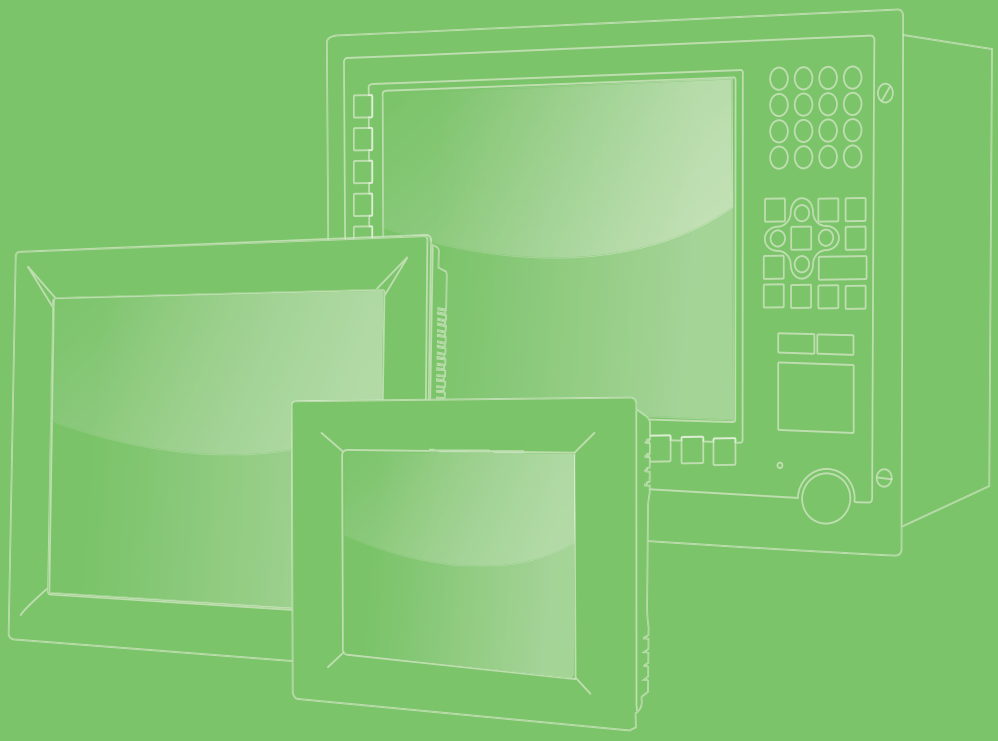

User Manual

TPC-1071H/1271H/ 1571H

Touch Panel Computer With Intel® Atom™ Dual Core Processor

ADVANTECH
eAutomation

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This Manual Covers the Following Models:

- TPC-1071H
- TPC-1271H
- TPC-1571H

Part No. 2003157101 Edition 2

Printed in Taiwan January 2012

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages
3. This product is intended to be supplied by a listed power supply complying with UL60950-1; rated from 10-29 V_{DC}, minimum 6.8 A to 2.4 A.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Packing List 2
1.2.1 TPC-1071H and 1271H 2
1.2.2 TPC-1571H 2
1.3 Specifications 3
1.3.1 System Kernel 3
1.3.2 I/O Ports 3
1.3.3 Safety and Environment 3
1.4 LCD Specifications 4
1.5 Touchscreen Specifications 4
1.6 Power 4
1.7 I/O Ports Arrangement 5
Figure 1.1 TPC-1071H/1271H - I/O Port Arrangement (Antenna is optional. Use P/N:1750000318 to order). 5
Figure 1.2 TPC-1571H - I/O Port Arrangement (Antenna is optional. Use P/N:1750000318 to order). 5
1.8 Panel Mounting 6
Figure 1.3 Panel Mounting 6
Figure 1.4 Front and Rear Images 6
1.9 Dimensions and Cutout 7
1.9.1 TPC-1071H 7
Figure 1.5 TPC-1071H Dimensions 7
1.9.2 TPC-1271H 8
Figure 1.6 TPC-1271H Dimensions 8
1.9.3 TPC-1571H 9
Figure 1.7 TPC-1571H Dimensions 9

Chapter 2 System Setup 11

2.1 System Setup 12
Figure 2.1 Unpack the Package 12
Figure 2.2 Install CompactFlash Memory Card 13
Figure 2.3 Power Connector and Power Lines 13
Figure 2.4 Power Receptor & Switch Pin Assignment 14
2.1.1 Installing the Drivers 14

Chapter 3 Features in Windows XP Embedded15

3.1 Features in Windows XP Embedded 16
3.2 EWF 16
3.3 HORM 16

Appendix A Jumper & Dip Switch Setting List and DIO Pin Assignment and Wiring17

A.1 Jumper and DIP Switch Settings 18
A.1.1 Jumper and Switch Locations 18
Figure A.1 Jumper and Switch Locations 18
A.2 Jumper Settings 19
A.2.1 JP1 LCD Power Select 19

A.2.2 JP2 CMOS Clear Select 19
A.3 DIP Switch Settings 20
A.3.1 SW1 TS Type Setting 20
A.3.2 SW2 LCD Controlled Function 20
A.3.3 SW3 FPGA 20
A.3.4 SW4 LCD Resolution Select 21
A.3.5 SW5 & SW6 Termination Resistor Selection 21
A.4 DIO Board Pin Assignment and Wiring 22
A.4.1 DIO PIN Assignment 22
A.4.2 Isolated Digital Input -- Dry Contact 22
A.4.3 Isolated Digital Input -- Wet Contact 23
A.4.4 Isolated Digital Output 23

