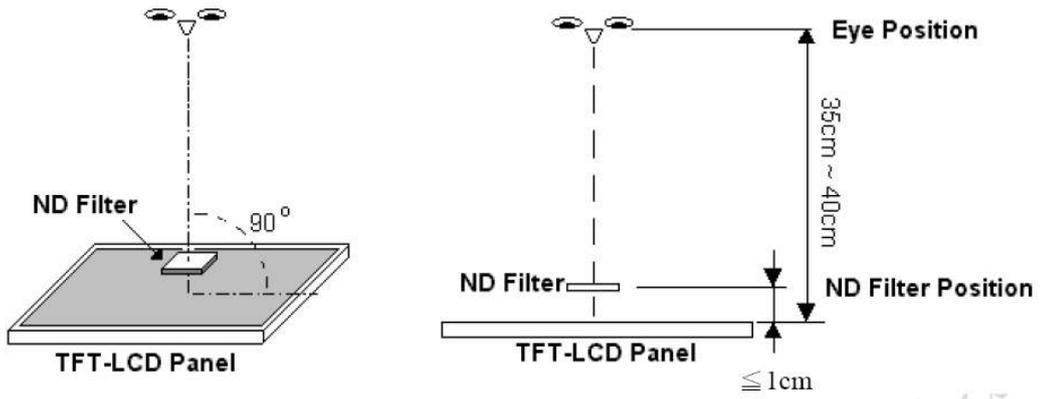
**(3) If require G0 grand (Total dot  $N \leq 0$ ), please contact region sales.**

[ Note 1 ] W: Width[mm]; L: Length[mm]; N: Number;  $\varphi$ : Average Diameter.

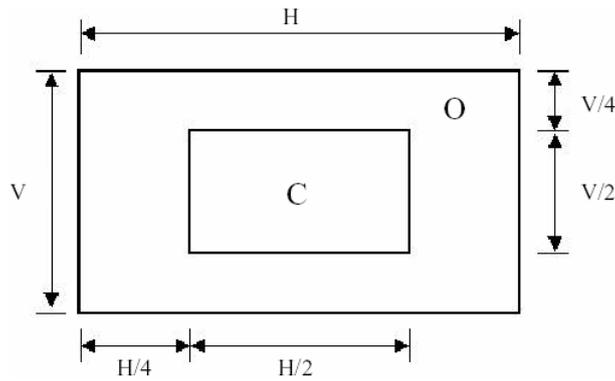


(a) White / Black Spot    (b) Polarizer Bubble

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

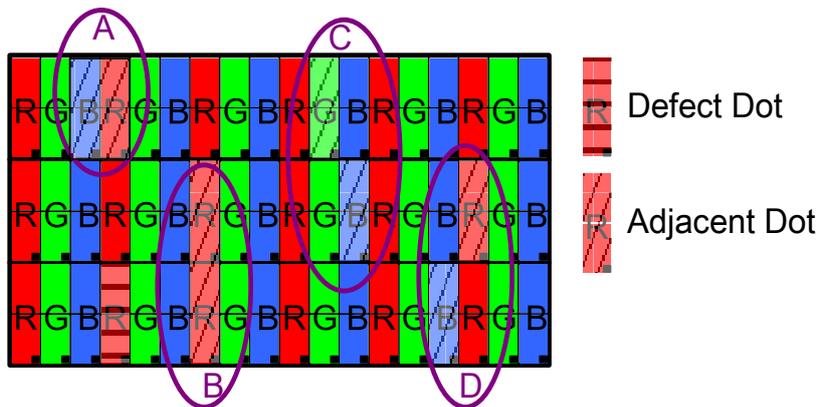


[ Note 3 ] Display area



**C Area:** Center of display area    **O Area:** Outer of display area

[ Note 4 ] Judge the defect dot and the adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dark adjacent dot. And they will be counted 2 defect dots in total quantity.



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.



