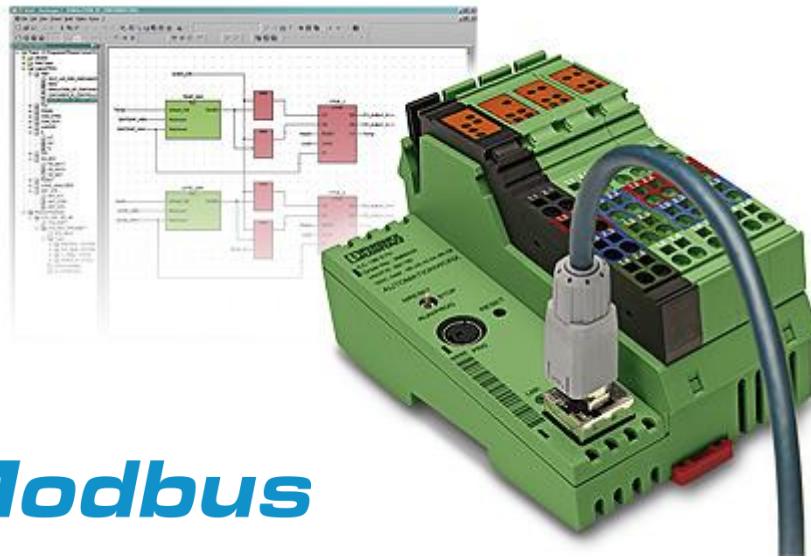
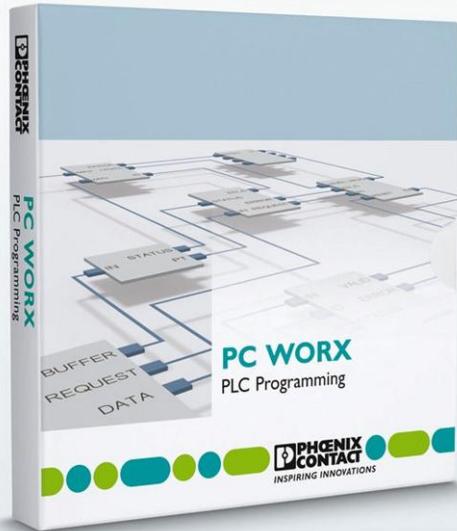
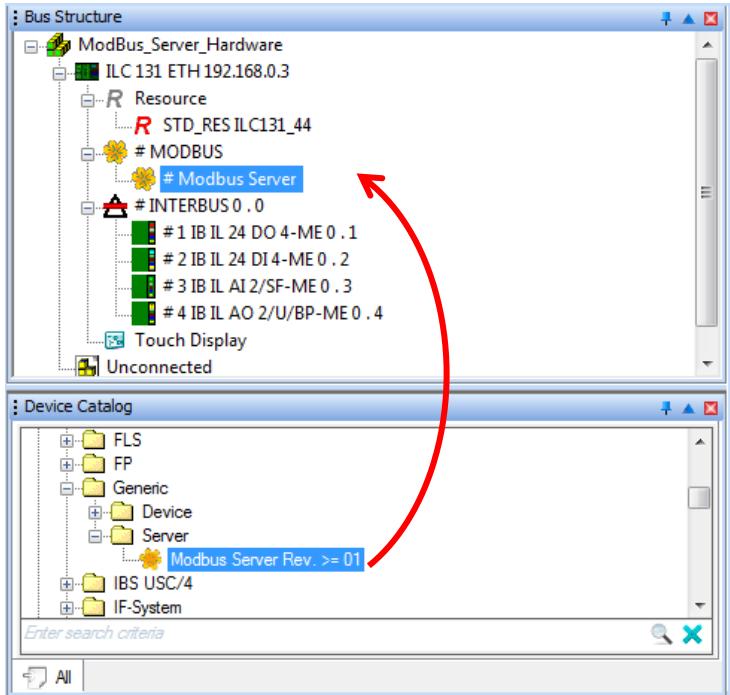


