

TouchPAD

TPD/VPD Series HMI Device User Manual

Version 1.3.2, Aug. 2017



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Preface

Thank you for buying TPD/VPD Series HMI Devices, TouchPADs, which are made by ICP DAS Co., Ltd. We suggest you read through this user manual before you set up these devices and develop their programs.

SUPPORT

This manual relates to the following modules:

TPD Series Models	TPD-280, TPD-280U, TPD-283, TPD-283U, TPD-430, TPD-430-EU, TPD-433,							
TPD Series Models	TPD-433-EU, TPD-432F, TPD-433F							
	TPD-280-H, TPD-280U-H, TPD-283-H, TPD-280-M1, TPD-280-M2,							
TPD High Speed	TPD-280-M3, TPD-283-M1, TPD-283-M2, TPD-283-M3, TPD-283U-M1,							
Series Models	TPD-283U-M2, TPD-283U-M3, TPD-430-H, TPD-433-H, TPD-433F-H,							
	TPD-433-M2, TPD-703, TPD-703-64							
VPD Series Models	VPD-130, VPD-130N, VPD-132, VPD-132N, VPD-133, VPD-133N, VPD-142,							
VPD Series Wodels	VPD-142N, VPD-143, VPD-143N							
VPD High Speed	VPD-130-H, VPD-130N-H, VPD-132-H, VPD-132N-H, VPD-133-H,							
VPD High Speed Series Models	VPD-133N-H, VPD-142-H, VPD-142N-H, VPD-143-H, VPD-143N-H							
	VPD-173N , VPD-173N-64, VPD-173X , VPD-173X-64							

PURPOSE

This manual shows how to use TouchPADs and develop programs.

This manual mainly contains the following parts:

- Introduction: basic understandings of TouchPADs.
- > Hardware: specifications, dimensions, and installations.
- Software: mainly how to build a project and HMIWorks introductions.

PERSONNEL

This manual is fit for following personnel:

- End Users
- > Engineers
- Technicians

1. Introduction

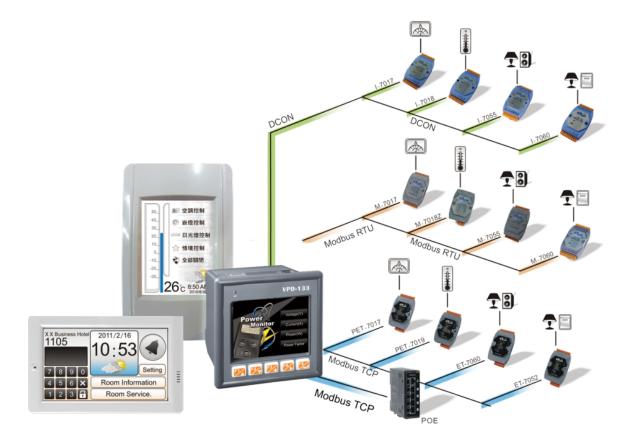


Our solution for HMI (Human Machine Interface) is composed of GUI (Graphical User Interface) based touch screens and an integrated software development package. ICP DAS hears the voices of our customers and is dedicated to providing a series of solutions particularly for intelligent building, equipment monitoring, factory automation and automatic controls. Its development software, HMIWorks, provides plenty of widgets and a variety of templates. Combined with the high resolution color touch screen of the TouchPAD series, a GUI can be realized with your own unique fashion and style. Development is no longer difficult and project accomplishment is within reach.

ICP DAS provides two types of touch HMI devices, the TPD series and the VPD series. The TPD series is designed for home/building automation applications and the VPD series is designed for factory/machine automation applications. Both have many common features, such as a high-resolution touch screen, RTC, and a variety of communication interfaces, including RS-232/RS-485, Ethernet, USB. However, each still has its own specific features for its respective target applications. For the TPD series, you can use an external wall box to help you smoothly blend the TPD series device into your decoration. For the VPD series, the rubber keypad, IP-65 waterproof front panel and DIN-Rail/panel mounting are designed for harsh environment, and are especially suitable for factories.

1.1 Features

- Excellent C/P ratio (cost/performance)
- High-Color high-resolution resolution touch screen
- PoE, Power over Ethernet (PoE)
- RS-485 network (including SelfTuner)/RS-232 (3 pins)
- RTC (Real Time Clock)
- Buzzer
- Rubber Keypad (Option for VPD Series)
- Graphical user interface designer
- Free development tool: HMIWorks
- Support the C language and Ladder Designer
- Support user-defined third party protocol (C language)
- Modbus Protocol enables remote control of I/O modules and integration with SCADA software
- ESD Protection: 4 kV
- Waterproofed Front Panel (VPD: IP65, TPD: IP40)
- Operating temperature: -20 ~ 50 °C (2.8": -20 ~ 70 °C, 7": -10 ~ 60 °C)



1.2 Module Naming Convention

There are many different products available, and sometimes it is difficult to remember the specifications for any given product. However, if you take a few minutes to understand the module naming conventions, it may save your time and prevent confusion. The figure below shows how the module naming conventions work for each TPD/VPD series product.

			X(X)	-	XX
Touch Screen Size	Cor	nmunication Inte	rface		Special
28: 2.8 inch	For 2.8 inch:	For 4.3 inch:	For 7.0 inch:	EU: For Eur	ropean 86 x 86 mm
43: 4.3 inch	0: RS-485	0: RS-485	3: Ethernet	Outlet	Box
70: 7.0 inch	0U: RS-485 + RTC	2: RS-485 x 2	+RTU	H: High Spe	eed Version
	3: Ethernet	3: RS-485/RS-23	32	M1 ~ M3: I	Multi Panel
	3U: RS-485 + RTC +	+ Ethernet		64: 64 MB	SDRAM/64 MB Flash
	Ethernet	(F): Flat Type			
V P D	- X		()	X)	- XX
Form Facto	r Touch	Screen Size	Communication In	terface	Special
1: 103 x 103 mm Pan	el Mount 3: 3.5 in	ch (): RS-485		H: High Speed Version
	4: 4.3 in	ch Z	2: RS-232/RS-485 + RS-	485	64: 64 MB SDRAM/64
	7: 7 inch		3: RS-232/RS-485 + RS-	MB Flash	
		E	Ethernet		
			N): No Rubber Keypac		

1.3 Selection Guide

1.3.1 TPD Series Models

2.8" (Resolution: 240 x 320)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Outlet Box	External Wall Box	Power Input
TPD-280	-	1	-	1 x RS-485	-			+10 ~ +30 V _{DC}
TPD-283	-	1	Yes	-	-	00420		PoE
TPD-280U	8 MB	54	-	1 x RS-485	Yes	OB120	EWB-T28	+10 ~ +30 V _{DC}
TPD-283U	8 MB	54	Yes	1 x RS-485	Yes			+10 ~ +30 V _{DC} or PoE

2.8" (Resolution: 240 x 320)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Outlet Box	External Wall Box	Power Input	Multi Panel
ТРД-280-Н	-	4	-	1 x RS-485	-			+12 ~ +48 V _{DC}	
TPD-283-H	-	4	Yes	-	-			PoE	-
TPD-280U-H	16 MB	108	-	1 x RS-485	Yes	OB120	EWB-T28	+12 ~ +48 V _{DC}	-
TPD-283U-H	16 MB	108	Yes	1 x RS-485	Yes			+12 ~ +48 V _{DC} or PoE	-
TPD-280-Mx	-	4	-	1 x RS-485	-			+12 ~ +48 V _{DC}	Yes
TPD-283-Mx	-	4	Yes	-	-			PoE	Yes
TPD-283U-Mx	16 MB	108	Yes	1 x RS-485	Yes	-	-	+12 ~ +48 V _{DC} or PoE	Yes

4.3" (Resolution: 480 x 272)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Outlet Box	External Wall Box	Power Input
TPD-430	8 MB	32	-	1 x RS-485	Yes	00140		+10 ~ +30 V _{DC}
TPD-433	8 MB	32	Yes	1 x RS-485	Yes	OB140	EWB-T43	+10 ~ +30 V _{DC} or PoE
TPD-432F	8 MB	32	-	2 x RS-485	Yes	0.54.405		+10 ~ +30 V _{DC}
TPD-433F	8 MB	32	Yes	1 x RS-232 1 x RS-485	Yes	OB140F OB140FP	EWB-T43F	+10 \sim +30 V_{DC} or PoE
TPD-430-EU	8 MB	32	-	1 x RS-485	Yes			+10 ~ +30 V _{DC}
TPD-433-EU	8 MB	32	Yes	1 x RS-485	Yes	-	-	+10 ~ +30 V _{DC} or PoE

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Outlet Box	External Wall Box	Power Input	Multi Panel
TPD-430-H	16 MB	32	-	1 x RS-485	Yes		+12 ~ +48V _{DC}	-	
ТРД-433-Н	16 MB	32	Yes	1 x RS-485	Yes	OB140F	EWB-T43F	+12 ~ +48 V _{DC} or PoE	-
TPD-433F-H	46 MAD	64		1 x RS-232	No	OB140FP	-	+12 ~ +48 V _{DC}	-
TPD-433-M2	16 MB	64	Yes	1 x RS-485	Yes			or PoE	Yes

4.3" (Resolution: 480 x 272)

> 7" (Resolution: 800 x 480)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Outlet Box	External Wall Box	Power Input	
TPD-703	16 MB	18	No	1 x RS-232		00470		12 01 + 40 M	
TPD-703-64	64 MB	84	Yes	1 x RS-485	Yes	OB170	EWB-T70	+12 ~ +48 V _{DC} or PoE	

1.3.2 VPD Series Models

> 3.5" (Resolution: 320 x 240)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input
VPD-130			-	RS-232/RS-485 COM1: RS-485 or RS-232		-	Yes		
VPD-130N		54	-		Yes	-	-	Front Panel: IP65	+12 ~ +48
VPD-132	0.145		-			Yes	Yes		V _{DC}
VPD-132N	8 MB		-			Yes	-		
VPD-133			Yes			Yes	Yes		+12 ~ +48
VPD-133N			Yes	COM2: RS-485		Yes	-		V_{DC} or PoE

> 3.5" (Resolution: 320 x 240)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input
VPD-130-H			-				Yes		
VPD-130N-H			-	RS-232/RS-485			-		+12 ~ +48
VPD-132-H	16		-				Yes	Front	V _{DC}
VPD-132N-H	MB	108 MB	-	COM1: RS-485 or RS-232 COM2: RS-485	Yes	Yes	-	Panel: IP65	
VPD-133-H			Yes				Yes		+12 ~ +48
VPD-133N-H			Yes				-		V _{DC} or PoE

➢ 4.3" (Resolution: 480 x 272)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input
VPD-142			-	COM1: RS-485			Yes	- .	+12 ~ +48
VPD-142N	0.140	32	-	or RS-232	No.		-	Front Panel: IP65	V _{DC}
VPD-143	8 MB		Yes	COM2: RS-485	Yes	Yes	Yes		+12 ~ +48
VPD-143N			Yes	or RS-232			-		V _{DC} or PoE

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input
VPD-142-H			-	COM1: RS-485			Yes	- .	+12 ~ +48
VPD-142N-H	16	<u> </u>	-	or RS-232		Yes	-	Front Panel:	V _{DC}
VPD-143-H	MB	VB 64	Yes	COM2: RS-485	Yes		Yes		+12 ~ +48
VPD-143N-H			Yes	or RS-232			-	IP65	V _{DC} or PoE

4.3" (Resolution: 480 x 272)

> 7" (Resolution: 800 x 480)

Model	Extra Flash	Image Storage Capacity	Ethernet	COM Port	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input
VPD-703N	16 MB	18							
VPD-703N-64	64 MB	84	Yes	COM1: RS-485 or RS-232 COM2: RS-485 or RS-232	Yes	-	-	Front Panel: IP65	+12 ~ +48 V _{DC}
VPD-703X	16 MB	18				Yes			or PoE
VPd-703X-64	64 MB	84							

Expansion I/O Boards (Optional XV-boards)

Model		Digital Input (DI)			Digital Output (DO)			
	Channels	Sink/Source	Contact	Channels Type		Sink/Source		
XV107	8	Source	Wet	8	Open Collector	Sink/Source		
XV107A	8	Sink	Wet	8	Open Emitter	Source		
XV110	16	Sink/Source	Wet + Dry	-	-	-		
XV111	0	-	-	16	Open Collector	Sink		
XV111A	0	-	-	16	Open Emitter	Source		
XV116	5	Sink/Source	Wet	6	Power Relay, Form A	-		

Model		AI		AO DI			DO	
	Channels	Туре	Channels	Туре	Channels	Туре	Channels	Туре
XV306	4	Voltage/ Current	-	-	4	Wet	4	Relay Form A, 6A
XV307	-	-	2	Voltage/Current	4		4	Sink
XV308	8	Voltage/	-	-	DI+DO = 8	Dry,	DI+DO=8	Sink
XV310	4	Current	2	Voltage/Current	4	Source	4	Source

1.4 Specifications

A Note: **Communication interface** that is only for run time supports the following protocols:

- 1. For the case of **RS-485**, Modbus RTU Master and DCON Protocol Master (for ICP DAS I-7000 series modules) are supported. We provide API functions to open COM Port for sending/receiving strings through RS-485.
- 2. For the case of **Ethernet**, Modbus TCP Master is supported. We provide API functions to sending/receiving strings through TCP.
- 3. USB is used for firmware update only.

1.4.1 TPD-280/280U/283/283U

Models	TPD-280	TPD-280U	TPD-283	TPD-283U		
CPU Module						
СРИ		32-bit	RISC CPU			
Memory Expansion	-	16 MB SDRAM / 8 MB Flash	-	16 MB SDRAM / 8 MB Flash		
Real Time Clock (RTC)	- Yes		-	Yes		
Buzzer			Yes			
Rotary Switch (0 ~ 9)			Yes			
Communication Interface						
Ethernet		-	RJ-45 x 1, 10,	/100 Base-TX		
Serial Port	RS-485 (inclu	iding Self-Tuner)	-	RS-485 (including Self-Tuner)		
USB 1.1 Client	-	Firmware update only	-	Firmware update only		
MMI (Main Machine Interface)						
LCD	2.8	TFT (Resolution 240 x 3	320 x 16), defective pixe	els <= 3		
Backlight Life		20,0	00 hours			
Brightness		160) cd/m2			
Touch Panel			Yes			
Reset Button			Yes			
Electrical						
Powered from Terminal Block	+10 ~	' +30 VDC	-	+10 ~ +30 VDC		
Powered from PoE		-	IEEE 802.3af,	Class1 (48 V)		
Power Consumption		1	2 W			
Mechanical						
Dimensions (W x L x H) (Unit: mm)	119 >	(76 x 33	119 x 76 x 32	119 x 76 x 33		
Installation		Wall I	Mounting			
Ingress Protection	Front Panel: IP40					
Environmental						
Operating Temperature		-20	~ +70°C			
Storage Temperature	-30 ~ +80°C					
Ambient Relative Humidity		10 ~ 90% RH,	, non-condensing			

1.4.2 TPD-280-H/280U-H/280-Mx/283-H/283-Mx/ 283U-H/283U-Mx

Models		TPD-280-H	TPD-280U-H	TPD-283-H		TPD-283U-H		
		TPD-280-Mx		TPD-283-M>	x	TPD-283U-Mx		
CPU Module								
CPU			32-bit	RISC CPU				
Mamany Evinan	sion	-	16 MB SDRAM /	-		16 MB SDRAM /		
Memory Expan	SION		16 MB Flash			16 MB Flash		
Real Time Clock	(RTC)	-	Yes	-		Yes		
Buzzer				Yes				
Rotary Switch (0~9)			Yes				
		Commu	unication Interface					
Ethernet		-	-	RJ-45 x	1, 10/1	LOO Base-TX		
Serial Port		RS-485 (includ	ing Self-Tuner)	-		RS-485 (including Self-Tuner)		
USB 1.1 Client		-	Firmware update only	-	-			
		MMI (Mai	in Machine Interface	.)				
1.05		2.8 TFT (Resolution 240 x 320 x 65535 colors), defective pixels <= 3 for "H" versions						
LCD		2.8 TFT (Resolu	tion 240 x 320 x 16),	defective pixels <=	= 3 for '	"Mx" versions		
Backlight Life			20,00	00 hours				
Brightness			160	cd/m2				
Touch Panel			Resist	ive Touch				
Reset Button		Yes						
			Electrical					
Powered from ⁻	Terminal Block	+12 ~ +4	18 Vdc	-		+12 ~ +48 VDC		
Powered from	PoE	-		IEEE 802	.3af, Cla	ass1 (48 V)		
Power Consum	ption		1	.5 W				
			Mechanical					
Dimensions	"H" Version	119 x 7	6 x 33	119 x 76 x 32		119 x 76 x 33		
(W x L x H) (Unit: mm)	"Mx" Version	127 x 92	2 x 31	127 x 92 x 30		127 x 92 x 31		
Installation			Wall N	Nounting				
Ingress Protect	ion	Front Panel: IP40						
		Er	nvironmental					
Operating Tem	perature	-20 ~ +70°C						
Storage Tempe	rature	-30 ~ +80°C						
Ambient Relativ	ve Humidity	10 ~ 90% RH, non-condensing						

