

WEINTEK IIOT LTD.

Built-in CODESYS and HMI Internal Communication

Accessing HMI Driver Addresses with SoftPLC

Demo Project

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1. Overview

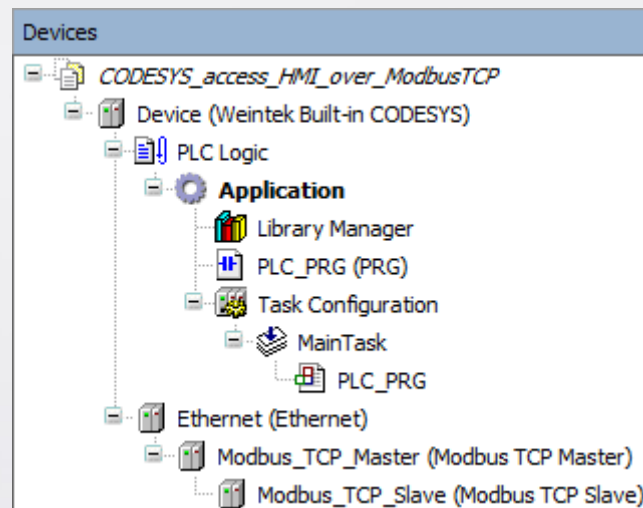
This demo project guides users in establishing internal communication between Built-in CODESYS and HMI, enabling quick setup of SoftPLC and HMI communication for seamless data exchange.

Once internal communication is successfully established, the communication reach of Built-in CODESYS can be further extended by mapping internal communication addresses to other external PLCs. This enables CODESYS to not only access HMI driver addresses but also perform real-time communication with other PLCs through internal address mapping, creating a stable and flexible device integration solution.

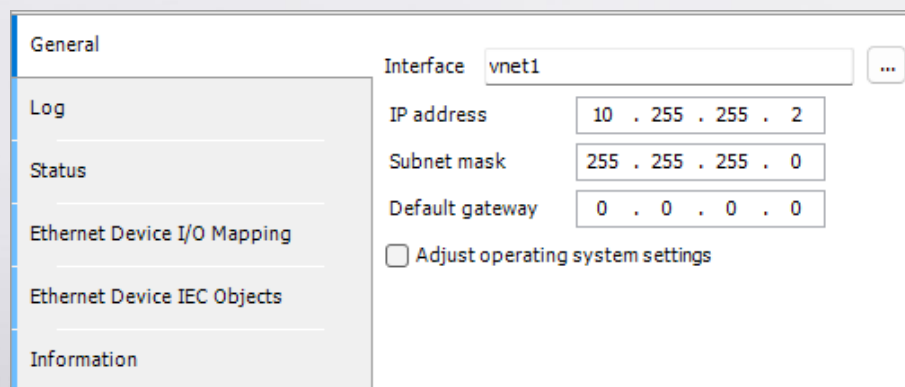
2. CODESYS Internal Communication Settings

CODESYS Project

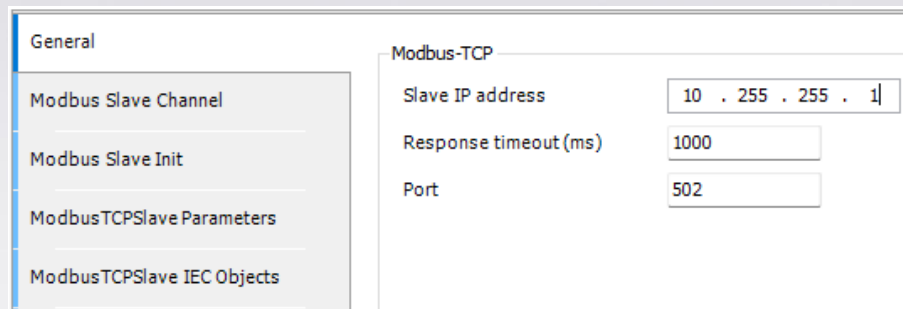
Step 1. Add the devices “Ethernet”, “ModbusTCP Master”, and “ModbusTCP Slave”.



Step 2. Go to [Ethernet] » [General] » [Interface] and select “vnet1”.



Step 3. Navigate to [ModbusTCP Slave] » [General] and enter the internal IP address of the HMI as “10.255.255.1”.



