

Servo press kit YJKP - Commissioning Anybus X-gateway Modbus-TCP PROFINET

Commissioning of the Anybus X-gateway Modbus-TCP PROFINET
in connection with the servo press kit YJKP:

YJKP

- Electrical commissioning
- Mechanical commissioning
- Software commissioning

Title Servo press kit YJKP - Commissioning Anybus X-gateway Modbus-TCP PROFINET
Version 1.20
Document no. 100131
Originalen
AuthorFesto

Last saved 14.02.2017

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1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
Servo press kit YJKP	general	--
Application software YJKP (GSAY-A4-F0-Z4-1.1.1)	V1.1.1	--
Firmware controller (CECC-X)	V3.2.10	--
Firmware motor controller (CMMP-AS)	V4.0.1501.2.3	--
Anybus X-gateway Modbus-TCP PROFINET	general	--

Table 1.1: 1 Components/Software used

2 Application description

This application note describes the commissioning of the Anybus X-gateway Modbus-TCP PROFINET in connection with the servo press kit YJKP:

- Electrical commissioning
- Mechanical commissioning
- Software commissioning

3 Electrical commissioning

See user manual Anybus X-gateway Modbus-TCP PROFINET on the provided CD.

Open windows explorer.

Navigate to path /files/Manual/PROFINET in the CD Drive directory.

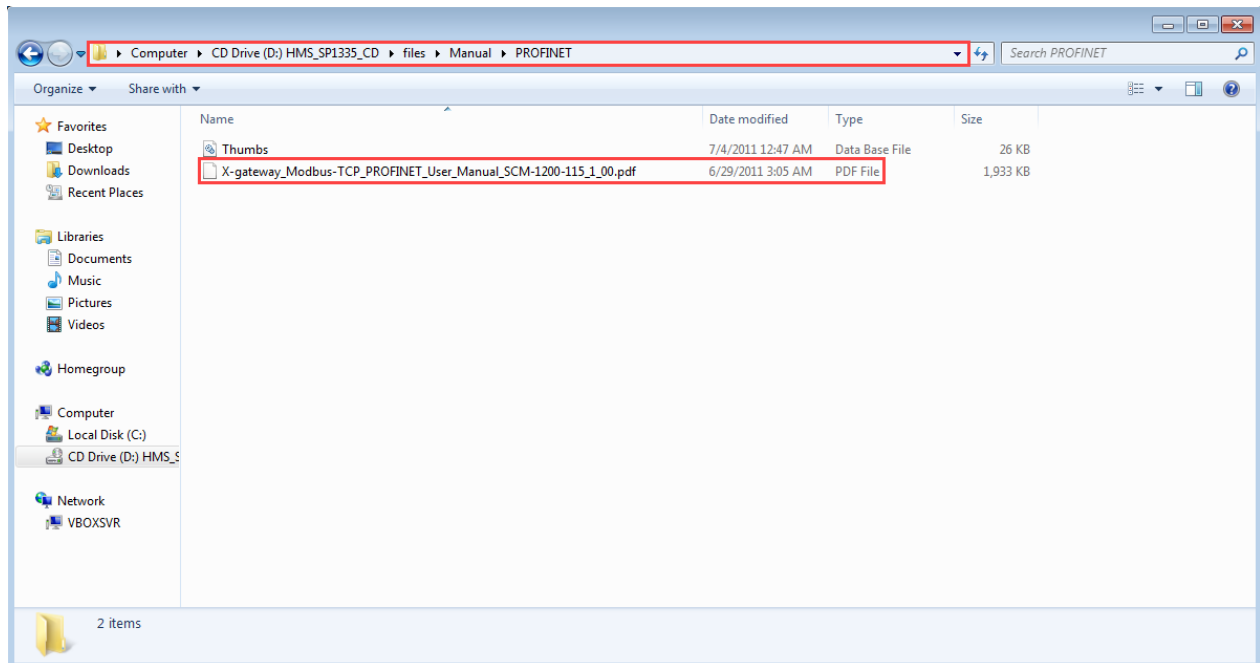


Figure 3-1: Manual Anybus X-gateway Modbus-TCP PROFINET

4 Mechanical commissioning

See user manual Anybus X-gateway Modbus-TCP PROFINET on the provided CD.

Open windows explorer.

Navigate to path /files/Manual/PROFINET in the CD Drive directory.

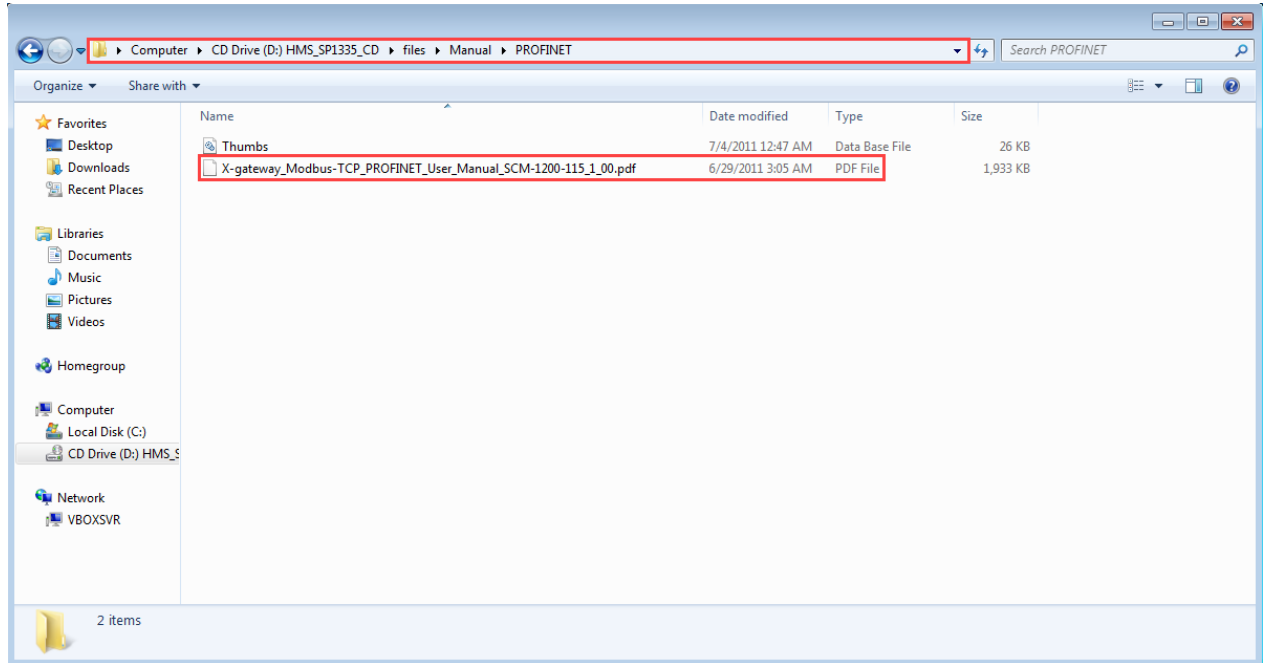


Figure 4-1: Manual Anybus X-gateway Modbus-TCP PROFINET

5 Software commissioning

For additional information see user manual Anybus X-gateway Modbus-TCP PROFINET on the provided CD.

