ENGLISH

Anybus® Communicator™ - PROFINET to EtherCAT MDevice

USER MANUAL

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Important User Information

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Table of Contents

1. Preface 1
1.1. About This Document 1
1.2. Document Conventions 1
1.3. Trademarks 2
1.4. About the EtherCAT Terminology 2

2. Safety 3
2.1. Intended Use 3
2.2. General Safety 3

3. Cyber Security 4
3.1. General Cyber Security 4

4. Preparation 5
4.1. Cabling 5
4.2. Mechanical Tools and Equipment 5
4.3. System Requirements 5
4.3.1. Supported Operating Systems 5
4.3.2. Supported Web Browsers 5
4.4. HMS Software Applications 5
4.5. Third-Party Software Applications 5
4.6. Software License Information 6
4.7. Support and Resources 6

5. About Anybus Communicator 7
5.1. EtherCAT MDevice Communication 7
5.1.1. EtherCAT MDevice Building Blocks 7
5.2. How the Communication Works 9
5.3. How the Data Exchange Works 11
5.4. Data Integrity 11

6. Installation 12
6.1. External Parts 12
6.2. DIN Rail Mounting 13
6.3. Connect to EtherCAT Network 14
6.4. Connect to PROFINET Network 15
6.5. Connect to Power 16
6.6. Security Switch 17
6.7. Lock the Cables 19
6.8. DIN Rail Demount 20

7. Communicator Configuration 22
7.1. Connect the Communicator 22
7.2. Access the Built-In Web Interface From HMS IPconfig 23
7.3. Access the Built-In Web Interface From a Web Browser 25
7.4. Communicator Built-In Web Interface Overview 26
7.5. EtherCAT MDevice Settings 27
7.5.1. Cycle Time Settings 27
7.5.2. EtherCAT MDevice Scan 28
7.5.3. Node Properties 29
7.5.4. Node Order 29
7.6. High Level Network Settings 30

7.6.1. To Use DHCP Server 30
7.6.2. To Configure IP Settings Manually 31
7.6.3. Naming the Host 32
7.6.4. PROFINET Station Name Settings 33
7.7. I/O Data Map 34
7.7.1. Endian Swap 35
7.7.2. Live List 36
7.7.3. Data Exchange Control 37
7.8. Configuration Notes 38
7.8.1. Add Configuration Note 38
7.8.2. View and Edit Configuration Notes 40
7.9. Apply Configuration 41
7.10. To Use an Existing Configuration 42

8. PLC Configuration 43
8.1. Export Product GSDML File 43
8.2. Configure the PROFINET Connection 43

9. Verify Operation 44
9.1. Communicator Status Monitor 44
9.2. Communicator LED Indicators 46
9.3. EtherCAT LED Indicators 47

10. Maintenance 48
10.1. Configuration File Handling 48
10.1.1. Export Configuration 48
10.1.2. Import Configuration 49
10.2. Clear and Revert Configuration 50
10.3. Firmware Management 51
10.3.1. View the Firmware Version 51
10.3.2. Firmware and Configuration Compatibility 51
10.3.3. Firmware File Validation 51
10.3.4. Update Firmware 52
10.4. Change Language 53

11. Troubleshooting 54
11.1. Diagnostics 54
11.1.1. I/O Data 54
11.1.2. Event Log 55
11.1.3. LED Status 56
11.2. Reset to Factory Settings 57
11.3. Firmware Upgrade Error Management 59
11.4. Support 61
11.4.1. Support Package 61

12. Technical Data 62
12.1. Technical Specifications 62

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.

1.4. About the EtherCAT Terminology

The EtherCAT® Technology Group has changed the terminology for Master and Slave.

Master is called **MainDevice**

Abbreviated: **MDevice**

Slave is called **SubordinateDevice**

Abbreviated: **SubDevice**

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. Cyber Security

3.1. General Cyber Security

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.

4. Preparation

4.1. Cabling

Have the following cables available:

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

4.2. Mechanical Tools and Equipment

Have the following tools available:

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

4.3. System Requirements

4.3.1. 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
Windows 11 64-bit	Windows 11 64-bit

4.3.2. Supported Web Browsers

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

- Google Chrome
- Microsoft Edge
- Mozilla Firefox

4.4. HMS Software Applications

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

HMS IPconfig

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.

4.5. 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.

4.6. 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.

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.

4.7. 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.

5. About Anybus Communicator

5.1. EtherCAT MDevice Communication

5.1.1. EtherCAT MDevice Building Blocks

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

Node

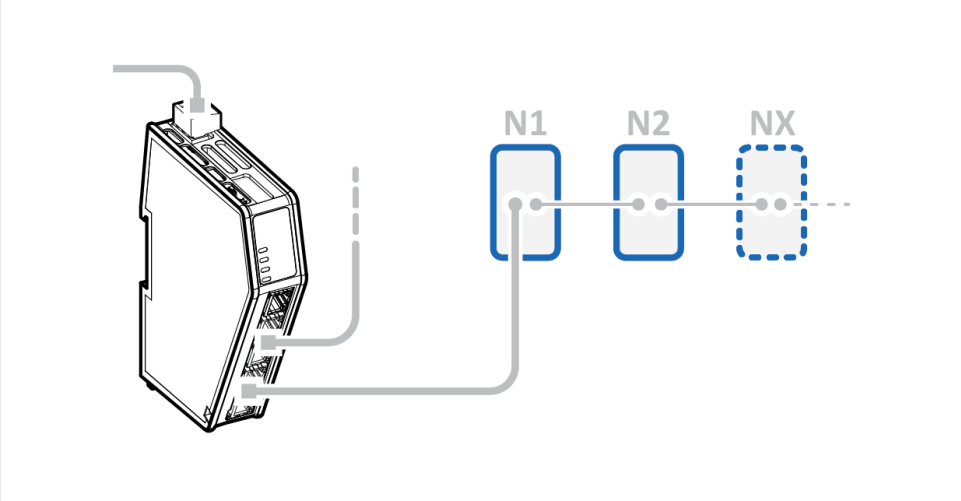


Figure 1. Nodes on a EtherCAT subnetwork

A node represents a single EtherCAT SubDevice on the EtherCAT subnetwork.

Each node can be associated with a number of process data objects.

Nodes and Process Data Objects

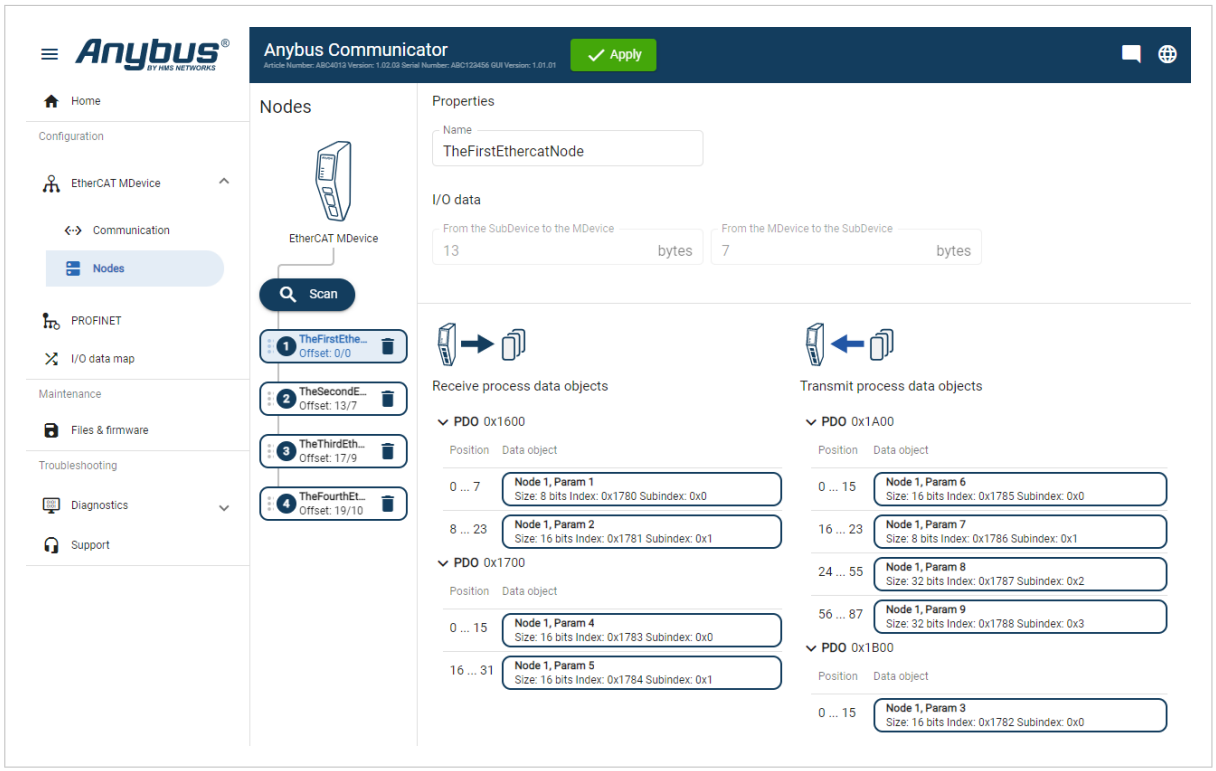


Figure 2. Node with Process data objects

To define how data is to be sent / received, the process data object parameters need to be configured in the EtherCAT MDevice.

Using **Scan** of the EtherCAT subnetwork in the Communicator built-in web interface, the EtherCAT network is scanned and the node(s) configuration with process data objects are uploaded to the Communicator.

5.2. How the Communication Works

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

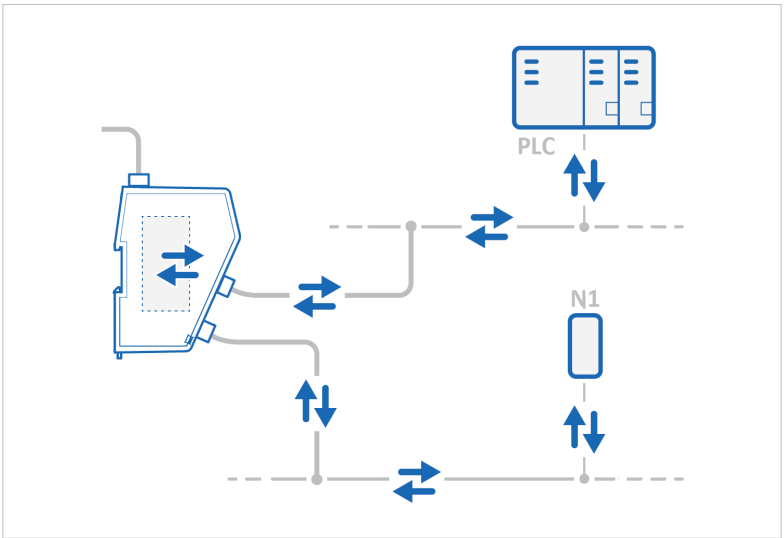


Figure 3. Process data traffic overview

For example:

- The client device can be a PLC or a PC.
- The node(s) can be a sensor, scanner, industrial robot or sniffer.

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

Input Process Data

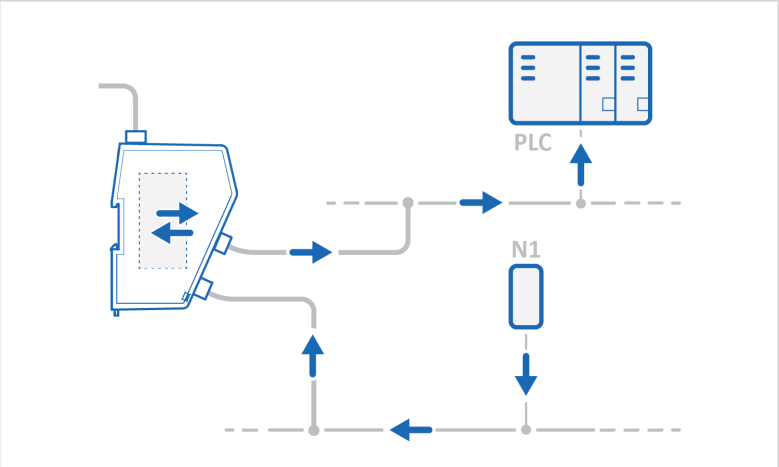


Figure 4. Process data traffic from nodes to client

Receive process data from the EtherCAT subnetwork nodes and make the process data available on the PROFINET interface and for the high level network client device.

The process data is specified when the EtherCAT network is scanned and the nodes(s) configuration is uploaded to the Communicator.

Output Process Data

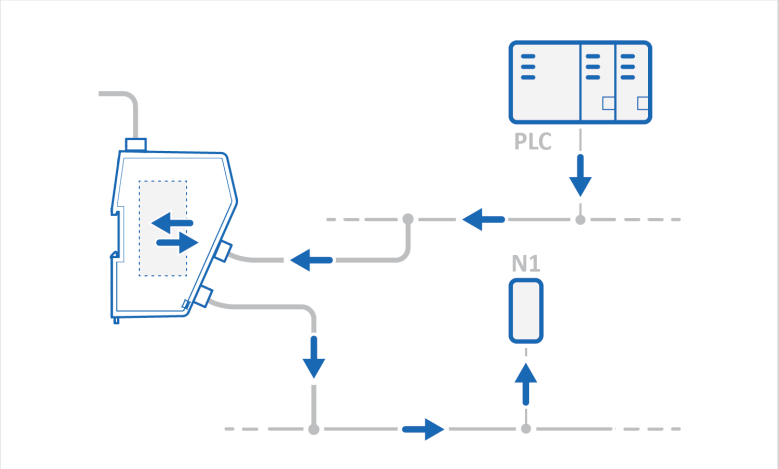


Figure 5. Process data traffic from client to nodes

Transmit process data from the high level network client device and make it available on the EtherCAT interface and for the EtherCAT subnetwork node(s) included in the configuration.

5.3. How the Data Exchange Works

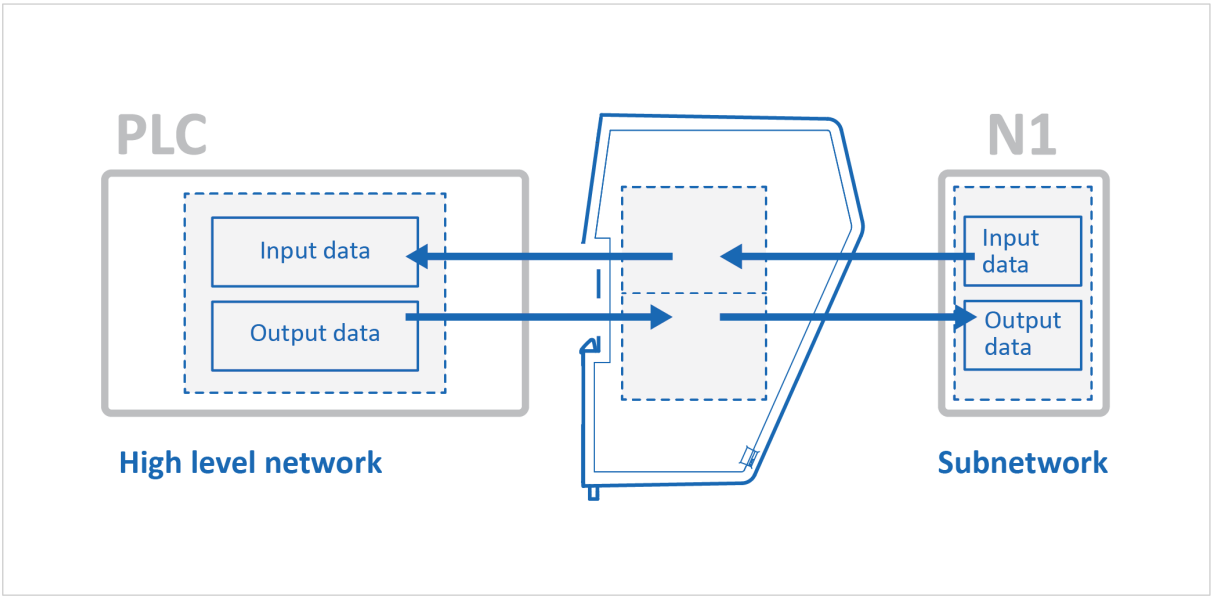


Figure 6. The Communicator internal memory areas

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

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

The same memory locations are exchanged on the EtherCAT subnetwork.

The memory locations are specified when you scan the EtherCAT network and the node(s) configuration is uploaded to 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.

5.4. Data Integrity

A snapshot of the process data buffer between the EtherCAT Client and the MDevice interface is used during the operation of executing all the process data objects within one cycle.

When the cycle is completed, the process data available on the MDevice and SubDevice(s) interfaces is updated and a new snapshot is created for the next cycle.

