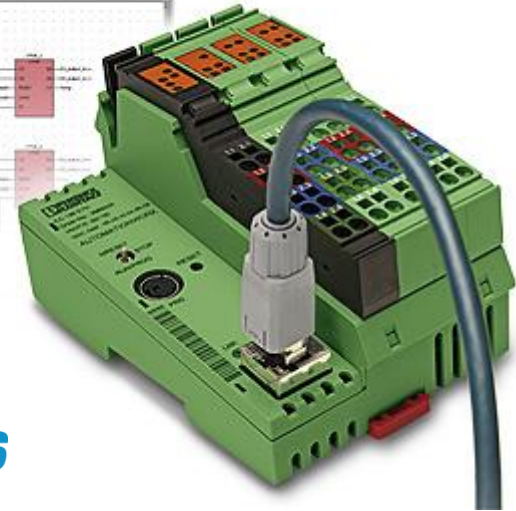
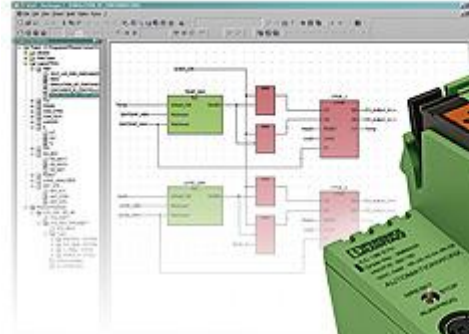
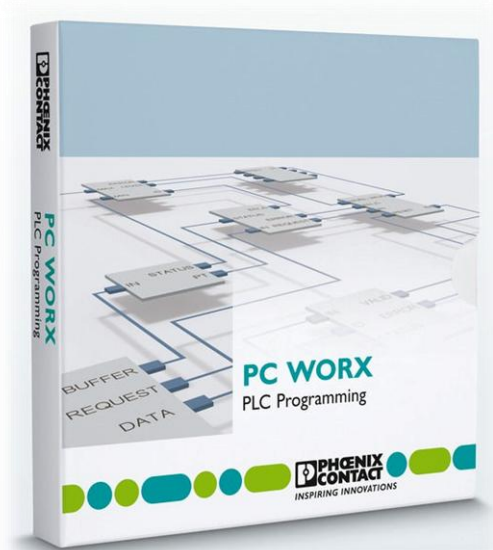
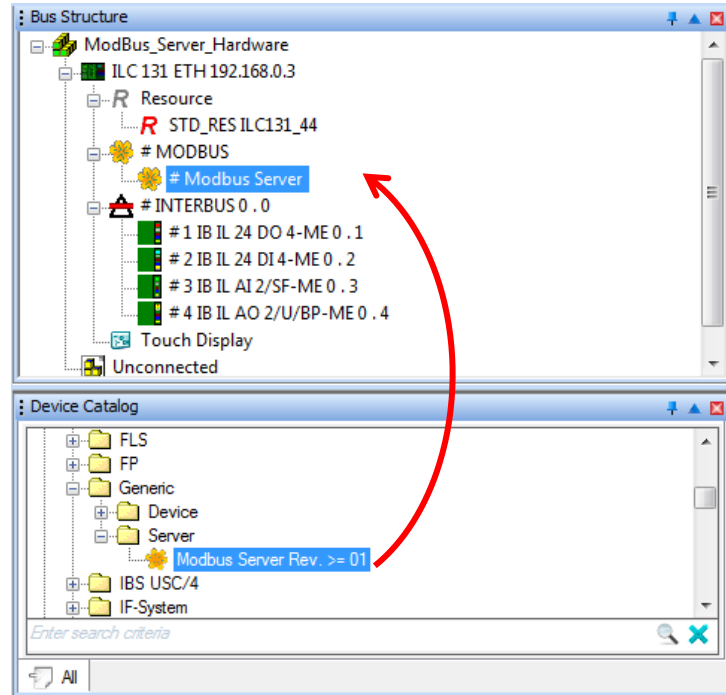


CONFIGURAÇÃO DE COMUNICAÇÃO MODBUS TCP/IP ENTRE DOIS CONTROLADORES



Via Modbus TCP/IP Nativo

BUS CONFIGURATION – Adicionar um drive genérico de MODBUS Server(Escravo)



BUS CONFIGURATION – Configuração do drive MODBUS Server(Escravo)

The screenshot displays the configuration interface for a Modbus Server. The 'Bus Structure' window shows the hierarchy: ModBus_Server_Hardware > ILC 131 ETH 192.168.0.3 > Resource > STD_RES ILC131_44 > # MODBUS > # Modbus Server. The 'Device Catalog' and 'Module Catalog' windows are also visible.

