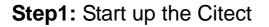
# The connection solution of Citect with ET-7000 series modules by using Modbus-TCP protocol

In this document, the Citect solution with ET7000 series 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.





Step2: Click 👔 button to create a new project

Example - Citect Explore File View Tools Help	٢			_	
Example		I <u>6</u>	<u>ra</u> :	<u> </u>	
Project List	Contents of Ex	ample			
B My Projects ⊕	Graphics	<b>a</b> Tags	Alarms	System	
🗄 💼 QuickStart			<b></b>	Jystem	
	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.

🔚 Modbus Demo - Citect Explo	rer			
File View Tools Help				
Modbus Demo	1 🗎 🔳	<u>6</u> 6 🔊	8 10 10	
Project List	Contents of Co	mmunications		
B My Projects È⊷ 🔁 Example		<u>, , ,</u> M-2		〕⊳
⊡… i Modbus Demo ⊡… i Graphics	Express I/O Device Setup	I/O Servers	Boards	Ports
Cicode Files	Modems	I/O Devices	I/O Remapping	
ClectvbA files				
Ready				1.

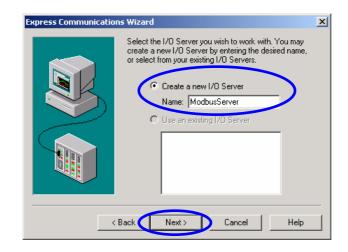
Step5: Click "NEXT" to continue.



Step6: Select "Creat a new I/O Server" and input

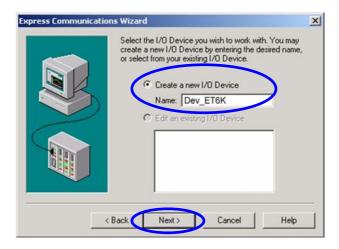
Citect Linking to ICPDAS ET7000 Modbus/TCP

"ModbusServer" in the blank field to be the name of I/O Server. Then Click "Next" to continue.

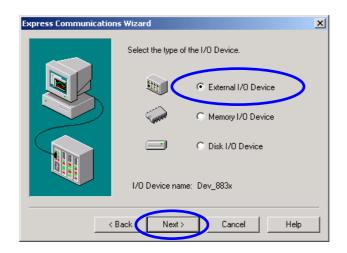


Step7: Select "Create a new I/O Device", and input "Dev\_883x"

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.

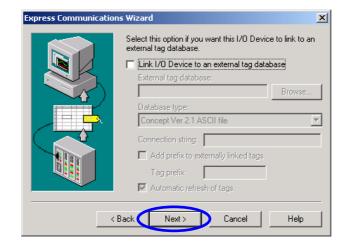
Express Communicati	ons Wizard	×
Select the manufacturer, model and method of communication for the I/D Device	Mitsubishi  Modicon  Modicon  Model A84  Second A84	
		-
Selected driver	M - 1	7
Manufacturer:	Modicon	
Model:	TSX Quantum	
Communications:	Ethernet (TCP/IP)	
	< Back Next > Cancel Help	

**Step10:** Find the IP address which is showed on the LED in the left hand side of the ET-7000, and input it in to IP

address field. Here, we fill 192.168.0.50 to be the IP address of the ET-7000. Then input the "502" in the Port field and click "Next" to continue.

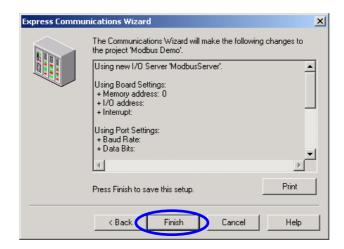
Express Communica	tions Wizard	×
	You have selected a device which communicates using the TCP/IP protocol. Enter the TCP/IP information here.	
	TCP O UDP Protocol Help	
Selected driver Manufacturer:	Modicon	
Model:	TSX Quantum	
Communications:	Ethernet (TCP/IP)	
	< Back Next > Cancel Help	

Step11: Click "Next" to continue.