6. Installation

6.1. External Parts

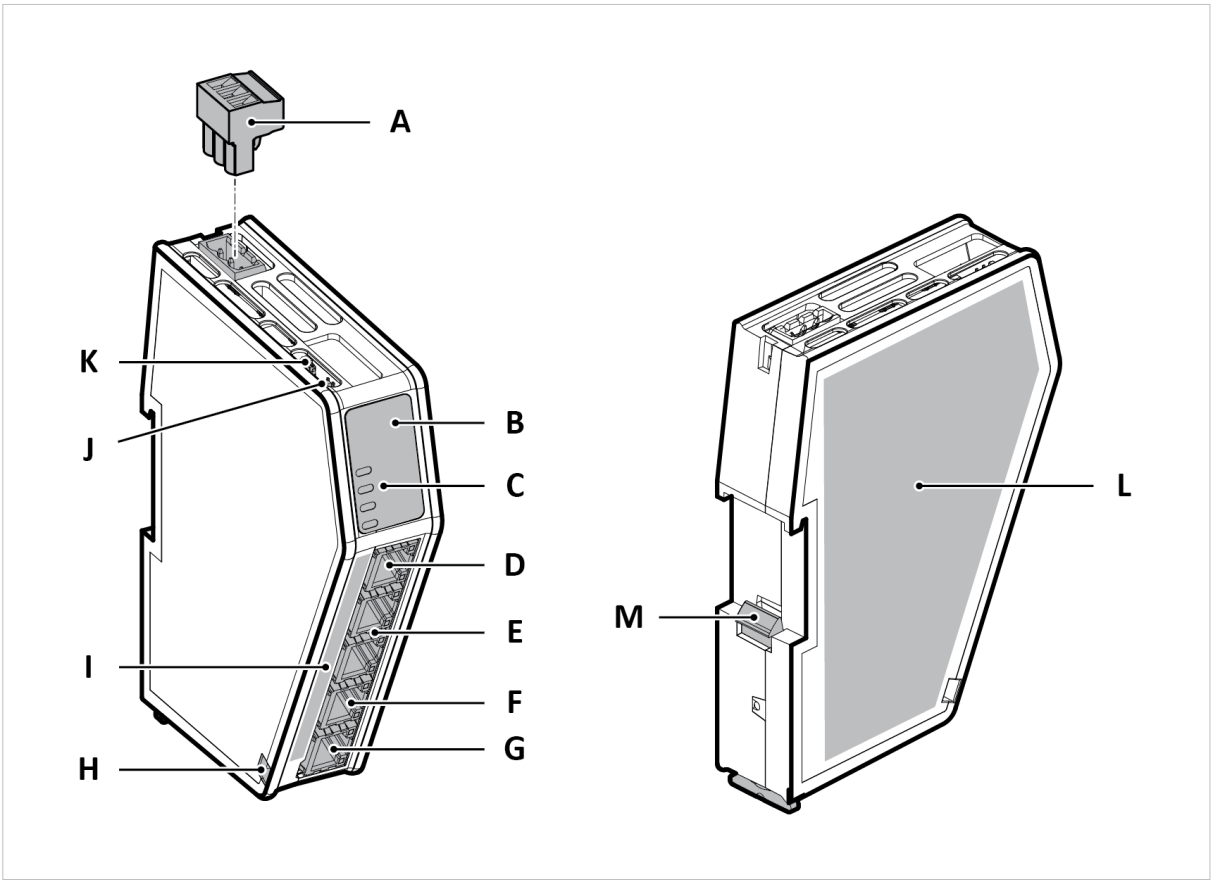


Figure 7. External parts

A. Power connector
B. Label with LED designation
C. Status LEDs
D. Configuration port
E. PROFINET port x 2
F. EtherCAT (X3.1) port
G. EtherCAT (X3.2) port
Reserved for future use, do not use
H. Cable tie mount
I. Laser engraved connectors designation
J. Security switch
K. Factory reset button
L. Laser engraved label with product information
M. DIN rail locking mechanism

6.2. 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.

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

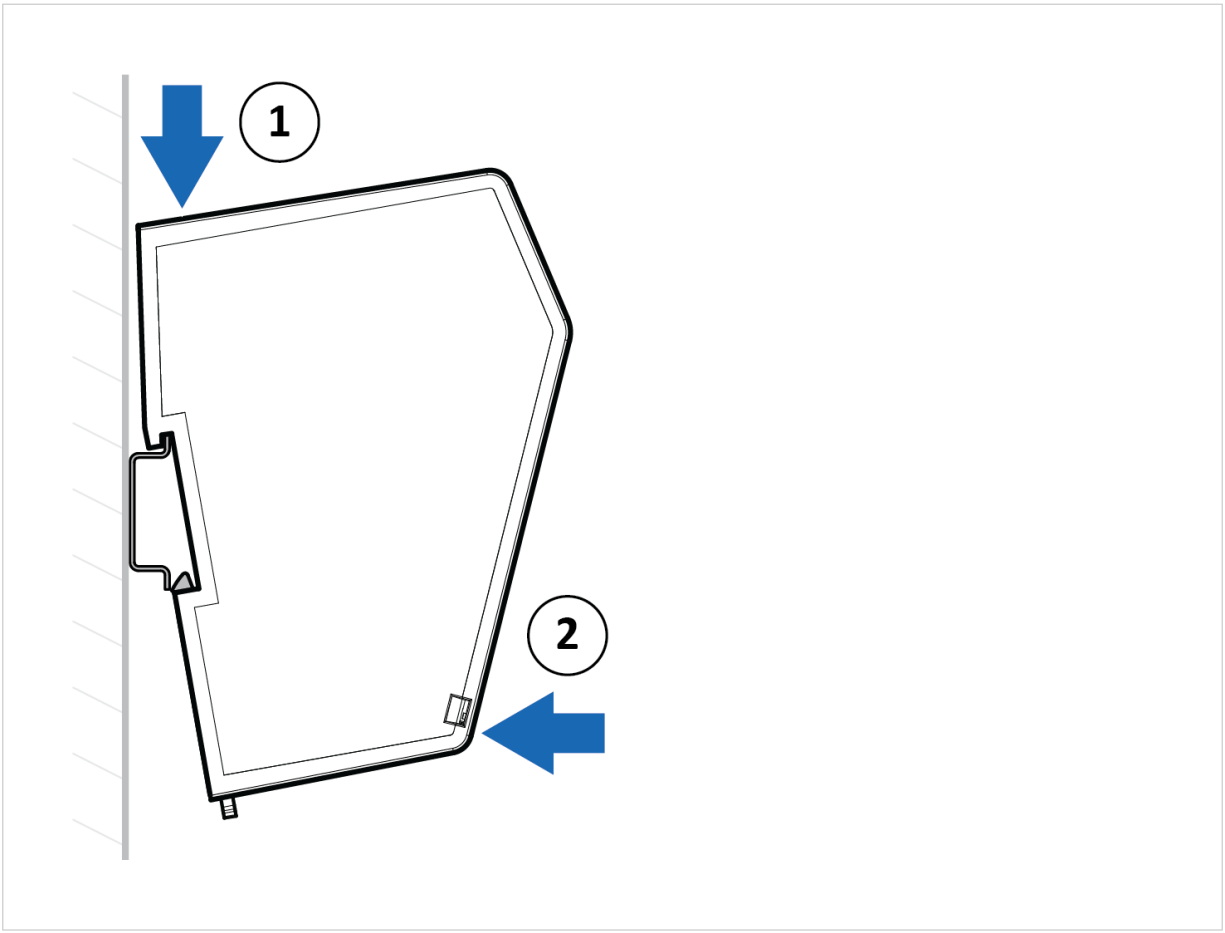


Figure 8. Attach the Communicator on the DIN rail

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.

6.3. Connect to EtherCAT Network

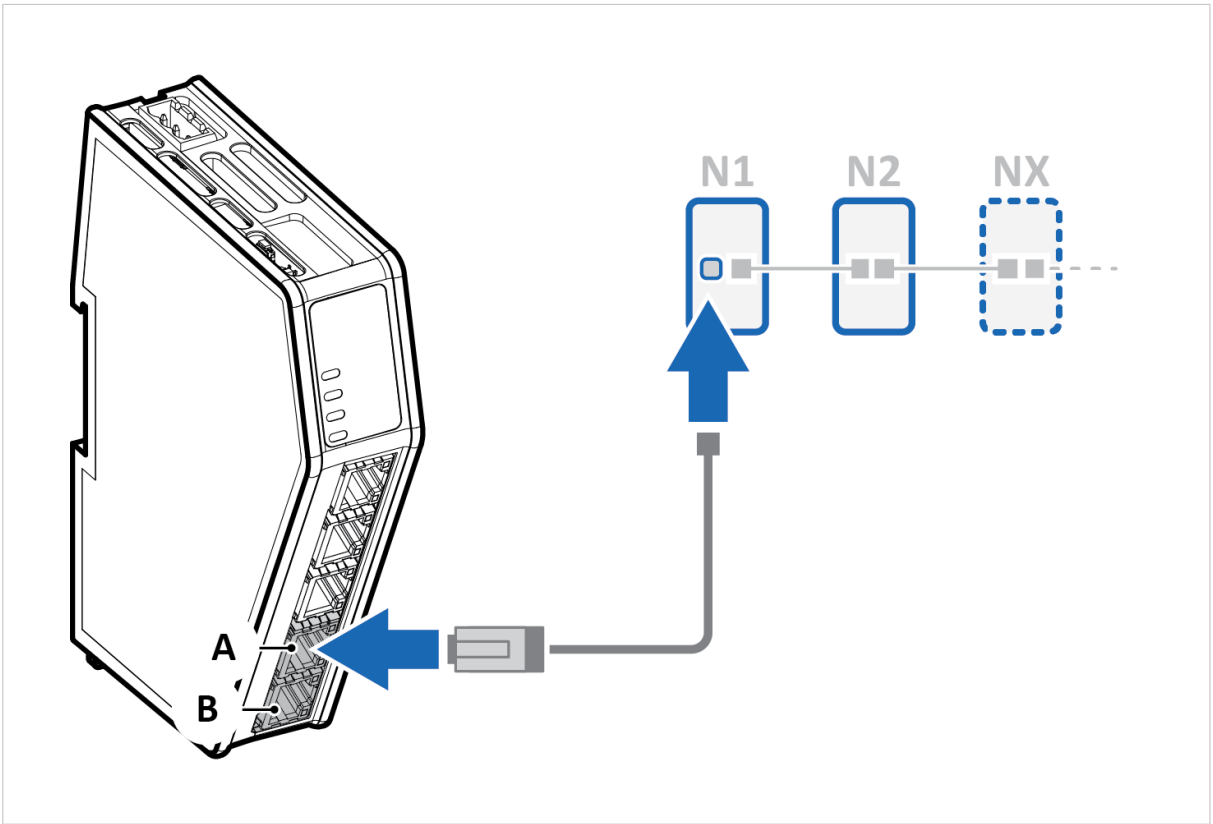
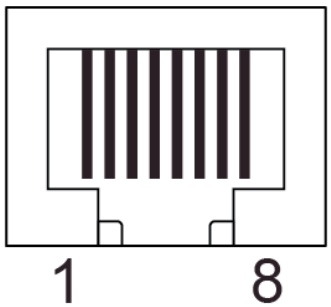


Figure 9. Connect to EtherCAT network

1. Connect the Communicator upper EtherCAT port X3.1 (A) to your EtherCAT network.

> **NOTE**
> The Communicator lower EtherCAT port X3.2 (B) is reserved for future use, do not use.

EtherCAT 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 PROFINET network and to power.

Check LED status, refer to Communicator LED Indicators.

6.4. Connect to PROFINET Network

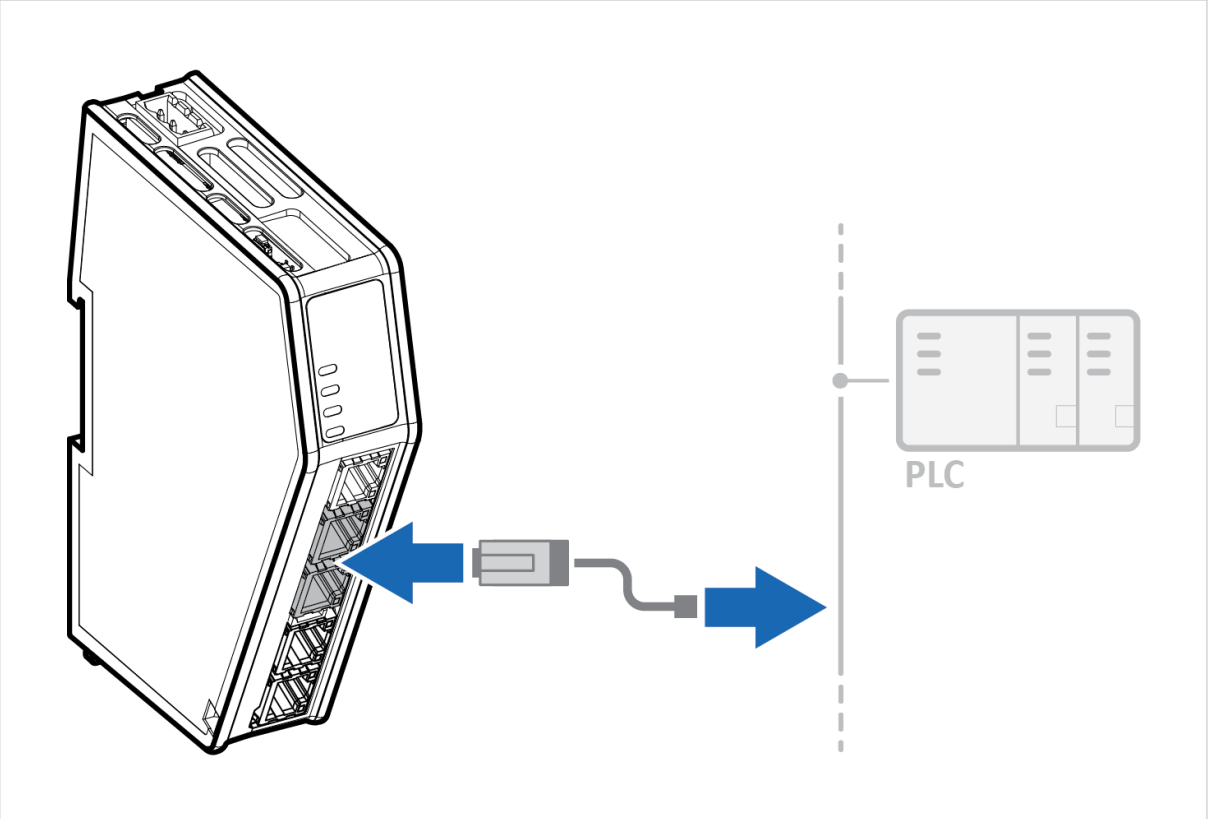
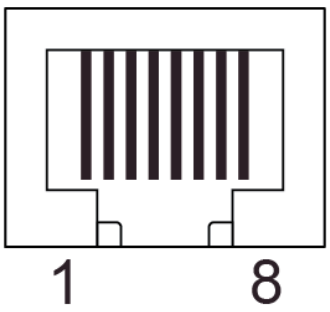


Figure 10. Connect to PROFINET network

1. Connect the Communicator to your PROFINET network.

EtherCAT 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.

6.5. 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.

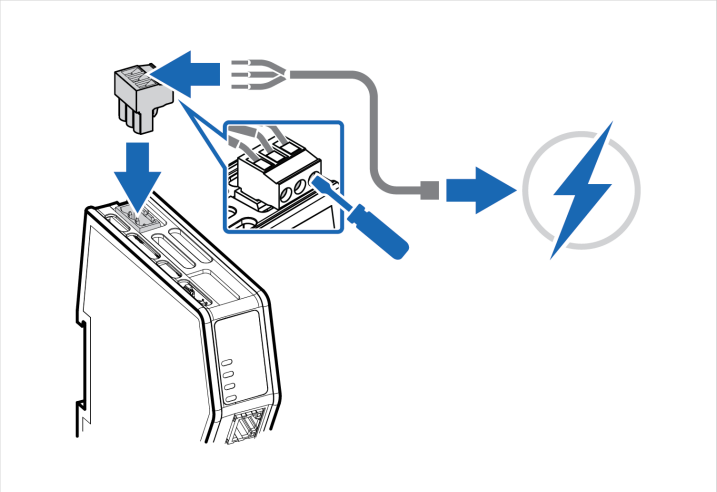
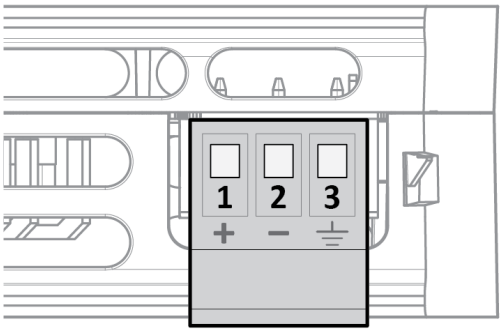


Figure 11. Connect to power

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

Connect the Communicator to the PROFINET and EtherCAT network.

Check LED status, refer to Communicator LED Indicators.