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1.4.3 TPD-430/430-EU/433/433-EU

Models	TPD-430	TPD-430-EU	TPD-433	TPD-433-EU					
CPU Module									
CPU		32-bit	RISC CPU						
Memory Expansion		16 MB SDRAM /8 MB Flash							
Real Time Clock (RTC)			Yes						
Buzzer			Yes						
Rotary Switch (0 ~ 9)			Yes						
Communication Interface									
Ethernet		-	RJ-45 x 1, 10,	/100 Base-TX					
Serial Port		RS-485 (inclu	uding Self-Tuner)						
USB 1.1 Client		Firmware	e update only						
MMI (Main Machine Interface)	I								
LCD	4.3"	TFT(Resolution 480 X	272 X 16), defective pix	els <= 3					
Backlight Life		20,0	00 hours						
Brightness		400 cd/m2							
Touch Panel			Yes						
LED Indicator		Yes							
Reset Button			Yes						
Electrical									
Powered from Terminal Block		+10 ^	~ +30 Vdc						
Powered from PoE		-	IEEE 802.3af,	Class1 (48 V)					
Power Consumption		2	2.5 W						
Mechanical									
	126 mm x 82	126 mm x 92 mm x	126 mm x 82 mm x	126 mm x 92 mm x					
Dimensions (W x L x H)	mm x 24 mm	29 mm	24 mm	29 mm					
	Wall Mount	Wall Mount	Wall Mount	Wall Mount					
Installation	(Suitable for the	(Suitable for the	(Suitable for the	(Suitable for the					
instanction	outlet box in	European 86mm x	outlet box in United	European 86mm x					
	United States)	86mm outlet box)	States)	86mm outlet box)					
Environmental									
Operating Temperature		-20	~ +50°C						
Storage Temperature		-30	~ +80°C						
Ambient Relative Humidity		10 ~ 90% RH	, non-condensing						

1.4.4 TPD-430-H/430-H-EU/433-H/433-H-EU

Models	TPD-430	TPD-430-EU	TPD-433	TPD-433-EU				
CPU Module								
CPU		32-bit	RISC CPU					
Memory Expansion		16 MB SDR	AM /8 MB Flash					
Real Time Clock (RTC)			Yes					
Buzzer			Yes					
Rotary Switch (0 ~ 9)			Yes					
Communication Interface								
Ethernet		-	RJ-45 x 1, 10,	/100 Base-TX				
Serial Port		RS-485 (inclu	uding Self-Tuner)					
USB 1.1 Client		Firmware	e update only					
MMI (Main Machine Interface)	I							
LCD	4.3"	TFT(Resolution 480 X	272 X 16), defective pix	els <= 3				
Backlight Life		20,0	00 hours					
Brightness		400) cd/m2					
Touch Panel			Yes					
LED Indicator		Yes						
Reset Button			Yes					
Electrical								
Powered from Terminal Block		+12 ^	~ +48 Vdc					
Powered from PoE		-	IEEE 802.3af,	Class1 (48 V)				
Power Consumption		2	2.5 W					
Mechanical								
	126 mm x 82	126 mm x 92 mm x	126 mm x 82 mm x	126 mm x 92 mm x				
Dimensions (W x L x H)	mm x 24 mm	29 mm	24 mm	29 mm				
	Wall Mount	Wall Mount	Wall Mount	Wall Mount				
Installation	(Suitable for the	(Suitable for the	(Suitable for the	(Suitable for the				
Installation	outlet box in	European 86mm x	outlet box in United	European 86mm x				
	United States)	86mm outlet box)	States)	86mm outlet box)				
Environmental								
Operating Temperature		-20	~ +50°C					
Storage Temperature		-30 ~ +80°C						
Ambient Relative Humidity		10 ~ 90% RH	, non-condensing					

1.4.5 TPD-432F/433F/433F-H/433-M2

		/						
Models	TPD-432F	TPD-433F	TPD-433F-H	TPD-433-M2				
CPU Module								
CPU	32-bit RISC CPU							
Memory Expansion	16 MB SDRAM /8 MB	Flash	16 MB SDRA	M /16 MB Flash				
Real Time Clock (RTC)		Yes						
Buzzer		Yes						
Rotary Switch (0 ~ 9)		Yes						
Communication Interface								
Ethernet	-	RJ-	45 x 1, 10/100 Ba	se-TX				
COM 1	RS-485 (including Self-Tuner)	RS-4	85 (including Self	-Tuner)				
COM 2	RS-485 (including Self-Tuner)		RS-232 (3-pin)					
USB 1.1 Client		Firmware update	only					
MMI (Main Machine Interface)								
LCD	4.3" TFT(Resolution	4.3" TFT(Resolution 480 X 272 X 16), defective pixels <= 3						
Backlight Life		20,000 hours						
Brightness		400 cd/m2						
Touch Panel		Yes						
LED Indicator		Yes						
Reset Button		Yes						
Electrical								
Powered from Terminal Block	+10 ~ +30 Vdc	+10 ~ +30 VDC	+12 ~	+48 Vdc				
Powered from PoE	-	IEE	E 802.3af, Class1	(48 V)				
Power Consumption		2.5 W						
Mechanical								
Dimensions (W x L x H)	14	0 mm x 87 mm x 4	42 mm					
Installation		Wall Mounting	5					
Ingress Protection		Front Panel: IP4	10					
Environmental								
Operating Temperature		-20 ~ +50°C						
Storage Temperature		-30 ~ +80°C						
Ambient Relative Humidity	10 ^	⁻ 90% RH, non-cor	Idensing					

1.4.6 TPD-703/703-64

Models	TPD-703	TPD-703-64					
CPU Module							
CPU	32-bit	RISC CPU					
Memory Expansion	16 MB SDRAM /16 MB Flash 64 MB SDRAM /64 MB Flash						
Real Time Clock (RTC)	Yes						
Buzzer		Yes					
Rotary Switch (0 ~ 9)		Yes					
Communication Interface							
Ethernet	RJ-45 x 1, 1	0/100 Base-TX					
COM 1	RS-485 (including Se	lf-Tuner); non-isolation					
COM 2	RS-232 (3-pir	n); non-isolation					
MMI (Main Machine Interface)							
LCD	7" TFT (Resolution 800 x 480 , 6	55535 colors), defective pixels <= 3					
Backlight Life	20,000 hours						
Brightness	250 cd/m2	400 cd/m2					
Touch Panel	4-wire, analog resistive	e; Light Transmission: 80%					
Reset Button		Yes					
Electrical							
Powered from Terminal Block	+12 ~	+48 VDC					
Powered from PoE	IEEE 802.3a	f, Class1 (48 V)					
Power Consumption	3	.6 W					
Mechanical							
Dimensions (W x L x H)	217 mm x 15	53 mm x 33 mm					
Installation	Wall N	Aounting					
Ingress Protection	Front P	anel: IP40					
Environmental							
Operating Temperature	-20 *	~ +60°C					
Storage Temperature	-30 *	~ +70°C					
Ambient Relative Humidity	10 ~ 90% RH,	non-condensing					

(inte

1.4.7 VPD-130/130N/132/132N/133/133N

Models	VPD-130	VPD-130N	VPD-132	VPD-132N	VPD-133	VPD-133N			
CPU Module									
CPU		32-bit RISC CPU							
Memory Expansion			16 MB SDRAM	√ /8 MB Flash					
Real Time Clock (RTC)			Ye	es					
Buzzer			Ye	es					
Rotary Switch (0 ~ 9)			Ye	es					
Communication Interface									
Ethernet		-			RJ-45 x 1, 10/	100 Base-TX			
COM1		85 (including Juner)	RS-485 (i	ncluding Self-T	uner) and RS-2	32 (3-pin)			
COM2		-		RS-485 (incluc	ding Self-Tuner)				
USB 1.1 Client			Firmware u	update only					
I/O Expansion									
I/O Expansion Bus		-		Yes, One o	f XV-boards				
MMI (Main Machine Interface)									
LCD	3.5" TFT (Resolution 240 x 320 x 16), defective pixels <= 3								
Backlight Life		20,000 hours							
Brightness			270 c	d/m2					
LED Indicator	Yes	-	Yes	-	Yes	-			
Touch Panel			Ye	es					
Reset Button			Ye	es					
Rubber Keypad	5 keys (Programmable)	-	5 keys (Programmable)	-	5 keys (Programmable)	-			
Electrical									
Powered from Terminal Block			+12 ~ +	-48 Vdc					
Powered from PoE		-			IEEE 802.3af,	Class1 (48 V)			
Power Consumption			2	W					
Mechanical									
Dimensions (W x L x H)			103 mm x 103	8 mm x 53 mm					
Installation	DIN-Rail Mounting and Panel Mounting								
Ingress Protection			Front Pa	nel: IP65					
Environmental									
Operating Temperature			-20 ~	+50°C					
Storage Temperature		-30 ~ +80°C							
Ambient Relative Humidity			10 ~ 90% RH, r	ion-condensin	g				

1.4.8 VPD-130-H/130N-H/132-H/132N-H/133-H/1 33N-H

Models	VPD-130-H	VPD-130N-H	VPD-132-H	VPD-132N-H	VPD-133-H	VPD-133N-H			
CPU Module									
CPU	32-bit RISC CPU								
Memory Expansion		16 MB SDRAM /16 MB Flash							
Real Time Clock (RTC)			Ye	es					
Buzzer			Ye	es					
Rotary Switch (0 ~ 9)			Ye	es					
Communication Interface	Communication Interface								
Ethernet		-			RJ-45 x 1, 10/	100 Base-TX			
COM1		85 (including ⁻ uner)	RS-485 (i	ncluding Self-1	「uner) and RS-2	32 (3-pin)			
COM2		-		RS-485 (inclue	ding Self-Tuner)				
USB 1.1 Client			Firmware u	update only					
I/O Expansion									
I/O Expansion Bus	Yes, One of X	Yes, One of XV-boards							
MMI (Main Machine Interface)									
LCD		3.5" TFT (Resolution 240 x 320 x 16), defective pixels <= 3							
Backlight Life		20,000 hours							
Brightness			270 c	d/m2					
LED Indicator	Yes	-	Yes	-	Yes	-			
Touch Panel			Y	es					
Reset Button			Ye	es					
Rubber Keypad	5 keys (Programmable)	-	5 keys (Programmable)	-	5 keys (Programmable)	-			
Electrical									
Powered from Terminal Block			+12 ~ +	-48 Vdc					
Powered from PoE		-			IEEE 802.3af,	Class1 (48 V)			
Power Consumption			2	W					
Mechanical									
Dimensions (W x L x H)			103 mm x 103	8 mm x 53 mm					
Installation		DIN-Rail Mounting and Panel Mounting							
Ingress Protection		Front Panel: IP65							
Environmental									
Operating Temperature			-20 ~	+50°C					
Storage Temperature			-30 ~	+80°C					
Ambient Relative Humidity			10 ~ 90% RH, r	on-condensin	g				

1.4.9 VPD-142/142N/143/143N

Models	VPD-142	VPD-142N	VPD-143	VPD-413N
CPU Module				
CPU	32-bit RISC CPU			
Memory Expansion	16 MB SDRAM /8 MB Flash			
Real Time Clock (RTC)			Yes	
Buzzer			Yes	
Rotary Switch (0 ~ 9)			Yes	
Communication Interface				
Ethernet		-	RJ-45 x 1, 10	/100 Base-TX
COM1	One	e set of RS-232 (3-pin) /	RS-485 (including Self	-Tuner)
COM2	One	e set of RS-232 (3-pin) /	RS-485 (including Self	-Tuner)
USB 1.1 Client		Firmware	e update only	
I/O Expansion				
I/O Expansion Bus		Yes, One	of XV-boards	
MMI (Main Machine Interface)				
LCD	4.3″	TFT (Resolution 480 x	272 x 16), defective pix	els <= 3
Backlight Life		20,00	00 hours	
Brightness		400	cd/m2	
LED Indicator	Yes	-	Yes	-
Touch Panel	Yes			
Reset Button			Yes	
Dubber Koused	5 keys	-	5 keys	-
Rubber Keypad	(Programmable)		(Programmable)	
Electrical				
Powered from Terminal Block	+12 ~ +48 VDC			
Powered from PoE	- IEEE 802.3af, Class1 (48		Class1 (48 V)	
Power Consumption	2.5 W			
Mechanical				
Dimensions (W x L x H)	131 mm x 105 mm x 54 mm			
Installation	DIN-Rail Mounting and Panel Mounting			
Ingress Protection	Front Panel: IP65			
Environmental				
Operating Temperature	-20 ~ +50°C			
Storage Temperature	-30 ~ +80°C			
Ambient Relative Humidity	10 ~ 90% RH, non-condensing			

1.4.10 VPD-173N/173N-64/173X/173X-64

Models		VPD-173N	VPD-173N-64	VPD-173X	VPD-173X-64
CPU Module	CPU Module				
CPU		32-bit RISC CPU			
Memory Expa	ansion	64 MB SDRAM /64	64 MB SDRAM /64	64 MB SDRAM /64	64 MB SDRAM /64
		MB Flash	MB Flash	MB Flash	MB Flash
Real Time Clo	ock (RTC)	Yes			
Buzzer			Y	es	
Rotary Switch	n (0 ~ 9)		Y	es	
Communicat	ion Interface				
Ethernet			RJ-45 x 1, 10	/100 Base-TX	
Serial Port	COM1	c) רכר כם	nin) or BS 49E (includ	ing Solf Tunor), 2500 V	(isolated
Serial Port	COM2	K3-232 (3-	pin) of RS-485 (includ	ing Self-Tuner); 2500 V	
I/O Expansio	n				
I/O Expansio	n Bus		-	Ye	es
MMI (Main N	Aachine Interface				
LCD		7" TFT (Resolution 800 x 480, 65535 colors), defective pixels <= 3			
Backlight Life		20,000 hours			
Brightness		250 cd/m2			
Touch Panel		4-wire, analog resistive; Light Transmission: 80%			
Reset Button		Yes			
Electrical					
Powered from	n Terminal Block	+12 ~ +48 VDC			
Powered from	n PoE	IEEE 802.3af, Class1 (48 V)			
Power Consu	mption	3.6 W			
Mechanical					
Dimensions (W x L x H)		217 mm x 153 mm x 33 mm			
Installation		Wall Mounting			
Ingress Protection		Front Panel: NEMA 4/IP65			
Environmental					
Operating Temperature		-10 ~ +60°C			
Storage Temperature		-20 ~ +70°C			
Ambient Relative Humidity		10 ~ 90% RH, non-condensing			

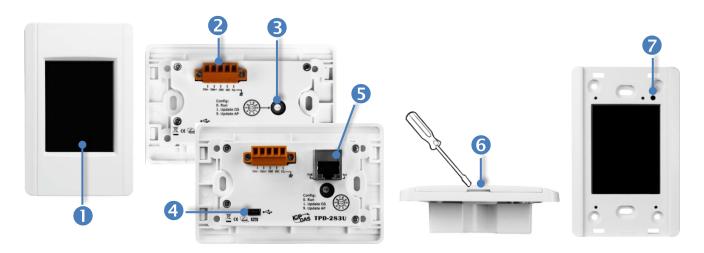
2. Hardware Information

This chapter provides a detailed description of the appearance, dimensions, pin assignments, mount the hardware for the TPD/VPD series product.

2.1 Appearance

2.1.1 TPD-280/283 Series Models

Models supported include TPD-280, TPD-280U, TPD-280-H, TPD-280U-H, TPD-283, TPD-283U, TPD-283-H and TPD-283U-H.



1.	2.8" TFT LCD with Touch Panel	
2.	Power/GND/RS-485 Connector (for TPD-280/280U/280-H/280U-H/283U/283U-H only)	
© <mark>88888</mark> 0	The TouchPAD device is equipped with a removable terminal block connector is	
	designed for easy and robust wiring. For more detailed information regarding the pin	
	assignments, refer to Section 2.2.1 TPD-280/283/430/433 Series Models.	
3.	Rotary Switch (0 ~ 9)	
	The Rotary Switch is used to set the configuration modes, as follows:	
	> For TPD-280/280-H:	
	0. Run Only: This mode is used for running programs.	

1. Update Only: This mode is used for updating programs.



For TPD-280U/283U:

0. Run: This mode is used to run the application. (Only one application on a TouchPAD)

- 1. Update OS: Update operating system of TouchPAD.
- 2. Update AP: Download an application to TouchPAD.

For TPD-280U-H:

0. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

For TPD-283/283-H:

0. Run & Update: Run or update the program. This mode is used in the development phase.

 Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device throught Ethernet.
 Run Only: Run the program.

For TPD-283U-H:

0. Run & Update (Ethernet): This is a special run mode which is used in the development stage. The TouchPAD device can be updated by a PC from the remote side through Ethernet.

1. Ethernet Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device through Ethernet.

2. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

4. USB Port (for TPD-280U/283U/280U-H/283U-H only)



The USB Port is used to downloading application programs.

5.

PoE and Ethernet RJ-45 Jack (for TPD-TPD-283/283U/283-H/283U-H only)



The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities. When an Ethernet link is detected and an Ethernet packet is received, the **Act LED (Green)** indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the **PoE LED (Orange)** indicator will be illuminated.