Chapter 1

General Information

1.1 Introduction

The TPC-1071H/1271H/1571H Touch Panel Computers are state-of-the-art Human Machine Interfaces featuring 10"/ 12"/ 15" displays with Intel Atom processors 400 and 500 Series with Intel 82801HM I/O Controller and the following key features:

- **Fanless**
  By using a low-power processor, the system does not have to rely on fans, which often are unreliable and causes dust to circulate inside the equipment.
- **Compact Expansion**
  With its PCI-E/mini PCI-E slot, it provides the easiest way to expand TPC's functionality.
- **Multiple OS**
  In addition to the OS support of Windows XP, Advantech offers platform support for WES7 and Windows XP embedded. The optional Windows CE operating system, specifically for Industrial Touch Panel Computers is also available.
- **Automation IO Control Module**
  8 x DI/DO design with isolation and Fieldbus control for automation monitoring/ control application.
- **Various Mounting Options**
  TPC-1071H/1271H/1571H allows a variety of mounting systems e.g. panel mount. It has been verified and is recommended to work with vertical mounting systems.
- **RTC Battery Backup**
  RTC backup ensures real time data management in case of accidental power failure.

1.2 Packing List

1.2.1 TPC-1071H and 1271H

- 8 x Panel Mount Clamps
- 8 x Panel Mount Screws
- 1 x 3 Pin Power Connector
- 1 x Power Indication Sticker
- 1 x Wire for Chassis Ground
- 1 x TPC Driver DVD
- 1 x Registration and Warranty Card
- 1 x Simplified Chinese Manual
- 2 x 10-pin plug-in block for DI/O port

1.2.2 TPC-1571H

- 10 x Panel Mount Clamps
- 10 x Panel Mount Screws
- 1 x 3 Pin Power Connector
- 1 x Power Indication Sticker
- 1 x Wire for Chassis Ground
- 1 x TPC Driver DVD
- 1 x Registration and Warranty Card
- 1 x Simplified Chinese Manual
- 2 x 10-pin plug-in block for DI/O port

1.3 Specifications

1.3.1 System Kernel

- **CPU:** Intel® Atom™ D525 1.8GHz
- **BIOS:** AMI BIOS
- **System Chipset:** ICH8M
- **VGA:** Integrated in ICH8M
- **Memory:** 4GB SO-DIMM DDR3 SDRAM
- **LAN**: 10/100/1000Base-T x 2
- **Watchdog Timer:** 1 ~ 255 sec (system)
- **Expansion Slots:** Full-size PCI-E or Mini PCI-E
- **Storage:** CompactFlash® slot and SATA HDD x 1

1.3.2 I/O Ports

TPC-1071H/1271H/1571H:

- **3 serial ports:** RS-232 x 2 (w/ isolation), RS-422/485 x 1 (w/isolation)
- 1 PS/2 Keyboard/Mouse
- **2 USB 2.0 Ports:** compliant with USB 2.0 and 1.1. (Host)
- 8 DI/DO & backup SRAM: DI/DO with isolation and backup 1MB SRAM

1.3.3 Safety and Environment

Safety

- FCC Class A
- CE certificated
- The front bezel is compliant with NEMA 4 and IP65

Environment

- **Operating Temperature:**
  - 0 ~ 50°C (32 ~ 122°F)
- **Storage Temperature:**
  - -20 ~ 60°C (-4 ~ 140°F)
- **Humidity:** 40°C @ 10~95% relative humidity (non-condensing)
- **Vibration:** 2 grms (5 ~ 500 Hz) with CF Card, 1 grm with HDD kit

1.4 LCD Specifications

	TPC-1071H/1271H/1571H
Display Type	TFT LCD
Size (diagonal)	10.4"/ 12.1"/ 15"
Maximum Resolution	800x600 / 800x600 / 1024x768
Maximum Colors	262K
Viewing Angle	140°/110°, 160°/140°, 160°/140°
Luminance (cd / m2)	500 / 450 / 350
Contrast Ratio	500:1 / 700:1 / 700:1
Operating Temperature	-30 ~ 85°C
Backlight	LED

Note! *There might be several bright or dark pixels on the LCD. This phenomenon is normal in today's LCD manufacturing.*

1.5 Touchscreen Specifications

- **Touch Type:** Resistive
- **Base Glass Construction:** Tempered glass
- **Resolution:** 1024 x 1024
- **Light Transmission:** 80% ± 3% (Measured by BYK-Gardner)
- **Controller:** RS-232 Interface
- **Lifespan:** 1 million touches at single point

Note! *Touchscreen ITO maybe crash duo to heavy usage.*

1.6 Power

- **Input Voltage:**
  - Typical - 24V_{DC}
  - Swing Range - 10-29V_{DC} (the fuse will become an open circuit if the input level exceeds 33V_{DC})
- **Power Consumption:** TPC-1071H: 17W /TPC-1271H: 20W / TPC-1571H:21W (typical)

1.7 I/O Ports Arrangement

The arrangement of the I/O ports is shown in in Figure 1.1 and 1.2.

