

# Anybus<sup>®</sup> Communicator<sup>™</sup> - PROFINET to Modbus TCP Client USER MANUAL

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## Important User Information

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# 1. Preface

## 1.1. About This Document

This document describes how to install and configure Anybus® Communicator™.

For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please visit [www.anybus.com/support](http://www.anybus.com/support).

## 1.2. Document Conventions

### Lists

Numbered lists indicate tasks that should be carried out in sequence:

1. First do this
2. Then do this

Bulleted lists are used for:

- Tasks that can be carried out in any order
- Itemized information

### User Interaction Elements

User interaction elements (buttons etc.) are indicated with bold text.

### Program Code and Scripts

```
Program code and script examples
```

### Cross-References and Links

Cross-reference within this document: [Document Conventions \(page 1\)](#)

External link (URL): [www.anybus.com](http://www.anybus.com)

### Safety Symbols



#### DANGER

Instructions that must be followed to avoid an imminently hazardous situation which, if not avoided, will result in death or serious injury.



#### WARNING

Instructions that must be followed to avoid a potential hazardous situation that, if not avoided, could result in death or serious injury.



#### CAUTION

Instruction that must be followed to avoid a potential hazardous situation that, if not avoided, could result in minor or moderate injury.



#### IMPORTANT

Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment, or to avoid a network security risk.

## Information Symbols

**NOTE**

Additional information which may facilitate installation and/or operation.

**TIP**

Helpful advice and suggestions.

## 1.3. Trademarks

Anybus® is a registered trademark of HMS Networks.

All other trademarks are the property of their respective holders.

## 2. Safety

### 2.1. Intended Use

The intended use of this equipment is as a communication interface and gateway.

The equipment receives and transmits data on various physical layers and connection types.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### 2.2. General Safety

**CAUTION**

Ensure that the power supply is turned off before connecting it to the equipment.

**CAUTION**

This equipment contains parts that can be damaged by electrostatic discharge (ESD). Use ESD prevention measures to avoid damage.

**CAUTION**

To avoid system damage, the equipment should be connected to ground.

**IMPORTANT**

Using the wrong type of power supply can damage the equipment. Ensure that the power supply is connected properly and of the recommended type.

## 3. Cybersecurity

### 3.1. General Cybersecurity

**IMPORTANT**

It is important to maintain the cybersecurity of the Communicator.

Before connecting the Communicator to a PLC, ensure the PLC is configured and installed in accordance with the PLC supplier hardening guidelines.

**IMPORTANT**

To physically secure networks and equipment and to prevent unauthorized access, it is recommended to install the equipment in a locked environment.

**IMPORTANT**

After completing the configuration of the Communicator, lock the security switch to prevent unauthorized access to the Communicator built-in web interface.

**IMPORTANT**

To avoid exposure of sensitive data, always perform a factory reset before decommissioning the equipment.

Factory reset will reset any on site made configuration changes and set the Communicator to the same state as leaving HMS production.

See [Reset to Factory Settings \(page 83\)](#).

### 3.2. Security Advisories

For cybersecurity reasons, stay informed about new vulnerabilities and follow the recommended actions.

HMS Networks Security Advisories includes information about our product vulnerabilities and available solutions.

You find our Safety Advisories at [www.hms-networks.com/cybersecurity/security-advisories](http://www.hms-networks.com/cybersecurity/security-advisories).

### 3.3. How to Report a Vulnerability

HMS Networks place the utmost importance on the security of our products and systems, however, despite all the measures we take, it cannot be excluded that vulnerabilities persist.

To report a potential vulnerability in an HMS product or service, please visit [www.hms-networks.com/cybersecurity/report-a-vulnerability](http://www.hms-networks.com/cybersecurity/report-a-vulnerability) and follow the instructions.

## 3.4. Product Cybersecurity Context

### 3.4.1. Security Defense in Depth Strategy

The defense in depth strategy of the Communicator includes the following security measures:

- Secure Boot: Security standard used to ensure that the Communicator boots using only software that is trusted by HMS Networks.
- Signed firmware: HMS Networks delivers digitally signed firmware. Before the firmware file is imported into the Communicator, the firmware upgrade function performs a validation of the file, to ensure that is authentic.
- Security switch: Used to lock unauthorized access to the Communicator built-in web interface.
- The Communicator is intended to be installed in a Process Control Network (PCN) environment. See Level 1 in the [Purdue Model \(page 6\)](#).
- To physically secure networks and equipment and to prevent unauthorized access, the Communicator is intended to be installed in a locked environment.

3.4.2. Purdue Model

The Communicator is intended to be part of the process control network in Level 1 (E), to enable communication between PLCs or between a PLC and peripheral devices.

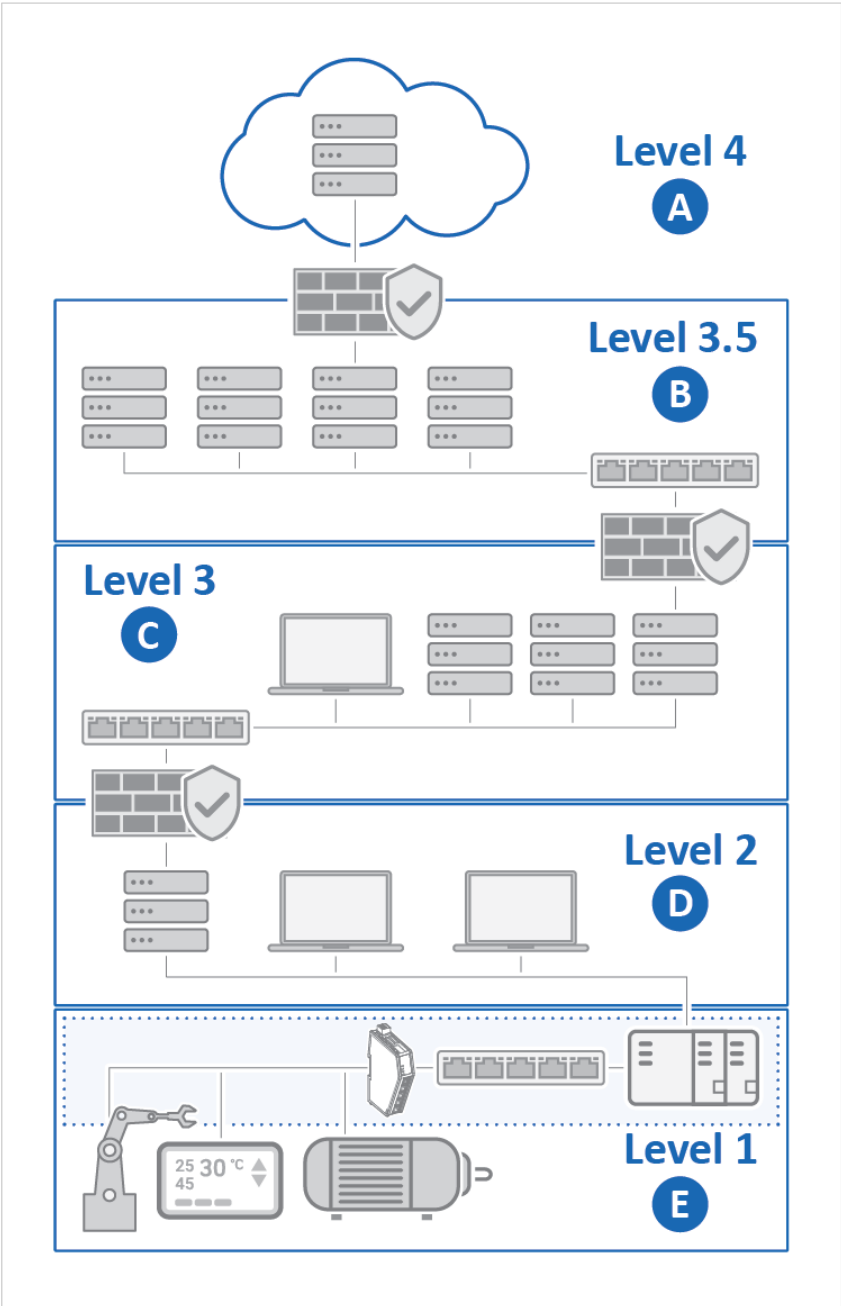


Figure 1. Purdue model, product security context

IT Network

- A. **Level 4: Enterprise Network**  
Example: Cloud solution, Business LAN (VPN)
- B. **Level 3.5: Perimeter Network**  
Example: Demilitarized Zone (DMZ)

OT Network

- C. **Level 3: Advanced Control Network (ACN)**  
Example: SCADA systems, Business control
- D. **Level 2: Supervisory Control**  
Example: Operator panels, Operator stations, Engineering stations
- E. **Level 1: Process Control Network (PCN)**  
**Environment where the Communicator is installed**  
Example: Factory floor, Industrial product line

## 4. Preparation

### 4.1. Support and Resources

For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please visit [www.anybus.com/support](http://www.anybus.com/support).

**TIP**

Have the product article number available, to search for the product specific support web page. You find the product article number on the product cover.

### 4.2. Cabling

Have the following cables available:

- Power cable.
- Ethernet cable for configuration.
- Ethernet cable x 2 for connecting to the networks.

### 4.3. Mechanical Tools and Equipment

Have the following tools available:

- Flat-head screwdriver, size 5.5 mm  
Needed when removing the Communicator from DIN-rail.

### 4.4. System Requirements

#### 4.4.1. Supported Web Browsers

The Communicator built-in web interface can be accessed from the following standard web browsers.

- Google Chrome
- Microsoft Edge
- Mozilla Firefox

#### 4.4.2. Supported Operating Systems

| Operating System      | Description                          |
|-----------------------|--------------------------------------|
| Windows 7 SP1, 32-bit | Windows 7 32-bit with Service Pack 1 |
| Windows 7 SP1, 64-bit | Windows 7 64-bit with Service Pack 1 |
| Windows 10 64-bit     | Windows 10 64-bit                    |
| Windows 11 64-bit     | Windows 11 64-bit                    |

## 4.5. HMS Software Applications

Download the software installation files and user documentation from [www.anybus.com/support](http://www.anybus.com/support).

### HMS IPconfig

Use the software application HMS IPconfig and scan your network to discover and change the Communicator IP address and to access the Communicator built-in web interface.



#### NOTE

As an alternative, you can set a static IP address within the same IP address range as the Communicator IP address on the computer accessing the Communicator built-in web interface.



#### NOTE

HMS IPconfig is only available for Windows.

## 4.6. Third-Party Software Applications

### Microsoft Excel

Microsoft Excel, or equivalent software application that supports the Office Open XML Workbook (xlsx) file format. Needed to open and read the **Event log** file.

## 4.7. Software License Information

For license agreements regarding the third-party software used in the Communicator, refer to the *LICENSE.txt* file(s) included in the Communicator firmware update package zip file.

To download the Communicator firmware update package zip file, please visit [www.anybus.com/support](http://www.anybus.com/support).



#### TIP

Have the product article number available, to search for the product specific support web page. You find the product article number on the product cover.

## 5. About Anybus Communicator

### 5.1. Modbus TCP Client Communication

#### 5.1.1. Modbus TCP Client Building Blocks

The following building blocks are used to describe the subnetwork communication.

##### Server

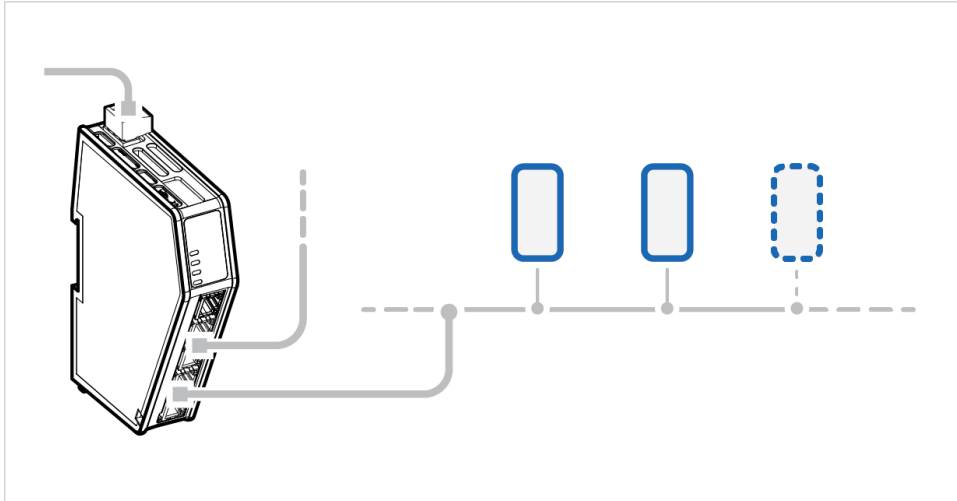


Figure 2. Servers on a Modbus TCP subnetwork

A server represents a single Modbus TCP device on the Modbus TCP subnetwork.

Servers and Transactions

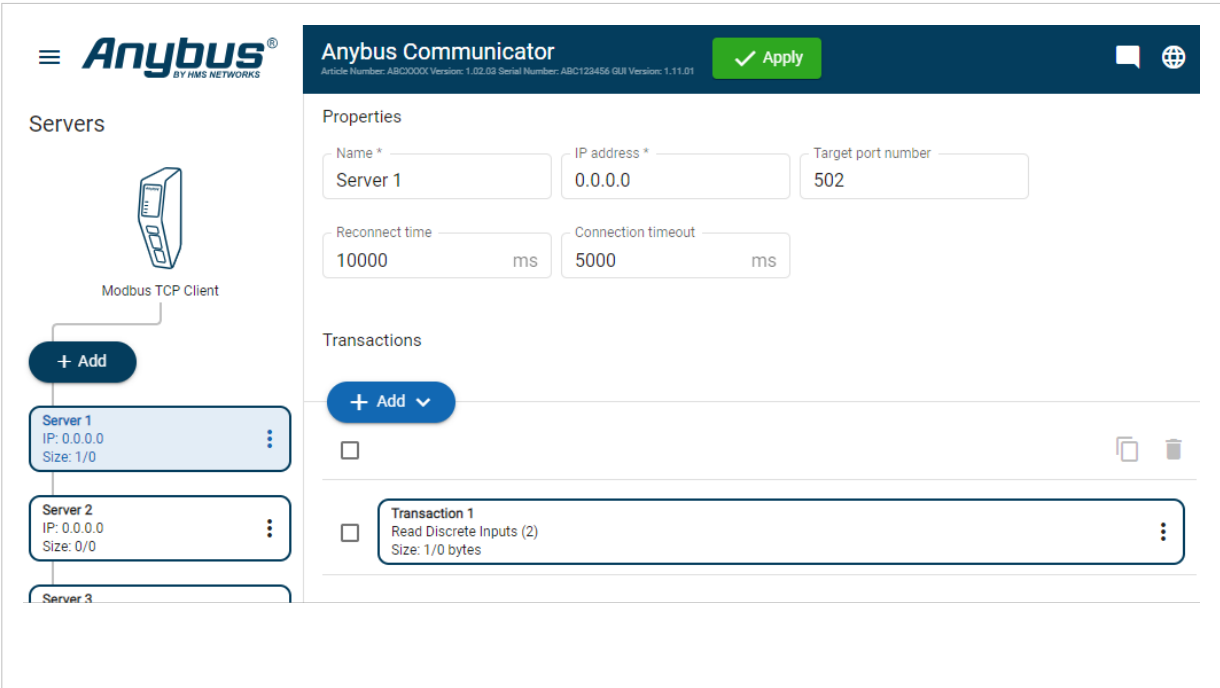


Figure 3. Server with Transactions

Transactions are based on standard Modbus transactions and define the data to be sent or received. See also [\(page 44\)](#).

Each transaction has a number of parameters that need to be configured to define how and when data is to be sent/received.

## 5.2. How the Communication Works

The Communicator enables communication, data exchange, between one or more server devices connected to a subnetwork and a client device connected to a high level network.

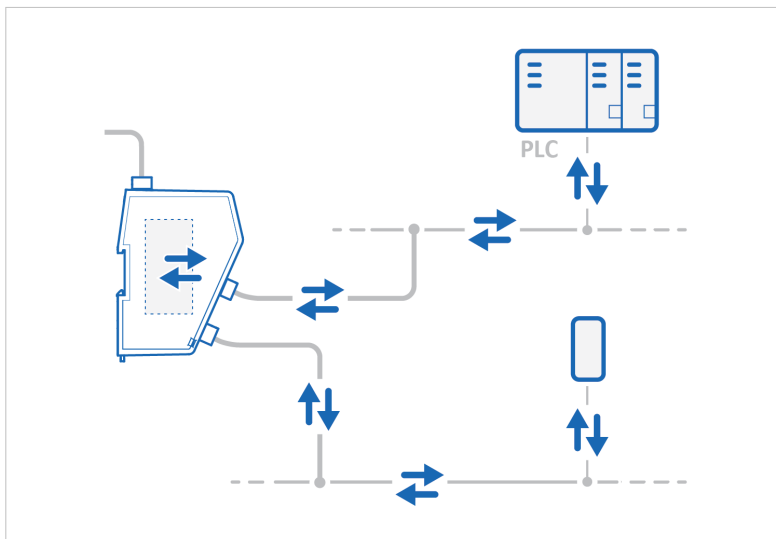


Figure 4. Process data traffic overview

For example:

- The client device can be a PLC controller or a PC.
- A server device can be a sensor, scanner, industrial robot, or sniffer.

The Communicator main task is to send the transactions that the server device(s) are configured to execute, in order to request and transfer process data.

### Request Process Data

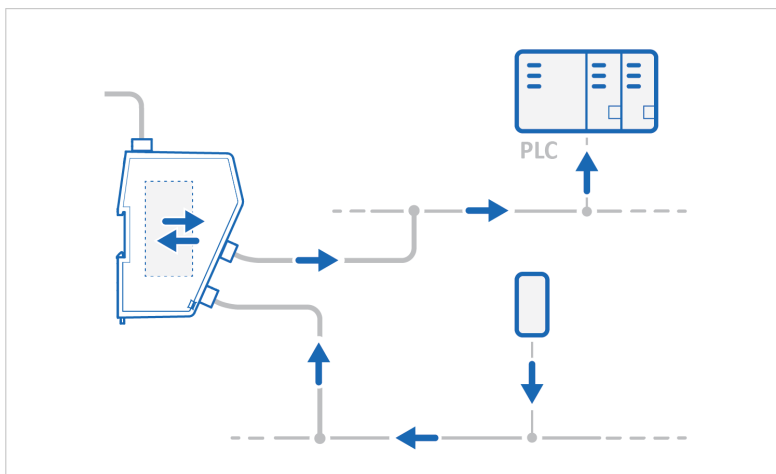


Figure 5. Process data traffic from servers to client

Request process data from the subnetwork nodes, specified in the Communicator configuration, and make the process data available on the server interface and for the high level network client device.

## Transfer Process Data

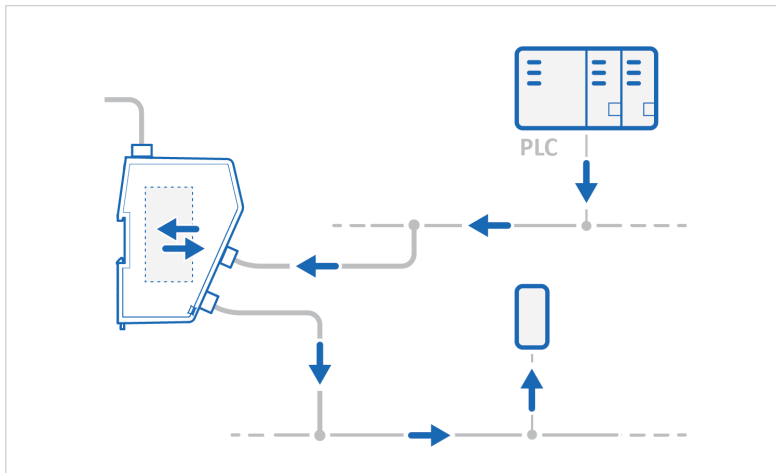


Figure 6. Process data traffic from client to servers

Transfer process data from the high level network client device and make it available on the server interface and for the subnetwork nodes included in the configuration.

### 5.3. How the Data Exchange Works

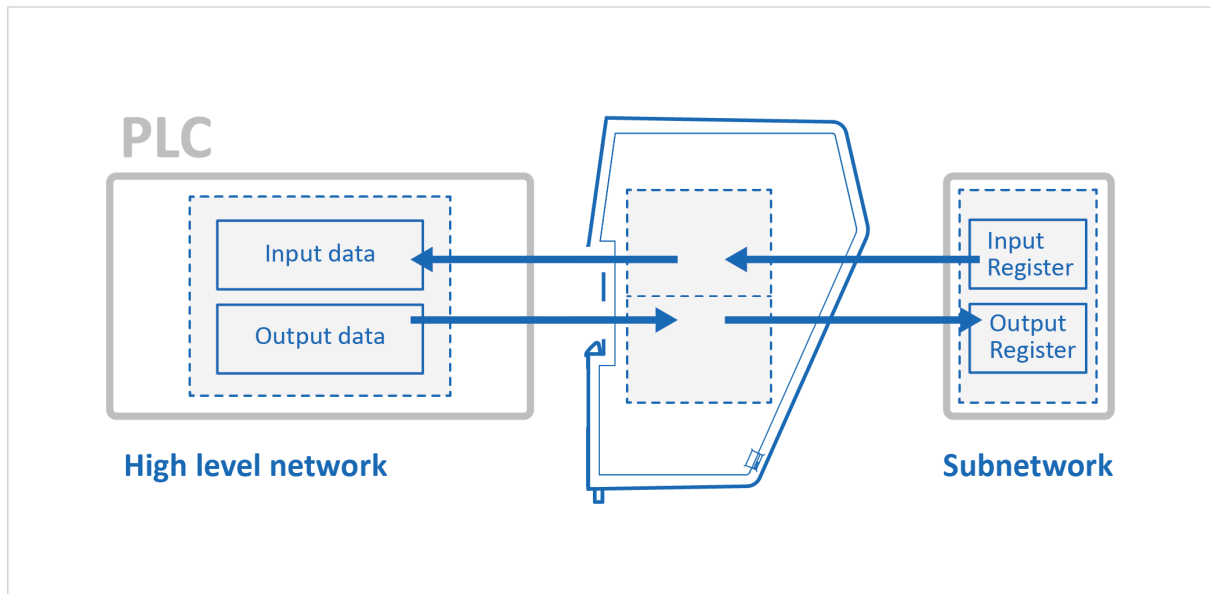


Figure 7. The Communicator internal memory areas

The data exchanged between the Communicator and the Modbus TCP subnetwork subnetwork and the high level network resides in the Communicator internal memory buffer.

To exchange data with the Modbus TCP subnetwork subnetwork, the high level network reads and writes data to the Communicator internal memory buffer.

The same memory locations are exchanged on the Modbus TCP subnetwork subnetwork.

The memory locations are specified when configuring the Communicator using the Communicator built-in web interface.

#### Input Data

The Input data area is read by the high level network.

#### Output Data

The Output data area is read/written by the high level network.

## 6. Installation

### 6.1. External Parts

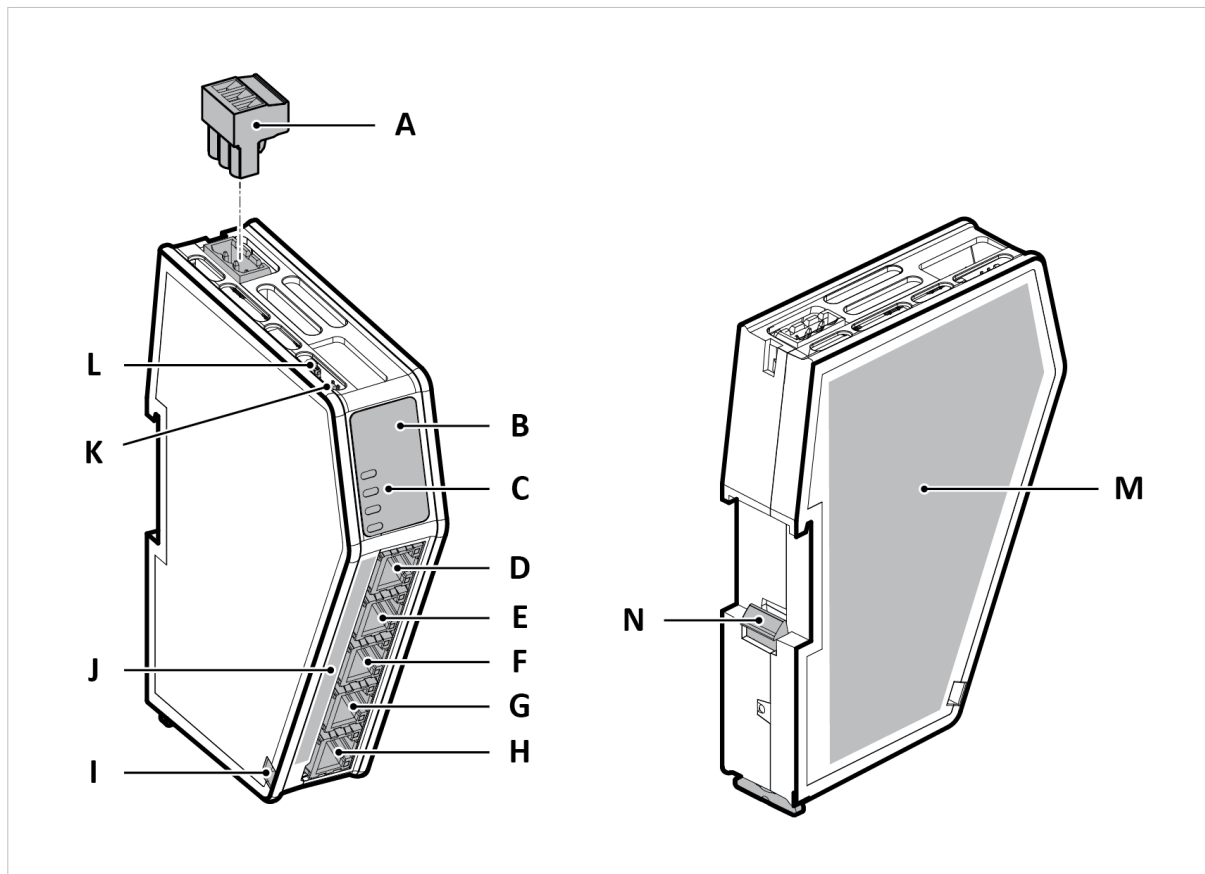


Figure 8. External parts

- |                               |                                          |                                                  |
|-------------------------------|------------------------------------------|--------------------------------------------------|
| A. Power connector            | E. PROFINET (X2.1) port                  | K. Security switch                               |
| B. Label with LED designation | F. PROFINET (X2.2) port                  | L. Factory reset button                          |
| C. Status LEDs                | G. Modbus TCP Client (X3.1) port         | M. Laser engraved label with product information |
| D. Configuration port (X1)    | H. Modbus TCP Client (X3.2) port         | N. DIN rail locking mechanism                    |
|                               | I. Cable tie mount                       |                                                  |
|                               | J. Laser engraved connectors designation |                                                  |

## 6.2. Connector Port Guide

This topic applies to different product variants for different networks.

