

Classification	□ tDS □ tGW □			PETL/tET/tPE		DS/PDS/PPDS		2N
classification	□ I/O C	ard		VXCCard	□ VxComr	n	☑ Other	(TouchPAD)
Author	Mike Ch	nou		Date	2019-11-29	1	NO.	FAQ033

Q: How do I access a third-party Modbus TCP slave device using a TouchPAD?

A: To access a third-party Modbus TCP slave device using a TouchPAD, refer to the following instructions:

Step 1: 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.

Step 2: Set up the third-party Modbus TCP slave device. In this demo, we will use the "**Modbus Slaver Simulator**" software to simulate a network I/O module with four DI, DO, AI and AO channels. Note that the specific testing method depends on the Modbus TCP slave device being used. Refer to the relevant user manual for details.

Step 3: Install the HMIWorks driver as well as the driver update program, both of which can be obtained from the ICPDAS website at:



- Double-click the icon for the "HMIWorks_STD_vxxx_setup.exe" file to execute the driver installation program.
- Follow the instructions in the installation wizard to install the driver. Once the driver installation is complete, double-click the icon for the "HMIWorks_STD_vxxx_Update_xx.exe" file to execute the update program for the driver.



HMIWorks_STD_ v2.10.02_setup. exe



HMIWorks_STD_ v2.10_Update_4 6.exe

For more detailed information related to the driver installation, refer to Chapter 2 "**Software Installation**" in the <u>HMIWorks Software User Manual</u> document.



Step 4: Open the HMIWorks software, and click the "**New Project**" icon to create a new project.

Welcome to HMIWorks STD v2.10.46 (Oct.18	, 2019)		×
Select a project to	start	Show the welcome dialog on	startup.
Click I	tere for selecting other	projects.)	
Remove Nonexistent Files			>

Step 5: In the "**New**" dialog box, configure the parameters for the new project in the following manner:

- 1. Click the name of the TouchPAD model to select it, TPD-703-64 in this case.
- 2. Enter a name for the project.
- 3. Select the location where the project should be saved.
- 4. Select the orientation for the display.
- 5. Select the Default Programming Type.
- 6. Click the "**OK**" button to save the configuration and close the dialog box.

New	×
⊙ TPD C VPD	
TPD-280	Project Name (Don't use space or special char):
TPD-280-H	DIO AIO demo
TPD-280-Mx	
TPD-280-RHT	Location (Don't use space or special char):
TPD-2800	
	C:\ICPDAS\HMIWorks_Standard\Projects
TPD-283	Orientation
TPD-283-H	Chentation
TPD-283-Mx	
TPD-283U	A C Portrait C Portrait Flip
TPD-283U-H	
TPD-2830-MX	
TPD-430	▲ C Landscape C Landscape Flip
TPD-432F	
TPD-432F-H	Default Programming Tyr
TPD-433	
TPD-433-H	C [1] Standard C (• [2] Ladder
TPD-433F	
TDD 433F-H	
TPD-703	OK Cancel
TPD-703-64	



Step 6: Click the **"Register Devices (I/O)**" option from the **"HMI**" menu to open the **"Devices**" dialog box, or press **F3**.

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🛃 File Edit Layout Arrange \	View HN	II Project Run	Window	Tools	Help							
Workspace Toolbox File Groups Connection Tags		New Frame Delete Frame Rename Frame New Virtual Tag Register Devices	Ctrl+M F2 ; (I/O) F3									
Virtual		Ladder Designe Bind Tags	r F4									

Step 7: Select "User Define(MTCPM)" from the "Device Series" drop down menu.

evice information	1		īΓ	Tag Name	IO Type	Address	Default	Comment		
TouchPAD is:	Modbus TCP Master	-		•						
Device Series:	tET_series	•								
Connection:	tET_series PET-7000									
Model Name:	WISE-7000	Search								
Device Name:	User_Define(MTCPM) Example(MTCPM)	Assign								
Net ID:	1	(1~247)								
Timeout:	200	ms								
Scan Time :	200	ms								
	,			<						
			Γ	OK Cancel				Clear A	All Tags	

Step 8: Select "**Create New...**" from the "**Connection**" drop down menu to open the "**New/Edit Connection...**" dialog box.