6.6. 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 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

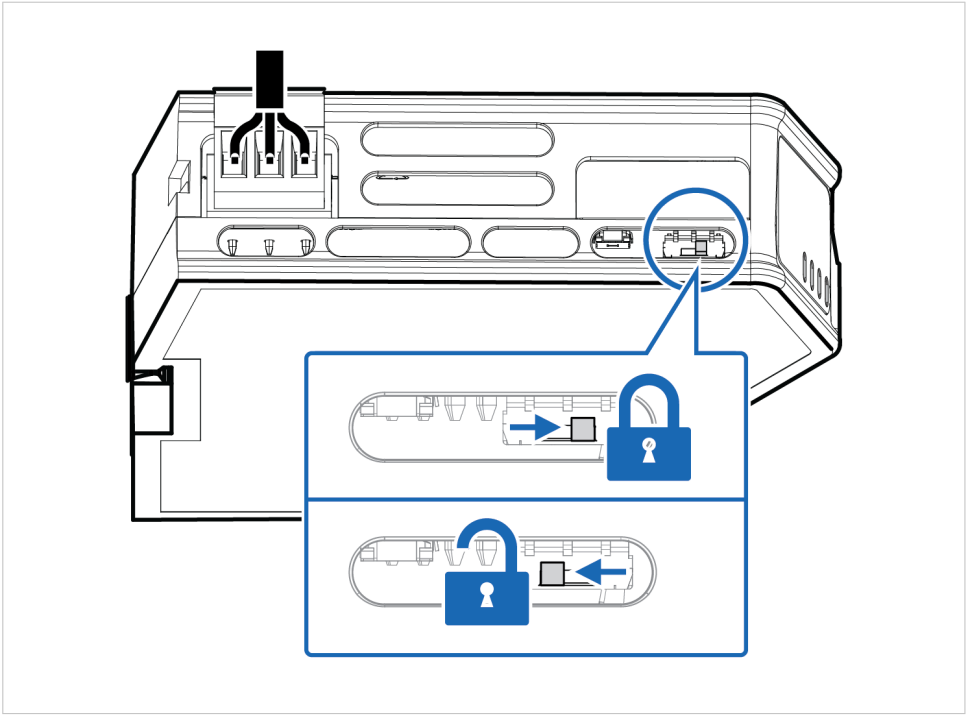


Figure 12. Security switch in locked and unlocked position

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

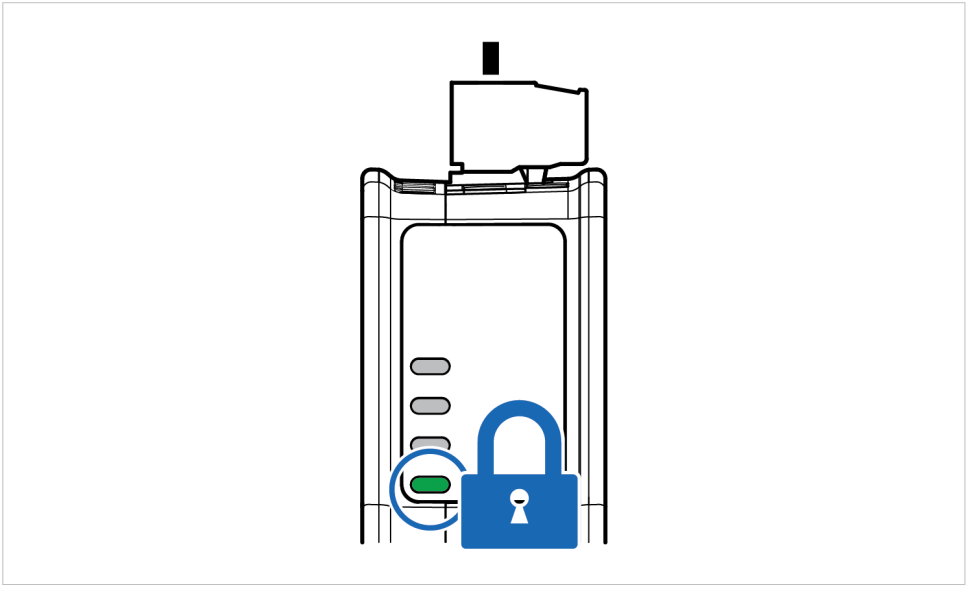


Figure 13. Security switch locked status LED

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.

6.7. Lock the Cables

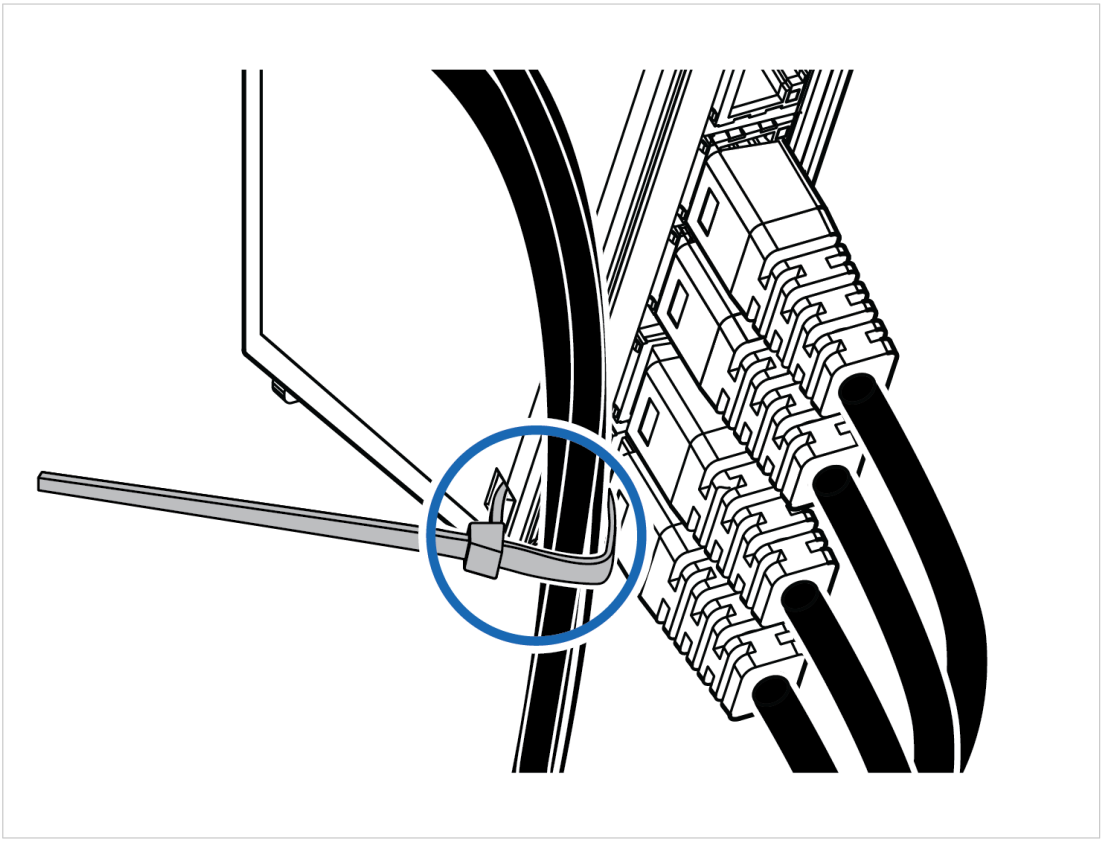


Figure 14. Lock the cables

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

6.8. 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.

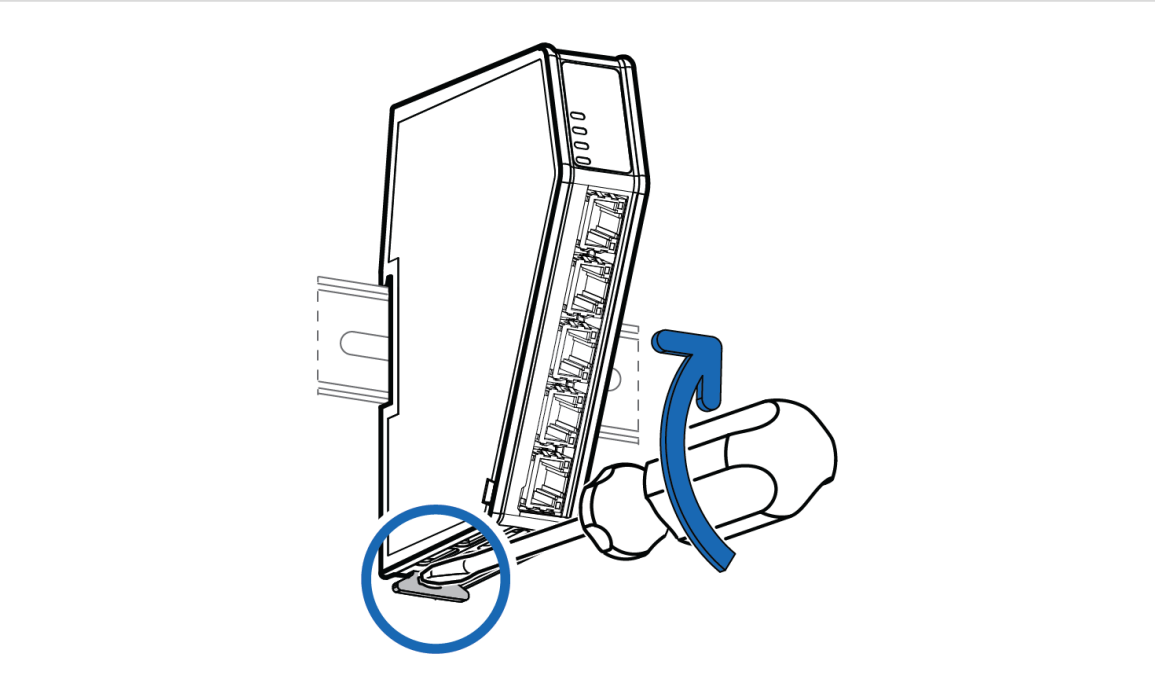


Figure 15. Unlock the Communicator

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

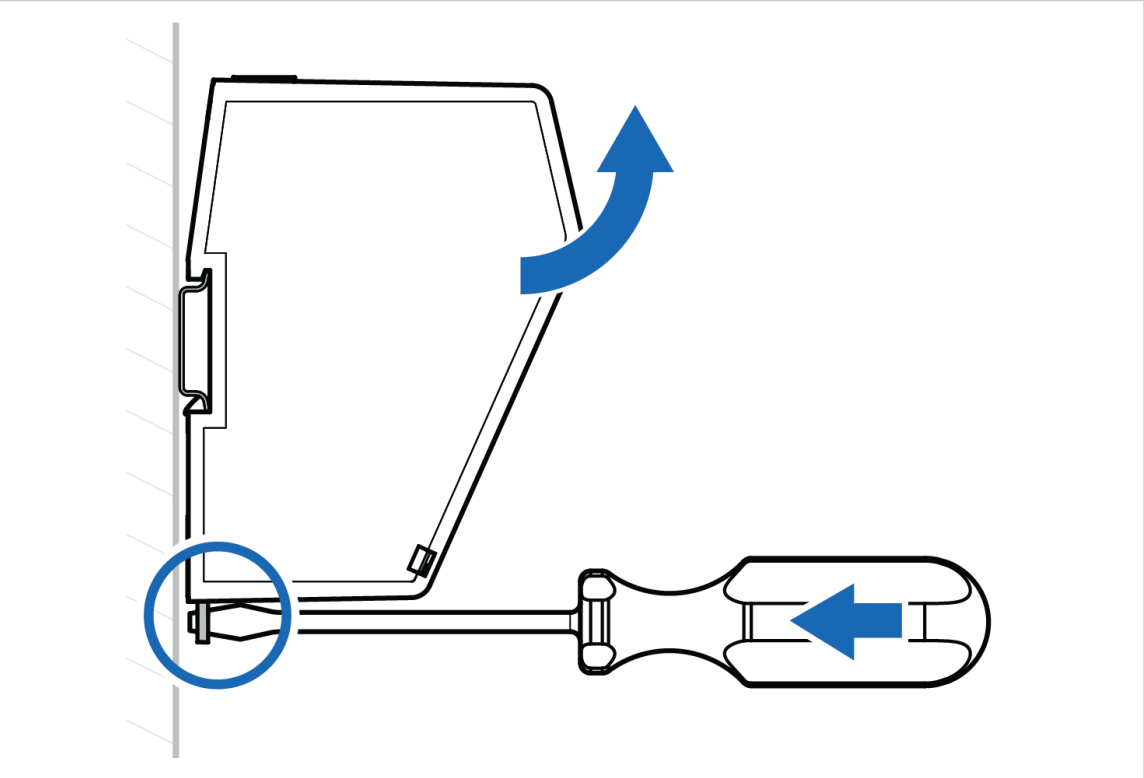


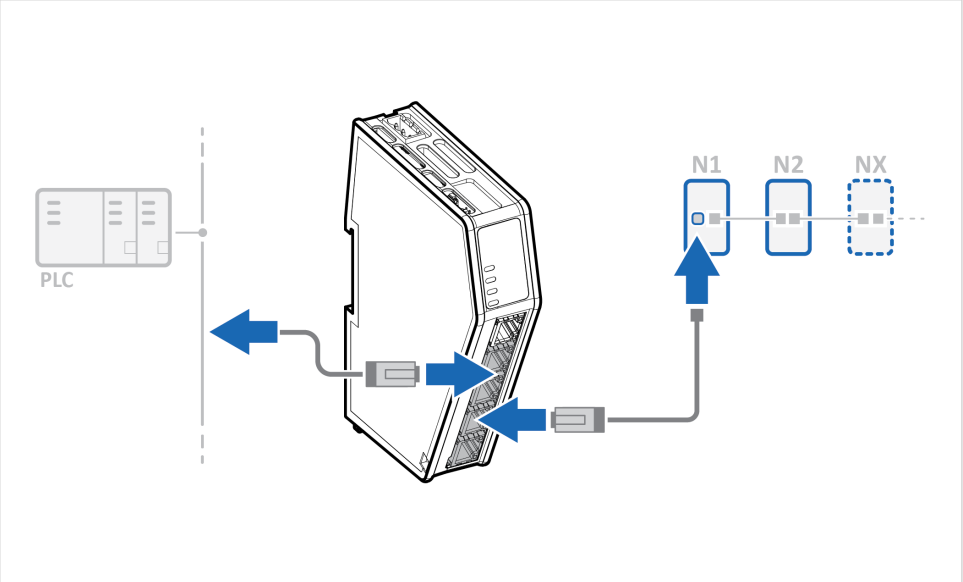
Figure 16. Unhook the Communicator

7. Communicator Configuration

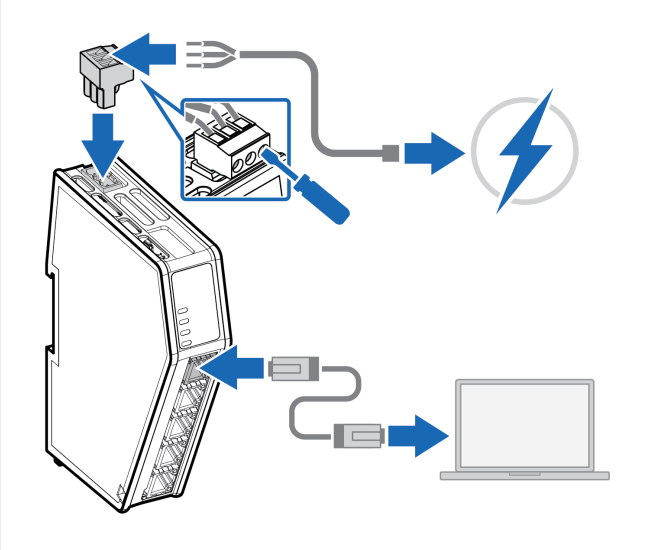
7.1. Connect the Communicator

Procedure

Connect to EtherCAT network and PROFINET network



Connect to PC and Power



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

7.2. 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.

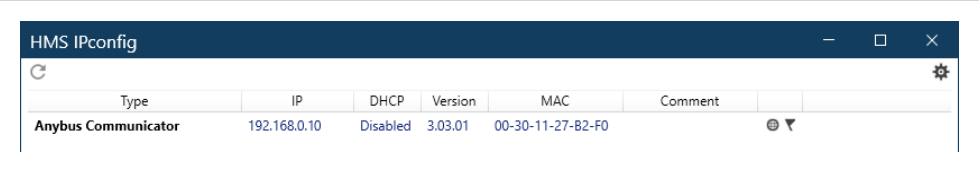
NOTE
To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.

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

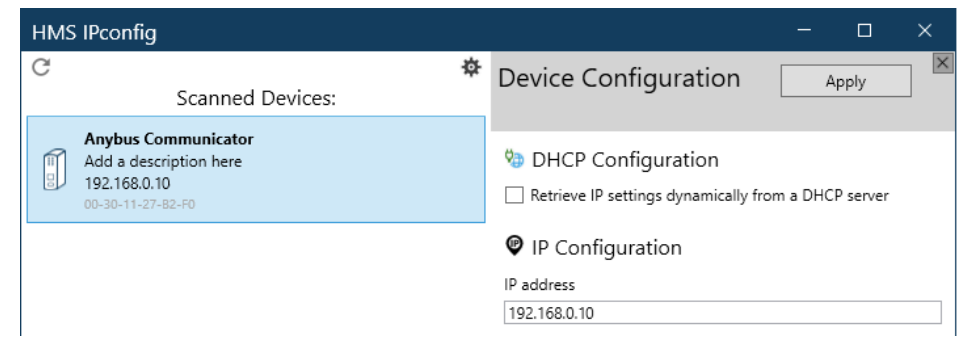
Procedure

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

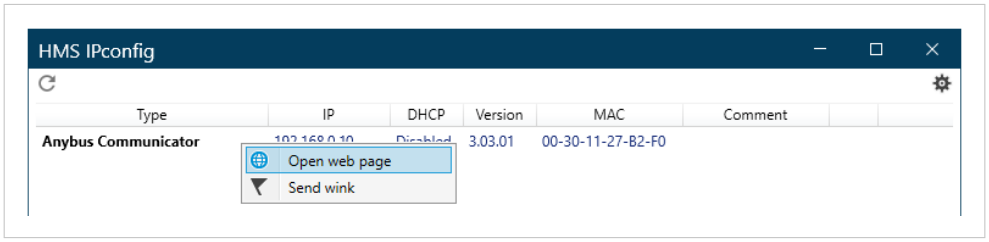


- HMS IPconfig automatically starts scanning for compatible and active HMS devices.
- Found HMS devices are added to the device list.

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.