Figure 1.1 TPC-1071H/1271H - I/O Port Arrangement
(Antenna is optional. Use P/N:1750000318 to order)

Figure 1.2 TPC-1571H - I/O Port Arrangement
(Antenna is optional. Use P/N:1750000318 to order)

1.8 Panel Mounting

1. There is an adhesive waterproof gasket on the AL front bezel. Make sure the waterproof gasket is in position before installing TPC into the panel opening.
1. Install the TPC into the panel opening.
2. Find the eight clamps and eight long screws in the accessory pack. Hook the clamps to the holes around the four sides of the bezel. Insert the screws into every clamp and fasten them. These screws will push the mounting panel and fix the unit.
3. The suggested mounting panel thickness is less than 6 mm (0.236”).

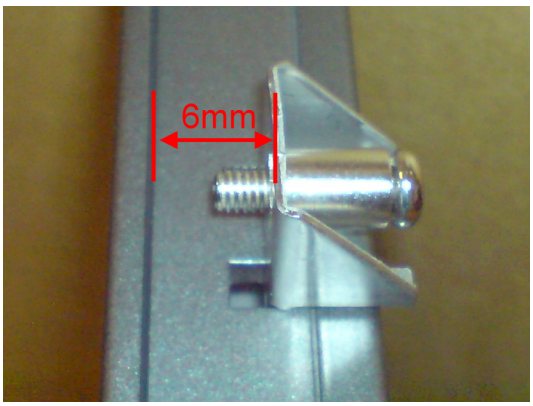


Figure 1.3 Panel Mounting

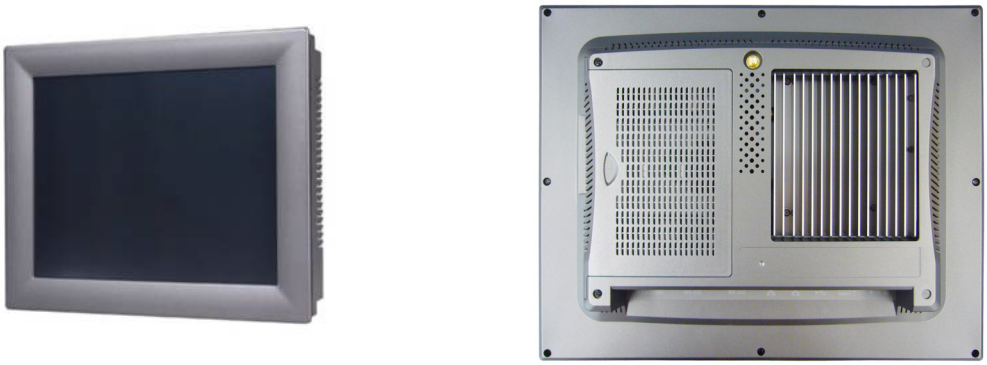


Figure 1.4 Front and Rear Images

Note! *The monitor should be vertically mounted on panels*

1.9 Dimensions and Cutout

1.9.1 TPC-1071H

- **Weight:** 3kg
- **Dimensions (W x H x D):**
  - 287 x 227 x 72.3 mm (11.29" x 8.94" x 2.84")
- **Cutout:**
  - 279.5 x 219 mm