## 1.5 Ordering Information

| PART NUMBER      | DESCRIPTION   |
|------------------|---|
| HMI-043T-EM41N-O | 4.3" HMI OP w/128MB/8MBSPI/2U/1S/485/GPIO/SPK/CAN           |
| HMI-043T-EM41B-O | 4.3" HMI OP w/128MB/512MBeMMC/8MBSPI/2U/1S/485/GPIO/SPK/CAN |
| HMI-043T-EM42N-O | 4.3" HMI OP w/256MB/8MBSPI/2U/1S/485/GPIO/SPK/CAN           |
| HMI-043T-EM42B-O | 4.3" HMI OP w/256MB/512MBeMMC/8MBSPI/2U/1S/485/GPIO/SPK/CAN |
| CABLE-265OP-SET  | HMI-043T Open Frame cable set                               |

### PACKING LIST

| PART NUMBER      | PACKAGE   |
|------------------|---|
| HMI-043T-EM41N-O | HMI-043T-EM41N-O *1   |
| HMI-043T-EM41B-O | HMI-043T-EM41B-O *1   |
| HMI-043T-EM42N-O | HMI-043T-EM42N-O *1   |
| HMI-043T-EM42B-O | HMI-043T-EM42B-O *1   |
| CABLE-265OP-SET  | CABLE-265OP-485-15    x 3 .<br>CABLE-265OP-COM-15    x 1 .<br>CABLE-265OP-GPIO-15    x 1 .<br>CABLE-265OP-LAN-15    x 1 .<br>CABLE-265OP-USB-15    x 1 .<br>CABLE-265OP-USB-15-1    x 1 . |



# Ch. 2

## System Installation

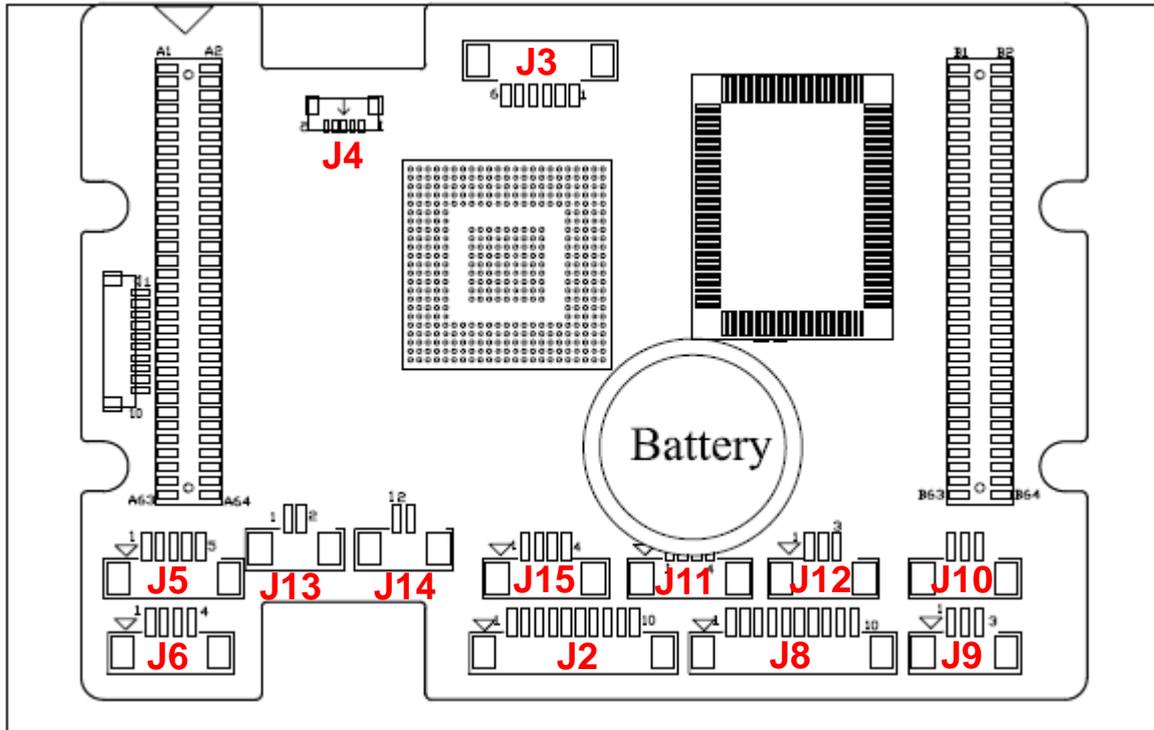
[2.1 CPU Board Outline](#)