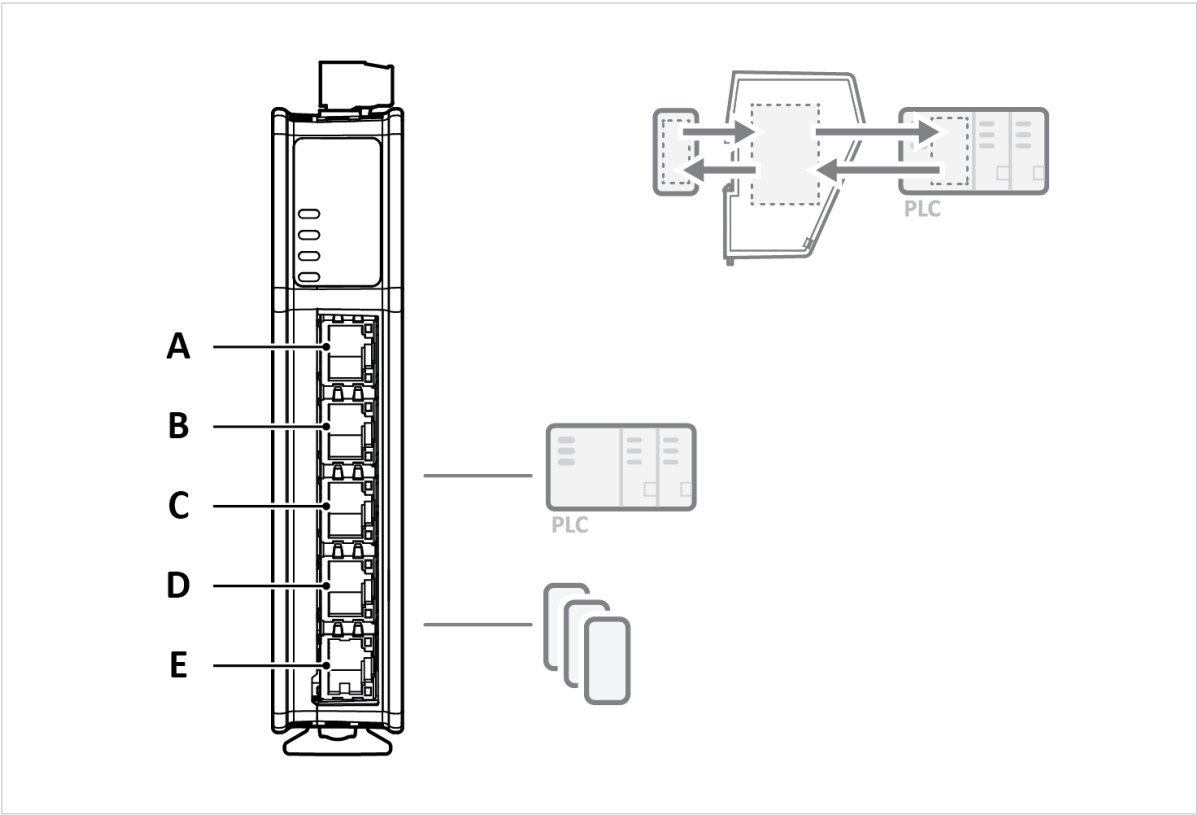


Figure 9. Communicator connector ports

| Position | Port Number | Connector Type | Port Usage                |
|----------|-------------|----------------|---------------------------|
| A        | X1          | Ethernet       | Configuration port        |
| B        | X2.1        | Ethernet       | PROFINET network          |
| C        | X2.2        | Ethernet       | PROFINET network          |
| D        | X3.1        | Ethernet       | Modbus TCP Client network |
| E        | X3.2        | Ethernet       | Modbus TCP Client network |

## 6.3. Label the Communicator with Network Stickers

This topic applies to the Communicator Common Ethernet product variant.

If you update the pre-configured firmware, you can use the included stickers to relabel the laser engraved marking next to the network LED indicators and connectors. See also [Configure the Communicator](#).

- Check which LEDs indicate the networks of the firmware installed on the Communicator. See [Communicator LED Indicators \(page 70\)](#).
- Check which connector is used for which network of the firmware installed on the Communicator. See [Connector Port Guide \(page 15\)](#).

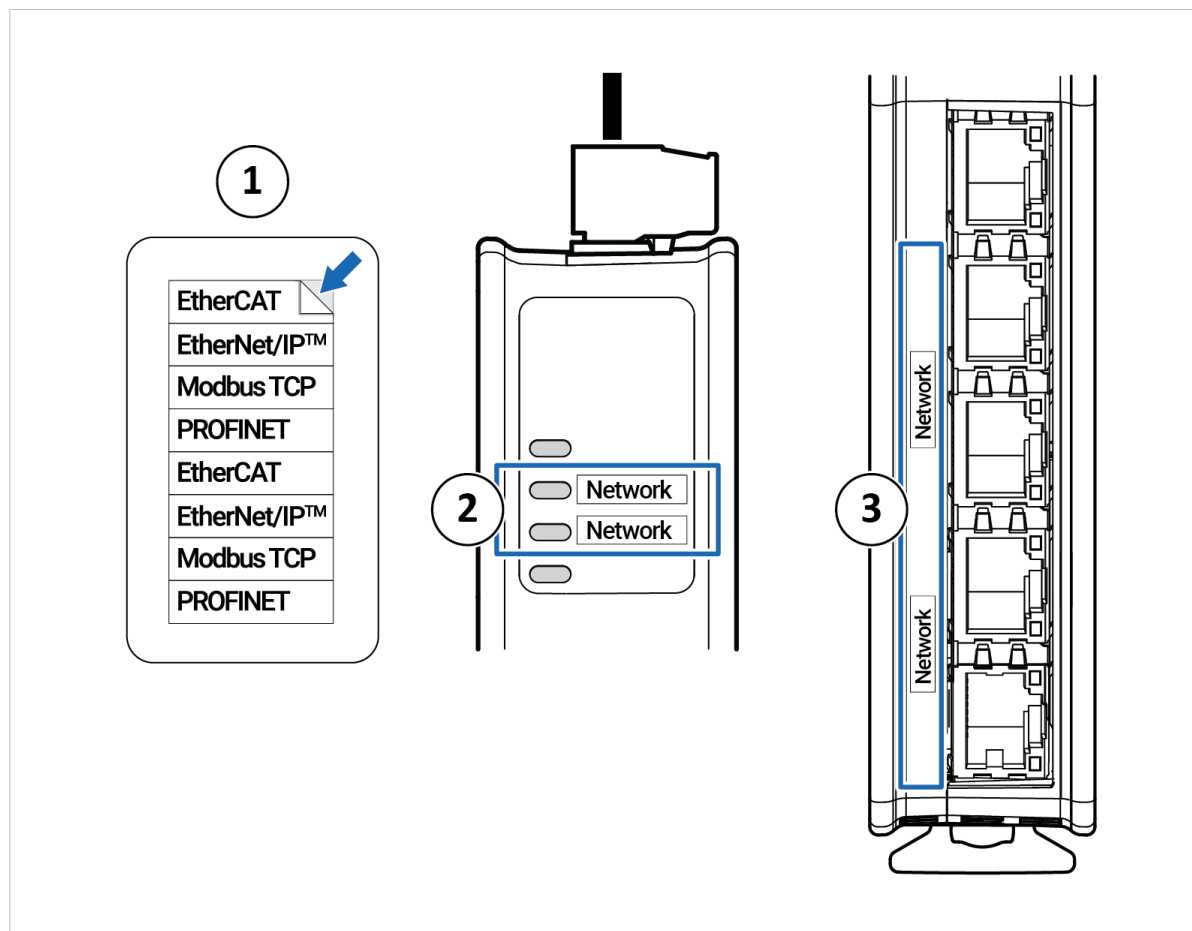


Figure 10. Stickers placed next to the Communicator LED indicators and connectors

## 6.4. DIN Rail Mounting

**IMPORTANT**

The equipment must be electrically grounded through the DIN rail for EMC compliance. Make sure that the equipment is correctly mounted on the rail and that the rail is properly grounded.

**IMPORTANT**

To physically secure networks and equipment and to prevent unauthorized access, it is recommended to install the equipment in a locked environment.

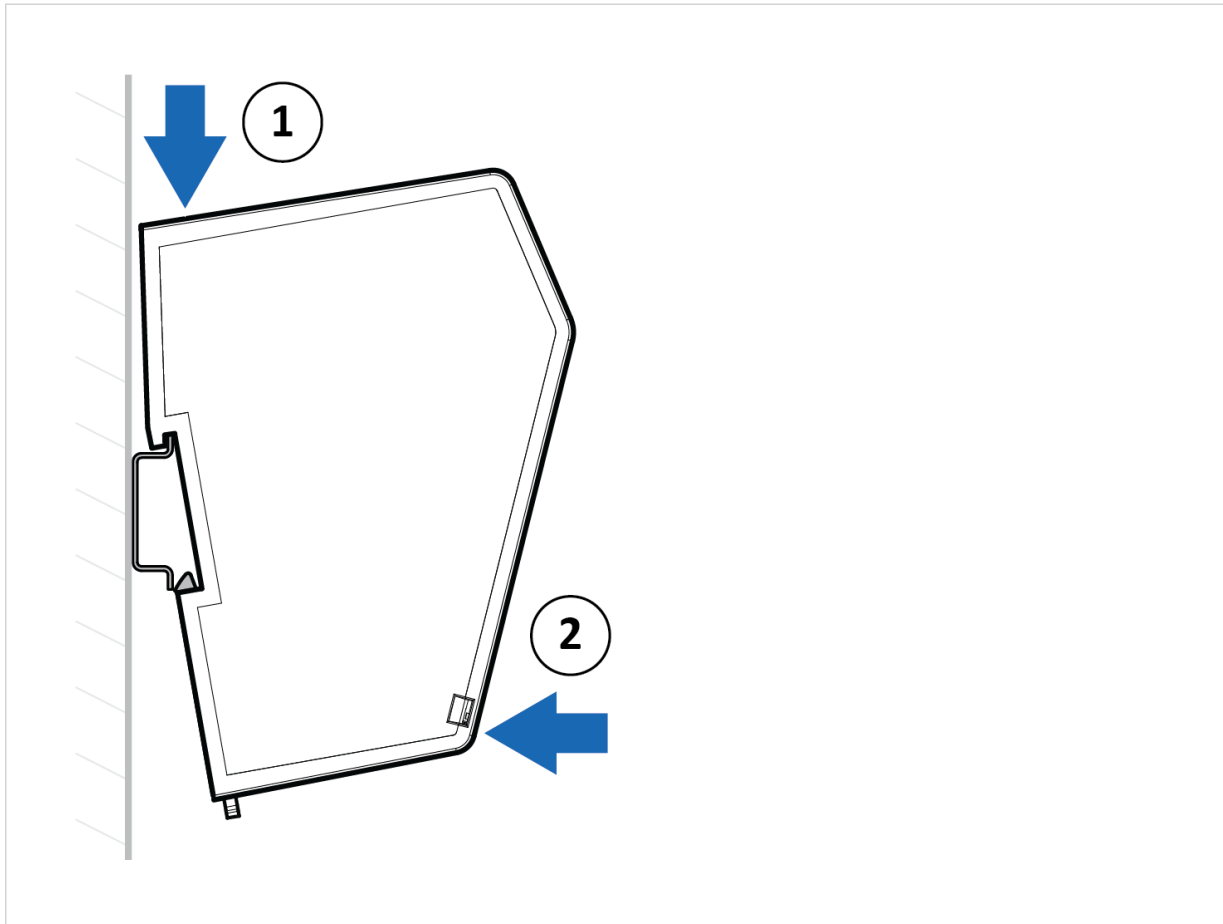


Figure 11. Attach the Communicator on the DIN rail

To attach the Communicator on the DIN rail:

1. Insert the upper end of the DIN rail clip into the DIN rail.
2. Push the bottom of the DIN rail clip into the DIN rail.

6.5. Connect to Modbus TCP Client Network

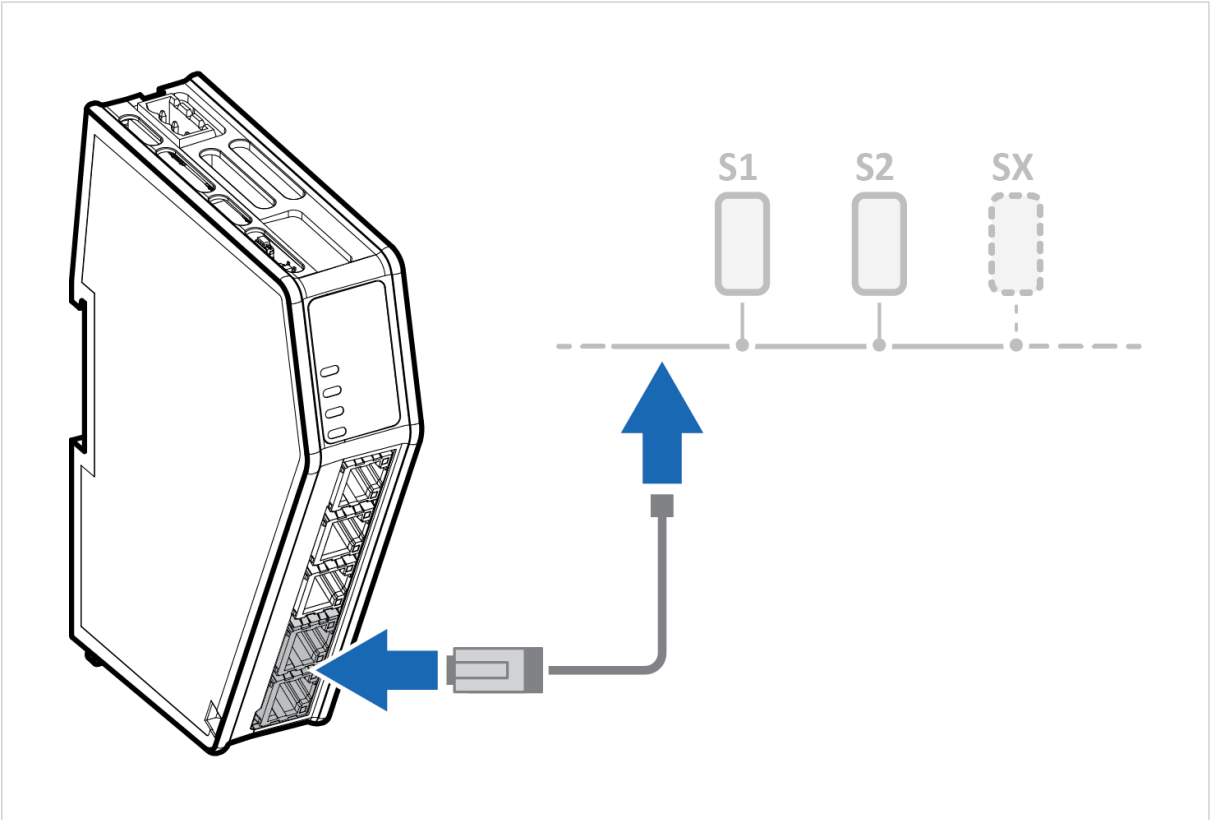


Figure 12. Connect to Modbus TCP Client network

Procedure

Connect the Communicator to your Modbus TCP Client network.

Ethernet RJ45 Connector Pinout

| Ethernet RJ45 Connector | Pin | Description |
|-------------------------|-----|-------------|
|                         | 1   | TD+         |
|                         | 2   | TD-         |
|                         | 3   | RD+         |
|                         | 4   | Not used    |
|                         | 5   | Not used    |
|                         | 6   | RD-         |
|                         | 7   | Not used    |
|                         | 8   | Not used    |

6.6. Connect to PROFINET Network

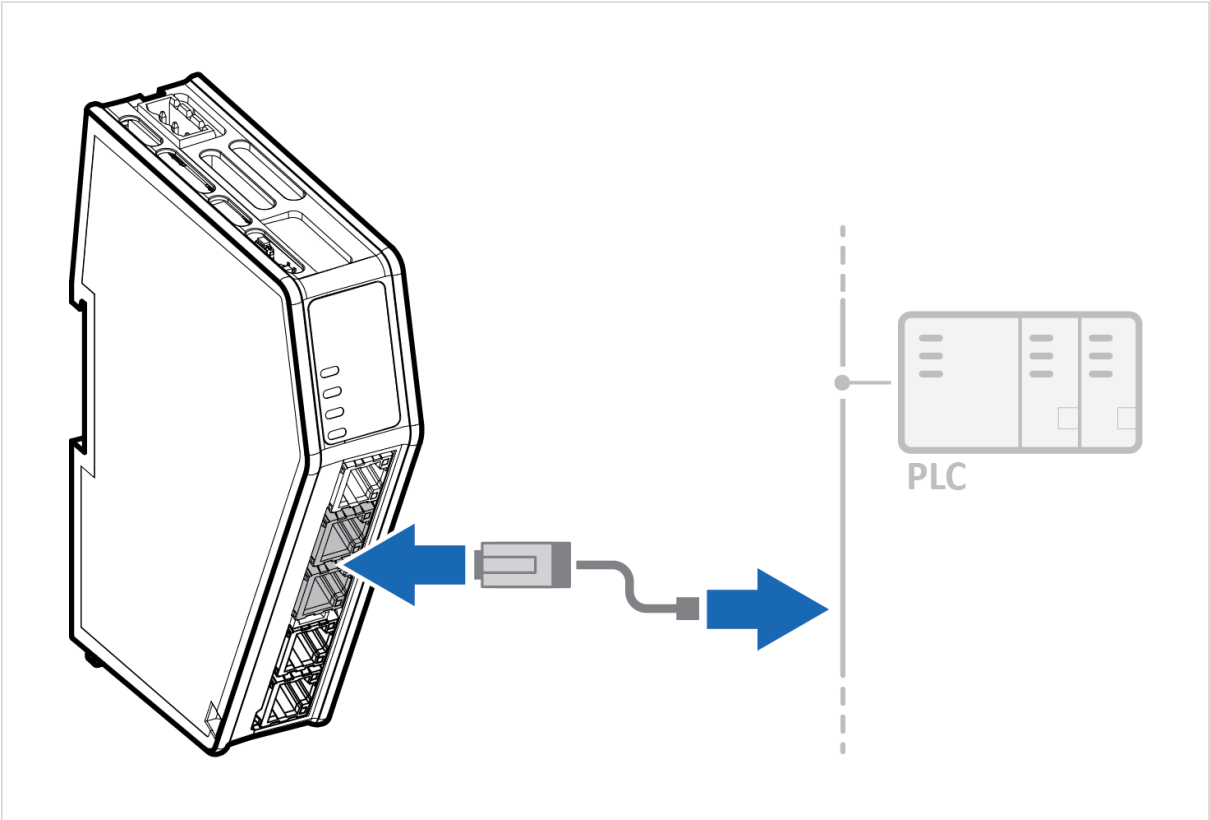
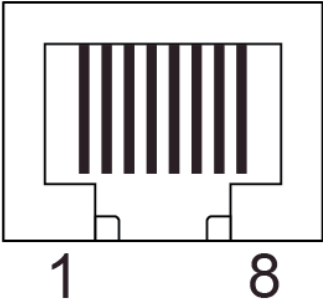


Figure 13. Connect to PROFINET network

Procedure

Connect the Communicator to your PROFINET network.

Ethernet RJ45 Connector Pinout

| Ethernet RJ45 Connector                                                             | Pin | Description |
|-------------------------------------------------------------------------------------|-----|-------------|
|  | 1   | TD+         |
|                                                                                     | 2   | TD-         |
|                                                                                     | 3   | RD+         |
|                                                                                     | 4   | Not used    |
|                                                                                     | 5   | Not used    |
|                                                                                     | 6   | RD-         |
|                                                                                     | 7   | Not used    |
|                                                                                     | 8   | Not used    |

## 6.7. Connect to Power



**CAUTION**  
Ensure that the power supply is turned off before connecting it to the equipment.



**IMPORTANT**  
Using the wrong type of power supply can damage the equipment. Ensure that the power supply is connected properly and of the recommended type.

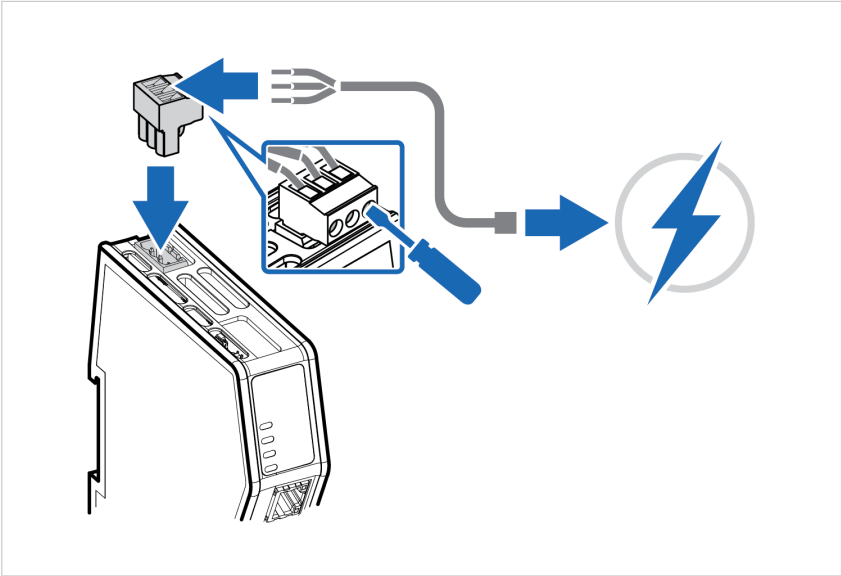


Figure 14. Connect to power

### Power Connector Pinout

| Power port | Pin | Description               |
|------------|-----|---------------------------|
|            | 1   | 12-30 VDC Power Connector |
|            | 2   | Ground (GND)              |
|            | 3   | Functional Earth (FE)     |

### Procedure

1. Insert the cable wires to the terminal block and tighten the wire clamp screws.
2. Connect the terminal block to the Communicator.
3. Connect the Communicator to a power supply.
4. Turn on the power supply.

## 6.8. Security Switch



### IMPORTANT

After completing the configuration of the Communicator, lock the security switch to prevent unauthorized access to the Communicator built-in web interface.

When the security switch is in its locked position, the Communicator built-in web interface cannot be accessed, and the Communicator cannot be configured using the built-in web interface. Network specific parameters, configured via the PLC is still available.

### To Lock and Unlock the Security Switch

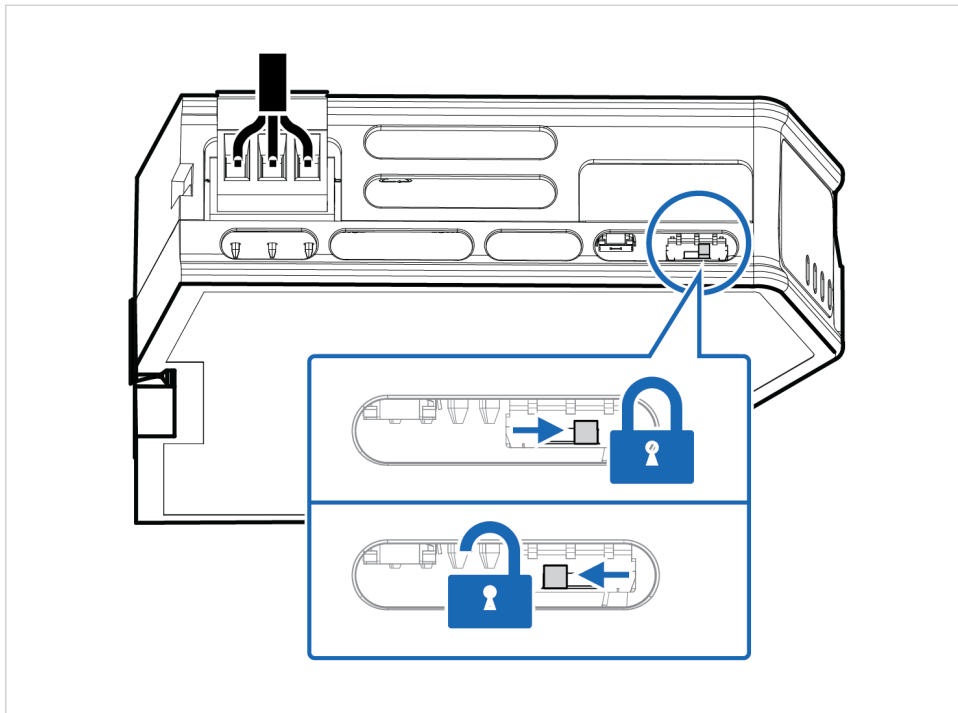


Figure 15. Security switch in locked and unlocked position

Use a pointed object, such as a ballpoint pen.

- To **lock** the security switch, push the toggle towards the **Communicator front**.
- To **unlock** the security switch, push the toggle towards the **Communicator back**.

## Security Switch Status LED

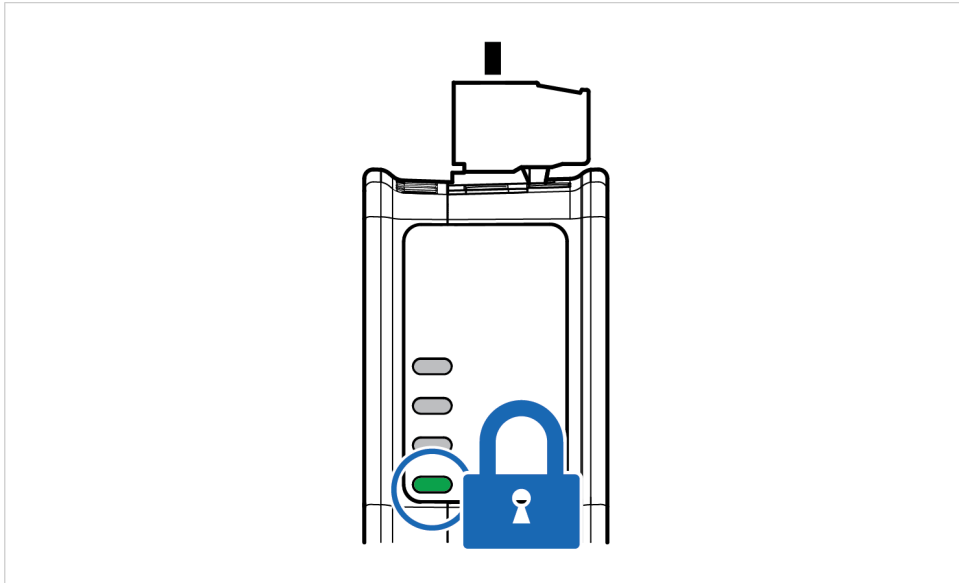


Figure 16. Security switch locked status LED

When the security switch is in its:

- locked position, the security switch status LED turn solid green.
- unlocked position, the security switch status LED is turned off.

## 6.9. Lock the Cables

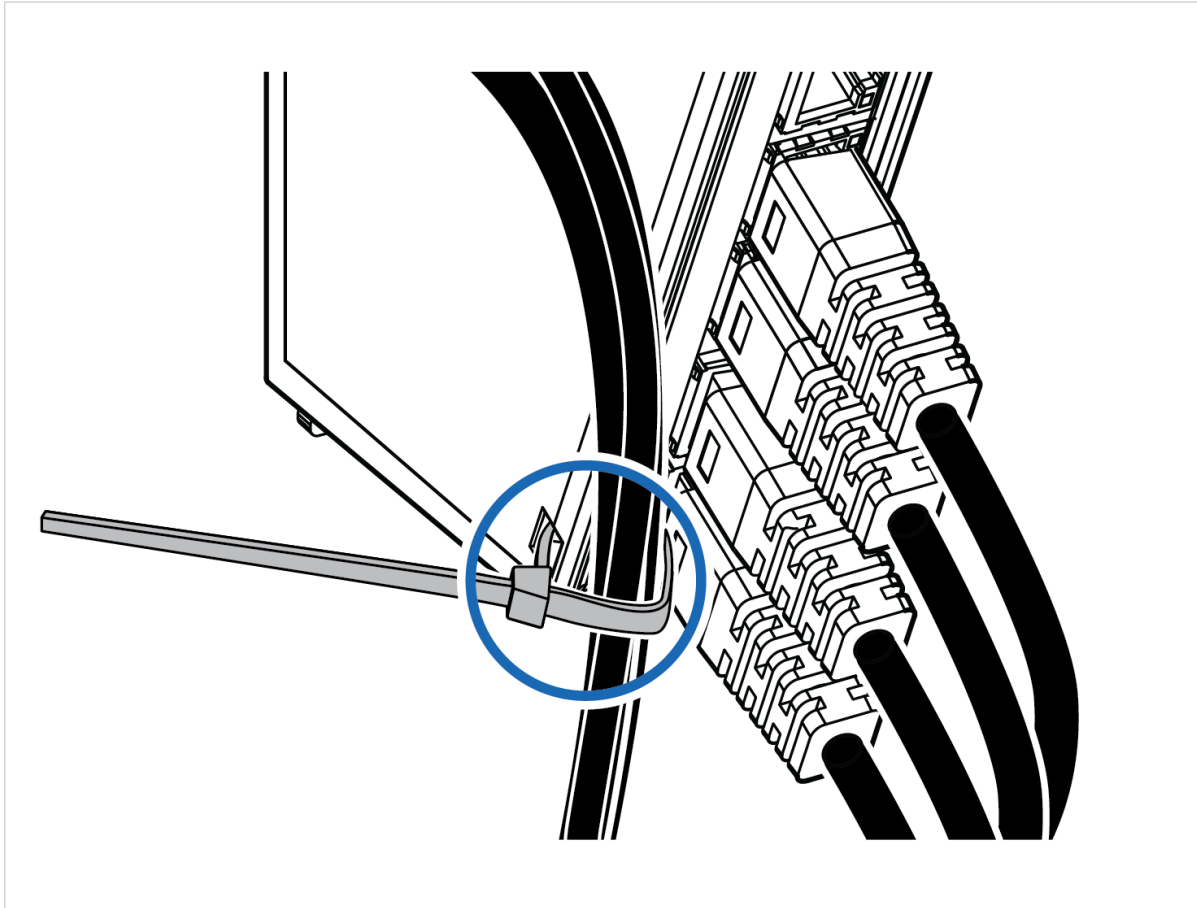


Figure 17. Lock the cables

To strain relieve the cables, place a cable tie in the holder and lock the cables.