6. Cover Removal Slit

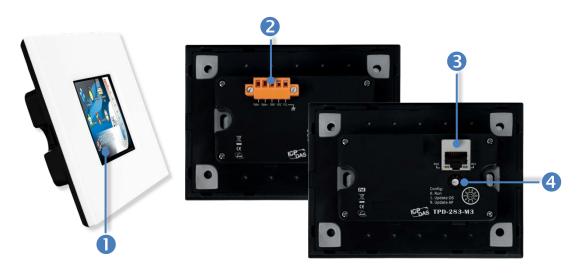
Use a flat-head screwdriver in this slit to remove the top cover on the TouchPAD device.

7. Reset Button

Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

2.1.2 TPD-280-Mx/283-Mx/283U-Mx Series Models

Models supported include TPD-280-M1, TPD-280-M2, TPD-280-M3, TPD-283-M1, TPD-283-M2, TPD-283-M3, TPD-283U-M1, TPD-283U-M2 and TPD-283U-M3.



1. 2.8" TFT LCD with Touch Panel

Power/GND/RS-485 Connector (*The TPD-283-Mx does not support this connector*) The TouchPAD device is equipped with a removable terminal block connector is designed for easy and robust wiring. For more detailed information regarding the pin assignments, refer to Section 2.2.1 TPD-280/283/430/433 Series Models.

3.

2.

PoE and Ethernet RJ-45 Jack (The TPD-280-Mx does not support this jack)

The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities. When an Ethernet link is detected and an Ethernet packet is received, the **Act LED (Green)** indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the **PoE LED (Orange)** indicator will be illuminated.

4. Rotary Switch $(0 \sim 9)$



The Rotary Switch is used to set the configuration modes, as follows:

For TPD-280-M1/M2/M3:

0. Run Only: This mode is used for running programs.

1. Update Only: This mode is used for updating programs.



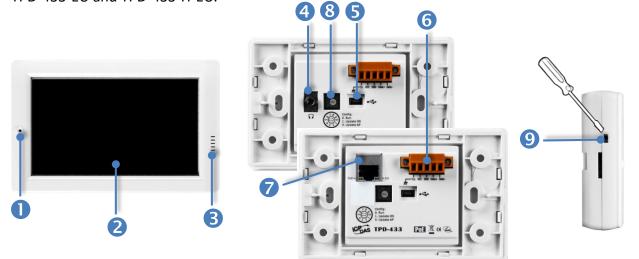
For TPD-283-M1/M2/M3 and TPD-283U-M1/M2/M3:

0. Run & Update: Run or update the program. This mode is used in the development phase.

Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device throught Ethernet.
 Run Only: Run the program.

2.1.3 TPD-430/433 Series Models

Models supported include TPD-430, TPD-430-H, TPD-430-EU, TPD-430-H-EU, TPD-433, TPD-433-H, TPD-433-EU and TPD-433-H-EU.



1.	Programmable LED Indicator
2.	4.3" TFT LCD with Touch Panel
3.	Buzzer
4.	Headphone Jack (for TPD-430/430-EU only)
5.	USB Port
	The USB Port is used to downloading application programs.
6.	Power/GND/RS-485 Connector
0	The TouchPAD device is equipped with a removable terminal block connector is
6 <mark>88888</mark> 5	designed for easy and robust wiring. For more detailed information regarding the pin
	assignments, refer to Section 2.2.1 TPD-280/283/430/433 Series Models.
7.	PoE and Ethernet RJ-45 Jack (for TPD-433/433-EU/433-H/433-H-EU only)
	The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX
	Ethernet port and features networking capabilities. When an Ethernet link is detected
	and an Ethernet packet is received, the Act LED (Green) indicator will be illuminated.
	When power is supplied via PoE (Power-over-Ethernet), the PoE LED (Orange) indicator
	will be illuminated.



8.

Rotary Switch (0 ~ 9)

The Rotary Switch is used to set the configuration modes, as follows:

For TPD-430/430-EU/433/433-EU:

- **0.** Run: This mode is used to run the application. (Only one application on a TouchPAD)
- 1. Update OS: Update operating system of TouchPAD.
- 9. Update AP: Download an application to TouchPAD.

For TPD-430-H/430-H-EU:

0. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

For TPD-433-H/433-H-EU:

0. Run & Update (Ethernet): This is a special run mode which is used in the development stage. The TouchPAD device can be updated by a PC from the remote side through Ethernet.

1. Ethernet Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device through Ethernet.

2. Run Only: Run the program.

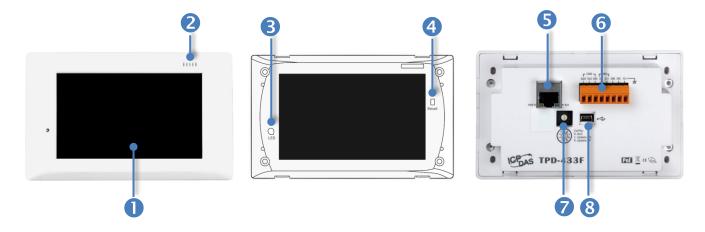
9. USB Force Update: Update a new application to the TouchPAD device through USB.

9. Reset Button (Left had Side)

Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

2.1.4 TPD-432F/433F Series Models

Models supported include TPD-432F, TPD-433F, TPD-433F-H and TPD-433-M2.



1.	4.3" TFT LCD with Touch Panel
2.	Buzzer
3.	Programmable LED Indicator

The Programmable LED is placed under the front cover of the TouchPAD device.

4. Reset Button

The reset button is placed under the front cover of the TouchPAD device, please remove this cover and use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.*

5.

PoE and Ethernet RJ-45 Jack (for TPD-433F/433F-H/433-M2 only)

The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities. When an Ethernet link is detected and an Ethernet packet is received, the **Act LED (Green)** indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the **PoE LED (Orange)** indicator will be illuminated.

6.

Power/GND/RS-485/RS-232 Connector

The TouchPAD device is equipped with a removable terminal block connector is designed for easy and robust wiring. For more detailed information regarding the pin assignments, refer to Section 2.2.2 TPD-432F Model and Section 2.2.3 TPD-433F Series Models.



Rotary Switch (0 ~ 9)

The Rotary Switch is used to set the configuration modes, as follows:

- $\sum_{\substack{\gamma \in \mathcal{I} \\ \gamma \neq 0}}^{A} \int_{0}^{5} \int_{0}^{6} \int_{0}^{1}$
- **For TPD-432F/433F:**
- 0. Run: This mode is used to run the application. (Only one application on a TouchPAD)
- **1. Update OS:** Update operating system of TouchPAD.
- 9. Update AP: Download an application to TouchPAD.

For TPD-433F-H/433-M2:

0. Run & Update (Ethernet): This is a special run mode which is used in the development stage. The TouchPAD device can be updated by a PC from the remote side through Ethernet.

1. Ethernet Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device through Ethernet.

2. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

8.

USB Port

The USB Port is used to downloading application programs.



1.	7" TFT LCD with Touch Panel
2.	Buzzer
3.	System LED Indicator
4.	Programmable LED Indicator
	the second process which the left is the set of the forest second fills. The shear defines

The System LED and Programmable LED is placed under the front cover of the TouchPAD device.

5. Reset Button

The reset button is placed under the front cover of the TouchPAD device, please remove this cover and use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.*

6.

Rotary Switch (0 ~ 9)



The rotary switch is placed under the front cover of the TouchPAD device, please remove this cover and use a flat-head screwdriver to set the configuration modes, as follows:

0. Run & Update: Run or update the program. This mode is used in the development phase.

Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device throught Ethernet.
 Run Only: Run the program.

7.

PoE and Ethernet RJ-45 Jack

The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities. When an Ethernet link is detected and an Ethernet packet is received, the Act LED (Green) indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the PoE LED (Orange) indicator will be illuminated.

8.

Power/GND/RS-232/RS-485 Connector

The TouchPAD device is equipped with a removable terminal block connector is designed for easy and robust wiring. For more detailed information regarding the pin assignments, refer to Section 2.2.4 TPD-703 Series Models.

2.1.6 VPD-130/130N Series Models

Models supported include VP-130, VPD-130N, VPD-130-H and VPD-130N-H.



1.	LED Indicator
2.	3.5" TFT LCD with Touch Panel
3.	Rubber Keypad (for VPD-130/130-H only)
4.	Power/GND/RS-232/RS-485 Connector
	The TouchPAD device is equipped with a removable terminal block connector is
	designed for easy and robust wiring. For more detailed information regarding the pin
	assignments, refer to Section 2.2.5 VPD-130 Series Models.
5.	Rotary Switch (0 ~ 9)
$\mathbb{Q}_{\mathcal{S}}^{\mathcal{S}} = \mathbb{Q}_{\mathcal{S}}^{\mathcal{S}}$	 The Rotary Switch is used to set the configuration modes, as follows: For VPD-130/130N:
	0. Run: This mode is used to run the application. (Only one application on a TouchPAD)
	1. Update OS: Update operating system of TouchPAD.
	9. Update AP: Download an application to TouchPAD.
	For VPD-130-H/130N-H:

- **0. Run Only:** Run the program.
- **9. USB Force Update:** Update a new application to the TouchPAD device through USB.

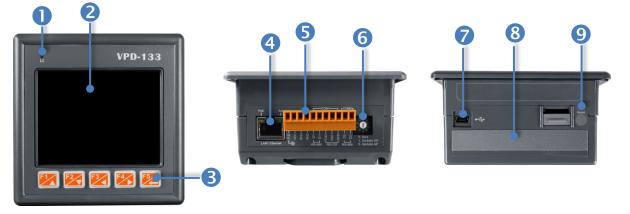
6. Reset Button

Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

7.	USB Port
~	The USB Port is used to downloading application programs.
8.	I/O Expansion Boards (Optional XV-board) (for VPD-130-H/130N-H only)
	Optional XV-board

2.1.7 VPD-132/132N/133/133N Series Models

Models supported include VP-132, VPD-132N, VPD-132-H, VPD-132N-H, VPD-133, VPD-133N, VPD-133-H and VPD-133N-H.



1.	LED Indicator
2.	3.5" TFT LCD with Touch Panel
3.	Rubber Keypad (for VPD-132/133/132-H/133-H only)
4.	PoE and Ethernet RJ-45 Jack (for VPD-133/133N/133-H/133N-H only)
	The TouchPAD device is equipped with an RJ-45 jack that is used as the $10/100$
PoE Act	Base-TX Ethernet port and features networking capabilities. When an Ethernet link is
	detected and an Ethernet packet is received, the Act LED (Green) indicator will be
LAN1 Ethernet	illuminated. When power is supplied via PoE (Power-over-Ethernet), the PoE LED
	(Orange) indicator will be illuminated.
5.	Power/GND/RS-232/RS-485 Connector
	The TouchPAD device is equipped with a removable terminal block connector is
	designed for easy and robust wiring. For more detailed information regarding the pin
	assignments, refer to Section 2.2.6 VPD-132/133 Series Models.
6.	Rotary Switch (0 ~ 9)
	The Rotary Switch is used to set the configuration modes, as follows:
901	
	> For VPD-132/132N/133/133N:
	0. Run: This mode is used to run the application. (Only one application on a
	TouchPAD)
	 Update OS: Update operating system of TouchPAD.
	9. Update AP: Download an application to TouchPAD.

For VPD-132-H/132N-H:

0. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

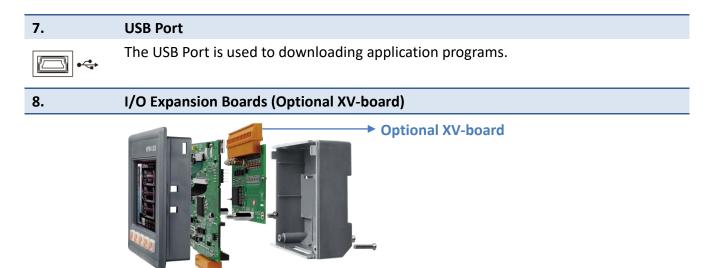
For VPD-133-H/133N-H:

0. Run & Update (Ethernet): This is a special run mode which is used in the development stage. The TouchPAD device can be updated by a PC from the remote side through Ethernet.

1. Ethernet Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device through Ethernet.

2. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.



Reset Button

9.

Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

2.1.8 VPD-142/142N/143/143N Series Models

Models supported include VP-142, VPD-142N, VPD-142-H, VPD-142N-H, VPD-143, VPD-143N, VPD-143-H and VPD-143N-H.



1.	LED Indicator
2.	4.3" TFT LCD with Touch Panel
3.	Rubber Keypad (for VPD-142/143/142-H/143-H only)
4.	Reset Button

Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

Rotary Switch (0 ~ 9)

The Rotary Switch is used to set the configuration modes, as follows:



5.

For VPD-142/142N/143/143N:

0. Run: This mode is used to run the application. (Only one application on a TouchPAD)

- 1. Update OS: Update operating system of TouchPAD.
- 9. Update AP: Download an application to TouchPAD.

For VPD-142-H/142N-H:

- **0. Run Only:** Run the program.
- **9. USB Force Update:** Update a new application to the TouchPAD device through USB.

For VPD-143-H/143N-H:

0. Run & Update (Ethernet): This is a special run mode which is used in the development stage. The TouchPAD device can be updated by a PC from the remote side through Ethernet.

1. Ethernet Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device through Ethernet.

2. Run Only: Run the program.

9. USB Force Update: Update a new application to the TouchPAD device through USB.

6. Power/GND/RS-232/RS-485 Connector

The TouchPAD device is equipped with a removable terminal block connector is designed for easy and robust wiring. For more detailed information regarding the pin assignments, refer to Section 2.2.7 VPD-142/143 Series Models.

PoE and Ethernet RJ-45 Jack (for VPD-143/143N/143-H/143N-H only)



7.

The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities. When an Ethernet link is detected and an Ethernet packet is received, the **Act LED (Green)** indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the **PoE LED (Orange)** indicator will be illuminated.

8.

9.

USB Port

The USB Port is used to downloading application programs.

I/O Expansion Boards (Optional XV-board)



2.1.9 VPD-173N/173X Series Models

Models supported include VP-173N, VPD-173N-64, VPD-173X and VPD-173X-64.



1.	7" TFT LCD with Touch Panel				
2.	L1 (LAN) and PWR (Power) LED Indicator				
3.	COM2 (RS-232/RS-485 Connector)				
_	The TouchPAD device is equipped with a removable terminal block connector is				
	designed for easy and robust wiring. For more detailed information regarding the				
	pin assignments, refer to Section 2.2.8 VPD-173N/173X Series Models.				
4.	COM1 (RS-232/RS-485 Connector)				
	The TouchPAD device is equipped with a removable terminal block connector is				
	designed for easy and robust wiring. For more detailed information regarding the				
	pin assignments, refer to Section 2.2.8 VPD-173N/173X Series Models.				
5.	Ethernet RJ-45 Jack				
	The TouchPAD device is equipped with an RJ-45 jack that is used as the 10/100				
	Base-TX Ethernet port and features networking capabilities. When an Ethernet link is				
	detected and an Ethernet packet is received, the Act LED (Green) indicator will be				
	illuminated. When power is supplied via PoE (Power-over-Ethernet), the PoE LED				
	(Orange) indicator will be illuminated.				



Power/GND Connector



6.

The use as the power supply applies to VPD-173N/173X series models. The valid power voltage range is from +12 to +48 V_{DC} . For more detailed information regarding the pin assignments, refer to Section 2.2.8 VPD-173N/173X Series Models.

7. Rotary Switch (0 ~ 9)



The rotary switch is placed under the front cover of the TouchPAD device, please remove this cover and use a flat-head screwdriver to set the configuration modes, as follows:

0. Run & Update: Run or update the program. This mode is used in the development phase.

Force Update: While the application run on the TouchPAD device seriously crashes, use this mode to update a new application to the TouchPAD device throught Ethernet.
 Run Only: Run the program.

8. Reset Button

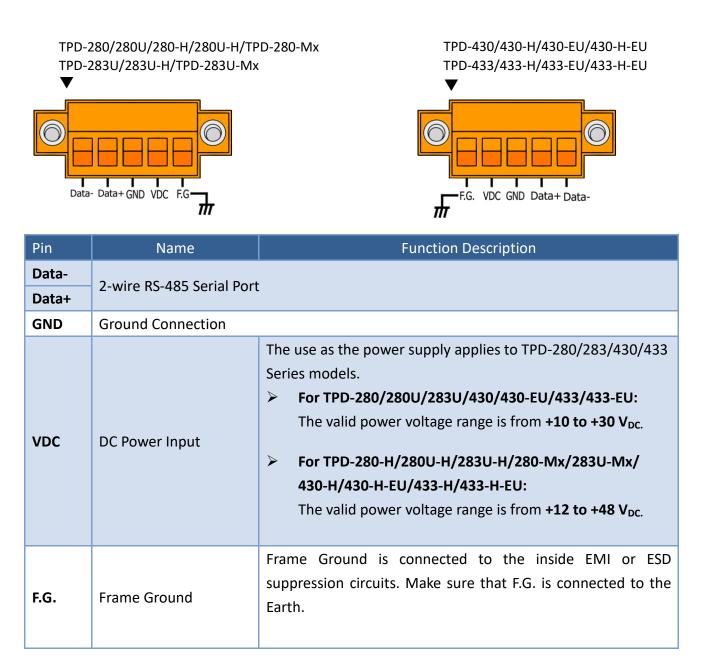
Use a flat-head screwdriver to press this button to reset the TouchPAD device. *Note: The reset* button does not behave as a reboot to the whole system, only resets the microcontroller and this is not enough to make the program downloading successful. Always cut the power then turn it on before downloading programs.

