Citect Linking to Modbus/TCP

In this topic, the Citect solution with i-8000-MTCP via the Modbus/TCP protocol will be presented step by step. Here, we use the Citect vision 5.40 with service pack C and modnet driver version 2.5.1.8 to do this demo. So, please check the software required first.

Step1: Start up the Citect



Step2: Click 📋 button to create a new project

🔚 Example - Citect Explore	r			_ [IJN
File View Tools Help					
Example		1 🛃		1 🖻 🗄	1
Project List	Contents of Ex	ample			
■ My Projects ■ — — — Example		e	ଷ	2	
⊕… <u> </u> Opensecond ⊕… <u> </u> QuickStart	Graphics	Tags	Alarms	System	
	Communica	Cicode Files	CitectVBA Files		
Ready	,				

Step3: Input "Modbus Demo" to be the name of this project, and use default value for other parameters. Then Click "OK" to continue.

New Project 🔀
Name: Modbus Demo
Description:
Location: C:\Citect\User\Modbus Demo Browse
Page defaults
Template style: Standard
Template resolution: Default
Show template title bar
Background colour:
OK Cancel Help

Step4: Open the Folder-"Communications" and Click the "Express I/O Device Setup" to build a new I/O Server and I/O Device.



Step5: Click "NEXT" to continue.



Step6: Select "Creat a new I/O Server" and input "ModbusServer" in the blank field to be the name of I/O Server. Then Click "Next" to continue.



Step7: Select "Create a new I/O Device", and input "Dev_883x" in the blank field to be the name of I/O Device. Then Click "Next" to continue.



Step8: Select "External I/O Device" to be the type of the I/O Device, and click "Next" to continue.



Step9: Select "Modicon/TSX Quantum/Ethernet(TCP/IP)" to be the communication protocol. Then click "Next" to continue.

Express Communicat	ions Wizard
Select the manufacturer, model and method of communication for the I/O Device	Mitsubishi Modicon ••• 484 ••• 584 ••• 884 ••• 984 ••• 984 ••• 1SX Quantum ••• Ethemet (TCP/IP) •• Moore Industries
 Selected driver Manufacturer: 	Modicon
Model:	TSX Quantum
Communications:	Ethernet (TCP/IP)
	< Back Next > Cancel Help

Step10: Find the IP address which is showed on the LED in the left hand side of the i-8000, and input it in to IP address field. Here, we fill "192.168.0.50" to be the IP address of the i-8000. Then input the "502" in the Port field and click "Next" to continue.

Express Communica	tions Wizard	×
	You have selected a device which communicates using the TCP/IP protocol. Enter the TCP/IP information here.	
Manufacturer:	Modicon	
Model:	TSX Quantum	
Communications:	Ethernet (TCP/IP)	
	< Back Next > Cancel Help	

Step11: Click "Next" to continue.



Setp12: Click "Finish" to finish the parameter setting of I/O Servers and I/O Devices.

Express Commu	nications Wizard	×
	The Communications Wizard The Communications Wizard will make the following changes to the project 'Modbus Demo'. Using new I/O Server 'ModbusServer'. Using Board Settings: + Memory address: 0 + I/O address: + Interrupt: Using Port Settings: + Baud Rate: + Data Bits:	×
	Press Finish to save this setup.	
	< Back Finish Cancel Help	

Step13: In the Citect Project Editor, select "I/O Devices" to modify the parameters of the I/O device that we build previously.

🍓 Citect Project Editor [Modbu:	s Demo] - UNCOMPILED
File Edit Tags Alarms System	Communication Tools Window Help
🏼 🏼 🏑 🔝 💷 🗡 🖻	Express Wizard
	I/O Server
	Boards
	Ports
	Modems
\sim	I/O Devices
	Remapping

Step14: Fill the station number that displayed on the switch in the right hand side of the i-8000. Here, we use "1" to be the station number of the i-8000. Click "Replace" to finish the parameters setting.

🛄 I/O Device	s [Modbus Demo]			- D ×
Server Name	ModbusServer			-
Name	Dev_883x	Number	1	
Address	1			
Protocol	MODNET	Port Name	PORT1_BOARD1	•
Comment				
Add Record : 1	Replace Delete	e <u>H</u> elp		T



Step15: Open the folder-"Tags", and click "Variable Tags" to create new tags.

Step16: Input the Variable Tag Name, Select I/O Device Name, select appropriate data type, and correct address. All this parameters are shown as following table. When finishing the parameters setting of one tag, click "Add" to build the next tag.