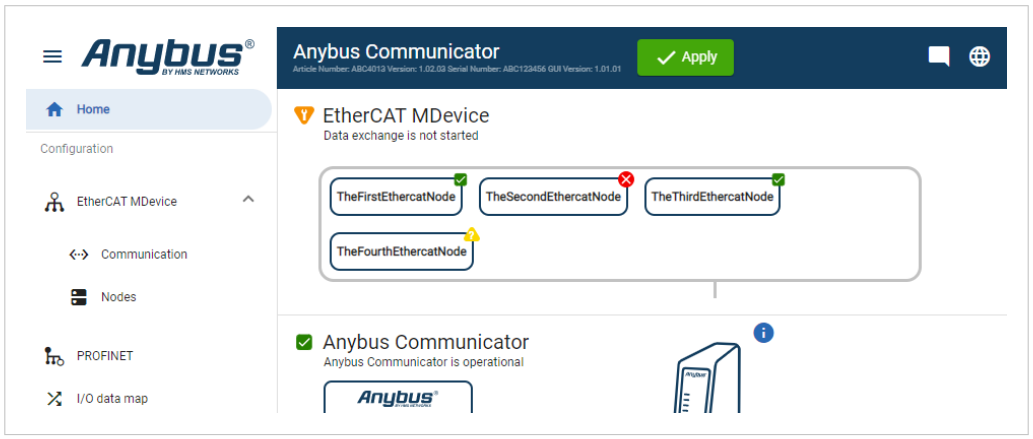


5. To open the **Open web page** built-in web interface, click Communicator.



Result

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



7.3. 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.

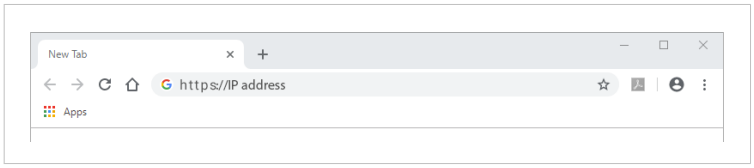
NOTE
To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your Firewall. This applies to any Firewall between the web browser and the gateway.

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

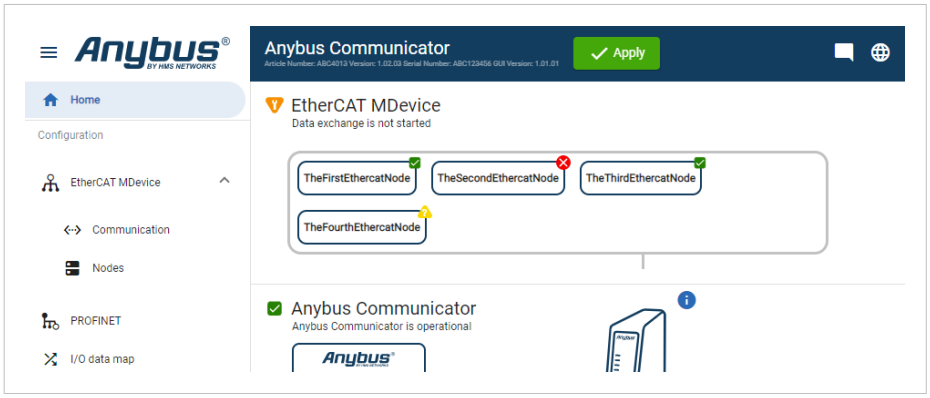
Procedure

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**.



7.4. Communicator Built-In Web Interface Overview

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

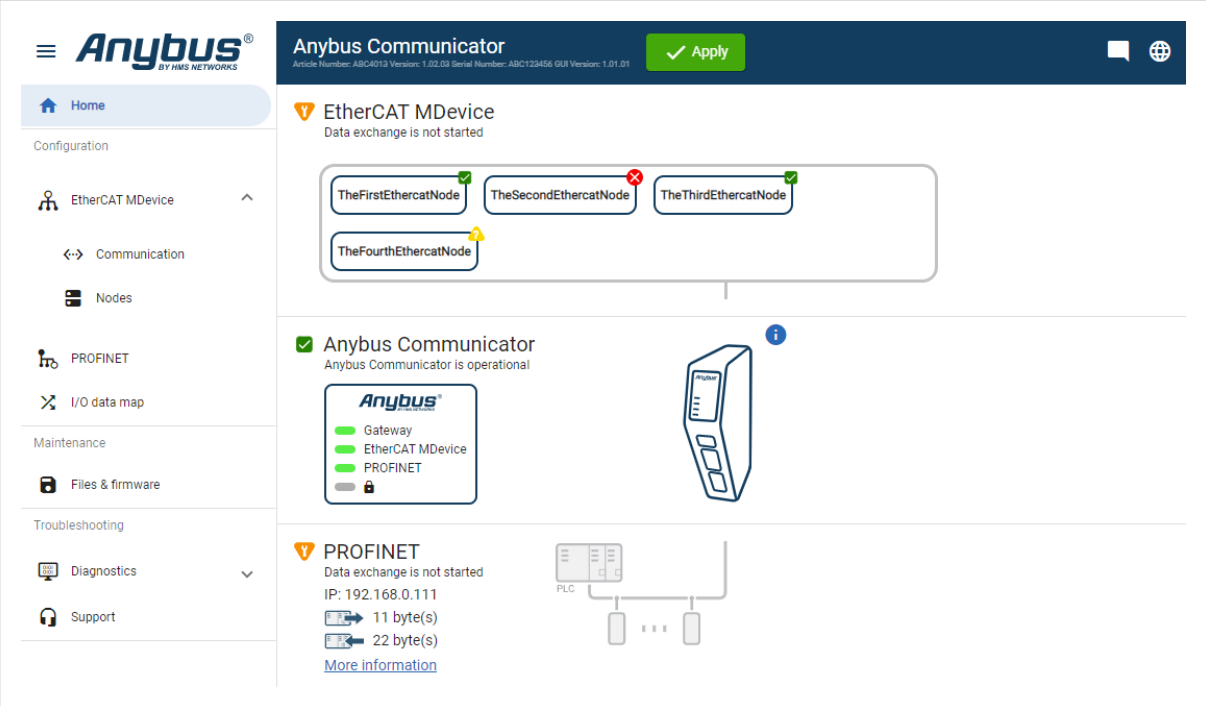


Figure 17. The Communicator built-in web interface Home page

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.
PROFINET	Select Cycle time. Scan the EtherCAT MDevice and upload the configuration to the Communicator,
EtherCAT	Configure the network settings for the EtherCAT network.
I/O data map	View the commands mapped to the Communicator internal memory area.
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.

7.5. EtherCAT MDevice Settings

7.5.1. Cycle Time Settings

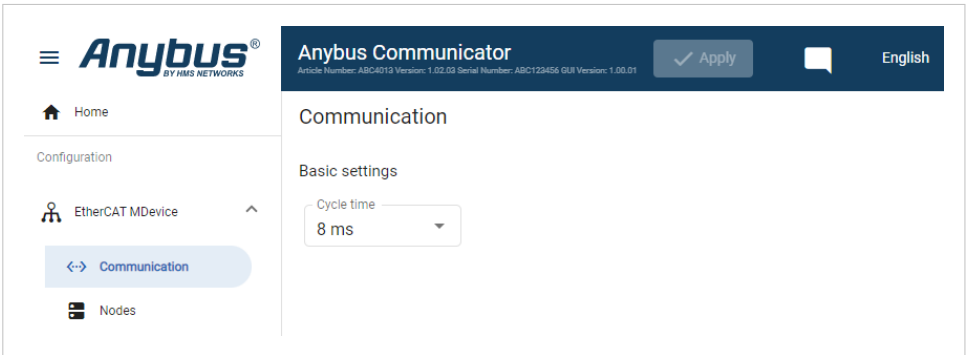


Figure 18. Communication page, Cycle time

Specify how often data is exchanged.

A lower cycle time results in reduced latency and jitter but increased network load.

- The default Cycle time is 8 ms.
- Minimum cycle time: 1 ms
- Maximum cycle time: 128 ms

7.5.2. EtherCAT MDevice Scan

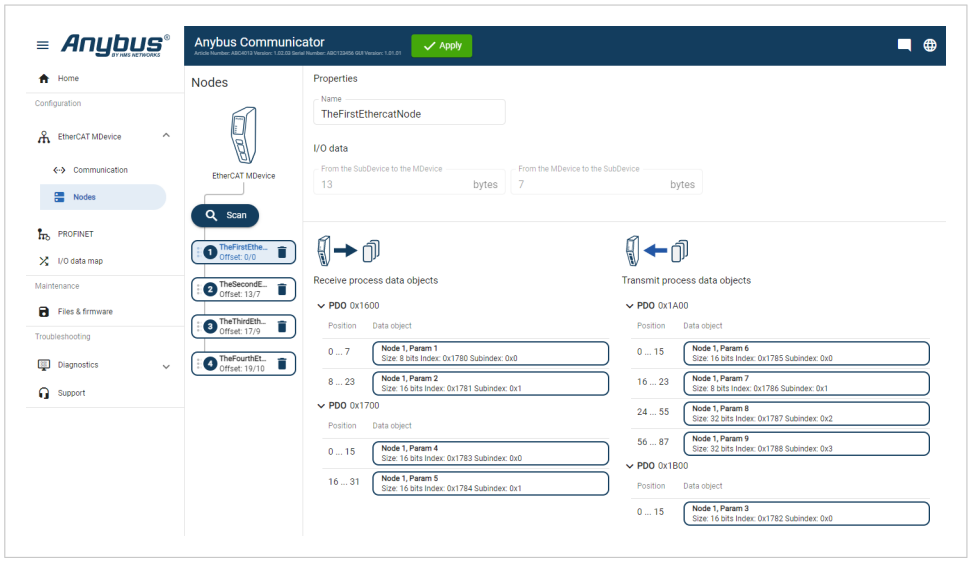


Figure 19. EtherCAT MDevice page, Scan to import nodes

Procedure

1. To import the EtherCAT MDevice nodes, click **Scan**.
2. The **Select nodes** window appears. By default, all nodes are selected.
   - To import all the nodes, click **Select**.
   - To select individual nodes: Uncheck the **Select all** checkbox. Then select the nodes to be imported and click **Select**.

Figure 20. List with all nodes selected

The nodes are imported and listed in the **Nodes** pane.

To view the **Receive process data objects** and **Transmit process data objects** for a specific node, select the node in the list.

7.5.3. Node Properties

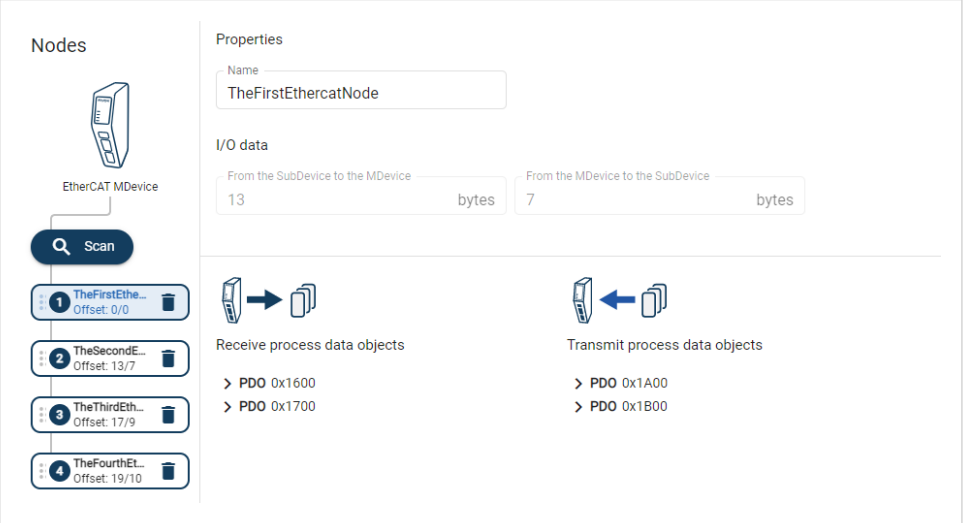


Figure 21. EtherCAT MDevice page, Properties

To view the process data objects and the properties for a specific node, select the node in the list.

The I/O data **From the SubDevice to the MDevice** and **From the MDevice to the SubDevice** are displayed in the **Properties** pane.

To give a node a specific name: Select the node and enter the name in the **Name** field.

7.5.4. Node Order

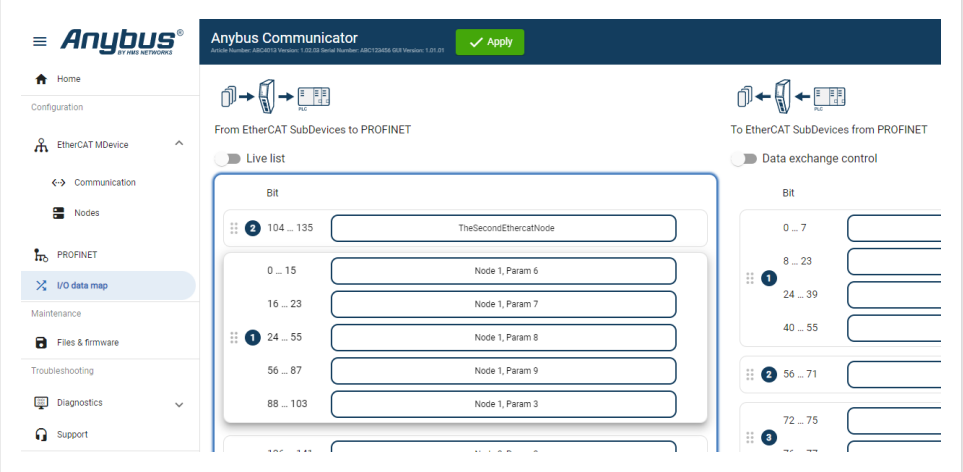


Figure 22. I/O data map page, Properties

Navigate to the **I/O data map** page.

Changing the order of the nodes also changes how they map their data to the client device (PLC or PC) on the subnetwork.

To change the order of the nodes: Drag and drop the node in the list to change the order.

7.6. High Level Network Settings

Configure the PROFINET network settings.

7.6.1. To Use DHCP Server

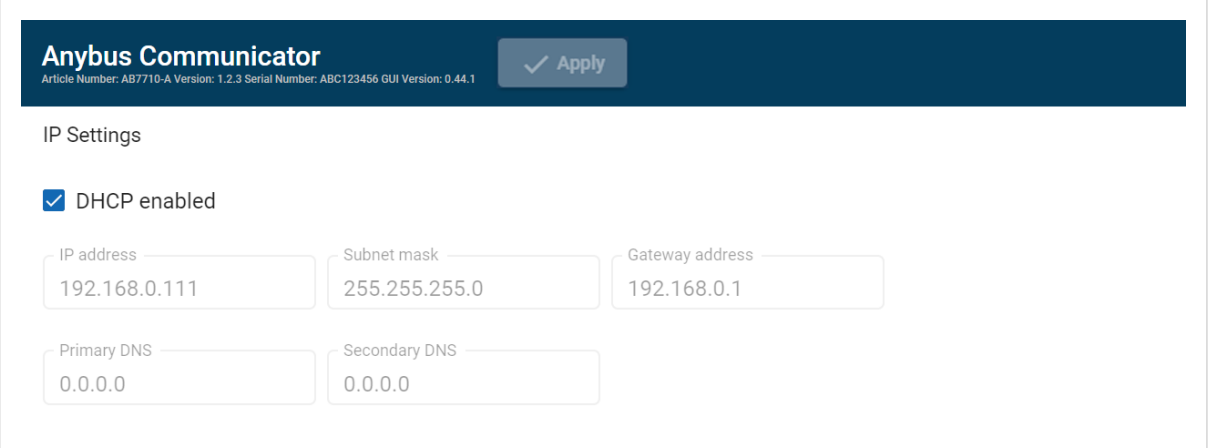


Figure 23. IP Settings, DHCP enabled

By default, DHCP is disabled.

Default Communicator IP Settings

The Communicator comes with the following factory default IP settings:

Setting	Default value
DHCP	Off
IP address	192.168.0.10
Subnet mask	255.255.255.0
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.

7.6.2. To Configure IP Settings Manually

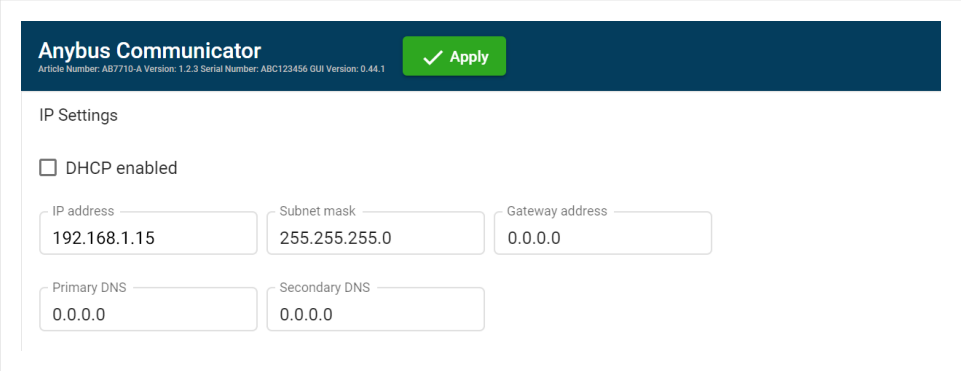


Figure 24. IP Settings, DCHP disabled

1. Ensure that the **DHCP enabled** checkbox is deselected.
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. 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.
Station name	To identify the Communicator in the PROFINETnetwork, enter a Station name. Maximum length is 240 characters. No symbol characters, punctuation characters, or whitespace are permitted. Write the Station name as one single word.