Open windows explorer.

Navigate to path /files/Manual/PROFINET in the CD Drive directory.

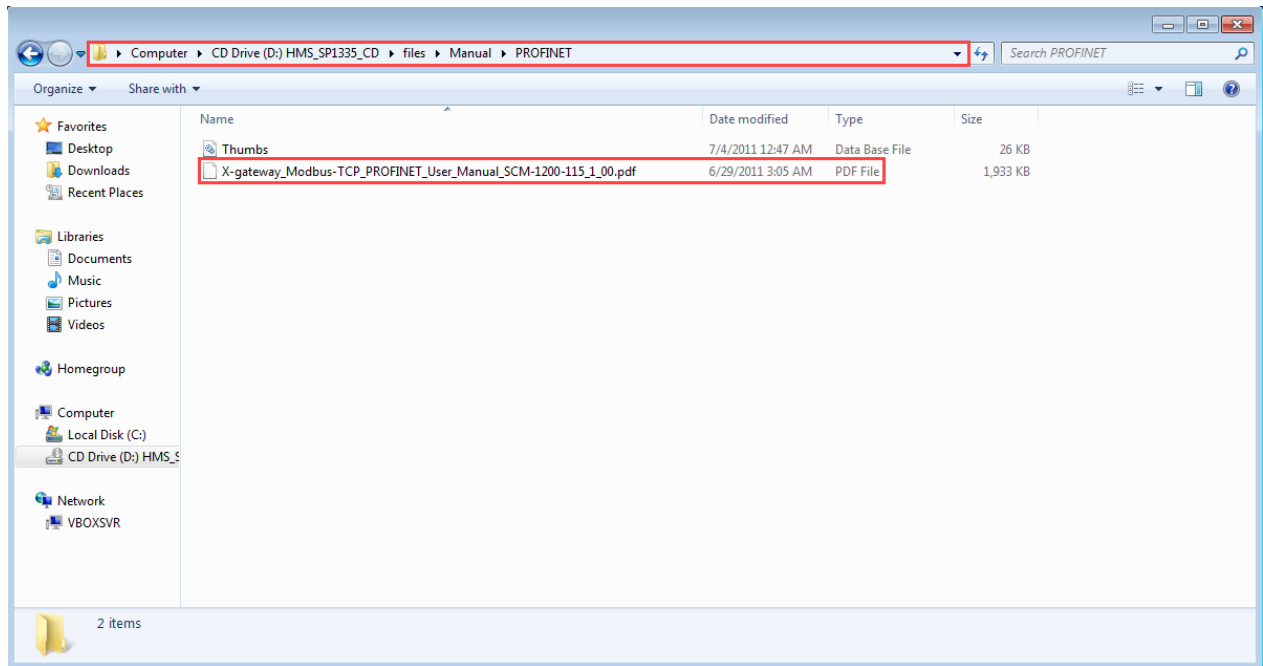


Figure 5-1: Manual Anybus X-gateway Modbus-TCP PROFINET

5.1 Installation Anybus IPconfig

1. Insert delivered CD with the Anybus X-gateway in your CD Drive.
2. Open windows explorer.
Navigate to path /files/Anybus IPconfig in the CD Drive directory.
Execute Anybus IPconfig Setup 1.7.1.2.exe.

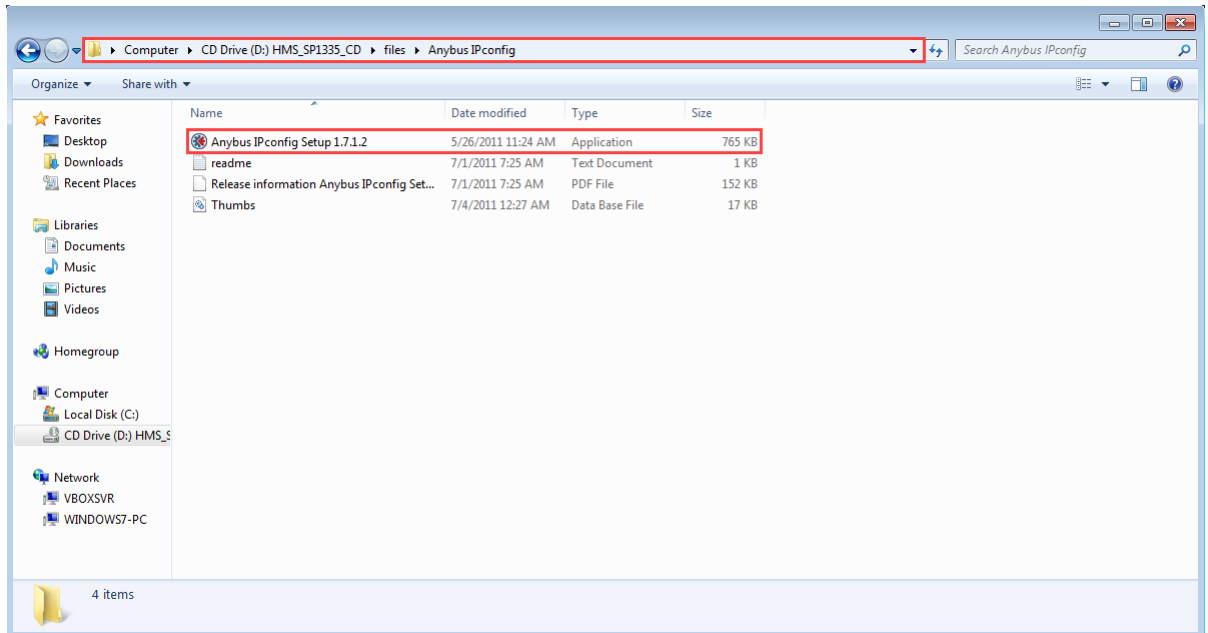


Figure 5-2: Install Anybus IPconfig

3. A dialog box “User Account Control” will be pop up.
Confirm the request with left click on button “Yes”.

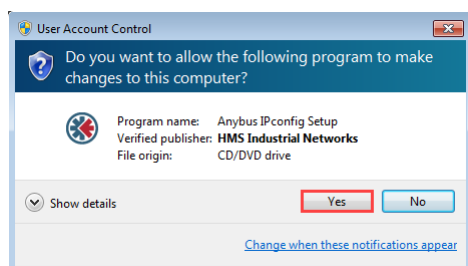


Figure 5-3: Dialog box "User Account control"