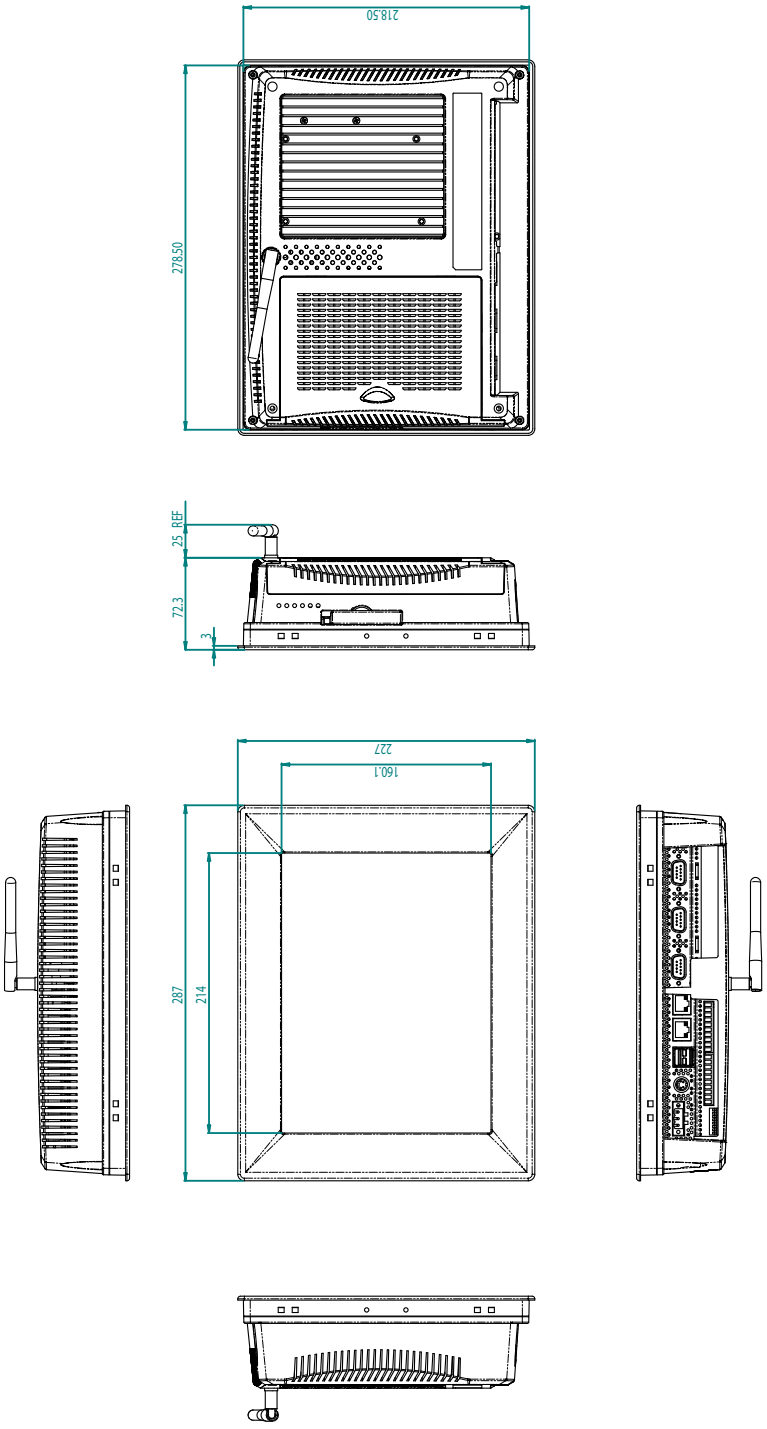


Figure 1.5 TPC-1071H Dimensions

1.9.2 TPC-1271H

- **Weight:** 4.57kg
- **Dimensions (W x H x D):**
  - 311 x 237 x 73.1 mm (12.24" x 9.33" x 2.88")
- **Cutout:** 302 x 228 mm

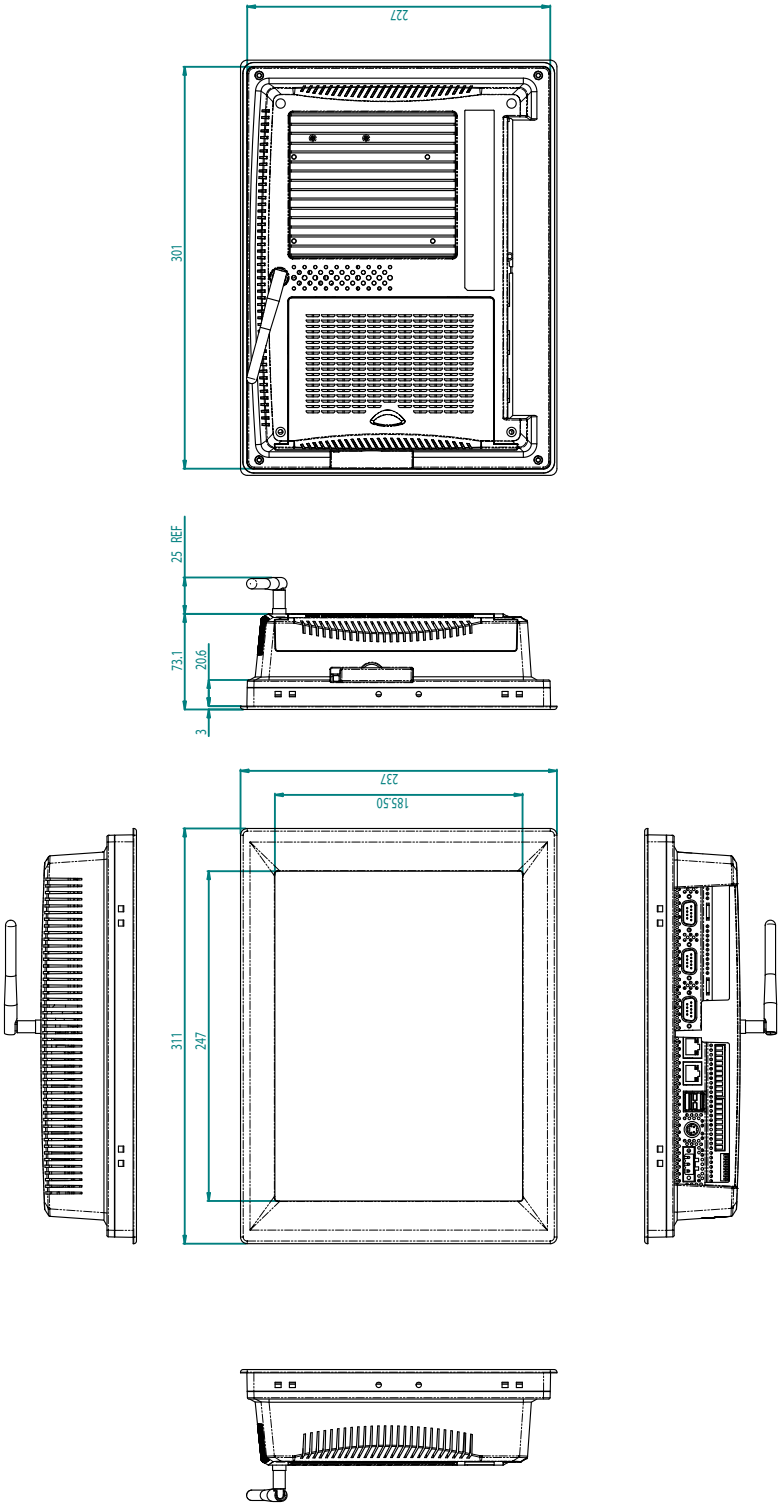


Figure 1.6 TPC-1271H Dimensions

1.9.3 TPC-1571H

- **Weight:** 5.5kg
- **Dimensions (W x H x D):**
  - 383 x 307 x 78.5 mm (15.08" x 12.09" x 3.09")
- **Cutout:** 374.5 x 298.5 mm