Devices								-		×
Device information			Γ	Tag Name	IO Type	Address	Default	Comment		
TouchPAD is:	Modbus TCP Master	•		>						
Device Series:	User_Define(MTCPM)	•								
Connection:		-								
	Create New									
Device Name:		Assign								
Net ID:	1	(1~247)								
Timeout:	200	ms								
Scan Time :	200	ms								
	7			<						2
				<u>Q</u> K <u>C</u> ancel			Add Tag	s Clear	All <u>T</u> ags	1



Step 9: In the "**New/Edit Connection...**" dialog box, configure the connection information for the Modbus TCP slave device in the following manner:

- 1. Enter a name for the connection (e.g., TCPIP_1) in the "Connection Name" field.
- 2. Select "**TCPIP**" from the "**Connection Interface**" drop down menu.
- 3. Enter the IP Address of the Modbus TCP slave device in the "IP Address" field.
- 4. Enter the TCP Port number for the Modbus TCP slave device in the "**Port**" field.
- 5. Click the "**OK**" button to save the configuration and close the dialog box.

-	
New/Edit Connection >	<
1	
Connection Name TCPIP_1 Assign Name	
Connection Interface TCPIP 2	
Note: The interface is for communication between TouchPAD and I/O devices, not for downloading firmware.	
TCP/IP Connecting	
Remote IP 10.0.8.28	
Port 4 502 (e.g.: 502)	
☐ TouchPAD as a Server	
6	_
<u>OK</u> <u>C</u> ancel	

Step 10: In the "Devices" dialog box, click the "Add Tags" button to open the "Import..." dialog box.

🐻 Devices								_		×
Device information			Γ	Tag Name	IO Type	Address	Default	Comment		
TouchPAD is:	Modbus TCP Master	•	1							
Device Series:	User_Define(MTCPM)	•								
Connection:	TCPIP_1	•								
Device Name:	Dev_1	Assign								
Net ID:	1	(1~247)								
Timeout:	200	ms								
Scan Time :	200	ms								
				<						>
				<u>O</u> K <u>C</u> ancel		•	Add Tag	s Clear All]	<u>F</u> ags	
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Step 11: In the "**Import...**" dialog box, configure the information for the Modbus TCP slave device in the following manner:

- 1. Select the "Protocol Address (Base 0)" option from the drop-down menu.
- Set the "IO Type", "Start Address" and "Count" values depending on the parameters of the Modbus TCP slave device, e.g., DO Start Address = 0, DO Count = 4; DI Start Address = 0, DI Count = 4; AO Start Address = 0, AO Count = 4; AI Start Address = 0, AI Count = 4.
- 3. Click the "**OK**" button to save the configuration and close the "**Import...**" dialog box.

In	nport		ิด		×
	Protocol Addr	ess (base <mark>0</mark>)	▼ F	ote: HMIWorks supports data address 0 to 65535 on each I/O type. lease remove the leading 0X, 1X, 3X, 4X digit when entering data address.	
	Ю Туре	Start Address	Count	Comment	^
	DO	0		0X: Coils, FC 1/5/15	
	DI	0		1X: Discrete Inputs, FC 2	
	AO	0		4X: Holding Registers, FC 3/6/16	
I	AI	0		3X: Input Registers, FC 4	
				3	~
	DO DI	AO	AI	Del OK Cancel	

Step 12: Verify that the **information for the Modbus TCP slave device is correct**, e.g., the Device Name, the Net ID, the Tag Name, the IO Type, the Start Address and the Default Value, etc. And then click the **"OK"** button to save the configuration and close the **"Devices"** dialog box.