4. A dialog box “Setup - Anybus IPconfig” will be pop up.
Confirm the request with left click on button “Next >”.

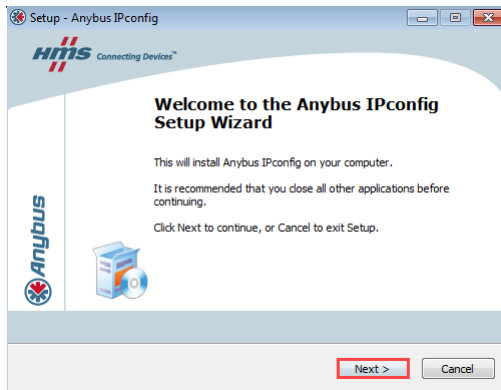


Figure 5-4: Dialog box "Setup - Anybus IPconfig"

5. A dialog box “Setup - Anybus IPconfig” will be pop up.
Select with left click on radio button “I accept the agreement”.
Confirm the request with left click on button “Next >”.

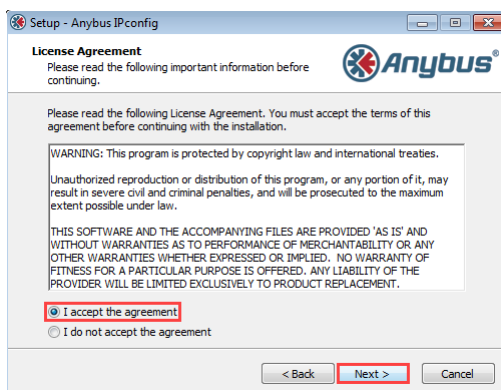


Figure 5-5: Dialog box "Setup - Anybus IPconfig"

6. A dialog box “Setup - Anybus IPconfig” will be pop up.
Change the destination folder if you don't want to use the default settings.
Confirm the request with left click on button “Next >”.

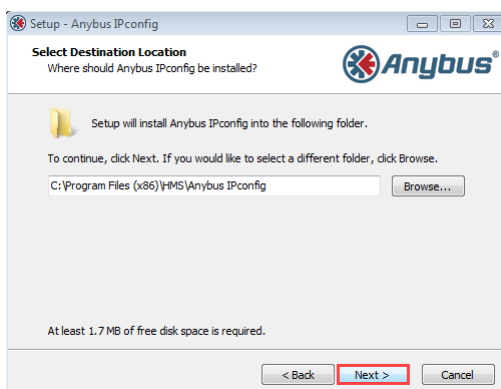


Figure 5-6: Dialog box "Setup - Anybus IPconfig"

7. A dialog box “Setup - Anybus IPconfig” will be pop up.
Change the shortcut options if you don’t want to use the default settings.
Confirm the request with left click on button “Next >”.

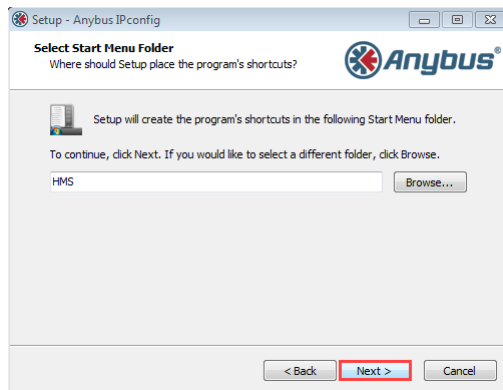


Figure 5-7: Dialog box "Setup - Anybus IPconfig"

8. A dialog box “Setup - Anybus IPconfig” will be pop up.
Confirm the request with left click on button “Install”.

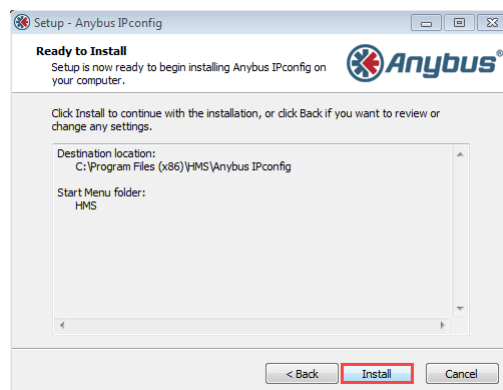


Figure 5-8: Dialog box "Setup - Anybus IPconfig"

5.2 Configure Anybus X-gateway Modbus-TCP PROFINET

1. Execute software “Anybus IPconfig”.
2. A dialog box “Windows Security Alert” will be pop up.
Select with left click on radio button “Private networks, such as my home or work network”.
Confirm the request with left click on button “Allow access”.

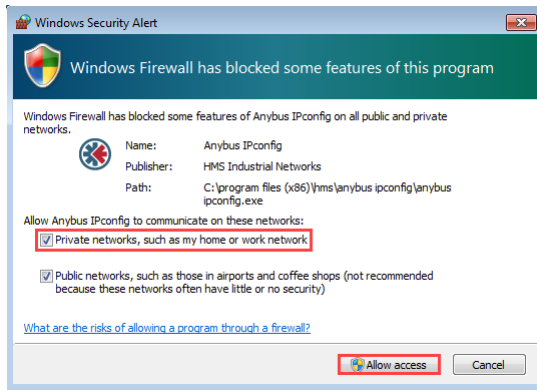


Figure 5-9: Dialog box "Windows Security Alert "

3. A window “Anybus IPconfig” will be pop up.
Select device with right click and select item “Configuration” with left click.