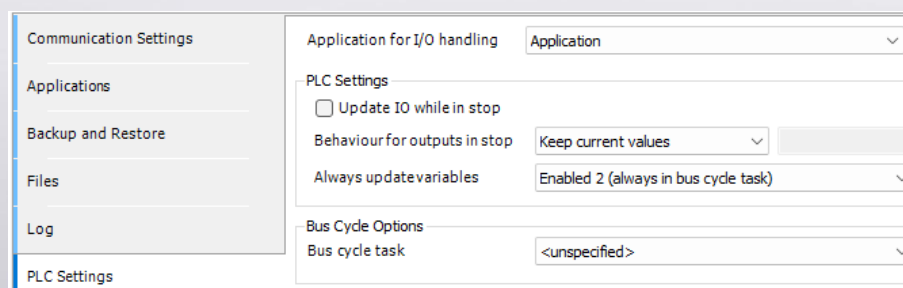
Step 4. Under [ModbusTCP Slave] » [ModbusTCPSlave Parameters], set the “Unit-ID” to match the “Station no.” parameter in the Modbus server driver in EasyBuilder Pro.

General	Parameter	Type	Value
Modbus Slave Channel	NewChannelConfig	BOOL	true
Modbus Slave Init	Unit-ID	USINT	1
ModbusTCPSlave Parameters	ResponseTimeout	DWORD	1000
	IPAddress	ARRAY[0..3] OF BYTE	[10, 255, 255, 1]
	Port	UINT	502
	ConfigVersion	UDINT	16#03050B00

Step 5. In [ModbusTCP Slave] » [Modbus TCP Slave Channel], add the Modbus communication addresses for the HMI.

General	Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
Modbus Slave Channel	0 Channel 0	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0000	1	Keep last Value	16#0000	1
	1 Channel 1	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms					

Step 6. Go to [Weintek Built-in CODESYS] » [PLC Settings] » [Always update variables] and select “Enabled 2”.



Step 7. Click [Login] and the CODESYS project will be downloaded.

3. HMI Project Settings

EasyBuilder Pro Project

Step 1. In [System Parameter Settings] » [New Device/Server], add the “MODBUS Server” driver.

Device list:

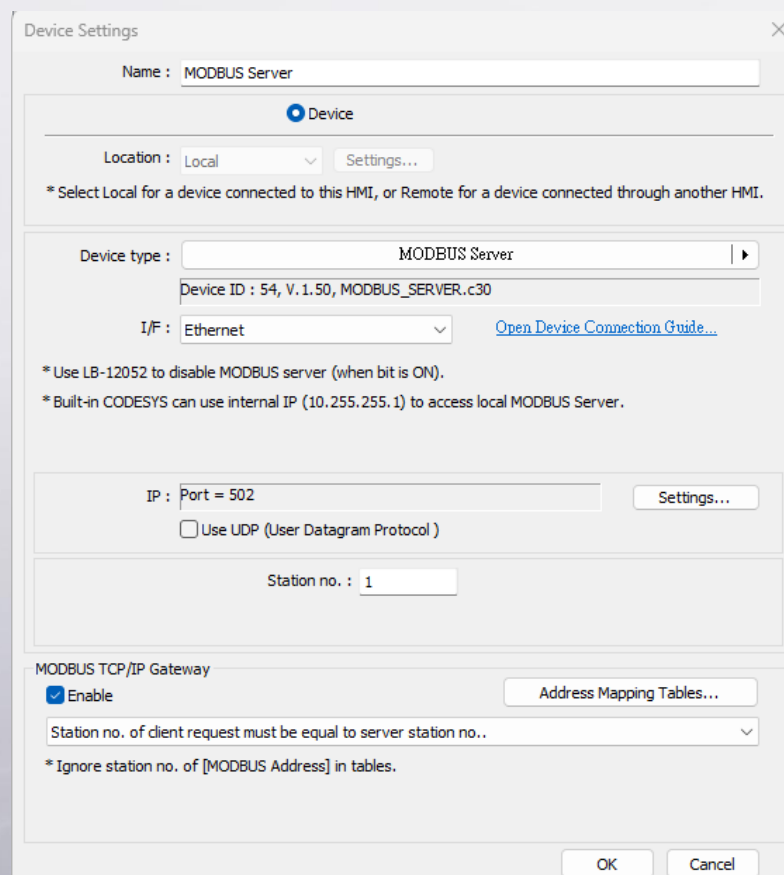
	Name	Location	Device Type
▼ Local HMI	Local HMI	Local	cMT3092X (1024 x 768)
	Local Server	MODBUS Server	Local MODBUS Server

Step 2. Configure the MODBUS Server driver parameters:

“I/F”: Ethernet

“Station no.”: 1

“MODBUS TCP/IP Gateway”: Enable



Device Settings

Name : MODBUS Server

Device

Location : Local Settings...