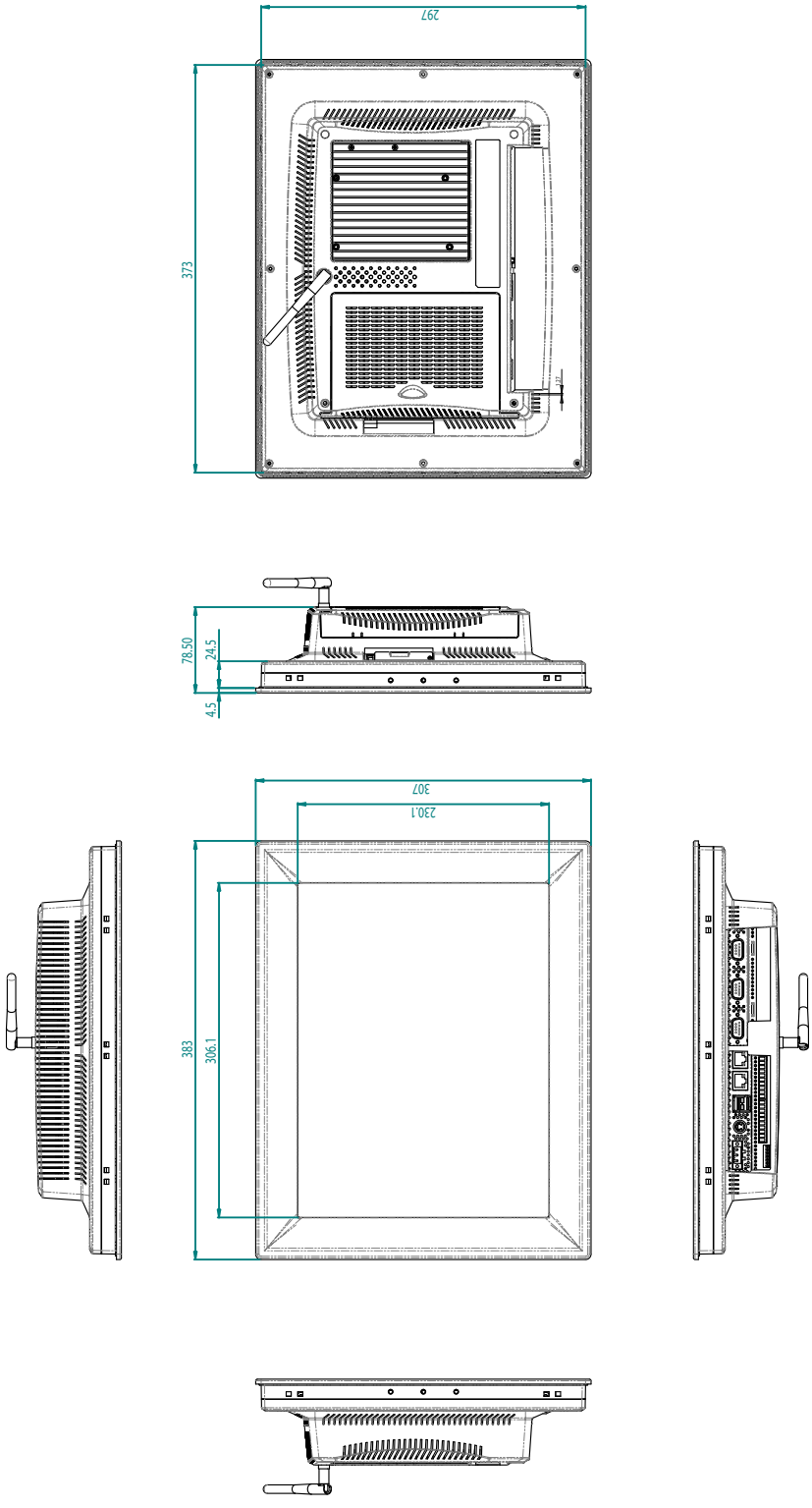


Figure 1.7 TPC-1571H Dimensions

Chapter 2

System Setup

2.1 System Setup

You can easily get TPC started by following the below steps.

1. Unpack the TPC package. Check the packing list at the beginning of this manual to make sure all items have been included.

Figure 2.1 Unpack the Package

2. Install a CompactFlash card containing Windows CE, Embedded Windows XP or another operating system.

Figure 2.2 Install CompactFlash Memory Card

Warning! *It is suggested to turn OFF system power as you plug in or pull out the memory card, even though the CompactFlash memory is hot swappable.*

3. Connect the power connector to the 24 V_{DC} power lines. The power lines can either be of some power adapter or in-house power source.

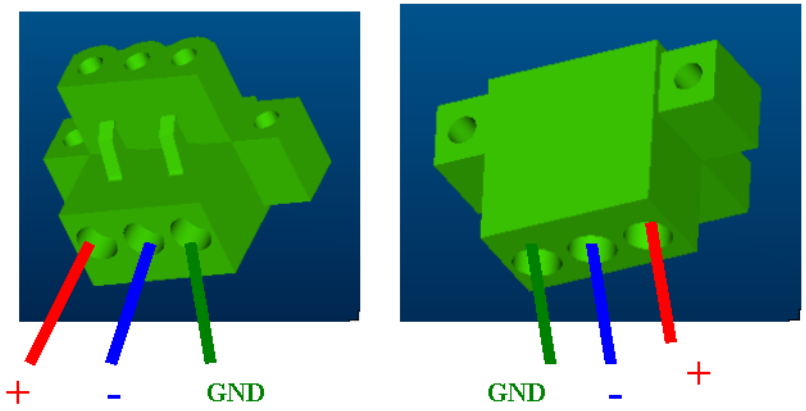


Figure 2.3 Power Connector and Power Lines

Figure 2.4 Power Receptor & Switch Pin Assignment

4. Plug the power lines into the system power receptor.
5. Power on the system.
6. Calibrate the touchscreen (click "PM" in the bottom corner).

