ENGLISH

Anybus® Communicator™ - Modbus TCP Server to EtherCAT Slave

USER MANUAL

SCM-1202-192
Version 1.0
Publication date 2022-08-31

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.

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

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. Preparation

3.1. Cabling

Have the following cables available:

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

3.2. System Requirements

3.2.1. 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

3.2.2. Supported Web Browsers

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

- Google Chrome
- Microsoft Edge
- Mozilla Firefox

3.3. Mechanical Tools and Equipment

Have the following tools available:

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

3.4. Support and Resources

For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please visit 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.

3.5. HMS Software Applications

Download the software installation files and user documentation from www.anybus.com/support.

IPconfig

Use the HMS software application 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
IPconfig is only available for Windows.

3.6. Third-Party Software Applications

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. About Anybus Communicator

4.1. How the Communication Works

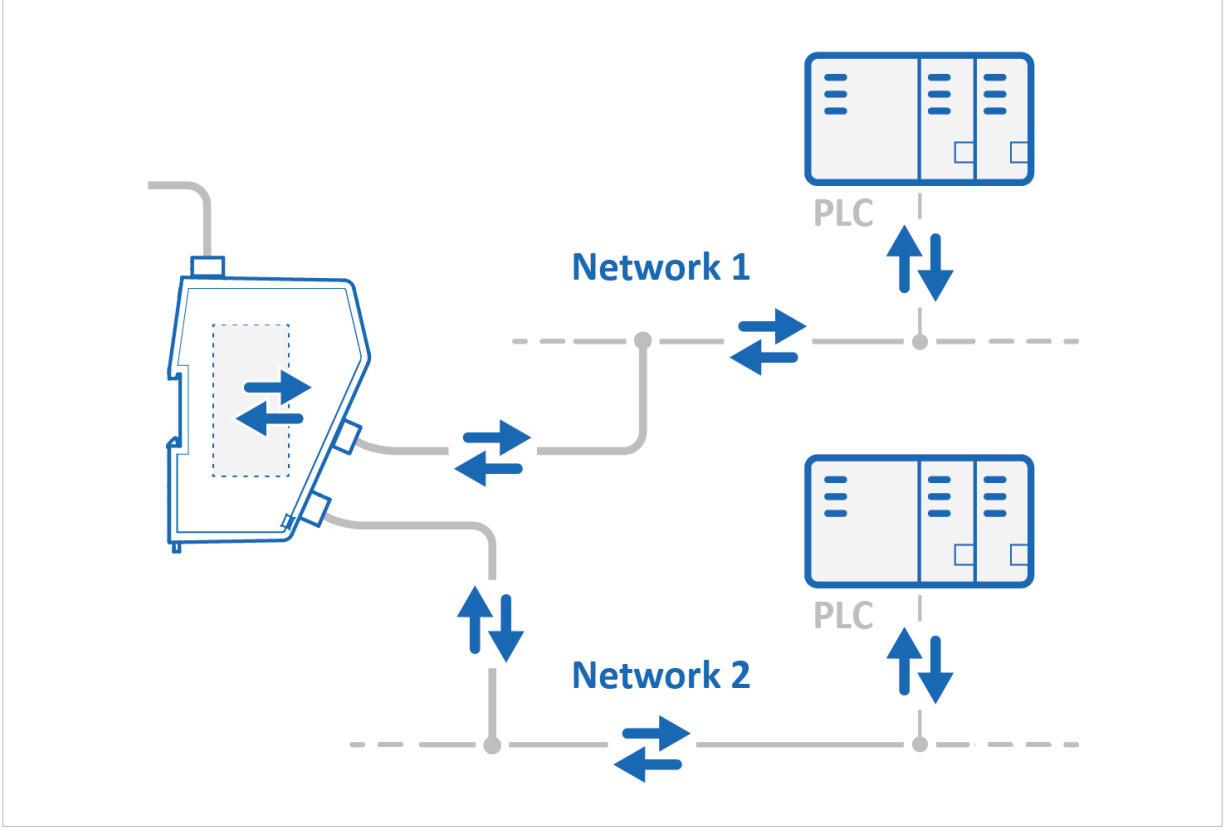


Figure 1. Process data traffic overview

The Communicator enables communication between a Master device connected to a Modbus TCP network and a Master device connected to a EtherCAT network.

The Master device can, for example, be a PLC control system or a Gateway.

The Communicator main task is to transfer cyclic I/O data between the two networks.

4.2. How the Data Exchange Works

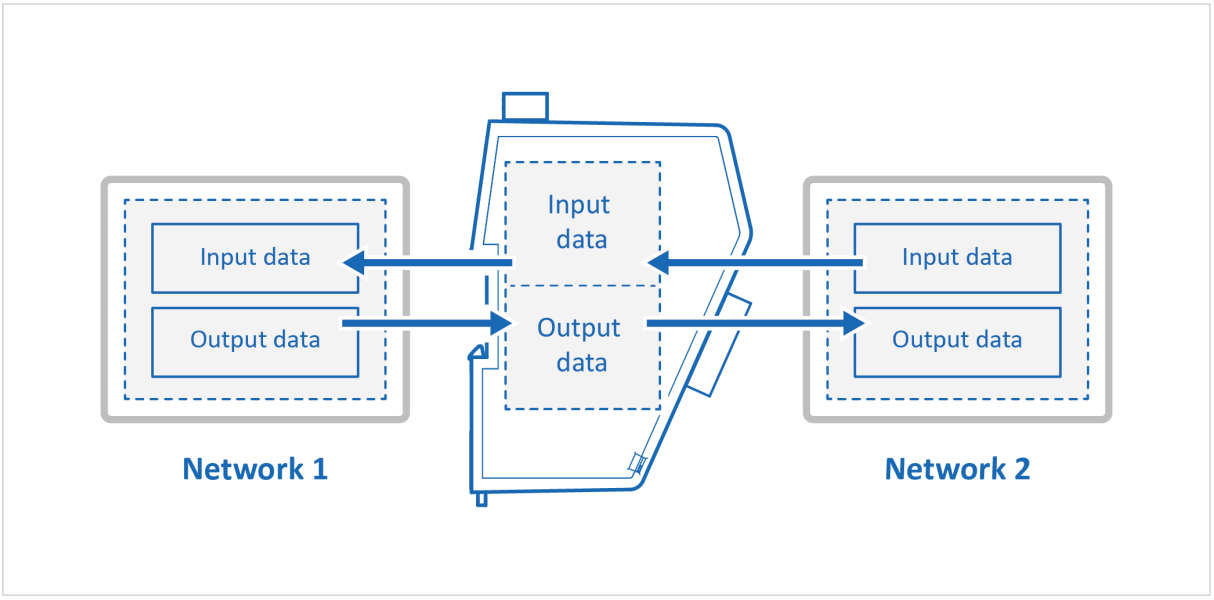


Figure 2. The Communicator internal memory areas

The data exchanged between the Communicator and the Modbus TCP and the EtherCAT resides in the Communicator internal memory buffer.

The Communicator internal memory buffer is divided into two areas: Input data and Output data.

Input Data

This Input data area is read by the EtherCAT.

The Communicator can handle up to 1486 bytes input data.

Output Data

The Output data area is read/written by the Modbus TCP.

The Communicator can handle up to 1500 bytes output data.

4.3. Data Integrity

A snapshot of the process data buffer between the Modbus TCP/EtherCAT Client and the server interface is used during the operation of executing all the transactions within one cycle.

When the cycle is completed, the process data available on the server interface is updated and a new snapshot is created for the next cycle.

5. Installation

5.1. External Parts

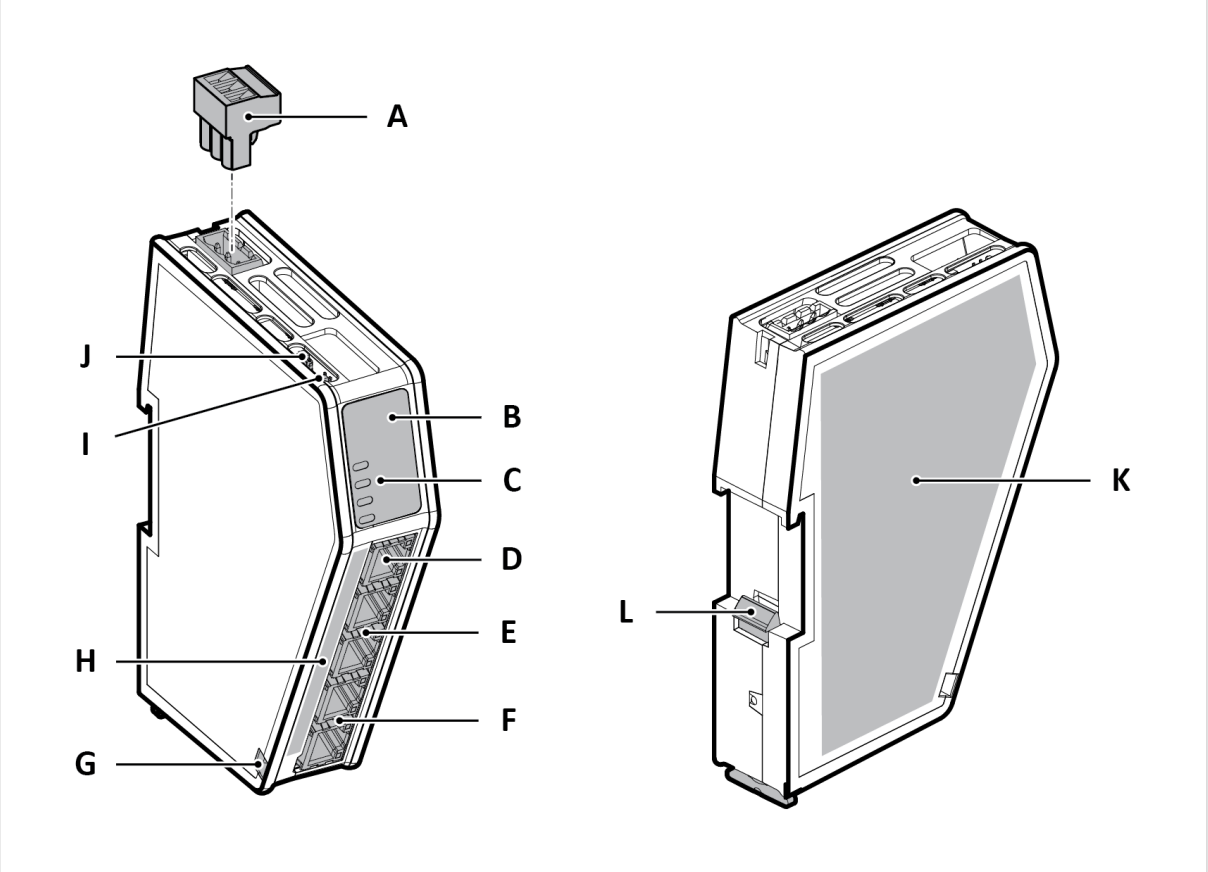


Figure 3. External parts

A. Power connector
B. Label with LED designation
C. Status LEDs
D. Configuration port
E. Modbus TCP port x 2
F. EtherCAT port x 2
G. Cable tie mount
H. Laser engraved connectors designation
I. Security switch
J. Factory reset button
K. Laser engraved label with product information
L. DIN rail locking mechanism

5.2. 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.

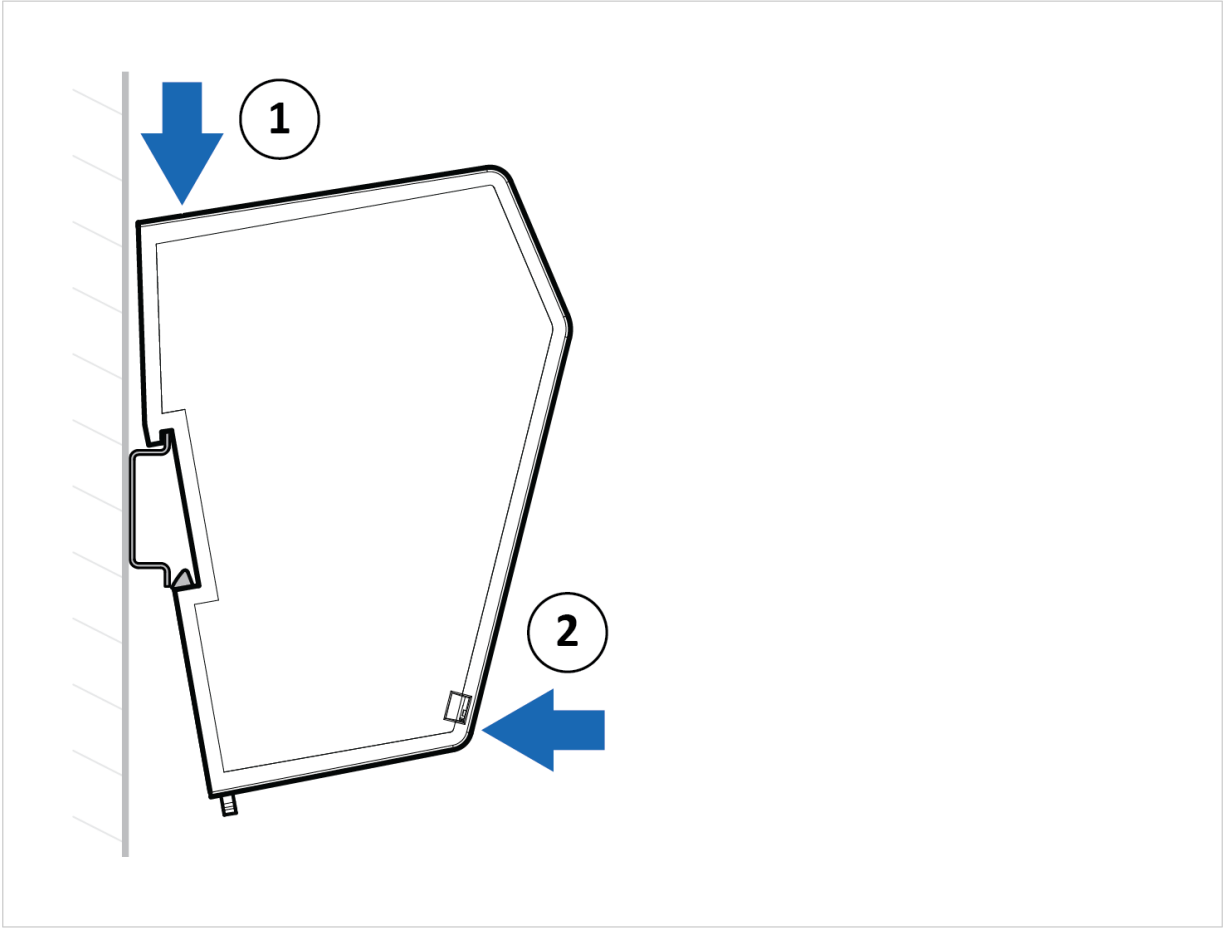


Figure 4. Attach the Communicator on the DIN rail

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.