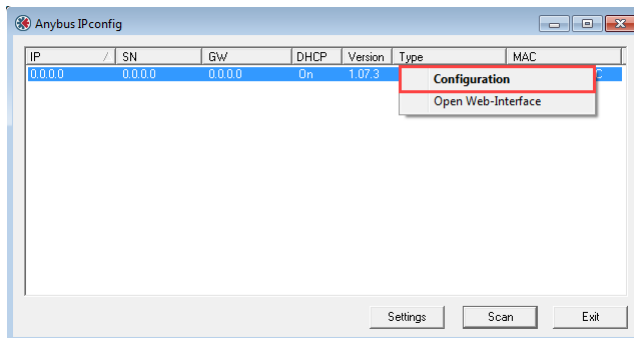


Figure 5-10: Open configuration

4. A dialog box “Configure” will be pop up.
Change IP address to your preferred IP address.
In this case “192.168.4.100”.
Change subnet mask to your preferred subnet mask.
In this case “255.255.0.0”.
Select radio button “Off” with left click to deactivate DHCP.
Confirm input with left click on button “OK”.

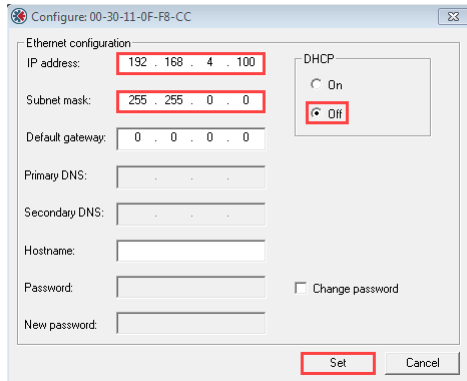


Figure 5-11: Set network properties

5. Open a web browser and type in the IP address of the device.
Confirm input with return.

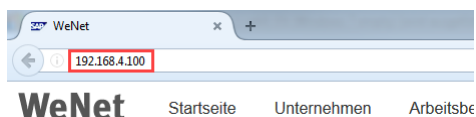


Figure 5-12: Open configuration software

6. The configuration software opened in the browser window.

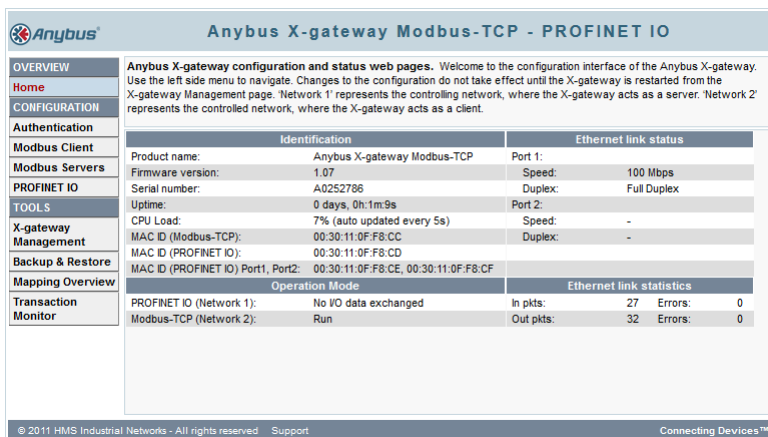


Figure 5-13: Configuration software "Home"

7. Select button “Authentication” with left click to change the settings of the Authentication. Change settings to your preferred settings, if you don’t want to use the default settings. Confirm input with left click on button “Save settings”.

Anybus X-gateway Modbus-TCP - PROFINET IO

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Authentication configuration. Enable or disable the username/password authentication of the gateway's configuration pages. It is very important to save the authentication information and keep it in a safe location, since it is not possible to retrieve a lost username or password.

Administrator authentication

Authentication
If authentication is enabled username and password can be changed below. Current username and password is not shown when entering this page. Disabled

New username

New password

Confirm new password

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Figure 5-14: Configuration software "Authentication"

8. Select button “Modbus Client” with left click to change the settings of the Modbus Client. Change settings to your preferred settings, if you don’t want to use the default settings. Confirm input with left click on button “Save settings”.

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Modbus client configuration (Network 2). Configure the Modbus-TCP (Network 2) settings.

IP Configuration		Actual
IP address	192.168.4.100	192.168.4.100
Subnet mask	255.255.0.0	255.255.0.0
Router IP address	0.0.0.0	0.0.0.0
DHCP	Disabled	
Anybus IPConfig (HICP)	Enabled	

Other settings

Start-up operation mode Running

Action in case of irrecoverable error Shutdown

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Figure 5-15: Configuration software "Modbus Client"

9. Select button “Modbus Servers” with left click to change the settings of the Modbus Servers. Add a new server with left click on button “Add new server”.

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Modbus server configuration (Network 2). Add, edit or delete Modbus connections for Network 2. On each connection several transactions towards a Modbus server can be set up. Press 'Add new server' button to add a new connection, then edit it to set server properties and finally click the 'Transactions' link to set up transactions to call Modbus functions on the server. The global limit is 64 transactions and it is not possible to map more process data than the X-gateway can handle.

Global configuration limits.
Transaction units: 0/61 units | I/O mapped input data: 8/256 bytes | I/O mapped output data: 0/256 bytes | I/O mapped input bits: 0/1024 | I/O mapped output bits: 0/1024 | Input data: 0/256 bytes | Output data: 0/256 bytes

Name	IP address	Port	Protocol	Transactions
No servers configured, click button to add a server.				

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Figure 5-16: Configuration software "Modbus Servers"

10. Edit server with left click on button “Edit”.

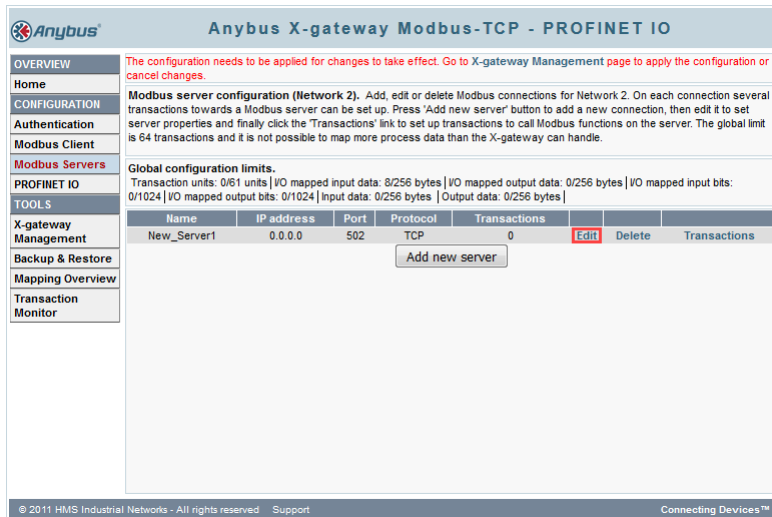


Figure 5-17: Configuration software "Modbus Servers"

11. Change the settings of the server if you don't want to use the default settings.
Change name to your preferred name.
In this case “YJKP”.
Change server address to your preferred server address.
In this case “192.168.4.10”.
Confirm input with left click on button “OK”.