7.6.3. Naming the Host

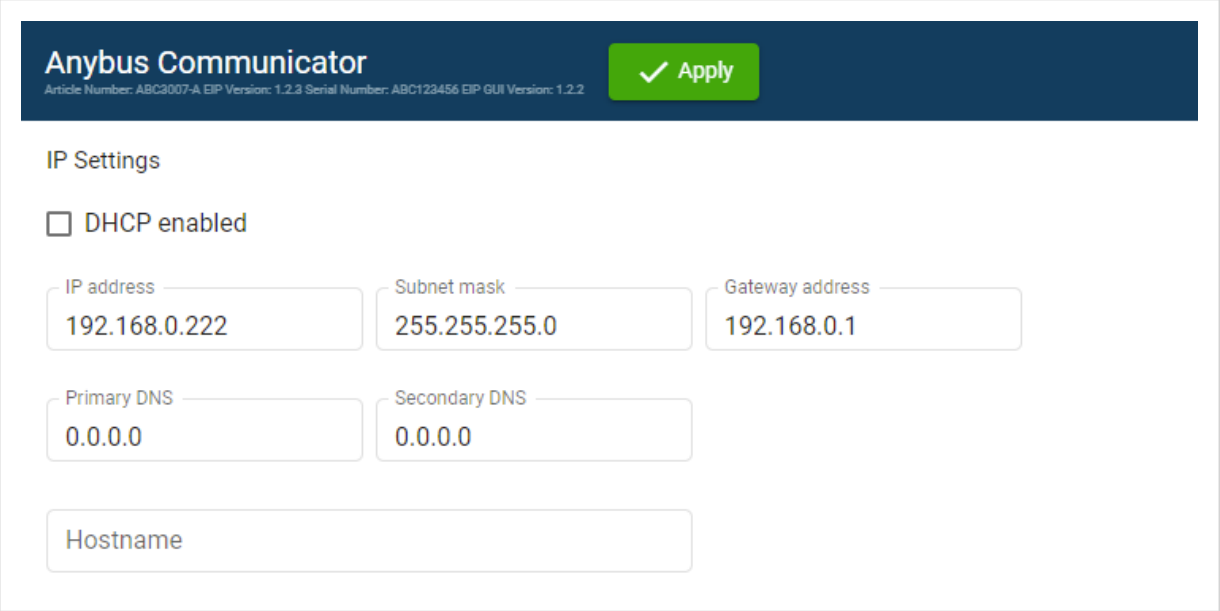


Figure 25. IP Settings Hostname

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.

7.6.4. PROFINET Station Name Settings

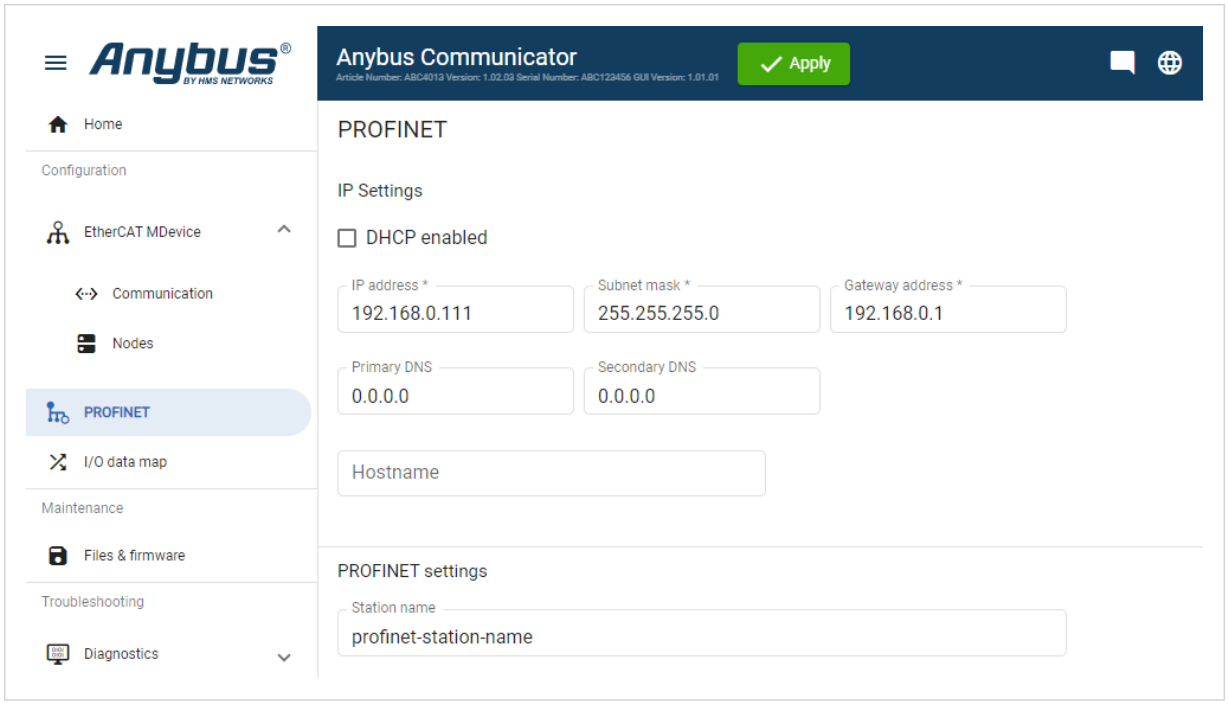


Figure 26. PROFINET page, Station name

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.

7.7. I/O Data Map

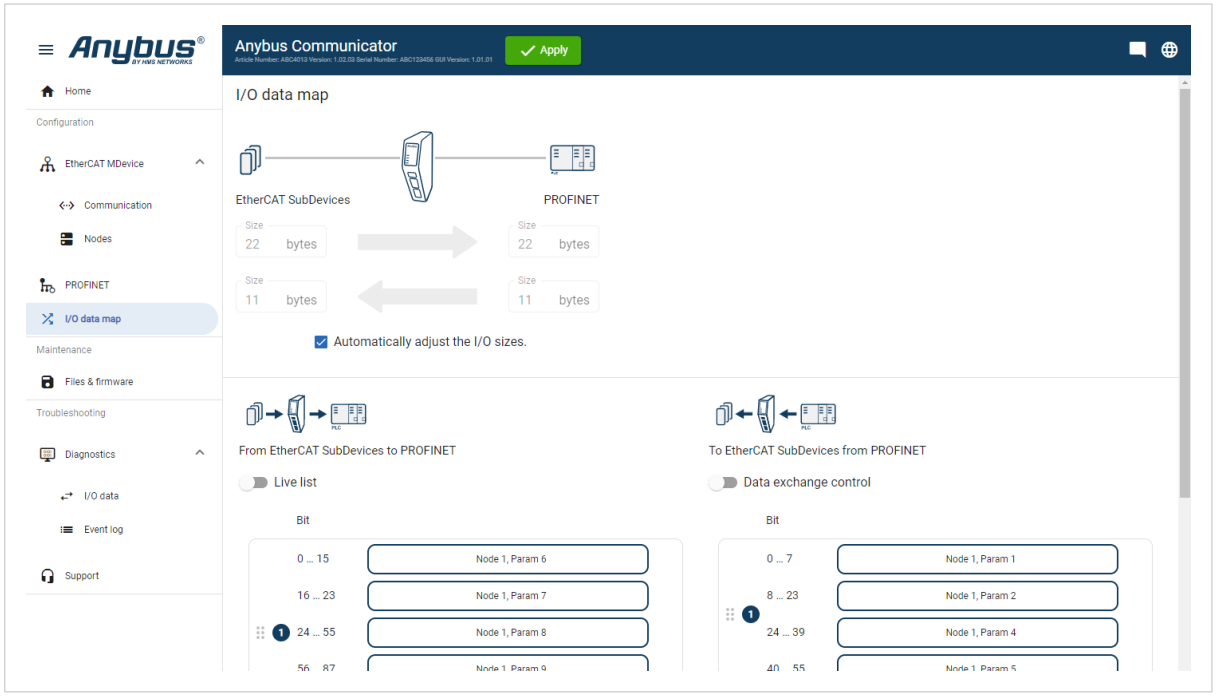


Figure 27. **I/O data map** page

On the **I/O data map** page the data communication between the EtherCAT and the PROFINET network is mapped.

The allocated I/O area is auto-generated based on the scanned **EtherCAT** network node(s) configuration and how the settings on the **PROFINET** page are configured.

There are two areas: **From EtherCAT SubDevices to PROFINET** and **To EtherCAT SubDevices 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 EtherCAT SubDevices.

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

7.7.1. Endian Swap

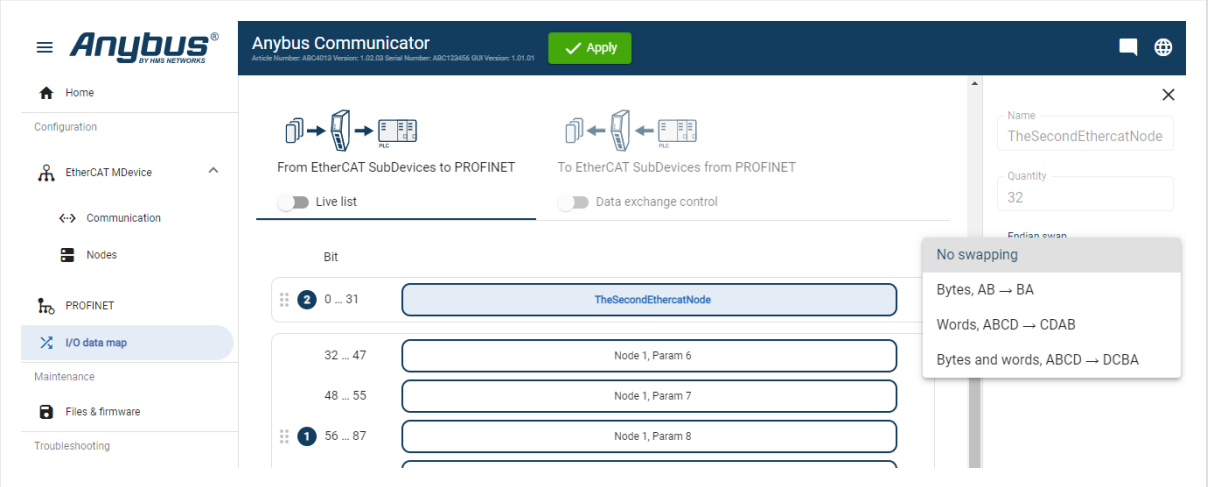


Figure 28. **I/O data map**, Endian swap

To change the byte order:

1. Navigate to the **I/O data map** page.
2. In the data map, select the object 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 No swapping is performed on the data.
Bytes	Swap 2 bytes A B becomes B A
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

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

7.7.2. Live List

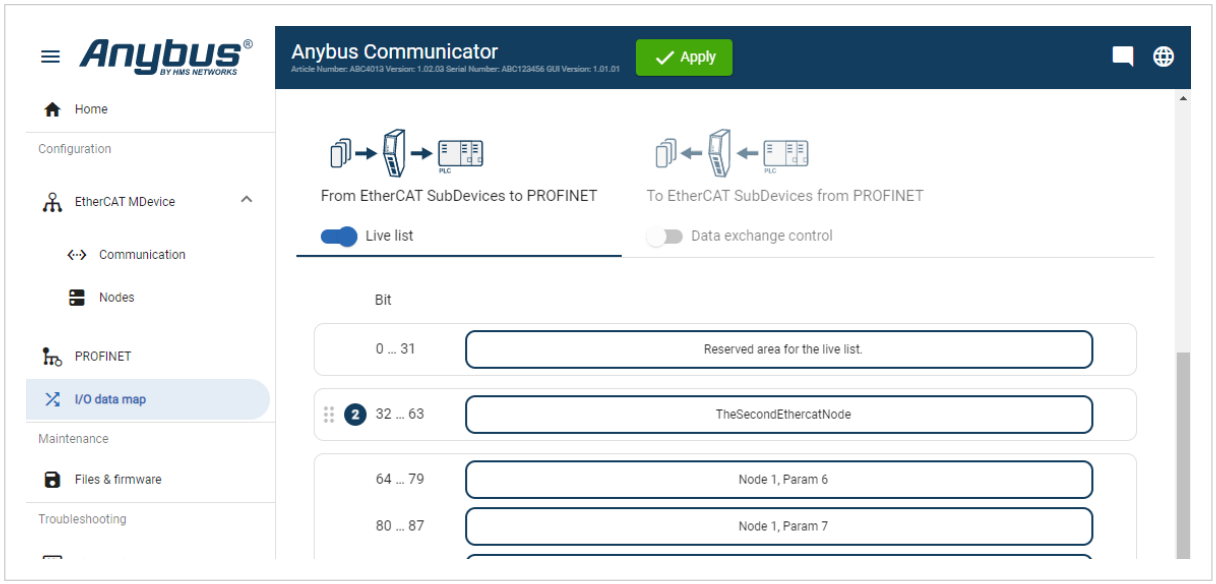


Figure 29. I/O data map page, Live list enabled

By default **Live list** is disabled.

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 node.

The **Live list** holds 32 bits, a total of 32 nodes connected to the Communicator.

The bit is 0 when the bit does not correspond to the configured node. For example, this occurs when the number of configured nodes is less than 32.

Each bit is 1 when the corresponding node is online.

7.7.3. Data Exchange Control

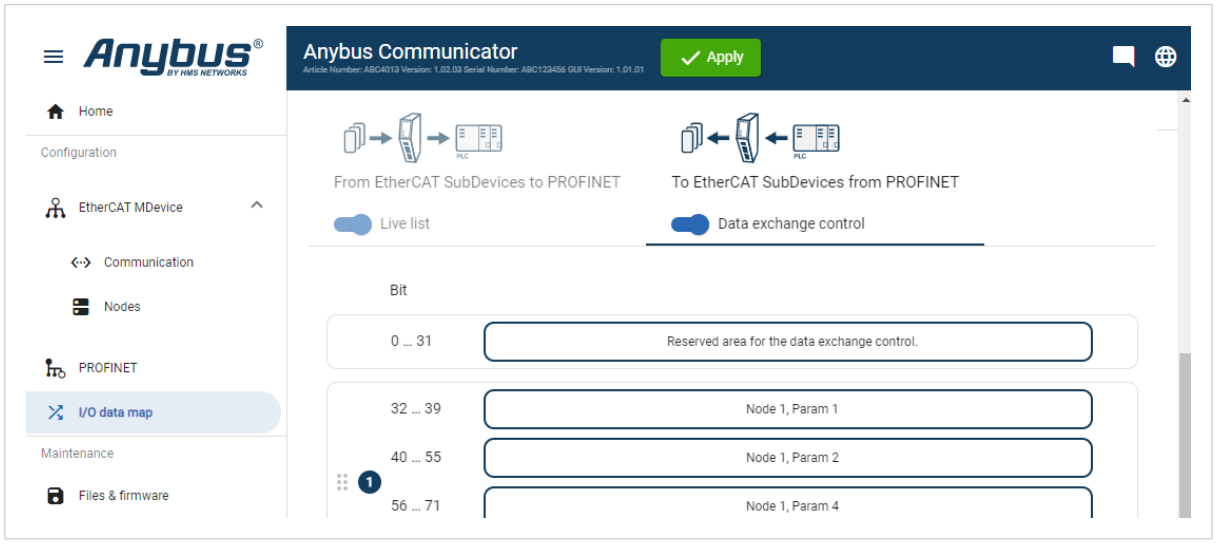


Figure 30. I/O data map, **Data exchange control** enabled

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 nodes on the subnetwork.

When the bit is 1, it correspond to a node in the state Operational.

When the Data exchange control bit is 0, the node is put in the state Safe-Operational.

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

When the data exchange is enabled for the corresponding node, the control bit is 1.

7.8. Configuration Notes

You can add notes to describe the Communicator configuration.

7.8.1. Add Configuration Note

Procedure

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

Figure 31. Configuration note, comment icon

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

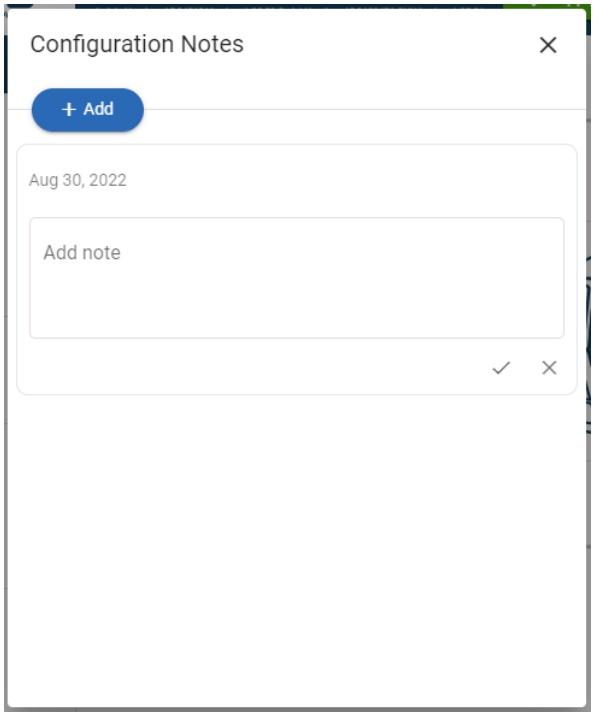


Figure 32. Add new configuration note

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

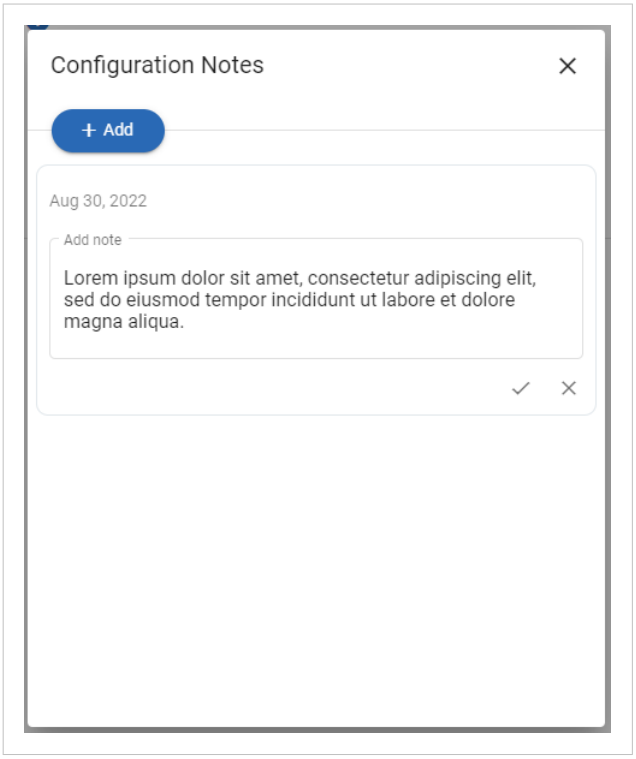


Figure 33. Write a configuration note

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.