evice information			ı Г	Tag Name	IO Type	Address	Default	Comment		
TouchPAD is:	Modbus TCP Master	•	Þ	• AI0	AI	0	0			
				Al1	AI	1	0		0	
Device Series:	User_Define(MTCPM)	-		Al2	AI	2	0		2	
Connection:	TCPIP 1	_		Al3	AI	3	0			
connoction.		-		ENABLE_AI	Virtual	0	1			
				AO0	AO	0	0			
Device Name:	Dev_1	Assign		AO1	AO	1	0			
Net ID:	1	(1~247)		A02	AO	2	0			
Timeout:	200	ms		AO3	AO	3	0			
Ocean Times a	200			ENABLE_AO	Virtual	0	1			
Scan Time :	200	ms		c						>
		8		OK Canc	el		Add Tage	Clear	All <u>T</u> ags	



Step 13: The creation of the "**TCPIP_1**" connection and the "**Dev_1**" device is now complete and will be displayed in the Workspace pane.



Step 14: Use the following procedure to create a sample program, e.g., a sample IO program):

Note that the actual sample program depends on the type of Modbus TCP slave device being used. Refer to the relevant user manual for details

<u>D0</u>

- 1. Select a "Button" object from the "Libraries" pane to represent the DO0 tag.
- Drag the "Dev_1_DOO" tag (DO channel 0) from the "Workspace" pane to the desired position on the design frame.
- 3. Repeat the previous steps to create a button for the required number of DO objects.





FA

1. Select a "Button" object from the "Libraries" pane to represent the DIO tag.

00

- 2. Drag the "**Dev_1_DIO**" tag (DI channel 0) from the "**Workspace**" pane to the desired position on the design frame.
- 3. Repeat the previous steps to create a button for the required number of DI objects.



- 1. Select the "Slider" Widget from the "Toolbox".
- 2. Draw a "Slider" on the design frame.

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S File Edit Layout Arrange S	jew h <u>M</u> i <u>Froject Bun</u> <u>Window</u> Toois ⊟eip		- 0
Vorkspace Toolbox		Inspector Libra	uries
Drawing (Ctrl+1)		Ell Slider20	
Arrow		Background. Background.	0xFFFFFF
		Enabled	True
Texerusinbuc		FillColor	0x000000
🖀 Slider 🏊 👘		Font	(Font)
		Height	40
BitButton			20
HotSpot		Leit	100
		Min	0
CheckBox		Name	Slider
		OutlineColor	0x000000
🔛 Label		Position	0
RadioRutton		RefObject	-
Naurobuccon		Tag	0
		TagName	
		Тор	45
		Vertical	False
		Visible	True
		Width	250



- 3. Adjust the "Max" and "Min" values for AO0 from the "Inspector"
- 4. Click "TagName" button to open the "Select Tag" dialog box.
- 5. Select "**Dev_1_AO0**" tag from the Name column, and then click the "**OK**" button to connect the Slider and the "**Dev_1_AO0**" tag.
- 6. Repeat the previous steps to create a slider for the required number of AO objects.

Eile Edit Layout Arrange View HMI Project I Workspace Toolbox Drawing (Ctrl+1) Widget (Ctrl+2)	<u>Bun Window Iools H</u> elp Select Tag Browse Tags Enter Constant Bind Tags		×	Inspector Librari	- 8 ×
Arrow TextPushButton SLider BitButton HotSpot CheckBox Label RadioButton Arrow Arrow Model CheckBox Chec	Scope (Global)	Comment	3	Background Enabled FillColor Font Height ID Haff Max Min Position RefObject Tag TagName Top Vertical Visible Width	0xFFFFF True 0x000000 (Font) 40 20 350 65535 0 0 0 0 0 0 0 0 0 0 0 0 0
System (Ctrl+3)					
Output Errors					*

- <u>AI</u>
- 1. Select the "Label" Widget from the "Toolbox".
- 2. Draw a "Label" on the design frame.