[2.2 Connector Summary](#)

[2.3 Connector Pin Assignments](#)

[2.4 Connector I/O Overview](#)

## 2.1 CPU Board Outline



HMI-043T CPU Board

## 2.2 Connector Summary

| No. | Description      | Type of Connections               | Pin #  |
|-----|------------------|-----------------------------------|--------|
| J1A | Expansion slot   | 1.27mm 32x2-pin female box header | 64-pin |
| J1B | Expansion slot   | 1.27mm 32x2-pin female box header | 64-pin |
| J2  | GPIO             | 1.25mm 10-pin wafer               | 10-pin |
| J3  | JTAG (Debug USE) | 1.25mm 6-pin wafer                | 6-pin  |
| J4  | USB              | 0.8mm 5-pin wafer                 | 5-pin  |
| J5  | USB              | 1.25mm 5-pin wafer                | 5-pin  |
| J6  | LAN              | 1.25mm 4-pin wafer                | 4-pin  |
| J8  | RS-232           | 1.25mm 10-pin wafer               | 10-pin |
| J9  | RS-485           | 1.25mm 3-pin wafer                | 3-pin  |
| J10 | RS-485           | 1.25mm 3-pin wafer                | 3-pin  |
| J11 | TOUCH            | 1.25mm 4-pin wafer                | 4-pin  |
| J12 | CAN              | 1.25mm 3-pin wafer                | 3-pin  |
| J13 | SPK-L            | 1.25mm 2-pin wafer                | 2-pin  |
| J14 | SPK-R            | 1.25mm 2-pin wafer                | 2-pin  |
| J15 | MIC-IN           | 1.25mm 4-pin wafer                | 4-pin  |

## 2.3 Connector Pin Assignments

### J1A/J1B: Expansion Slot

| J1A1 |             | J1A2 |             | J1B1 |             | J1B2 |             |
|------|-------------|------|-------------|------|-------------|------|-------------|
| Pin# | Signal Name |
| 1    | RSTDRV      | 2    | GND         | 1    | VCC_IN      | 2    | VCC_IN      |
| 3    | GP00        | 4    | GP01        | 3    | GP70        | 4    | GP71        |
| 5    | GP02        | 6    | GP03        | 5    | GP72        | 6    | GP73        |
| 7    | GP04        | 8    | GP05        | 7    | GP74        | 8    | GP75        |
| 9    | GP06        | 10   | GP07        | 9    | GP76        | 10   | GP77        |
| 11   | GP90        | 12   | GP91        | 11   | GP60        | 12   | GP61        |
| 13   | GP92        | 14   | GP93        | 13   | GP62        | 14   | GP63        |
| 15   | GP94        | 16   | GP95        | 15   | GP64        | 16   | GP65        |
| 17   | GP96        | 18   | GP97        | 17   | GP66        | 18   | GP67        |
| 19   | GND         | 20   | GND         | 19   | GND         | 20   | GND         |
| 21   | USBD1-      | 22   | USBD2-      | 21   | GP50        | 22   | GP51        |
| 23   | USBD1+      | 24   | USBD2+      | 23   | GP52        | 24   | GP53        |
| 25   | AGND        | 26   | AGND        | 25   | GP54        | 26   | GP55        |
| 27   | ADC_0       | 28   | ADC_1       | 27   | GP56        | 28   | GP57        |
| 29   | ADC_2       | 30   | ADC_3       | 29   | GP40        | 30   | GP41        |
| 31   | ADC_4       | 32   | ADC_5       | 31   | GP42        | 32   | GP43        |
| 33   | ADC_6       | 34   | ADC_7       | 33   | GP44        | 34   | GP45        |
| 35   | GND         | 36   | GND         | 35   | GP46        | 36   | GP47        |
| 37   | SATA_TX-    | 38   | SATA_RX-    | 37   | GND         | 38   | GND         |
| 39   | SATA_TX+    | 40   | SATA_RX+    | 39   | GP30        | 40   | GP31        |
| 41   | GND         | 42   | HSYNC       | 41   | GP32        | 42   | GP33        |
| 43   | VGA_R       | 44   | VSYNC       | 43   | GP34        | 44   | GP35        |
| 45   | VGA_G       | 46   | PCIRST-     | 45   | GP36        | 46   | GP37        |
| 47   | VGA_B       | 48   | RESET-      | 47   | GP20        | 48   | GP21        |
| 49   | GND         | 50   | GND         | 49   | GP22        | 50   | GP23        |
| 51   | LANTX-      | 52   | LANRX-      | 51   | GP24        | 52   | GP25        |
| 53   | LANTX+      | 54   | LANRX+      | 53   | GP26        | 54   | GP27        |
| 55   | VBATT       | 56   | VCC1.8_OUT  | 55   | GND         | 56   | GND         |
| 57   | GP80        | 58   | GP81        | 57   | GP10        | 58   | GP11        |
| 59   | GP82        | 60   | GP83        | 59   | GP12        | 60   | GP13        |
| 61   | GP84        | 62   | GP85        | 61   | GP14        | 62   | GP15        |
| 63   | GP86        | 64   | GP87        | 63   | GP16        | 64   | GP17        |