Note! *If you want to install the touchscreen driver & use the touchscreen utility, please refer the user manual which is "PenMount 6000 Installation-Guide" on the DVD.*

2.1.1 Installing the Drivers

After installing your system software, you will be able to set up the Ethernet, VGA, and touchscreen functions. All drivers are stored in a DVD entitled “TPC-1071H, TPC-1271H or TPC-1571H” which can be found in your accessory box.

The various drivers in the DVD have their own text files which help users install the drivers and understand their functions. These files are a very useful supplement to the information in this manual.

Note! *The drivers and utilities used for the TPC-1071H, TPC-1271H and TPC-1571H panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utilities.*

Chapter 3

Features in Windows XP Embedded

3.1 Features in Windows XP Embedded

TPC product supports the embedded Windows platform. This section outlines the important features (EWF and HORM), that are provided in Windows XP embedded.

3.2 EWF

EWF stands for Enhanced Write Filter. It provides an upper filter in the storage device driver stack that redirects disk write operations to volatile (RAM) or non-volatile (disk) storage. EWF protects a volume from write access. The benefits are as the following.

Write-protect one or more partitions on your system.

Enable read-only media, such as DVD or flash, to boot and run.

Prolong the lifespan of write-sensitive storage, such as CompactFlash.

TPC-1071H/1271H/1571H XPE provides EWF RAM-REG mode on system partition. All wirte to system partition will be redirected to RAM once this mode is enabled. This mode is manually enabled by customers after theyfinish all their changes on system such as installing their applications or adjusting system setting.

Advantech provides a pair of utilities to operate EWF, OSLock andOSUnLock. Please refer the training slide in the folder, file name is "Advantech XPe Add-one.pdf".

3.3 HORM

HORM stands for Hibernate Once Resume Many. In HORM environment, a single hibernation file is used to boot the system repeatedly. To set a HORM environment, please follow the steps below.

Please make sure EWF is disabled. You can run OSUnLock to disable EWF.

Enable hibernation support:

Run “power options” in control panel, and then select “Enable Hibernation” in hibernation pane.

Enable EWF:

Run OSLock, and then system reboot automatically.

Open those software that customers want to directly use after system resume from hibernation.

Hibernate via Advantech HORM utility:

Please Click Start Menu->All Programs->Advantech->AdvWF

HORM environment remains all along unless the following events occur:

Run EWF commit command (ewfmgr c: -commit) and then reboot system.

Select “Discard hibernation file” by clicking F8 when system is starting up.

Appendix A

Jumper & Dip Switch Setting List and DIO Pin Assignment and Wiring

A.1 Jumper and DIP Switch Settings

If you need to adjust the jumper or DIP switch settings refer to the information below.