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Workspace Toolbox			
Torrapace		Inspector Librar	ies
Drawing (Ctrl+1)		E Label24	
Vvidget (Ctri+2)		Alignment	Center
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		FillColor	0xFFFFFF
I TextPushButton	Tabel24	Font	(Font)
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sinder.		ID	24
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HotSpot		OutlineColor	0x000000
		RefObject	
🖸 CheckBox 🚺		TagName	
		Text	Label24
🖆 Label 🥕 👘		Ton	30
		Vicible	True
RadioButton *		Wistble	120
		width	150



- 3. Click "TagName" button to open the "Select Tag" dialog box.
- Select "Dev_1_AIO" tag from the Name column, and then click the "OK" button to connect the Label and "Dev_1_AIO" tag.
- 5. Repeat the previous steps to create a label for the required number of AI objects.

Drawing (Ctrl+1)	Select Tag		×	Inspector Librari	es
Drawing (Ctrl+1) Widget (Ctrl+2) nrrow extPushButton Lider itButton botSpot heckBox abel adioButton	Browse Tags Enter Constant Bind Tags Scope (Global) - Name - - Dev_1_Al1 - - Dev_1_Al3 - - Dev_1_Al3 - - Dev_1_AO0 - - Dev_1_AO2 - - Dev_1_AO2 - - Dev_1_BABLE_AO - - Dev_1_BO3 - - Dev_1_BO3 - - Dev_1_DI1 - - Dev_1_DI3 - - Dev_1_DO0 - - Dev_1_DO0 - - Dev_1_DO3 - -	Clear Iag		Ell Label24 Alignment DecimalDigits FillColor Font Height ID Left Name OutlineColor RefObject TagName Text Top Visible Width	Center 0 0xFFFFFF (Font) 65 24 640 0x000000 Label 0x000000 Label 130
System (Ctrl+3)	Dev_1_DO3	>	 		

Connection LED

- 1. Select a "Light" object from the "Libraries" pane to represent the ERROR tag.
- 2. Drag the "Dev_1_ERROR" tag from the "Workspace" pane to the desired position on the

design frame.

Frame1 - [DIO_AIO_demo - HMIWor	ks STD v2.10.46 (Oct.18, 2019)] v HMI Project Bun Window Iools Help	×
Image Server 1 (DIO, AIO, demo - HMWork Image Server 1 (DIO, demo - HMWork Image S	k STD v2.10.46 (Oct. 18, 2019)] x H <u>M</u> Project <u>Bun Window Look Hep</u>	Inspector Libraries
Results Output Errors	Frame1	Size: 24x24, 5 KB



Step 15: Once the sample program is complete, it can be uploaded to the TPD-703-64 module via the Ethernet. The detailed configuration and wiring information is as follows:

 Power off the TPD-703-64 module and remove the shell. Using a flat-head screwdriver, set the Rotary Switch on the TPD-703-64 module to "Force Update" mode (position 1). Note that the default configuration is "Run & Update" mode (position 0).



2. Connect both the TPD-703-64 module 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 TPD-703-64 via the PoE Switch.





- Select the "Set up Device (TouchPAD)" item from the "Run" menu to open the "Setup Ethernet Device" dialog box.
- 4. Select the "**DHCP**" and "**Ethernet**" options, and then click the "**Search for TouchPAD...**" to search for the module.

Note: If your network doesn't have access to a DHCP, you can use the Static IP and enter the effective IP information.