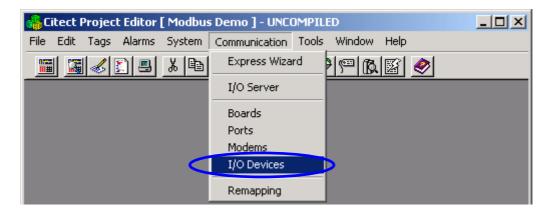


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**Setp12:** Click "Finish" to finish the parameter setting of I/O Servers and I/O Devices.



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



Step14: Fill the station number that displayed on the switch in the right hand side of the ET-7000. Here, we use "1" to be the station number of the ET-7000. Click "Replace" to Citect Linking to ICPDAS ET7000 Modbus/TCP [Ver. 1.0.0 Sep.2006] --- 7 finish the parameters setting.

	🛄 I/O Device	es [ Modbus Demo ]			
	Server Name	ModbusServer			-
	Name	Dev_ET6K	Number	1	-
<	Address	1			
	Protocol	MODNET	Port Name	PORT1_BOARD1	•
	Comment				
	Add	Replace Delete	e <u>H</u> elp		
	Record : 1				•

Step15: Open the folder-"Tags", and click "Variable Tags" to

create new tags.

🔚 Modbus Demo - Citect Exp	lorer _ 🗌 🗙
File View Tools Help	
Modbus Demo	T 🖹 🔳 📶 🖉 🔊 🖪 🚬
Project List My Projects Comparison Modbus Demo Comparison Modbus Demo Comparison Modbus Demo	Contents of 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.

Тад	I/O Device Data		Address	Raw	Eng Scale
Name	Name	Туре		Scale	
Do_0	Dev_ET7K	DIGITAL	00001	Х	Х
Di_0	Dev_ ET7K	DIGITAL	10001	Х	Х
Ao_0	Dev_ ET7K	INT	40001	0~32767	0~10
Ai_0	Dev_ ET7K	INT	30001	0~32767	0~10

Varia	uriable Ta ble Tag N Device Nar	anie Do		Y			Data Type Address	DIG	ITAL 01	-				
Raw	🛄 Varia	ble Tags	[ test ]									_10	×	
Eng	Variable	ag Name	Di_0				Data	Туре	DIGITA	L -		>	-	
Eng	1/0 Devi	ce Name	Dev B	T6K	-		Addr	555	10001					
Com	Raw Zer	o Scale					Raw	Full Scale						
Г	EngZer	🛄 Varia	ble Tags [	test 1									_  🗆 🗵	1
Rec	Eng Uni	Variable	ag Name	Ao_0				Data T	ype	INT	•		-	
	Commer	I/O Devi	e Name	Dev_B	ET6K	*		Addres	5	40001				
	A	Raw Zen	Scale	0				Raw F	ull Scale	32767				
	Record	EngZero		0		_		EngFi	d Scala	10				
		Eng Unit				-		Formal			-			1 minut
		Commer	🛄 Variabl		-					_		_		
		A	Variable Ta		Ai_0	TOK			Data 1	300	INT	-		
		Record	1/0 De ice Raw Zero		Dev_l	EIGK	_		Addre		30001		0	
			Eng Zero S		0					ull Scale ull Scale	32767	_		
			Eng Units	cale			-		Forma			-		
			Comment				-		roma	<u>.</u>	1			
			Common		1									
			Add	E	eplace	Dek	ete	Help						-
			Record :	4					Linked	t 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.)

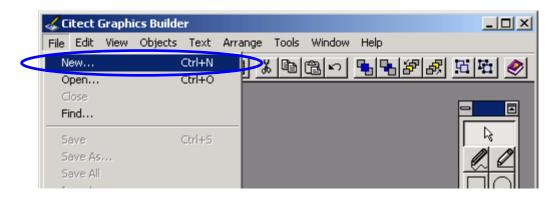
	Zero scale	Full scale
Raw (non-menaing)	0	32768
Eng (menaing)	0	10 (V)

	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.