The 'Device Details' window shows the following configuration table:

Name	Value
Vendor	Phoenix Contact
Designation	Modbus Server
Device ID	0x0002
Functional description	
Device type	Server
Device family	Generic
Process Data Watchdog Trigger	0 ms
Process Data Watchdog Trigger register	1000
Process Data Watchdog Trigger behavior	Set inputs to 0
Port	502
Node ID	28

The 'Modbus-Settings' button in the bottom navigation bar is highlighted with a red box.

BUS CONFIGURATION – Criação de mapa de registros e respectivas funções do MODBUS Server(Escravo)

The screenshot shows the Phoenix Contact software interface. On the left, the 'Bus Structure' tree shows a 'Modbus Server' under 'Resource'. Below it, the 'Device Catalog' and 'Module Catalog' are visible. The main window, 'Device Details', shows the configuration for a 'Modbus Server (Modbus Register)'. A table lists 14 registers, with a red circle highlighting the entire table. At the bottom of the window, a red circle highlights the 'Modbus Register' button.

	Name	Data Type	Number	Data Direction	Address	\$Beschreibung\$
1	Input0	BIT	1	OUT	0	Inputs, ReadOnly (FC2)
2	Input1	BIT	1	OUT	1	Inputs, ReadOnly (FC2)
3	Input2	BIT	1	OUT	2	Inputs, ReadOnly (FC2)
4	Input3	BIT	1	OUT	3	Inputs, ReadOnly (FC2)
5	Input4	BIT	1	OUT	4	Inputs, ReadOnly (FC2)
6	Input5	BIT	1	OUT	5	Inputs, ReadOnly (FC2)
7	Input6	BIT	1	OUT	6	Inputs, ReadOnly (FC2)
8	Input7	BIT	1	OUT	7	Inputs, ReadOnly (FC2)
9	Output0	BIT	1	IN	10	Coils, ReadWrite (FC1, FC5, FC15)
10	Output1	BIT	1	IN	11	Coils, ReadWrite (FC1, FC5, FC15)
11	Output2	BIT	1	IN	12	Coils, ReadWrite (FC1, FC5, FC15)
12	Output3	BIT	1	IN	13	Coils, ReadWrite (FC1, FC5, FC15)
13	AnalogInput0	WORD	1	OUT	20	InputRegisters, ReadOnly (FC4)
14	AnalogOutput0	WORD	1	IN	30	HoldingRegisters, ReadWrite (FC3, FC16, FC6, FC23)

* Para adicionar um novo registro, basta clicar com o botão direito na área em branco do quadro da tabela de registros e ir na opção “Add”

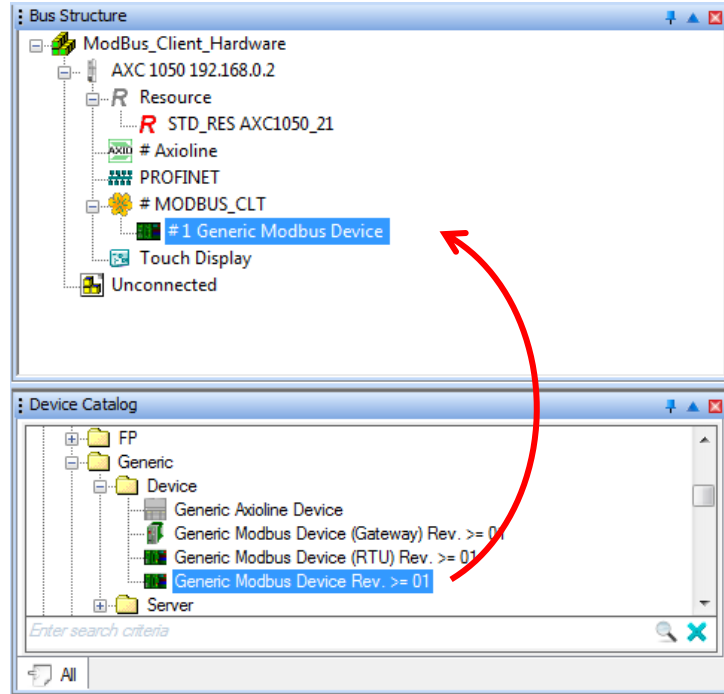
PROCESS DATA– Vincular as variáveis do programa com o mapa de registros do MODBUS Server(Escravo)

The screenshot displays the 'Process Data Assignment' window. On the left, a tree view shows the project structure with 'Main: Main' selected. The main area is divided into two tables. The left table lists program variables, and the right table lists Modbus server registers. A red arrow points from the 'Output0' row in the left table to the 'Output0' row in the right table, indicating the mapping.

