

# Anybus<sup>®</sup> Communicator<sup>™</sup>

EtherNet/IP<sup>™</sup> to Modbus RTU

## USER MANUAL

SCM-1202-152 1.0 en-US ENGLISH



---

# Important User Information

## Disclaimer

The information in this document is for informational purposes only. Please inform HMS Industrial Networks of any inaccuracies or omissions found in this document. HMS Industrial Networks disclaims any responsibility or liability for any errors that may appear in this document.

HMS Industrial Networks reserves the right to modify its products in line with its policy of continuous product development. The information in this document shall therefore not be construed as a commitment on the part of HMS Industrial Networks and is subject to change without notice. HMS Industrial Networks makes no commitment to update or keep current the information in this document.

The data, examples and illustrations found in this document are included for illustrative purposes and are only intended to help improve understanding of the functionality and handling of the product. In view of the wide range of possible applications of the product, and because of the many variables and requirements associated with any particular implementation, HMS Industrial Networks cannot assume responsibility or liability for actual use based on the data, examples or illustrations included in this document nor for any damages incurred during installation of the product. Those responsible for the use of the product must acquire sufficient knowledge in order to ensure that the product is used correctly in their specific application and that the application meets all performance and safety requirements including any applicable laws, regulations, codes and standards. Further, HMS Industrial Networks will under no circumstances assume liability or responsibility for any problems that may arise as a result from the use of undocumented features or functional side effects found outside the documented scope of the product. The effects caused by any direct or indirect use of such aspects of the product are undefined and may include e.g. compatibility issues and stability issues.

---

# Table of Contents

Page

<b>1</b>	<b>Preface .....</b>	<b>5</b>
1.1	About This Document .....	5
1.2	Document Conventions .....	6
1.3	Trademarks .....	7
<b>2</b>	<b>Safety .....</b>	<b>8</b>
2.1	Intended Use .....	8
2.2	General Safety .....	8
<b>3</b>	<b>Preparation .....</b>	<b>9</b>
3.1	Cabling .....	9
3.2	System Requirements .....	9
3.3	Tools .....	9
3.4	Support and Resources .....	9
3.5	HMS Software Applications .....	10
3.6	Third-Party Software Applications .....	10
<b>4</b>	<b>About Anybus Communicator .....</b>	<b>11</b>
4.1	How the Communication Works .....	11
4.2	How the Data Exchange Works .....	13
4.3	Data Integrity .....	13
<b>5</b>	<b>Installation .....</b>	<b>14</b>
5.1	External Parts .....	14
5.2	DIN Rail Mounting .....	15
5.3	Connecting to EtherNet/IP Network .....	16
5.4	Connecting to Serial RS232/RS485 Subnetwork .....	17
5.5	Connecting to Power .....	18
5.6	Security Switch .....	19
5.7	Locking the Cables .....	20
5.8	DIN Rail Demount .....	21
<b>6</b>	<b>Configuration Quick Guide .....</b>	<b>22</b>
6.1	Prepare Configuration .....	22
6.2	Setup New Configuration .....	24
6.3	PLC Configuration .....	25
6.4	Verify Operation .....	27

---

<b>7</b>	<b>Communicator Configuration .....</b>	<b>28</b>
7.1	Connecting the Communicator .....	28
7.2	Access the Built-In Web Interface From HMS IPconfig.....	29
7.3	Access the Built-In Web Interface From a Web Browser .....	31
7.4	Communicator Built-In Web Interface Overview .....	32
7.5	General Subnetwork Settings .....	33
7.6	Nodes and Commands .....	35
7.7	High Level Network Settings.....	41
7.8	I/O Data Map .....	44
7.9	Apply Configuration.....	47
7.10	Use an Existing Configuration .....	49
<b>8</b>	<b>PLC Configuration .....</b>	<b>50</b>
8.1	Export I/O Data Map .....	50
8.2	Export Product EDS file .....	50
8.3	CIP Objects .....	51
<b>9</b>	<b>Verify Operation.....</b>	<b>52</b>
9.1	Communicator Status Monitor .....	52
9.2	Communicator LED Indicators .....	54
9.3	Ethernet LED Indicators.....	55
<b>10</b>	<b>Maintenance.....</b>	<b>56</b>
10.1	Configuration File Handling .....	56
10.2	Clear and Revert Configuration.....	58
10.3	Firmware Management.....	58
<b>11</b>	<b>Troubleshooting .....</b>	<b>60</b>
11.1	Diagnostics .....	60
11.2	Support .....	63
11.3	Reset to Factory Settings .....	64
11.4	Firmware Upgrade Error Management.....	66
<b>12</b>	<b>Technical Data .....</b>	<b>68</b>
12.1	Technical Specifications.....	68