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	1
Template: normal			Style:		
			bottom standard top version2	OK Cancel	
normal pagemenu	poptrend	rangechart		Edit	I
			I		
singletrend spccpk	spcpareto	spcxrschart	└ Linked └ Title bar		
			Resolution:		
standardchart summary	tab1menu	tab2menu	<b>_</b>	Help	1

Step20: Click is button and drag-and-drop on the page to

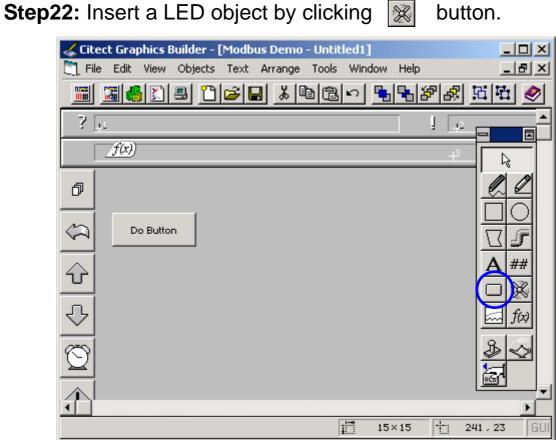
add a new button on this new page.

Citect Graphics Builder - [Modbus Demo		
Tile Edit View Objects Text Arrange	Tools Window Help	
	<u>16   1   1   1   1   1   1   1   1   1  </u>	<u> 56 6 </u>
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<u></u> f(x)	+3	
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$\overline{\mathbf{\hat{v}}}$		<b>A</b> ##
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3		80
<u> </u>		
	1 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 object.

Button Properties		×
	Access Text: Do Button Font: ButtonFont	General Visibility

utton Properties	Input Access	<u>×</u>
Action Action Down Repeat	Up command Toggle(Do_0)	✓ Touch ✓ Keyboar
Repeat rate:	500 milliseconds	Clear Property
	ОК	Cancel Apply Help



Step23: In the attribution-"Appearance", fill "Do\_0" to decide the symbol of this LED object. Then click "OK" to build another LED object.

Symbol Set Properties	×
✓ Appearance ✓ Movement ✓ Scaling ✓ Fill ✓ Input ✓ Slider ✓ Access          Type       ON symbol when         On / off       Do_0         Multi-state       Array         Animated       OFF symbol:         OFF symbol:       Clear         ight_1_black       Clear         light_1_red	🗸 General 🖉 Visibility
Clear Property	
OK Cancel Apply Hel	>

Step24: Follow the "Step22" and "Step23" as a model to build

another LED object, and the parameters of this LED

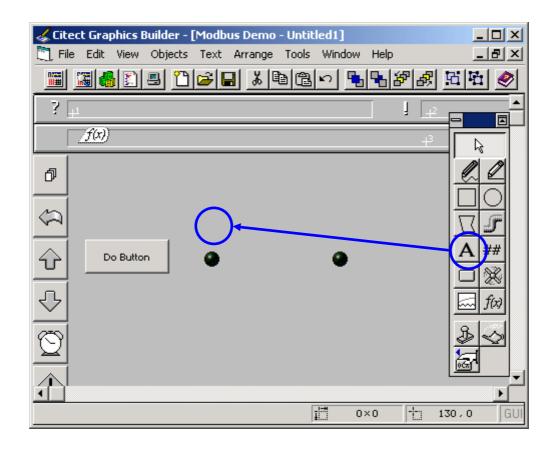
Symbol Set Properties		×
<ul> <li>✓ Appearance</li> <li>✓ Movem</li> <li>✓ Type</li> <li>On / off</li> <li>○ Multi-state</li> <li>○ Array</li> <li>○ Animated</li> </ul>	Image: Sealing Image: Fill Image: Slider Access     ON symbol when     Di-0     OFF symbol:   ON symbol:   Set   Clear   light_1_black   ON symbol:   Ight_1_black	✓ General 🖉 Visibility
	Clear Property	
	OK Cancel Apply Help	

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object is showed as following.