## 6.10. DIN Rail Demount

### Before You Begin



#### IMPORTANT

Be careful when removing the Communicator from the DIN-rail. If not removed properly, the DIN rail locking mechanism and the product cover can break.

Have a flat-blade screwdriver, size 5.5 mm, available.

### Procedure

Remove the Communicator from the DIN Rail:

1. Insert the screwdriver into the Communicator DIN rail locking mechanism.
2. To unlock the Communicator DIN rail locking mechanism, turn the screwdriver clockwise.

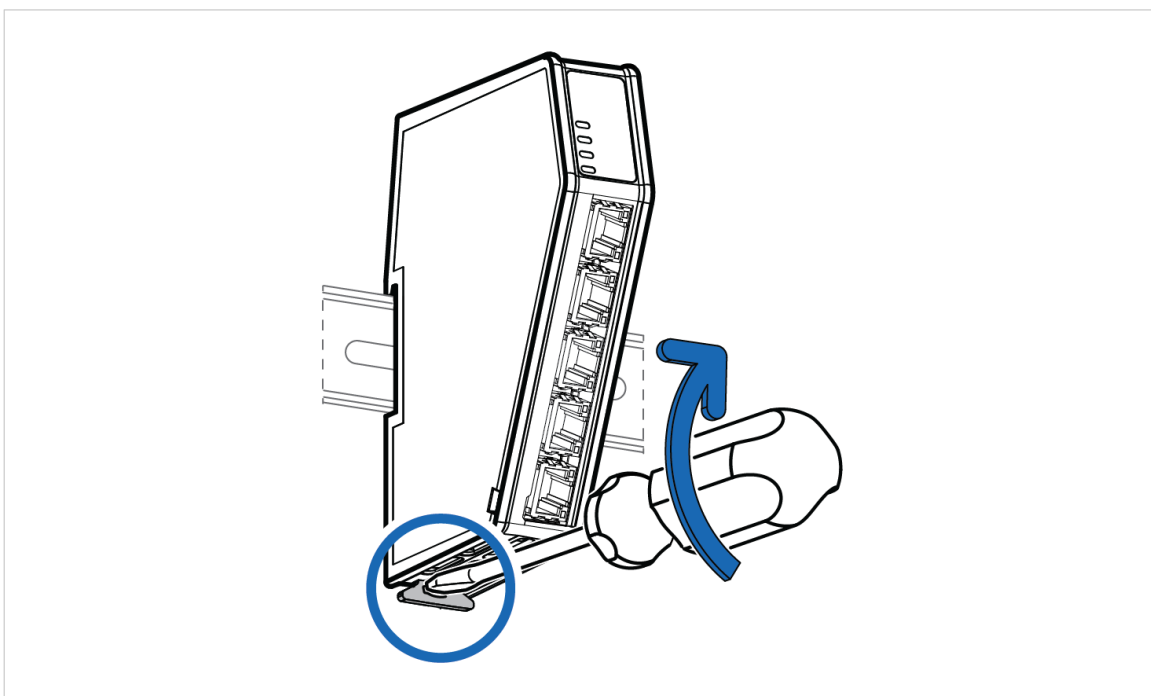


Figure 18. Unlock the Communicator

3. Hold the screwdriver in the DIN rail locking mechanism while you unhook the Communicator from the DIN rail.

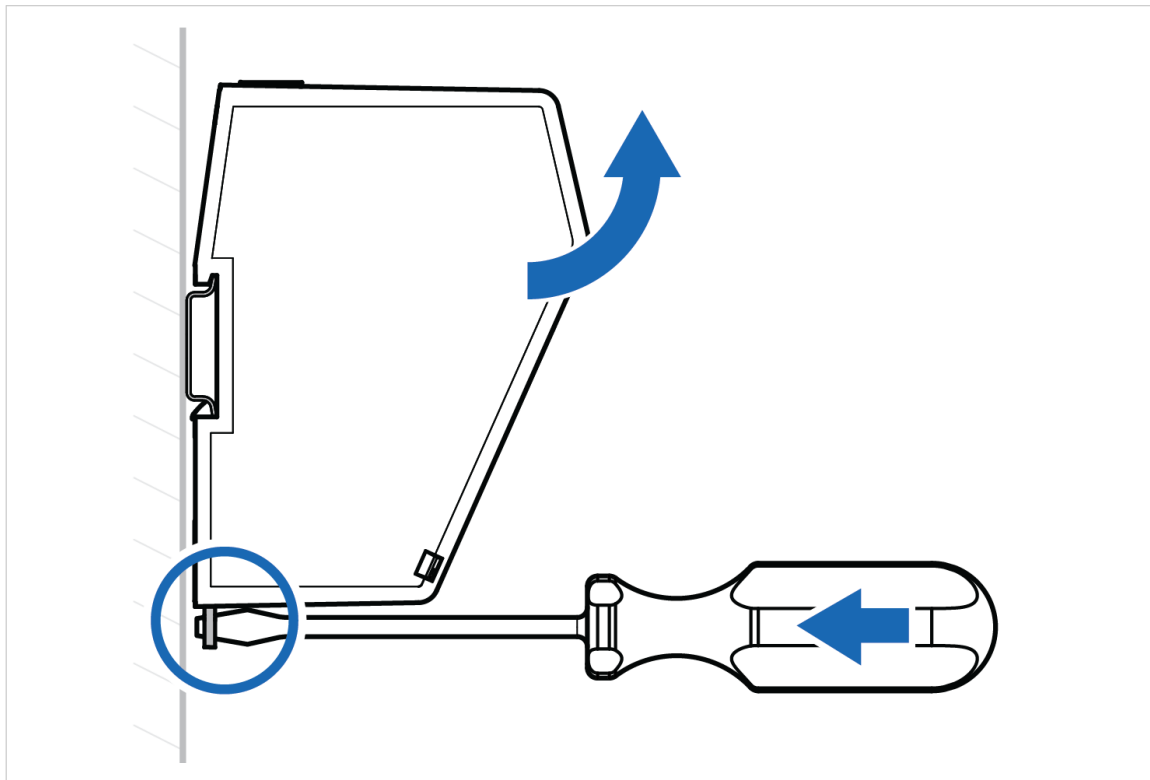


Figure 19. Unhook the Communicator

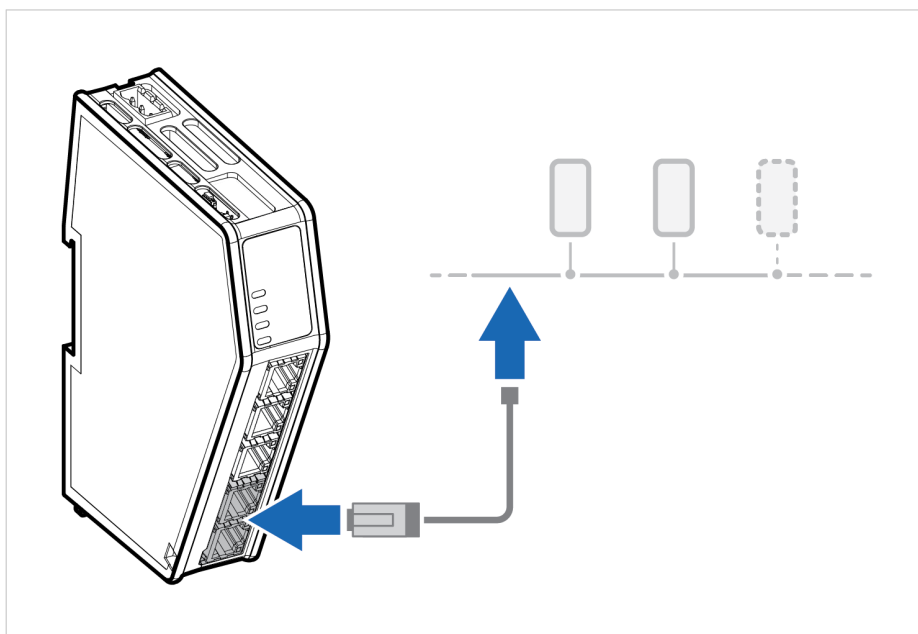
## 7. Configuration Quick Guide

This section is intended to give you a brief overview of the tasks you need to perform to configure the Communicator.

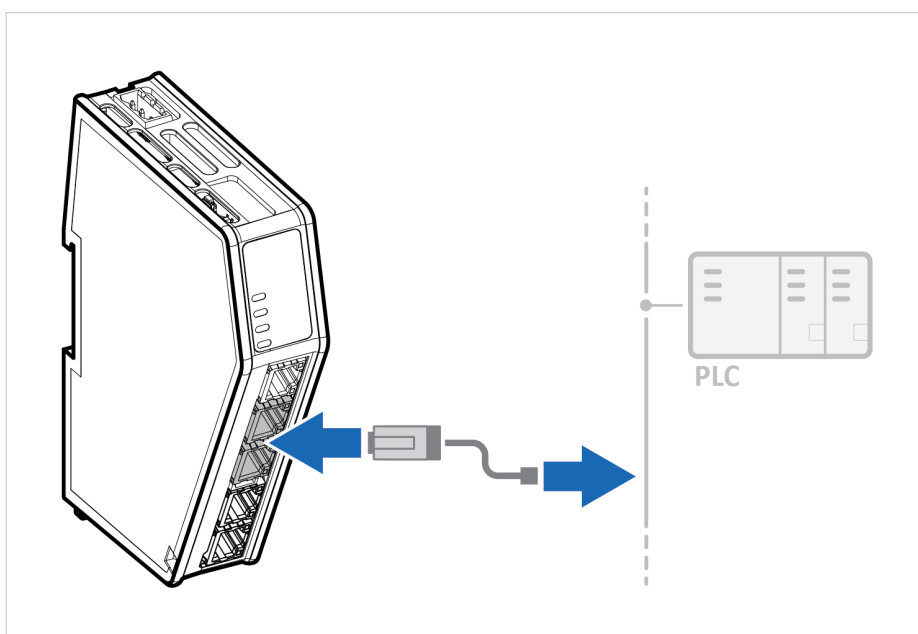
For detailed information, please refer to [Communicator Configuration \(page 34\)](#).

### 7.1. Prepare Configuration

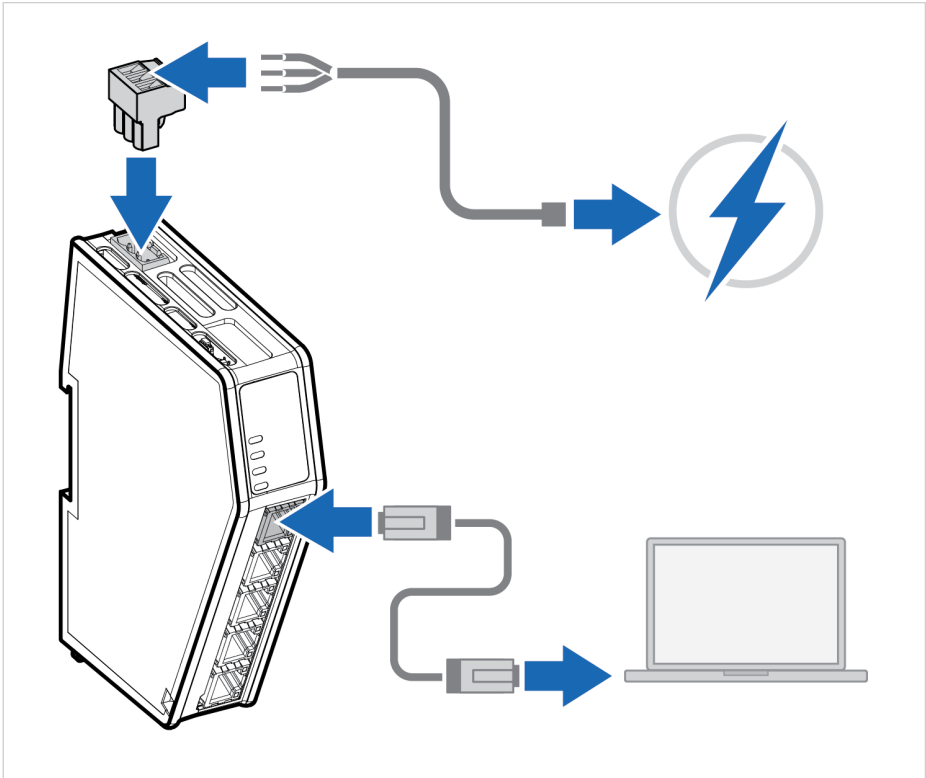
1. **Connect the Communicator to the Modbus TCP subnetwork**



2. **Connect Communicator to the PROFINET network.**



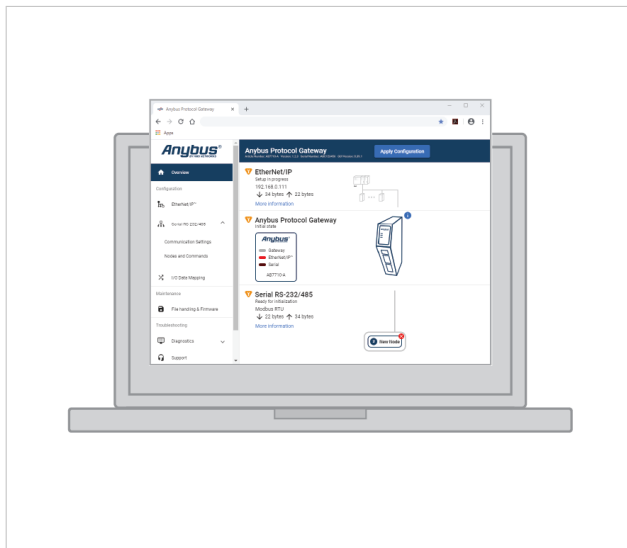
3. Connect to PC and power



- a. Connect an Ethernet cable between the Communicator configuration port and your PC.
  - b. Connect the Communicator to a power supply.
4. **Find the Communicator on your PC**  
The Communicator default IP address is 192.168.0.10.

| Option 1                                                                                                                                                                                                                                                   | Option 2                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><p>On the PC accessing the Communicator built-in web interface, set a static IP address within the same IP address range as the Communicator IP address.</p></div> | <div><p>Change the IP address on the Communicator configuration port to one within the same IP address range as your PC.</p><p>Use the software application HMS IPconfig to find the Communicator default IP address on your PC.</p><p>Download the installation files and user documentation from <a href="http://www.anybus.com/support">www.anybus.com/support</a>.</p></div> |

## 5. Access the Communicator built-in web interface



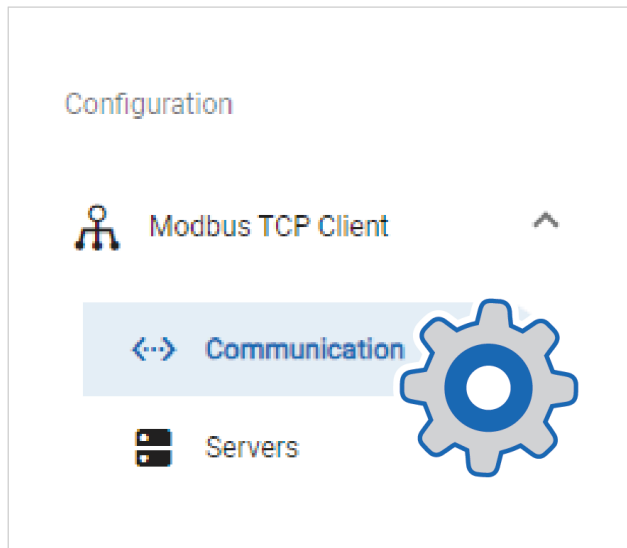
Open the Communicator built-in web interface in HMS IPconfig or enter the Communicator IP address in your web browser.

The Communicator built-in web interface overview page opens in your browser.

## 7.2. Setup New Configuration

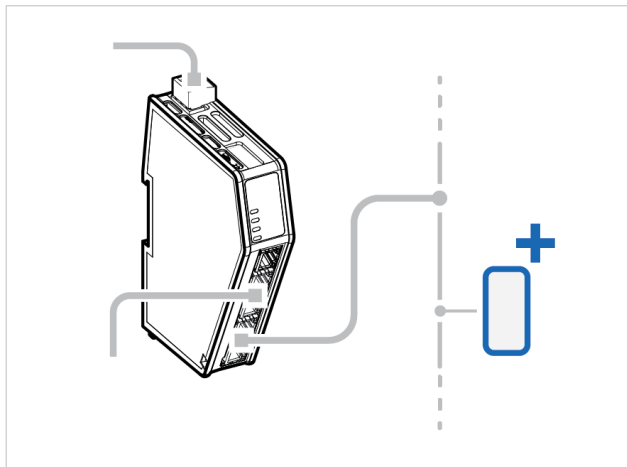
Follow these steps to setup a new Communicator configuration.

### 1. Subnetwork configuration



On the **Communication** page: Enable DHCP or configure the IP settings manually.

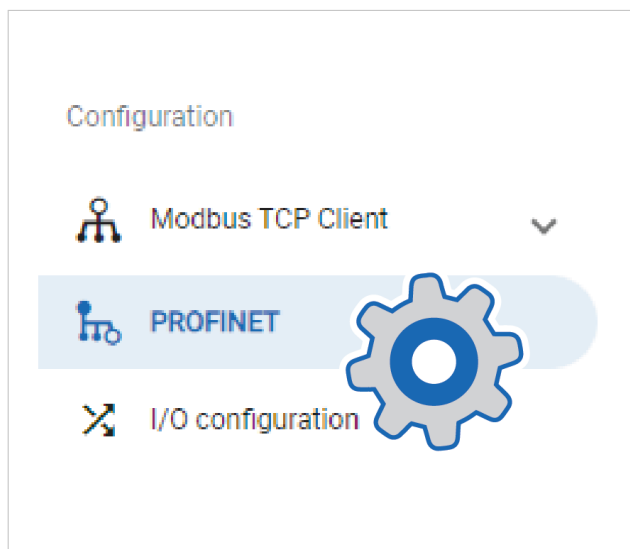
### 2. Add Servers



On the **Servers** page:

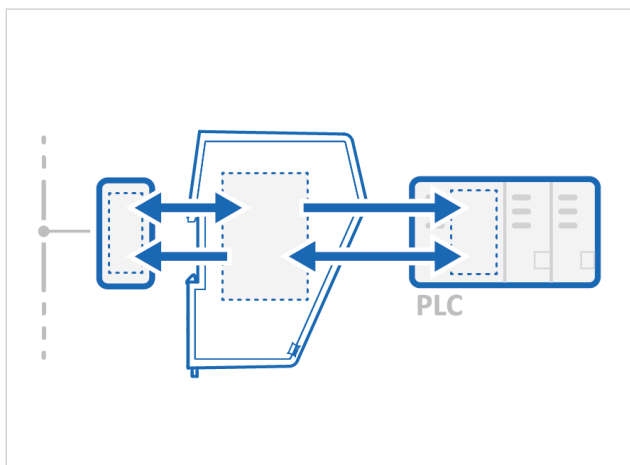
- a. Add a server and configure the server **Properties**.
- b. Add transaction(s) to the server and configure the **Transaction properties**.
- c. Repeat until you have added and configured all your servers.

### 3. High level network configuration



On the **PROFINET** page:  
Enable DHCP server or choose to set a specific IP address.

### 4. I/O Configuration

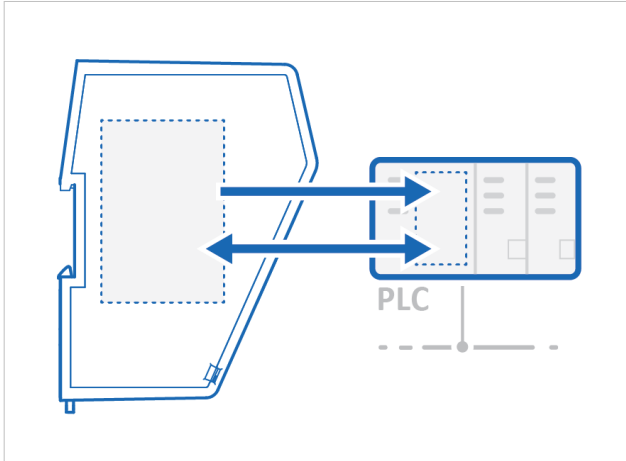


The transaction(s) for each server is automatically mapped to the Communicator internal memory area.  
On the **I/O configuration** page, view the mapping relation between the server connections and the layout on the process data area.

## 7.3. PLC Configuration

In the PLC program:

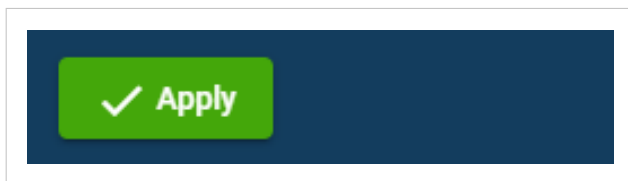
1. **Import product file**  
Option if the PLC program requires an GSDML (Generic Station Description Markup Language) file.  
Import the GSDML file into your PLC project.
2. **Configure the communication**



Configure the PLC to communicate with the Communicator according to the I/O data map created in the Communicator.

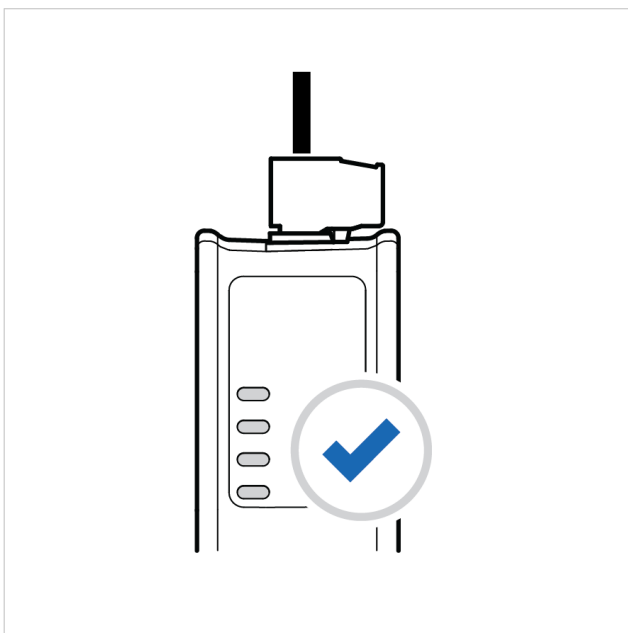
## 7.4. Verify Operation

### 1. Apply the configuration



When you have completed and verified the configuration, click **Apply** for the settings to take effect.

### 2. Verify status and LED indications



On the **Home** page:

Monitor the Communicator, network and server status.

You can also view the Communicator LED indications remotely.

### 3. Verify and monitor communication



In **Diagnostics**, use the:

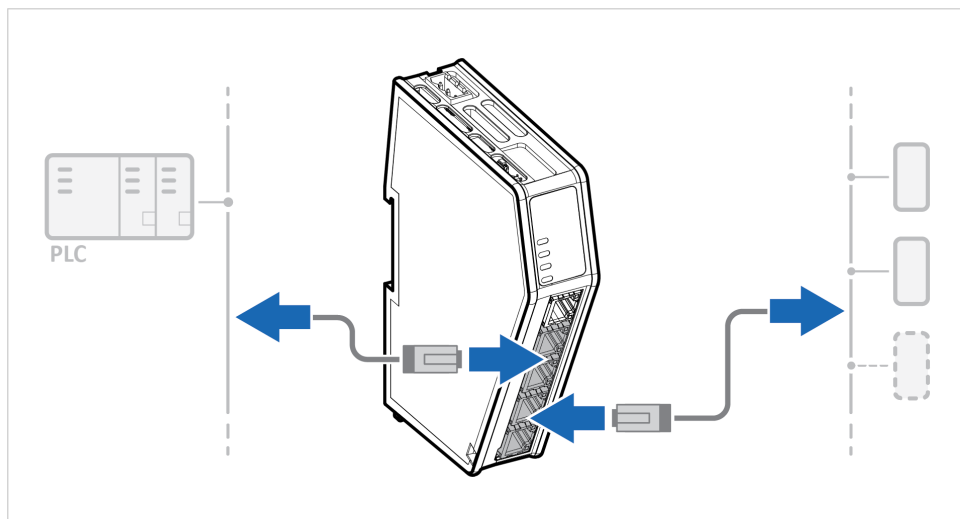
- **I/O data** page to monitor how the data flow between the **Modbus TCP Client** side and the **PROFINET** side, including any configured endian conversions.
- **Event log** page to detect failures and unexpected behavior over time.

## 8. Communicator Configuration

### 8.1. Connect the Communicator

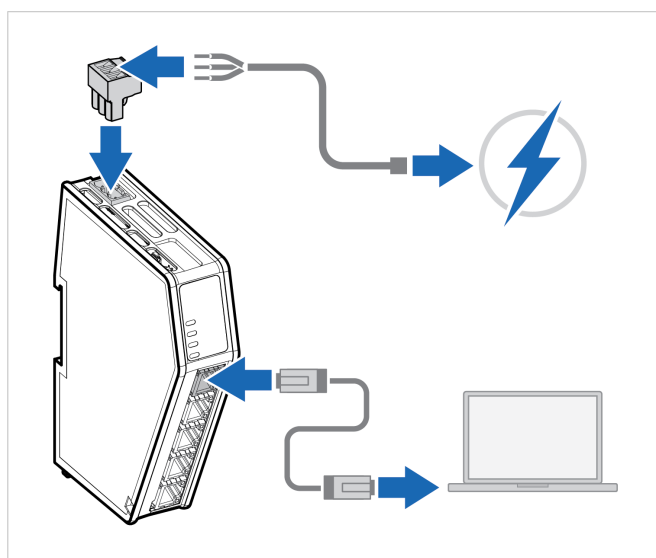
#### Procedure

Connect to Modbus TCP Client network and PROFINET network



1. Connect the Communicator to the high level network.
2. Connect the Communicator to the subnetwork.

Connect to PC and Power



1. Connect an Ethernet cable between the Communicator and your PC.
2. Connect the Communicator to a power supply.

## 8.2. Access the Built-In Web Interface from HMS IPconfig

### Before You Begin

Download the software application HMS IPconfig installation files and user documentation from [www.anybus.com/support](http://www.anybus.com/support).



#### NOTE

The Communicator default IP address is 192.168.0.10.



#### NOTE

To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.



#### NOTE

To access the Communicator built-in web interface from HMS IPconfig, ensure that Port 3250 UDP is open in your PC Windows Firewall.