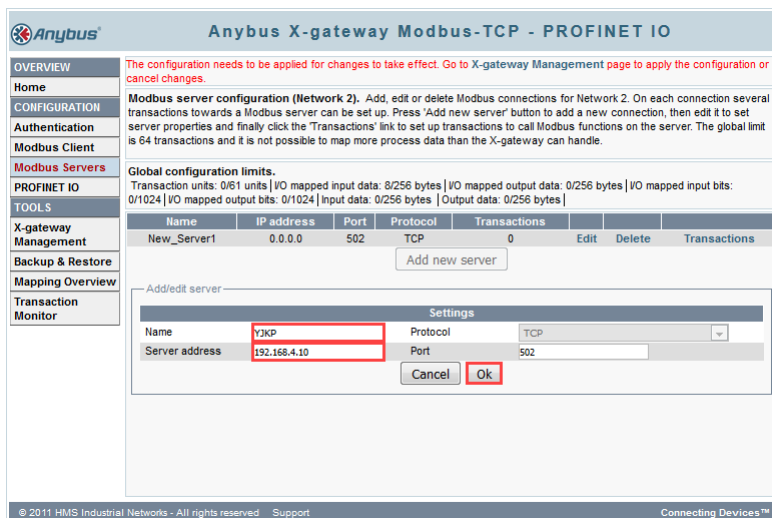


Figure 5-18: Configuration software "Modbus Servers"

12. Add transactions to the server with left click on button “Transactions”.

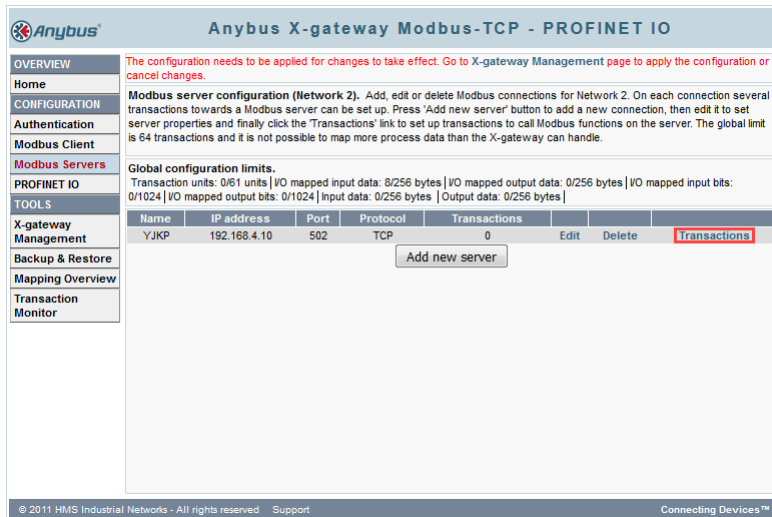


Figure 5-19: Configuration software "Modbus Servers"

13. Add new transaction to the server with left click on button “Add new transaction”.

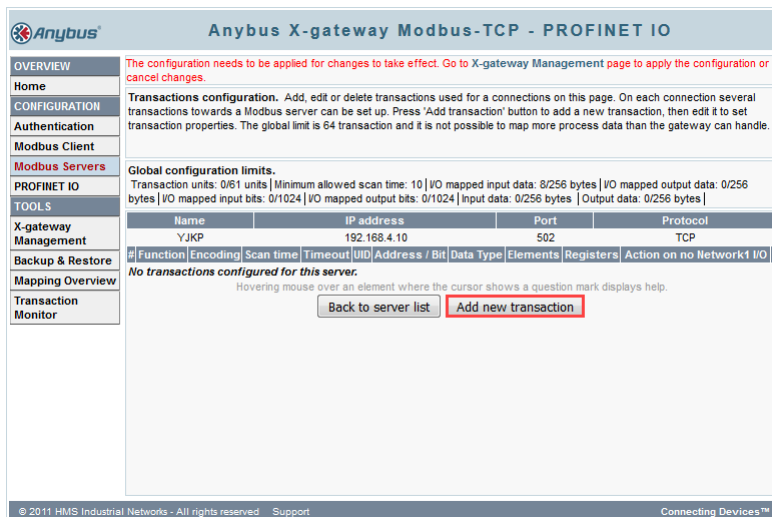


Figure 5-20: Configuration software "Modbus Servers"

14. Edit transaction with left click on button “Edit”.

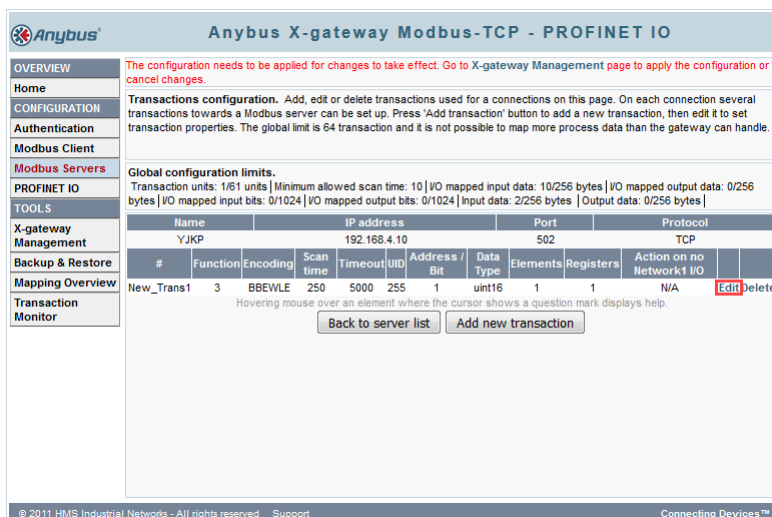


Figure 5-21: Configuration software "Modbus Servers"

15. Change the settings of the transaction.
Change function code to “4-Read Input Registers”.
Change elements to “52”.
Confirm input with left click on button “OK”.

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The configuration needs to be applied for changes to take effect. Go to X-gateway Management page to apply the configuration or cancel changes.