**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	caling ∫ ∕ Fill ∫ ∕ Ir	nput 🛛 🗠 Slider 🗍 🗠 Access 🗎	×
Font: Arial @Fixedsys @System @Terminal @新知明體 Fixedsys Microsoft Sans Serif Alignment Effects Left Centre Foreground: Effects	Style: Regular Italic Bold Bold Italic	Size:	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 C Left C Right C Centre	Effects	DILED	×	ay Value 🖂 🖉 Visibi
Alignment C Left C Right C Centre C Left C Right C Centre	Effects Strikeout Underline Strikeout Underline	AI Value		ay Value 🗹 Visibilialue 🖉 Visibi
Foreground:		ОК	Cancel	Apply Help

**Step28:** The filished page is showed as following. Click ##

button to create a new number object.

or the state of th	der - [Modbus Demo	- Untitled1]	- D ×
Tile Edit View Ob	ijects Text Arrange	Tools Window Help	_ 8 ×
🔳 📓 🚳 🗈 🖴	1 🗃 🖬 👗 🗉		P 🔊 🔁 🖉
? 😐			
<u>f(x)</u>			<b></b>
ð			
\$	DO LED	DI LED	
Do Button		٩	<u>A ##</u>
	1		
<u>~</u>	AO Value	AI Value	fw
3			\$ ->

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		×
Type C On / off Multi-state Orresy Numeric String Format: ##.###	Seneral JD Effects V Display	an Effecte
Text Properties         ✓ Appearance       Movement       Scaling       Fli       Input       Slider       Access         Key sequence       '#####ENTER' command         Movement       Access       Image: State of the sequence         Warehouse       '#####ENTER' command	X Touch	
Security	ch <ul> <li>Keyboard Commands</li> </ul>	
✓       Same area as object       ✓       Same privilege as object         Command area:       ✓       ✓       Privilege level:       <	Commands	
Add     Delete     Edit       Log message:		
OK Cancel Apply He	lp	

**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 🖉 Acc	cess
Type C On / off Multi-state Arrav Numeric String Format: ##.###	General 3D Effects V D

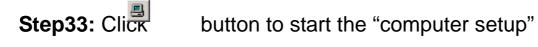
**Step31:** The finished page is showed as following. Then click **I** 

button to save this page.

AO Value AI Value
<u> </u>

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

Page	Template	Symbol Genie		Super Genie
age:	Proj	ect:	Preview	v: ОК
page1	Mod	bus Demo	🔽 Ena	
		mple ude V2 tbus Demo ensecond		Cancel
-1	Qui	ckStart	<b></b>	Delete
4	F		Þ	
				Help



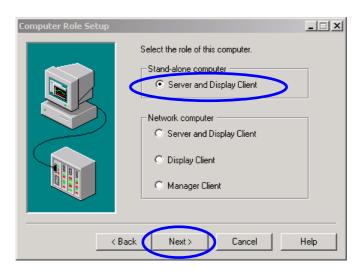
Modbus Demo - Citect Ex	plorer			[	- 🗆 🗵				
File View Tools Help									
Modbus Demo	- 1	III 🔏 💰		<u>*</u>					
Project List	Contents of Mo	odbus Demo							
My Projects Example		<b>a</b>	ଫ	8					
Graphics	Graphics	Tags	Alarms	System					
Cicode Files	Communica	Cicode Files	CitectVBA Files						
Ready									

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

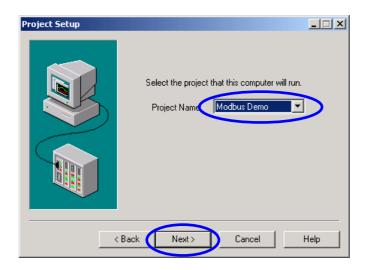


## Step35: Select "Server and Display Client" and click "Next" to

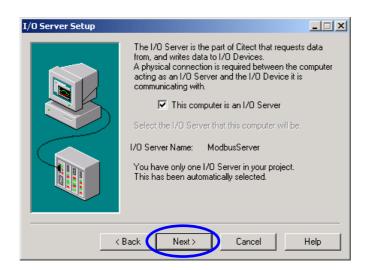
continue.



**Step36:** Select "Modbus Demo" in the "Project Name" list box and click "Next" to 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.