### GPIO Function Pin

|                 |    | GPIO PIN | Function               |    |  | GPIO PIN | Function    |
|-----------------|----|----------|------------------------|----|--|----------|-------------|
| P0/COM1         | P0 | GP00     | COM1_DCD1\             | P5 |  | GP50     |             |
|                 |    | GP01     | COM1_TXD1\             |    |  | GP51     |             |
|                 |    | GP02     | COM1_RTS1\             |    |  | GP52     |             |
|                 |    | GP03     | COM1_RI1\              |    |  | GP53     |             |
|                 |    | GP04     | COM1_RXD1\             |    |  | GP54     |             |
|                 |    | GP05     | COM1_DTR1\             |    |  | GP55     |             |
|                 |    | GP06     | COM1_DSR1\             |    |  | GP56     |             |
|                 |    | GP07     | COM1_CTS1\             |    |  | GP57     |             |
| P1              | P1 | GP10     |                        | P6 |  | GP60     | SDA_D2      |
|                 |    | GP11     |                        |    |  | GP61     | SDA_D3      |
|                 |    | GP12     |                        |    |  | GP62     | SDA_CMO     |
|                 |    | GP13     |                        |    |  | GP63     | SDA_CLK     |
|                 |    | GP14     |                        |    |  | GP64     | SDA_D0      |
|                 |    | GP15     |                        |    |  | GP65     | SDA_D1      |
|                 |    | GP16     |                        |    |  | GP66     | SDA_CD      |
|                 |    | GP17     |                        |    |  | GP67     | SDA_WP      |
| P2/Bit-Rich-I/O | P2 | GP20     | SPI_CS_Touch           | P7 |  | GP70     | GP70        |
|                 |    | GP21     | SPI_SCLK_Touch         |    |  | GP71     | GP71        |
|                 |    | GP22     | SPI_SDI_Touch          |    |  | GP72     | GP72        |
|                 |    | GP23     | SPI_SDO_Touch          |    |  | GP73     | GP73        |
|                 |    | GP24     | SPI_INT_Touch          |    |  | GP74     | GP74        |
|                 |    | GP25     |                        |    |  | GP75     | GP75        |
|                 |    | GP26     | En&PWM Dimming Control |    |  | GP76     | GP76        |
|                 |    | GP27     | 14.318Mhz_OUT          |    |  | GP77     | GP77        |
| P3/Rich-I/O     | P3 | GP30     | COM5_TXD5              | P8 |  | GP80     | HD_BCLK     |
|                 |    | GP31     | COM5_RXD5              |    |  | GP81     | HD_SYNC     |
|                 |    | GP32     | COM6_TXD6              |    |  | GP82     | HD_SDO      |
|                 |    | GP33     | COM6_RXD6              |    |  | GP83     | HD_SDI      |
|                 |    | GP34     |                        |    |  | GP84     | HD_RST#     |
|                 |    | GP35     |                        |    |  | GP85     | COM5_TXDEN5 |
|                 |    | GP36     |                        |    |  | GP86     | COM6_TXDEN6 |
|                 |    | GP37     |                        |    |  | GP87     |             |
| P4/Bit-Rich-I/O | P4 | GP40     |                        | P9 |  | GP90     |             |
|                 |    | GP41     |                        |    |  | GP91     |             |
|                 |    | GP42     | CAN-TXD                |    |  | GP92     |             |
|                 |    | GP43     | CAN-RXD                |    |  | GP93     |             |
|                 |    | GP44     |                        |    |  | GP94     |             |
|                 |    | GP45     |                        |    |  | GP95     |             |
|                 |    | GP46     |                        |    |  | GP96     |             |
|                 |    | GP47     |                        |    |  | GP97     |             |