# CONFIGURAÇÃO DE COMUNICAÇÃO MODBUS TCP/IP ENTRE DOIS CONTROLADORES



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 shows the Bus Configuration software interface with the following components:

- Bus Structure** pane (left): Shows the device tree. A **# Modbus Server** node under **ILC 131 ETH 192.168.0.3** is selected and highlighted in blue.
- Device Catalog** pane (bottom-left): Contains categories like Phoenix Contact and Universal. A search bar and a 'All' button are also present.
- Module Catalog** pane (bottom-right): Contains a search bar and a 'All' button.
- Device Details** pane (right): Displays configuration settings for the selected Modbus Server. A red box highlights the following settings:

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
- Bottom Navigation Bar**: Contains tabs for **Modbus-Settings** (highlighted with a red box), **Modbus Register**, and **Data Sheet**.

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

The screenshot shows the Bus Configuration software interface with three main panes:

- Bus Structure:** Shows the hardware configuration under "ModBus\_Server\_Hardware". It includes an ILC 131 ETH 192.168.0.3 device with various resources like STD\_RES, MODBUS, and INTERBUS.
- Device Catalog:** Lists components from Phoenix Contact and Universal categories.
- Device Details:** Displays the "Modbus Register" configuration for the selected device. A red box highlights the table below:

	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, FCS, FC15)
11	Output2	BIT	1	IN	12	Coils, ReadWrite (FC1, FC5, FC15)
12	Output3	BIT	1	IN	13	Coils, ReadWrite (FC1, FCS, FC15)
13	AnalogInput0	WORD	1	OUT	20	InputRegisters, ReadOnly (FC4)
14	AnalogOutput0	WORD	1	IN	30	HoldingRegisters, ReadWrite (FC3, FC16, FC6, FC23)

A red box also highlights the "Modbus Register" tab at the bottom of the Device Details pane.

\* 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)

Process Data Assignment

Symbols/Variables

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 \ ...	

ILC 131 ETH 192.168.0.3

R Resource

R STD\_RES ILC131\_44

# MODBUS

# Modbus Server

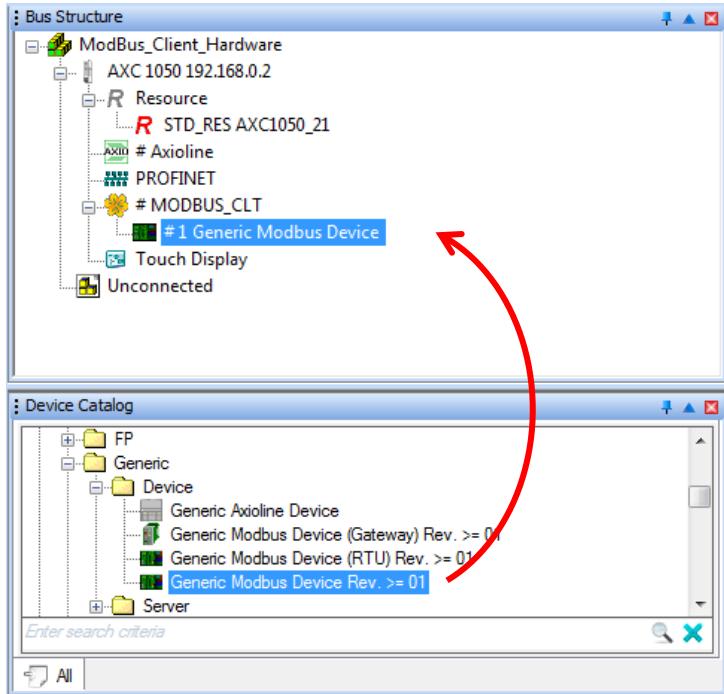
# INTERBUS 0 . 0

# 1 IB IL 24 DO 4-ME 0 . 1

# 2 IB IL 24 DI 4-ME 0 . 2

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 shows the Bus Configuration software interface with three main panes:

- Bus Structure**: Shows the hierarchical structure of the network. A device named "ModBus\_Client\_Hardware" is selected, revealing its internal components: AXC 1050 192.168.0.2, Resource (STD\_RES AXC1050\_21), PROFINET, # MODBUS\_CLT, # 1 Generic Modbus Device, Touch Display, and Unconnected.
- Device Catalog**: Displays a catalog of available devices. Under the "Device" category, "Generic Modbus Device Rev. >= 01" is selected.
- Device Details**: Provides configuration details for the selected device. The table lists various parameters:

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

A red box highlights the "IP Address" and "Subnetmask" fields, with a yellow callout "IP do Escravo" pointing to the IP address value. The "Modbus-Settings" tab is also highlighted with a red box at the bottom of the Device Details pane.