#### NOTE

Ensure that the security switch is unlocked. HMS IPconfig cannot configure the Communicator if the security switch is locked.



#### TIP

When you have accessed the Communicator built-in web interface, you can change the IP settings for the Communicator configuration port on the **System > Configuration port** page.

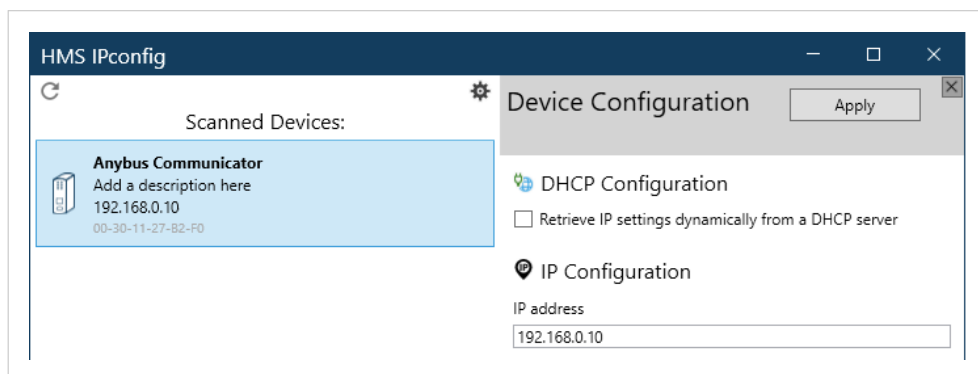
### Procedure

1. Install HMS IPconfig on your PC.
2. Open HMS IPconfig.

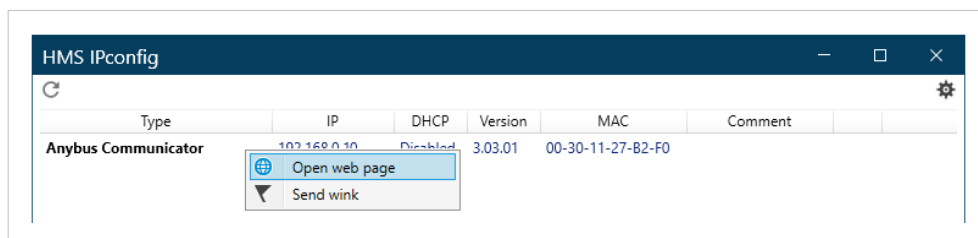


- HMS IPconfig automatically starts scanning for compatible and active HMS devices.
  - Found HMS devices are added to the device list.
3. To open the settings pane, click on the Communicator in the device list.

4. Change the Communicator configuration port IP address to one within the same IP address range as your PC.

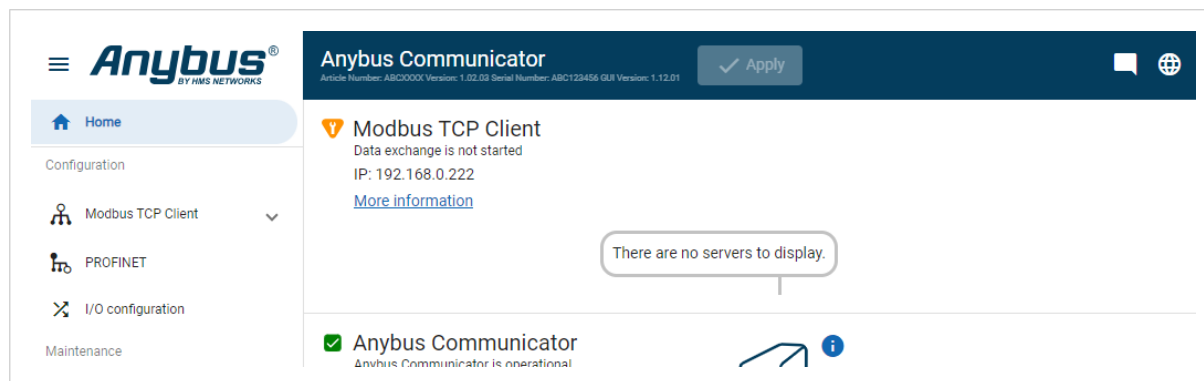


5. To open the **Open web page** built-in web interface, click Communicator.



## Result

You are redirected to the Communicator built-in web interface **Home** page.



## 8.3. Access the Built-In Web Interface from a Web Browser

### Before You Begin

**NOTE**

The Communicator configuration port default IP address is 192.168.0.10.

**NOTE**

To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.

**NOTE**

When you change to a static IP address on your computer, internet access may be lost.

**TIP**

When you have accessed the Communicator built-in web interface, you can change the IP settings for the Communicator configuration port on the **System > Configuration port** page.

### Procedure

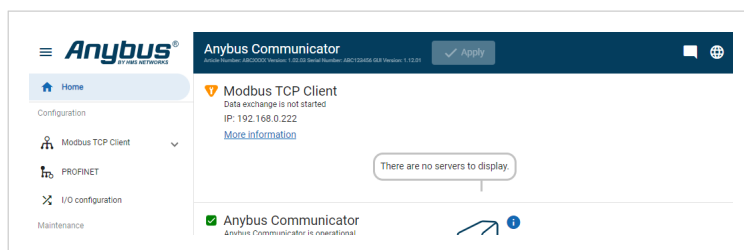
1. On the PC accessing the Communicator built-in web interface, set a static IP address within the same IP address range as the Communicator IP address.



2. Open a web browser.
3. Click to select the **Address bar** and enter the Communicator IP address.



4. To open the built-in web interface **Home** page, press **Enter**.



## 8.4. Communicator Built-In Web Interface Overview

Use the Communicator built-in web interface to configure, maintain and troubleshoot the Communicator.

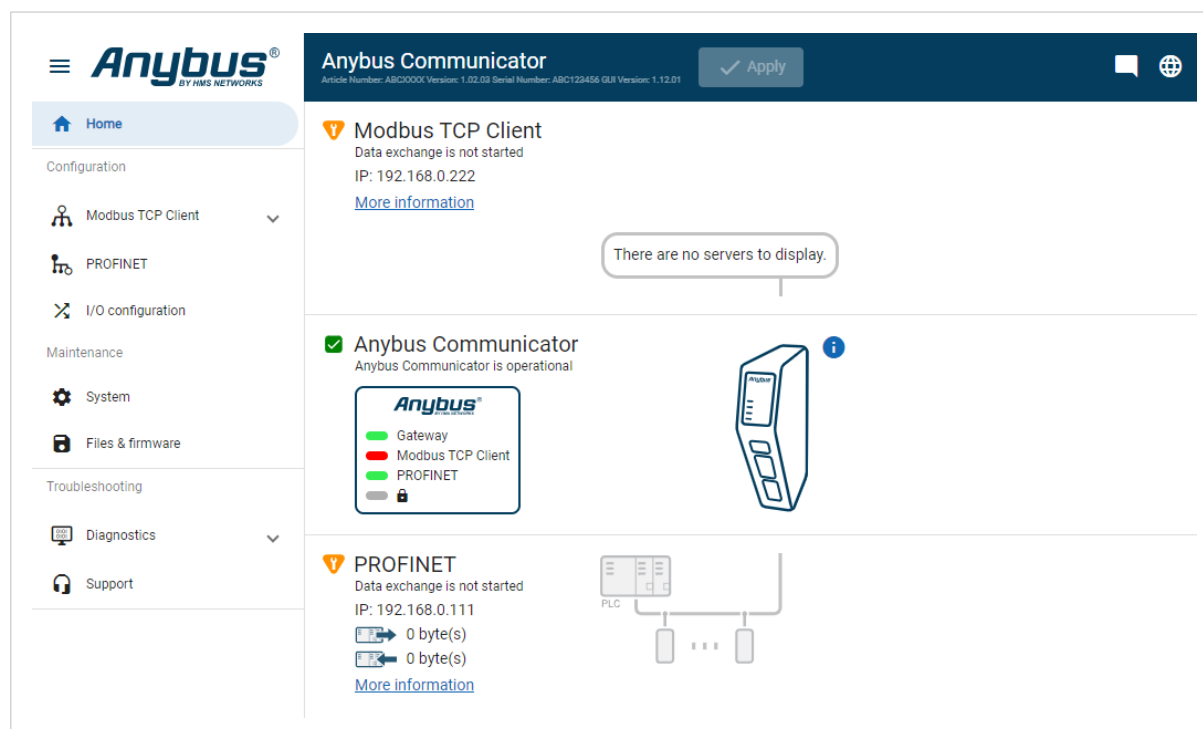


Figure 20. The Communicator built-in web interface Home page

| Menu item         | Description                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Home              | View the Communicator, network and adapter(s) status.                                                                                                                                                                                                 |
| Apply             | After configuration changes are made and verified, press Apply to make the settings take effect.                                                                                                                                                      |
| Modbus TCP Client | Modbus TCP subnetwork with server(s).<br>Configure communication and add servers and transactions.                                                                                                                                                    |
| PROFINET          | Configure the network settings for the PROFINET network.                                                                                                                                                                                              |
| I/O configuration | View the connections mapped to the Communicator internal memory area.                                                                                                                                                                                 |
| System            | Define how the device should behave if a serious error occurs.<br>Configure the Communicator configuration port IP settings.                                                                                                                          |
| Files & firmware  | Save settings in a configuration files, upload configuration files and upgrade firmware.                                                                                                                                                              |
| Diagnostics       | Monitor and troubleshoot the Communicator.                                                                                                                                                                                                            |
| Support           | Contains Communicator product information, Anybus contact information, link to Anybus support website, and product file for download.<br>Here you can generate a support package with product information, to send to your Anybus support technician. |

## 8.5. Modbus TCP Client Communication Settings

### 8.5.1. To Use DHCP Server

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

IP Settings

☒ DHCP enabled

IP address

192.168.0.111

Subnet mask

255.255.255.0

Gateway address

192.168.0.1

Primary DNS

0.0.0.0

Secondary DNS

0.0.0.0

Figure 21. IP Settings, DHCP enabled

By default, DHCP is disabled.

To enable DHCP, select the **DHCP enabled** checkbox. The IP settings will be provided by the high level network DHCP server.

#### Default Communicator IP Settings

The Communicator comes with the following factory default IP settings:

| Setting              | Default value                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DHCP                 | Off                                                                                                                                                                                |
| IP address           | There is no default IP address.                                                                                                                                                    |
| Subnet mask          | There is no default Subnet mask.                                                                                                                                                   |
| Gateway address      | There is no default Gateway address.                                                                                                                                               |
| Primary DNS server   | There is no default Primary DNS server.                                                                                                                                            |
| Secondary DNS server | There is no default Secondary DNS server.                                                                                                                                          |
| Hostname             | You can label the Communicator. Maximum length is 64 characters. No symbol characters, punctuation characters, or whitespace are permitted. Write the Hostname as one single word. |

8.5.2. To Configure IP Settings Manually

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

IP Settings

☐ DHCP enabled

IP address

192.168.1.15

Subnet mask

255.255.255.0

Gateway address

0.0.0.0

Primary DNS

0.0.0.0

Secondary DNS

0.0.0.0

Figure 22. Modbus TCP Client IP Settings, DCHP disabled

1. Ensure that the **DHCP enabled** checkbox is deselected.

2. Configure the IP settings.

| Setting              | Description                                                                                                                                                                        |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP address           | The Modbus TCP Client network IP address in IPv4 dot-decimal notation                                                                                                              |
| Subnet mask          | The Modbus TCP Client network Subnet mask in IPv4 dot-decimal notation.                                                                                                            |
| Gateway address      | The Modbus TCP Client network Gateway address in IPv4 dot-decimal notation.<br>If there is no gateway available, set the Gateway address to: 0.0.0.0                               |
| Primary DNS server   | The Modbus TCP Client network Primary DNS in IPv4 dot-decimal notation.                                                                                                            |
| Secondary DNS server | The Modbus TCP Client network Secondary DNS in IPv4 dot-decimal notation.                                                                                                          |
| DHCP                 | Off                                                                                                                                                                                |
| Hostname             | You can label the Communicator. Maximum length is 64 characters. No symbol characters, punctuation characters, or whitespace are permitted. Write the Hostname as one single word. |

8.5.3. Naming the Host

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

Hostname

Figure 23. Modbus TCP Client, Communication page, IP Settings Hostname

You can label the Communicator.

- The maximum allowed length of the Hostname is 64 characters.
- No symbol characters, punctuation characters, or whitespace are permitted.
- Write the Hostname as one single word.

# 8.6. Servers

## 8.6.1. Add Server

### Before You Begin



**NOTE**

The maximum number of servers that can be added is 64.

### Procedure

1. In the web-interface left sidebar menu, click **Servers**.
2. Click **Add**.  
A new server is added to the **Modbus TCP Client** server list.

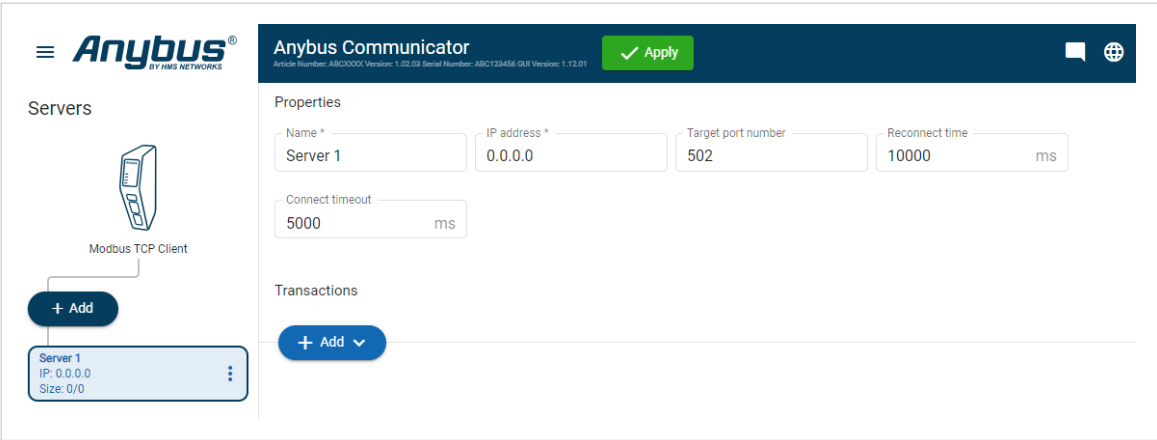


Figure 24. Modbus TCP Client, Server page

3. Repeat until you have added all your servers.

### To Do Next

Configure the server Properties, see [Server Properties \(page 42\)](#).

## 8.6.2. Server Properties

### Procedure

The screenshot displays the 'Anybus Communicator' web interface. On the left, a sidebar shows the 'Servers' section with a 'Modbus TCP Client' icon and a '+ Add' button. Below this, a list shows 'Server 1' with IP '0.0.0.0' and Size '0/0'. The main area is titled 'Anybus Communicator' and contains an 'Apply' button. Below this is the 'Properties' section with input fields for Name (Server 1), IP address (0.0.0.0), Target port number (502), Reconnect time (10000 ms), and Connect timeout (5000 ms). At the bottom is a 'Transactions' section with a '+ Add' button.

Figure 25. Servers page, Properties

1. In the server list, select a server to configure.
2. Configure the **Properties**.

| Setting            | Value                                     | Description                                                                                                      |
|--------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Name               | Server [n]                                | The default name is Server, followed by an incremental number suffix.                                            |
| IP address         | Default 0.0.0.0                           | The server IP address in IPv4 dot-decimal notation                                                               |
| Reconnect time     | 0 ms to 4294967295 ms<br>Default 1000 ms  | Specify for how long the Communicator should wait before attempting to reconnect, if the server is disconnected. |
| Connect timeout    | 0 ms to 4294967295 ms<br>Default 5000 ms  | Specify the period in which the Communicator should establish a connection with the server.                      |
| Target port number | 0 to 65535<br>Default Modbus TCP port 502 | Modbus TCP port of the target device.<br>If the server requires it, it is possible to change.                    |

3. To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

### To Do Next

Add Transactions, [Add Transactions](#).

### 8.6.3. Add Transactions

#### Before You Begin



#### NOTE

The transactions are executed in the order they appear in the **Server Transaction** list.



#### NOTE

One transaction is performed at a time per connection.



#### NOTE

You can add a maximum of 152 transaction units distributed among the servers.

For Modbus TCP, it is possible to map up to 1500 bytes of data in either direction, including data exchange control and live list.

#### Procedure

1. In the **Modbus TCP Client** server list, select a server to configure.
2. Click **Add** and select a transaction from the list of standard Modbus transactions.

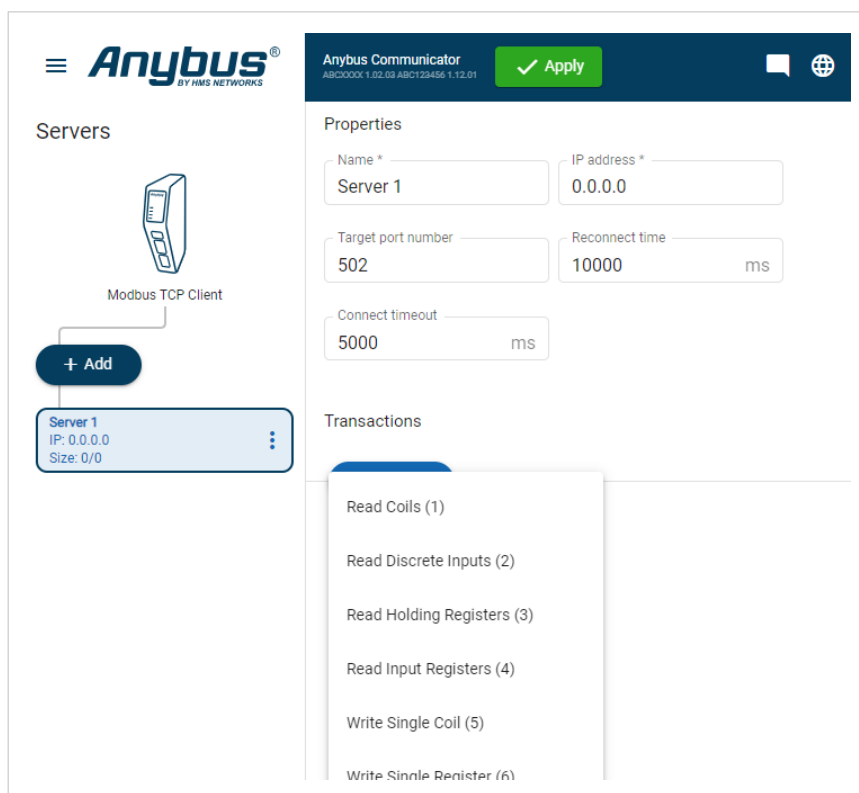


Figure 26. Add Modbus transactions

3. Repeat until you have added all your transactions.

#### To Do Next

Configure the transaction Properties settings, [Transaction Properties](#).

## 8.6.4. Modbus Transactions

Reference: MODBUS Application Protocol Specification V1.1b3, April 26 2012

For more information refer to the Modbus organization website.

| Nr | Transaction                   | Area              | Function Code | Description                                                                                                             |
|----|-------------------------------|-------------------|---------------|-------------------------------------------------------------------------------------------------------------------------|
| 1  | Read Coils                    | Coils             | 0x01          | Read from 1 to 2000 contiguous status of coils in a remote device.                                                      |
| 2  | Read Discrete Inputs          | Discrete inputs   | 0x02          | Read from 1 to 2000 contiguous status of discrete inputs in a remote device.                                            |
| 3  | Read Holding Registers        | Holding registers | 0x03          | Read the contents of a contiguous block of holding registers in a remote device.                                        |
| 4  | Read Input Registers          | Input registers   | 0x04          | Read from 1 to 125 contiguous input registers in a remote device.                                                       |
| 5  | Write Single Coil             | Coils             | 0x05          | Write a single output to ON or OFF in a remote device.                                                                  |
| 6  | Write Single Register         | Holding registers | 0x06          | Write a single holding register in a remote device.                                                                     |
| 15 | Write Multiple Coils          | Coils             | 0x0F          | In a sequence of coils, force each coil to either ON or OFF in a remote device.                                         |
| 16 | Write Multiple Registers      | Holding registers | 0x10          | Write a block of contiguous registers in a remote device.                                                               |
| 23 | Read/Write Multiple Registers | Holding registers | 0x17          | Performs a combination of one read operation and one write operation. The write operation is performed before the read. |

## 8.6.5. Transaction Properties

### Before You Begin

For Modbus transaction reference guide, refer to [Modbus Transactions \(page 44\)](#).

### Procedure

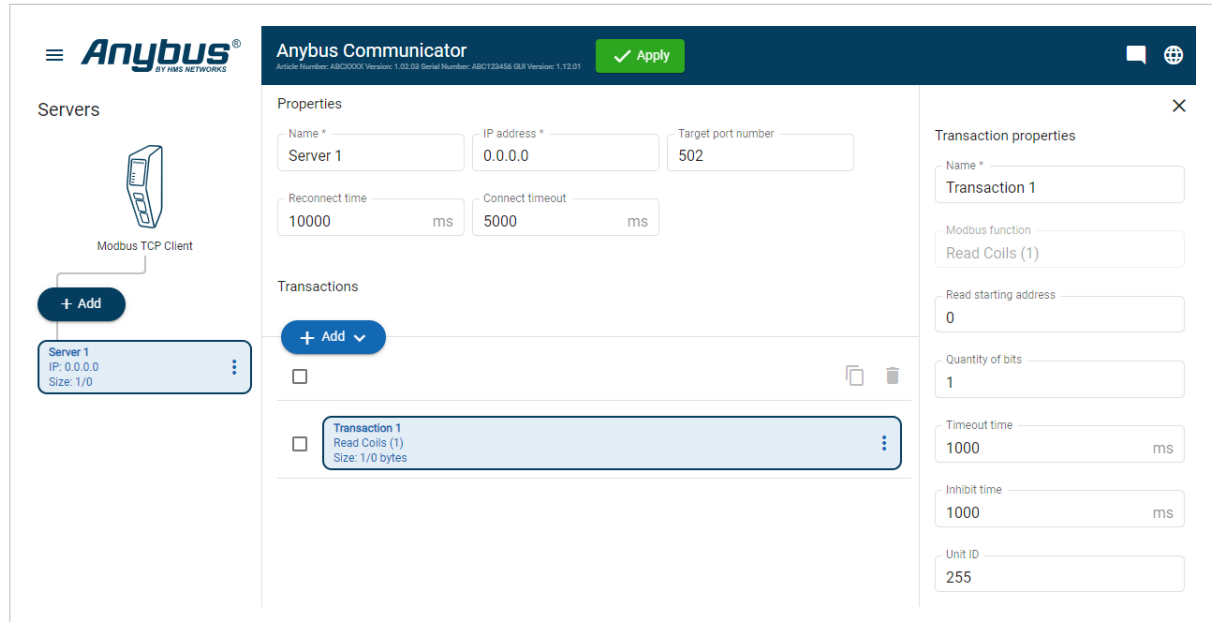


Figure 27. Transaction properties

1. In the **Modbus TCP Client** server list, select a server to configure.
2. In the **Transactions** list, select a transaction to configure.  
The **Transaction properties** sidebar opens, on the right side of the screen.
3. Enter a transaction **Name**.  
By default, the transaction is assigned the name Transaction, followed by an incremental number suffix.
4. Configure the **Transaction properties**.

| Setting                | Value           | Setting for Modbus Transaction                                                                                                                        | Description                                                                                                                                                                                                                                     |
|------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                   | Transaction [n] | Applicable for all.                                                                                                                                   | You can name the transaction to make it easier to identify.<br>The default name is Transaction, followed by an incremental number suffix.                                                                                                       |
| Read starting address  | 0 to 65 535     | Read Coils (1)<br>Read Discrete Inputs (2)<br>Read Holding Registers (3)<br>Read Input Registers (4)<br>Read Write Multiple Registers (23)            | Specify the start address for the read/write transaction.<br>The address acts as an address to the data position, where the data is read from or written to.<br>Modbus holding register addresses starts at 0.<br>Modbus address 0 = Register 1 |
| Write starting address | 0 to 65 535     | Write Single Coil (5)<br>Write Single Register (6)<br>Write Multiple Coil (15)<br>Write Multiple Registers (16)<br>Read Write Multiple Registers (23) |                                                                                                                                                                                                                                                 |
| Quantity to read       | 1 to 125        | Read Holding Registers (3)<br>Read Input Registers (4)<br>Read Write Multiple Registers (23)                                                          | Specifies the number of registers to read to follow in the read data field.                                                                                                                                                                     |

| Setting                | Value                                                                                                                  | Setting for Modbus Transaction                                                                                                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Quantity to write      | Write Multiple Registers (16), 1 to 123<br>Read Write Multiple Registers (23), 1 to 121                                |                                                                                                                                                       | Specifies the quantity of registers to follow in the write data field.                                                                                                                                                                                                                                                                                                                                                                         |
| Quantity of bits       | Read Coils (1), 1 to 2000<br>Read Discrete Inputs (2), 1 to 2000<br>Write Multiple Coils (15), 1 to 1968<br>Default: 1 |                                                                                                                                                       | Specify the number of coils to follow in the read/write data field.                                                                                                                                                                                                                                                                                                                                                                            |
| Unit ID                | 0 to 255<br>Default: 255                                                                                               | Applicable for all.                                                                                                                                   | Specifies the unit identifier of the server device.                                                                                                                                                                                                                                                                                                                                                                                            |
| Timeout time           | 0 to 65 535 ms                                                                                                         | Applicable for all.                                                                                                                                   | Specify the period within which the server must return a response to the transaction.<br><br>If no response is received within the timeout period, the connection to the server is closed.<br><br>If the connection to the server is closed, all transactions to that server are affected.                                                                                                                                                     |
| Update time            | 10 to 10 000 ms                                                                                                        | Applicable for all.                                                                                                                                   | Specify the minimum time that may elapse between the transfer of two of the same transaction.                                                                                                                                                                                                                                                                                                                                                  |
| Update mode            | Cyclically<br>On data change                                                                                           | Write Single Coil (5)<br>Write Single Register (6)<br>Write Multiple Coil (15)<br>Write Multiple Registers (16)<br>Read Write Multiple Registers (23) | Specify when a transaction shall be sent to the server.<br><br>Cyclically: The transaction is sent cyclically, at the interval specified in the Update time parameter.<br><br>On data change: The transaction is sent when the data is changed. The minimum time between two transactions is specified by the Update time parameter.                                                                                                           |
| Startup operation mode | Directly<br>Wait for data                                                                                              | Write Single Coil (5)<br>Write Single Register (6)<br>Write Multiple Coil (15)<br>Write Multiple Registers (16)<br>Read Write Multiple Registers (23) | Directly: Data is sent as soon as possible after start-up.<br><br>Wait for data: All data for the transaction must have been sent from the High Level network and received by the Communicator before the transaction is sent.                                                                                                                                                                                                                 |
| Offline option         | Default: Freeze<br>Pause<br>Safe value; Length and Value                                                               | Write Single Coil (5)<br>Write Single Register (6)<br>Write Multiple Coil (15)<br>Write Multiple Registers (16)<br>Read Write Multiple Registers (23) | Define the action to be taken when the high level network connection is lost.<br><br>Freeze: The Communicator holds the value until the network connection is restored.<br><br>Pause: The transaction is suspended until the network connection is restored.<br><br>Safe value: To ensure stability and reliability in the absence of a network connection, specify the Length 1 or 2 and the Value 0 to 65 535 to use during offline periods. |

5. To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

### 8.6.6. Duplicate Transaction

When you duplicate a transaction, all settings are preserved.