Symbol/...	Data Type	Process Data Item	Description
V004	WORD		
Input0	BOOL	# Modbus Server \ ...	
Input2	BOOL	# Modbus Server \ ...	
Input3	BOOL	# Modbus Server \ ...	
Input4	BOOL	# Modbus Server \ ...	
Input5	BOOL	# Modbus Server \ ...	
Input6	BOOL	# Modbus Server \ ...	
Input7	BOOL	# Modbus Server \ ...	
Output0	BOOL	# Modbus Server \ ...	
Output1	BOOL	# Modbus Server \ ...	
Output2	BOOL	# Modbus Server \ ...	
Output3	BOOL	# Modbus Server \ ...	
Input1	BOOL	# Modbus Server \ ...	
AnalogIn...	WORD	# Modbus Server \ ...	
AnalogOu...	WORD	# Modbus Server \ ...	

Device	Process Data It...	I/Q	Data Type	Byte.Bit	Address	Symbol/...	Function Text
# Mo...	Input0	Q	BOOL	0.0		STD_CN...	
# Mo...	Input1	Q	BOOL	0.0		STD_CN...	
# Mo...	Input2	Q	BOOL	0.0		STD_CN...	
# Mo...	Input3	Q	BOOL	0.0		STD_CN...	
# Mo...	Input4	Q	BOOL	0.0		STD_CN...	
# Mo...	Input5	Q	BOOL	0.0		STD_CN...	
# Mo...	Input6	Q	BOOL	0.0		STD_CN...	
# Mo...	Input7	Q	BOOL	0.0		STD_CN...	
# Mo...	Output0	I	BOOL	0.0		STD_CN...	
# Mo...	Output1	I	BOOL	0.0		STD_CN...	
# Mo...	Output2	I	BOOL	0.0		STD_CN...	
# Mo...	Output3	I	BOOL	0.0		STD_CN...	
# Mo...	AnalogInput0	Q	WORD	0.0		STD_CN...	
# Mo...	AnalogOutput0	I	WORD	0.0		STD_CN...	

BUS CONFIGURATION – Adicionar um drive genérico de MODBUS Client (Mestre)



BUS CONFIGURATION – Configuração do drive MODBUS Client (Mestre)

The screenshot displays the configuration interface for a Modbus Client. It is divided into three main sections:

- Bus Structure:** A tree view showing the hierarchy of the Modbus Client hardware. The selected device is '# 1 Generic Modbus Device'.
- Device Catalog:** A list of available device types. The selected device is 'Generic Modbus Device Rev. >= 01'.
- Device Details:** A table showing the configuration parameters for the selected device. The 'IP Address' and 'Subnetmask' fields are highlighted with a red box and labeled 'IP do Escravo' in a yellow box.

Name	Value
Device family	Generic
Order number	
Revision: HW / Master FW (/COP FW)	01
Station Name	Generic_Modbus_20
Device Name	
Module Equipment ID	
MAC Address	
IP Address	192.168.0.3
Subnetmask	255.255.255.0
Default Gateway	
Port	502
Protocol	TCP
Swap Bytes	No
Connection timeout / UDP timeout	5000 ms
Reconnection interval	2000 ms
Process Data Watchdog Trigger	500 ms
Unit ID	1
Consecutive Number	1
Node ID	20

BUS CONFIGURATION – Criação de mapa de registros e respectivas funções do MODBUS Client (Mestre)

The screenshot displays the Modbus Client software interface. The 'Bus Structure' panel on the left shows a tree view of the hardware configuration, including 'ModBus_Client_Hardware', 'AXC 1050 192.168.0.2', 'Resource', 'STD_RES AXC1050_21', '# Axioline', 'PROFINET', '# MODBUS_CLT', '# 1 Generic Modbus Device', 'Touch Display', and 'Unconnected'. The 'Device Catalog' panel below it shows a tree view of device types, including 'FP', 'Generic', 'Device', and 'Server'. The 'Device Details' panel on the right shows the configuration for '# 1 Generic Modbus Device \Modbus Register\'. A table lists the registers and their functions, with a red circle highlighting the table area. At the bottom of the 'Device Details' panel, there are three tabs: 'Modbus-Settings', 'Modbus Register' (highlighted with a red circle), and 'Data Sheet'.