---

<b>A</b>	<b>Reference Guides .....</b>	<b>69</b>
A.1	About Input Registers and Holding Registers .....	69
A.2	Modbus Data Model.....	69
A.3	Modbus Command Register .....	69
A.4	Modbus Exception Codes .....	70
A.5	ASCII Table.....	70
A.6	RS485/RS232 Electrical Connection .....	71

**This page intentionally left blank**

# **1 Preface**

## **1.1 About This Document**

This manual describes the installation and configuration of the Anybus Communicator.

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

## 1.2 Document Conventions

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
- An action
  - and a result

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

```
Program code and script examples
```

Cross-reference within this document: [Document Conventions, p. 6](#)

External link (URL): [www.hms-networks.com](http://www.hms-networks.com)



### **WARNING**

Instruction that must be followed to avoid a risk of death or serious injury.



### **Caution**

Instruction that must be followed to avoid a risk of personal injury.



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.



*Additional information which may facilitate installation and/or operation.*



## 1.3 Trademarks

Anybus® is a registered trademark of HMS Industrial Networks AB.

Microsoft® and Windows® are registered trademarks of Microsoft, Inc. EtherNet/IP™, CIP™ (Common Industrial Protocol) and ODVA™ are trademarks of ODVA, Inc.

All other trademarks mentioned in this document 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.



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 and connector**
- **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.

Browser
Google Chrome
Microsoft Edge
Mozilla Firefox

### 3.3 Tools

Have the following tools available:

- **Flat-head screwdriver, size 5.5 mm**  
Needed when removing the Communicator from *DIN-rail*.
- **Flat-head screwdriver, size 3 mm**  
Needed when connecting the cables to the *7-pin connector*.

### 3.4 Support and Resources

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



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](http://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.



*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.*

---



*IPconfig is only available for Windows.*

---

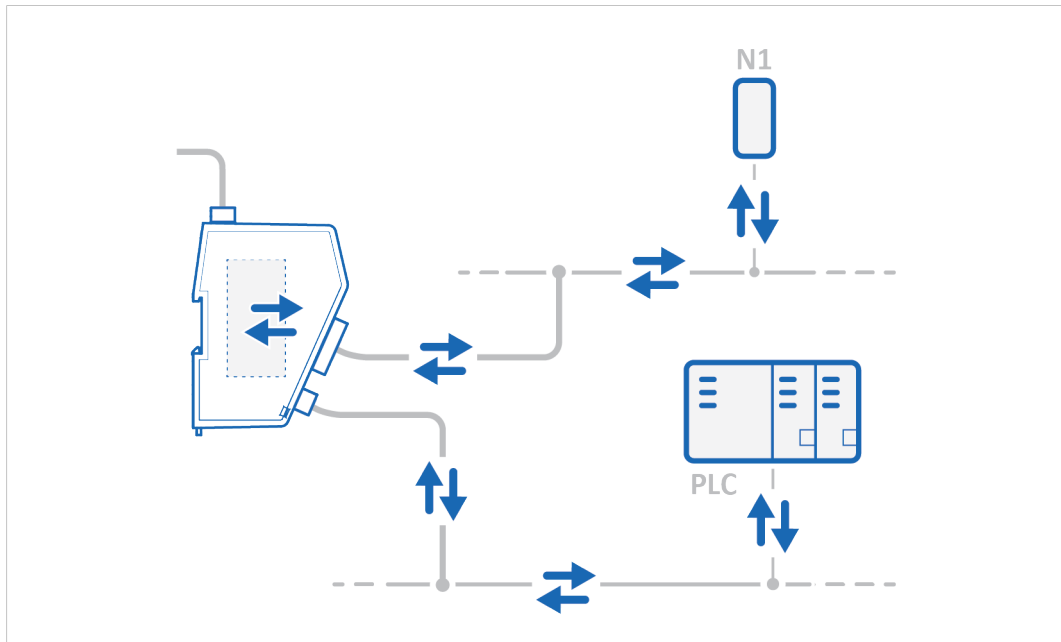
## 3.6 Third-Party Software Applications

Microsoft Excel, or equivalent software application that supports the Office Open XML Workbook (xlsx) file format.