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Eile Edit Layout Arrange Vie	w H <u>M</u> I <u>P</u> roject <u>R</u> un <u>W</u> indow	<u>T</u> ools <u>H</u> elp	
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E C File	Build (Ren	der, Compile) F5	
E Donnection	Compile Render	Ctrl+E5	
🗄 🔶 Tags	Download	Ctrl+F9	
⊡-√Device	Set up Der	vice (TouchPAD)	
- 🤁 Dev_1_Al0	Downless	File (User Birt)	· · · · · · · · · · · · · · · · · · ·
Dev_1_AI1	Console (c	md.exe) F10	
Dev_1_AI3			
Dev_1_ENABLE Set	up Ethernet Device		×
	Network settings (Touch	IPAD)	
- 2 Dev 1 A03	-IP Address Assignm	ent Method	
	C Static IP		C Runtime Setting
	IP Address		
	Mask		
	Gateway		
	Device Nickname:	ICPDAS	
			4
	Download Interface :	○ USB (● Ethernet	Search for TouchPAD
	Download Information (T	ouchPAD)	
		□ Same as runtime Static IP	
	IP address:		Only use for download
	in address.		T
	MAC address:		larget device's MAC
	Host Information (PC)		
	Host IP Address:	10.0.8.28	
		OK Careal	



5. Select the TPD-703-64 module that has the correct MAC address, and then click the "OK" button.

IP Address	Port	MAC A	Address	Descriptio	n
▶ 0.0.0.0		68 00:0D:	E0:6F:12:73	ICPDAS	

 Return to the "Setup Ethernet Device" dialog box and enter an effective "IP address" in the "Download Information (TouchPAD)" field, and then click the "OK" button.

Setup Ethernet Device			×
Network settings (Touch	PAD)		
-IP Address Assignm	ent Method		
O Static IP	DHCP	C Runtime Setting	
IP Address			
Mask		I	
Gateway		I I	
Device Nickname:	ICPDAS		
Download Interface :	OUSB @ Ethernet	Search for TouchPAD	
Download Information (T	ouchPAD)		
	🗖 Same as runtime Static IF		
IP address:	10.0.8.140	Only use for download	
MAC address:	00:0D:E0:6F:12:73	Target device's MAC	
Host Information (PC)			
Host IP Address:	10.0.8.28]	
e	OK <u>C</u> ancel		



Step 16: The sample program can now be uploaded to the TPD-703-64 module. To do this, follow the procedure described below:

1. In the HMIWorks application, click the "**Run (Render, Compile, Download) F9**" item from the "**Run**" menu, or press **F9**.

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Eile Edit Layout Arrange View	H <u>M</u> I Project <u>R</u> u	un <u>W</u> indow <u>T</u> ools <u>H</u> elp				- 8	×
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E Connection		Render	Ctrl+E5			0_L_0.hwd	
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Prove Dev_1	I	Set up Device (TouchPAD)			Label24	L01_0.hwd	
2 Dev 1 Al1		Download File (User Bin)		_ · · · · · · · · · · · · · · · · · · ·		L02 0.hwd	
	U ^P	Console (cmd.exe)	F10			L02_1.hwd	
Dev_1_Al3						L03_0.hwd	
Dev_1_ENABLE_AI					T 1 105	Light0.hwd	
2 Dev 1 AO1	<u> </u>				Label25	Light1.hwd	
Dev 1 AO2	A			· · · · · · · · · · · · · · · · · · ·	····	LightShow0 bwd	
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Dev_1_ENABLE_DI	₩P	· · · · · · · · · · · · · · · · · · · 					
Dev_1_DO0					· · · · · · · · · · · · · · · · · · ·		
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Dev_1_R_ACTION	a					1	_
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2. The program will now be compiled. Wait until the Build and Download are completed.

main compi	ling
	14%
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 Once the upload is complete, i.e., when the progress indicator reaches 100%, set the Rotary Switch to "Run & Update" mode (position 0).



4. **Reboot** the TPD-703-64 module so that the module is operating in **"Run" mode**. The TPD-703-64 module will then execute the sample program.





Step 17: Connect both the TPD-703-64 module and the Slave device to the same sub network. Check that the Error LED Indicator displays **Normal Ethernet Communication,** i.e., Green, and then operate the TPD-703-64 to read/write from/to the IO device.



Note: Operations should be executed according to your Modbus TCP slave device.

The instructions are now complete.