7.8.2. View and Edit Configuration Notes

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

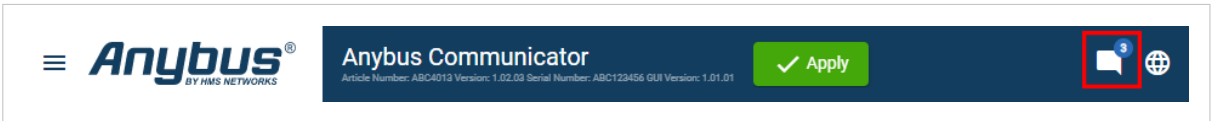


Figure 34. Example: The comment icon indicates that there are three added notes

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

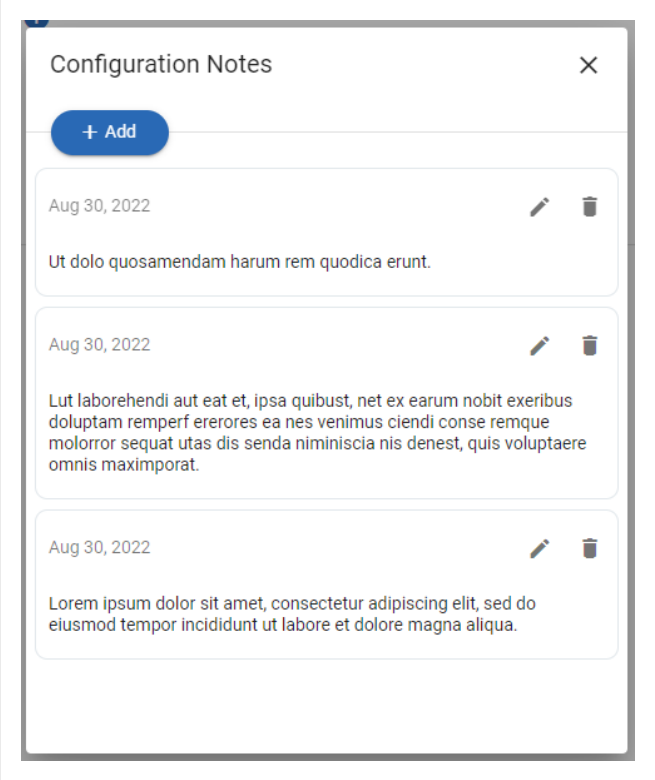


Figure 35. Example: The Configuration Notes window with added notes

7.9. Apply Configuration

Before You Begin

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

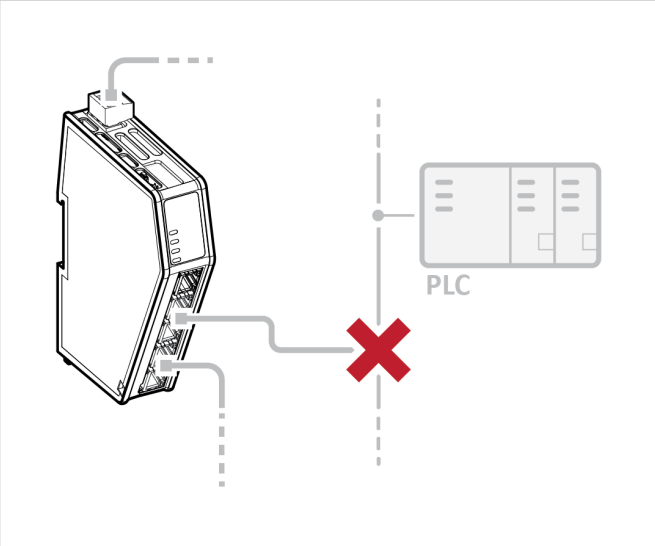


Figure 36. Disconnect the Communicator from the networks

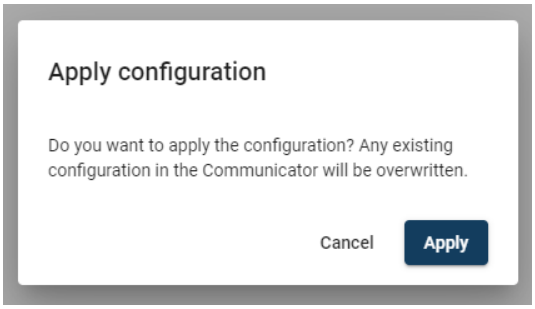
Before you can apply the configuration, ensure that there is no active communication on the PROFINET network where the Communicator is connected.

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.



7.10. 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

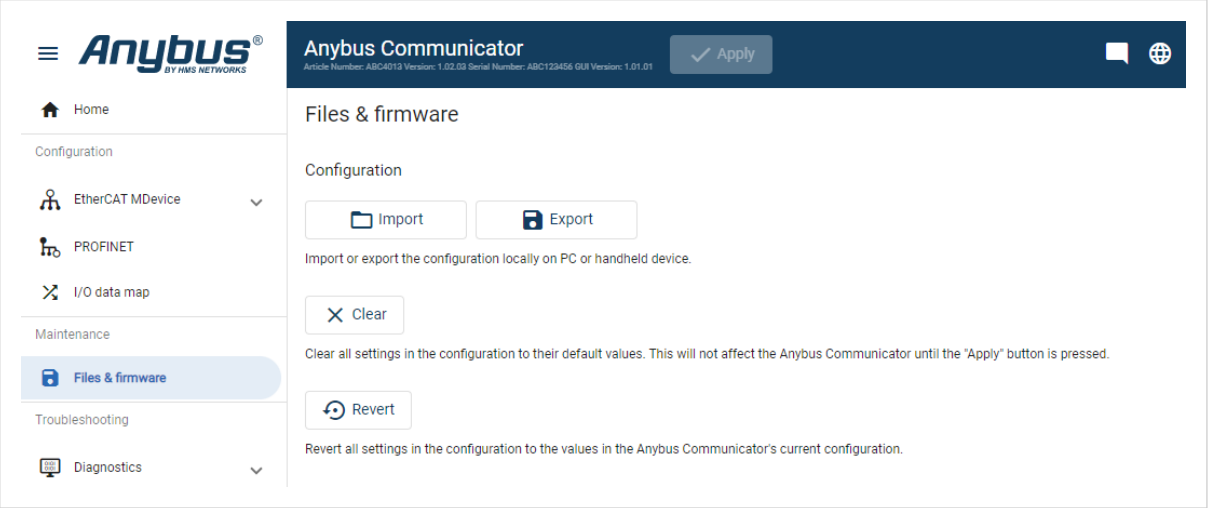


Figure 37. **Files & firmware** page

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 an conf 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 and 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. PLC Configuration

8.1. 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.

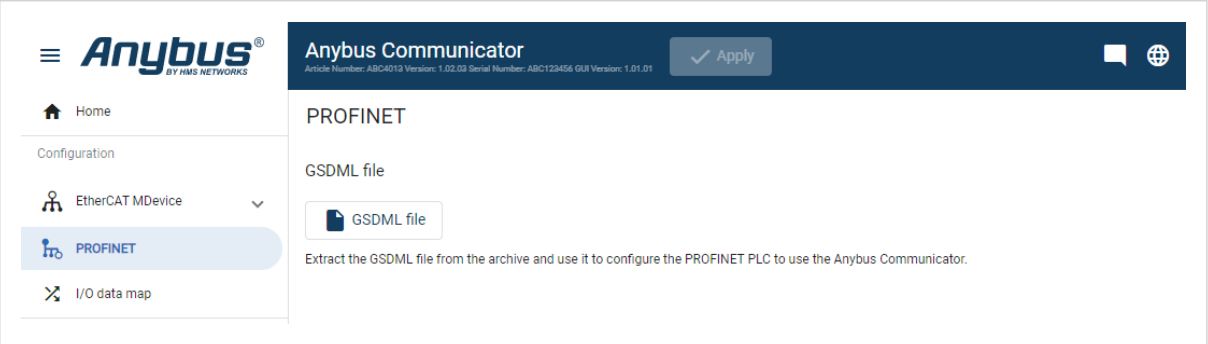


Figure 38. Files & firmware page, PROFINET GSDML file

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.

8.2. Configure the PROFINET Connection

Before You Begin

- Configure the Communicator, refer to Communicator Configuration (page 22).
- Download the PROFINET GSDML file from the Communicator built-in web interface, refer to Export Product GSDML File (page 43).

Procedure

To configure the PROFINET connection:

1. Import the PROFINET GSDML file into your PLC configuration tool.
2. Select the input module and output module.
   Ensure that the I/O data sizes match the I/O data sizes configured on the Communicator built-in web interface **I/O data map** page, refer to I/O Data Map (page 34).

9. Verify Operation

Before You Begin

Ensure that the Communicator is connected to your PC, to a power supply and to the OT network.

See Installation (page 12).

9.1. Communicator Status Monitor

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

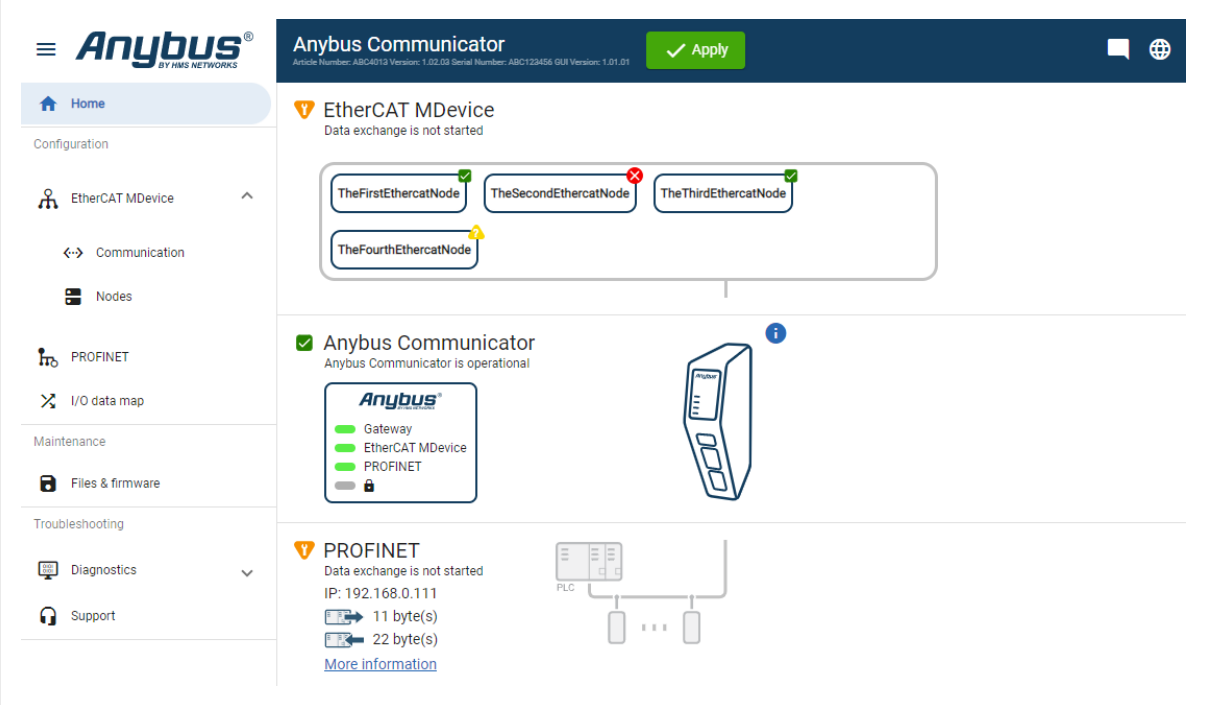


Figure 39. Home page

Gateway Status

Overview the Communicator LED indications remotely.

Refer to Communicator LED Indicators.

Node Status

Overview the status for each node 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: • Initial state where non network components are started and configured. • Network startup in progress. • Invalid configuration detected.
	Normal operation.

9.2. Communicator LED Indicators

This topic applies to different product variants for different networks.

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

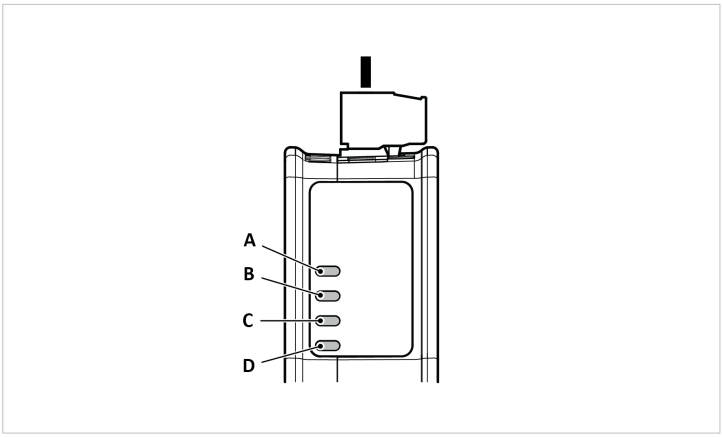


Figure 40. Gateway status (A), Network connection (B)/(C) and Security switch (D)

Gateway status - LED A	
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 client device

- **LED B for product:**
  ABC3107 EtherNet/IP, ABC3128 Modbus TCP, ABC3113 PROFINET, and ABC3190 Common Ethernet
- **LED C for product: ABC3100 PROFIBUS**

Operation status	**PROFIBUS**	**EtherNet/IP**	**Modbus TCP**	**PROFINET**
Off	No power/No data exchange	No power/No IP address	No power/ No IP address	No power/No connection with IO controller
Green, flashing	Clear, data exchange	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	N/A			Connection with IO controller established, IO controller in STOP state or IO data is inaccurate.
Green, solid	Operate, data exchange	Running, one or more connections established		
Red, solid	N/A	IP address conflict detected		N/A
Red, one flash	Parameterization error	N/A		Station name not set
Red, two flash	Configuration error	N/A		IP address not set
Red, three flash	N/A			Expected Identification differs from Real Identification
Red, flashing	N/A	One or more connections timed out	Connection timeout	N/A

EtherCAT MDevice • LED C for product: ABC3107 EtherNet/IP, ABC3128 Modbus TCP, ABC3113 PROFINET, and ABC3190 Common Ethernet • LED B for product: ABC3100 PROFIBUS	
Operation status	**Description**
Off	No power/Subnetwork not running/Node is switched off via a control word
Green, solid	Running
Red, flashing	All nodes are offline

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

9.3. EtherCAT LED Indicators

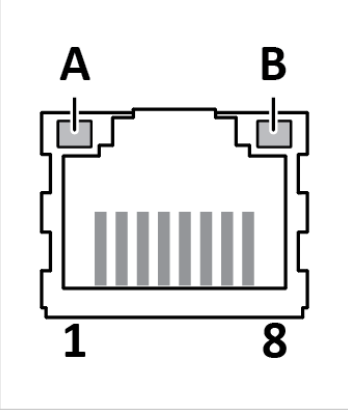


Figure 41. LED A. Activity LED B. Not used

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

10. Maintenance

10.1. Configuration File Handling

10.1.1. Export Configuration

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

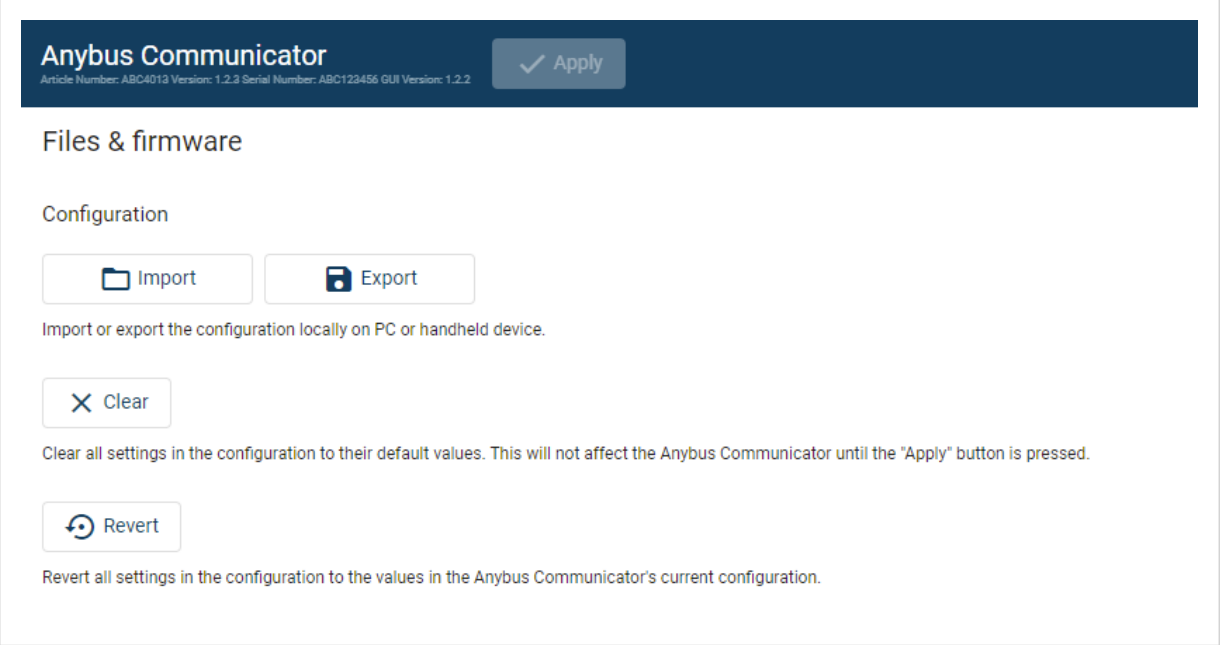


Figure 42. Files & firmware page

To export a configuration file:

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

10.1.2. 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

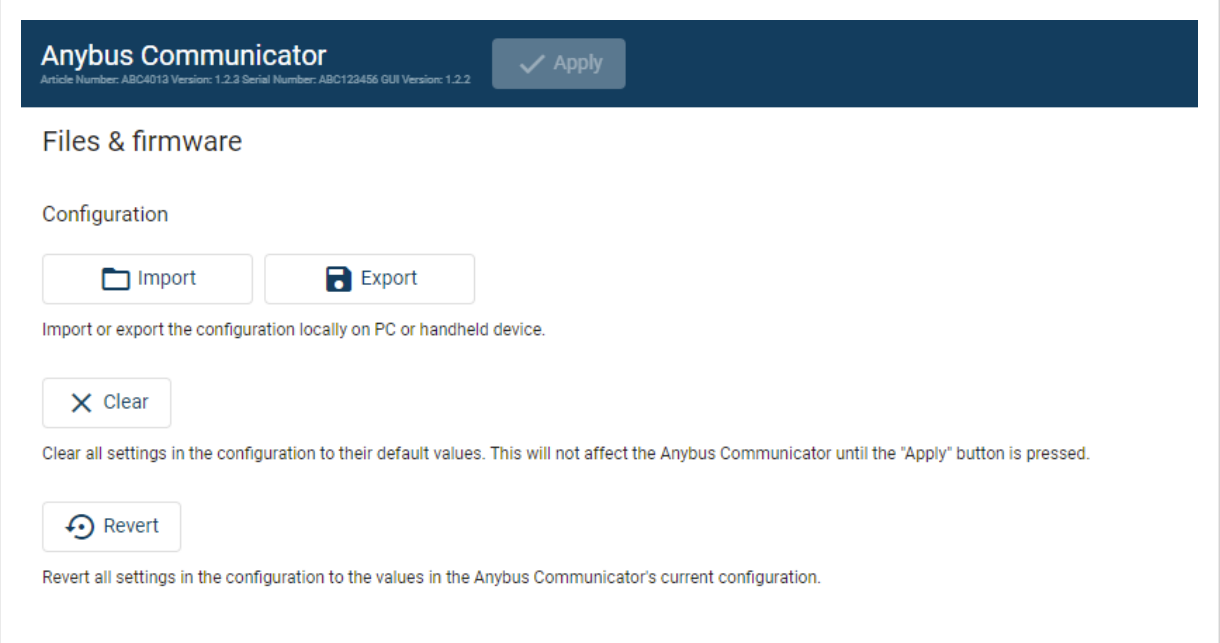


Figure 43. Files & firmware page

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.

10.2. Clear and Revert Configuration

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

Procedure

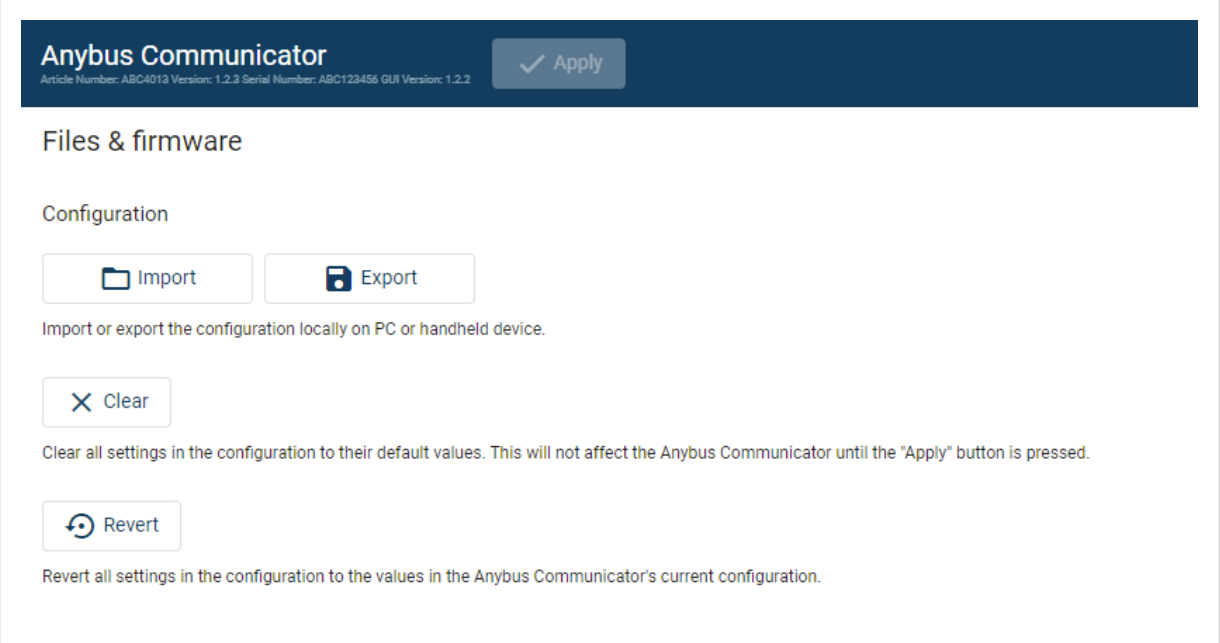


Figure 44. Files & firmware page

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.

10.3. Firmware Management

10.3.1. View the Firmware Version

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

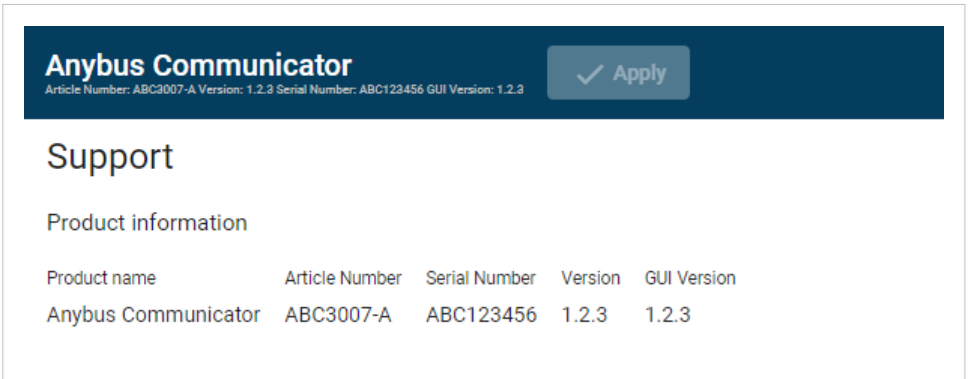


Figure 45. Support page, Product information example

10.3.2. 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 can not be guaranteed.

The current configuration may use features not available in the older firmware version.

10.3.3. 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.

10.3.4. 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 that the Communicator is disconnected from the OT networks.

Procedure

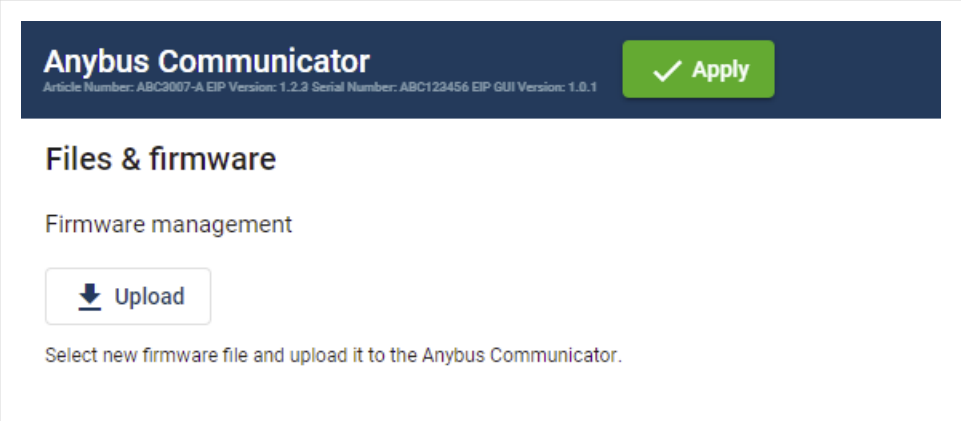


Figure 46. Files & firmware page

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.

10.4. 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 .

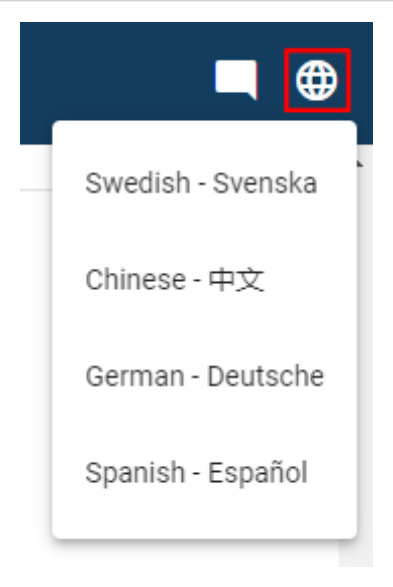


Figure 47. Language menu

2. Select a new language from the list.

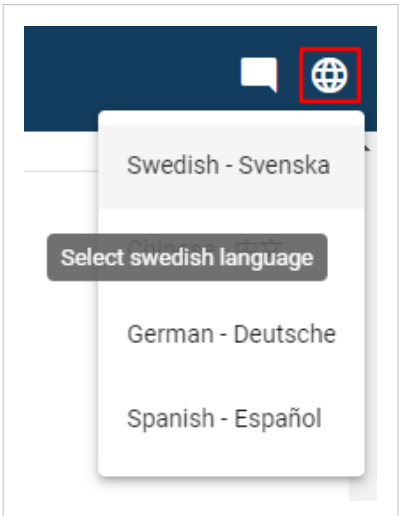


Figure 48. Example: Change language to Swedish

The language change takes effect immediately.

11. Troubleshooting

11.1. Diagnostics

11.1.1. I/O Data

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

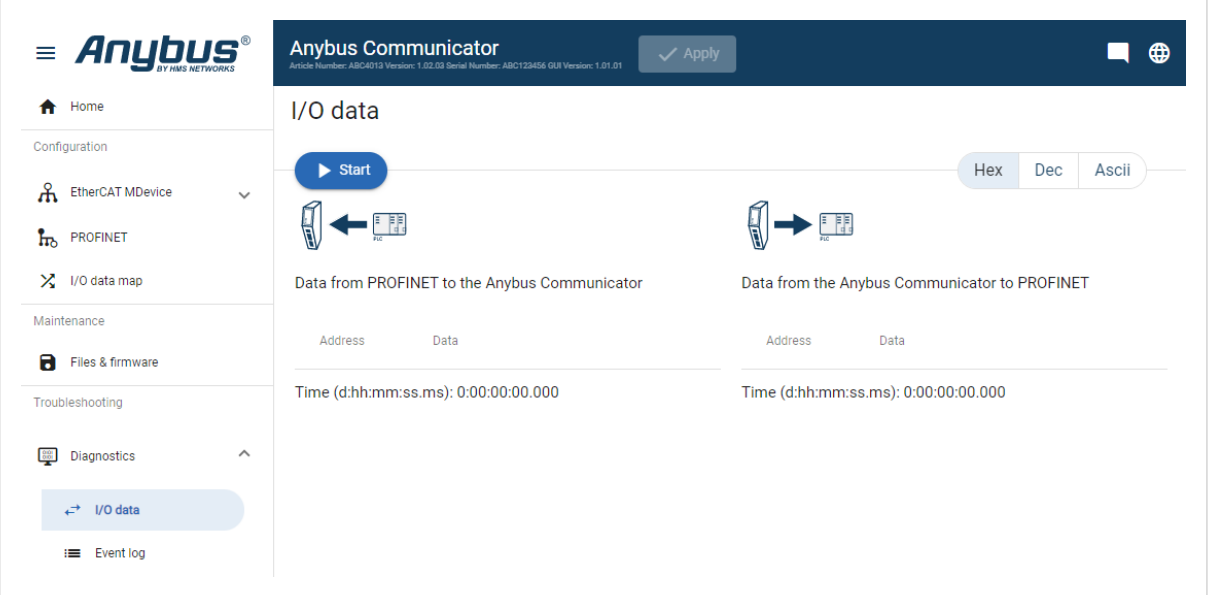


Figure 49. I/O data

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 **EtherCAT** or **PROFINET**.

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**.

11.1.2. Event Log

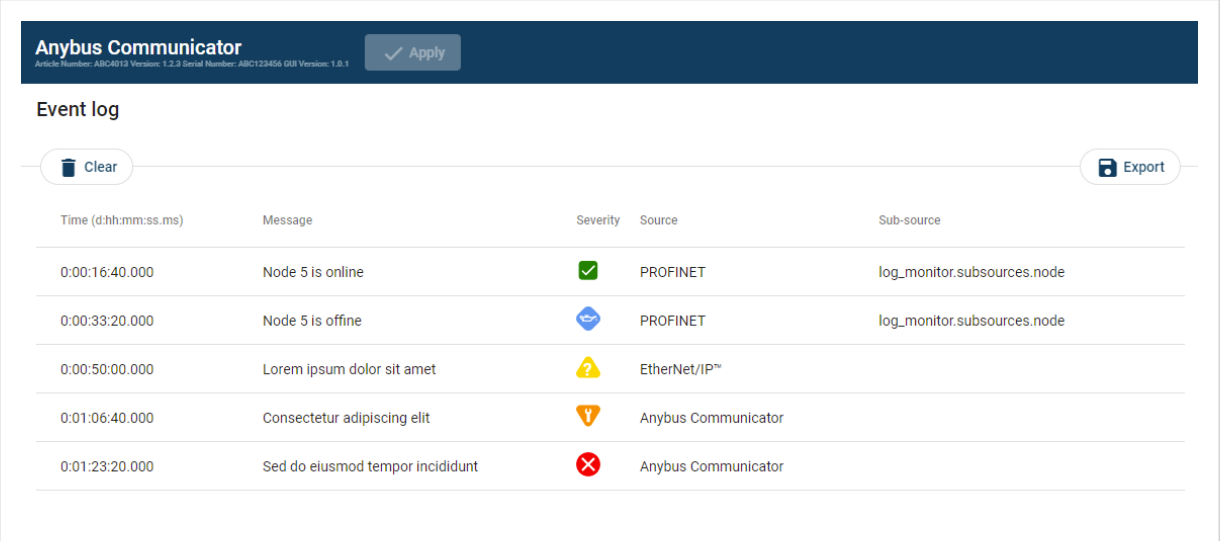


Figure 50. Event log page example

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 (page 44).	
Source	0	Communicator
	1	High level network, PROFINET
	2	EtherCAT
Sub-source	The nodes connected to the subnetwork and the PLC connected to the high level network. If there is a problem with a node the node name is displayed in the Sub-source column. Example 1. Sub-source number If the node name is 5, number 5 is displayed in the Sub-source column.	

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

11.1.3. LED Status

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

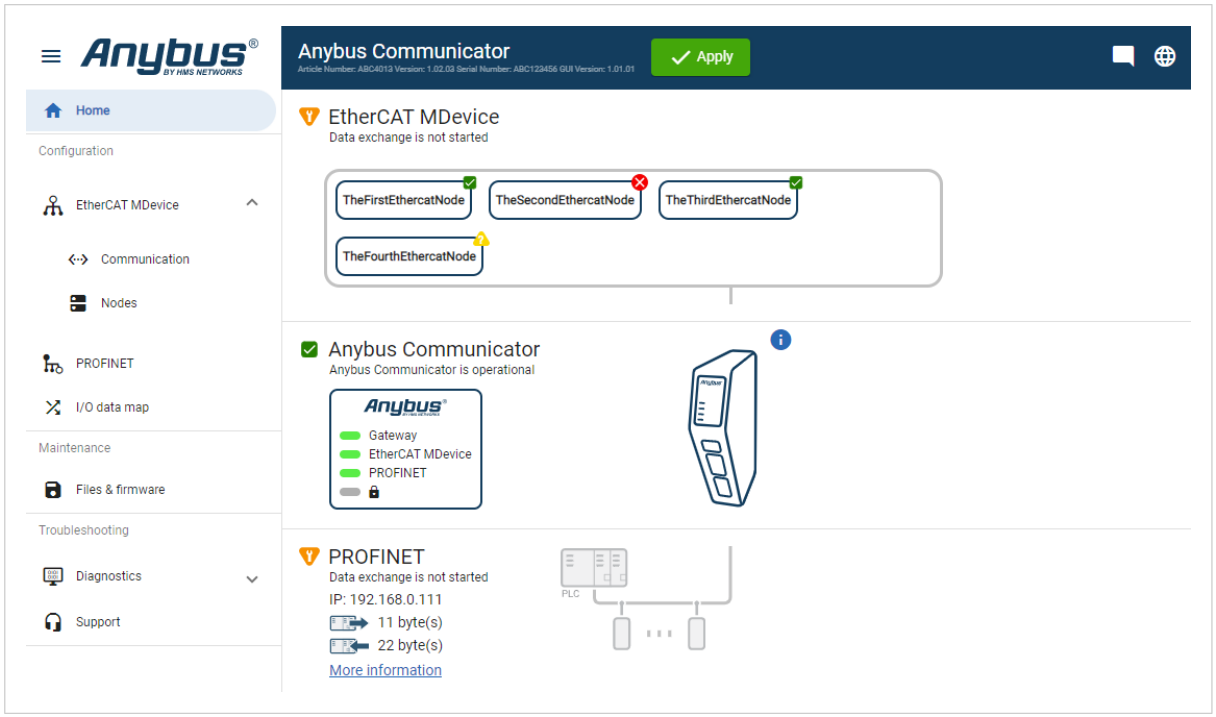


Figure 51. Home page

For information about the LED indication, see Communicator LED Indicators.