Transactions configuration. Add, edit or delete transactions used for a connections on this page. On each connection several transactions towards a Modbus server can be set up. Press 'Add transaction' button to add a new transaction, then edit it to set transaction properties. The global limit is 64 transaction and it is not possible to map more process data than the gateway can handle.

Global configuration limits.
Transaction units: 1/61 units | Minimum allowed scan time: 10 | I/O mapped input data: 10/256 bytes | I/O mapped output data: 0/256 bytes | I/O mapped input bits: 0/1024 | I/O mapped output bits: 0/1024 | Input data: 2/256 bytes | Output data: 0/256 bytes |

Name	IP address	Port	Protocol
YJKP	192.168.4.10	502	TCP

#	Function	Encoding	Scan time	Timeout	UID	Address / Bit	Data Type	Elements	Registers	Action on no Network I/O
New_Trans1	3	BBEVL	250	5000	255	1	uint16	1	1	N/A

Hovering mouse over an element where the cursor shows a question mark displays help.

[Back to server list](#) [Add new transaction](#)

Add/edit transaction

General transaction settings

Function code: **4-Read Input Registers** Name: New_Trans1

Data encoding: Byte Big Endian, Word Little Endian Timeout (ms): 5000

Trigger: Cyclic Scan time (ms): 250

I/O mapped: Yes Unit Id: 255

Read settings

Starting register: 1 Data type: uint16

Elements: **52** Registers: 52

[Cancel](#) [Ok](#)

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Figure 5-22: Configuration software "Modbus Servers"

16. Add new transaction to the server with left click on button “Add new transaction”.

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The configuration needs to be applied for changes to take effect. Go to X-gateway Management page to apply the configuration or cancel changes.

Transactions configuration. Add, edit or delete transactions used for a connections on this page. On each connection several transactions towards a Modbus server can be set up. Press 'Add transaction' button to add a new transaction, then edit it to set transaction properties. The global limit is 64 transaction and it is not possible to map more process data than the gateway can handle.

Global configuration limits.
Transaction units: 1/61 units | Minimum allowed scan time: 10 | I/O mapped input data: 112/256 bytes | I/O mapped output data: 0/256 bytes | I/O mapped input bits: 0/1024 | I/O mapped output bits: 0/1024 | Input data: 104/256 bytes | Output data: 0/256 bytes |

Name	IP address	Port	Protocol
YJKP	192.168.4.10	502	TCP

#	Function	Encoding	Scan time	Timeout	UID	Address / Bit	Data Type	Elements	Registers	Action on no Network I/O
New_Trans1	4	BBEVL	250	5000	255	1	uint16	52	52	N/A

Hovering mouse over an element where the cursor shows a question mark displays help.

[Back to server list](#) [Add new transaction](#)

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Figure 5-23: Configuration software "Modbus Servers"

17. Edit transaction with left click on button “Edit”.

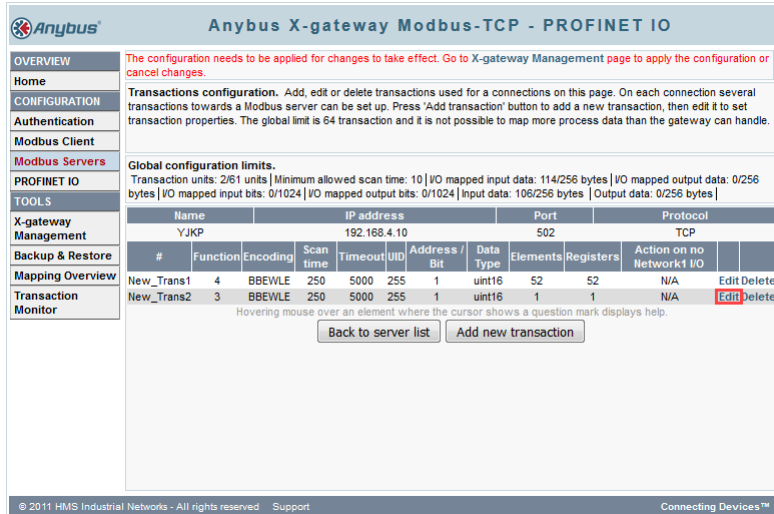


Figure 5-24: Configuration software "Modbus Servers"

18. Change the settings of the transaction.
 Change function code to “16-Write Multiple Registers”.
 Change elements to “52”.
 Change Startup-mode to “Directly”.
 Confirm input with left click on button “OK”.

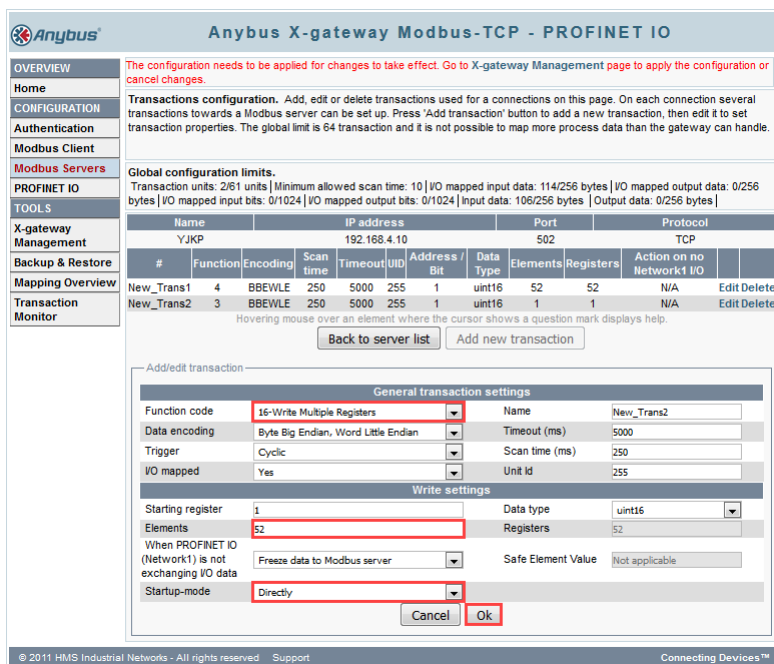


Figure 5-25: Configuration software "Modbus Servers"

19. Select button “PROFINET IO” with left click to change the settings of the PROFINET IO.
Change the settings of the PROFINET IO to your preferred settings if you don't want to use the default settings.
Change IP address to your preferred IP address.
In this case “192.168.4.30”.
Change subnet mask to your preferred subnet mask.
In this case “255.255.0.0”.
Change I/O mapped control/status word to “Disabled”.
Change I/O mapped live list to “Disabled”.
Confirm input with left click on button “Save settings”.