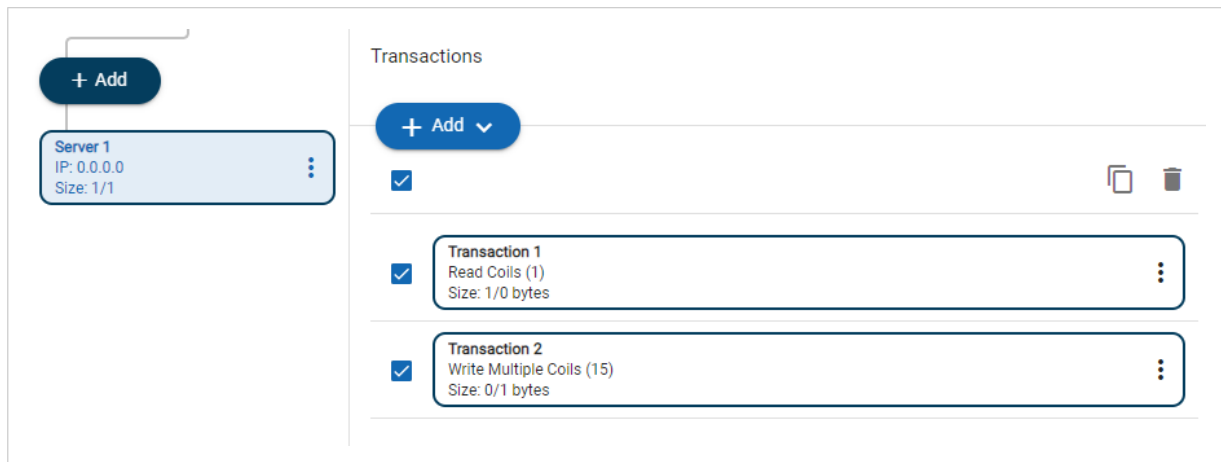


Figure 28. Duplicate transaction

To duplicate, select the checkbox in front of each transaction you want to duplicate and click the **Duplicate** icon.

The duplicated transaction(s) is added at the bottom of the transactions list.

### 8.6.7. Delete Transaction

When you delete a transaction, all its settings are permanently lost.

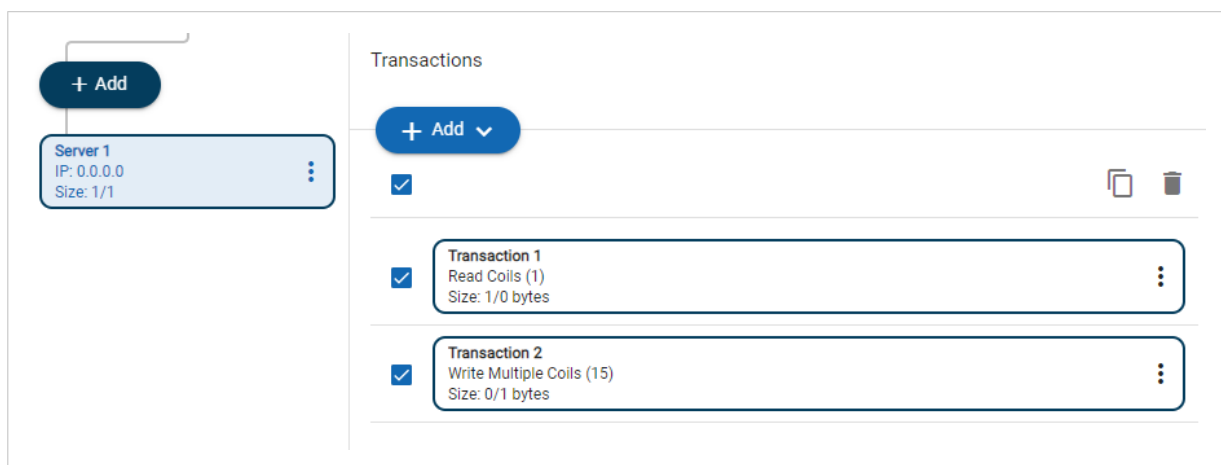


Figure 29. Delete transaction

To delete:

1. Select the checkbox in front of each transaction you want to delete and click the **recycle bin icon**.
2. To confirm, **Delete**.

## 8.7. PROFINET Settings

### 8.7.1. To Use DHCP Server

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

IP Settings

☒ DHCP enabled

IP address

192.168.0.111

Subnet mask

255.255.255.0

Gateway address

192.168.0.1

Primary DNS

0.0.0.0

Secondary DNS

0.0.0.0

Figure 30. IP Settings, DHCP enabled

By default, DHCP is disabled.

To enable DHCP, select the **DHCP enabled** checkbox. The IP settings will be provided by the high level network DHCP server.

#### Default Communicator IP Settings

The Communicator comes with the following factory default IP settings:

| Setting              | Default value                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DHCP                 | Off                                                                                                                                                                                |
| IP address           | There is no default IP address.                                                                                                                                                    |
| Subnet mask          | There is no default Subnet mask.                                                                                                                                                   |
| Gateway address      | There is no default Gateway address.                                                                                                                                               |
| Primary DNS server   | There is no default Primary DNS server.                                                                                                                                            |
| Secondary DNS server | There is no default Secondary DNS server.                                                                                                                                          |
| Hostname             | You can label the Communicator. Maximum length is 64 characters. No symbol characters, punctuation characters, or whitespace are permitted. Write the Hostname as one single word. |

8.7.2. To Configure IP Settings Manually

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

IP Settings

☐ DHCP enabled

IP address

192.168.1.15

Subnet mask

255.255.255.0

Gateway address

0.0.0.0

Primary DNS

0.0.0.0

Secondary DNS

0.0.0.0

Figure 31. PROFINET IP Settings, DHCP disabled

1. Deselect the **DHCP enabled** checkbox.
2. Configure the IP settings.

| Setting         | Description                                                                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP address      | The PROFINET network IP address in IPv4 dot-decimal notation                                                                                                                       |
| Subnet mask     | The PROFINET network Subnet mask in IPv4 dot-decimal notation.                                                                                                                     |
| Gateway address | The PROFINET network Gateway address in IPv4 dot-decimal notation.<br>If there is no gateway available, set the Gateway address to: 0.0.0.0                                        |
| Primary DNS     | The PROFINET network Primary DNS in IPv4 dot-decimal notation.                                                                                                                     |
| Secondary DNS   | The PROFINET network Secondary DNS in IPv4 dot-decimal notation.                                                                                                                   |
| Hostname        | You can label the Communicator. Maximum length is 64 characters. No symbol characters, punctuation characters, or whitespace are permitted. Write the Hostname as one single word. |

8.7.3. Naming the Host

Anybus Communicator

Article Number: AB7710-A Version: 1.2.3 Serial Number: ABC123456 GUI Version: 0.44.1

✓ Apply

Hostname

Figure 32. PROFINET page, IP Settings Hostname

You can label the Communicator.

- The maximum allowed length of the Hostname is 64 characters.
- No symbol characters, punctuation characters, or whitespace are permitted.
- Write the Hostname as one single word.

## 8.7.4. PROFINET Station Name Settings

**Anybus Communicator**  
Article Number: ABCXXXXX Version: 1.02.03 Serial Number: ABC123456 GUI Version: 1.12.01

**PROFINET**

**IP Settings**

☐ DHCP enabled

IP address \* 192.168.0.111 Subnet mask \* 255.255.255.0 Gateway address \* 192.168.0.1

Primary DNS 0.0.0.0 Secondary DNS 0.0.0.0

Hostname

**PROFINET settings**

Station name  
profinet-station-name

**GSDML file**

GSDML file

Extract the GSDML file from the archive and use it to configure the PROFINET PLC to use the Anybus Communicator.

**Advanced settings**

☐ Use legacy mode  
Use the legacy mode to force the product into being compatible to how the previous generation product behaved.

Figure 33. PROFINET page, Station name

A PROFINET device is identified by its Station name in the PROFINET network.

Enter a Station name for the Communicator.

- The maximum allowed length of the Station name is 240 characters.
- No symbol characters, punctuation characters, or whitespace are permitted.
- Write the Station name as one single word.

## 8.8. PROFINET Advanced Settings



### NOTE

The Advanced settings is used to makes the Communicator compatible with the Anybus X-gateway.

### 8.8.1. Legacy Mode

**Advanced settings** option for PROFIBUS.

#### Before You Begin

If you already have an Anybus X-gateway GSDML (Generic Station Description Markup Language) file installed in your PLC, legacy mode allows you to continue using the settings from the GSDML file for the new Communicator.



### IMPORTANT

Legacy mode does not support acyclic communication.

#### Procedure

GSDML file

GSDML file

Not applicable in Legacy mode. Uses the already installed ABX Classic GSD file.

Advanced settings

☒ Use legacy mode

Use the legacy mode to force the product into being compatible to how the previous generation product behaved.

Figure 34. Advanced settings > Use legacy mode

To enable the legacy mode, select the **Use legacy mode** checkbox.

When Use legacy mode is enabled, the **GSDML file** download becomes inactive.

## 8.9. I/O Configuration

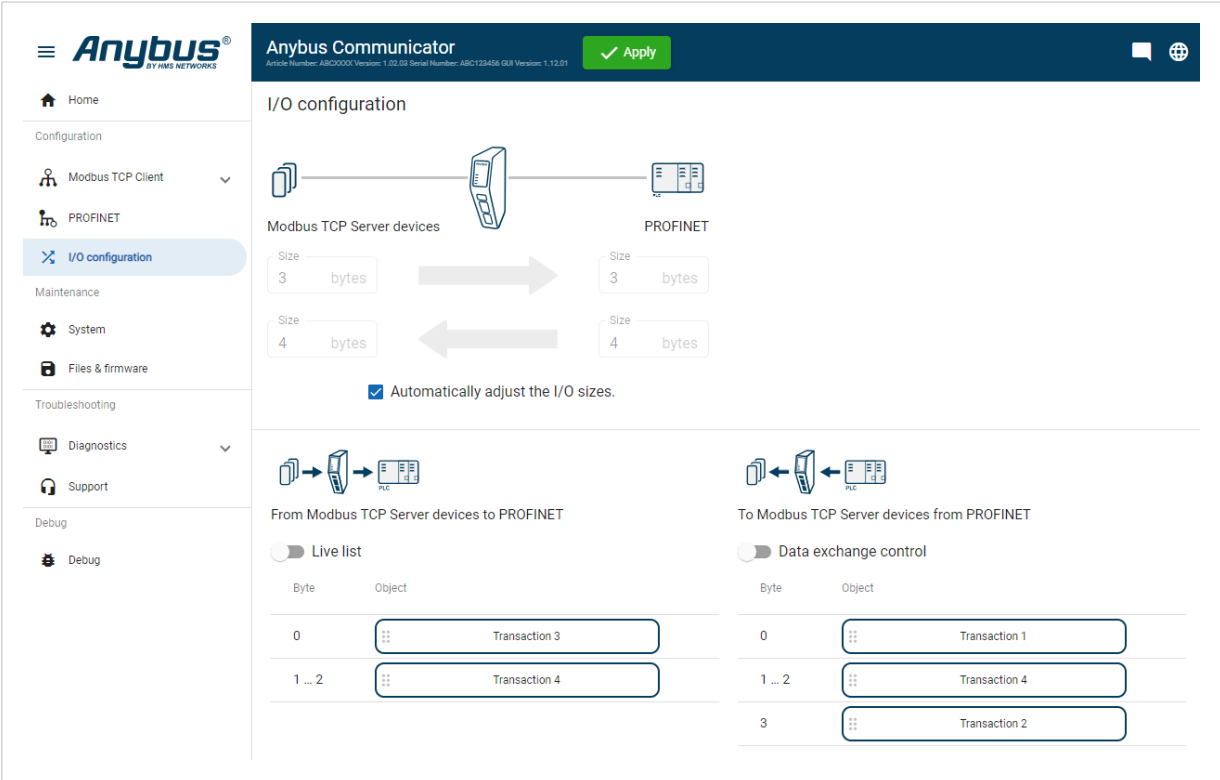


Figure 35. I/O configuration page

On the **I/O configuration** page the data communication between the Modbus TCP server devices and the PROFINET network is mapped.

The allocated I/O area is auto generated based on the **Modbus TCP server devices** network server(s) configuration and how the settings on the **PROFINET** page are configured.

There are two areas: **From Modbus TCP server devices to PROFINET** and **To Modbus TCP server devices from PROFINET**.

### I/O Size Settings

By default, the Communicator is set to use the same I/O sizes for both the PROFINET network and the Modbus TCP server devices.

To configure different sizes for the networks, deselect the **Automatically adjust the I/O sizes** checkbox and enter the desired sizes.

### 8.9.1. Map Area Object Order

To change the order of the objects in a map area, drag and drop the desired transaction to a new location.

Objects can not share the same I/O area.

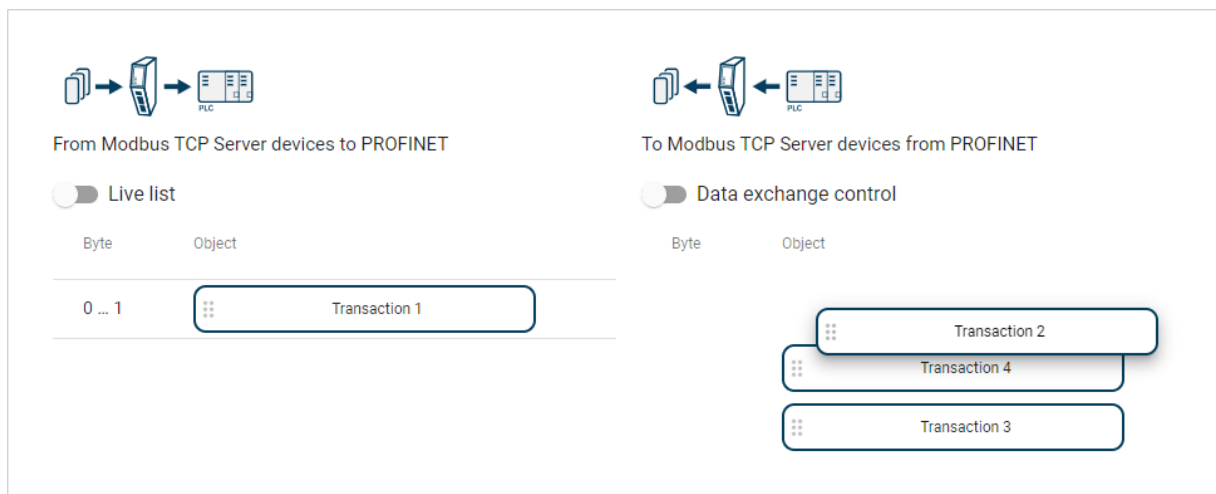


Figure 36. I/O configuration, change the order of objects

### 8.9.2. Endian Swap

By default, Communicator uses **No swapping**.

#### About Endianness

##### Big-endian (BE)

The big-endian format places the most significant byte of the data at the byte with the lowest memory address.

##### Little-endian (LE)

The little-endian format places the least significant byte of the data at the byte with the lowest memory address.

8.9.3. Convert Between Big-Endian and Little-Endian

To convert between big-endian and little-endian you must reverse the byte order.

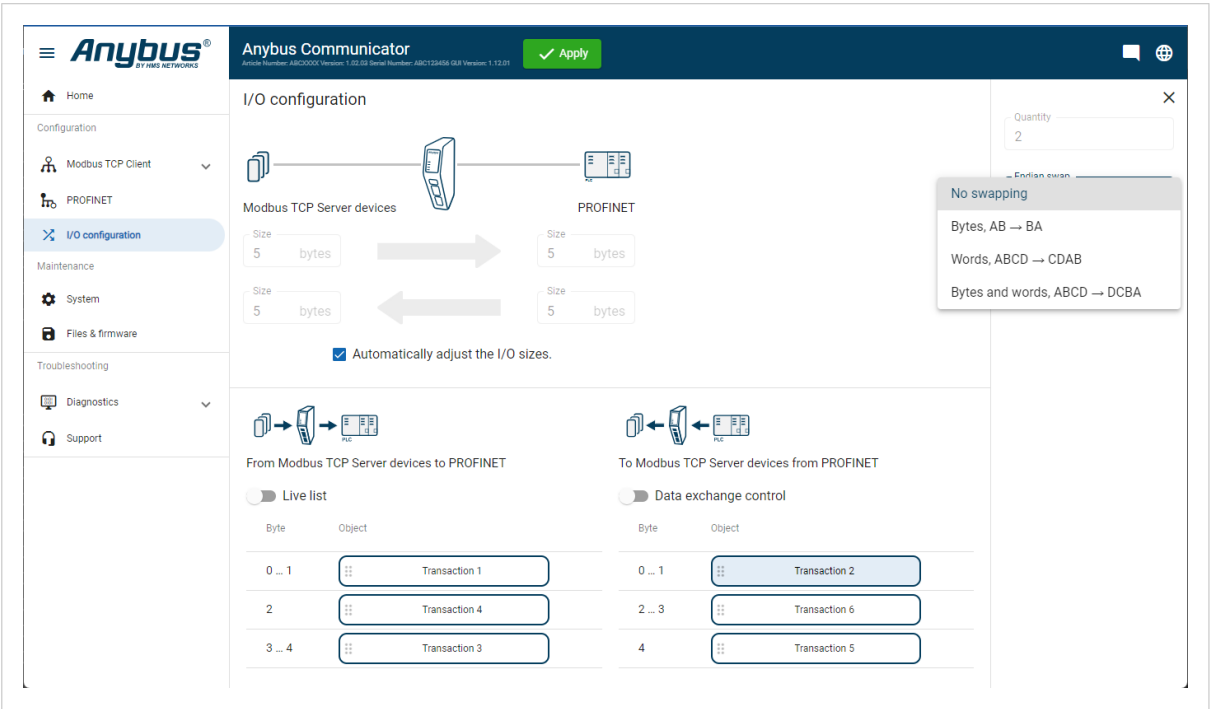


Figure 37. I/O configuration page, Endian swap

To reverse the byte order:

- 1. In the web-interface left sidebar menu, click **I/O configuration**.
- 2. In the data map, select the transaction for which you want to do swap the byte order.
- 3. Select the endian swap type from the **Endian swap** drop-down menu.

| Setting         | Description                                              |
|-----------------|----------------------------------------------------------|
| No swapping     | Default setting<br>No swapping is performed on the data. |
| Bytes           | Swap 2 bytes<br>A B C D becomes B A D C                  |
| Words           | Swap 4 bytes<br>A B C D becomes C D A B                  |
| Bytes and words | A B C D becomes D C B A                                  |

- 4. To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

## 8.9.4. Live List

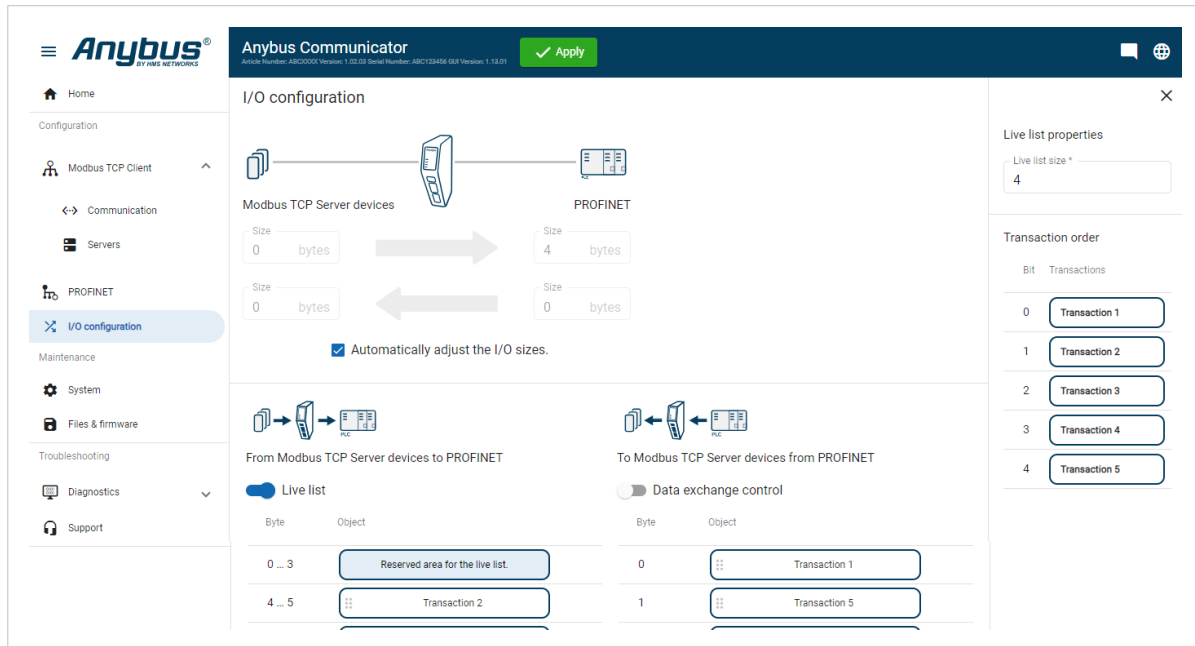


Figure 38. I/O configuration page, Live list enabled

By default, **Live list** is disabled.

### About the Live List

- When **Live list** is enabled, the first four bytes of process data on the PROFINET network contain the live list.
- Each bit in the **Live list** can hold the status for one transaction.
- The **Live list** holds 32 bits, a total of 32 servers connected to the Communicator.
- The bit is 0 when the bit does not correspond to a configured server.  
For example, this occurs when the number of configured servers is less than 32.
- Each bit is 1 when the corresponding servers is online.

### Transaction Online or Offline

The bit is 0 when the corresponding transaction is offline.

The transaction is considered offline when:

- The transaction is not sent to the server.
- The transaction have timed out, no valid response has been received within the specified timeout period.
- Another transaction on the same connection has timed out.
- The server has responded with a Modbus error.

The transaction is considered online when:

- The transaction has received a valid response within the specified timeout period.

Live List Size and Transaction Order

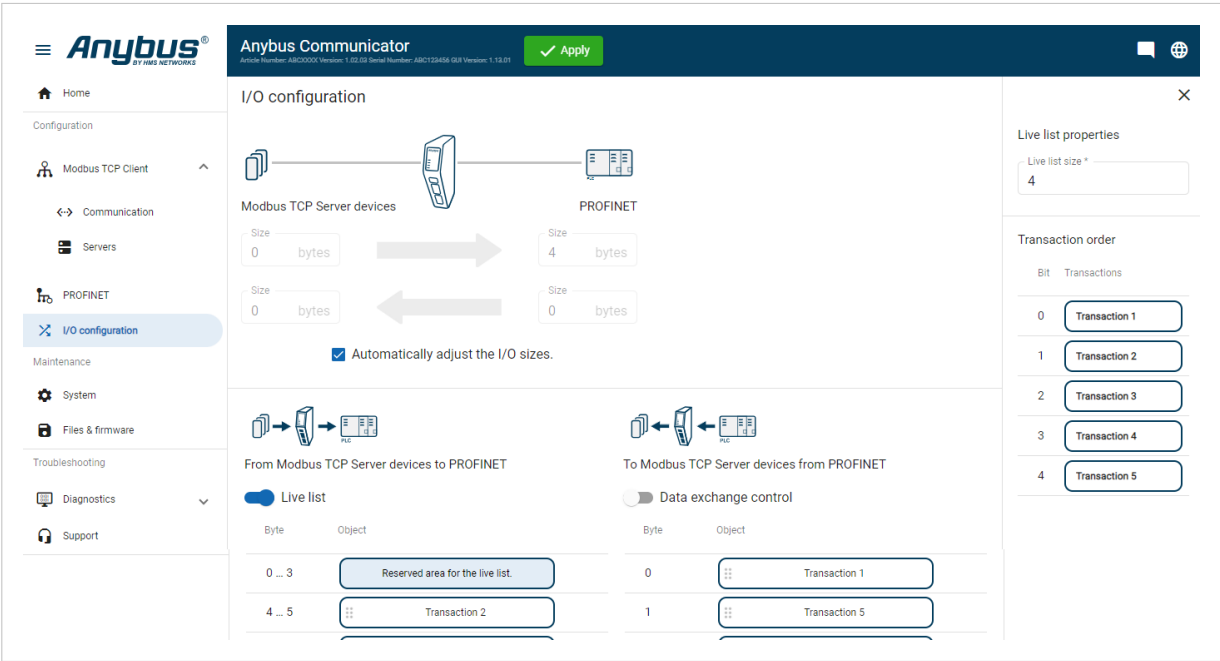


Figure 39. Live list properties and Transaction order

The default **Live list size** is 4 bytes.

The size of the live list can be configured within the range of 1 to 19 bytes.

In the **Transaction order** list, you can view the order in which the transactions are executed.

8.9.5. Data Exchange Control

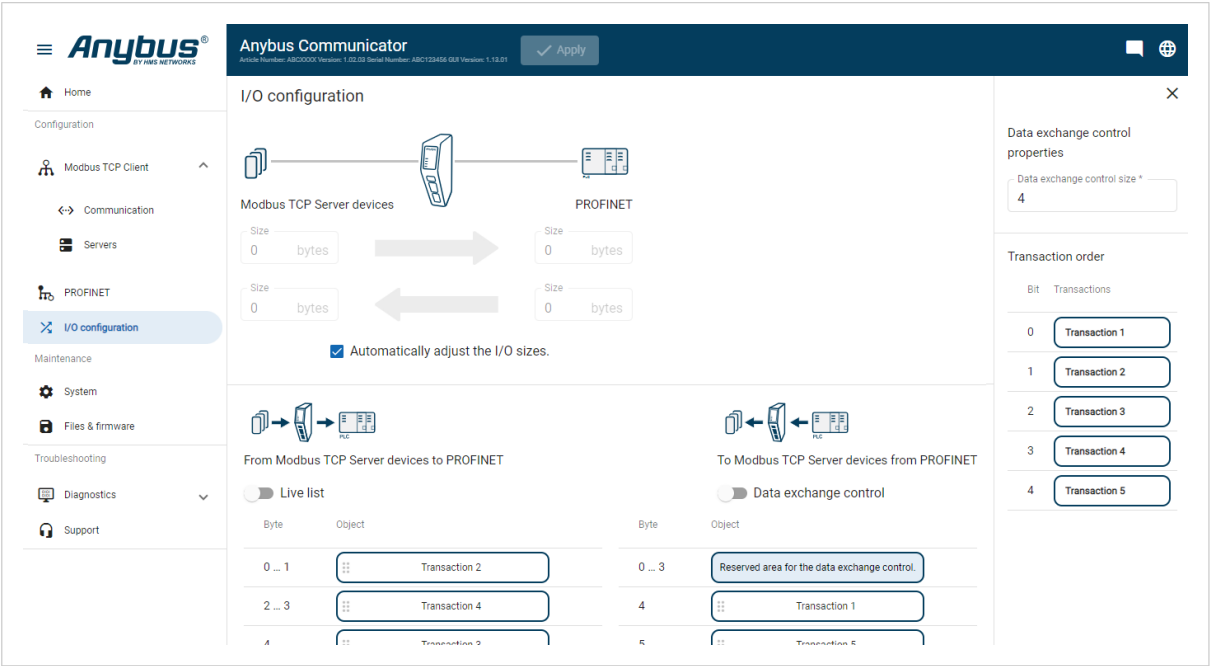


Figure 40. I/O configuration, **Data exchange control** enabled

By default **Data exchange control** is disabled.

When **Data exchange control** is enabled, the first four bytes of process data on the PROFINET network contain the data exchange control.

The **Data exchange control** holds 32 bits.

Each bit in the **Data exchange control** can be used to enable/disable data exchange for individual transaction on the subnetwork.

The server order in the **Data exchange control** 32 bit array always matches the Live List.

When data exchange is enabled, the transaction is sent only if the corresponding bit is 1.