11.2. Reset to Factory Settings

Before You Begin

If 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.

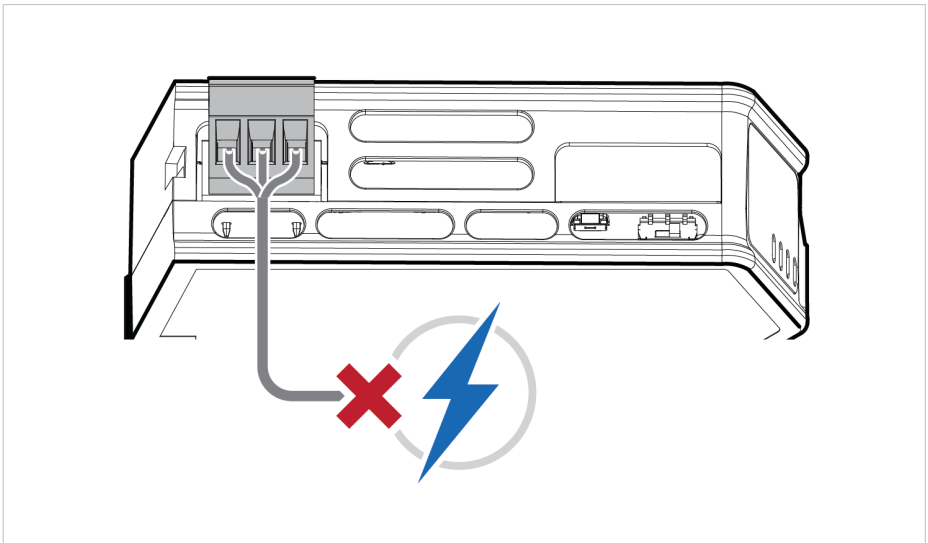


Figure 52. Disconnect power

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

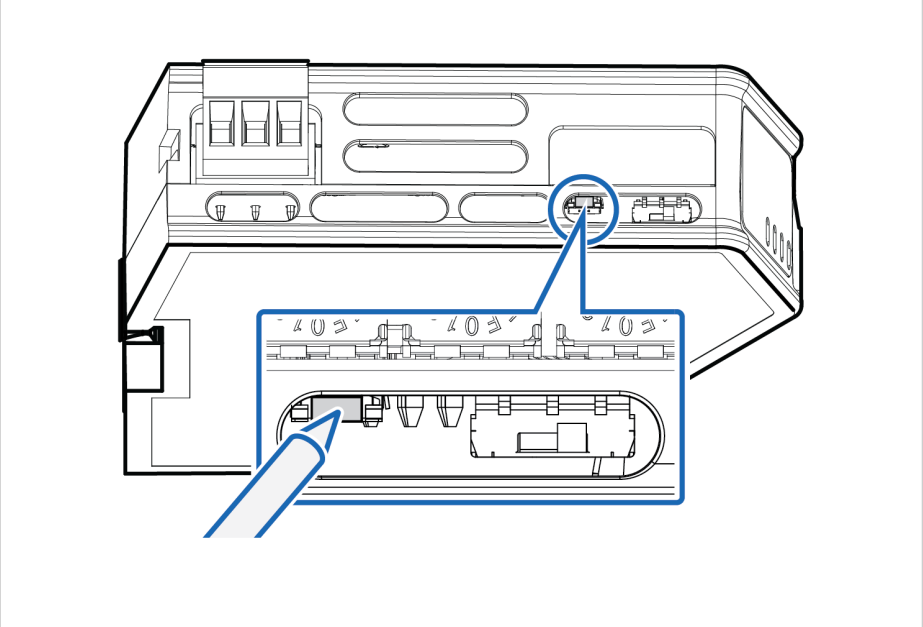


Figure 53. Press and hold **Reset** button

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

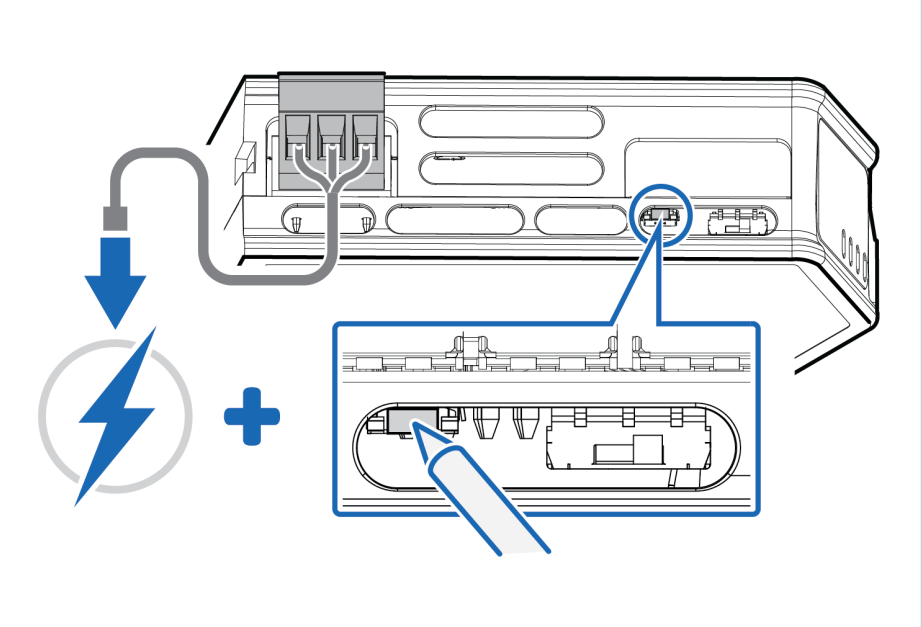


Figure 54. Hold **Reset** button and reconnect power

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**.

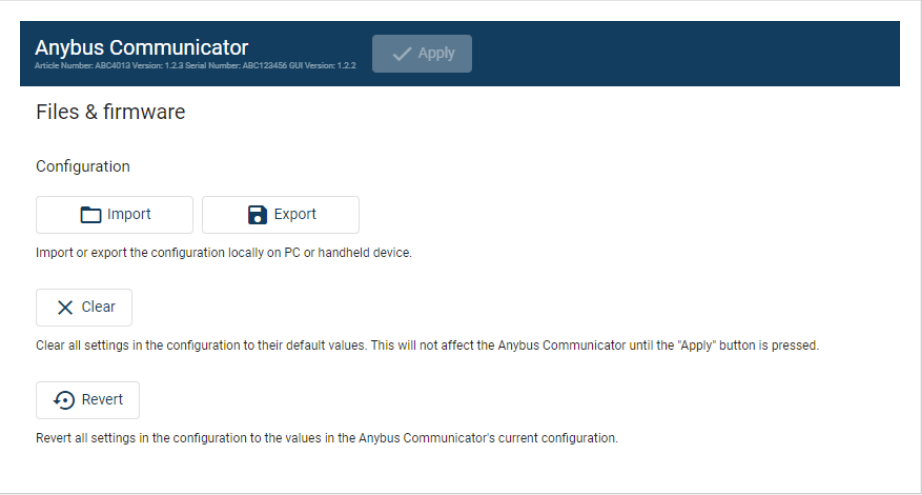


Figure 55. Files & firmware, Revert

11.3. 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.

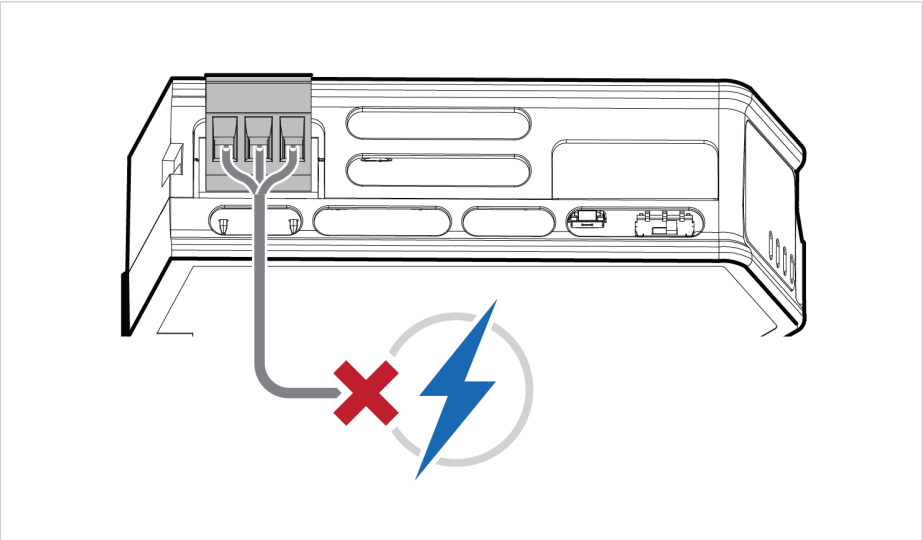


Figure 56. Disconnect power

2. Reconnect the Communicator to power.

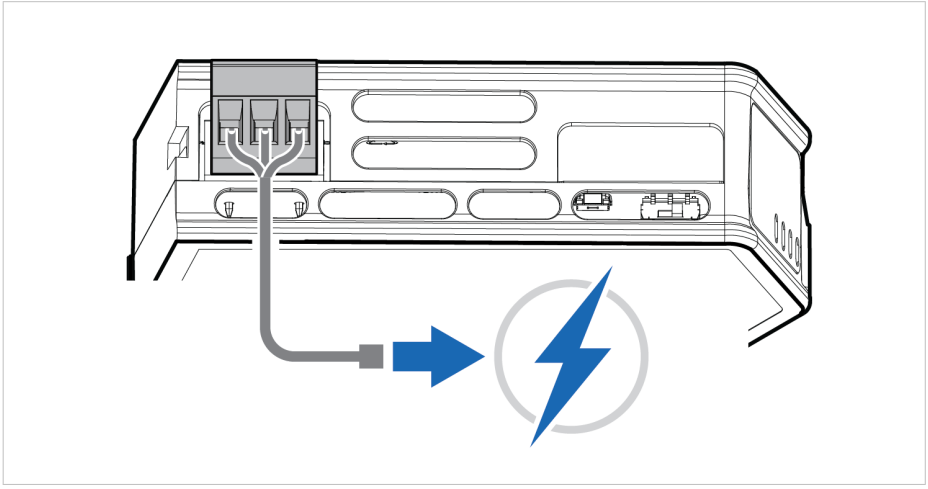


Figure 57. Reconnect power

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

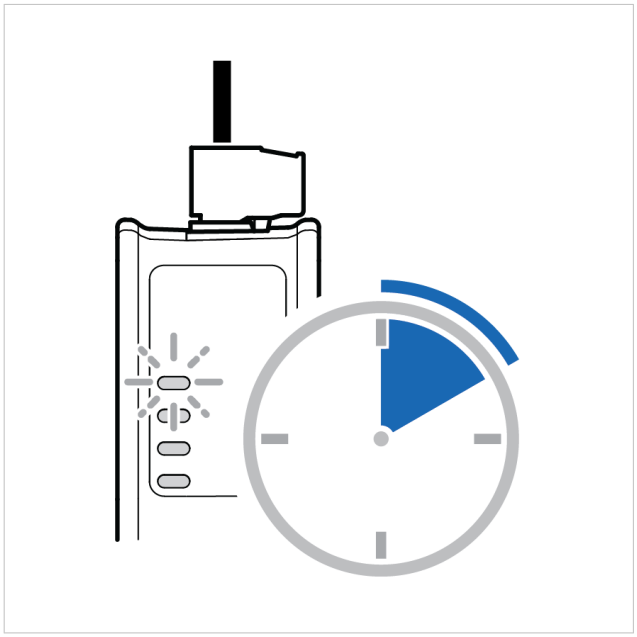


Figure 58. Firmware upgrade LED indication

Result

The Communicator recover and return to normal operation.

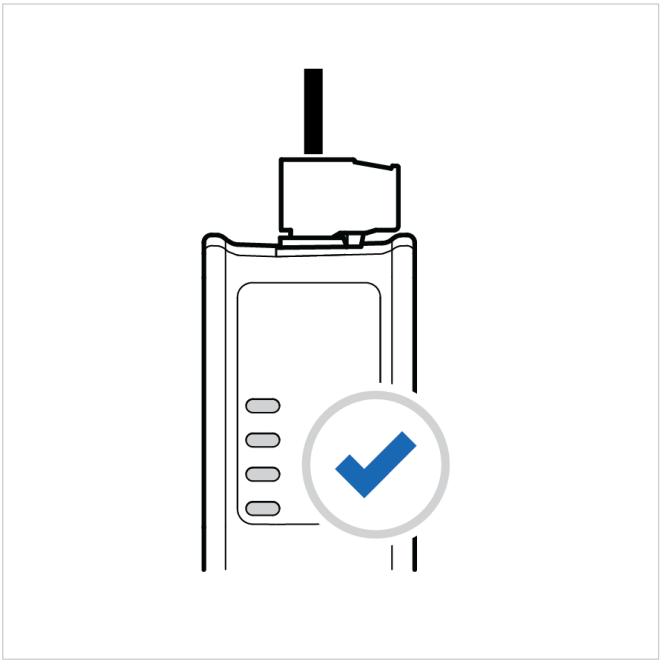


Figure 59. Recover and return to normal operation

To Do Next

To check LED status, refer to Communicator LED Indicators.

11.4. Support

11.4.1. Support Package

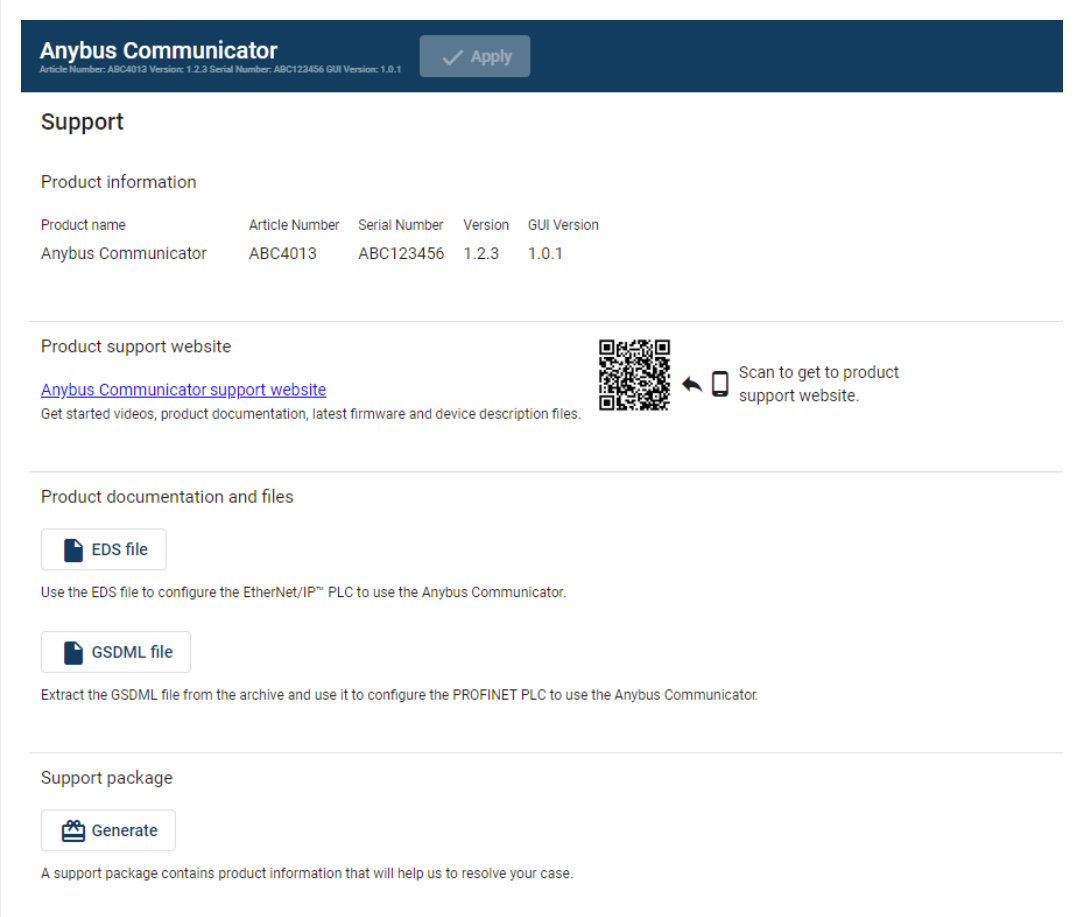


Figure 60. Support page example

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.

12. Technical Data

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

12.1. Technical Specifications

Article identification	ABC3113
Configuration connector	RJ45
Communication connector	RJ45 x 2
EtherCAT MDevice 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