5.3. Connect to Modbus TCP Network

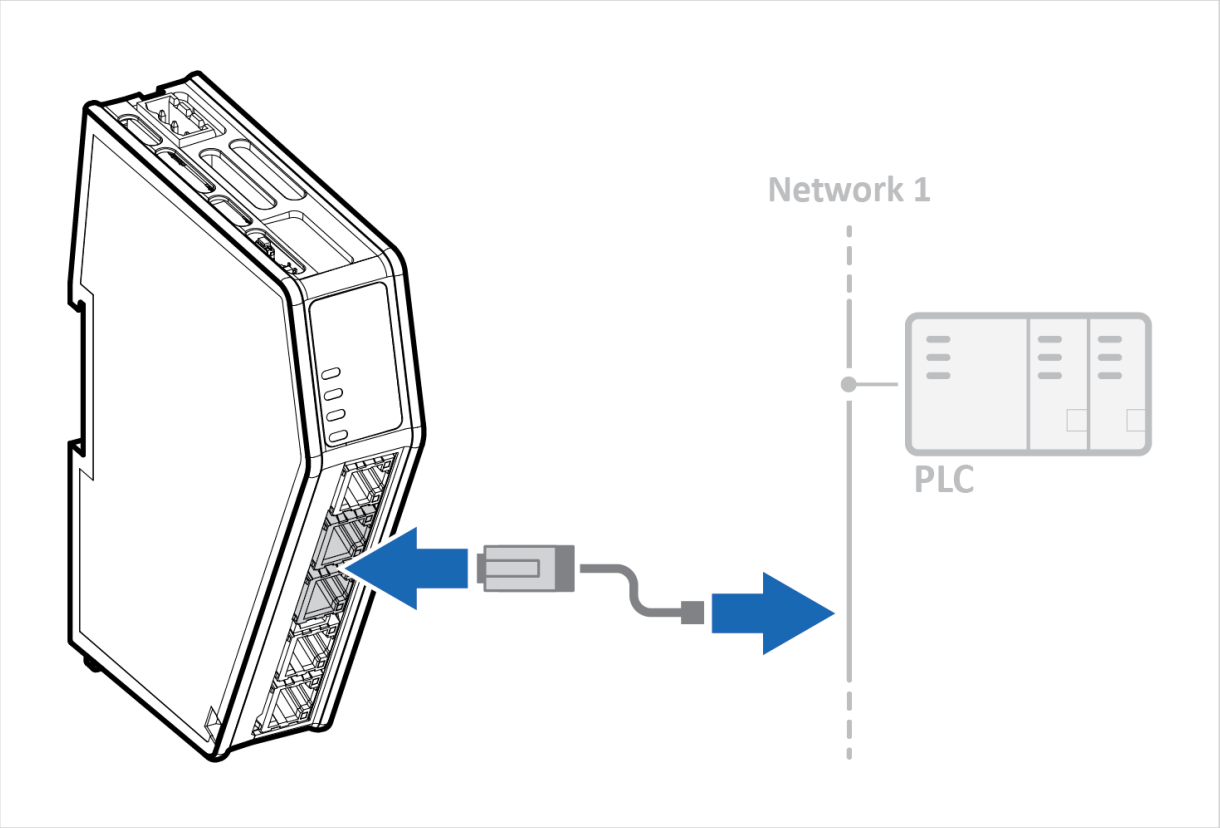
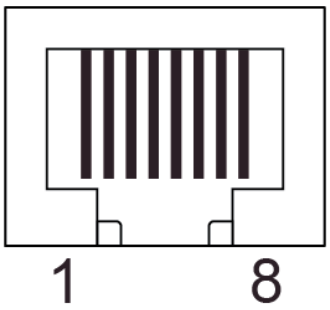


Figure 5. Connect to Modbus TCP network

1. Connect the Communicator, upper connector, to your Modbus TCP network.

EtherNet/IP Connector	Pin	Description
	1	TD+
	2	TD-
	3	RD+
	4	Not used
	5	Not used
	6	RD-
	7	Not used
	8	Not used

To Do Next

Connect the Communicator to the EtherCAT network and to power.

Check LED status, refer to Communicator LED Indicators.

5.4. Connect to EtherCAT Network

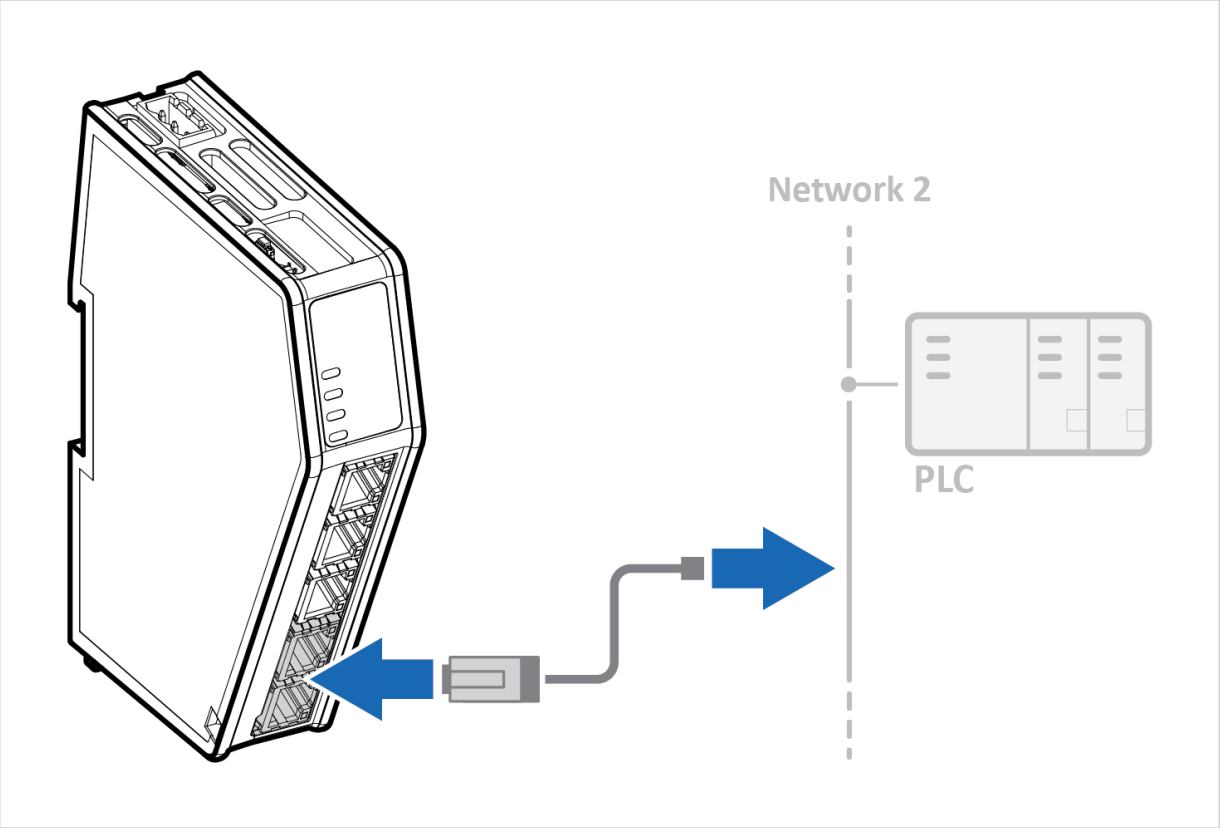
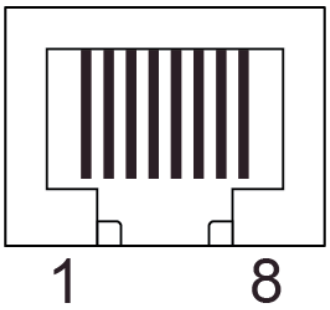


Figure 6. Connect to EtherCAT network

1. Connect the Communicator, lower connector, to your EtherCAT network.

EtherNet/IP Connector	Pin	Description
	1	TD+
	2	TD-
	3	RD+
	4	Not used
	5	Not used
	6	RD-
	7	Not used
	8	Not used

To Do Next

Connect the Communicator to the Modbus TCP network and to power.

Check LED status, refer to Communicator LED Indicators.

5.5. 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.

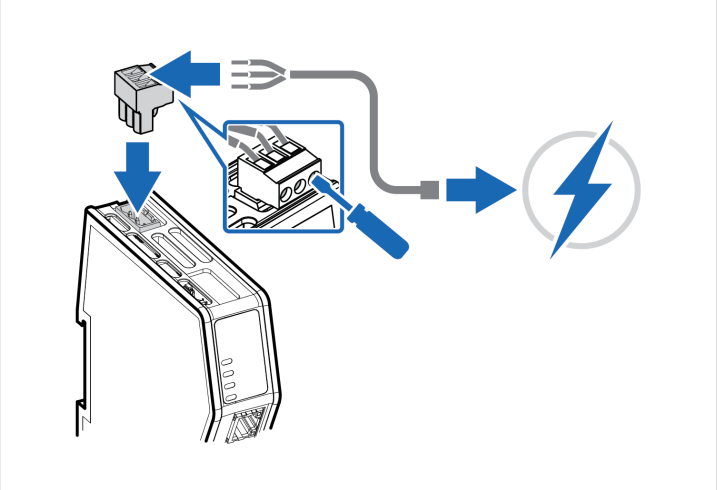
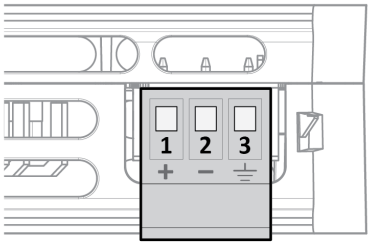


Figure 7. Connect to power

1. Insert the cable wires to the terminal block and tighten the wire clamp screws.

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

2. Connect the terminal block to the Communicator.
3. Connect the Communicator to a power supply.
4. Turn on the power supply.

To Do Next

Check LED status, refer to Communicator LED Indicators.

5.6. Security Switch

When the security switch is in its locked position, the Communicator built-in web interface can not be accessed and the Communicator can not 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

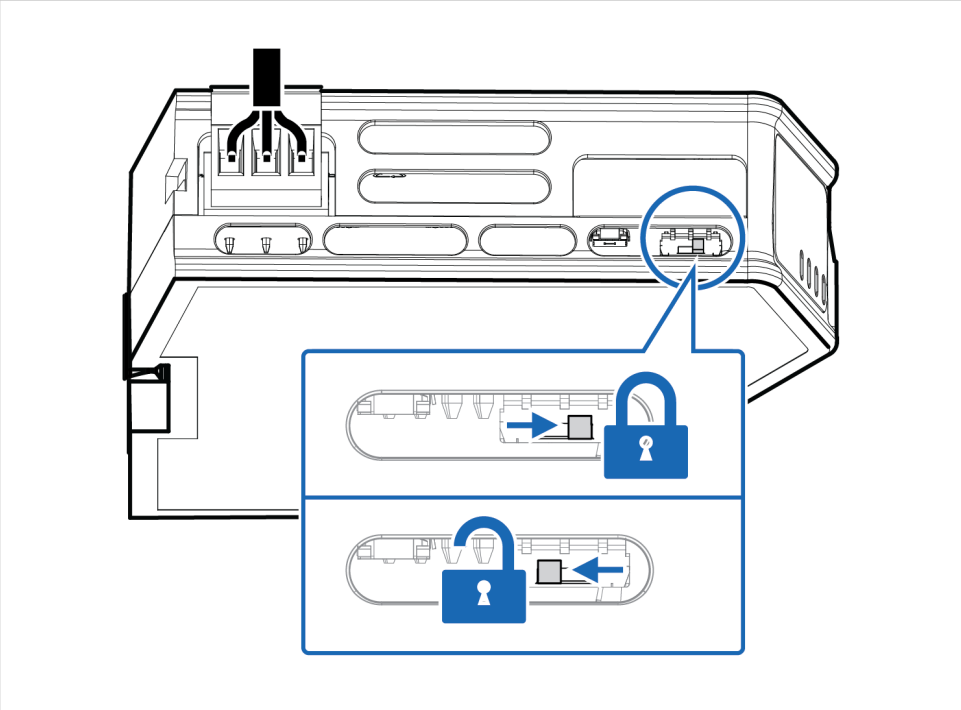


Figure 8. Security switch in locked and unlocked position

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

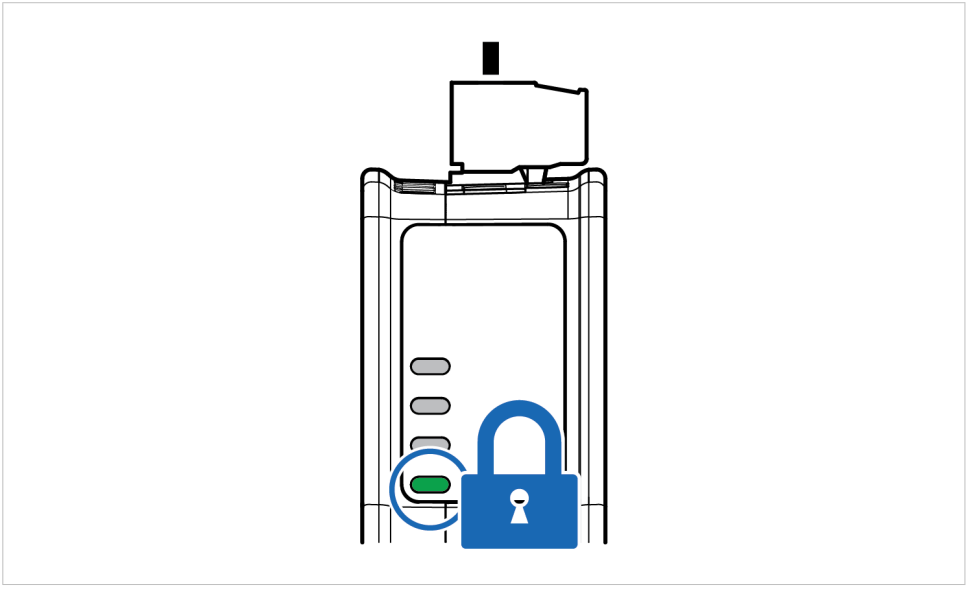


Figure 9. Security switch locked status LED

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.

5.7. Lock the Cables

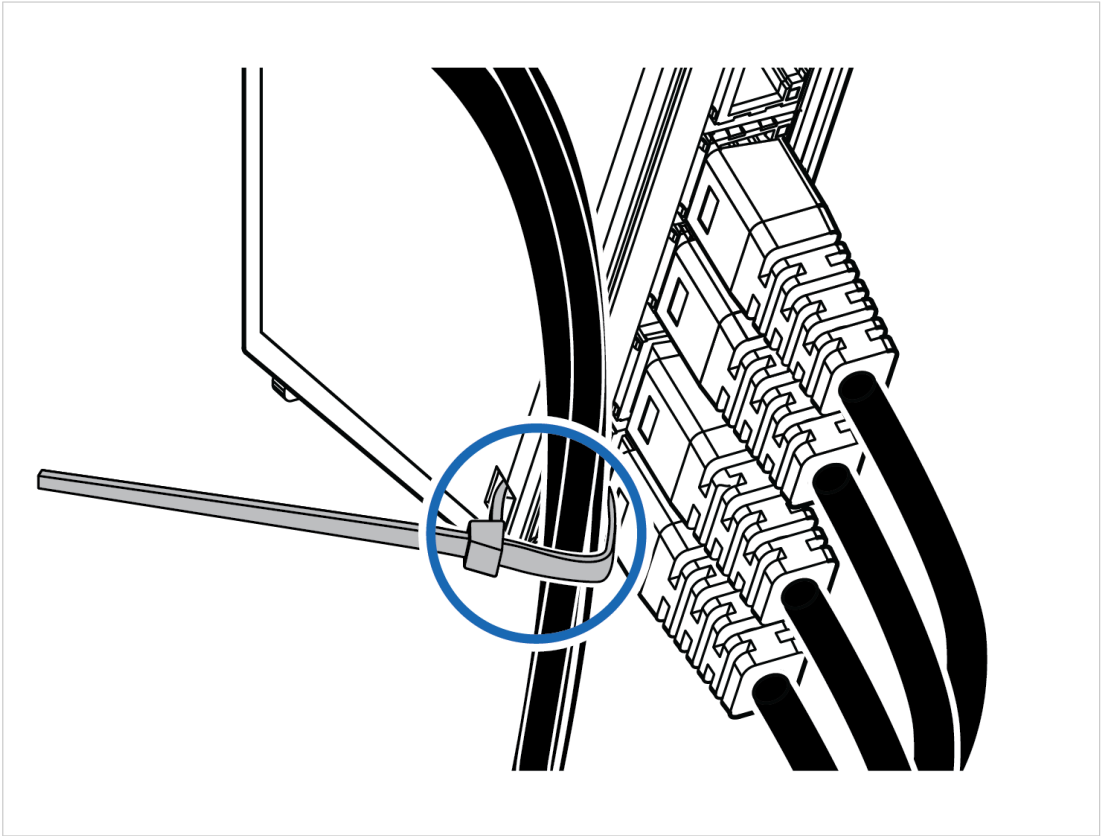


Figure 10. Lock the cables

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

5.8. 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.