Tag Name	I/O Device Name	Data Type	Address	Raw Scale	Eng Scale
Do_0	Dev_883x	DIGITAL	00001	Х	Х
Di_0	Dev_883x	DIGITAL	10001	Х	Х
Ao_0	Dev_883x	INT	40001	0~32767	0~10
Ai_0	Dev_883x	INT	30001	0~32767	0~10

🛄 ¥ariable Tags [test]	
Variable Tag Name Do_0	Data Type DIGITAL 💌
I/O Device Name Dev 883x 💌	Address 00001
Raw 🛄 Variable Tags [test]	
Eng. Variable Tag Name Di_0	Data Type DIGITAL
Eng I/O Device Name Dev 883x 💌	Address 10001
Com Raw Zero Scale	Raw Full Scale
Eng Zer 🛄 Variable Tags [test]	
Rec Eng Uni Variable Lagivame Ao_0	Data Type INT 🔽
Commer 1/D Device Name Dev_883x 💌	Address 40001
Raw Zero Scale 0	Raw Full Scale 32767
Eng Zero Scale 0	Eng Full Scale 10
Eng Units	Format 💌
Commer	
	Data Type INT
Record David Scale	Address 30001
Ena Zero Scale 0	Fran Full Scale 10
Comment	
Add <u>R</u> eplace <u>D</u>	Delete Help
Record: 4	Linked: No 💌

Note:

- In the Modbus protocol, the type of digital output is set to "0", digital input is set to "1", analog output is set to "4" and analog input is set to "3".
- The DI and DO are declared as Boolean data, the AI and AO are declared as unsigned integral data.
- The "Starting address" begins at "0001". Thus, if you want to use the 5th DO, the "address" filed must be given as "10005", and the data type must be selected as "DIGITAL" type. If you want to use the 15th AI, you must fill "30015" in the "address" field, and Select "INT" to be the data type.
- The raw scale is used to converter a non-meaning value (0x0000 ~ 0xFFFF) to a meaning value (voltage, current, temperature, etc.)

	Zero scale	Full scale
Raw (non-menaing)	0	32768
Eng (menaing)	0	10 (V)

	Zero scale	Full scale
Raw (non-menaing)	0	65535
Eng (menaing)	-10 (V)	20 (mA)

	Zero scale	Full scale
Raw (non-menaing)	0	32768
Eng (menaing)	0	10 V

Step17: In the Citect Graphics Builder environment, click "New..." to create a new page.

💰 Ci	itect (Graphi	ics Builde	2r						Ľ
File	Edit	View	Objects	Text	Arrange	Tools	Window	Help		
Ne	ew			Ctrl+N			剤の	% % % &	머머	اچ
O	pen			Ctrl+O						<u>~</u>
C	ose									_
Fi	nd									
Sa	ave			Ctrl+S					R I	
Sa	ave As								1 1	2
Sa	ave All									
-										

Step18: Click "Page" button to build a new page.



Step19: Select "normal" to be the template of page, and click "OK" to continue.

Use Template						2	<u><</u>
Template: normal					Style:	\frown	
			rangeshart		bottom standard top version2	OK Cancel	
singletrend	spccpk		spcxrschart		Linked Title bar	Edit	L
standardchart s	summary	ab1menu	tab2menu	•	Resolution:	Help	

Step20: Click button and drag-and-drop on the page to add a new button on this new page.

or the citect Graphics Builder -	[Modbus Demo - Untitl	ed1]	
Tile Edit View Objects	Text Arrange Tools	Window Help	_ & ×
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	Ī	= 3×1	207,13 GUI

Step21: In the attribution-"Appearance", input the text-"Do Button" which will be showed on the button. And in the attribution-"Input", fill "toggle(Do_0)" in the blank text box. Then click "OK" to build another objects.

Button Properties	×
Appearance Access	
Type Text Do Button C Symbol Font: ButtonFont	General Visibi
Button Properties	×
🧭 Appearance 🖌 Input 🖉 Access	. 1
Action Up command Toggle(Do) Down Repeat	Touch Keyboar
Repeat rate: 500 milliseconds	Clear Property
OK Cancel	Apply Help

Step22: Insert a LED object by clicking 🙀 button.

Citect Graphics Builder - [Modbus Demo - Untitled1]	
File Edit View Objects Text Arrange Tools Window He	
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? [₁₁	
<u></u> <u>f(x)</u>	
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· ·	
Do Button	TF
	<u>A</u> ##
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	80
15×15	+ 241,23 GUI

Step23: In the attribution-"Appearance", fill "Do_0" to decide the symbol of this LED object. Then click "OK" to build another LED object.