Anybus X-gateway Modbus-TCP - PROFINET IO

PROFINET IO configuration (Network 1). Configure the Network 1 side of the X-gateway. Enabling or disabling the mapping of the control/status word or the live list affects the process data size.

Global configuration limits.
Transaction units: 2/61 units | I/O mapped input data: 106/256 bytes | I/O mapped output data: 106/256 bytes | I/O mapped input bits: 0/1024 | I/O mapped output bits: 0/1024 | Input data: 104/256 bytes | Output data: 104/256 bytes

Setting	Configured	Actual
Station name		x-gateway-etnm
IP address	192.168.4.30	0.0.0.0
Subnet mask	255.255.0.0	0.0.0.0
Gateway	192.168.0.1	0.0.0.0
Use Physical Device (PDev)	Disabled	
When Modbus-TCP (Network 2) error	Freeze data to master	
I/O mapped control/status word	Disabled	
I/O mapped live list	Disabled	
Reserved bytes, read bit transactions	0	
Reserved bytes, write bit transactions	0	

Cancel Save settings

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Figure 5-26: Configuration software "PROFINET IO"

20. Select button “X-gateway Management” with left click to change the settings of the X-gateway Management.
Apply changes with left click on button “Apply”.

Anybus X-gateway Modbus-TCP - PROFINET IO

X-gateway management. Changes made to the configuration are not stored persistently or used until the X-gateway has been restarted by clicking the Apply button. If changes have been made they can be cancelled by using the cancel button. All changes are then reverted and the X-gateway uses the previously loaded or stored configuration.

Apply changes:
The X-gateway will reboot and start to use the changes made to the configuration:
Apply

If the configuration applied changes the IP address of the X-gateway, you will have to manually enter the new IP address in the web browser address field as the automatic page reload will fail.

Reboot and undo changes:
This reboots the X-gateway, any configuration changes not applied will be lost:
Reboot

Undo changes:
Cancels all changes made since the last configuration was applied, the X-gateway will not be rebooted:
Cancel

Factory reset:
This resets the X-gateway to its default configuration:
Factory reset

Wink device:
Identify the X-gateway through a 15 sec LED sequence:
Wink

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Figure 5-27: Configuration software "X-gateway Management"

21. Select button “Mapping overview” with left click to see the mapping overview.

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Data Mapping Overview. Shows how configured transactions, control word, status word and live list are mapped from Network 2 to Network 1 in the X-gateway and vice versa.

Network 1 (PROFINET IO)

SLOT DETAILS Cyclic I/O

Slot	Transaction name	In slot Range (bytes)	Absolute range (bytes)	Input words	Output words
1	New_Trans1	0 .. 103	0 .. 103	52	-
2	New_Trans2	0 .. 103	0 .. 103	-	52

PARAMETER DATA, Acyclic I/O

All acyclic access should be addressed through API 0, Slot 0, Subslot 1 with the specified Index.

Gateway

Name	Element size (bytes)	Elements	Index	Bytes	Access
Status	2	1	256	0 .. 1	R
Control	2	1	257	0 .. 1	RW
Live-List	1	8	258	0 .. 7	R
Exceptions	1	64	259	0 .. 63	R
Transaction status	1	64	260	0 .. 63	R

ServoPress

Name	Element size (bytes)	Elements	Index	Bytes	Access
New_Trans1	2	52	266	0 .. 103	R
New_Trans2	2	52	389	0 .. 103	R

Network 2 (Modbus-TCP Client)

Name	IP address	Port	Protocol
ServoPress	192.168.0.10	502	TCP

#	Function	Encoding	Scan time	Timeout	UID	Address / Bit	Data Type	Elements	Registers	Action on no Network1 I/O
New_Trans1	4	BBEVLE	250	5000	255	1	uint16	52	52	N/A
New_Trans2	16	BBEVLE	250	5000	255	1	uint16	52	52	Freeze

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Figure 5-28: Configuration software "Mapping overview"

5.3 Configure Profinet device

1. Insert delivered CD with the Anybus X-gateway in your CD Drive.
2. Open windows explorer.
Navigate to path /files/GSD EDS files/PROFINET in the CD Drive directory.
There you can find the GSD file for the Anybus X-gateway Modbus-TCP PROFINET.