A.1.1 Jumper and Switch Locations

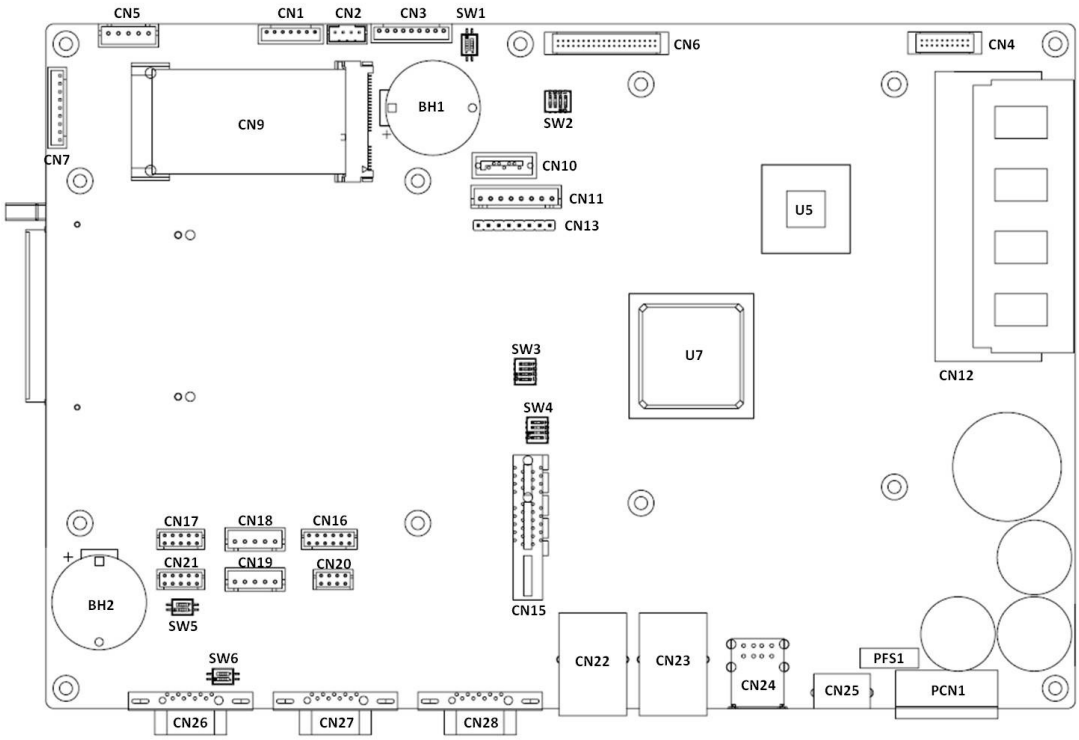


Figure A.1 Jumper and Switch Locations

A.2 Jumper Settings

A.2.1 JP1 LCD Power Select

JP1 is used to select LCD power

	Description
1-3 & 2-4	+5V is used to supply LCD panel
3-5 & 4-6	+3.3V is used to supply LCD panel*

* Default setting

A.2.2 JP2 CMOS Clear Select

JP2 is used to select CMOS enable/disable

	Description
2-3	Enable (Clear CMOS)
1-4	Disable*

* Default setting

A.3 DIP Switch Settings

A.3.1 SW1 TS Type Setting

SW1 is used to select TS type setting

	Description	On	Off
Bit 1	T/S type	4,8 WIRE	5 Wire*
Bit 2	Baud Rate	9600	19,200*

* Default setting

	TPC-1071H	TPC-1271H	TPC-1571H
Bit 1	Off	Off	Off
Bit 2	Off	Off	Off

A.3.2 SW2 LCD Controlled Function

SW2 is used to select LCD Controlled Function

	Description	On	Off
Bit 1	Left and Right opposite	Depends on LCD spec	
Bit 2	Up and Down opposite		
Bit 3	Scan direction control		
Bit 4	Select 6 or 8 bits LVDS input		

Default settings

	TPC-1071H	TPC-1271H	TPC-1571H
Bit 1	Off	Off	Off
Bit 2	Off	Off	Off
Bit 3	Off	On	On
Bit 4	Off	On	Off

A.3.3 SW3 FPGA

Default settings

	TPC-1071H	TPC-1271H	TPC-1571H
Bit 1	Off	Off	Off
Bit 2	Off	Off	Off
Bit 3	Off	Off	Off
Bit 4	Off	Off	Off

A.3.4 SW4 LCD Resolution Select

SW4 is used to select LCD Resolution

	Description	On	Off
Bit 1	GPI_LCDSEL0	Depends on BIOS definitions	
Bit 2	GPI_LCDSEL1		
Bit 3	GPI_LCDSEL2		
Bit 4	GPI_LCDSEL3		

Default settings

	TPC-1071H	TPC-1271H	TPC-1571H
Bit 1	On	Off	On
Bit 2	On	On	Off
Bit 3	On	On	On
Bit 4	On	On	On

A.3.5 SW5 & SW6 Termination Resistor Selection

SW5 (optional COM) and SW6 (standard COM) are used to select the Termination Resistor (120 ohm) for long distance transmission or device matching

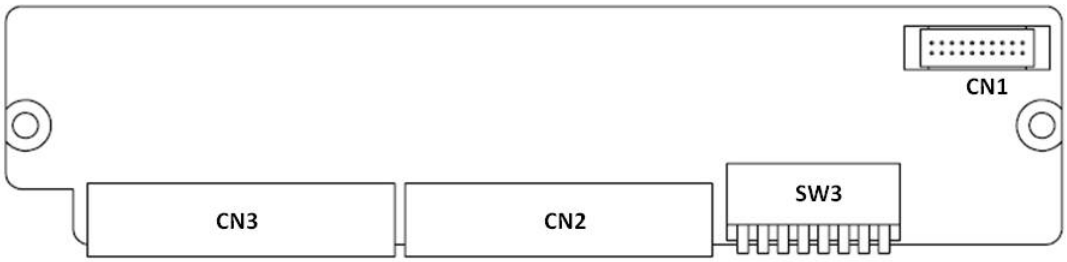
	Description	On	Off
Bit 1	Termination resistor select	Enable	Disable
Bit 2	Termination resistor select	Enable	Disable