9.	I/O Expansion Boards (Optional XV-board) (for VPD-173X/173X-64 only)
----	--

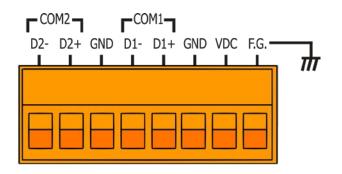
2.2 Pin Assignments

2.2.1 TPD-280/283/430/433 Series Models

Models supported include TPD-280, TPD-280U, TPD-280-H, TPD-280U-H, TPD-280-Mx, TPD-283, TPD-283U, TPD-283U-H, TPD-283U-Mx, TPD-430, TPD-430-H, TPD-430-EU, TPD-430-H-EU TPD-433, TPD-433-H, TPD-433-EU and TPD-433-H-EU.



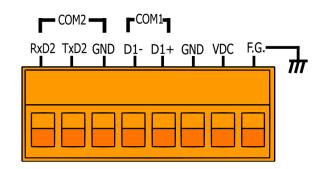
2.2.2 TPD-432F Model



Pin	Name Function Description					
D2-						
D2+	2-wire RS-485	For COM2 Serial Port				
GND						
D1-	2-wire RS-485	For COM 1 Serial Port				
D1+	2-WIE N3-465					
GND	Ground Connection	Ground Connection				
VDC	DC Power Input The use as the power supply applies to TPD-432F . The valid power voltage range is from +10 to +30 V _{DC} .					
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.				

2.2.3 TPD-433F Series Models

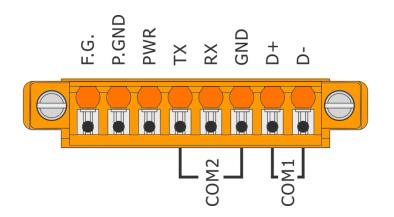
Models supported include TPD-433F, TPD-433F-H and TPD-433-M2.



Pin	Name	Function Description		
RxD2				
TxD2	3-wire RS-232	For COM2 Serial Port		
GND				
D1-	2-wire RS-485	For COM 1 Social Port		
D1+	2-WITE K3-485	For COM 1 Serial Port		
GND	Ground Connection			
VDC	DC Power Input	The use as the power supply applies to TPD-433F . The valid power voltage range is from +10 to +30 V _{DC} . The use as the power supply applies to TPD-433F-H/433-M2 . The valid power voltage range is from +12 to +48 V _{DC} .		
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.		

2.2.4 TPD-703 Series Models

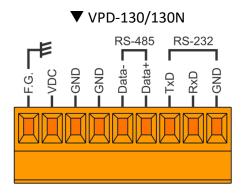
Models supported include TPD-703 and TPD-703-64.

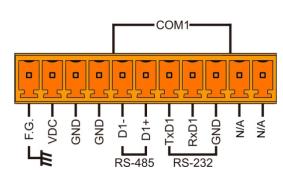


Pin	Name	Function Description				
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.				
P.GND	Ground Connection					
PWR	DC Power Input	wer Input The use as the power supply applies to TPD-703/703-64 Series models. The valid power voltage range is from +12 to +48 V _{DC} .				
Тх						
Rx	3-wire RS-232	For COM2 Serial Port				
GND						
D+	2-wire RS-485	For COM 1 Social Port				
D-	2-WILE N3-405	For COM 1 Serial Port				

2.2.5 VPD-130 Series Models

Models supported include VPD-130, VPD-130N, VPD-130-H and VPD-130N-H.



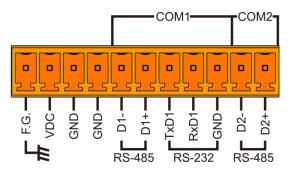


Pin		Name	Function Description			
F.G.		Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.			
VDC		DC Power Input	The use as the power supply applies to VPD-130(N)/130(N)-H Series models. The valid power voltage range is from +12 to +48 V _{DC} .			
GND		Ground Connection				
GND		Ground Connectior	1			
Data-	D1-	2				
Data+ D1+		2-wire RS-485	For COM1 Serial Port			
TxD						
RxD		3-wire RS-232				
GND						

▼ VPD-130-H/130N-H

2.2.6 VPD-132/133 Series Models

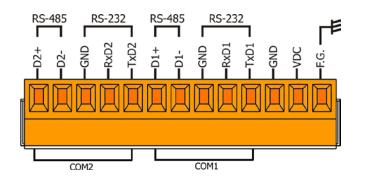
Models supported include VPD-132, VPD-132N, VPD-132-H, VPD-132N-H, VPD-133, VPD-133N, VPD-133-H and VPD-133N-H.



Pin	Name Function Description					
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.				
VDC	DC Power Input	The use as the power supply applies to VPD-132(N)/133(N)/ 132(N)-H/133(N)-H Series models. The valid power voltage range is from +12 to +48 V_{DC} .				
GND	Ground Connection					
GND	Ground Connection					
D1-						
D1+	2-wire RS-485					
TxD1		For COM1 Serial Port				
RxD1	3-wire RS-232					
GND						
D2-	2 wire DC 495	For COM2 Social Port				
D2+	2-wire RS-485	For COM2 Serial Port				

2.2.7 VPD-142/143 Series Models

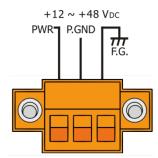
Models supported include VPD-142, VPD-142N, VPD-143, VPD-143N, VPD-142-H, VPD-142N-H, VPD-143-H and VPD-143N-H.

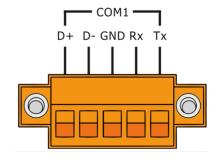


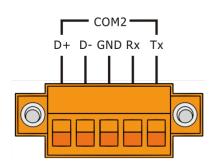
Pin	Name	Function Description			
D2+	2-wire RS-485				
D2-	2-WITE K3-465				
GND		For COM2 Serial Port			
RxD2	3-wire RS-232				
TxD2					
D1+					
D1-	2-wire RS-485				
GND		For COM1 Serial Port			
RxD1	3-wire RS-232				
TxD1					
GND	Ground Connection				
VDC	DC Power Input	The use as the power supply applies to VPD-142(N)/143(N)/142(N)-H/143(N)-H Series models. The valid power voltage range is from +12 to +48 V _{DC} .			
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.			

2.2.8 VPD-173N/173X Series Models

Models supported include VPD-173N, VPD-173N-64, VPD-173X and VPD-173X-64.





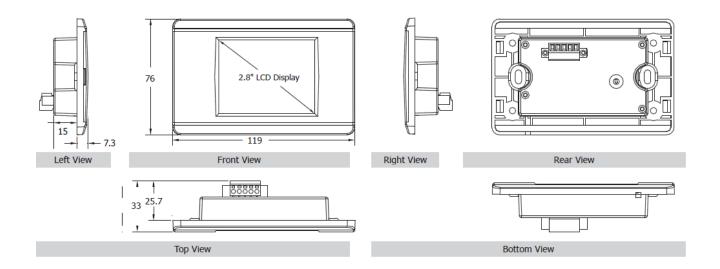


Pin	Name	Function Description					
PWR	DC Power Input	TheuseasthepowersupplyappliestoVPD-173N/173N-64/173X/173X-64.The validpower voltagerange is from +12 to +48 Vpc.					
P.GND	Power Ground Connection	on					
F.G.	Frame Ground	Frame Ground is connected to the inside EMI or ESD suppression circuits. Make sure that F.G. is connected to the Earth.					
D+							
D-	2-wire RS-485						
GND	or	For COM1 Serial Port					
Rx	3-wire RS-232						
Тх							
D+							
D-	2-wire RS-485						
GND	or	For COM 2 Serial Port					
Rx	3-wire RS-232						
Тх							

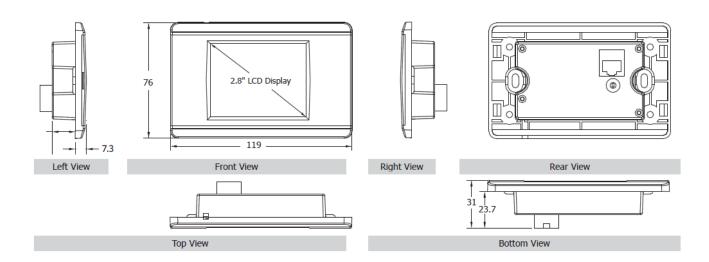
2.3 Dimensions

2.3.1 TPD-280/283 Series Models

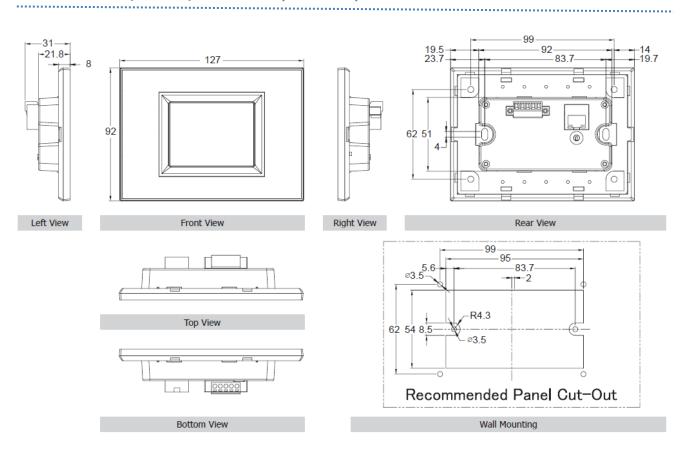
> TPD-280/280U/280-H/280U-H (Units: mm)



> TPD-283/283U/283-H/283U-H (Units: mm)

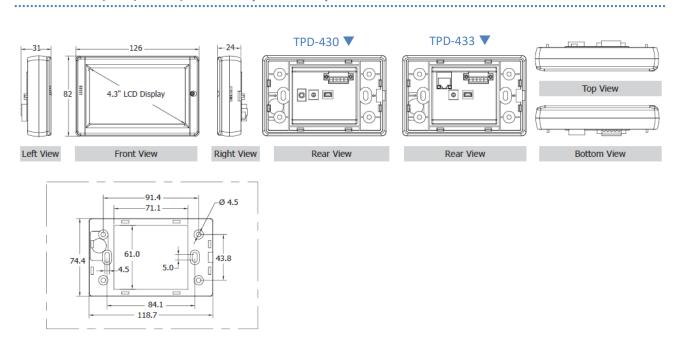


> TPD-280-Mx/283-Mx/283U-Mx (Units: mm)



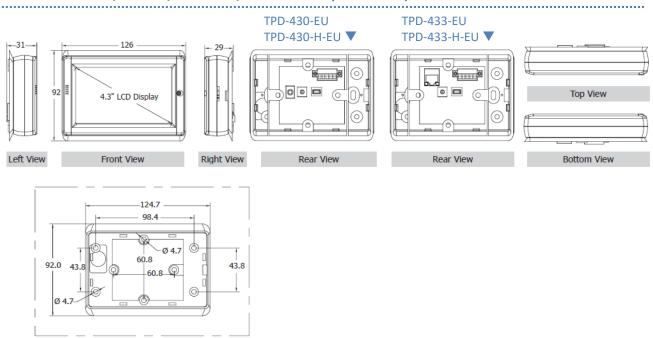
2.3.2 TPD-430/432/433/703 Series Models

> TPD-430/433/430-H/433-H (Units: mm)



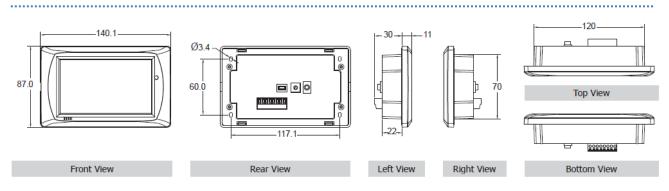
> TPD-430-EU/433-EU/430-H-EU/433-H-EU (Units: mm)

Wall Mounting

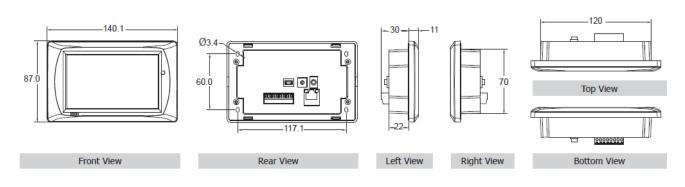


Wall Mounting

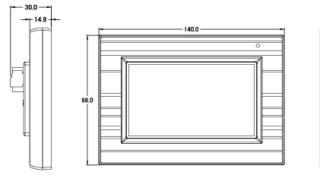
TPD-432F (Units: mm)

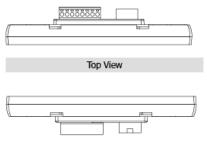


> TPD-433F/433F-H (Units: mm)



TPD-433-M2 (Units: mm)



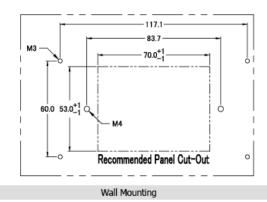


Left View

Front View

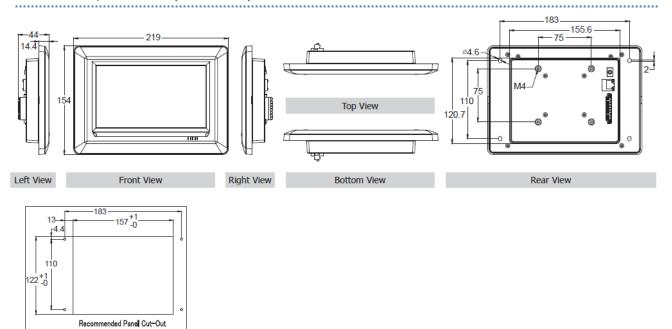
Right View

Bottom View



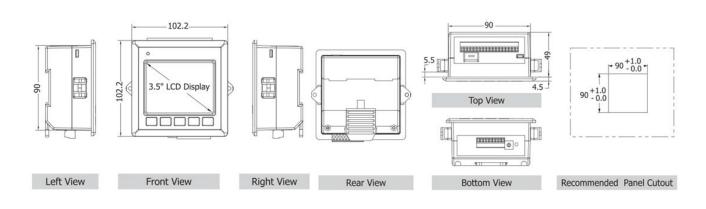
> TPD-703/703-64 (Units: mm)

Wall Mounting

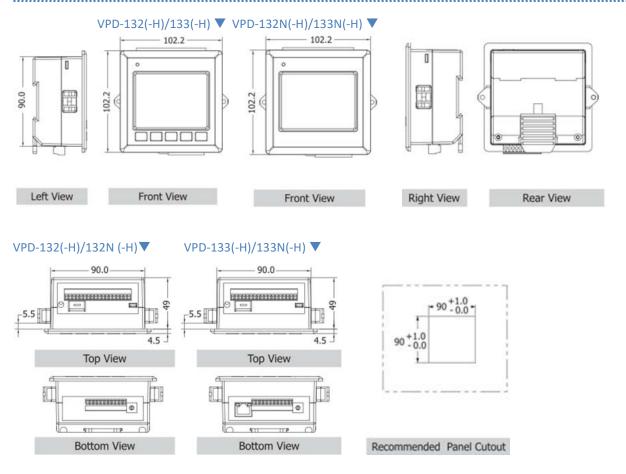


2.3.3 VPD-130/132/133 Series Models

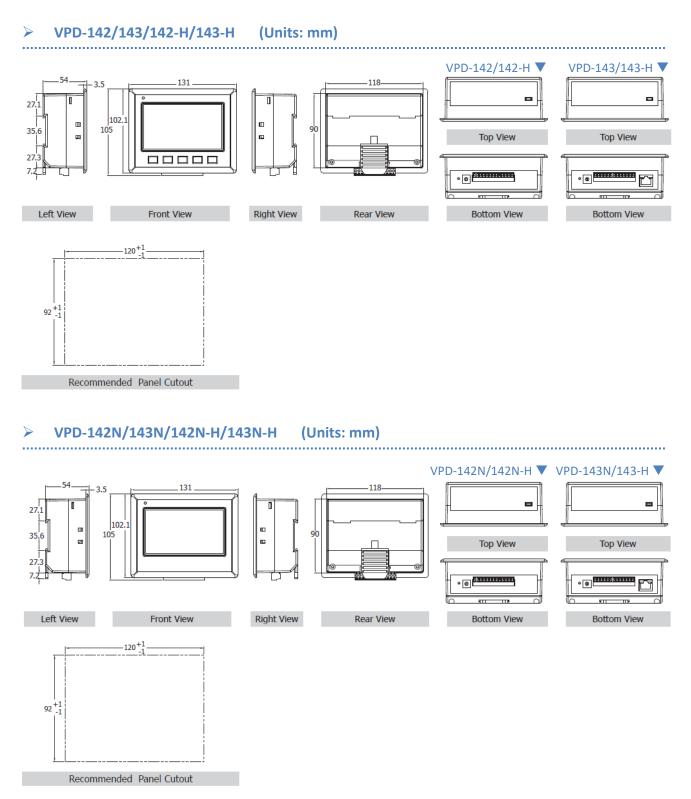
VPD-130/130N/130-H/130N-H (Units: mm)



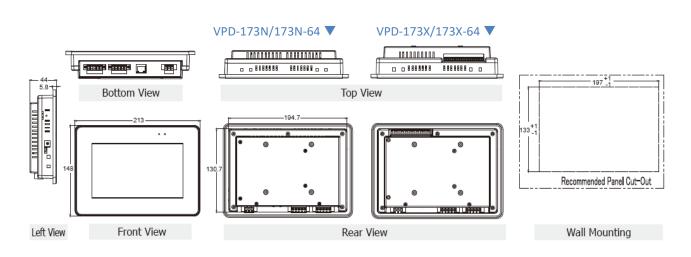
VPD-132/132N/132-H/132N-H/133/133N/133-H/133N-H (Units: mm)



2.3.4 VPD-142/143/173N Series Models



> VPD-173N/173N-64/173X/173X-64 (Units: mm)



.....