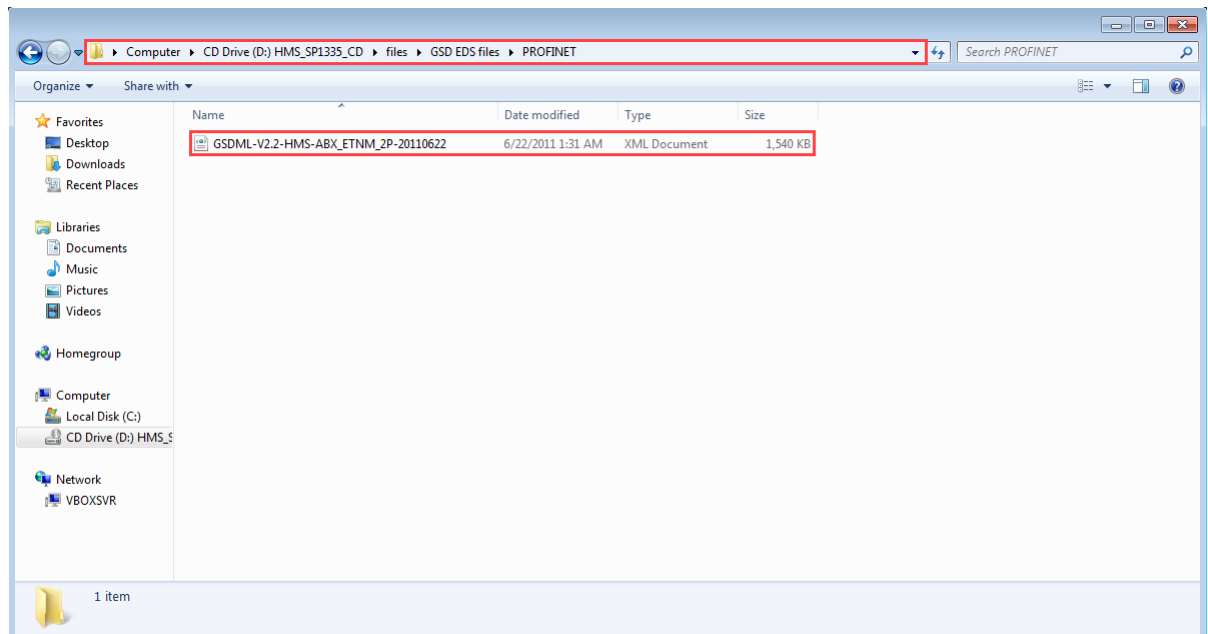


Figure 5-29: Path GSD file

3. There are two GSDML included. It is important to use the right entry: Anybus X-gateway Modbus-TCP (No PDev).

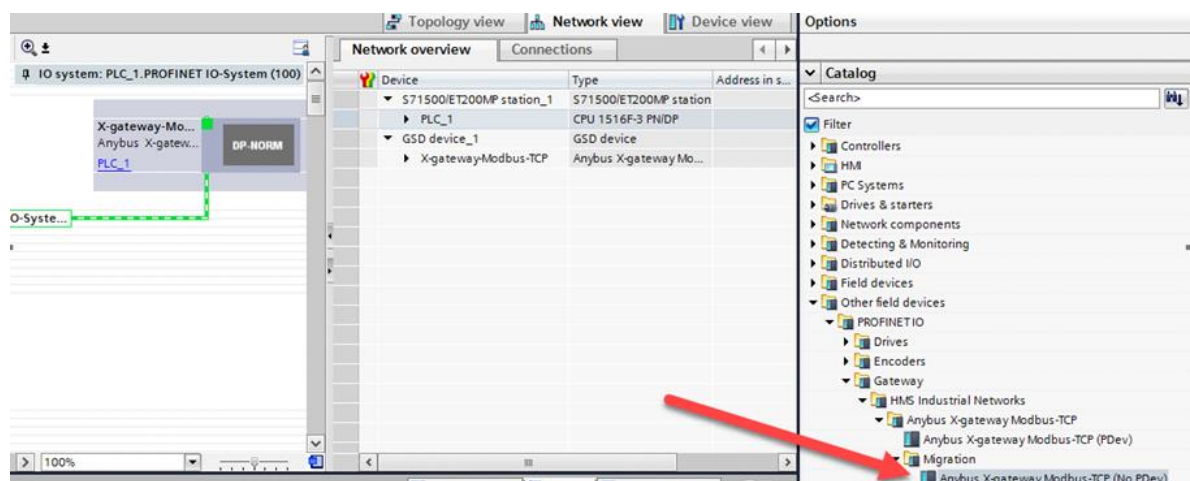


Figure 5-30: Select Anybus X-gateway Modbus-TCP (No PDev)

4. Be sure to configure the same modules in TIA like the mapping within the gateway.

Gateway: 52 Input Registers and 52 Write Multiple Registers

PLC: 52 word_input and 52 word_output

Geräteübersicht

Baugruppe	Baugr...	Steck...	E-Adresse	A-Adres...	Typ	Artike
X-gateway-ETNM	0	0			X-gateway ETNM (N...	X-gat
Interface	0	0 X1			X-gateway-ETNM	
052 word input_1	0	1	68...171		052 word input	
052 word output_1	0	2		68...171	052 word output	
	0	3				
	0	4				
	0	5				
	0	6				

SLOT DETAILS Cyclic I/O

Slot	Transaction name	In slot Range (bytes)	Absolute range (bytes)	Input words	Output words
1	New_Trans1	0 .. 103	0 .. 103	52	-
2	New_Trans2	0 .. 103	0 .. 103	-	52

Figure 5-31: Mapping Anybus X-gateway in TIA

5.4 Communication

1. The whole system must run (Servo press kit, Anybus X-gateway, Profinet device).
2. Change control highness of the servo press kit to “Host” and fieldbus to “Modbus TCP”.

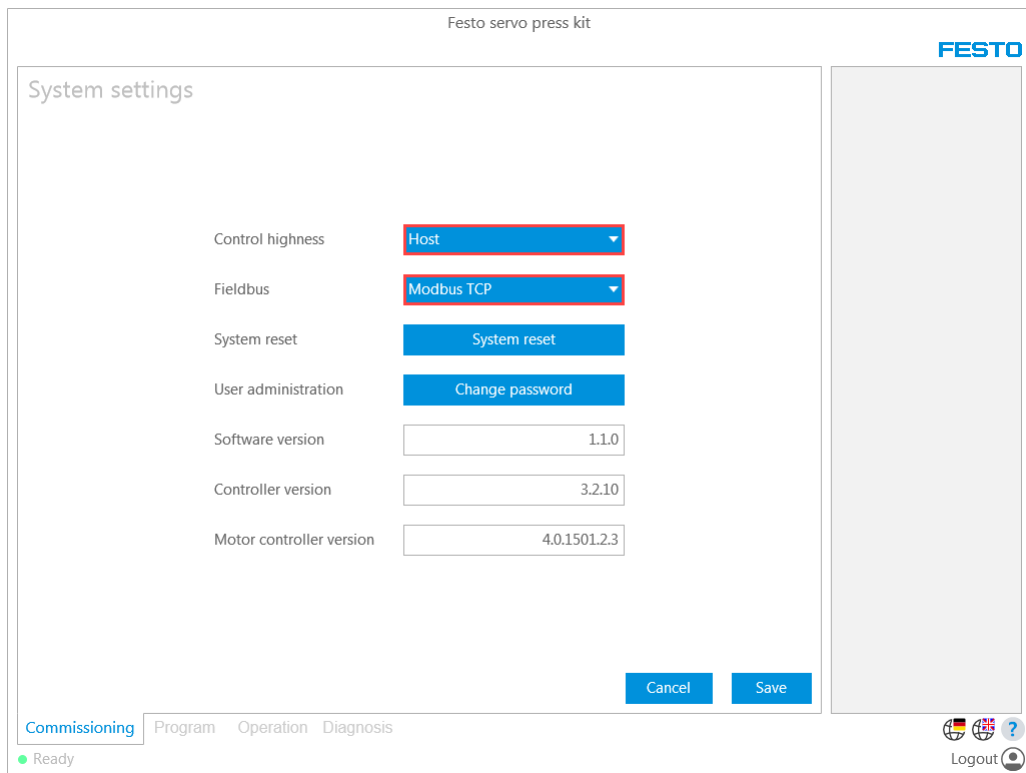


Figure 5-32: Change control highness and fieldbus

3. All necessary LEDs should be green: 1- GW (Gateway Status), 3 - NS (Profinet Network Status), 4 - MS (Profinet Module Status), 6 - MTCP (Modbus TCP Status) and minimum 7 - Ethernet Link (LA1).