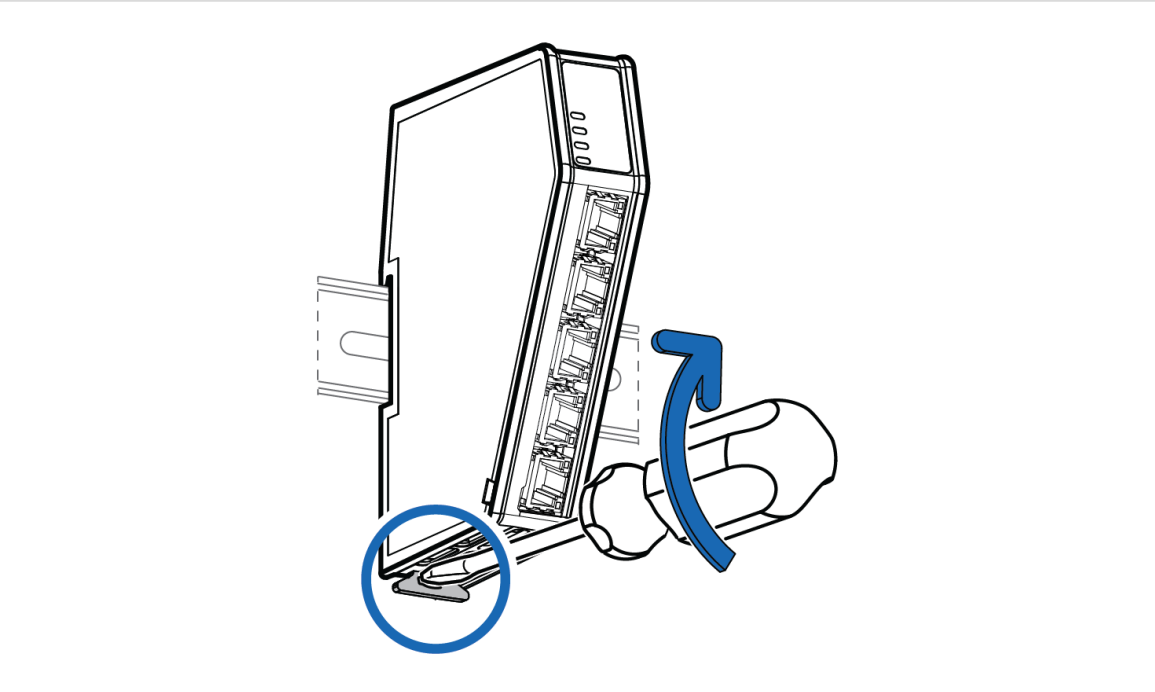


Figure 11. Unlock the Communicator

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

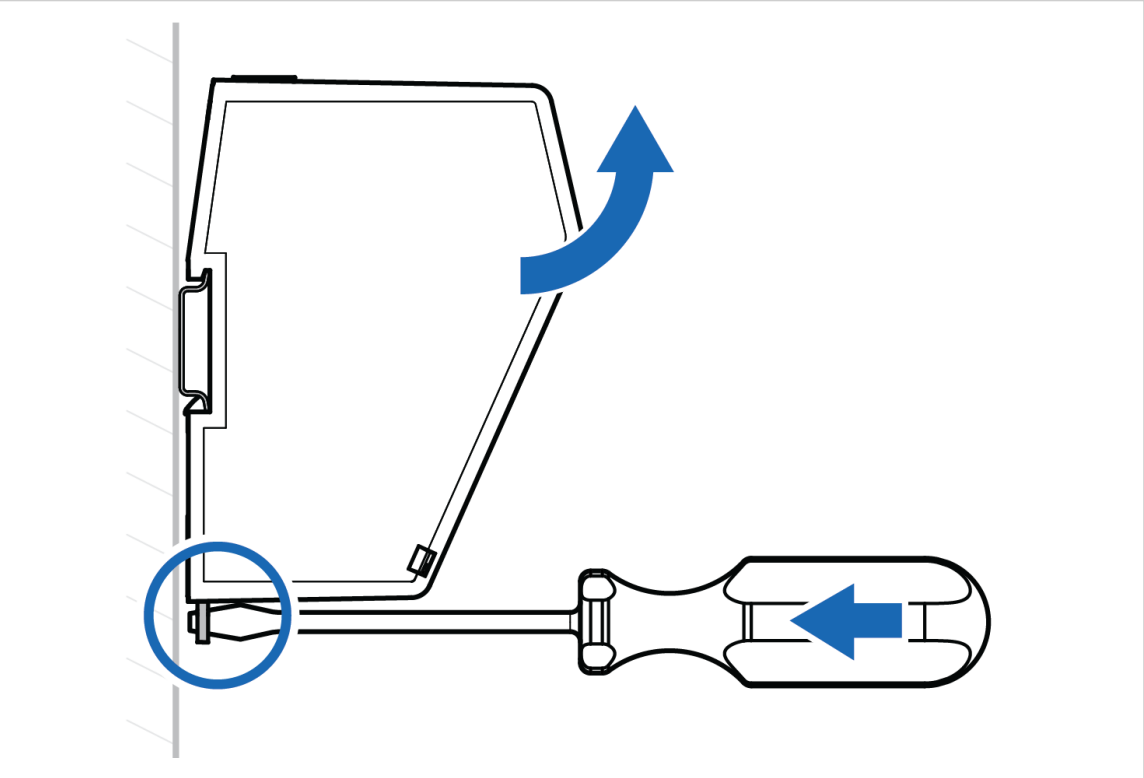


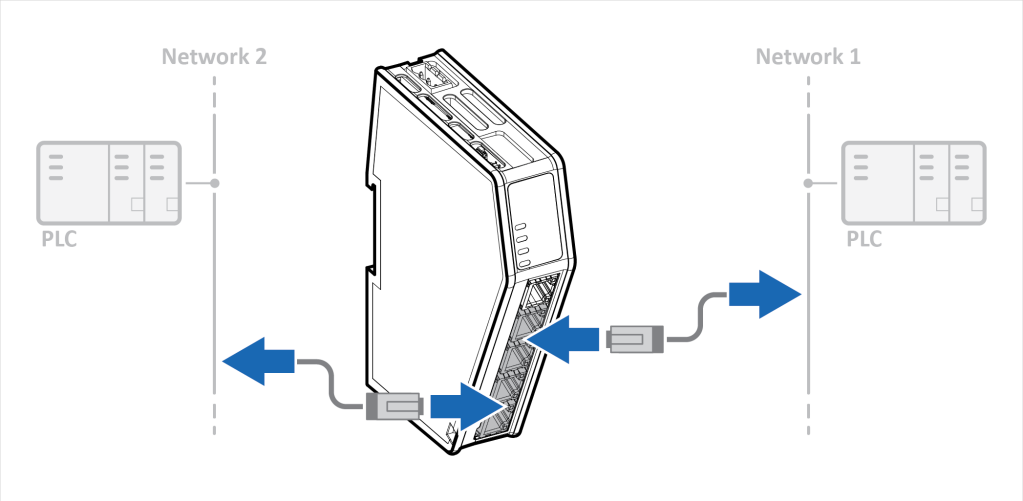
Figure 12. Unhook the Communicator

6. Communicator Configuration

6.1. Connect the Communicator

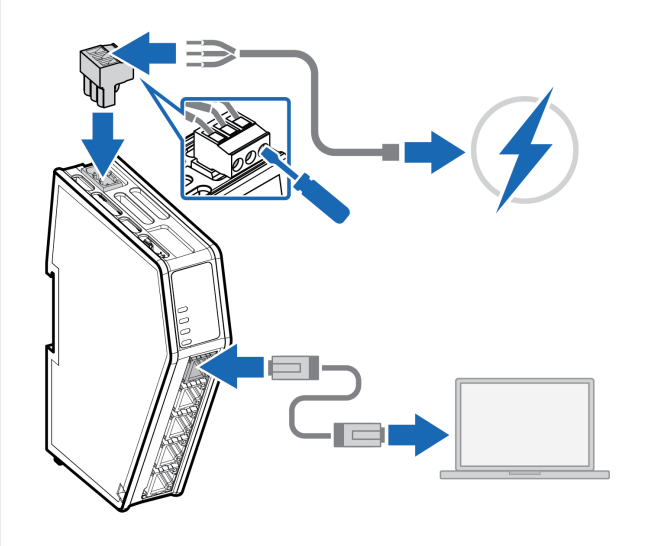
Procedure

Connect to Modbus TCP and EtherCAT network



Network 1 = Modbus TCP Network 2 = EtherCAT

Connect to PC and Power



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

6.2. 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.

NOTE
The Communicator default IP address is 192.168.0.10.

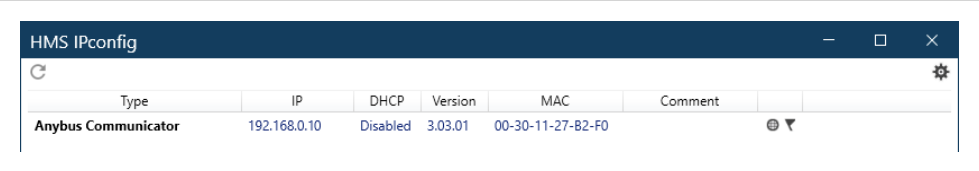
NOTE
To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.

NOTE
To access the Communicator built-in web interface from HMS IPconfig, ensure that port 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.

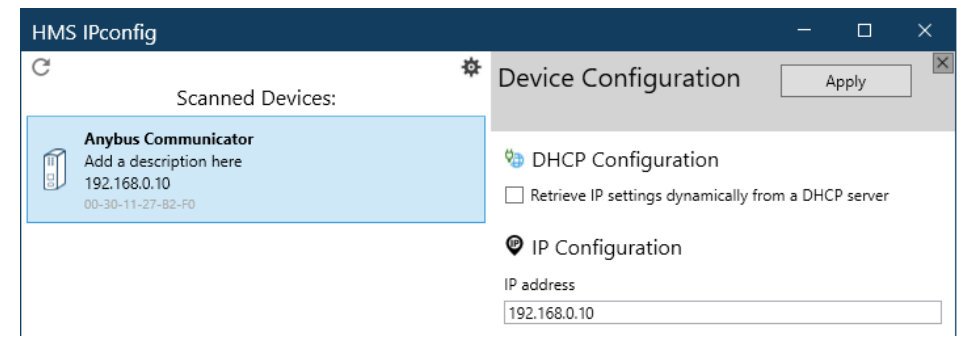
Procedure

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

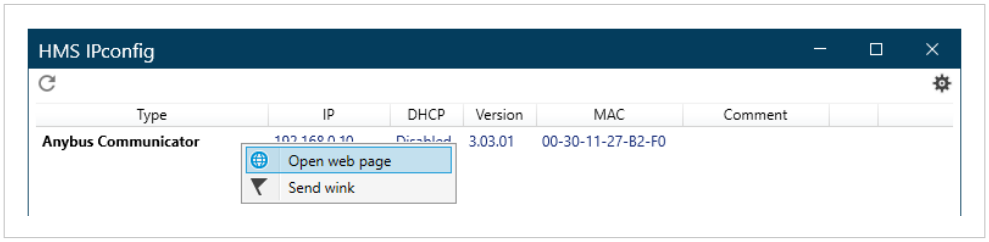


- HMS IPconfig automatically starts scanning for compatible and active HMS devices.
- Found HMS devices are added to the device list.

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.

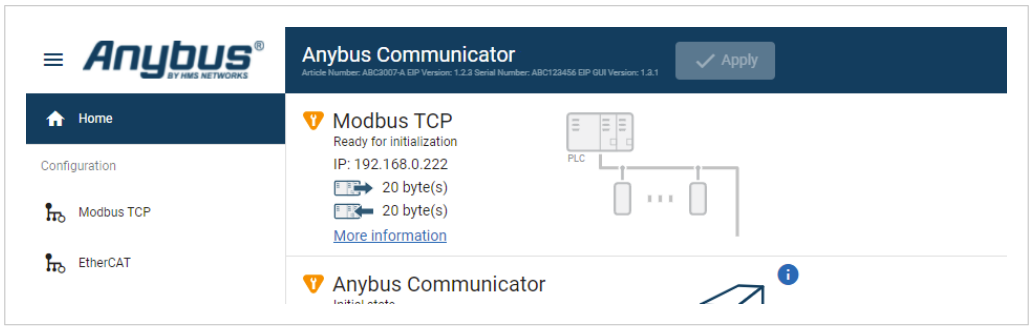


5. To open the **Open web page** built-in web interface, click Communicator.



Result

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



6.3. 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.

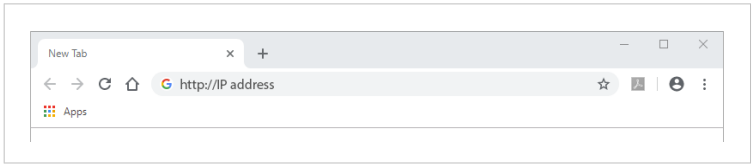
NOTE
To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.

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

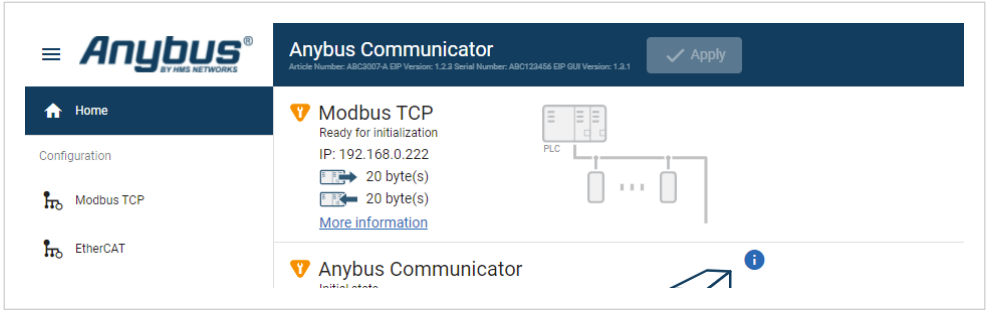
Procedure

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**.