* Select Local for a device connected to this HMI, or Remote for a device connected through another HMI.

Device type : MODBUS Server

Device ID : 54, V.1.50, MODBUS_SERVER.c30

I/F : Ethernet [Open Device Connection Guide...](#)

* Use LB-12052 to disable MODBUS server (when bit is ON).

* Built-in CODESYS can use internal IP (10.255.255.1) to access local MODBUS Server.

IP : Port = 502 Settings...

☐ Use UDP (User Datagram Protocol)

Station no. : 1

MODBUS TCP/IP Gateway

☒ Enable Address Mapping Tables...

Station no. of client request must be equal to server station no..

* Ignore station no. of [MODBUS Address] in tables.

OK Cancel

Step 3. Add a Numeric object with the address LW-0.

Step 4. Download the project to the HMI.

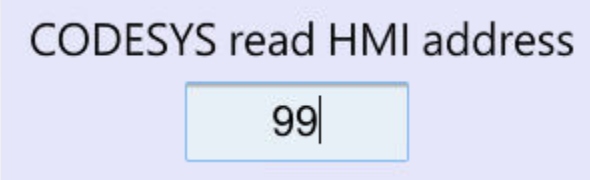
Address Mapping Table

After enabling the MODBUS TCP/IP Gateway, Modbus addresses are automatically mapped to the internal memory of the HMI. If CODESYS needs to access addresses from other PLCs, configure the address mapping table to map Modbus addresses to PLC addresses.


Address Mapping Table								
Table	Comment	MODBUS Address		Device Name	Mapped Device Address	Table Size	Read/Write	Security
1	0x <==> LB	0x-1	<==>	Mitsubishi FX5U - Binary Mode (Ethernet)	M-0	12896	Read/Write	N/A
2	1x <==> LB	1x-1	<==	Mitsubishi FX5U - Binary Mode (Ethernet)	M-0	12896	Read only	N/A
3	3x <==> LW	3x-1	<==	Mitsubishi FX5U - Binary Mode (Ethernet)	W-0	9999	Read only	N/A
4	4x <==> LW	4x-1	<==>	Mitsubishi FX5U - Binary Mode (Ethernet)	W-0	9999	Read/Write	N/A
5	3x <==> RW	3x-10000	<==	Mitsubishi FX5U - Binary Mode (Ethernet)	D-0	55536	Read only	N/A
6	4x <==> RW	4x-10000	<==>	Mitsubishi FX5U - Binary Mode (Ethernet)	D-0	55536	Read/Write	N/A

4. Operation


Modifying Address Value on the HMI



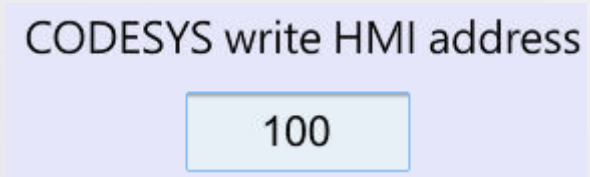
Change the address value of LW-0 on the HMI, and the value will be synchronized to the Read Holding Registers channel in CODESYS.

Variable	Mapping	Channel	Address	Type	Current Value	Prepared Value	Unit	Description
		Channel 0	%IW0	ARRAY [0..0] OF WORD				Read Holding Registers
		Channel 0[0]	%IW0	WORD	99			0x0000

Modifying Value in CODESYS

		Channel 1	%QW0	ARRAY [0..0] OF WORD				Write Multiple Registers
		Channel 1[0]	%QW0	WORD	100			0x0001

When the value is modified in the Write Multiple Registers in CODESYS, it will be synchronized to the address LW-1 on the HMI.



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