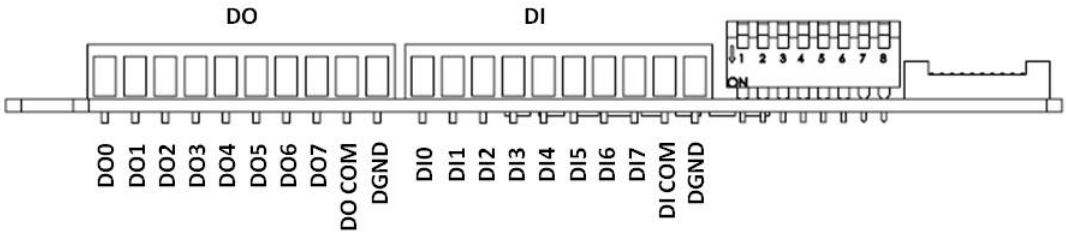
Default Setting

	TPC-1071H	TPC-1271H	TPC-1571H
Bit 1	Off	Off	Off
Bit 2	Off	Off	Off

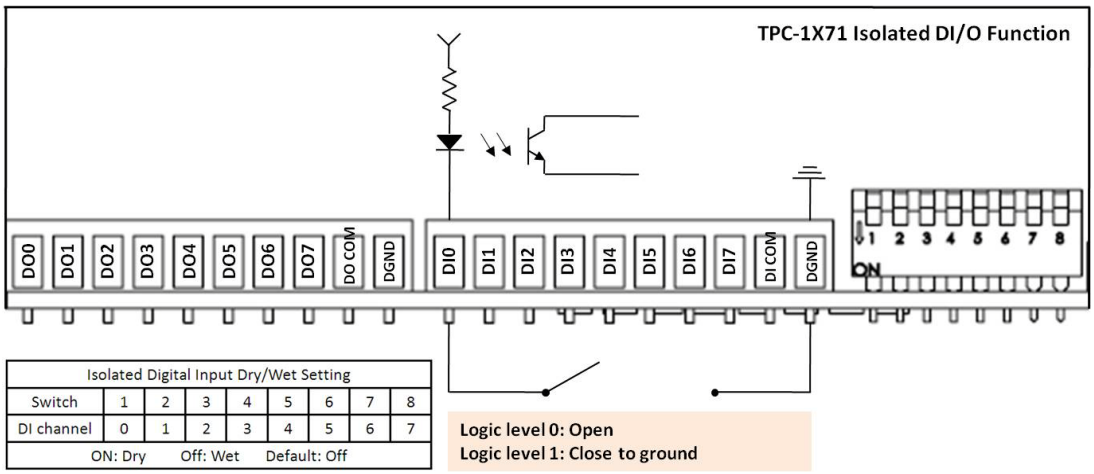
A.4 DIO Board Pin Assignment and Wiring

A.4.1 DIO PIN Assignment



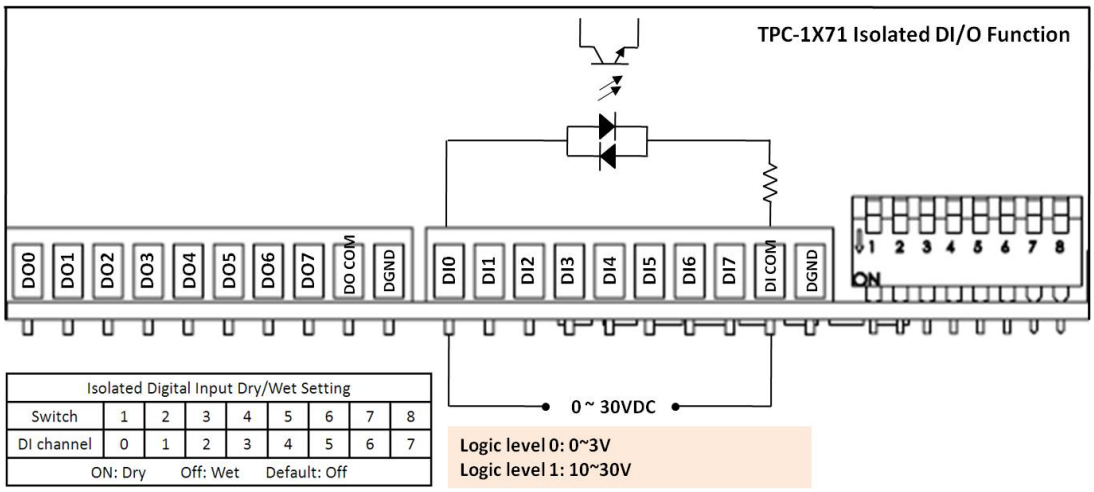


A.4.2 Isolated Digital Input -- Dry Contact



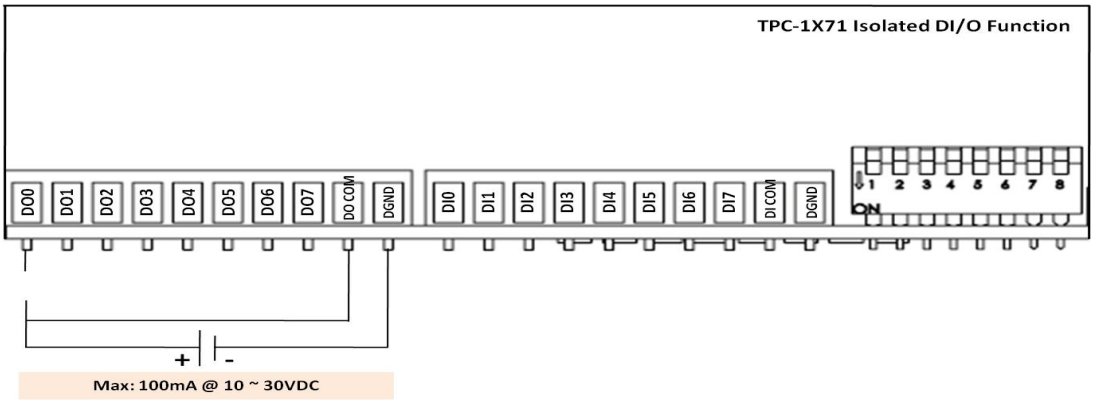
Isolated Digital Input Dry/Wet Setting								
Switch	1	2	3	4	5	6	7	8
DI channel	0	1	2	3	4	5	6	7
ON: Dry Off: Wet Default: Off								

A.4.3 Isolated Digital Input -- Wet Contact



Isolated Digital Input Dry/Wet Setting								
Switch	1	2	3	4	5	6	7	8
DI channel	0	1	2	3	4	5	6	7
ON: Dry Off: Wet Default: Off								

A.4.4 Isolated Digital Output



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