6.4. Communicator Built-In Web Interface Overview

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

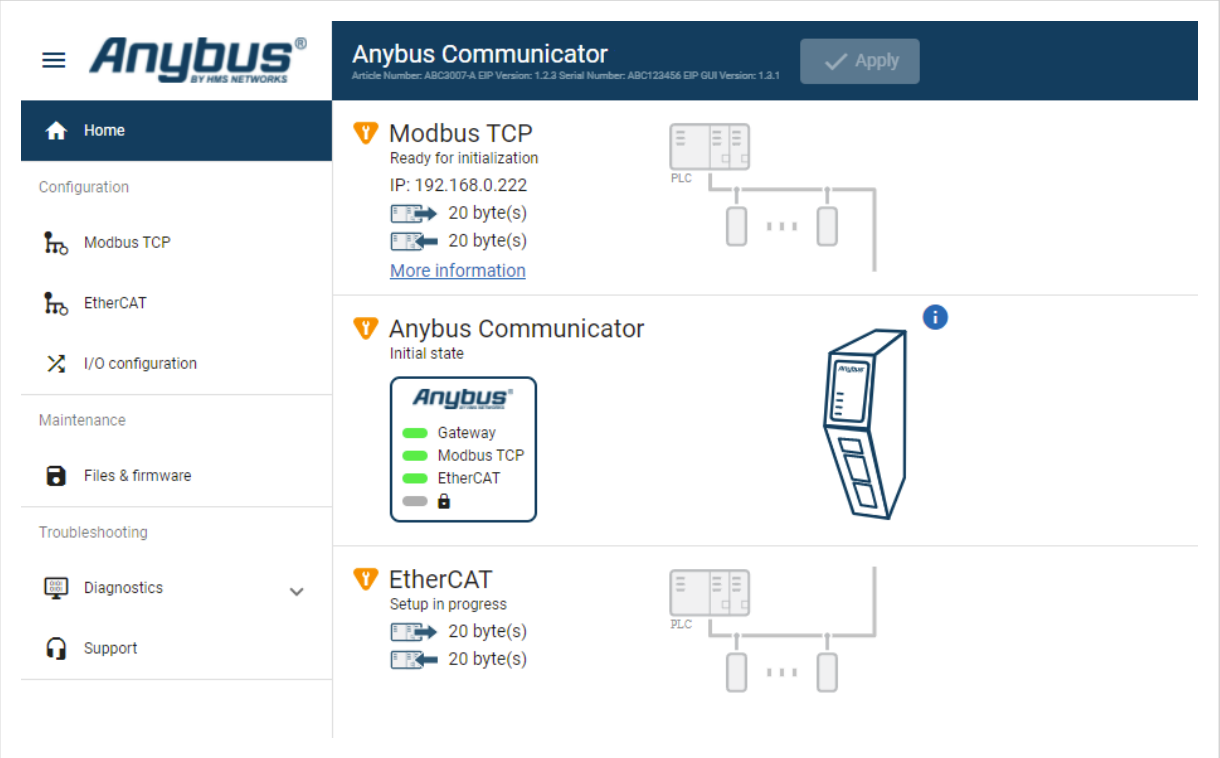


Figure 13. The Communicator built-in web interface Home page

Menu item	Description
Home	View the Communicator, network and node status.
Apply	After configuration changes are made and verified, press Apply to make the settings take effect.
Modbus TCP	Configure the network settings for the Modbus TCP network.
EtherCAT	Configure the network settings for the EtherCAT network.
I/O configuration	Configure input and output data sizes and endian conversion.
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. Here you can generate a support package with product information, to send to your Anybus support technician.

6.5. Modbus TCP Settings

6.5.1. Modbus TCP IP Settings

To Use DHCP Server

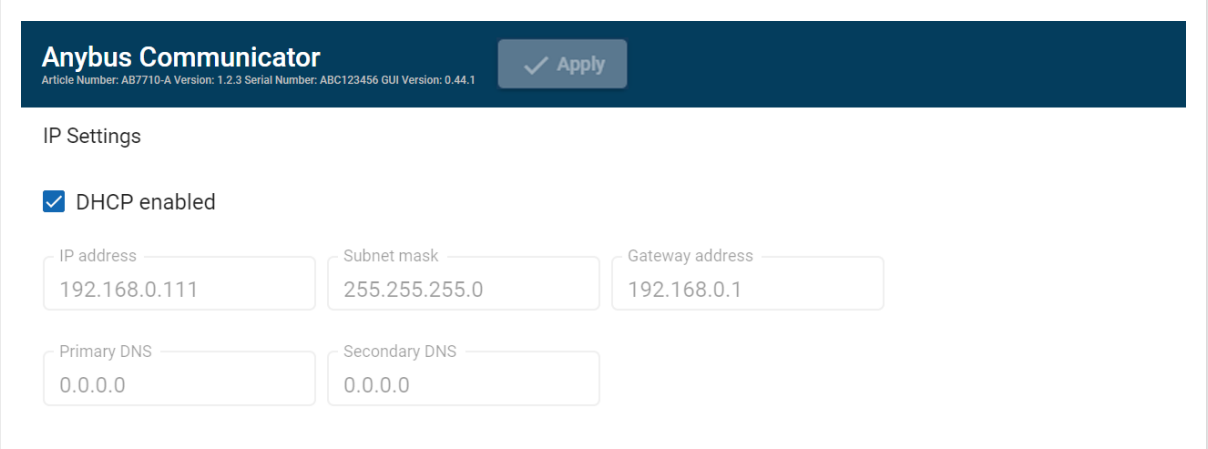


Figure 14. IP Settings, DHCP enabled

By default, the IP settings are provided by the high level network DHCP server. The **DHCP enabled** checkbox is selected.

To Configure IP Settings Manually

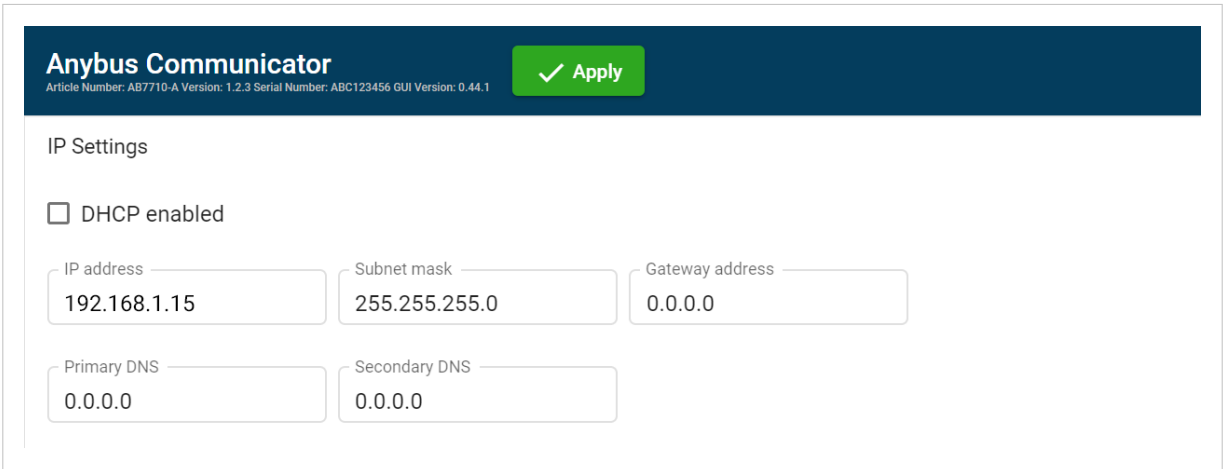


Figure 15. Modbus TCP IP Settings, DCHP disabled

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

Setting	Description
IP address	The Modbus TCP network IP address in IPv4 dot-decimal notation
Subnet mask	The Modbus TCP network Subnet mask in IPv4 dot-decimal notation.
Gateway address	The Modbus TCP network Gateway address in IPv4 dot-decimal notation. If there is no gateway available, set the Gateway address to: 0.0.0.0
Primary DNS server	The Modbus TCP network Primary DNS in IPv4 dot-decimal notation.
Secondary DNS server	The Modbus TCP network Secondary DNS in IPv4 dot-decimal notation.
DHCP	Enabled

If you change a value and click **Refresh**, the value is reset to the last applied value.

Naming the Host

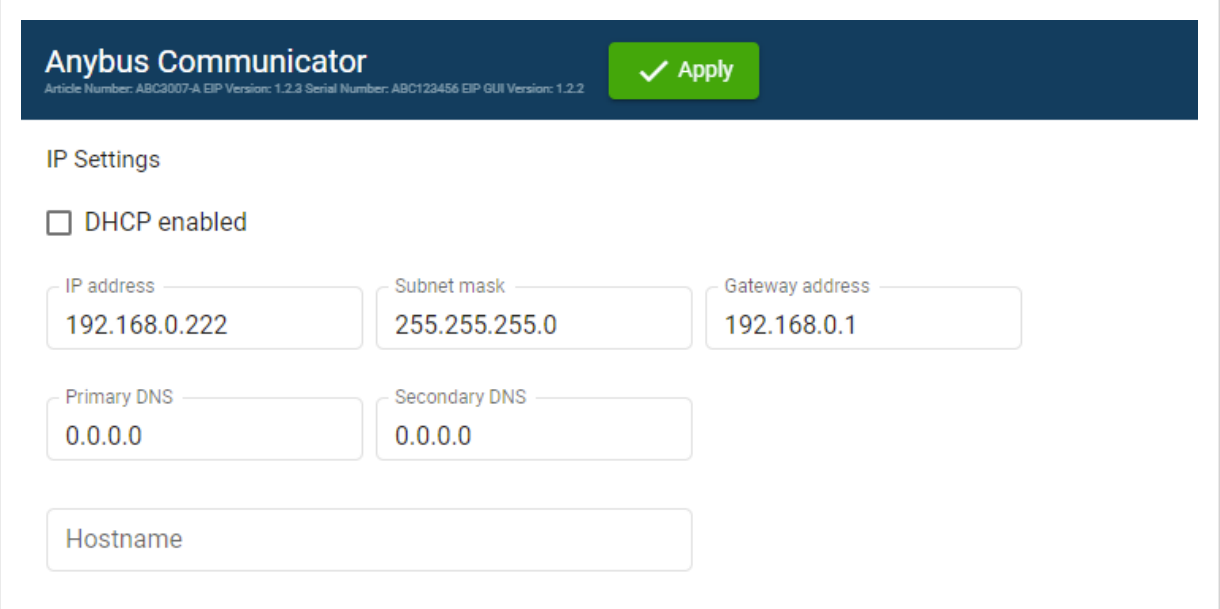


Figure 16. IP Settings Hostname

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.

6.5.2. Timeout Time Settings

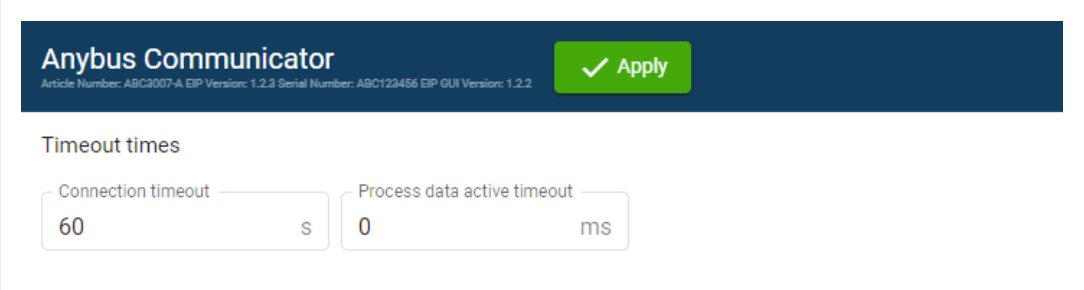


Figure 17. Modbus TCP page, Timeout times

Connection Timeout
Specify how long a Modbus TCP connection may be idle before it is closed by the Communicator.

The default value is 60 seconds.

Process Data Active Timeout
Specify the maximum allowed time between two incoming messages in steps of 10 ms.

If this time is exceeded, the high level network is considered to be offline.

The data sent to the sub-network is frozen.

A value of 0 disables this feature, i.e. the high level network can never go offline.

The default value is 0 ms.

6.6. EtherCAT Settings

6.6.1. EtherCAT Product ESI File

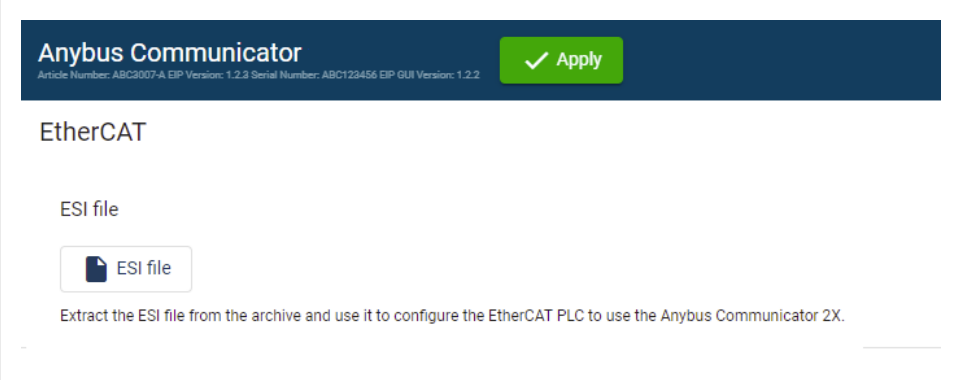


Figure 18. EtherCAT Product ESI File

Download the ESI (EtherCAT Slave Information) file and use it to configure the EtherCAT PLC to use the Communicator.

6.6.2. Timeout Time Settings

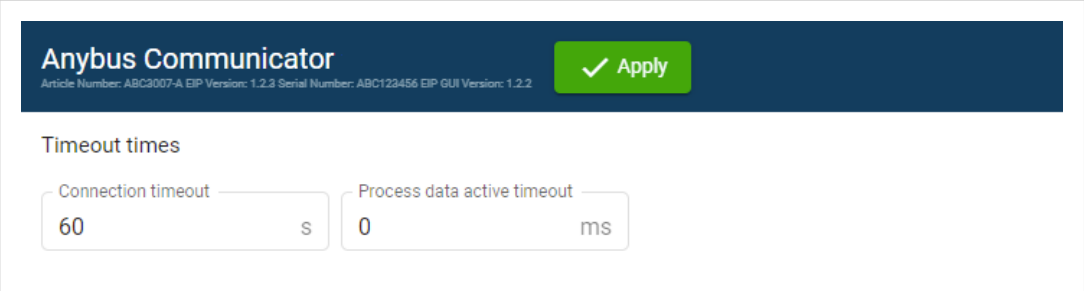


Figure 19. EtherCAT page, Timeout times

Connection Timeout
Specify how long a Modbus TCP connection may be idle before it is closed by the Communicator.

The default value is 60 seconds.

Process Data Active Timeout
Specify the maximum allowed time between two incoming messages in steps of 10 ms.

If this time is exceeded, the high level network is considered to be offline.

The data sent to the sub-network is frozen.

A value of 0 disables this feature, i.e. the high level network can never go offline.

The default value is 0 ms.

6.7. I/O Configuration

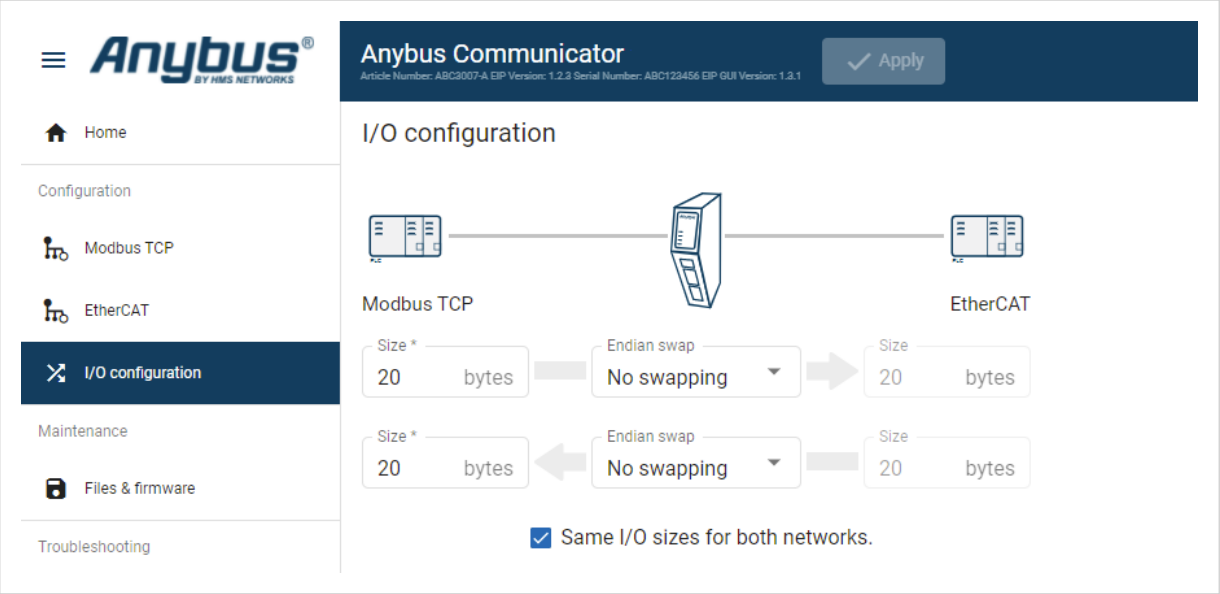


Figure 20. I/O configuration page

Enter the desired **Size** for the network input data and output data.