Step24: Follow the "Step22" and "Step23" as a model to build another LED object, and the parameters of this LED object is showed as following.

Symbol Set Properties		×
 ✓ Appearance ✓ Moveman ✓ Type On / off ○ Multi-state ○ Array ○ Array ○ Animated 	ent & Scaling & Fill & Input & Slider & Access Di_0 OFF symbol: Clear light_1_black Fill & Input & Slider & Access ON symbol: Clear Light_1_red	
	Clear Property	
	OK Cancel Apply Help	

Step25: Click A button to create a new Text object, and put it on the above of left LED object.



Step26: In the attribution-"Appearance", fill "DO LED" into "Text" box. Then click "OK" to create another new Text objects.

Text Properties Image: Appearance Image: Appearance<	×
Font: Style: Size: Arial Regular 11 @Fixedsys Image: Constrained Constr	General 3D Effects 🖉 Display Value 🗠 Visibility
OK Cancel Apply Help	

Step27: Follow the "Setp25" and "Step26" as a model, build three another Text Objects and put them in the appropriate place. The parameter setting of these Text objects are showed as following.

Alignment • Left • Right	Effects	✓ Scaling ✓ Fill ✓ Input ✓ S Text DI LED	lider Access	ay Value
C Centre	Effects	Text AI Value		° Visibi ay Value 🖂 Visib
Left Right Centre Foreground:	Underline	AO Value		ilalue

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Step28: The filished page is showed as following. Click **##** button to create a new number object.



Step29:In the attribution-"Appearance", fill "Ao_0" into the numeric expression field, and "Format" is "##.###". In the attribution-"Input", fill "#####ENTER" into key sequence box, and fill "Ao_0=arg1;" into command box.

Text Properties	P
🗸 Appearance 🕽 Movement 🧭 Scaling 🖉 Fill 🔽 Input 🖉 Slider 🦿 Access	
Type On / off Multi-state Array Numeric Numeric	General 3D Effects
Format: ##.###	< Disp
Text Properties	×
 ✓ Appearance Movement ✓ Scaling ✓ Pt ✓ Input Slider ✓ Access Kev sequence HHHHHENTER Ac_0=arg1; Security Security Same area as object Same privilege as object Command area: <a a="" href="mailto: All areas> Privilege level: <a href=" mailto:<=""> None> Logging Log message: 	Truch Keyboard Commands
OK Cancel Apply Help	

Step30: Follow the "Step29" as a model. Build a new number object, and set the "Appearance" attribution, but not to set the attribution-"Input". The setting parameters are as following.

Text Properties		×
🗸 Appearance 🖉 Movement 🖉 Scaling 🖉 Fill 🖉 Input 🧭 Slider 🖉 Access		
Type C On / off Multi-state Array Numeric String Format: ##.###	×	General 3D Effects 🗸 D

Step31: The finished page is showed as following. Then click **b**utton to save this page.

Citect Graphics Build	er - [Modbus Dem ects Text Arrange	o-Untitled1] e Tools Window Help	
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<u></u>			
<u>ð</u>			
		DI LED	
		•	
	AO Value	AI Value	
<u>0</u>	##.###	##.###	
		_111	• • • • • • • • • • • • • • • • • • •
		I O×O]™ 78,10 GUI

Step32: Input "page1" in the page field to be the name of this page.

Page	Template	Symbol	Genie	Super Genie
Page:	Proje	ct:	Preview:	ОК
page1	Modb	us Demo	💌 Enab	
	Exar Inclu IncV	nple de 2	<u>_</u>	
	Oper Quic	bus Demo hsecond kStart		New
1	V V		<u>×</u>	Delete
				Help

Step33: Click 📕 button to start the "computer setup"



Step34: Select "Express Setup" and then click "Next" to continue.



Step35: Select "Server and Display Client" and click "Next" to continue.



Step36: Select "Modbus Demo" in the "Project Name" list box and click "Next" to Citect Linking to ICPDAS I-8000 Modbus/TCP controller [Ver. 1.0.0 Sep.2003] --- 16

continue.



Step37: Use default value and click "Next" to continue.



Step38: Click "finish" to finish the computer setup.



Set40: Press "F5" to run the project. Clicking "Do Button" or click AO "number object" to input value can change the value of DO and AO.