Data Exchange Control Size and Transaction Order

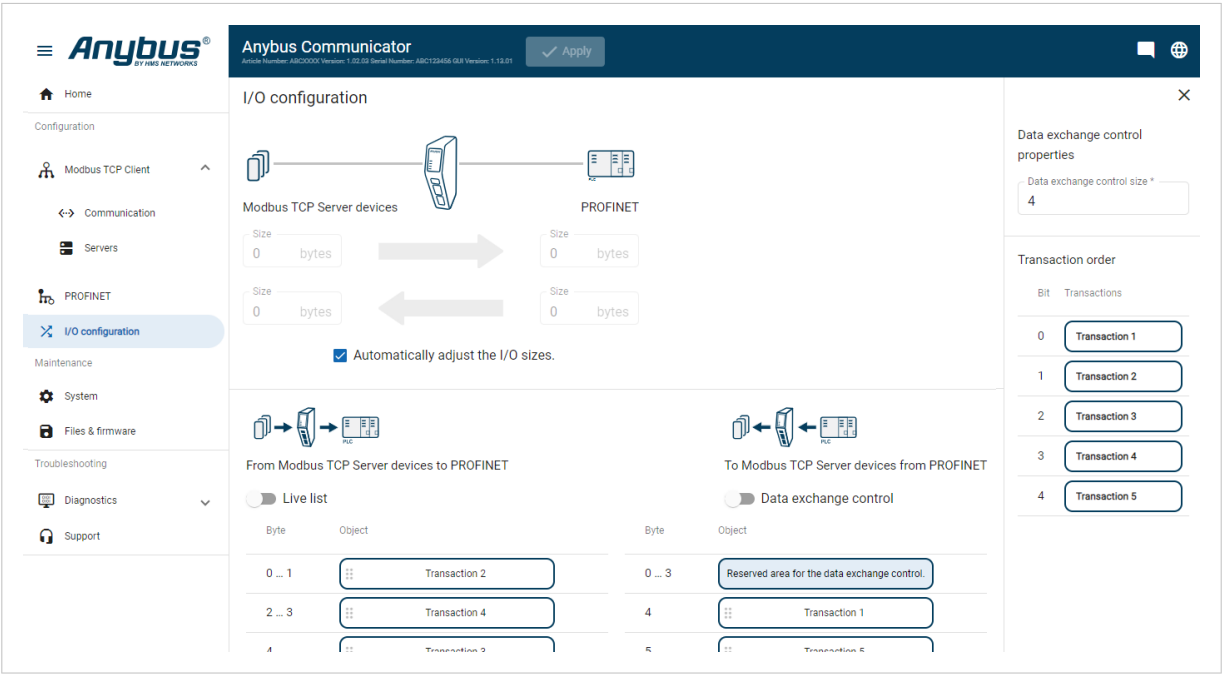


Figure 41. Data exchange control properties and Transaction order

The default **Data exchange control size** is 4 bytes.

The size of the data exchange control can be configured within the range of 1 to 19 bytes.

In the **Transaction order** list, you can view the order in which the transactions are executed.

## 8.10. Configuration Notes

You can add notes to describe the Communicator configuration.

### 8.10.1. Add Configuration Note

#### Procedure

1. To open the **Configuration Notes** window, click on the **comments** icon .



Figure 42. Configuration note, comment icon

2. To add a new configuration note, click **Add**.

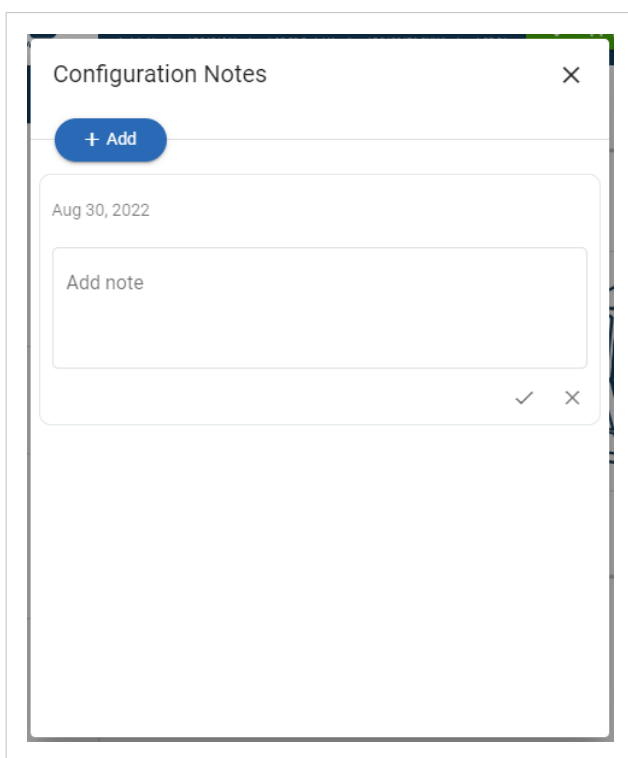


Figure 43. Add new configuration note

3. Write your configuration note and click **accept** ✓.

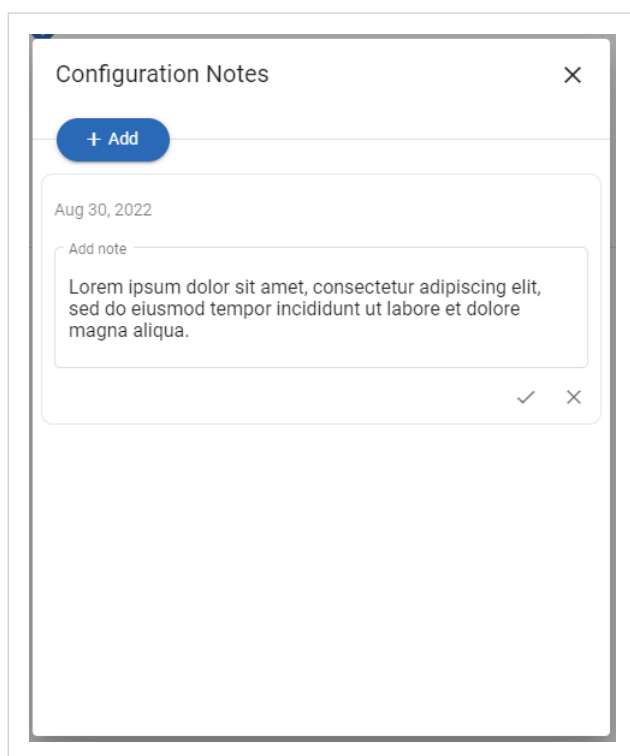


Figure 44. Write a configuration note

The configuration note is added to the list.

4. To close the window, click **close** ✕.
5. To save the configuration note, click **Apply** in the web-interface header, and follow the instructions.

8.10.2. View and Edit Configuration Notes

To view and/or edit a note, click on the **comments** icon .



Figure 45. Example: The comment icon indicates that there are three added notes

The configuration notes are listed in the **Configuration Note** window.

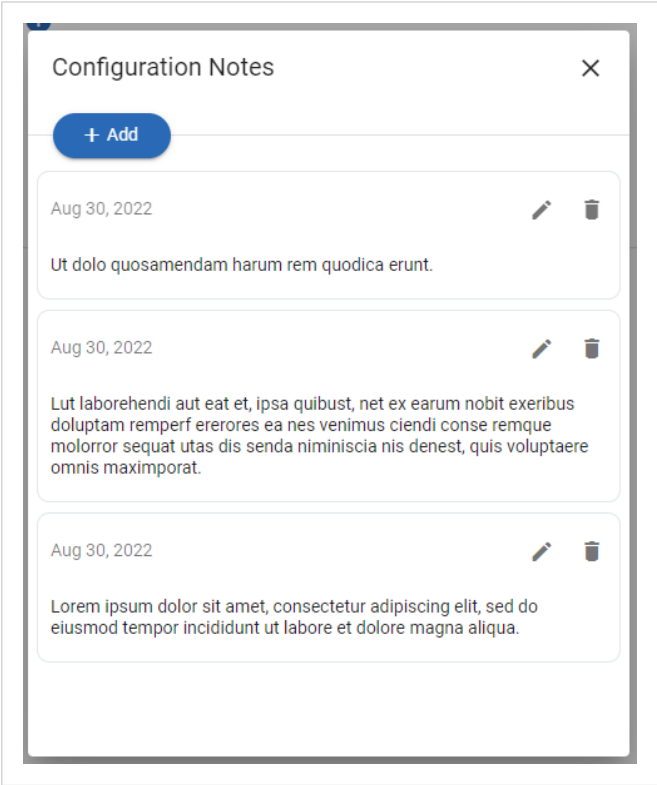


Figure 46. Example: The Configuration Notes window with added notes

## 8.11. Apply Configuration

### Before You Begin

**NOTE**

When you apply the configuration, any existing configuration is overwritten.

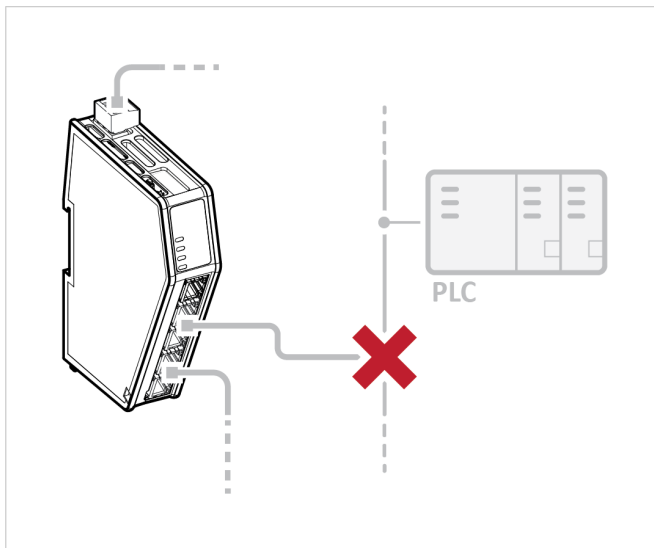


Figure 47.

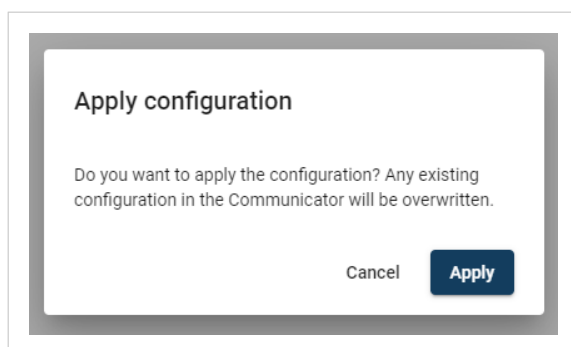
### Procedure

To make the settings take effect, download the configuration to the Communicator:

1. In the web-interface header, click **Apply**



2. To confirm download, click **Apply**.  
The configured settings are downloaded and applied to the system.



## 8.12. To Use an Existing Configuration

When you have configured a Communicator and want to use the same settings to configure additional Communicator, do the following.

### Procedure

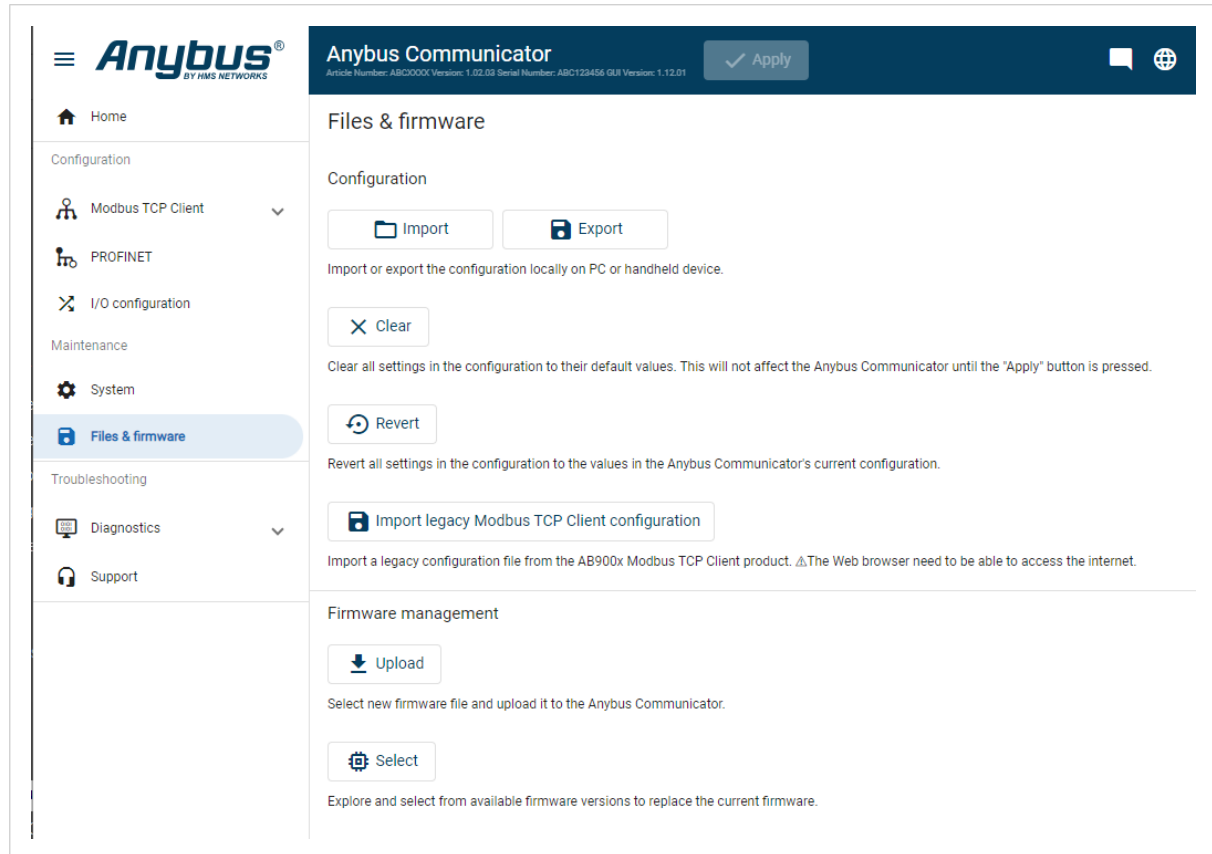


Figure 48. Files & firmware page

In the built-in web-interface of the Communicator with the configuration you want to use:

1. On the **Files & firmware** page, click **Export**  
The configuration is saved in a configuration file and downloaded to your PC.

In the built-in web-interface of the new Communicator to be configured:

2. On the **Files & firmware** page, click **Import**
3. In the Import configuration window, click **Select file (.conf)**.
4. In the Open dialog box, browse to, select the configuration file, and click **Open**.
5. To import the configuration file, click **Import**.

### Result

All the configuration settings are imported.

To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

## 8.13. To Use a Legacy Modbus TCP Client Configuration

### Before You Begin

The intended use of the X-gateway configuration import is to get a new Communicator unit up and running quickly and then complete the configuration in the Communicator built-in web interface.



#### NOTE

Only the X-gateway Modbus TCP Client configuration settings can be imported.

The I/O data map and high-level network settings are not supported and must be set manually in the Communicator built-in web interface.

### Procedure

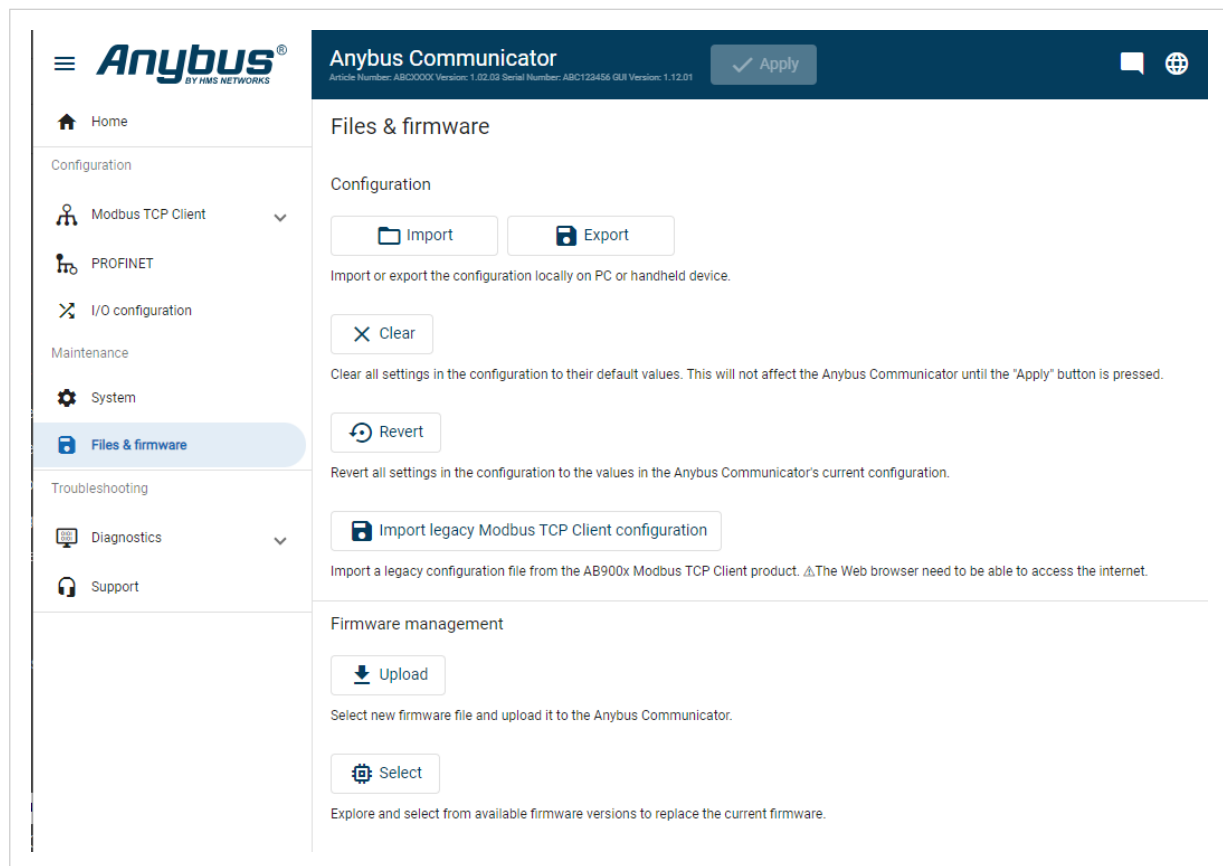


Figure 49. Files & firmware page

1. Ensure that the PC you are using to configure the Communicator is connected to the internet.
2. On the **Files & firmware** page, click **Import Modbus TCP Client legacy configuration**.
3. In the **Import Modbus TCP Client legacy configuration** window, click **Select file (.cfg)**.
4. In the Open dialog box, browse to and select the configuration .cfg file and click **Open**.

5. To import the configuration, click **Import**.

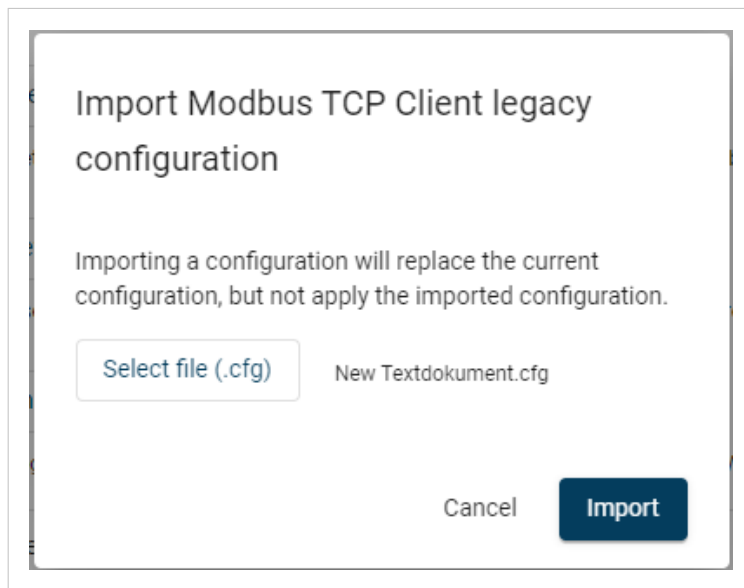


Figure 50. Example, selected .cfg file

6. Option when the X-gateway configuration file is protected with a username and password. Select the **Authentication details** checkbox and enter the username and password.

**NOTE**

For information about X-gateway Authentication to protect the configuration, see the user documentation for your specific X-gateway.

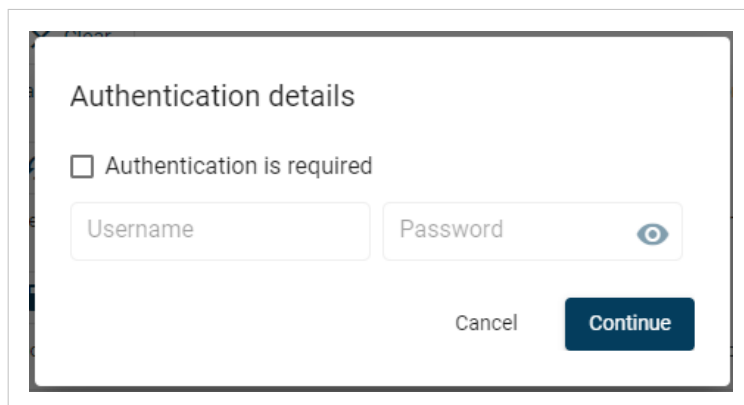
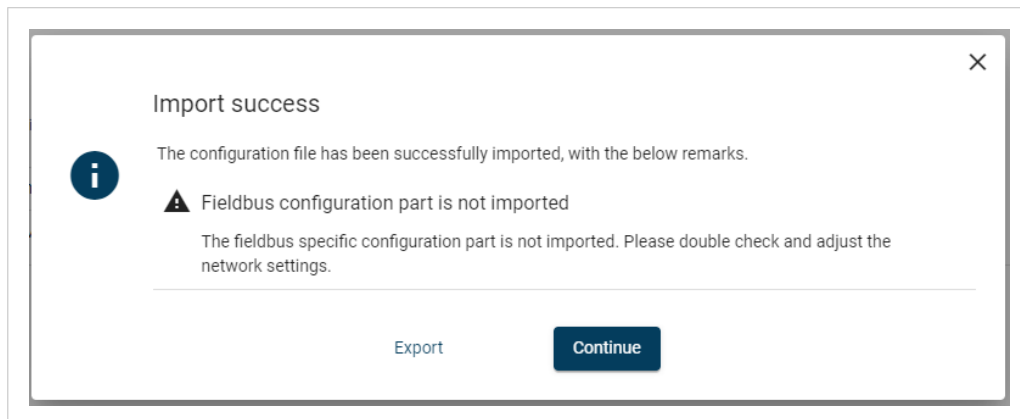


Figure 51. Authentication details

7. Click **Continue**.

## Result

The X-gateway Modbus TCP Client configuration settings are imported.



A window with messages about the imported configuration appears.

In the list you can view the settings that are supported or adjusted to work with Communicator and which settings that are not supported and must be set manually in the Communicator built-in interface.

To export the messages in an Excel XLS file, click **Export Messages**.

Figure 52. Example, list with messages about the import

To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

## 9. PLC Configuration

### 9.1. PLC Device Security



#### IMPORTANT

It is important to maintain the cybersecurity of the Communicator.

Before connecting the Communicator to a PLC, ensure the PLC is configured and installed in accordance with the PLC supplier hardening guidelines.

### 9.2. Export Product GSDML File

Option if the PLC program requires a product file, GSDML (Generic Station Description Markup Language) file, describing how the Communicator can be used on the high level network.

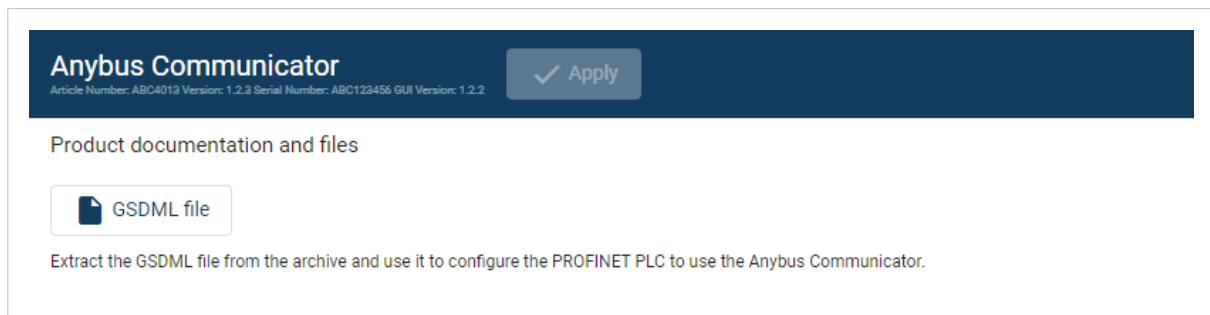


Figure 53. Files & firmware page, PROFINET GSDML file

You find the *PROFINET* GSDML file on the Communicator built-in web interface **PROFINET** page, **Files & firmware** page and on the **Support** page.

To export the GSDML file:

- Click **GSDML file**.  
The GSDML file is downloaded to your PC.

## 10. Verify Operation

### 10.1. Communicator Status Monitor

On the Home page, you can get a quick overview of the network and the Communicator operating status.

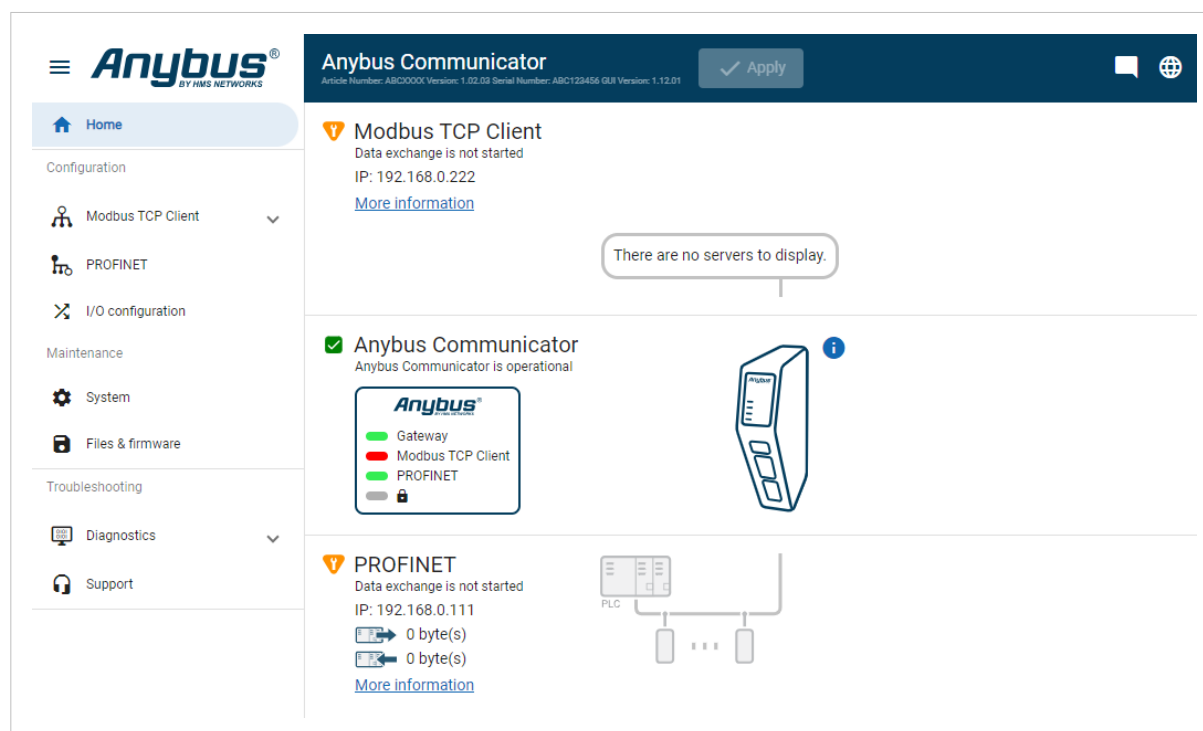


Figure 54. Home page

#### Gateway Status

Overview the Communicator LED indications remotely.

Refer to [Communicator LED Indicators \(page 70\)](#)

#### Server Status

Overview the status for each server added to the subnetwork.

#### Network Status and Settings

Overview communication status and the current networks settings.