By default, the Communicator is set to use the same I/O sizes for both the Modbus TCP and the EtherCAT networks.

To configure different sizes for the networks, deselect the **Same I/O sizes for both networks** checkbox.

Endian Swap

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

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

Convert Between Big-Endian and Little-Endian

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

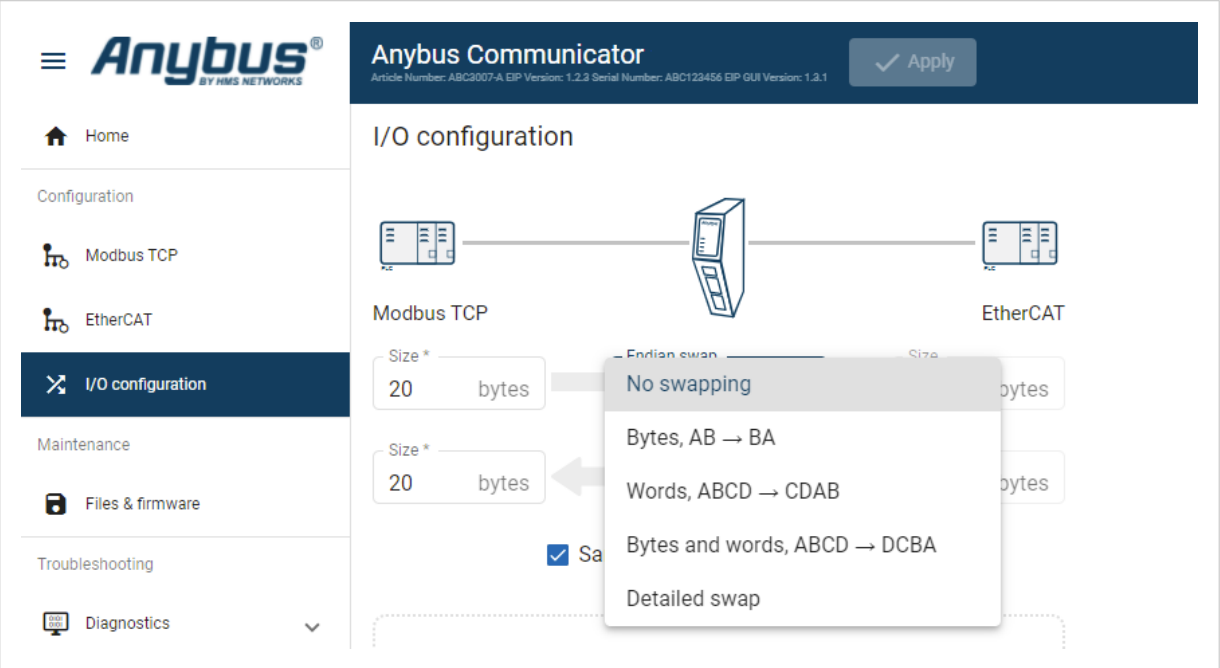


Figure 21. **I/O data map**, Endian swap

To reverse the byte order:

1. In the web-interface left sidebar menu, click .
2. Select the endian swap type from the **Endian swap** drop-down menu.

Setting	Description
No swapping	Default setting No swapping is performed on the data.
Bytes	Swap 2 bytes A B C D becomes B A D C
Words	Swap 4 bytes A B C D becomes C D A B
Bytes and words	A B C D becomes D C B A
Detailed swap	With Detailed swap, you can select a Endian swap method for each byte in the I/O Configuration. Set the endian swap type **No swap**, **Bytes, AB → BA**, **Word swap, ABCD → CDAB** or **Bytes and words, ABCD → DCBA** for each bite. See Build Detailed Endian Swap (page 29).

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

Build Detailed Endian Swap

If you have multiple data types, you can use the **Detailed endian swap** to change different parts of the data area in different ways.

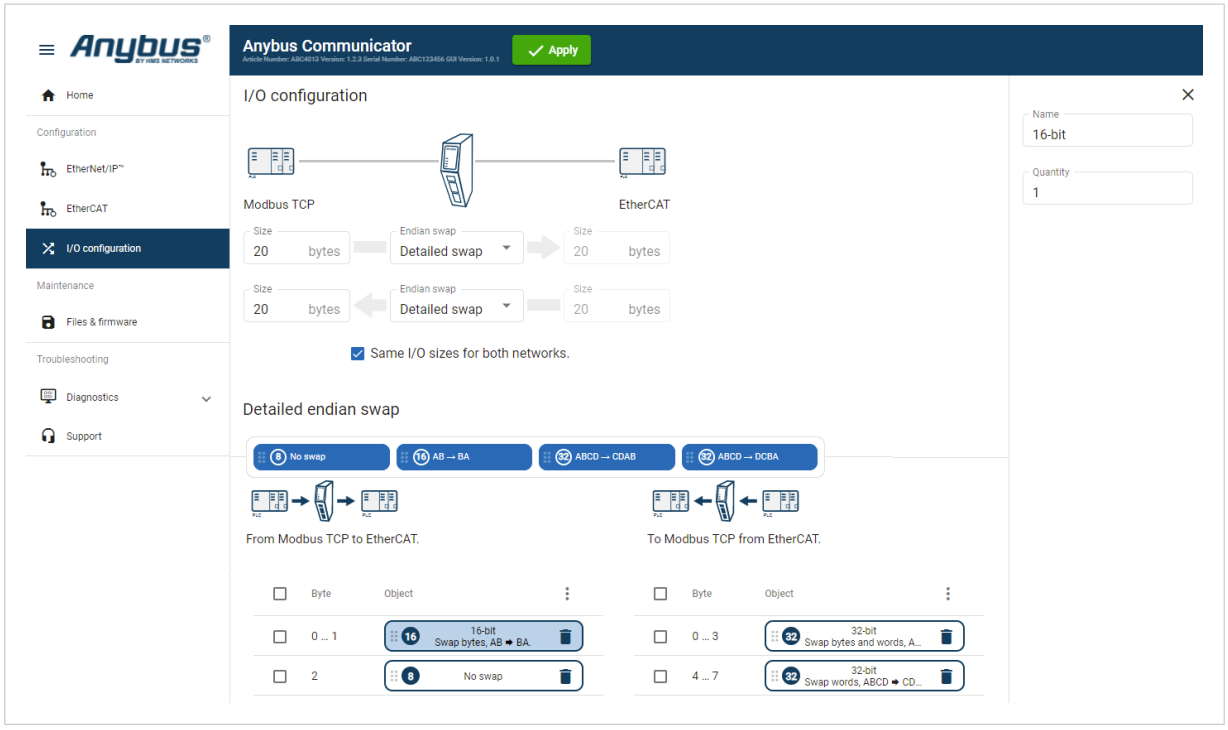


Figure 22. Detailed endian swap example

1. In the **Endian swap** drop-down menu for the desired network(s), select **Detailed swap**.
2. Build the detailed endian swap.

- To add an endian swap object: Drag and drop the desired endian swap object from the toolbar into the drag and drop fields.

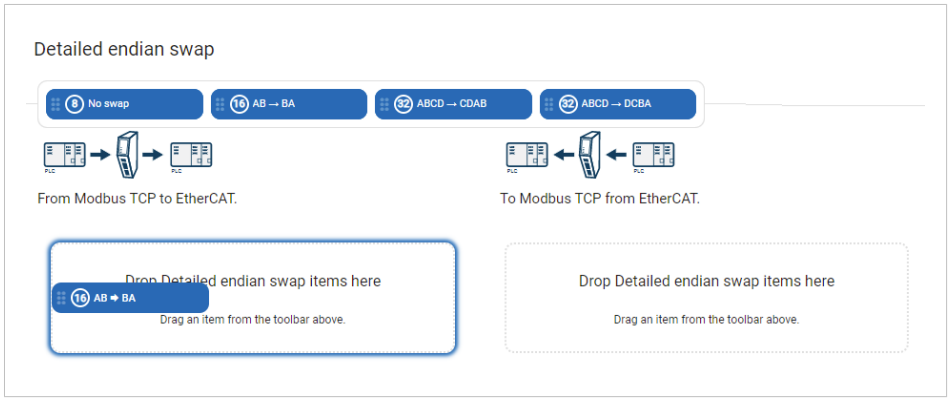


Figure 23. Add endian swap object(s)

- To duplicate an endian swap object: Select the checkbox in front of the endian swap object that you want to duplicate and click the **Duplicate selected** button.
  You can select multiple endian swap objects and duplicate the group.

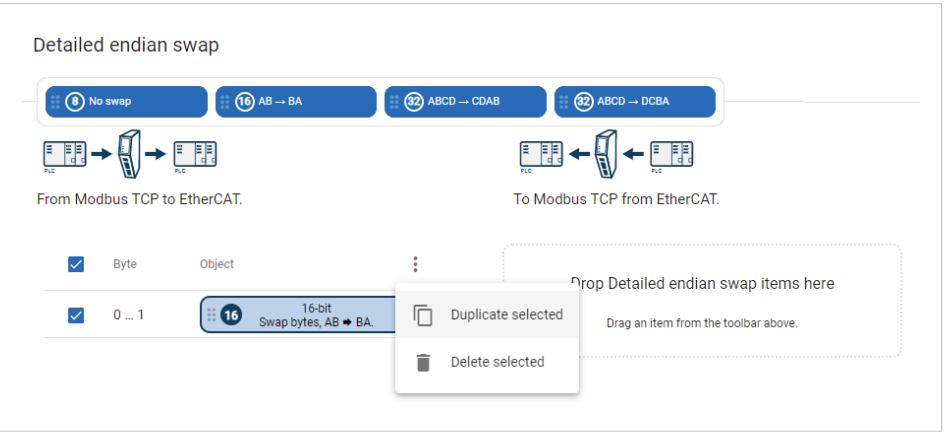


Figure 24. Duplicate endian swap object

- To change the order of the endian swap objects, drag and drop the endian swap objects in the list.

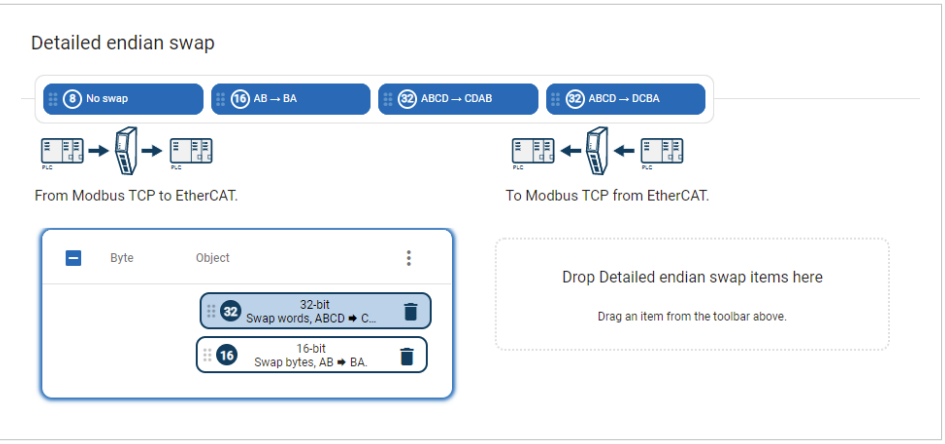


Figure 25. Change endian swap objects order

6.8. Apply Configuration

Before You Begin

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

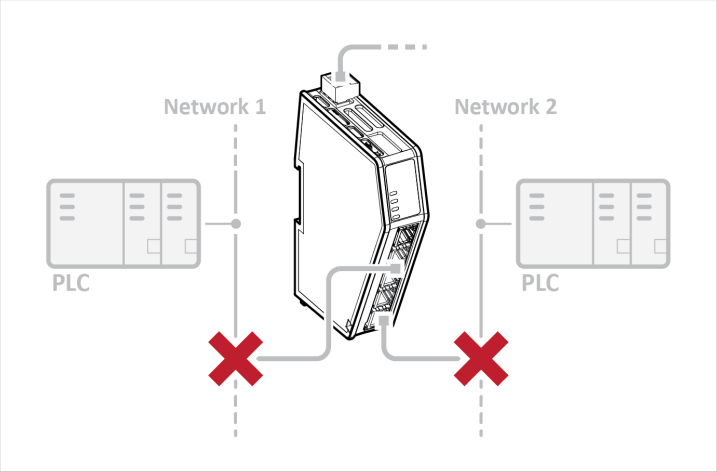


Figure 26.

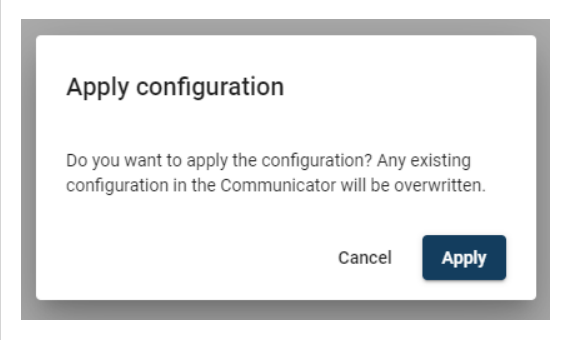
Before you can apply the configuration, ensure that there is no active communication on the Modbus TCP network or the EtherCAT network where the Communicator is connected.

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.



6.9. Configuration Notes

You can add notes to describe the Communicator configuration.

6.9.1. Add Configuration Note

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

Figure 27. Configuration note, comment icon

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

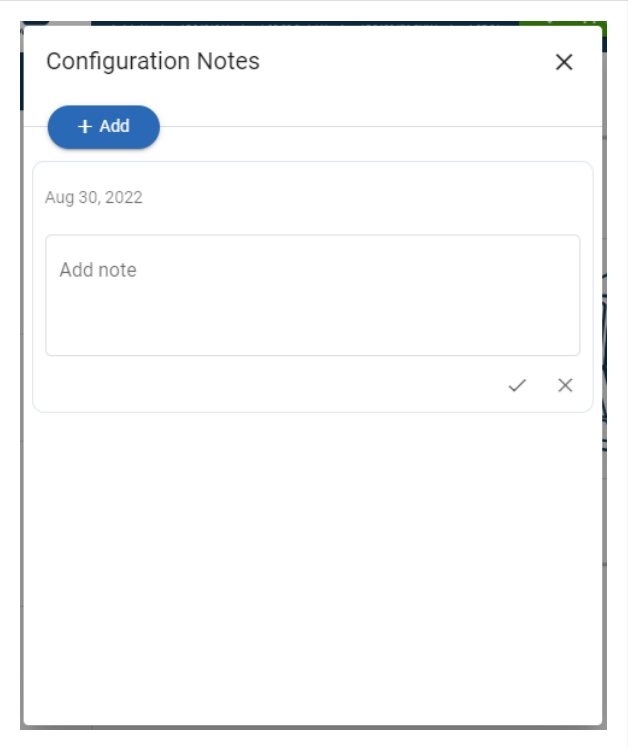


Figure 28. Add new configuration note

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

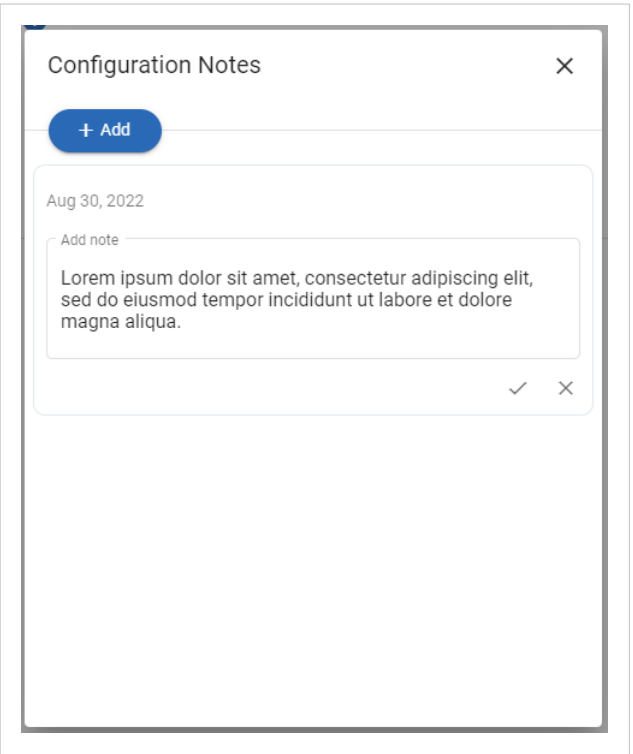


Figure 29. Write a configuration note

The configuration note is added to the list.