	Name	Function Code	Data Type	Number	Data Direction	Address
1	Input0	FC02 (Read Discrete Inputs)	BIT	1	IN	0
2	Input1	FC02 (Read Discrete Inputs)	BIT	1	IN	1
3	Input2	FC02 (Read Discrete Inputs)	BIT	1	IN	2
4	Input3	FC02 (Read Discrete Inputs)	BIT	1	IN	3
5	Input4	FC02 (Read Discrete Inputs)	BIT	1	IN	4
6	Input5	FC02 (Read Discrete Inputs)	BIT	1	IN	5
7	Input6	FC02 (Read Discrete Inputs)	BIT	1	IN	6
8	Input7	FC02 (Read Discrete Inputs)	BIT	1	IN	7
9	Output0	FC15 (Force Multiple Coils)	BIT	1	OUT	10
10	Output1	FC15 (Force Multiple Coils)	BIT	1	OUT	11
11	Output2	FC15 (Force Multiple Coils)	BIT	1	OUT	12
12	Output3	FC15 (Force Multiple Coils)	BIT	1	OUT	13
13	AnalogInput0	FC04 (Read Input Registers)	WORD	1	IN	20
14	AnalogOutput0	FC16 (Write Multiple Registers)	WORD	1	OUT	30

* Para adicionar um novo registro, basta clicar com o botão direito na área em branco do quadro da tabela de registros e ir na opção "Add"

PROCESS DATA– Vincular as variáveis do programa com o mapa de registros do MODBUS Client (Mestre)

The screenshot displays the 'Process Data Assignment' window, which is used to link program variables to Modbus registers. The interface is divided into several sections:

- Symbols/Variables:** A tree view on the left showing the project structure, including 'STD_CN...' and 'Main · Main'.
- Resource Tree:** A tree view on the right showing the hardware configuration, including 'AXC 1050 192.168.0.2', 'Resource', 'STD_RES AXC1050_21', 'Axioline', 'PROFINET', 'MODBUS_CLT', and '# 1 Generic Modbus Device'.
- Assignment Table (Left):** A table with columns for Symbol/..., Data Type, Process Data Item, and Description. It lists various variables like 'Saida01', 'Entrada0', 'Entrada1', etc., and their corresponding data types (BOOL, WORD).
- Assignment Table (Right):** A table with columns for Device, Process Data Item, I/Q, Data Type, Byte.Bit, Address, Symbol/..., and Function Text. It lists Modbus registers like 'Input0', 'Output0', 'AnalogInput0', etc., and their corresponding data types and addresses.

A red arrow points from the 'Saida0' row in the left table to the 'Output0' row in the right table, indicating the mapping between the program variable and the Modbus register.

Symbol/...	Data Type	Process Data Item	Description
Saida01	BOOL		
Entrada0	BOOL	# 1 Generic Modbu...	
Entrada1	BOOL	# 1 Generic Modbu...	
Entrada2	BOOL	# 1 Generic Modbu...	
Entrada3	BOOL	# 1 Generic Modbu...	
Entrada4	BOOL	# 1 Generic Modbu...	
Entrada5	BOOL	# 1 Generic Modbu...	
Entrada6	BOOL	# 1 Generic Modbu...	
Entrada7	BOOL	# 1 Generic Modbu...	
Saida0	BOOL	# 1 Generic Modbu...	
Saida1	BOOL	# 1 Generic Modbu...	
Saida2	BOOL	# 1 Generic Modbu...	
Saida3	BOOL	# 1 Generic Modbu...	
AnalogIn...	WORD	# 1 Generic Modbu...	
AnalogOu...	WORD	# 1 Generic Modbu...	