2.4 Mounting the Hardware

2.4.1 Wall Mounting

For TPD-280/280U/280-H/280U-H/283/TPD-283U/283-H/283U-H (2.8")







For TPD-430-EU/433-EU/430-H-EU/433-H-EU (4.3")



For TPD-430/433/430-H/433-H (4.3")





For TPD-432F/433F/433F-H (4.3")





For TPD-703/703-64 (7")



2.4.2 DIN-Rail Mounting

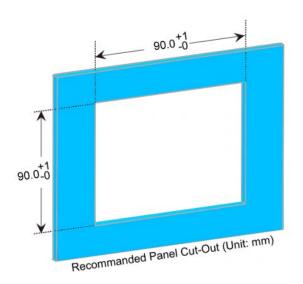
The VPD Series device can be mounted by attaching the bottom of the chassis to a DIN-Rail or the wall. The DIN-Rail mounts are available in three size, and enable a variety of ICP DAS devices to be mounted.

Part Number	Maximum Number of Modules	Dimensions
DRS-125	2	125 mm x 35 mm
DRS-240	3	240 mm x 35 mm
DRS-360	5	360 mm x 35 mm



2.4.3 Panel Mounting

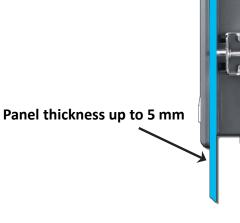
The VPD Series device can be mounted on a panel of maximum thickness 5 mm. Adequate access space can be available at the rear of the instrument panel for wiring and servicing purposes.



1. Prepare the panel and cut the hole to the specified size. The detailed about panel cut-out size depends on the type of VPD Series, please refer to Section 2.3 Dimensions.

2. Attach the View PAC to the cut-out hole.





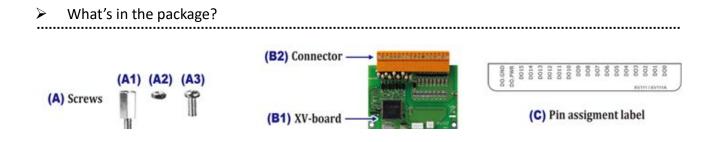
- 3. Insert the panel mounting clips into the upper and lower ventilation holes.
- 4. Screw the panel mounting clips to the panel.



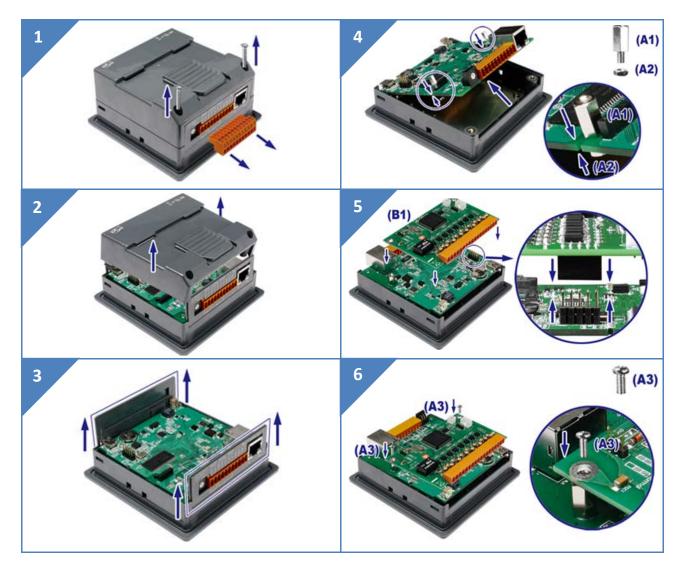


A Note: Recommended Screw Torque: 3.4 ~ 4.5 kgf-cm.

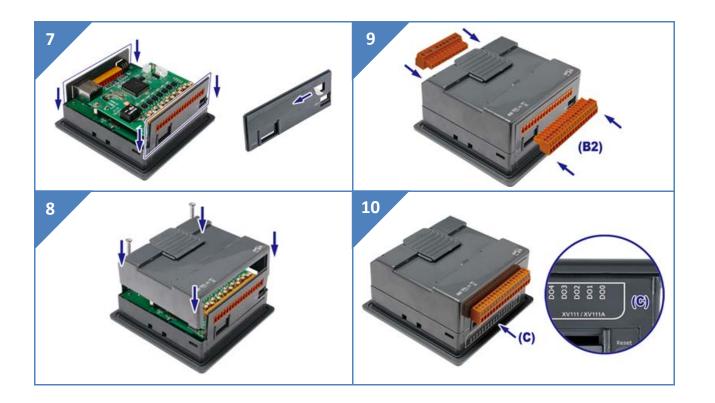
2.4.4 XV-boards Assembly on the VPD Series



Follow the procedure described below:



TPD/VPD Series HMI Device User Manual



3. Getting Started

This chapter provides a basic overview of how to install, configure and operate TouchPAD device.

3.1 Obtaining/Installing the HMIWorks Software

First of all, you should **install the HMIWorks development software on your PC**. HMIWorks is the development tools for the TouchPAD devices.

The **HMIWorks** can be obtained from either the companion CD-ROM, the ICP DAS FTP site, or the ICP DAS web site. The location of the install files on the CD and the download addresses are shown below:





1. Double-click the **"HMIWorks_STD_vxxx_setup.exe"** file icon to execute the driver installation program.



2. Once the driver installation is complete, double-click the

"HMIWorks_STD_vxxx_Update_xx.exe" file icon to execute the driver installation update program.

Follow the steps as suggested by the HMIWorks setup wizard to finish the installation. For more detailed information related to the driver installation, refer to <u>HMIWorks Software user manual</u>.

3.2 Create a New Project in the HMIWorks

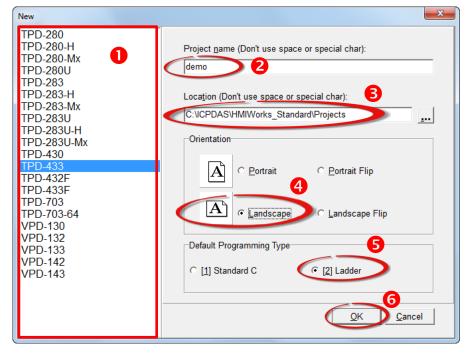
Step 1: Double click the HMIWorks shortcut on desktop to open the HMIWorks software.

Step 2: Click the "New Project" icon to create a new project.



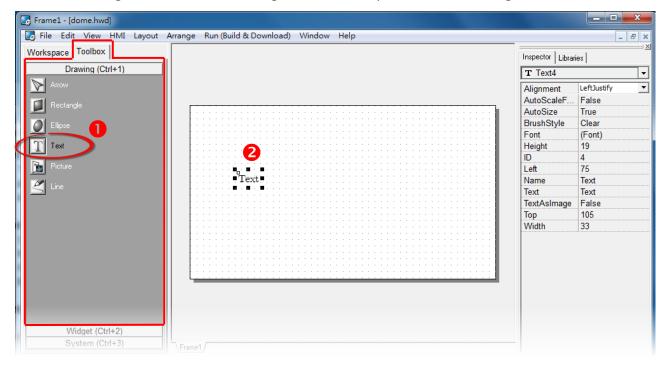
Step 3: In the "New" dialog box, configure the parameters for the new project as follows:

- 1. Click the name of the TouchPAD model to select it (e.g., TPD-433).
- 2. Enter a name for the project (e.g., dome).
- 3. Select the location where the project should be saved (Use the default path).
- 4. Select the orientation for the display (e.g., Landscape).
- 5. Select the Default Programming Type (e.g., Ladder).
- 6. Click the "OK" button to save the configuration and close the dialog box.



Step 4: The following example creates a simple procedure that displays the string **"Hello TouchPAD!"** on the screen of the TouchPAD device.

- 1. Click the **"Text"** icon from the "Toolbox" pane.
- 2. Drag and click the **"Text"** tag to the desired position on the design frame.



3. Enter the **"Hello TouchPAD!"** in the "Text" field from the "Inspector" pane and press "Enter" key.

		IMI	Layout	Arrange	Run (Build & Download) Window Help		- 5
Vorkspace			,	a	Inspec	ctor	es
Dra	wing (Ctrl	+1)			T Te	ext4	
Arrow Arrow						ScaleF	LeftJustify False
Ellipse						hStyle	True Clear
T Text					Font Heigh		(Font) 19
Picture					ID Left		4 75 3
Line					Hello TouchPAD!		Text Hello TouchPAD!
					Textra Top Width	Asimage h	Faise 105 123
	dget (Ctrl-						

4. Click the " … " icon in the "Font" field from the "Inspector" pane to setting the text size, style, color, etc.

🕞 Frame1 - [dome.hwd]						
💽 File Edit View HMI Layout Arr	range Run (Build & Download	d) Window Help				_ 8 ×
Workspace Toolbox Drawing (Ctrl+1)					Inspector Librarie	
Arrow Rectangle Ellipse	Font		x		AutoScaleF AutoSize BrushStyle Font	LeftJustify False True Clear (Font) ···)
 Text Picture ∠ Line 	Font: Cm Cmsc Cmss Cmtt	Style: Regular Regular Bold Italic	Size: 18 <u>QK</u> 10 <u>Cancel</u> 14 <u>Cancel</u> 18 <u>Q</u> 14 <u>2</u> 14 <u>2</u> 20 <u>22</u> 24 •	•	ID Left Name Text TextAsImage	19 4 75 Text Helio TouchPADI False 105 123
Widget (Ctrl+2) System (Ctrl+3) Results Output Errors	Effect Color	Note The fonts may hav differences betwe you design in HMI' and what you actu on TouchPAD.	re slight en what Works			×

 The creation of the string "Hello TouchPAD!" sample is now complete, it can be uploaded to the TouchPAD device, refer to <u>Section 3.3 "Supply Power to the TouchPAD</u>" and <u>Section 3.4 "Downloading Methods for TouchPAD</u>" for more details.

Frame1 - [dome.hwd]			_ D _ X
🛃 File Edit View HMI Layout Arrang	ge Run (Build & Download) Window Help		_ 8 ×
Workspace Toolbox		Inspector Librari	es
Drawing (Ctrl+1)		T Text4	~
Arrow		Alignment	LeftJustify
Rectangle	[·····	AutoScaleF	False
		AutoSize BrushStyle	True Clear
		Font	(Font) ···
T Text		Height	28
Picture		ID Left	4 75
	Hello TouchPAD!	Name	Text
Line	-Hello Touchi AD:	Text	Hello TouchPAD!
		TextAsImage	False
		Тор	105
		Width	181
Widget (Ctrl+2) System (Ctrl+3)			



3.3 Supply Power to the TouchPAD

The power supply is divided into two kinds, namely Ethernet power supply (PoE) and DC power supply. The detailed wiring information is as follows:

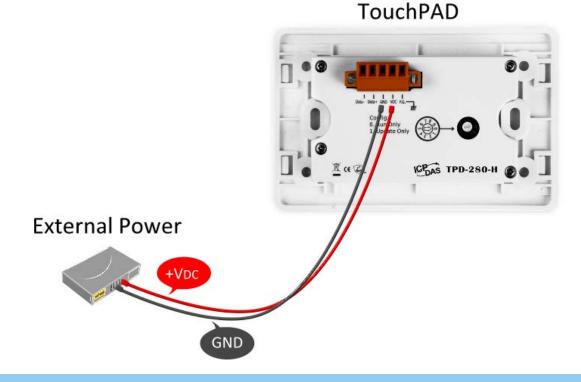
3.3.1 DC Power Supply

Step 1: Connect the External Power Supply (+24 V) to the VDC pin on the TouchPAD device.

The valid power voltage range depends on the type of TPD/VPD Series device. Please refer to the table below:

Model	TPD VDP	TPD-280/280U/283U TPD-430/430-EU TPD-433/433-EU TPD-432F/433F -	TPD-280-H/208U-H/283U-H/280-Mx/283U-Mx TPD-430-H/433-H/430-H-EU/433-H-EU TPD-433F-H/433-M2 TPD-703/703-64 VPD-130(N)/130(N)-H VPD-132(N)/132(N)-H VPD-133(N)/133(N)-H VPD-142(N) /143(N)-H VPD-173N/173N-64/173X/173X-64
Power li	nput	+10 ~ 30 VDC	+12 ~ +48 VDC

Step 2: Connect the External Power Supply GND to the GND pin on the TouchPAD device.



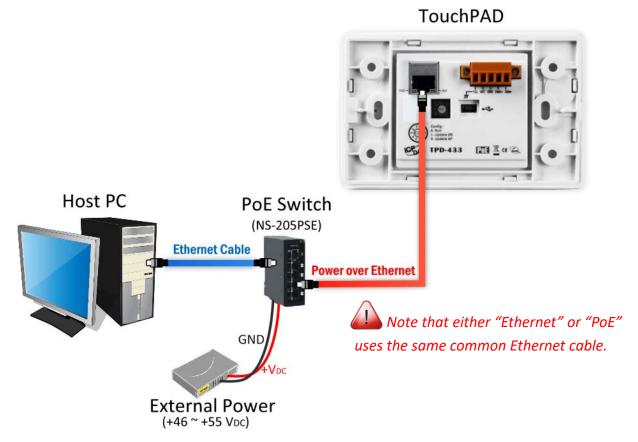
3.3.2 PoE Power Supply

When using PoE devices such as the TPD-283(-H)/283U(-H)/283(U)-Mx, TPD-433(-H)/433(-H)-EU/ 433F(-H)/433-M2/703(-64) and VPD-133(N)(-H)/143(N)(-H)/173N(-64)/173X(-64), you can incorporate the ICP DAS **"PoE"** switch, the **"NS-205PSE"**, as the power source. The NS-205PSE automatically detects any connected devices, whether they are PoE devices or not. This mechanism ensures that the NS-205PSE will function simultaneously with both PoE and non-PoE devices.



- 1. When acting as a power source for a PoE device, the NS-205PSE requires a power input ranging from +46 V_{DC} to +55 V_{DC} .
- 2. PoE (Power over Ethernet) means that the Ethernet cable conveys not only data but also power.

Step 1: Connect both the TouchPAD device and the Host PC to the same sub network or use a Power over Ethernet Switch (e.g., an NS-205PSE) and supply power to the TouchPAD device via the PoE Switch.



3.4 Downloading Methods for TouchPAD

The downloading applications program to the TouchPAD device is divided into three methods, RS-485, Ethernet and USB. The detailed wiring and configuration information is as follows:

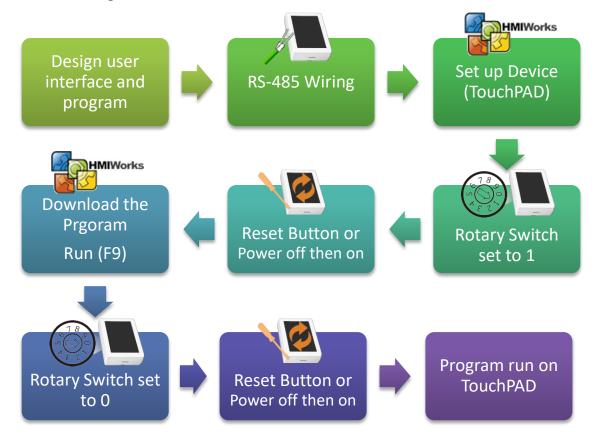
3.4.1 Setup RS-485-downloaded Devices

The TouchPAD Series models listed below use RS-485 to download the HMIWorks-built applications into TouchPAD:

☑ TPD-280	☑ TPD-280-M1/M2/M3
☑ TPD-280-H	

3.4.1.1 Applications are downloaded through RS-485

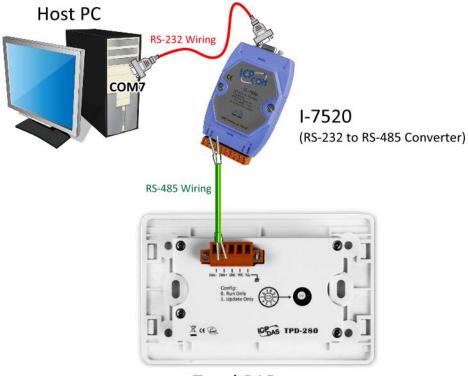
> The following flow chart describes the RS-485-downloaded devices.