4. To close the window, click **close** ×.

6.9.2. View and Edit Configuration Notes

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

Figure 30. Example: The comment icon indicates that there are three added notes

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

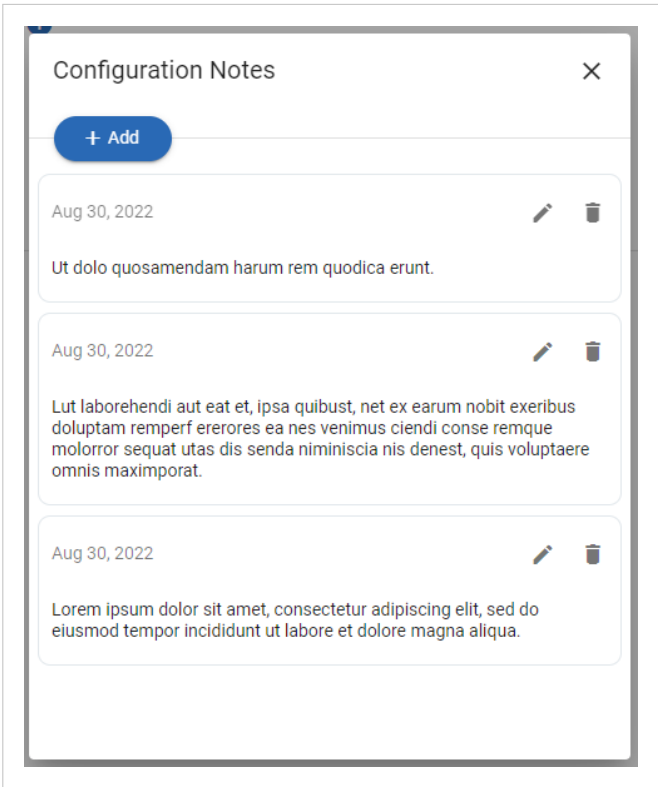


Figure 31. Example: The Configuration Notes window with added notes

7. PLC Configuration

7.1. Export Product ESI File

Option for EtherCAT Slave.

Option if the PLC program requires a product file, ESI (EtherCAT Slave Information) file to configure the EtherCAT PLC to use the Communicator

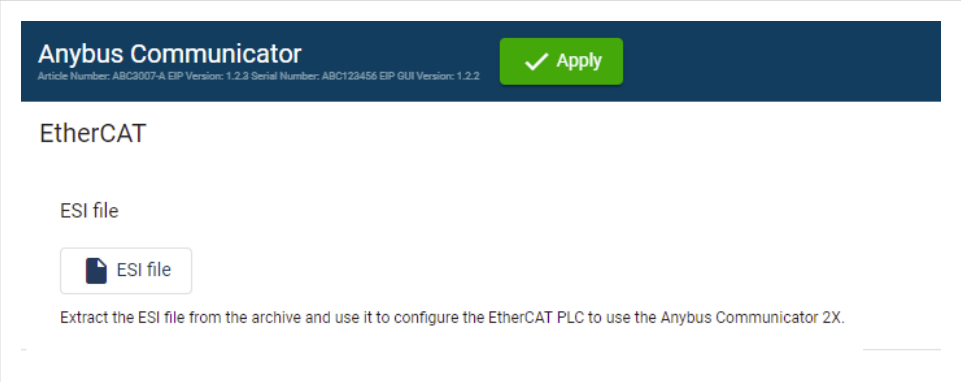


Figure 32. Export Product ESI File

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

To export the ESI file:

1. Click **ESI file**.
   The ESI file is downloaded to your PC.

7.2. Addressing and Register Mapping

7.2.1. Data From Modbus TCP Network to Serial-Subnet

Process data offset	Coil address	Holding register
0x0000 — 0x001	0x0000 — 0x000F	0x0000
0x0002 — 0x0003	0x0010 — 0x001F	0x0001
...	...	...
0x05D8 — 0x05D9	0x2EC0 — 0x2ECF	0x02EC
0x05DA — 0x05DB	0x2ED0 — 0x2EDF	0x02ED

7.2.2. Data From Serial-Subnet to Modbus TCP Network

Process data offset	Discrete input address	Input register	Holding register
0x0000 — 0x001	0x0000 — 0x000F	0x0000	0x0800
0x0002 — 0x0003	0x0010 — 0x001F	0x0001	0x0801
...	...	...	...
0x05D8 — 0x05D9	0x2EC0 — 0x2ECF	0x02EC	0x0AEC
0x05DA — 0x05DB	0x2ED0 — 0x2EDF	0x02ED	0x0AED

7.2.3. Idle Mode

Transaction	Holding Register	Description
Enter/Exit Idle Mode	0x1004	Used by the Modbus TCP client to indicate an idle/offline mode on the network.

8. Verify Operation

8.1. Communicator Status Monitor

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

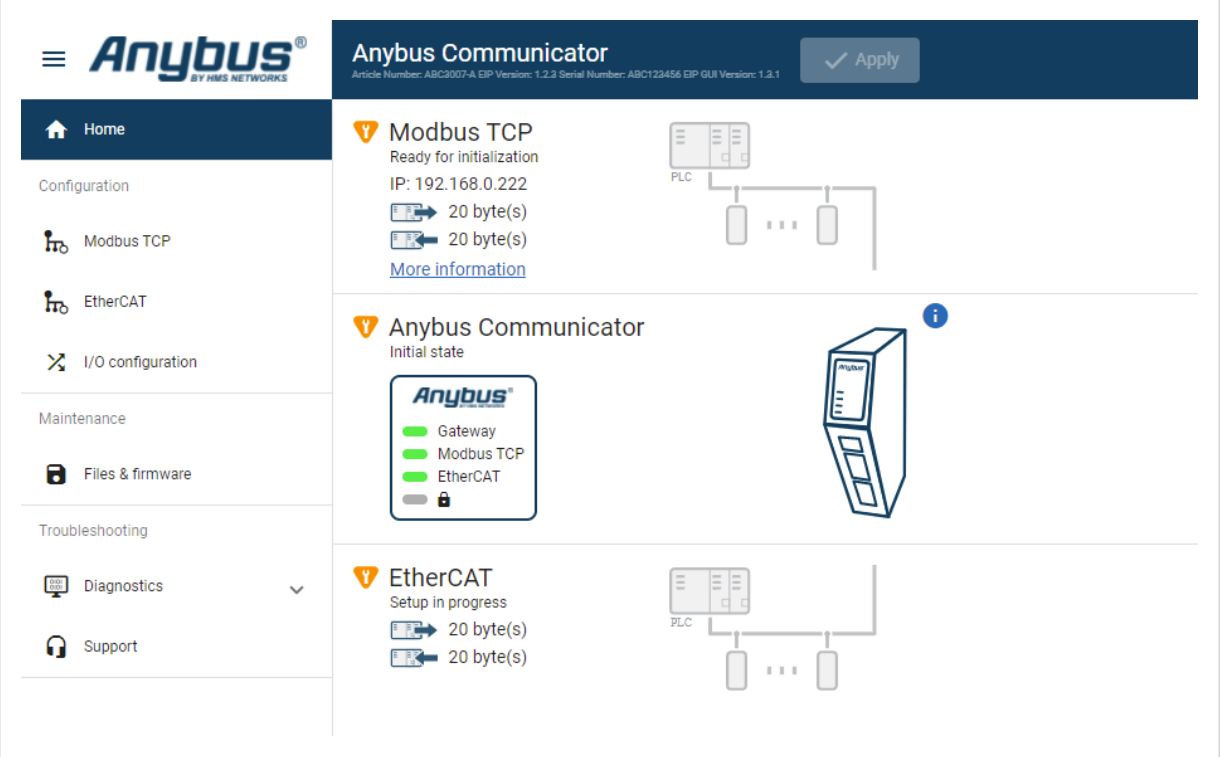


Figure 33. Home page

Gateway status

Overview the Communicator LED indications remotely.

Refer to Communicator LED Indicators.

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: • Initial state where non network components are started and configured. • Network startup in progress. • Invalid configuration detected.
	Normal operation.

8.2. Communicator LED Indicators

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

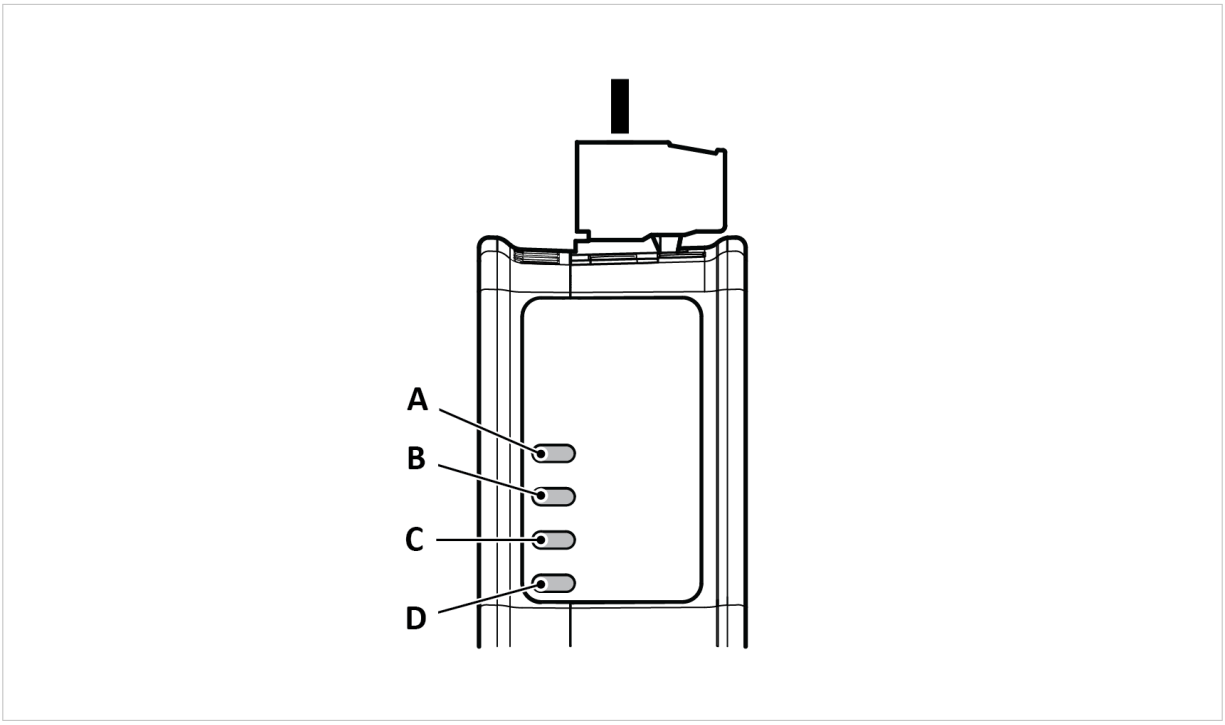


Figure 34. Gateway status (A), Lower connector (B), Upper connector (C) and (D) Security Switch

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

LED B - Modbus TCP, Upper connector **LED C - EtherCAT, Lower connector**				
Operation Status	**EtherCAT**	**EtherNet/IP**	**Modbus TCP**	**PROFINET**
Off	No power/EtherCAT device in 'INIT'-state	No power/No EtherNet/IP IP address	No power/ No Modbus TCP IP address	No power/No connection with IO controller
Green, flashing	EtherCAT device in 'PRE-OPERATIONAL'-state	EtherNet/IP online, no connections established	Modbus TCP online, no messages received	Used by engineering tools to identify the node on the network
Green, one flash	EtherCAT device in 'SAFE-OPERATIONAL'-state	N/A	N/A	Connection with IO controller established IO controller in STOP state or IO data bad
*The EtherCAT RUN (green) and ERROR (red) LED behaviors are combined in LED (C)/(D). This can cause LED (C)/(D) to alternate between red and green. The LED behavior still represents the states described in the table above.				

LED B - Modbus TCP, Upper connector LED C - EtherCAT, Lower connector				
Operation Status	**EtherCAT**	**EtherNet/IP**	**Modbus TCP**	**PROFINET**
Green, solid	EtherCAT device in 'OPERATIONAL'-stat	EtherNet/IP online, one or more connections established	Modbus TCP online, at least one message received	PROFINET online, one or more connections established
Red, solid	FATAL event	Duplicated EtherNet/IP IP address	IP address conflict detected	FATAL event
Red, one flash	Unsolicited state change Slave device application has changed the EtherCAT state autonomously.	N/A	N/A	Station name not set
Red, two flash	Sync Manager watchdog timeout	N/A	N/A	IP address not set
Red, three flash	N/A	N/A	N/A	Expected Identification differs from Real Identification
Red, flashing	Invalid configuration	One or more connections timed out	Connection timeout	One or more connections timed out
Green/Red, flashing	EtherCAT RUN (green) and ERROR (reed) LED combined*	N/A	N/A	N/A
*The EtherCAT RUN (green) and ERROR (red) LED behaviors are combined in LED (C)/(D). This can cause LED (C)/(D) to alternate between red and green. The LED behavior still represents the states described in the table above.				

LED D - Security switch	
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

9. Maintenance

9.1. Configuration File Handling

9.1.1. Export Configuration

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

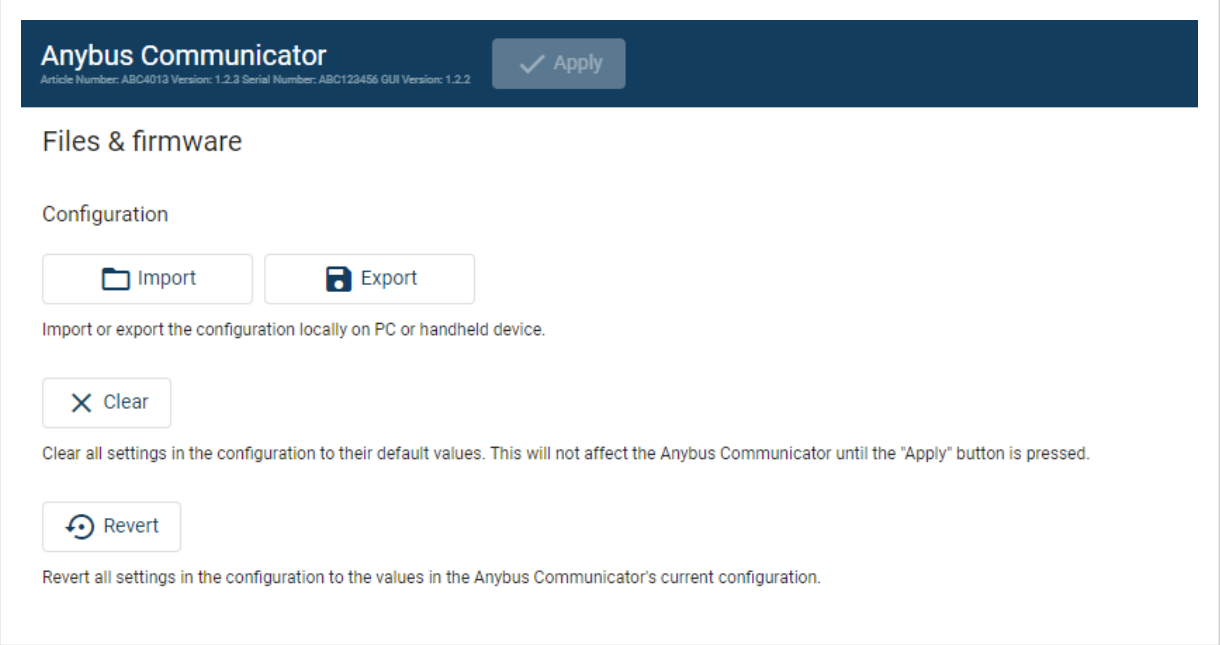


Figure 35. Files & firmware page

To export a configuration file:

- In **Files & firmware**, click **Export**.
  The configuration settings are stored in a .conf file and downloaded to your PC.