**J2: GPIO**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | GND         | 2     | GP70        |
| 3     | GP71        | 4     | GP72        |
| 5     | GP73        | 6     | GP74        |
| 7     | GP75        | 8     | GP76        |
| 9     | GP77        | 10    | VCC         |

**J4: USB**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | VCC         | 2     | LUSBD1-     |
| 3     | LUSBD1+     | 4     | GND         |
| 5     | GGND        |       |             |

**J5: USB**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | VCC         | 2     | LUSBD2-     |
| 3     | LUSBD2+     | 4     | GND         |
| 5     | GGND        |       |             |

**J6: LAN**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | LTX+        | 2     | LTX-        |
| 3     | LRX+        | 4     | LRX-        |

**J8: COM**

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

**J9: RS-485**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | RS485+      | 2     | RS485-      |
| 3     | GND         |       |             |

**J10: RS-485**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | RS485+      | 2     | RS485-      |
| 3     | GND         |       |             |

**J11: TOUCH**

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

**J12: CAN**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | CAN_H       | 2     | CAN_L       |
| 3     | GND         |       |             |

**J13: SPK-L**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | LOUTP       | 2     | LOUTN       |

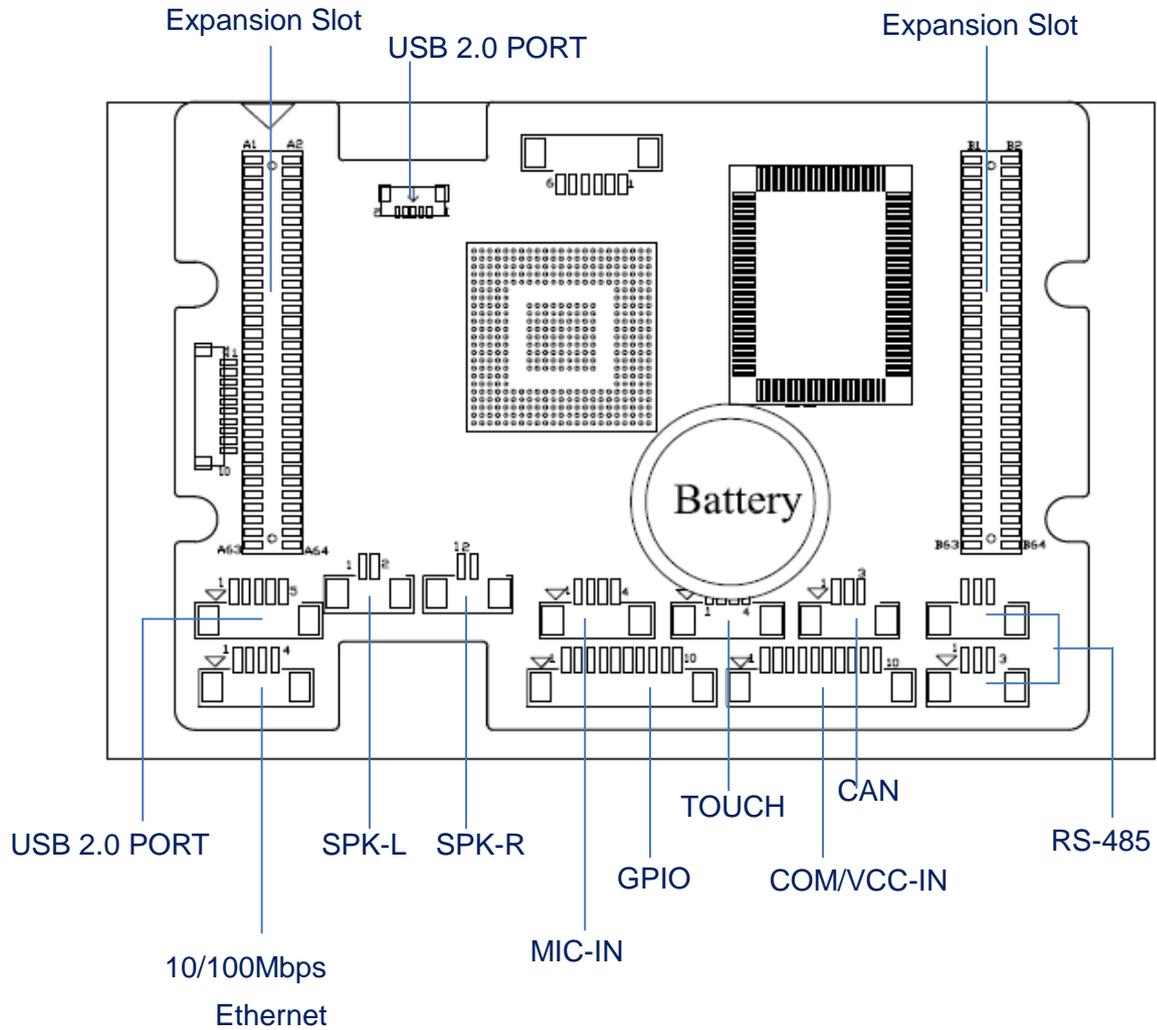
**J14: SPK-R**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | ROUTP       | 2     | ROUTN       |

**J15: MIC-IN**

| Pin # | Signal Name | Pin # | Signal Name |