Follow the procedure described below:

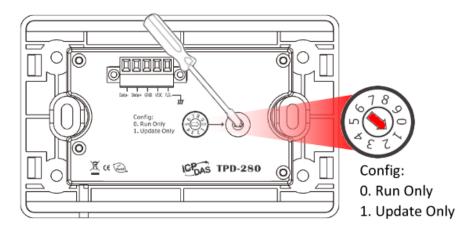
Step 1: Attach a power supply to the TouchPAD device. Refer to <u>Section 3.3 "Supply Power to the</u> <u>TouchPAD"</u> for more details.

Step 2: Connect the TouchPAD device to the Host PC using an I-7520 module (Option).



TouchPAD

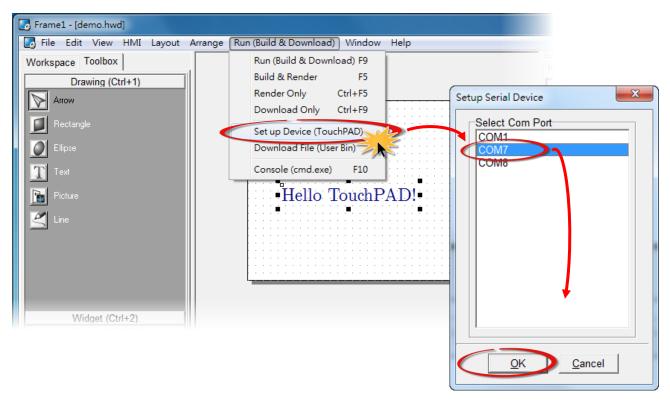
Step 3: Use a flat-head screwdriver to set the **Rotary Switch** on the TouchPAD device to **"Update Only" mode (position 1)**. **Reboot the TouchPAD device** and then setting is complete. *Note that the default configuration is "Run Only" mode (position 0)*.



Note: Before downloading programs to the TouchPAD device, be sure to set up the TouchPAD device to connect to it first.

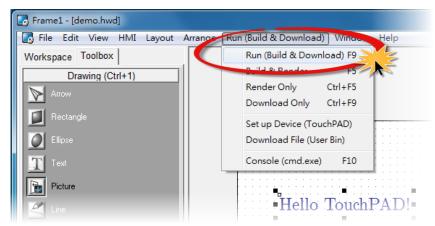
Step 4: In the HMIWorks software, click the "Set up Device (TouchPAD)" item from the "Run (Build & Download)" menu to open "Select Com Port" dialog box.

Step 5: In the "Select Com Port" dialog box, **Select the COM Port** (e.g., COM7) depend on your PC COM Port that connect to TouchPAD device and click the **"OK"** button.



Note: Verify that the new project has been created (see <u>Section 3.2 "Create a New Project in</u> the HMIWorks").

Step 6: Click the "Run (Build & Download) F9" item from the "Run (Build & Download)" menu, or press F9.



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update.

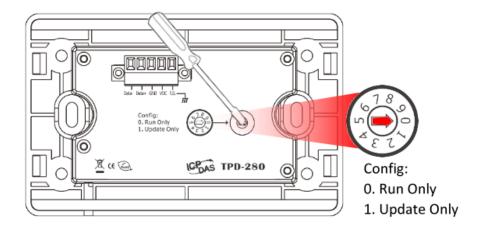
Step 7: A **"*** Warning***"** dialog box will be displayed and click the **"OK"** button to continue.

Informatio	on 📃 🔀
	Warning
	Make sure the RS-485 bus has no other devices online, else these devices may malfunction or fail the downloading procedure.
	Press OK to continue
	OK Cancel

Step 8: The "Download in progress..." dialog box will be displayed showing the progress of the

File Edit View HMI Layout Arrange	Run (Build & Download) Window Help	
Workspace Toolbox		Inspector Libraries
Drawing (Ctrl+1)		T Text4
Download in	progress	eft.Just alse rue
Dece Test	404	Pear Fort
The second secon	1%	5 ext Mello Tr
	Cancel	1450 1350 15 1

Step 9: Once the upload is complete (i.e., when the progress indicator reaches 100%), power off the TouchPAD device and set the Rotary Switch to "Run Only" mode (position 0).

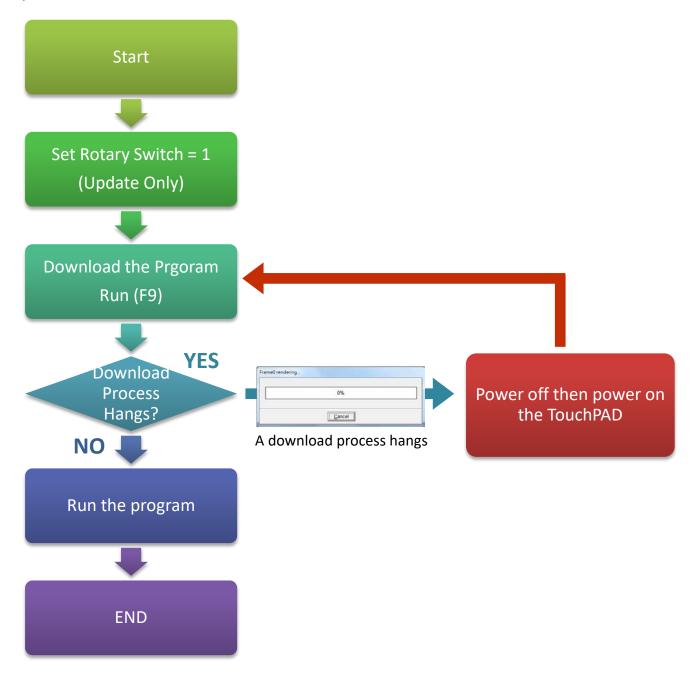


Step 10: Power-on and reboot TouchPAD device so that the module is operating in "Run Only" mode. The TouchPAD device will then execute the string "Hello TouchPAD!" sample.





Anytime download process hangs, users can follow the flow below to complete the download process.



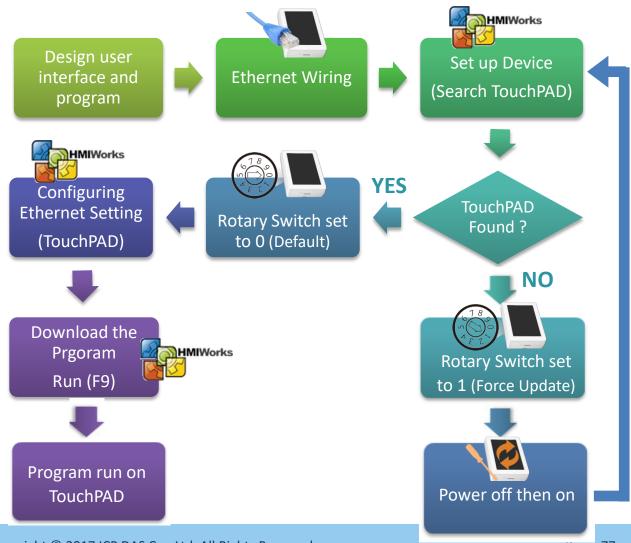
3.4.2 Setup Ethernet-downloaded Devices

The TouchPAD Series models listed below use Ethernet to download the HMIWorks-built applications into TouchPAD:

☑ TPD-283/283-H	🗹 TPD-433-H/433F-H/433-M2
☑ TPD-283U-H	☑ TPD-703/703-64
☑ TPD-283-M1/M2/M3	☑ VPD-133-H/143-H
☑ TPD-283U-M1/M2/M3	☑ VPD-173N/173N-64/173X/173X-64

3.4.2.1 Applications are downloaded through Ethernet

> The following flow chart describes the Ethernet-downloaded devices.



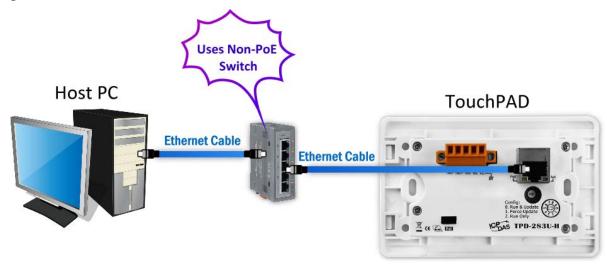
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Page: 77

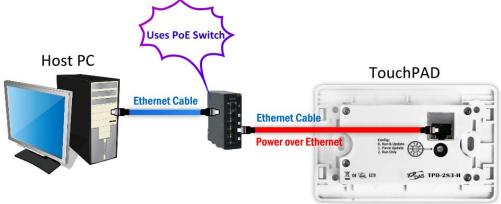
> Follow the procedure described below:

Step 1: Attach a power supply to the TouchPAD device. Refer to <u>Section 3.3 "Supply Power to the</u> <u>TouchPAD"</u> for more details.

Step 2: Connect the TouchPAD device to the same hub or the same sub-network as the Host PC using an **Ethernet cable**.

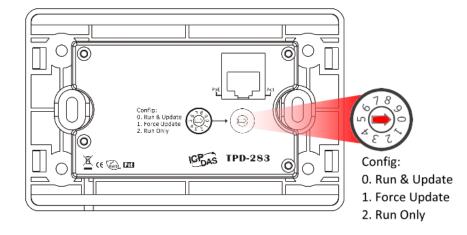


Note that if you use PoE power supply to TouchPAD device, please keep the original network wiring.



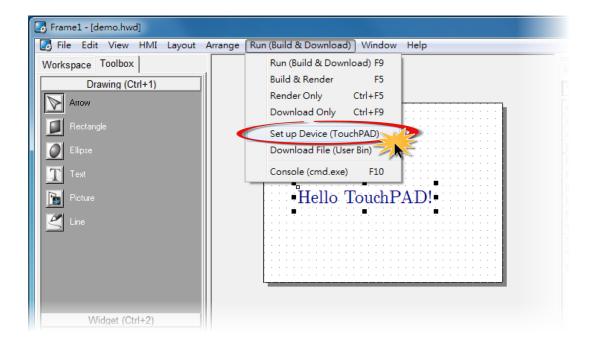
Step 3: Check that the Rotary Switch on the TouchPAD device is "Run & Update" mode (position 0).

Note that the default configuration is "Run & Update" mode (position 0).



Note: Before downloading programs to the TouchPAD device, be sure to **set up the TouchPAD device** to connect to it first.

Step 4: In the HMIWorks software, click the **"Set up Device (TouchPAD)"** item from the **"Run (Build & Download)"** menu to open "Setup Ethernet Device" dialog box.



	×
10.1.0.60	
FouchPAD)	
ICPDAS	
ment Method	
OHCP	C Runtime Setting
192.168.255.1	(eg: 10.1.2.3)
255.255.0.0	
192.168.255.254	
(TouchPAD)	
🗖 Same as runtime Static II	
192.168.255.1	(eg: 10.1.2.3)
00:0D:E0:B2:02:6B	(eg: 00:0D:E0:11:22:33)
<u>O</u> K <u>C</u> ancel	
	FouchPAD) ICPDAS ment Method

Step 5: In the "Setup Ethernet Device" dialog box, click the "<u>Search for TouchPAD...</u>" button to open "Search for TouchPAD" dialog box.

The following is factory default settings of the TouchPAD device:

Item	Value
IP Address	192.168.255.1
Туре	Static IP
Mask	255.255.0.0
Gateway	192.168.255.254

Step 6: If the TouchPAD device is found and displayed in the list on the "Search for TouchPAD" dialog box, select the TouchPAD item depend on MAC Address of your TouchPAD device and click the "OK" button to bring the information back to the "Setup Ethernet Device" dialog box.

Note: You can find the MAC address on the back of the TouchPAD.

Search for TouchPAD	-		X
<u>R</u> efresh □ Disabl	e UDP Filter		
ir Address ▶ 10.1.0.61	Port	MAC Address	Description
10.1.0.61	23	00:0D:E0:B2:02:6B	TouchPAD-ICPDAS
		-	
			Ļ
<			•
		(OK Cancel

Step 7: In the "Setup Ethernet Device" dialog box, select the **"DHCP"**, **"Static IP" or "Runtime Setting"** (e.g., DHCP) in the "IP Address Assignment Method" field.

Setup Ethernet Device				
Search for TouchPAD				
Host Information (PC)				
Host IP Address:	10.1.0.60			
Runtime Information (To	uchPAD)			
Device Nickname:	ICPDAS			
-IP Address Assignm	ent Method			
C Static IP	OHCP	C Runtime Setting		
Device IP Address	10.1.0.61	(eg: 10.1.2.3)		
Mask	255.255.0.0			
Gateway	192.168.255.254			
Download Information (T				
Download Information (1	Same as runtime Static IP]		
IP address:	10.1.0.61	(eg: 10.1.2.3)		
MAC address:	00:0D:E0:B2:02:6B	(eg: 00:0D:E0:11:22:33)		
	1	, ,		
<u>O</u> K <u>C</u> ancel				



- 1. When using **"Static IP" or "DHCP"**, the IP settings are stored as a part of the program image, and only successful downloading can update the IP settings.
- 2. When using **"Runtime Setting"**, the program image has no information about the IP settings, and TouchPAD loads the IP information from the flash at the runtime. Before IP settings are used, be sure to set the IP settings into the flash by the related API functions. We have demo to do this as well.

Step 8: Verify that "Host IP Address" and "TouchPAD IP Address" in the same subnet.

Step 9: Verify that **"TouchPAD MAC Address"** must match the MAC Address of your TouchPAD device, and click the **"OK"** button.

Setup Ethernet Device			
Search for TouchPAD .]		Note: You can find the MAC
Host Information (PC) Host IP Address:	10.1.0.60	•	address on the back of the TouchPAL
-Runtime Information (To	ouchPAD)		
Device Nickname:	ICPDAS		
⊢IP Address Assignm	nent Method		
C Static IP	OHCP	C Runtime Setting	
Device IP Address	10.1.0.61	(eg: 10.1.2.3)	
Mask	255.255.0.0		
Gateway	192.168.255.254		
Download Information (TouchPAD)		
ľ ľ	☐ Same as runtime Sta	tic IP	
IP address:	10.1.0.61	(eg: 10.1.2.3)	
MAC address:	00:0D:E0:B2:02:6B	(eg: 00:0D:E0:11:22:33)	
	<u>O</u> K <u>C</u> anc	el	

Note: Verify that the new project has been created (see <u>Section 3.2 "Create a New Project in</u> <u>the HMIWorks</u>").

Step 10: Click the "Run (Build & Download) F9" item from the "Run (Build & Download)" menu, or press F9.

💽 Frame1 - [demo.hwd]		
🛃 File Edit View HMI Layout /	Arran je [Run (Build & Download) Window elp
Workspace Toolbox		Run (Build & Download) F9
Drawing (Ctrl+1)		Build & Bandar F5
Arrow		Render Only Ctrl+F5
		Download Only Ctrl+F9
Rectangle		Set up Device (TouchPAD)
O Ellipse		Download File (User Bin)
Text		Console (cmd.exe) F10
Picture		
🖉 Line		Hello TouchPAD!

Step 11: The "Download in progress..." dialog box will be displayed showing the progress of the update.

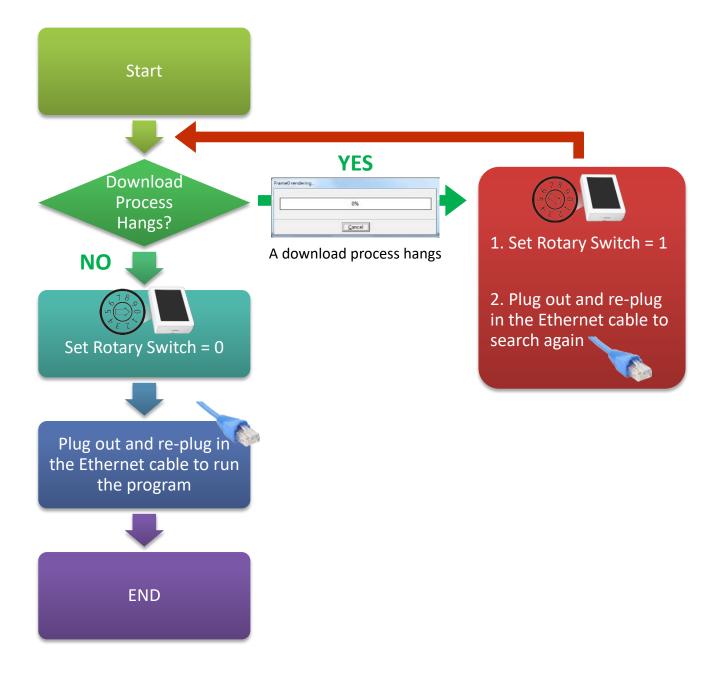
Frame1 - (dome hwd)		
	ayout Arrange Run (Build & Download) Window Help	
Workspace Toolbox		Inspector Librares
Drawing (Ctrl+1)		T Text4
Anon	ownload in progress	eft.Justify also
Laterate D	ownload in progress	108
Q Date		Dear
11 1-4		
The second se	1%	5
ing frame	•	ext tello TouchPAD
_		alse
	Cancel	05
e		
Widget (Ctrl+2)		

Step 12: The TouchPAD device will then execute the string **"Hello TouchPAD!"** sample.