Device	Process Data Item	I/Q	Data Type	Byte.Bit	Address	Symbol/...	Function Text
# 1 G...	Input0	I	BOOL	0.0		STD_CN...	
# 1 G...	Input1	I	BOOL	0.0		STD_CN...	
# 1 G...	Input2	I	BOOL	0.0		STD_CN...	
# 1 G...	Input3	I	BOOL	0.0		STD_CN...	
# 1 G...	Input4	I	BOOL	0.0		STD_CN...	
# 1 G...	Input5	I	BOOL	0.0		STD_CN...	
# 1 G...	Input6	I	BOOL	0.0		STD_CN...	
# 1 G...	Input7	I	BOOL	0.0		STD_CN...	
# 1 G...	Output0	Q	BOOL	0.0		STD_CN...	
# 1 G...	Output1	Q	BOOL	0.0		STD_CN...	
# 1 G...	Output2	Q	BOOL	0.0		STD_CN...	
# 1 G...	Output3	Q	BOOL	0.0		STD_CN...	
# 1 G...	AnalogInput0	I	WORD	0.0		STD_CN...	
# 1 G...	AnalogOutput0	Q	WORD	0.0		STD_CN...	

Exemplo Programa Main - Escravo

(*##### Link de variaveis do PLC escravo com registro Modbus OUT #####*)

ONBOARD_INPUT_BIT0—————Envia_Mestre_Digital_0
ONBOARD_INPUT_BIT1—————Envia_Mestre_Digital_1
CONTA_PECAS—————Envia_Mestre_Contador_0

(*##### Link de variaveis do PLC escravo com registro Modbus IN #####*)

Recebe_Escravo_Digital_0—————ONBOARD_OUTPUT_BIT0
Recebe_Escravo_Digital_1—————ONBOARD_OUTPUT_BIT1
Recebe_Escravo_Display_0—————IHM_Slave

Exemplo Bus Configuration – Modbus Registers - Escravo

Bus Structure

- Exemplo_MB_Nativo_Server
 - ILC 131 ETH 192.168.0.10
 - Resource
 - STD_RES ILC131_44
 - # MODBUS
 - # Modbus Server
 - # INTERBUS 0 . 0
 - Touch Display
 - Unconnected

Device Catalog

- Generic
- IL
- IL 2MBD
- ILB
- ILC1xx
- IP
- LOOP 2

Enter search criteria

All

Device Details

Modbus Server (Modbus Register)

	Name	Data Type	Number	Data Direction	Address	§Beschreibung§
1	Envia_MB_BIT_0	BIT	1	OUT	0	Inputs, ReadOnly (FC2)
2	Envia_MB_BIT_1	BIT	1	OUT	1	Inputs, ReadOnly (FC2)
3	Recebe_MB_BIT_0	BIT	1	IN	2	Coils, ReadWrite (FC1, FC5, FC15)
4	Recebe_MB_BIT_1	BIT	1	IN	3	Coils, ReadWrite (FC1, FC5, FC15)
5	Envia_MB_WORD_0	WORD	1	OUT	10	InputRegisters, ReadOnly (FC4)
6	Recebe_MB_WORD_0	WORD	1	IN	20	HoldingRegisters, ReadWrite (FC3, FC16, FC6, FC23)

Modbus-Settings Modbus Register Data Sheet

Exemplo Process Data - Escravo

Process Data Assignment

Symbols/Variables

- STD_CNF : eCLR
- STD_RES : ILC131_44
 - Default
 - System Variables

Exemplo_MB_Nativo_Server

- ILC 131 ETH 192.168.0.10
 - Resource
 - STD_RES ILC131_44
 - # MODBUS
 - # Modbus Server
 - # INTERBUS 0 . 0
 - Touch Display
 - Unconnected

Symbol/Variable	Data Type	Process Data Item	Description
CONTA_PECAS	WORD		
IHM_Slave	WORD		
Envia_Mestre_Digital_0	BOOL	# Modbus Server \ ...	
Envia_Mestre_Digital_1	BOOL	# Modbus Server \ ...	
Envia_Mestre_Contador_0	WORD	# Modbus Server \ ...	
Recebe_Escravo_Digital_0	BOOL	# Modbus Server \ ...	
Recebe_Escravo_Digital_1	BOOL	# Modbus Server \ ...	
Recebe_Escravo_Display_0	WORD	# Modbus Server \ ...	