9.1.2. Import Configuration

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

Before You Begin

The supported file format is .conf.

Procedure

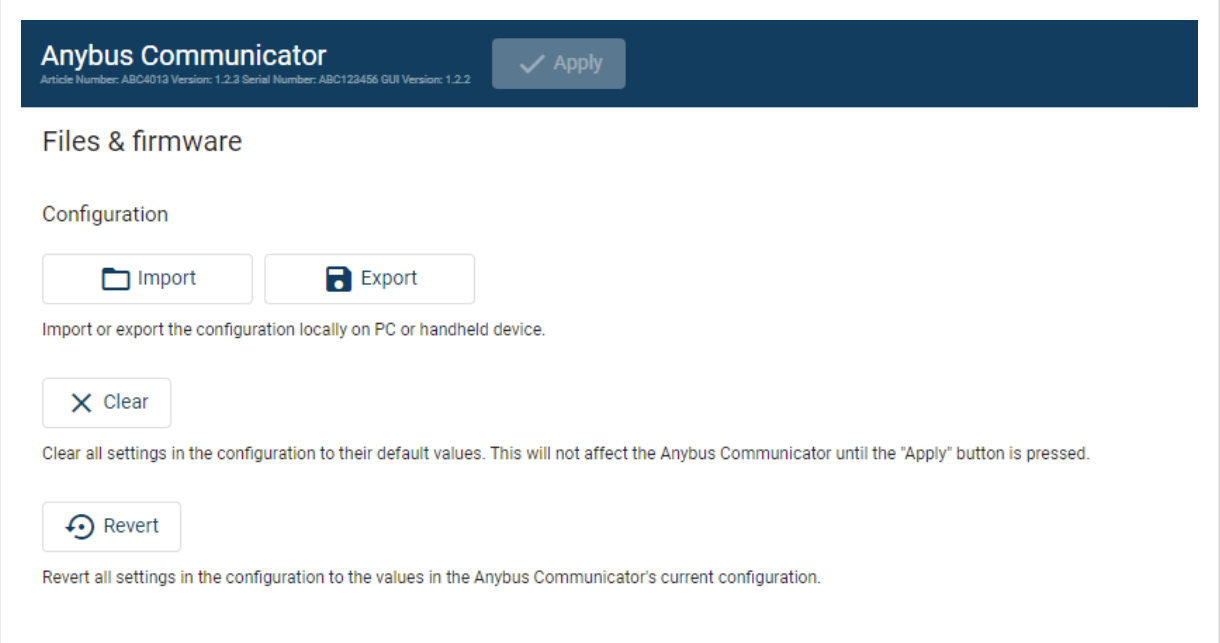


Figure 36. Files & firmware page

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 and 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 occurs, a message about the mismatch appears.
7. To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

9.2. Clear and Revert Configuration

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

Procedure

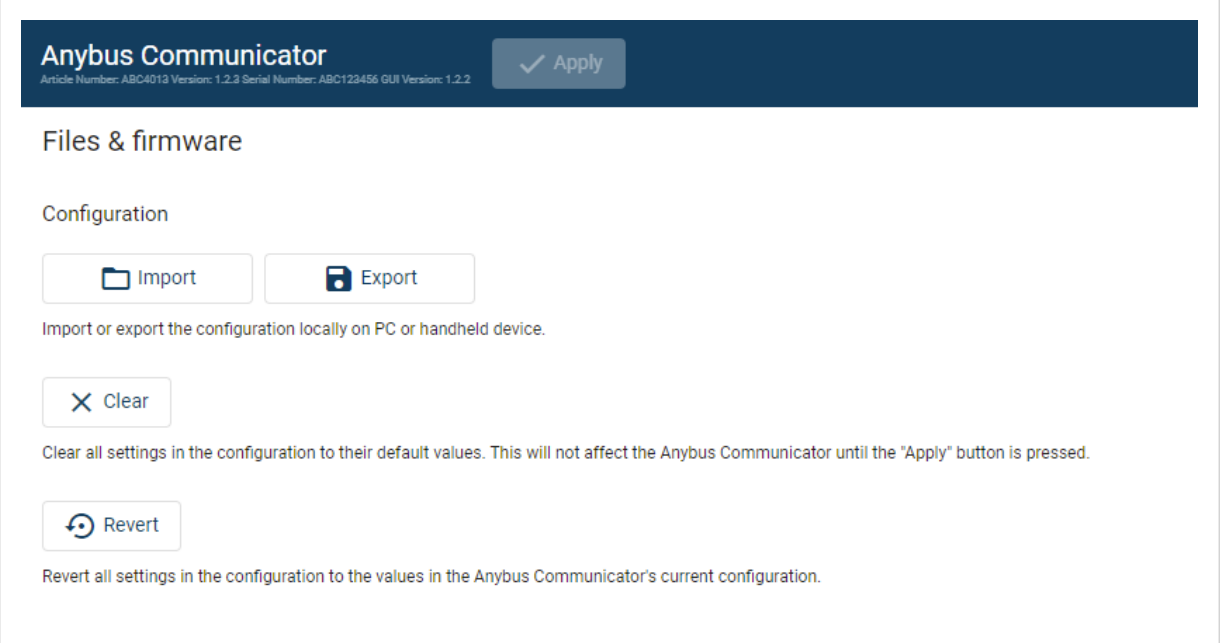


Figure 37. Files & firmware page

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.

9.3. Firmware Management

9.3.1. View the Firmware Version

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

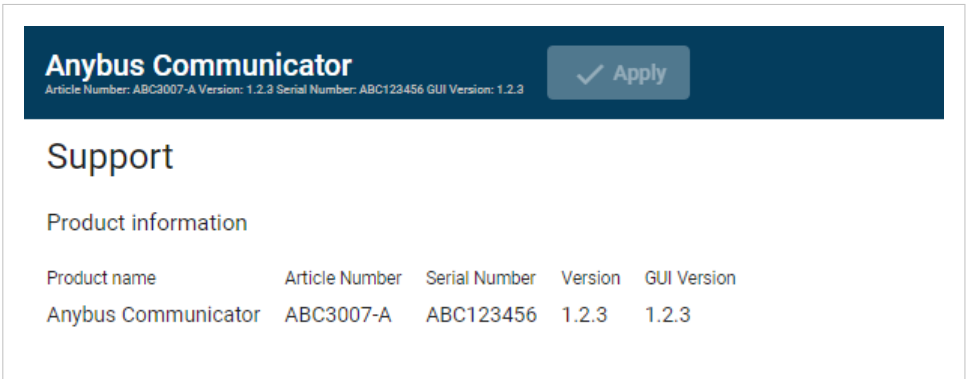


Figure 38. Support page, Product information example

9.3.2. Firmware and Configuration Compatibility

Compatibility after firmware upgrade

Current configuration is still compatible after upgrading the firmware.

Compatibility after firmware downgrade

9.3.3. Firmware File Validation

Before the firmware file is imported into the system, the firmware upgrade function perform 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.

9.3.4. Update Firmware

Before You Begin

Ensure that the Communicator is disconnected from the OT networks.

Procedure

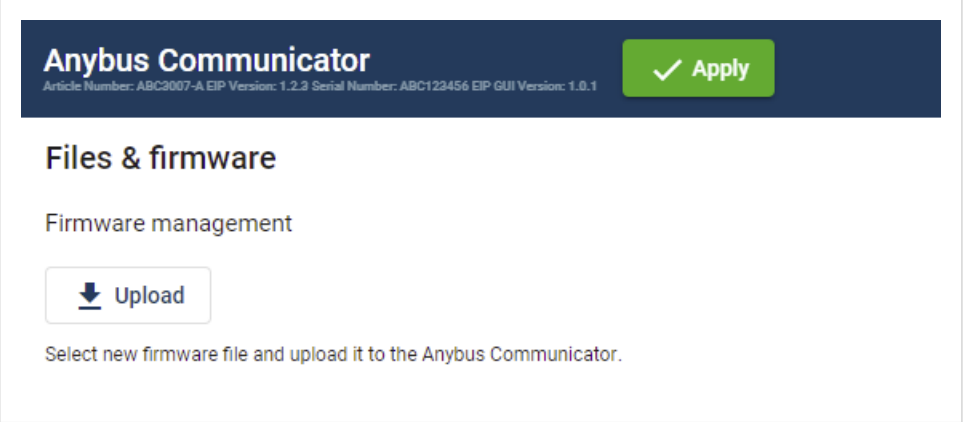


Figure 39. Files & firmware page

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 and 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 pass 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 appear.

10. Troubleshooting

10.1. Diagnostics

10.1.1. I/O Data

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

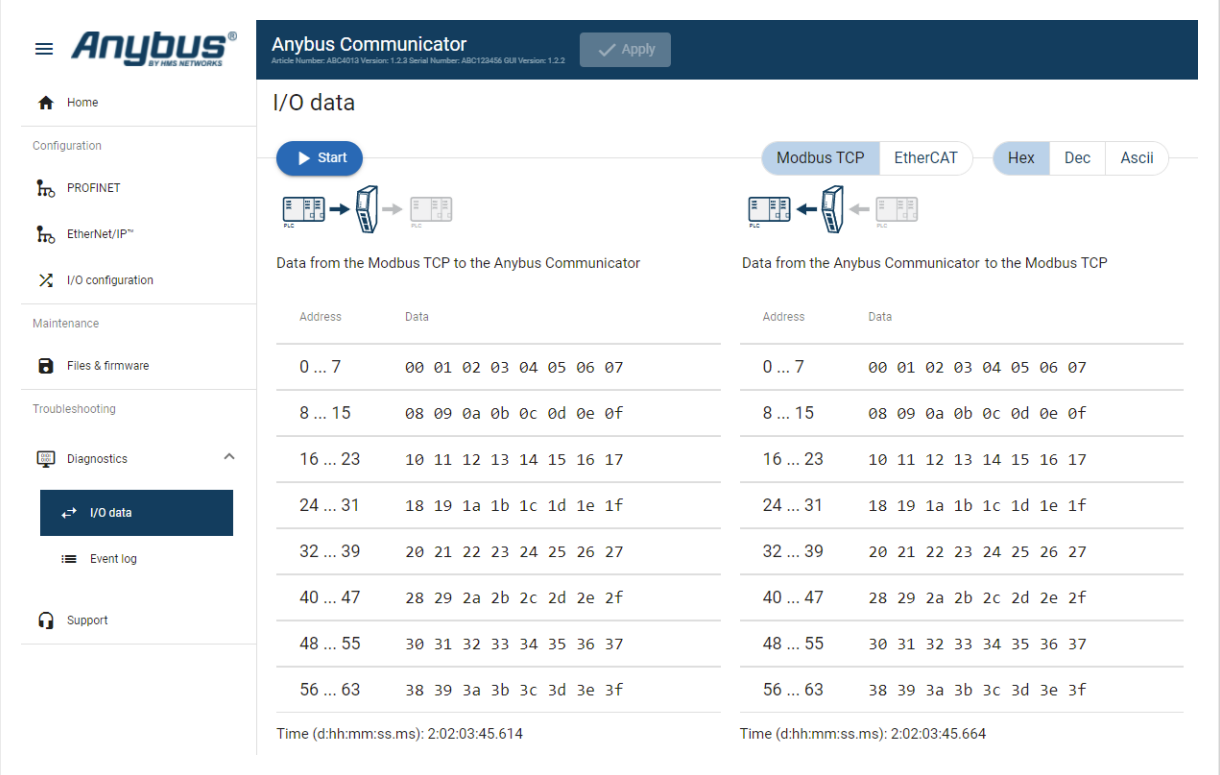


Figure 40. I/O data

The table can contain at most 10000 messages. When the limit is reached, the oldest messages are discarded when new messages are added.

Switch between the OT networks

To switch between the networks, select **Modbus TCP** or **EtherCAT**.

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**.

10.1.2. Event Log

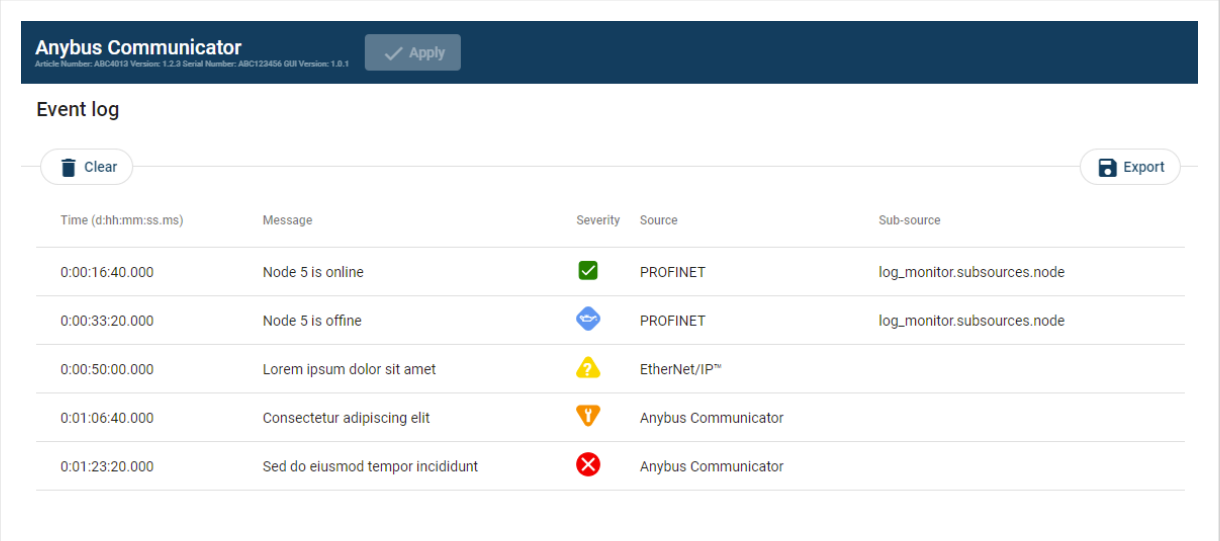


Figure 41. Event log page example

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. For description of the symbols, see Communicator Status Monitor.	
Source	0	Communicator
	1	EtherCAT
	2	Modbus TCP

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

10.2. Reset to Factory Settings

Before You Begin

Procedure

To reset the Communicator:

1. Disconnect the Communicator from power.

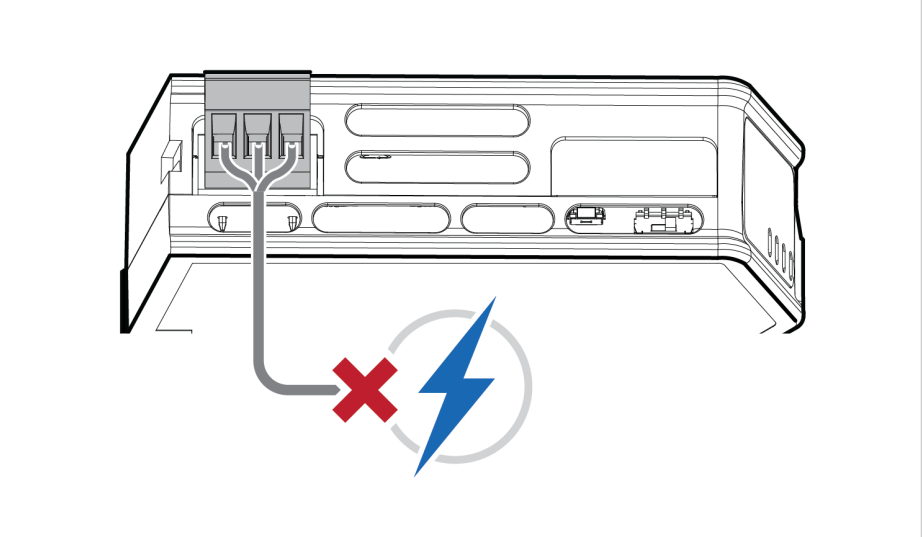


Figure 42. Disconnect power

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

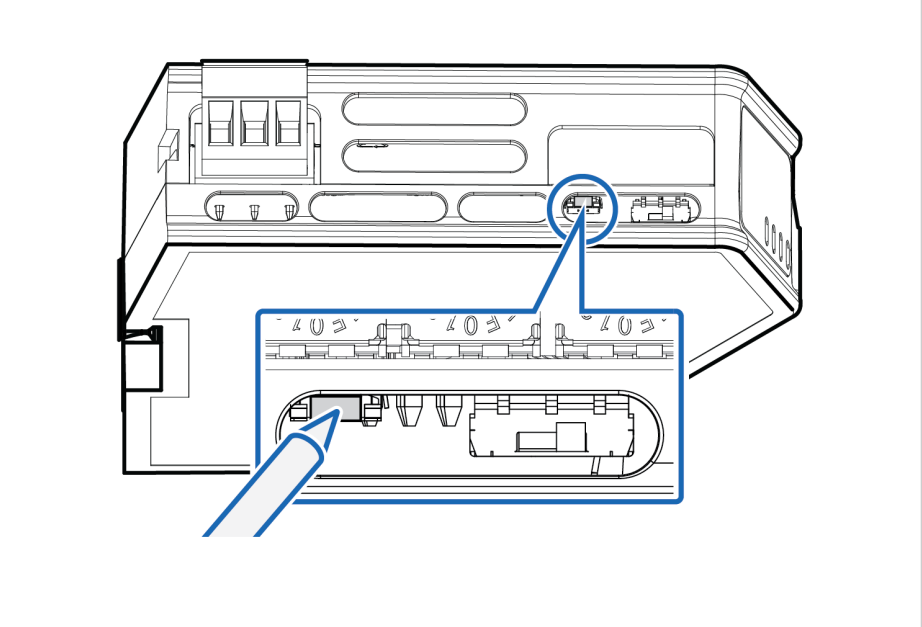


Figure 43. Press and hold **Reset** button

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

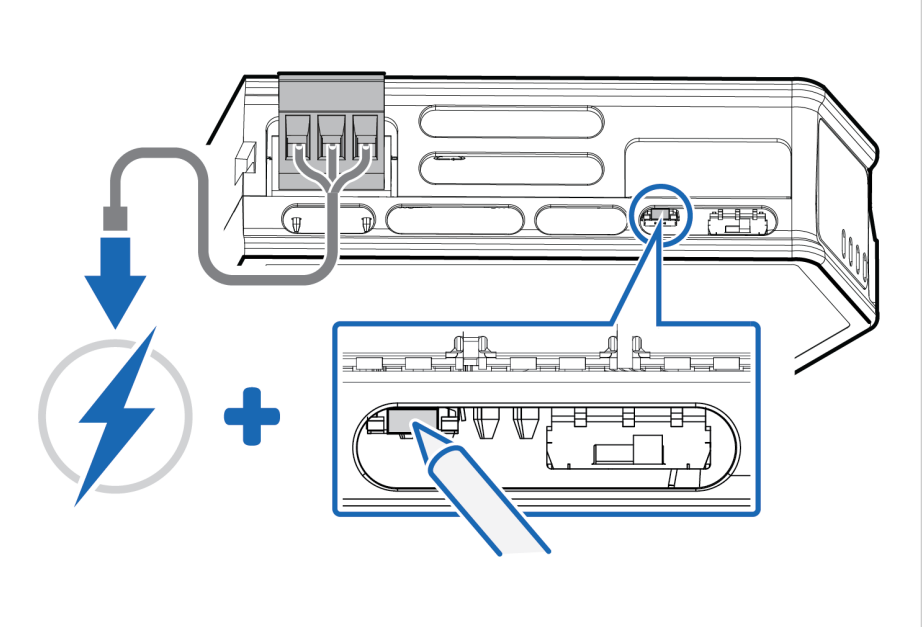


Figure 44. Hold **Reset** button and reconnect power

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 the Communicator built-in web interface.
2. Navigate to the **Files & firmware** page and click **Revert**.

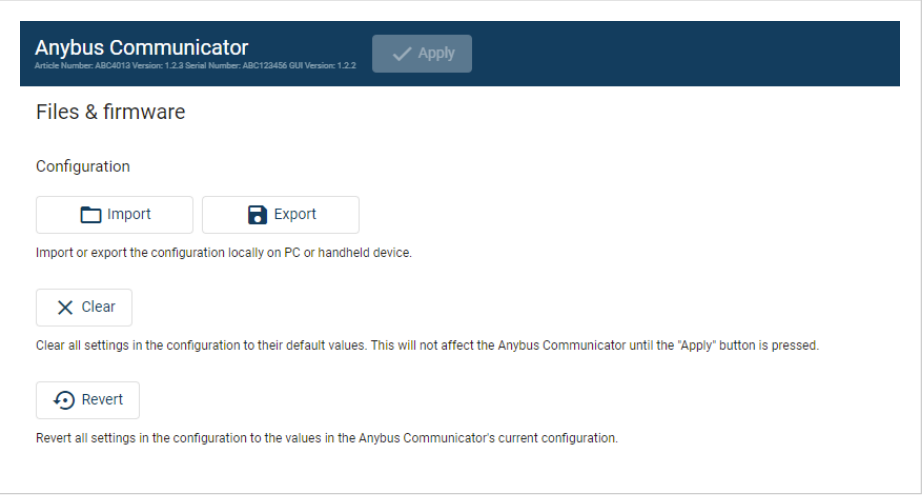


Figure 45. Files & firmware, Revert

10.3. Firmware Upgrade Error Management

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.

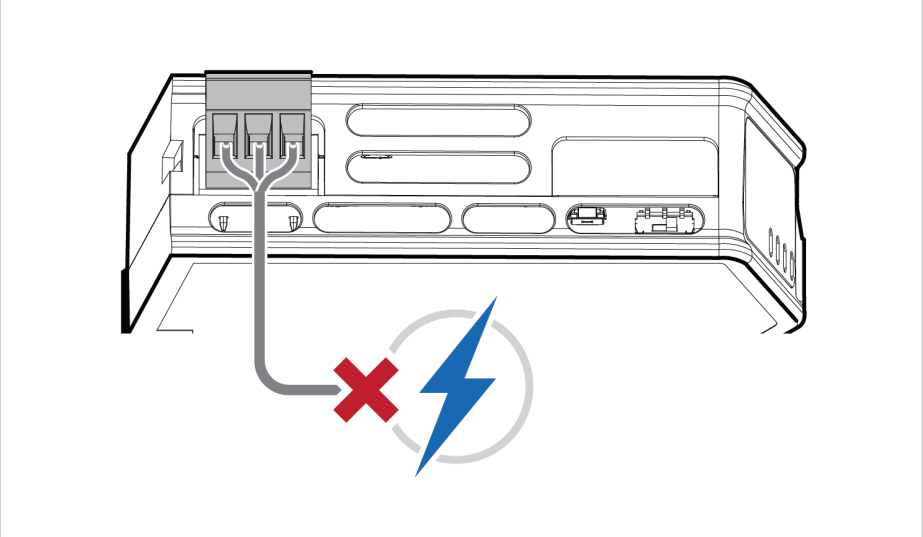


Figure 46. Disconnect power

2. Reconnect the Communicator to power.

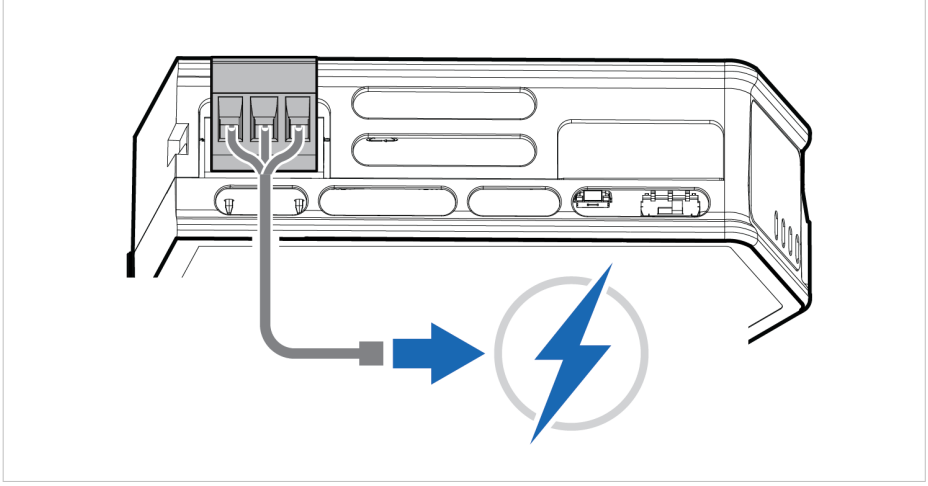


Figure 47. Reconnect power

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

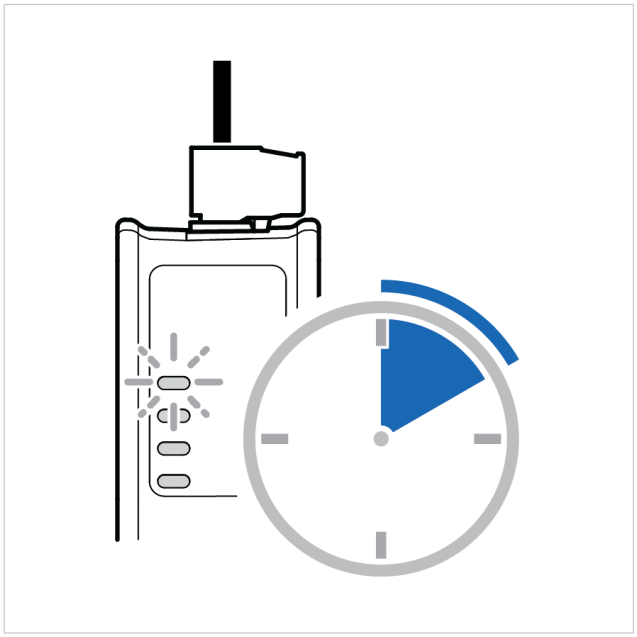


Figure 48. Firmware upgrade LED indication

Result

The Communicator recover and return to normal operation.

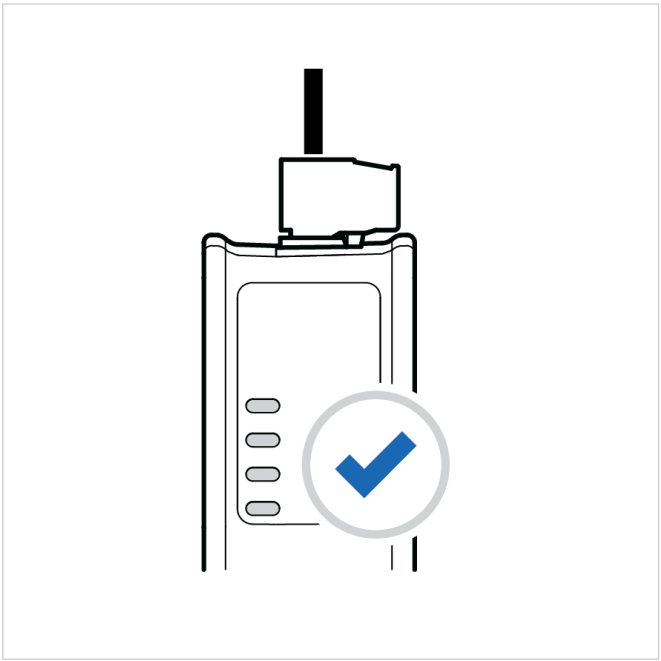


Figure 49. Recover and return to normal operation

To Do Next

To check LED status, refer to Communicator LED Indicators.

10.4. Support

10.4.1. Support Package

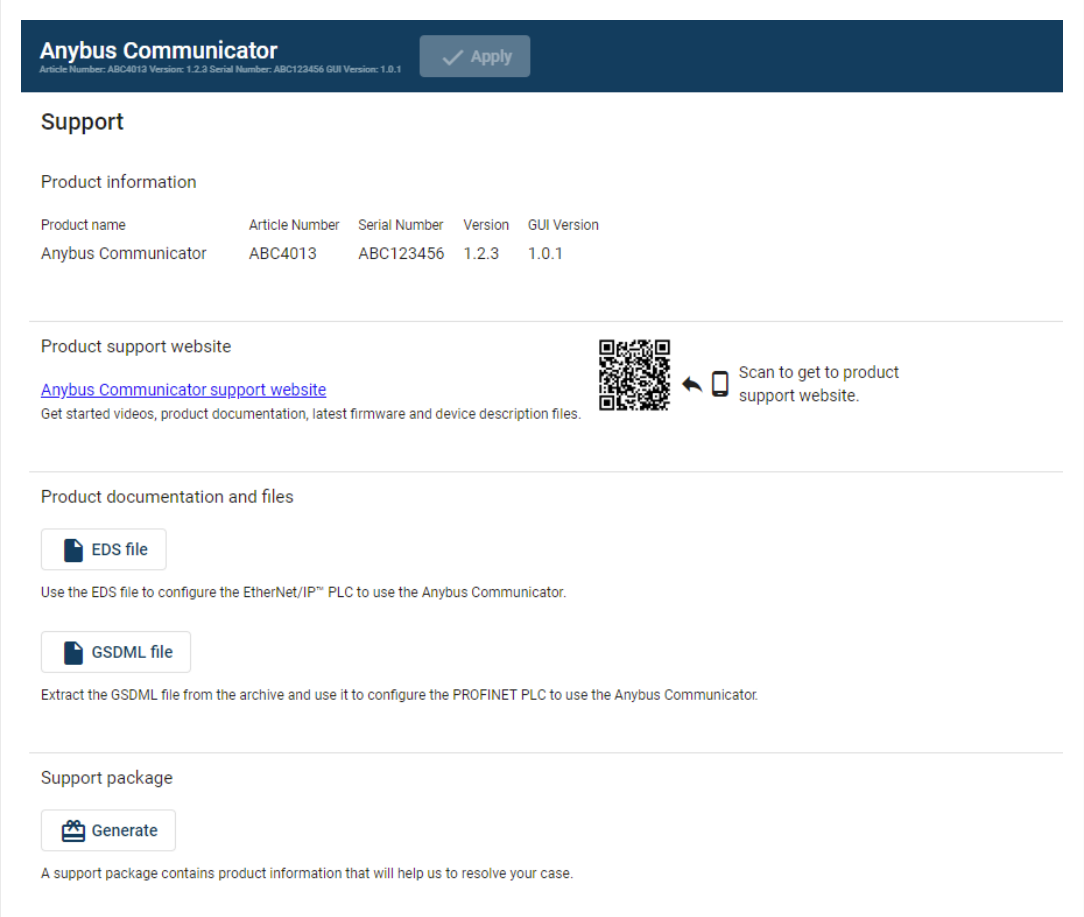


Figure 50. Support page example

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 are 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 Support page, click **Anybus support website**.
   You are redirected to the Anybus support website.

2. On the Anybus support website, create a support ticket and upload the support package.

11. Technical Data

For complete technical specifications and regulatory compliance information, please visit www.anybus.com.

11.1. Technical Specifications

Article identification	ABC4016
Configuration connector	RJ45
Upper connector	RJ45 x 2
Lower 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: 160 mA @ 24 V Max: 400 mA @ 12 V
Storage temperature	-40 to +85 °C
Operating temperature	-25 to +70 °C
Humidity	EN 600068-2-78: Damp heat, +40°C, 93% humidity for 4 days 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

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