3.4.2.2 What to do if the download process hangs?

Anytime download process hangs, users can follow the flow below to complete the download process. (Note that below is not just for the case after setup device.)



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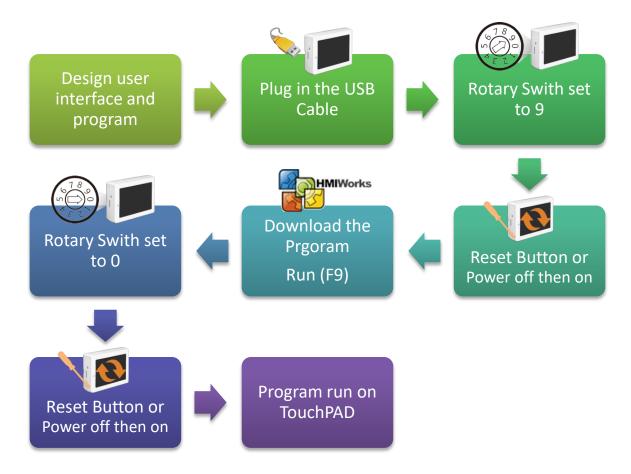
3.4.3 Setup USB-downloaded Devices

The TouchPAD Series models listed below use USB Port to download the HMIWorks-built applications into TouchPAD:

☑ TPD-280U	☑ VPD-130/130N/130-H/130N-H
☑ TPD-283U/283U-H/283U-Mx	☑ VPD-132/132N/132-H/132N-H
☑ TPD-430/430-EU/430-H/430-H-EU	☑ VPD-133/133N/133-H/133N-H
🗹 TPD-433/433-EU/433-H/433-H-EU	☑ VPD-142/142N/142-H/142N-H
🗹 TPD-432F/433F/433F-H/433-M2	☑ VPD-143/143N/143-H/143N-H

3.4.3.1 Applications are downloaded through USB Port

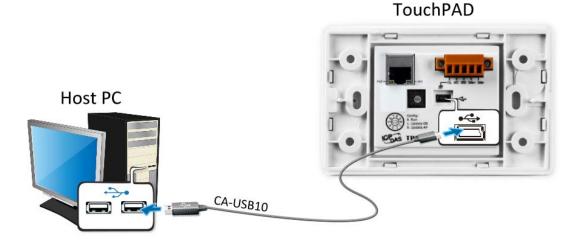
> The following flow chart describes the USB-downloaded devices.



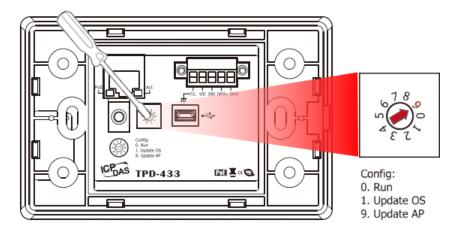
> Follow the procedure described below:

Step 1: Attach a power supply to the TouchPAD device. Refer to <u>Section 3.3 "Supply Power to the</u> <u>TouchPAD"</u> for more details.

Step 2: Connect the TouchPAD device to the Host PC using a CA-USB10 cable.



Step 3: Power off the TouchPAD device and use a flat-head screwdriver to set the **Rotary Switch** on the TouchPAD device to **"Update AP" mode (position 9)**. *Note that the default configuration is "Run" mode (position 0)*.



Step 4: Power-on and reboot the TouchPAD device, the message: "MiniOS8 is running. Waiting for connection..." will be displayed on TouchPAD device.



Note: Verify that the new project has been created (see <u>Section 3.2 "Create a New Project in</u> <u>the HMIWorks"</u>).

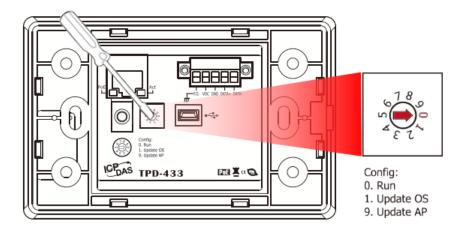
Step 5: In the HMIWorks software, click the "Run (Build & Download) F9" item from the "Run (Build & Download)" menu, or press F9.

Frame1 - [dome.hwd]	
💽 File Edit View HMI Layout Arrange	Run (Build & Download) Window
Workspace Toolbox	Run (Build & Download) F9
Drawing (Ctrl+1)	Build & Render
	Render Only Ctrl+F5
Arrow	Download Only Ctrl+F9
Rectangle	Seture Device (Touch DAD)
	Set up Device (TouchPAD)
D Ellipse	Download File (User Bin)
T Text	Console (cmd.exe) F10
Picture	
🖉 Line	
	•Hello TouchPAD!•

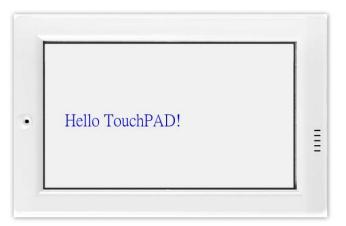
Step 6: The **"Download in progress..."** dialog box will be displayed showing the progress of the update.

Frame1 - [dome hwd]	and the second	-	- 0
	Layout Arrange Run (Build & Download) Window Help		10.53
Workspace Toolbox		Inspector Librares	1
Drawing (Ctrl+1		T Text4	•
Annon Incompt Chart	Download in progress	at ru Je	e 21
Tere Ficture Tere	1%	5 2 2	
	[]	al 05 81	
Widget (Ctrl+2)			

Step 7: Once the upload is complete (i.e., when the progress indicator reaches 100%), **power off the TouchPAD device** and set the **Rotary Switch to "Run" mode (position 0)**.



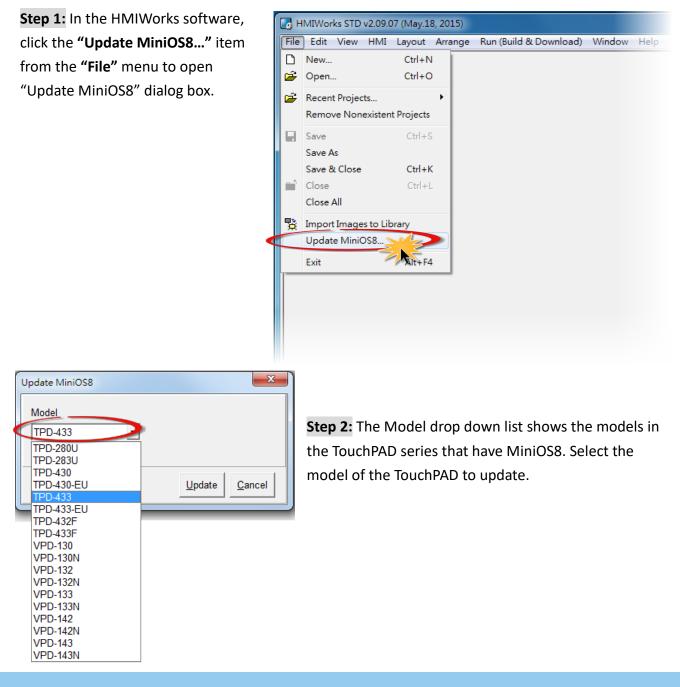
Step 8: Power-on and reboot TouchPAD device so that the module is operating in "Run" mode. The TouchPAD device will then execute the string "Hello TouchPAD!" sample.



3.4.3.2 Updating MiniOS through USB Port

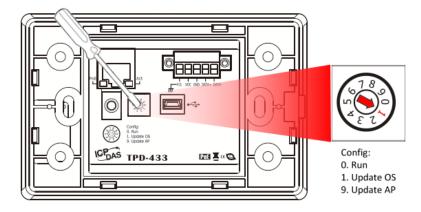
Some devices (e.g., TPD-280) in the TouchPAD series do not have MiniOS8 on them, but still some do have. Each version of HMIWorks corresponds to a version of MiniOS8 • Though we try to achieve backward compability, we still suggest update MiniOS8 every time HMIWorks is updated.

Follow the procedure described below to update the MiniOS8 for TouchPAD device:



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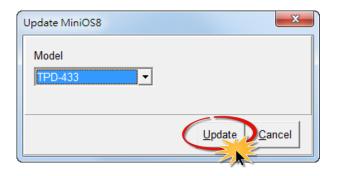
Step 3: Use a flat-head screwdriver to set the **Rotary Switch** on the TouchPAD device to **"Update OS" mode (position 1) and power off then power on the TouchPAD**. *Note that the default configuration is "Run" mode (position 0).*



Step 4: Connect the TouchPAD device to the **Host PC** using a **CA-USB10 cable**.



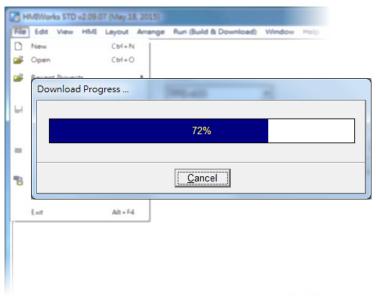
Step 5: In the "Update MiniOS8" dialog box, click the "<u>Update</u>" button to start update.



Step 6: Verify that steps 1 to 3 has been set in the configuration dialog box and click the **"OK"** button to continue.

HMIWorks STD v2.09.07 (May.18, 2015)
 Set the rotary switch of TouchPAD to 1 (Update OS Mode). Use USB download cable to connect the host PC and TouchPAD. Power off then power on the TouchPAD (then shows blank screen).
ОК

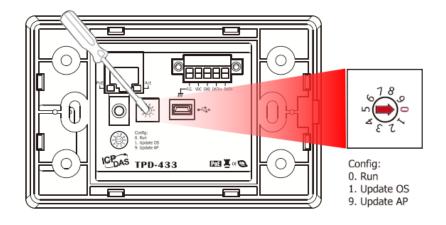
Step 7: The **"Download in progress..."** dialog box will be displayed showing the progress of the update.



Step 8: Once the upload is complete (i.e., when the progress indicator reaches 100%), a configuration dialog box will be displayed and click the **"OK"** button.

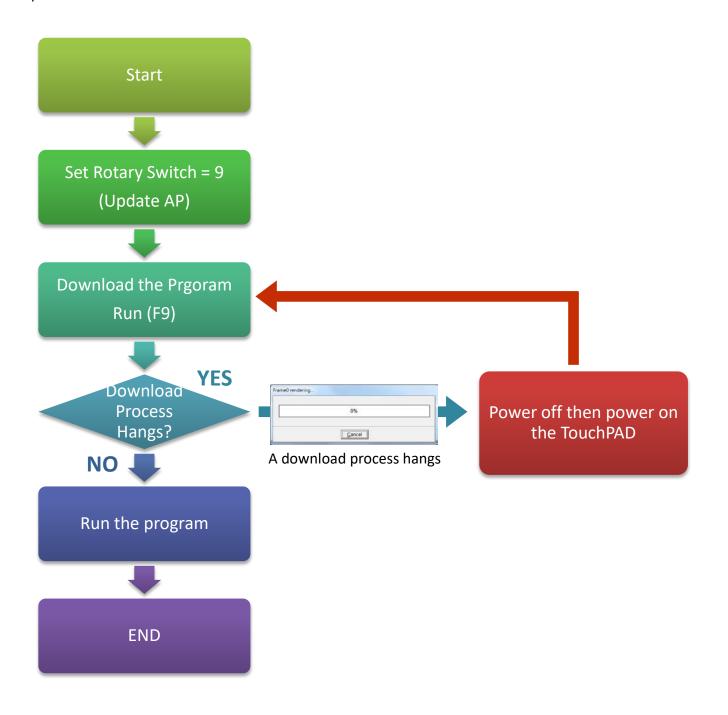


Step 9: Use a flat-head screwdriver to set the **Rotary Switch** on the TouchPAD device to **"Run" mode (position 0) and power off then power on the TouchPAD**.





Anytime download process hangs, users can follow the flow below to complete the download process.



4. Calibrations

Usually users need not to calibrate the touch screen because we calibrate the TouchPAD devices before shipping. However, in cases users may need to calibrate the touch screens, we introduce the flow below.

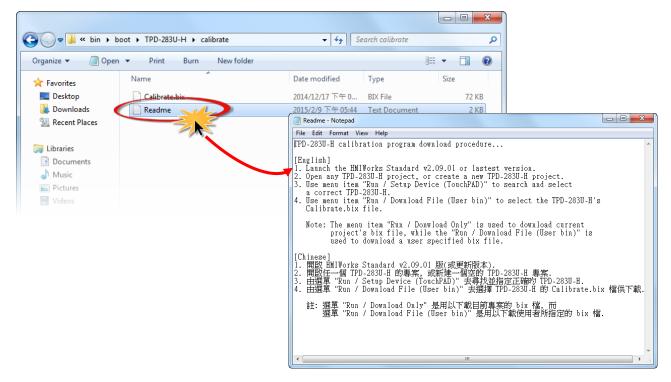
You can find that the calibration programs are in the following directory: "[HMIWorks_Install_Path]\bin\boot\[Device_Name]\calibrate".

							x
C:\ICPDAS\	HMIWorks_Standard\bin\boot\TPD-433\cal	librate	- 4 → Se	earch calibrate			٩
Organize 🔻 Include in	n library 👻 Share with 👻 Burn	New fo	older	: :===	•		?
🔆 Favorites	Name		Date modified	Туре	Size		
🧮 Desktop	🚳 calibrate		2014/8/18 下午 01:	Windows Batch File		1 K	в
Downloads	Calibrate.bin		2014/8/18 下午 01:	BIN File		19 K	В
🔚 Recent Places							
词 Libraries							
Documents							
🎝 Music							
Pictures							
Yideos 🗧							
Computer							
🗣 Network							
2 items							

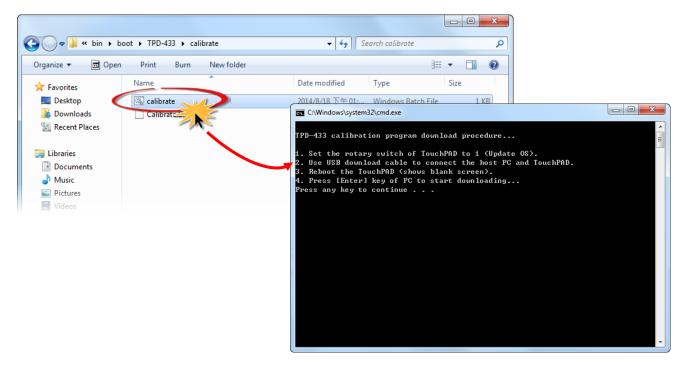
For example, there are two calibration programs can be found at

"C:\ICPDAS\HMIWorks_Standard\bin\boot\TPD-433\calibrate" if trying to calibrate TPD-433. And in the same directory of the calibrate file, there's a batch file which is used to download the calibrate programs to the TouchPAD device and it is called "calibrate.bat".

Refer "Readme.txt" to execute calibration when contains a Readme.txt file in the calibrate folder.



Double click "calibrate.bat" file to execute calibration when contains a calibrate.bat in the calibrate folder.



5. Connecting to I/O Devices

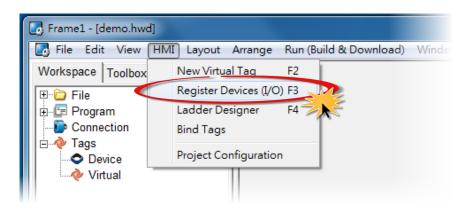
We provide connection methods for three series of I/O modules, the PET-7000, the I-7000, and the M-7000 series and a general approaches for the Modbus TCP Master I/O modules, Modbus RTU Master/Slave I/O modules.

5.1 Access a Modbus TCP Slave Device

Using a PET-7060 module (Ethernet I/O Module with 6-channel Relay output, 6-channel Digital Input) as an example, ensure that the network settings for both the Modbus TCP slave device and the Host computer are correctly configured, otherwise the TouchPAD may not be able to correctly access the Modbus TCP slave device via the Ethernet network.

The following will access to connect to Modbus TCP slave device through HMIWorks configuration:

Step 1: In the HMIWorks software, click the **"Register Devices (I/O)"** option from the **"HMI"** menu to open the **"Devices"** dialog box, or press **F3**.



Devices							
Device information TouchPAD is: Device Series: Connection: Model Name: Device Name:	Modbus TCP Master Modbus TCP Master Modbus TCP Slave Modbus TCP Slave Modbus RTU Slave DCON Master	Search Assign	Tag Name ▶	Ю Туре	Start Address	Default Value	Comment
Net ID: Timeout:	1 200		< □ 				► Clear All <u>T</u> ags

Step 2: Select "Modbus TCP Master" from the "TouchPAD is" drop down menu
--

Step 3: Select **"PET-7000"** from the "Device Series" drop down menu.