Device	Process Data Item	I/Q	Data Type	Byte.Bit	Address	Symbol/...	Function Te
# Mo...	NODE_STATUS_...	I	MBS_NOD...	0			
# Mo...	Envia_MB_BIT_0	Q	BOOL	0.0		STD_CN...	
# Mo...	Envia_MB_BIT_1	Q	BOOL	0.0		STD_CN...	
# Mo...	Recebe_MB_BIT...	I	BOOL	0.0		STD_CN...	
# Mo...	Recebe_MB_BIT...	I	BOOL	0.0		STD_CN...	
# Mo...	Envia_MB_WOR...	Q	WORD	0.0		STD_CN...	
# Mo...	Recebe_MB_W...	I	WORD	0.0		STD_CN...	

Exemplo Programa Main - Mestre

(*##### Link de variáveis com registros de leitura Modubs IN #####*)

Le_Escravo_Digital_0—————Led_Sinalizador_0

Le_Escravo_Digital_0—————Led_Sinalizador_1

Le_Escravo_Word_0—————Word_Sinalizador_0

(*##### Link de variáveis com registros de escrita Modubs OUT #####*)

Alarme_Digital_0—————Escreve_Escravo_Digital_0

Alarme_Digital_1—————Escreve_Escravo_Digital_1

Alarme_Word_0—————Escreve_Escravo_Word_0

Exemplo Bus Configuration – Modbus Registers - Mestre

Bus Structure

- Exemplo_MB_Nativo_Client
 - PC WORX SRT V1.1 EXPRESS 192.168.0.22
 - Resource
 - STD_RES PCWSRT_11
 - # MODBUS_CLT
 - # 1 Generic Modbus Device

Device Catalog

- Generic
- IL
- IL 2MBD
- ILB
- ILC1xx
- IP
- LOOP 2

Enter search criteria

Device Details

1 Generic Modbus Device \Modbus Register\

	Name	Function Code	Data Type	Number	Data Direction	Address
1	Leitura_MB_BIT_0	FC02 (Read Discrete Inputs)	BIT	1	IN	0
2	Leitura_MB_BIT_1	FC02 (Read Discrete Inputs)	BIT	1	IN	1
3	Escrita_MB_BIT_0	FC15 (Force Multiple Coils)	BIT	1	OUT	2
4	Escrita_MB_BIT_1	FC15 (Force Multiple Coils)	BIT	1	OUT	3
5	Leitura_MB_WORD_0	FC04 (Read Input Registers)	WORD	1	IN	10
6	Escrita_MB_WORD_1	FC16 (Write Multiple Registers)	WORD	1	OUT	20

Modbus-Settings Modbus Register Data Sheet

Exemplo Process Data - Mestre

Process Data Assignment

Symbols/Variables

- STD_CNF : eCLR
 - STD_RES : PCWSRT_11
 - Default
 - System Variables

Exemplo_MB_Nativo_Client

- PC WORX SRT V1.1 EXPRESS 192.168.0.22
 - Resource
 - STD_RES PCWSRT_11
 - # MODBUS_CLT
 - # 1 Generic Modbus Device
 - Unconnected

Symbol/Variable	Data Type	Δ	Process Data I...	Description
Alarme_Digital_1	BOOL			
Alarme_Word_0	WORD			
Escreve_Escravo_Digital_0	BOOL		# 1 Generic Modbu...	
Escreve_Escravo_Digital_1	BOOL		# 1 Generic Modbu...	
Escreve_Escravo_Word_0	WORD		# 1 Generic Modbu...	
Le_Escravo_Digital_0	BOOL		# 1 Generic Modbu...	
Le_Escravo_Digital_1	BOOL		# 1 Generic Modbu...	
Le_Escravo_Word_0	WORD		# 1 Generic Modbu...	

Device	Process Data It...	I/Q	Data Type	Byte.Bit	Address	Symbol/...	Function Te...
# 1 G...	STATION_CON...	Q	MBT_STAT...	0			
# 1 G...	Leitura_MB_BIT_0	I	BOOL	0.0		STD_CN...	
# 1 G...	Leitura_MB_BIT_1	I	BOOL	0.0		STD_CN...	
# 1 G...	Escrita_MB_BIT_0	Q	BOOL	0.0		STD_CN...	
# 1 G...	Escrita_MB_BIT_1	Q	BOOL	0.0		STD_CN...	
# 1 G...	Leitura_MB_WO...	I	WORD	0.0		STD_CN...	
# 1 G...	Escrita_MB_WO...	Q	WORD	0.0		STD_CN...	

Pronto!!!

A comunicação Modbus TCP/IP já está configurada.
Agora você já pode iniciar a programação.



INSPIRING INNOVATIONS

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