Status Symbols

| Symbol                                                                             | Description                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Internal error has occurred, and operation cannot be guaranteed.                                                                                                                                                          |
|   | Out of Specification.                                                                                                                                                                                                     |
|   | Check Function: <ul style="list-style-type: none"><li>• Initial state where non network components are started and configured.</li><li>• Network startup in progress.</li><li>• Invalid configuration detected.</li></ul> |
|  | Normal operation.                                                                                                                                                                                                         |

## 10.2. Communicator LED Indicators

This topic applies to different product variants for different networks.



### NOTE

Before you can verify operation, you must configure the Communicator.

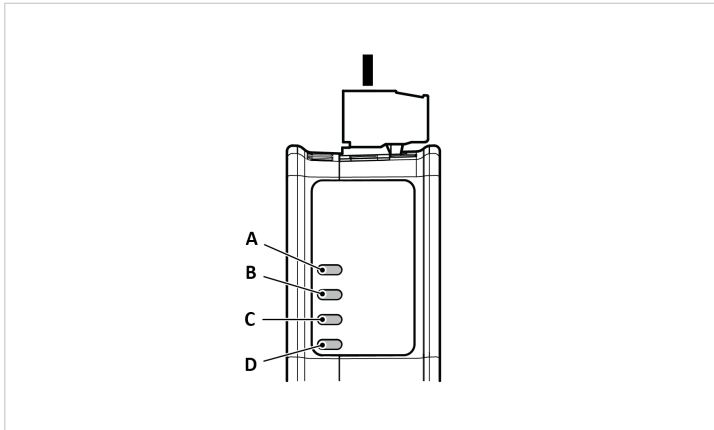


Figure 55. Gateway status (A), Network connection (B)/(C) and Security switch (D)

| LED A - Gateway status |                                                      |
|------------------------|------------------------------------------------------|
| Operation Status       | Description                                          |
| Off                    | No power                                             |
| Green, flashing        | Startup phase                                        |
| Green, solid           | Operational                                          |
| Red, flashing          | Invalid configuration                                |
| Green/Red, flashing    | Power up self-test/Firmware update/Firmware recovery |

| Connection to high level network IO controller device                                                                                        |                                                 |                                                                                             |                            |                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>LED B for PROFINET network</li> <li>LED C for EtherNet/IP, PROFIBUS, and EtherCAT networks</li> </ul> |                                                 |                                                                                             |                            |                                                                                                  |
| Operation status                                                                                                                             | EtherNet/IP                                     | EtherCAT                                                                                    | PROFIBUS                   | PROFINET                                                                                         |
| Off                                                                                                                                          | No power/No IP address.                         | No power                                                                                    | No power/No data exchange. | No power/No connection with IO controller.                                                       |
| Green, solid                                                                                                                                 | Connection with IO controller established.      | EtherCAT on.                                                                                | Operate, data exchange.    | Connection with IO controller established. IO controller in Run state.                           |
| Green, one flash                                                                                                                             | N/A                                             | N/A                                                                                         | N/A                        | Connection with IO controller established. IO controller in STOP state or IO data is inaccurate. |
| Green, flashing                                                                                                                              | EtherNet/IP online, no connections established. | EtherCAT online, no connections established.                                                | Clear, data exchange.      | Used by engineering tools to identify the node on the network.                                   |
| Red, solid                                                                                                                                   | IP address conflict detected.                   | N/A                                                                                         | N/A                        | Fatal event                                                                                      |
| Red, one flash                                                                                                                               | N/A                                             | Unsolicited state change SubDevice application has changed the EtherCAT state autonomously. | Parameterization error.    | Station name not set.                                                                            |
| Red, two flash                                                                                                                               | N/A                                             | Sync Manager watchdog timeout.                                                              | Configuration error.       | IP address not set.                                                                              |
| Red, three flash                                                                                                                             | N/A                                             | N/A                                                                                         | N/A                        | Expected Identification differs from Real Identification.                                        |
| Red, flashing                                                                                                                                | Connection timeout                              | Invalid configuration.                                                                      | N/A                        | N/A                                                                                              |

| Connection to subnetwork Modbus TCP client device                                                                                            |                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <ul style="list-style-type: none"> <li>LED C for PROFINET network</li> <li>LED B for EtherNet/IP, PROFIBUS, and EtherCAT networks</li> </ul> |                                               |
| Operation status                                                                                                                             | Description                                   |
| Off                                                                                                                                          | No IP address.                                |
| Red, flashing                                                                                                                                | At least one connection error or timeout.     |
| Red, solid                                                                                                                                   | IP address conflict detected, or FATAL event. |
| Green, solid                                                                                                                                 | No connections errors or timeouts.            |

| Security switch - LED D |                                                            |
|-------------------------|------------------------------------------------------------|
| Operation status        | Description                                                |
| Off                     | No power/Security switch is unlocked/Exception/Fatal error |
| Green                   | Security switch is locked                                  |

## Fatal Error and Exception Error

**Fatal error:** A fatal error causes the Communicator firmware application to crash in an uncontrolled manner.

**Exception error:** An exception error causes the Communicator to enter a controlled error state. The Communicator firmware application is still running.

| LED | Fatal error | Exception error |
|-----|-------------|-----------------|
| A   | Red, solid  | Red, solid      |
| B   | Red, solid  | Off             |
| C   | Red, solid  | Off             |
| D   | Off         | Off             |

## 10.3. Ethernet LED Indicators

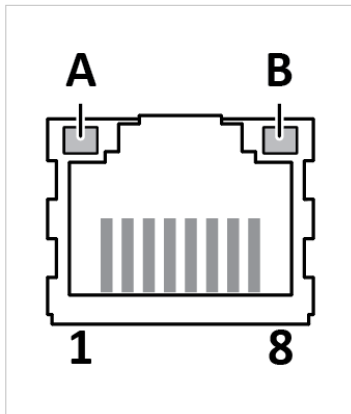


Figure 56. LED A. Activity LED B. Not used

| LED A            | Function                      |
|------------------|-------------------------------|
| Off              | No link (or no power)         |
| Green            | Link (100 Mbit/s) established |
| Green, flashing  | Activity (100 Mbit/s)         |
| Yellow           | Link (10 Mbit/s) established  |
| Yellow, flashing | Activity (10 Mbit/s)          |

| LED B | Function |
|-------|----------|
| Off   | Not used |

## 11. Maintenance

### 11.1. Action on Fatal Error

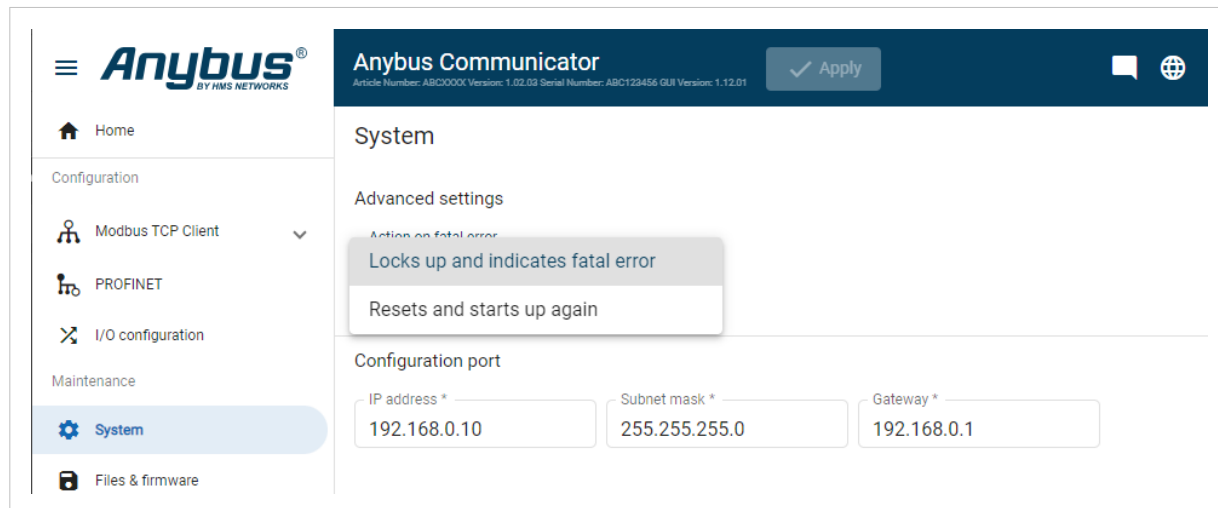


Figure 57. System page, Action on fatal error menu

A fatal error causes the Communicator firmware application to crash in an uncontrolled manner.

You can configure how the Communicator should behave if a fatal error occurs.

In the **Action on fatal error** menu, select one of the following settings:

- **Locks up and indicates fatal error:** Default setting, the Communicator locks up and the LED indicators indicate a fatal error.
- **Resets and starts up again:** The Communicator is rebooted to reset the system and return to normal operation.

## 11.2. Configuration Port IP Settings

On the **System** page you can change the IP address of the Communicator configuration port.

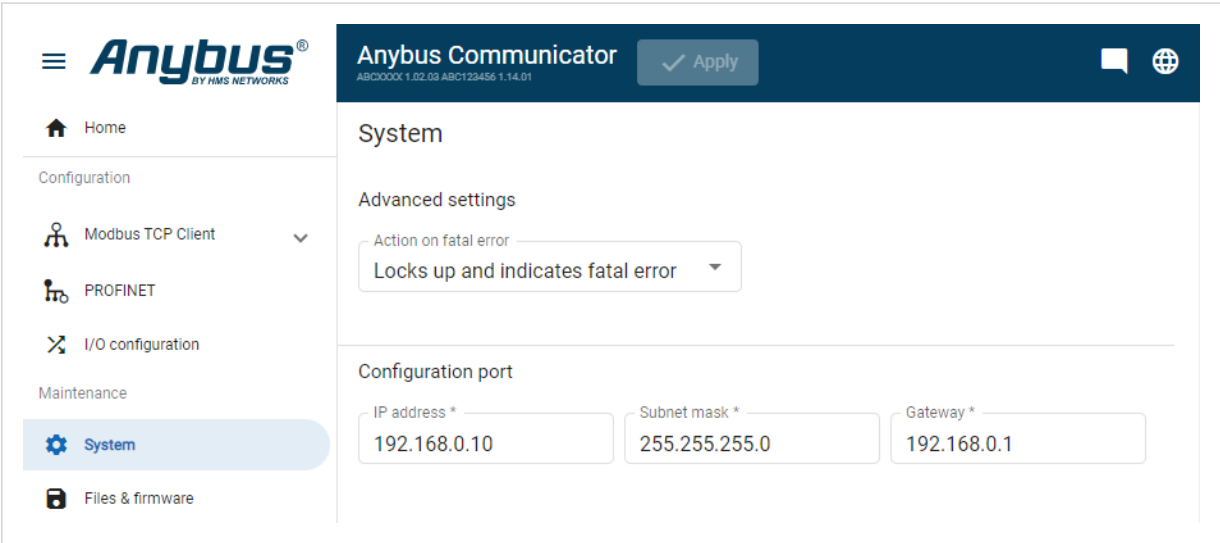


Figure 58. System page, Configuration port settings

### Default Configuration Port IP settings

| Setting     | Default value                        |
|-------------|--------------------------------------|
| IP address  | 192.168.0.10                         |
| Subnet mask | There is no default Subnet mask.     |
| Gateway     | There is no default Gateway address. |

## 11.3. Configuration File Handling

### 11.3.1. Export Configuration

You can export the current configuration, to import and use the same settings to configure additional Communicator.

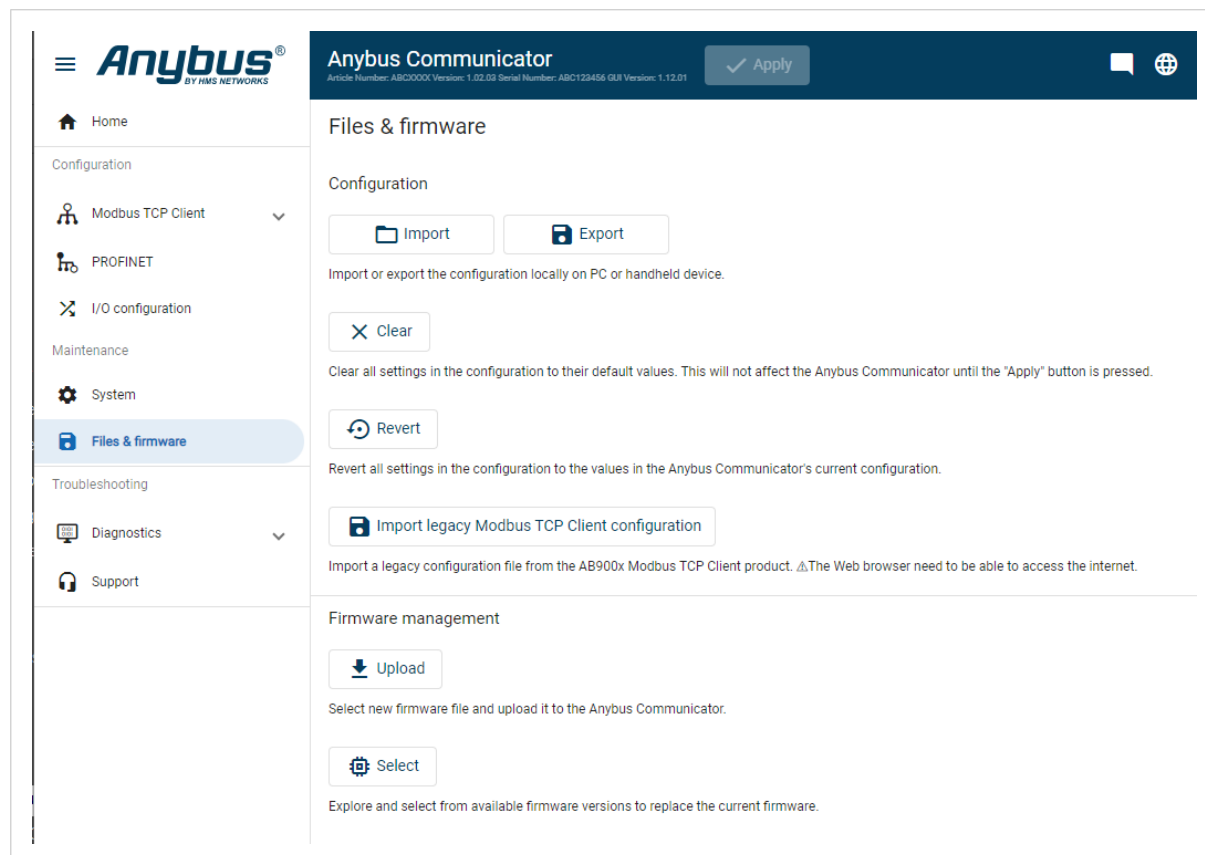


Figure 59. Files & firmware page

To export a configuration file:

In **Files & firmware**, click **Export**.

The configuration settings are stored in a .conf file and downloaded to your PC.

### 11.3.2. Import Configuration

To easily configure multiple Communicator with the same settings, you can import a configuration file.

#### Before You Begin



#### NOTE

Importing a configuration replaces the current applied configuration.

The supported file format is .conf.

#### Procedure

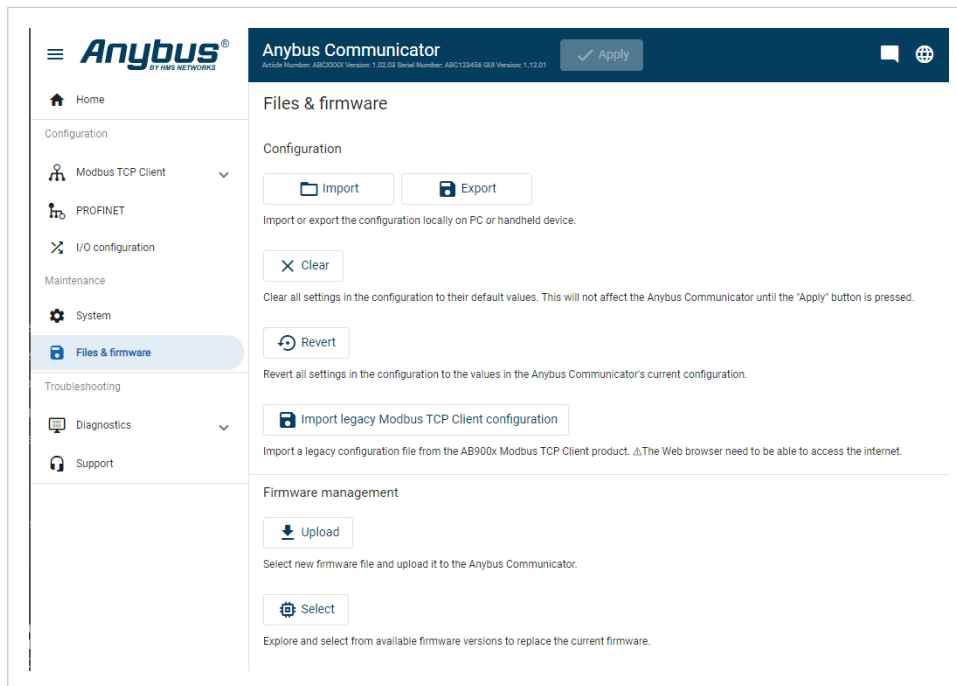


Figure 60. Files & firmware page

Import configuration file:

1. On the **Files & firmware** page, click **Import**.
2. In the Import configuration window, click **Select file (.conf)**.
3. In the Open dialog box, browse to, select the configuration file and click **Open**.
4. In the Import configuration window, click **Import**.
5. In the Communicator address settings window:
  - To import IP settings from the selected configuration file, click **Imported settings**.  
All configuration settings are imported.
  - To continue using the current IP settings, click **Configured settings**.  
All configuration settings except the IP settings are imported.
6. The configuration file is parsed.
  - If the configuration is compatible, the settings are imported.
  - If any compatibility mismatches occur, a message about the mismatch appears.
7. To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

## 11.4. Clear and Revert Configuration

You can restore all settings in a configuration to the default settings.

### Procedure

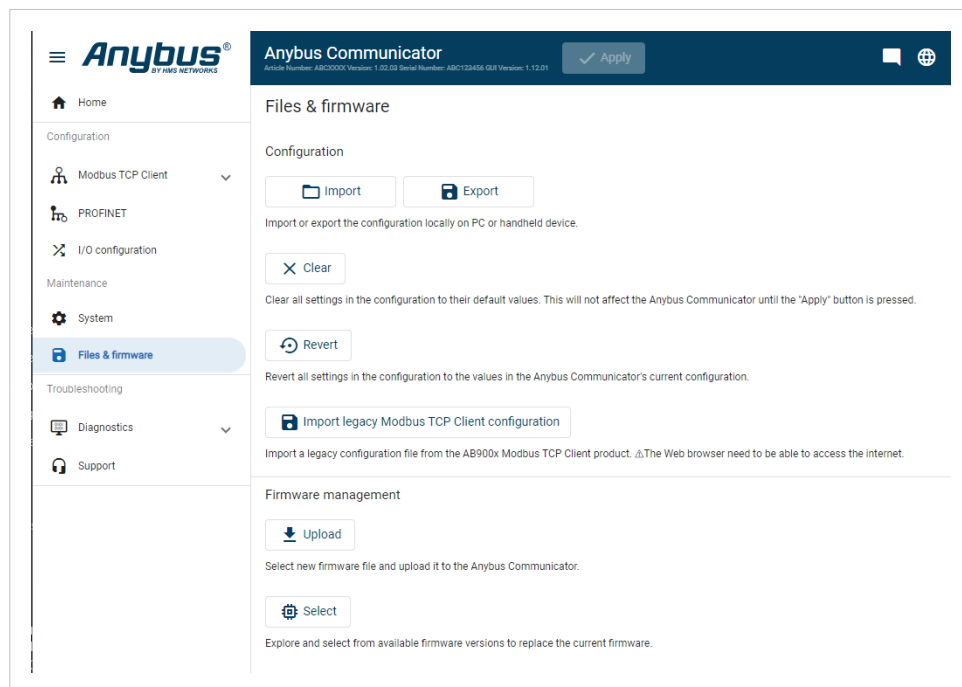


Figure 61. Files & firmware page

#### To Clear the Configuration

When you want to clear a configuration and return to the default settings.

1. On the **Files & firmware** page, click **Clear**.
2. In the Confirm clear window, click **Clear**.
3. To apply the change, click **Apply** in the web-interface header, and follow the instructions.

#### To Revert the Configuration

When you want to remove any configuration made in a current session and re-load the configuration from the gateway.

1. On the Files & firmware page, click **Revert**.
2. In the Confirm revert window, click **Revert**.
3. To apply the change, click **Apply** in the web-interface header, and follow the instructions.

# 11.5. Firmware Management

## 11.5.1. View the Firmware Version

On the **Support** page, you can view the current applied firmware version.

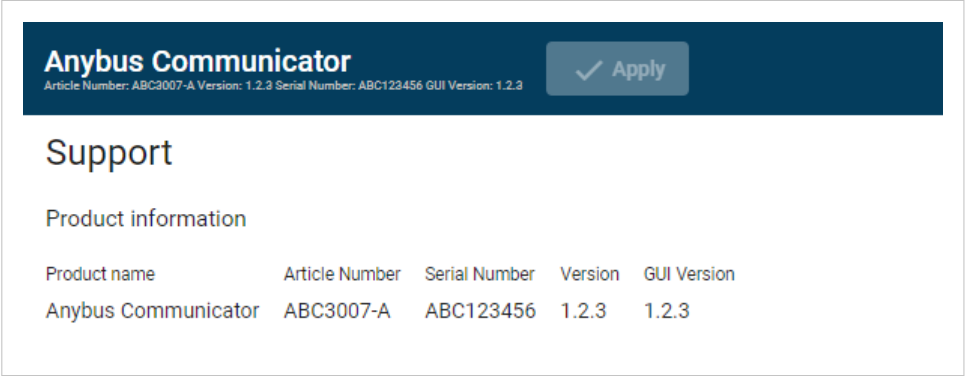


Figure 62. Support page, Product information example

## 11.5.2. Firmware and Configuration Compatibility

### Compatibility after firmware upgrade

Current configuration is still compatible after upgrading the firmware.

### Compatibility after firmware downgrade

**IMPORTANT**  
Compatibility after a firmware downgrade cannot be guaranteed.  
  
The current configuration may use features not available in the older firmware version.

## 11.5.3. Firmware File Validation

Before the firmware file is imported into the system, the firmware upgrade function performs a validation of the file, to ensure that:

- the firmware is compatible with the Communicator hardware
- the firmware is suited for the product
- the officially HMS software signatures are valid
- that the firmware file is not corrupt or damaged

If the firmware file does not pass the validation, the firmware file is rejected and an error message appear.

## 11.5.4. Update Firmware

### Before You Begin



#### IMPORTANT

To eliminate the risk of interference with plant operation, firmware update is only available when the Communicator is disconnected from the OT networks.

Ensure to disconnect the Communicator from the OT networks.

### Procedure

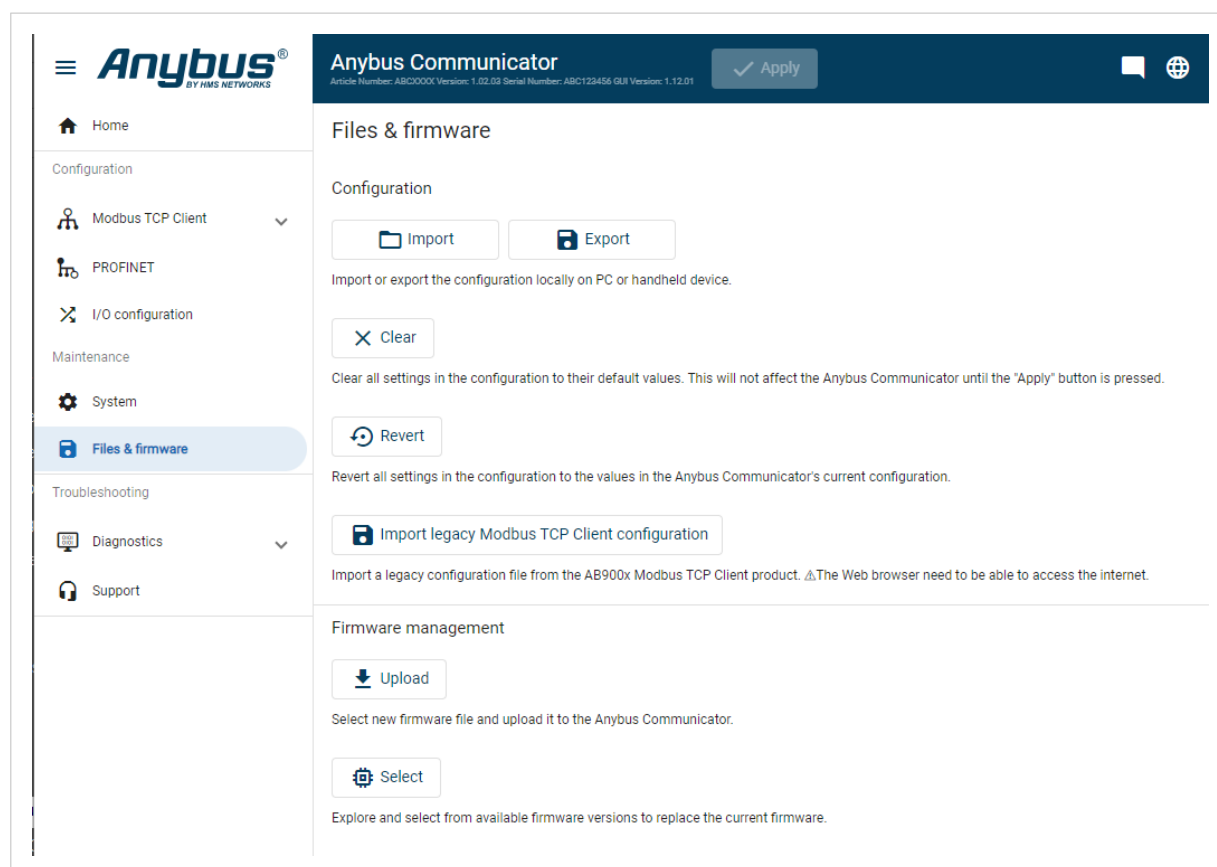


Figure 63. Files & firmware page

To update the firmware:

1. On the **Files & firmware** page, click **Upload**.
2. In the Upload Firmware window, click **Select firmware (.hiff)**.
3. In the Open dialog box, browse to, select the firmware file, and click **Open**.
4. To start the firmware upgrade, click **Update firmware**.  
The firmware file is validated and transferred.

### Result

- If the firmware file passes the validation: The firmware is upgraded and then the Communicator automatically reboots, for the upgrade to take effect.
- If the firmware file is rejected: An error message appears.

## 11.6. Change Language

Default language is **English**.

To change the language of the Communicator built-in web interface:

1. In the Communicator built-in web-interface header, click the **Language** icon .

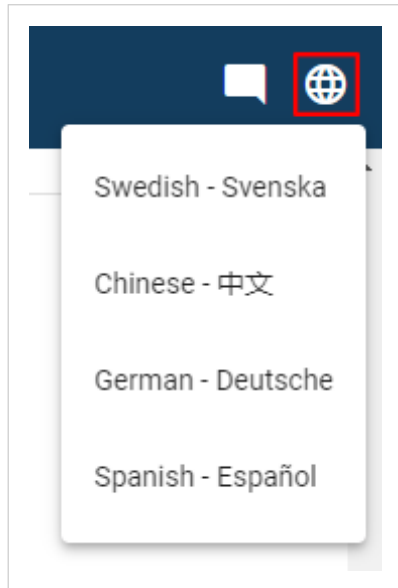


Figure 64. Language menu

2. Select a new language from the list.

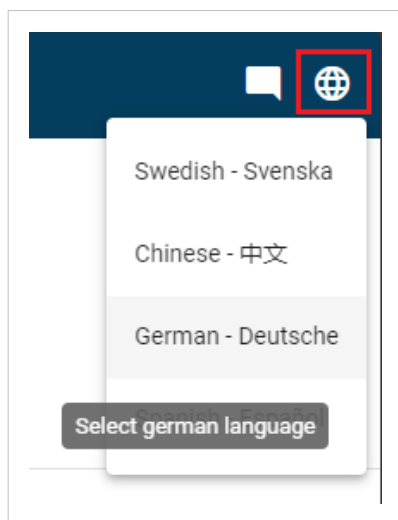


Figure 65. Example: Change language to German

The language change takes effect immediately.