|-------|-------------|-------|-------------|
| 1     | VREFOUT     | 2     | GND         |
| 3     | GND         | 4     | MIC1        |

## 2.4 Connector I/O Overview





# Ch. 3

## Driver Installation

### [3.1 HMI-043T Development Note](#)

## VGA

Vortex86VGA is a programmable VGA controller in 22mm x 16mm LQFP 128 package. It integrates a PCIe bridge controller and a VGA controller with 4M-Byte Pseudo SRAM memory (16-bit data width). It also incorporates 3.3V DVO digital interfaces to support a third party LVDS/TMDS transmitter.

## LAN

The Vortex86DX2 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 HMI-043T provides the VGA and LAN drivers for DOS, Linux, and Windows CE, Please get the drivers from ICOP technical support URL: [tech.icop.com.tw](http://tech.icop.com.tw)

HMI-043T is an open-source embedded platform based on Vortex86EXm SoC, easy-to-use hardware and software integrated. This platform can support many x86 O/S as well as those running on the original Arduino base system.

## 3.1 HMI-043T Development Note

### < WINDOWS DEVELOPMENT GUIDE >

Windows Embedded CE 6.0 BSP and Windows Embedded Compact 7 BSP with development notes, please visit technical website to get more information at <http://tech.icop.com.tw/>.

### < LINUX INSTALLATION NOTE>

Please visit Linux technical website to get more information at [ftp://vxdx:gc301@ftp.dmp.com.tw/Linux\\_DEMO/Vortex86\\_Linux\\_Support\\_List.htm](ftp://vxdx:gc301@ftp.dmp.com.tw/Linux_DEMO/Vortex86_Linux_Support_List.htm)

# 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.

All Trademarks appearing in this manuscript are registered trademark of their respective owners. All Specifications are subject to change without notice.  
©ICOP Technology Inc. 2016