Devices						3
Device information TouchPAD is: Modbus TCP Master Device Series: IET_series Connection: IET_series PET-7000 Model Nerse: MACE 7000 Device Name: User_Define(MTCPM) Net ID: 1 Timeout: 200	Tag Name	IO Type	Start Address	Default Value	Comment	4
	<u>O</u> K <u>C</u> ancel				Clear All <u>T</u> ags	

Step 4: Select **"Create New..."** from the "Connection" drop down menu to open the **"New/Edit Connection..."** dialog box.

Devices							• ×
Device information		Tag Name	IO Type	Start Address	Default Value	Comment	
TouchPAD is: Modbus TCP Master	P						
Device Series: PET 7000							
Connection:							
Model Name: Create New Search							
Device Name: Assign							
Net ID: 1							
Timeout: 200							
		•					۰.
		<u>O</u> K <u>C</u> ancel]			Clear All <u>T</u>	ags
							10

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Step 5: In the "**New/Edit Connection...**" dialog box, configure the connection information of the PET-7060 module as follows:

New/Edit Connection	×
Connection Name Connection Interface Note: The interface is for devices, not for downlo	TCPIP_1 Assign Name TCPIP 2 or communication between TouchPAD and I/O ading firmware.
TCP/IP Connection S IP Address Port	ettings 10.0.8.100 3 (e.g.: 10.1.0.100) 502 4 (e.g.: 502)
TouchPAD as a S	erver
	<u>O</u> K <u>C</u> ancel

- Enter a name for the connection (e.g., TCP_1) in the "Connection Name" field.
- 2. Select **"TCPIP"** from the "Connection Interface" drop down menu.
- 3. Enter the **IP Address of the PET-7060** module in the "IP Address" field.
- 4. Enter the **TCP Port of the PET-7060** module in the "Port" field.
- 5. Click the **"OK"** button to save the configuration.

Step 6: Click the "Search" button to open the "Select [PET-7000] Series..." dialog box.

Step 7: In the **"Select [PET-7000] Series..."** dialog box, select the model name (e.g., PET-7060) and then click the **"OK"** button.

	Select [PET-7000] Series	
Devices Device information TouchPAD is: Modbus TCP Master Device Series: PET-7000 Connection: TCPIP_1 Model Name: Assign Net ID: 1 Timeout: 200 QK Cance	PET-7002 PET-7005 PET-7015 PET-7017 PET-7018Z PET-7042 PET-7042 PET-7044 PET-7051 PET-7052 PET-7052 PET-7053 PET-7060 PET-7067	r All <u>T</u> ags

Step 8: Verify that the **information for PET-7060 module is correct** (e.g., the Device Name, Net ID, Tag Name, IO Type, Start Address and Default Value, etc.) and then click the **"OK"** button to save the configuration and close the "Devices" dialog box.

Devices								
Device information			Tag Name	IO Type	Start Address	Default Value	Comment	<u>^</u>
		ĩ	▶ DO0	DO	0	0		
TouchPAD is:	Modbus TCP Master		DO1	DO	1	0		E
Device Series:	PET-7000 -		DO2	DO	2	0		
Connection:	TCPIP 1	İ I	DO3	DO	3	0		
		Casal	DO4	DO	4	0		
			DO5	DO	5	0		
Device Name:	Dev_1	Assign	ENABLE_DO	Virtual	0	1		
Net ID:	1		DIO	DI	0	0		
Timeout:	200		DI1	DI	1	0		
	Device Series: PET-7000 Image: Connection: DO2 DO3 DD3 DD3 DD3 DD3 DD3 DD3 DD3 DD3 D1 D1 D1 D1 D							
				4				
			<u>O</u> K <u>C</u> ancel				Clear All <u>T</u> a	gs
								11.

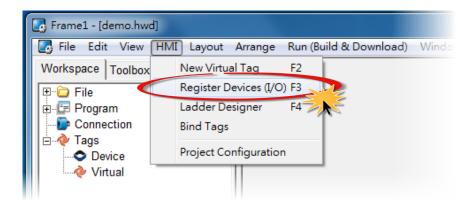
- For more detailed information regarding the Self-test process, which is used to confirm that the PET-7060 and TouchPAD are operating correctly, refer to FAQ: How can the PET-7060 be accessed using a TouchPAD.
- If you use a third-party Modbus TCP Slave device, refer to <u>FAQ</u>: How do I access a third-party <u>Modbus TCP slave device using a TouchPAD</u> for more detailed information.

5.2 Access a Modbus RTU Slave Device

Using an M-7060 module (I/O Module with 4-channel Relay output, 4-channel Digital Input) as an example, connect the Modbus RTU slave device to the TouchPAD model on RS-485 COM Port and apply power to the Modbus RTU slave device and TouchPAD model.

The following will access to connect to Modbus RTU slave device through HMIWorks configuration:

Step 1: In the HMIWorks software, click the **"Register Devices (I/O)"** option from the **"HMI"** menu to open the **"Devices"** dialog box, or press **F3**.



Step 2: Select **"Modbus RTU Master"** from the "TouchPAD is" drop down menu.

Devices									x
Device information				Tag Name	IO Type	Start Address	Default Value	Comment	
TouchPAD is:	Modbus TCP Master			•					
Device Series:	Modbus TCP Master Modbus RTU Master		1	,					
Connection:	Modbus TOF Slave Modbus RTU Slave								
Model Name:	DCON Master	Search							
Device Name:		Assign							
Net ID:	1								
Timeout:	200								
				•					•
				<u>O</u> K <u>C</u> ancel				Clear All <u>T</u> ags	

Device information				Tag Name	IO Type	Start Address	Default Value	Comment
TouchPAD is:	Modbus RTU Master	•	₽	•				
Device Series:	M-7000	-						
Connection:	M-7000 DL series MPTLIM							
Model Name:	tM_series	Select						
Device Name:	LC_series PM_series	Assign						
Net ID:	IR_series							
Timeout:	XVBoard							
	User_Define(MRTUM)							
				•				
			Г	OK <u>C</u> ancel	1			Clear All <u>T</u> ags

Step 3: Select **"M-7000"** from the "Device Series" drop down menu.

Step 4: Select **"Create New..."** from the "Connection" drop down menu to open the "New/Edit Connection..." dialog box.

Devices		x
Device information	Tag Name IO Type Start Address Default Value Comment	
TouchPAD is: Modbus RTU Master		
Device Series: M-7000 ▼ Connection: ▼		
Model Name: Create New	nect	
Device Name: Ass Net ID: 1	ssign	
Timeout: 200		
	OK Cancel Clear All Tags	1

Step 5: In the "**New/Edit Connection...**" dialog box, configure the connection information of the M-7060 module in the following manner:

- 1. Enter a name for the connection (e.g., SER_1) in the "Connection Name" field.
- 2. Select **"COM1"** from the "Connection Interface" drop down menu.
- 3. Select the **Baud Rate of the M-7060** module (e.g., 9600) in the "Baud Rate" drop down menu.
- 4. Select the **Data Format of the M-7060** module (e.g., 8, None, 1) in the "Data Bit", "Parity" and "Stop Bit" drop down menu.
- 5. Click the **"OK"** button to save the configuration and close the dialog box.

New/Edit Connection	
Connection Name Connection Interface Note: The interface is fi devices, not for downlo	SER_1 Assign Name COM1 Z T or communication between TouchPAD and I/O ading firmware.
Serial Connection Set	ttings
Baud Rate	9600 3 🗸
Data Bit	8 🗸
Parity	0(None) 4
Stop Bit	1
	5
	<u>O</u> K <u>C</u> ancel

Step 6: Click the "Select" button to open the "Select [M-7000] Series..." dialog box.

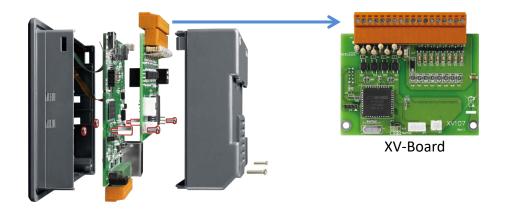
Step 7: In the **"Select [M-7000] Series..."** dialog box, select the M-7060 module and then click the **"OK"** button.

Step 8: Verify that the **information for M-7060 module is correct** (e.g., the Device Name, Net ID, Tag Name, IO Type, Start Address and Default Value, etc.) and then click the **"OK"** button to save the configuration and close the "Devices" dialog box.

Devices								• X
Device information-			Tag Name	IO Type	Start Address	Default Value	Comment	•
			▶ DI0	DI	0	0		
TouchPAD is:	Modbus RTU Master		DI1	DI	1	0		E
Device Series:	M-7000 🔻		DI2	DI	2	0		-
Connection:	SER 1		DI3	DI	3	0		
			ENABLE_DI	Virtual	0	1		
Model Name:		Select	DO0	DO	0	0		
Device Name:	Dev_M_7060_1 A	ssign	DO1	DO	1	0		
Net ID:	1		DO2	DO	2	0		
Timeout:	200		DO3	DO	3	0		
	,		ENABLE_DO	Virtual	0	1		
								•
			<u>O</u> K <u>C</u> ancel				Clear All <u>T</u> a	ags

- For more detailed information regarding the Self-test process, which is used to confirm that the M-7060 and TouchPAD are operating correctly, refer to <u>FAQ</u>: How can the M-7060 be accessed using a TouchPAD.
- If you use a third-party Modbus RTU Slave device, refer to FAQ: How do I access a third-party Modbus RTU slave device using a TouchPAD for more detailed information.

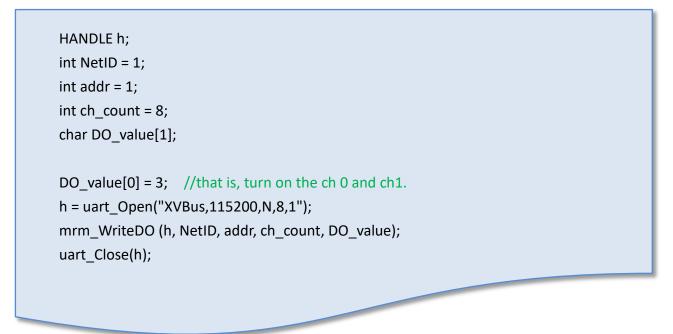
5.3 Connecting to I/O Expansion Boards (XV-Board)



Default Value

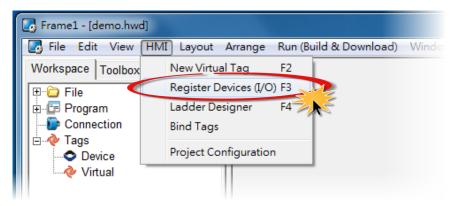
Net ID	1
Baud Rate	115200
Comport	XVBus
Communication Interface	Modbus RTU (XV-Board as slave)

Using C Programming Language to Control XV-Board



Using Ladder Designer

Step 1: In the HMIWorks software, click the **"Register Devices (I/O)"** option from the **"HMI"** menu to open the **"Devices"** dialog box, or press **F3**.



Step 2: Select **"Modbus RTU Master"** from the "TouchPAD is" drop down menu.

Device information			Tag Name	IO Type	Start Address	Default Value	Comment
TouchPAD is:	Modbus RTU Master	<u> </u>					
Device Series:	Modbus RTU Master Modbus RTU Slave						
Connection:	DOON Master						
Model Name:		Select					
Device Name:		Assign					
Net ID:	1						
Timeout:	200	_					
	,						
			•				
			<u>0</u> K	<u>C</u> ancel			Clear All <u>T</u> ags

Step 3: Select **"XVBoard"** from the "Device Series" drop down menu.

Device information				Tag Name	IO Type	Start Address	Default Value	Comment
TouchPAD is:	Modbus RTU Master	•						
Device Series:	XVBoard							
Connection: Model Name: Device Name: Net ID: Timeout:	M-7000 DL_series_MRTUM tM_series LC_series PM_series IR_series XVBoard User_Define(MRTUM)	Select Assign						
			•	<u>O</u> K <u>C</u> ancel	1			Clear All <u>T</u> ags

Step 4: Select **"Create New..."** from the "Connection" drop down menu to open the "New/Edit Connection..." dialog box.

Device information				Tag Name	IO Type	Start Address	Default Value	Comment
TouchPAD is:	Modbus RTU Master	•	ľ					
Device Series:	XVBoard	-						
Connection:		-						
Medel Name:	Create New	Select						
Device Name:		Assign						
Net ID:	1							
Timeout:	200							
	,							
			•	٠ 📃				
				<u>O</u> K <u>C</u> ancel	1			Clear All <u>T</u> ags

Step 5: In the "**New/Edit Connection...**" dialog box, configure the connection information of the XVBoard in the following manner:

- 1. Enter a name for the connection (e.g., XVBus) in the "Connection Name" field.
- 2. Select **"XVBus"** from the "Connection Interface" drop down menu.
- 3. Click the **"OK"** button to save the configuration and close the dialog box.

New/Edit Connection	Datas	×
Connection Name	XVBus 1	Assign Name
Connection Interface	XVBus 2 🔽	
Note: The interface is for devices, not for download	TCPIP COM1 COM2	hPAD and I/O
	XVBus	
	B	
	<u>O</u> K <u>C</u> ancel	

Step 6: Click the "Select" button to open the "Select [XVBoard] Series..." dialog box.

Step 7: In the **"Select [XVBoard] Series..."** dialog box, select the model and then click the **"OK"** button.

Devices			
Device information TouchPAD is: Device Series: Connection: Model Name: Device Name: Net ID: Timeout:	Select	Xv107 Xv107A Xv110 Xv111 Xv1116 Xv306 Xv307 Xv308 Xv310	ar All Iags

Step 8: Verify that the **information for XV-Board is correct** (e.g., the Device Name, Net ID, Tag Name, IO Type, Start Address and Default Value, etc.) and then click the **"OK"** button to save the configuration and close the "Devices" dialog box.

Devices								×
Device information			Tag Name	IO Type	Start Address	Default Value	Comment	
			▶ DI0	DI	0	0		
TouchPAD is:	Modbus RTU Master		DI1	DI	1	0		Ξ
Device Series:	XVBoard 👻		DI2	DI	2	0		
Connection:	XVBus 🔹		DI3	DI	3	0		
Model Name:		Select	DI4	DI	4	0		
			DI5	DI	5	0		
Device Name:	Dev_XV107_1	Assign	DI6	DI	6	0		
Net ID:	1		DI7	DI	7	0		
Timeout:	200		ENABLE_DI	Virtual	0	1		
	,		DO0	DO	0	0		
				1				1
			<u>O</u> K <u>C</u> ancel]			Clear All <u>T</u> ags	
								11.

Appendix: Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.25	April 2015	Initial issue
1.1.0	July 2015	1. Added the information about the TPD-703/703-64
		specification in Section 1.4 Specifications.
		2. Added the information about the TPD-703/703-64
		appearance in Section 2.1 Appearance.
		3. Added the information about the TPD-703/703-64 pin
		assignments in Section 2.2 Pin Assignments.
		4. Added the information about the TPD-703/703-64 dimensions
		in Section 2.3 Dimensions.
1.2.0	December	1. Added the information about the VPD-173N/173N-64 and
	2016	TPD-433F-H specification in Section 1.4 Specifications.
		2. Added the information about the VPD-173N/173N-64 and
		TPD-433F-H appearance in Section 2.1 Appearance.
		3. Added the information about the VPD-173N/173N-64 and
		TPD-433F-H pin assignments in Section 2.2 Pin Assignments.
		4. Added the information about the VPD-173N/173N-64 and
		TPD-433F-H dimensions in Section 2.3 Dimensions.
1.3.0	May 2017	1. Added the information about the specification in Section 1.4
		Specifications.
		2. Added the information about the VPD-130(N)-H/
		132(N)-H/133(N)-H/142(N)-H/143(N)-H/173X/173X-64,
		TPD-280U-H and
		TPD-430-H/430-H-EU/433-H/433-H-EU/433-M2 appearance in
		Section 2.1 Appearance.
		3. Added the information about the VPD-130(N)-H/
		132(N)-H/133(N)-H/142(N)-H/143(N)-H/173X/173X-64,
		TPD-280U-H and
		TPD-430-H/430-H-EU/433-H/433-H-EU/433-M2 pin

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TPD/VPD Series HMI D	Device User Manu	al
		assignments in Section 2.2 Pin Assignments.
		4. Added the information about the VPD-130(N)-H/
		132(N)-H/133(N)-H/142(N)-H/143(N)-H/173X/173X-64,
		TPD-280U-H and
		TPD-430-H/430-H-EU/433-H/433-H-EU/433-M2 dimensions in
		Section 2.3 Dimensions.
		5. Added the information about the VPD series DIN-Rail
		mounting in Section 2.4.2 DIN-Rail Mounting.
		6. Added the information about the VPD series panel mounting
		in Section 2.4.3 Panel Mounting.
1.3.1	Aug. 2017	1. Added the TPD-433-H/433F-H/433-M2 and
		VPD-133-H/143-H models in the Section 3.4.2 Setup
		Ethernet-downloaded Devices.
		2. Added the TPD 283U-H/283U-Mx in the Section 3.4.3
		Setup USB-downloaded Devices.