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

The screenshot shows the Bus Configuration software interface with three main windows:

- Bus Structure**: Shows the hardware resources connected to the AXC 1050. It includes a Resource folder containing STD\_RES AXC1050\_21 (Axioline), PROFINET, and # MODBUS\_CLT (containing #1 Generic Modbus Device). Other entries include Touch Display and Unconnected.
- Device Catalog**: Displays a tree structure under Generic > Device, listing Generic Axiline Device, Generic Modbus Device (Gateway) Rev. >= 01, Generic Modbus Device (RTU) Rev. >= 01, and Generic Modbus Device Rev. >= 01. A search bar at the bottom allows entering search criteria.
- Device Details**: Shows the configuration for #1 Generic Modbus Device \Modbus Register\, specifically for the #1 Generic Modbus Device. The table lists 14 registers with their details:

	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

At the bottom of the Device Details window, there are three tabs: Modbus-Settings, Modbus Register (which is highlighted with a red box), and Data Sheet.

\* 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)

Process Data Assignment

Symbols/Variables

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...	

AXC 1050 192.168.0.2

- Resource
  - R STD\_RES AXC1050\_21
    - Axioline
    - PROFINET
    - # MODBUS\_CLT
      - # 1 Generic Modbus Device
- Touch Display

Device Process Data Ite... I/Q Data Type Byte.Bit Address Symbol/... Function Text

Device	Process Data Ite...	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

The screenshot displays the Bus Configuration software interface for a Modbus Server setup.

**Bus Structure:** Shows the project structure under "Exemplo\_MB\_Nativo\_Server". The "ILC 131 ETH 192.168.0.10" node contains a "Resource" folder with "STD\_RES ILC131\_44" and a "# MODBUS" folder. The "# MODBUS" folder contains "# Modbus Server" and "# INTERBUS 0 .0". Other nodes include "Touch Display" and "Unconnected".

**Device Catalog:** A tree view showing categories like Generic, IL, IL 2MBD, ILB, ILC1xx, IP, and LOOP 2. A search bar at the bottom allows entering search criteria.

**Device Details:** The "Modbus Register" tab is selected, showing the configuration for the "# Modbus Server \Modbus Register\" device. The table lists the following registers:

	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)

At the bottom, tabs for "Modbus-Settings", "Modbus Register", and "Data Sheet" are visible.

# Exemplo Process Data - Escravo

Process Data Assignment

Symbols/Variables

- STD\_CNF: eCLR
- STD\_RES : ILC131\_44
  - Default
  - System Variables

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 \ ...	

Exemplo\_MB\_Nativo\_Server

- ILC 131 ETH 192.168.0.10
  - R Resource
    - R STD\_RES ILC131\_44
  - # MODBUS
    - # Modbus Server
  - # INTERBUS 0 . 0
  - Touch Display
- Unconnected

Device	Process Data It...	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

The screenshot displays the configuration interface for a Modbus device. The left pane shows the **Bus Structure** with a connection to a **PC WORX SRT V1.1 EXPRESS** at IP **192.168.0.22**. The right pane shows the **Device Details** for a **#1 Generic Modbus Device**, listing six registers with their names, function codes, data types, and addresses.

**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
  - Unconnected

**Device Details:**

	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

**Device Catalog:**

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

**Modbus Register:**

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
  - R Resource
    - STD\_RES PCWSRT\_11
  - # MODBUS\_CLT
    - #1 Generic Modbus Device
  - Unconnected

Symbol/Variable	Data Type	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 Ite...	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.





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