## 12. Troubleshooting

### 12.1. Diagnostics

#### 12.1.1. I/O Data

On the **Diagnostics, I/O data** page you can monitor how the data flow between the **Modbus TCP Client** side and the **PROFINET** side, including any configured endian conversions.

**Anybus Communicator**  
Article Number: ABC00000 Version: 1.02.03 Serial Number: ABC123456 GUI Version: 1.12.01

**I/O data**

**Start** Hex Dec Ascii

**Data from PROFINET to the Anybus Communicator**

| Address   | Data                    |
|-----------|-------------------------|
| 0 ... 7   | 00 01 02 03 04 05 06 07 |
| 8 ... 15  | 08 09 0a 0b 0c 0d 0e 0f |
| 16 ... 23 | 10 11 12 13 14 15 16 17 |
| 24 ... 31 | 18 19 1a 1b 1c 1d 1e 1f |
| 32 ... 39 | 20 21 22 23 24 25 26 27 |
| 40 ... 47 | 28 29 2a 2b 2c 2d 2e 2f |
| 48 ... 55 | 30 31 32 33 34 35 36 37 |
| 56 ... 63 | 38 39 3a 3b 3c 3d 3e 3f |

Time (d:hh:mm:ss.ms): 0:00:00:20.813

**Data from the Anybus Communicator to PROFINET**

| Address   | Data                    |
|-----------|-------------------------|
| 0 ... 7   | 00 01 02 03 04 05 06 07 |
| 8 ... 15  | 08 09 0a 0b 0c 0d 0e 0f |
| 16 ... 23 | 10 11 12 13 14 15 16 17 |
| 24 ... 31 | 18 19 1a 1b 1c 1d 1e 1f |
| 32 ... 39 | 20 21 22 23 24 25 26 27 |
| 40 ... 47 | 28 29 2a 2b 2c 2d 2e 2f |
| 48 ... 55 | 30 31 32 33 34 35 36 37 |
| 56 ... 63 | 38 39 3a 3b 3c 3d 3e 3f |

Time (d:hh:mm:ss.ms): 0:00:00:20.813

Figure 66. I/O data

I/O data is updated twice every second.

#### Select how data is displayed

To choose if the data should be displayed in Hexadecimal, Decimal or ASCII, click **Hex**, **Dec** or **Ascii**.

#### Start and Stop Data flow

- To start the data flow, click **Start**.
- To end the data flow, click **Stop**.

12.1.2. Event Log

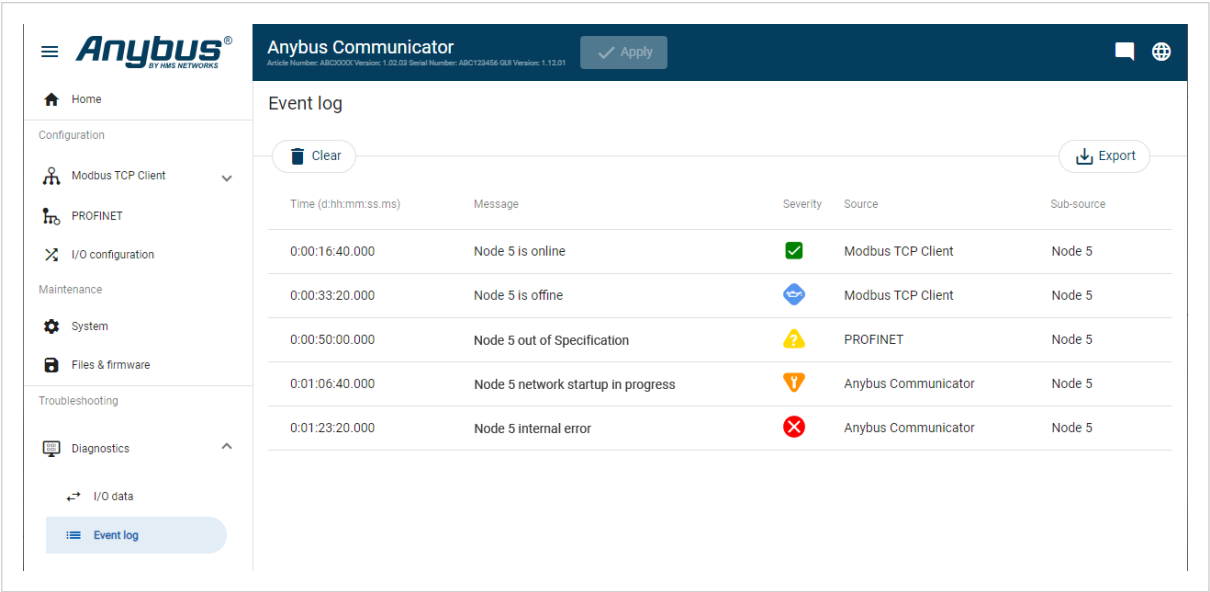


Figure 67. Event log page example

How To Analyze the Information

The log follows the FIFO principle, first in and first out. The oldest (first) value is processed first.

|                      |                                                                                                                                                                                  |                   |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Time (d:hh:mm:ss.ms) | The date and time when the event occurred.                                                                                                                                       |                   |
| Message              | A brief description of the event.                                                                                                                                                |                   |
| Severity             | The severity of the event occurred.<br>For description of the symbols, see <a href="#">Communicator Status Monitor (page 68)</a> .                                               |                   |
| Source               | 0                                                                                                                                                                                | Communicator      |
|                      | 1                                                                                                                                                                                | PROFINET          |
|                      | 2                                                                                                                                                                                | Modbus TCP Client |
| Sub-source           | The nodes connected to the subnetwork and the PLC connected to the high level network.<br>If there is a problem with a node the node name is displayed in the Sub-source column. |                   |
|                      | Example 1. Sub-source number<br>If the node name is 5, number 5 is displayed in the Sub-source column.                                                                           |                   |

To clear the current log, click **Clear**.

12.1.3. LED Status

On the Home page, you can remotely monitor the Communicator LED status.



Figure 68. Home page

For information about the LED indication, see [Communicator LED Indicators \(page 70\)](#).

## 12.2. Reset to Factory Settings

### Before You Begin

Factory reset will reset any on site made configuration changes and set the Communicator to the same state as leaving HMS production.

When the Firmware has been updated, factory reset will revert the Communicator configuration to initial state after the update.

### Procedure

To reset the Communicator:

1. Disconnect the Communicator from power.

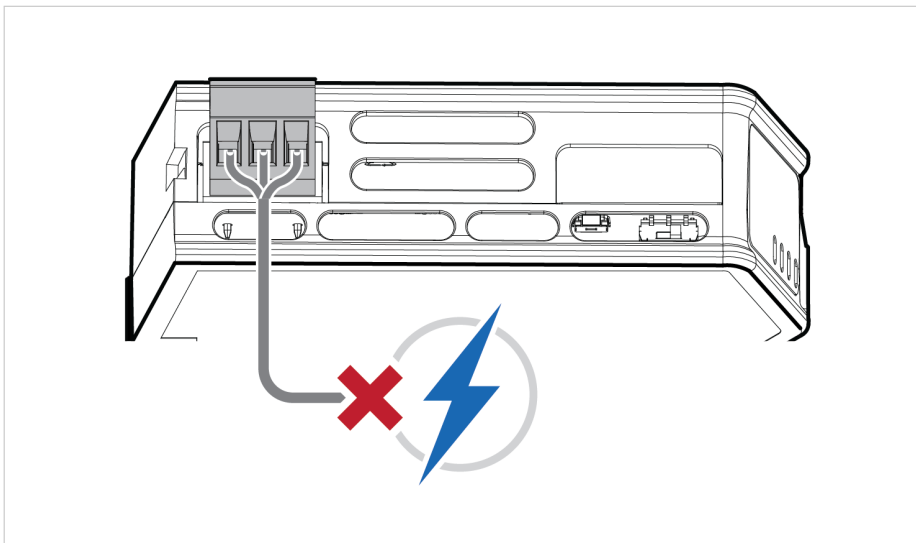


Figure 69. Disconnect power

2. Use a pointed object, such as a ballpoint pen to press and hold the **Reset** button.

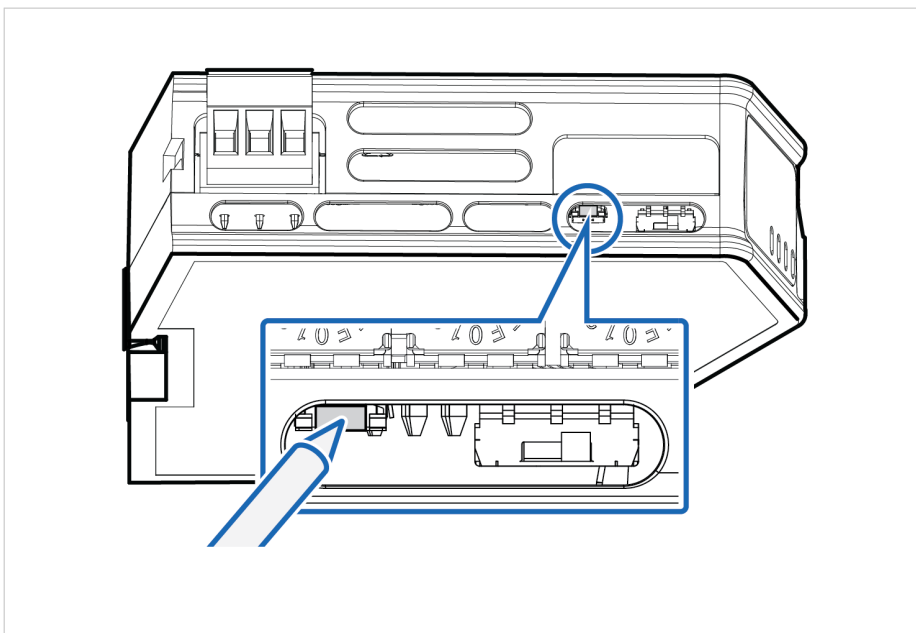


Figure 70. Press and hold **Reset** button

3. While holding the **reset** button, reconnect the Communicator to power.

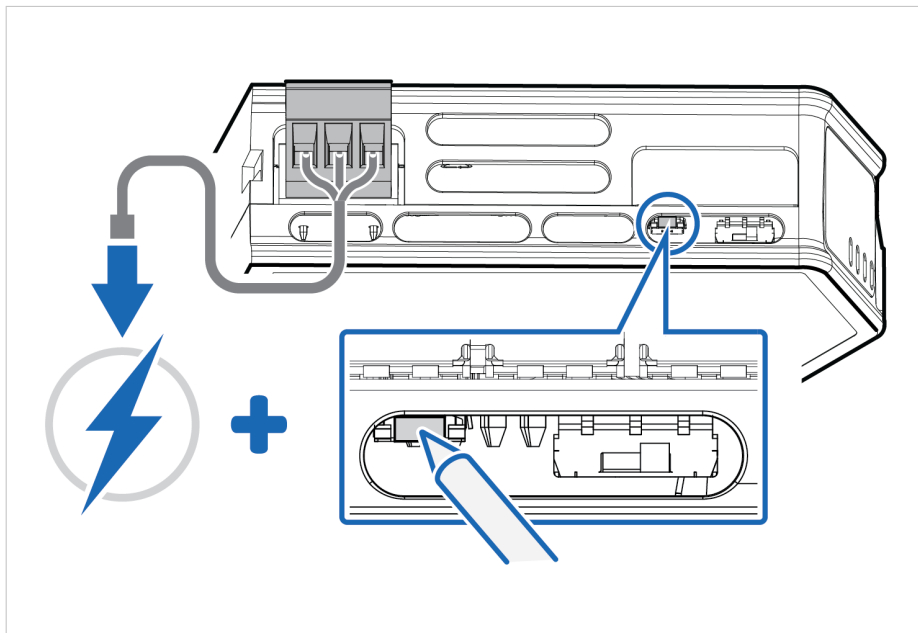


Figure 71. Hold **Reset** button and reconnect power

4. Release the **reset** button.  
The Communicator enters exception state.
5. Reboot the Communicator.

## Result

When the Communicator has successfully rebooted, the Communicator configuration is reset to the factory default configuration or the current configuration after firmware upgrade.

## To Do Next

To ensure that the Communicator built-in web-interface is synchronized.

1. Open the Communicator built-in web interface.

2. Navigate to the **Files & firmware** page and click **Revert**.

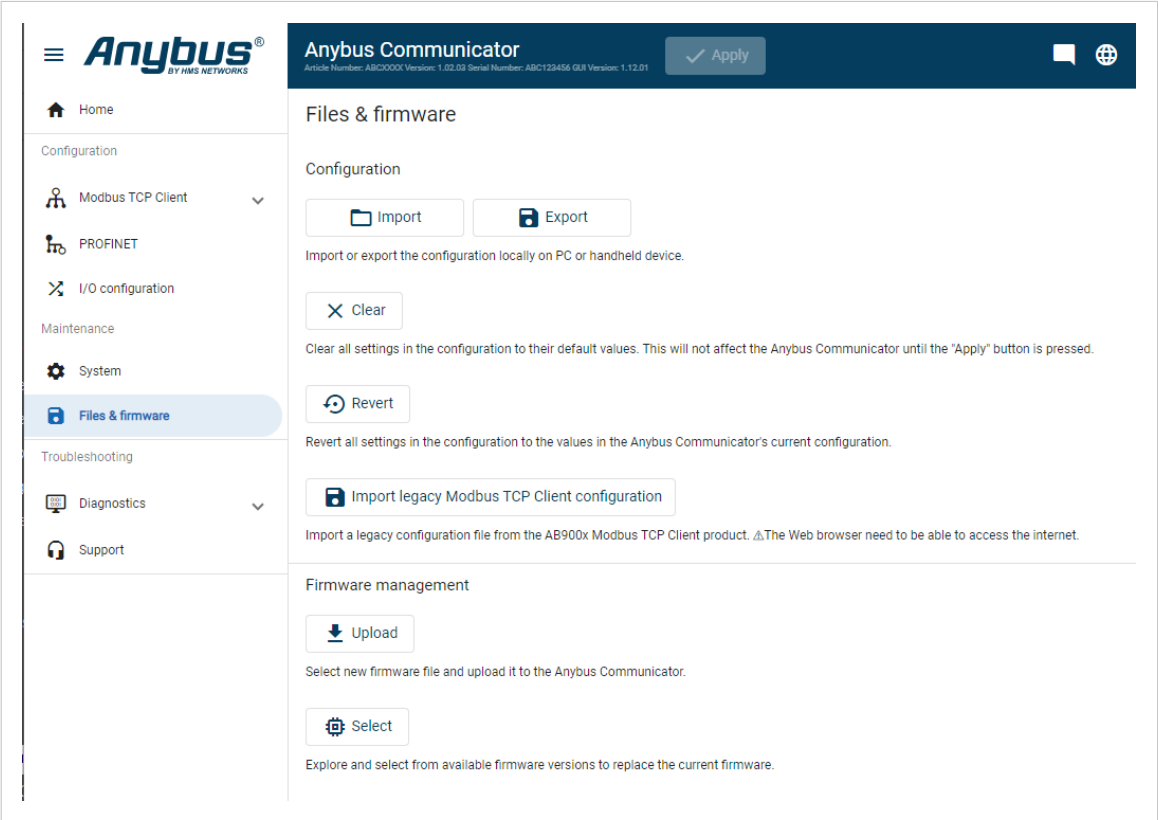


Figure 72. Files & firmware, Revert

## 12.3. Firmware Upgrade Error Management

### Before You Begin

If the firmware update process is interrupted or if the power is lost during the update process, the Communicator goes into fallback mode.

The last working firmware is still available on the flash, but it is not active.

### Procedure

To complete the interrupted firmware update:

1. Disconnect the Communicator from power.

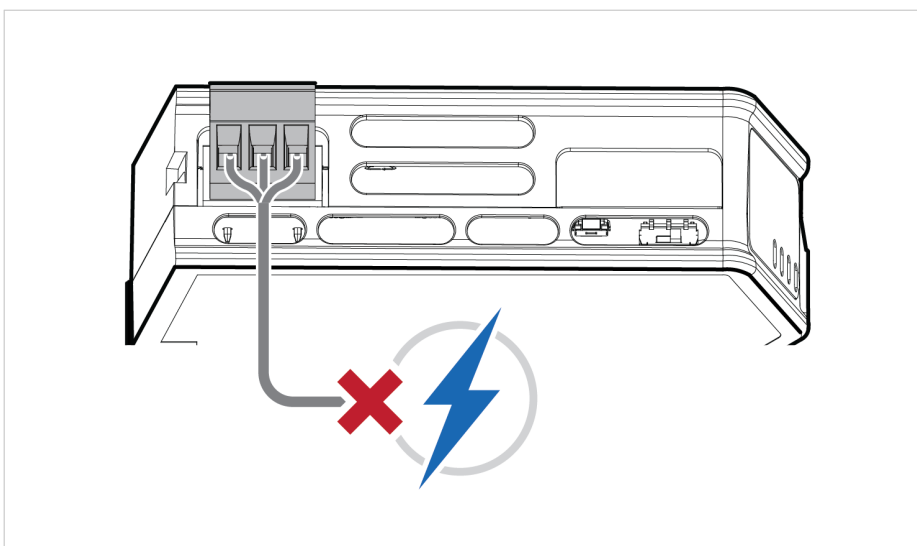


Figure 73. Disconnect power

2. Reconnect the Communicator to power.

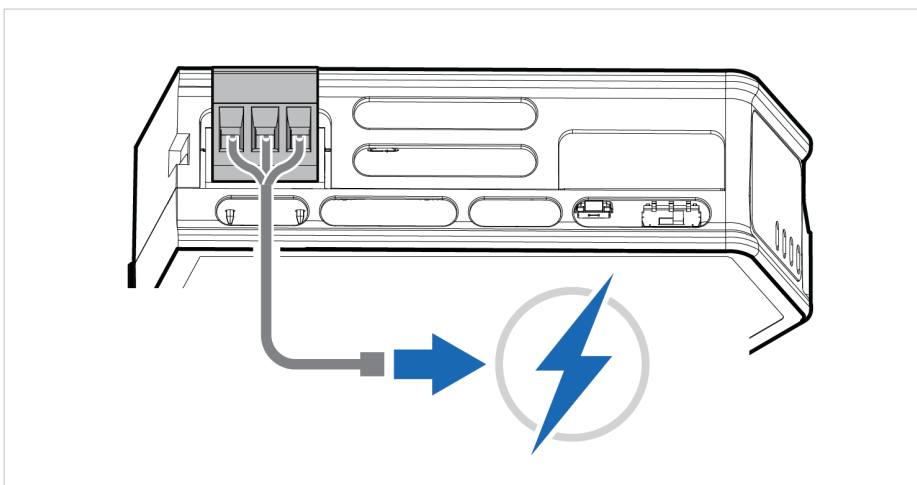


Figure 74. Reconnect power

3. Leave the Communicator for 10 minutes.  
The Gateway status led indicator flashes red and green until the firmware upgrade is completed.

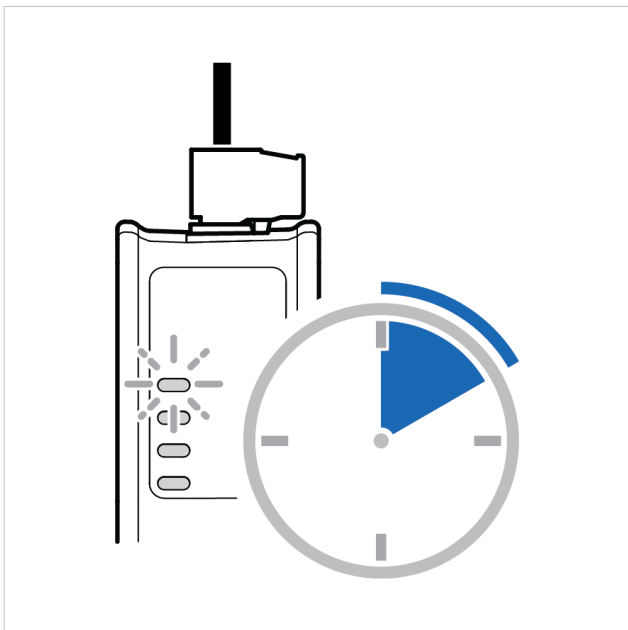


Figure 75. Firmware upgrade LED indication

## Result

The Communicator recover and return to normal operation.

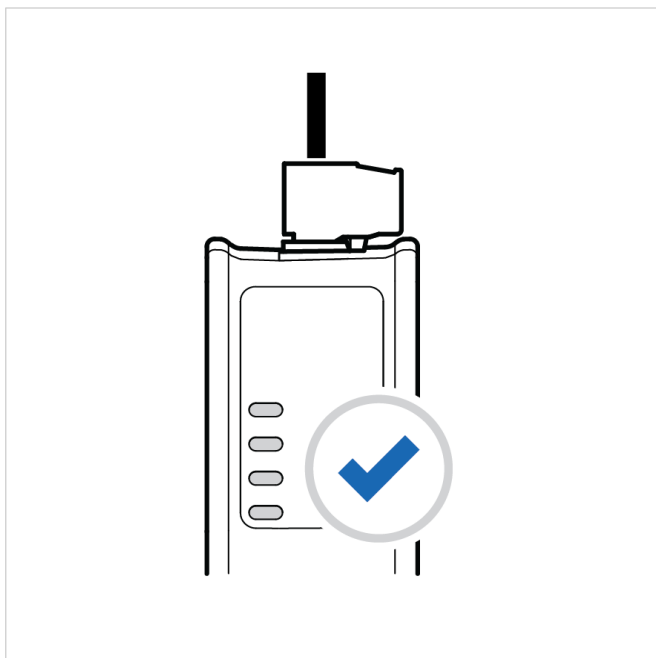


Figure 76. Recover and return to normal operation

## To Do Next

To check LED status, refer to [Communicator LED Indicators \(page 70\)](#)

## 12.4. Support

### 12.4.1. Support Package

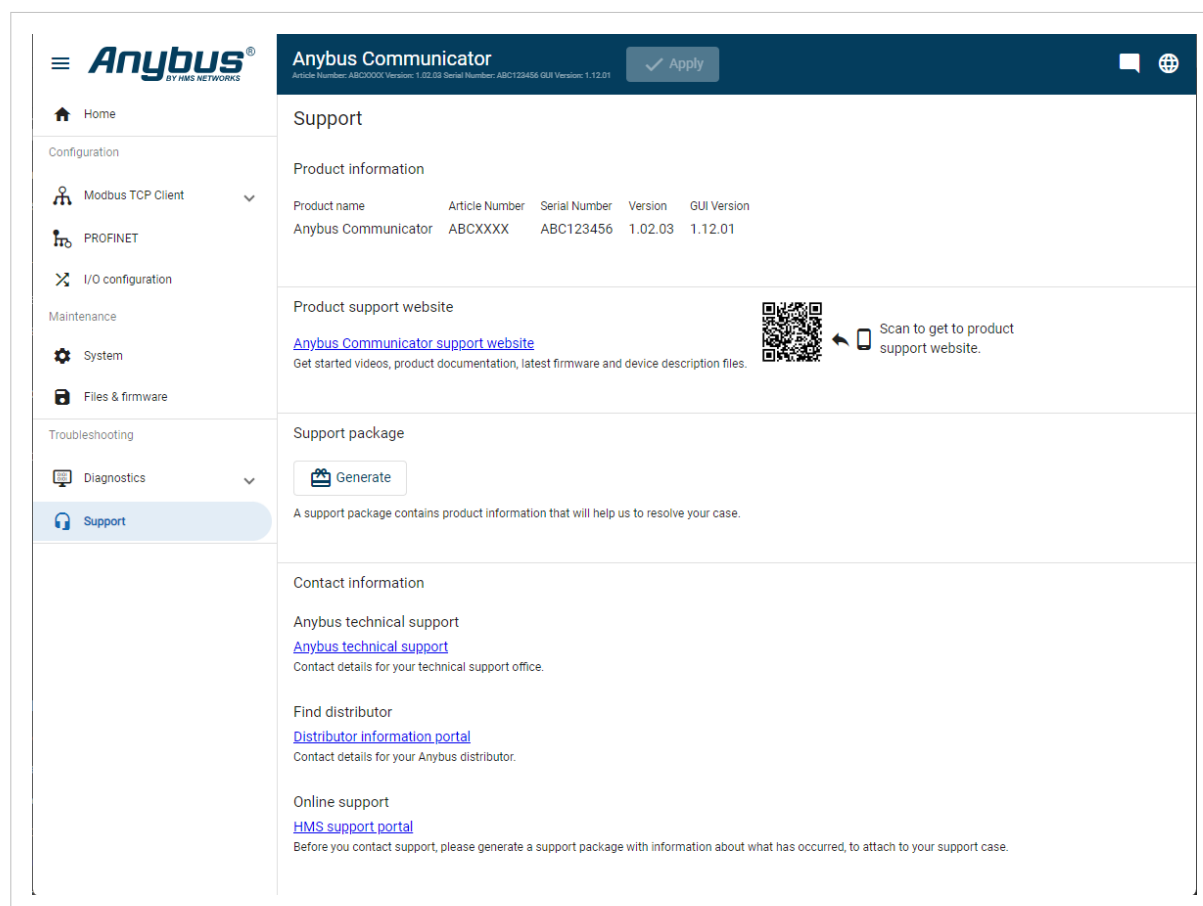


Figure 77. Support page example

Before you create a ticket for technical support, generate a support package.

The support package contains information about what has occurred and will help the Anybus technical support team resolve the support case as quickly and efficiently as possible.

#### Support Package Content

The information in the support package is available to open and read, the files are not locked or encrypted.

#### Generate Support Package

On the **Support** page, click **Generate**.

A zip file with the support files is downloaded to your PC.

#### Create a Support Ticket

1. On the **Anybus Technical Support** page, navigate to the **Support Center** page and click **HMS Support Portal**.
2. In the **HMS Support Portal**, create a support ticket and upload the support package.

## 13. End Product Life Cycle

### 13.1. Secure Data Disposal

**IMPORTANT**

To avoid exposure of sensitive data, always perform a factory reset before decommissioning the equipment.

Factory reset will reset any on site made configuration changes and set the Communicator to the same state as leaving HMS production.

See [Reset to Factory Settings \(page 83\)](#).

## 14. Technical Data

For complete technical specifications and regulatory compliance information, please visit [www.anybus.com](http://www.anybus.com).

### 14.1. Technical Specification

| Article identification      | ABC3213                                                                                                               |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Configuration connector     | RJ45                                                                                                                  |
| Communication connector     | RJ45 x 2                                                                                                              |
| Modbus TCP Client connector | RJ45 x 2                                                                                                              |
| Power connector             | 3-pin screw connector                                                                                                 |
| Power supply                | 12-30 VDC, Reverse voltage protection and short circuit protection                                                    |
| Power consumption           | Typical: 90 mA @ 24 V (2.2 W) Max: 3 W                                                                                |
| Storage temperature         | -40 to +85 °C                                                                                                         |
| Operating temperature       | -25 to +70 °C                                                                                                         |
| Humidity                    | EN 60068-2-78: Damp heat, +40°C, 93% humidity for 4 days<br>EN 60068-2-30: Damp heat, +25°C – +55°C, 95% RH, 2 cycles |
| Vibration                   | See datasheet                                                                                                         |
| Housing material            | Plastic, See datasheet for details                                                                                    |
| Protection class            | IP20                                                                                                                  |
| Product weight              | 150 g                                                                                                                 |
| Dimensions                  | 27 x 144 x 98 mm (W x H x D) with connectors included                                                                 |
| Mounting                    | DIN-rail                                                                                                              |