Needed to open and read the I/O data mapping file.

## 4 About Anybus Communicator

### 4.1 How the Communication Works

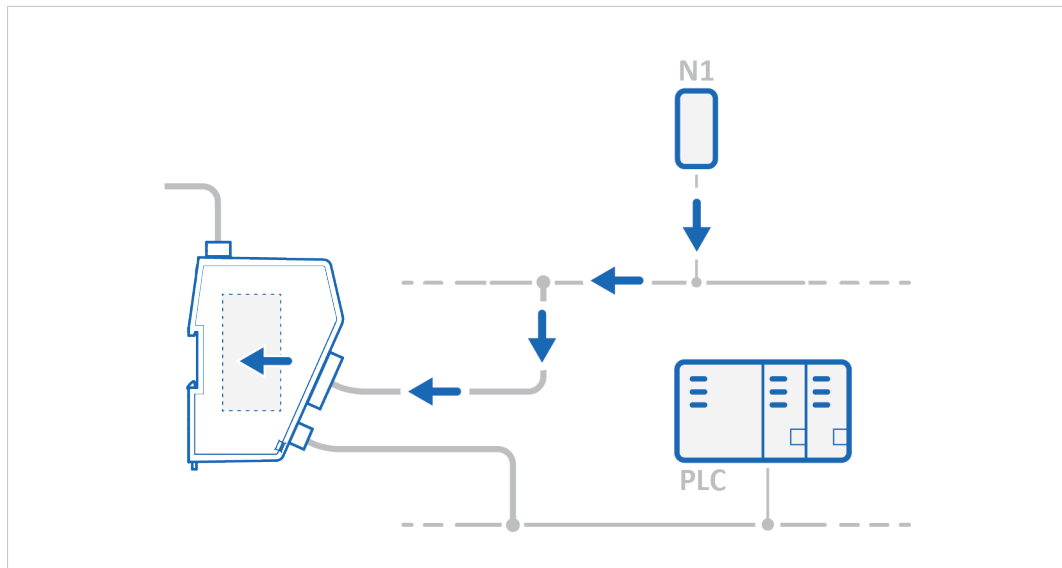


The Communicator enables communication, data exchange, between one or more slave devices connected to a *serial subnetwork* and a master device connected to a *high level network*.

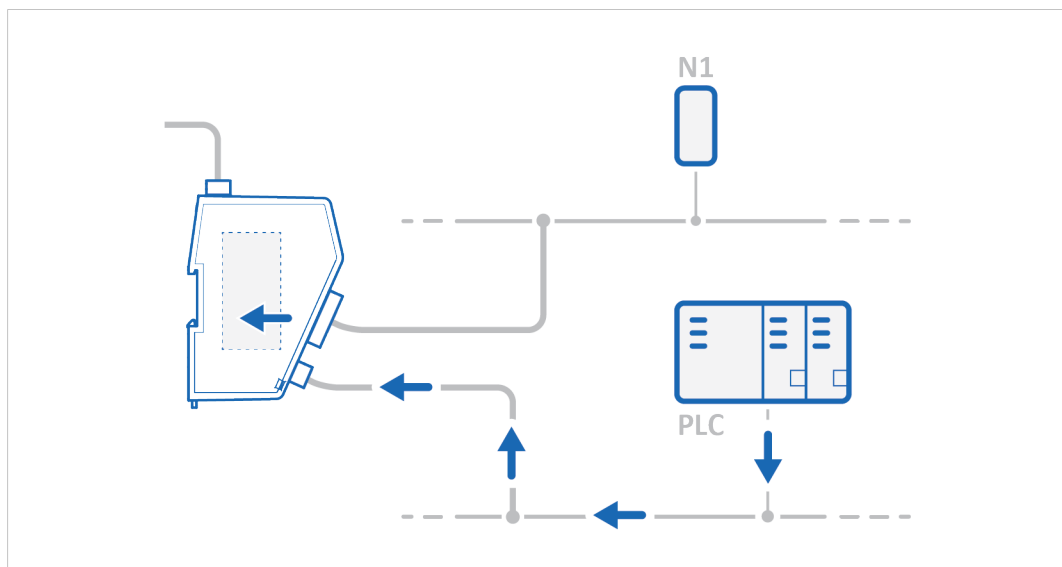
For example:

- The master device can be a PLC controller or a PC.
- A slave devices can be a sensor, scanner or industrial robot.

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

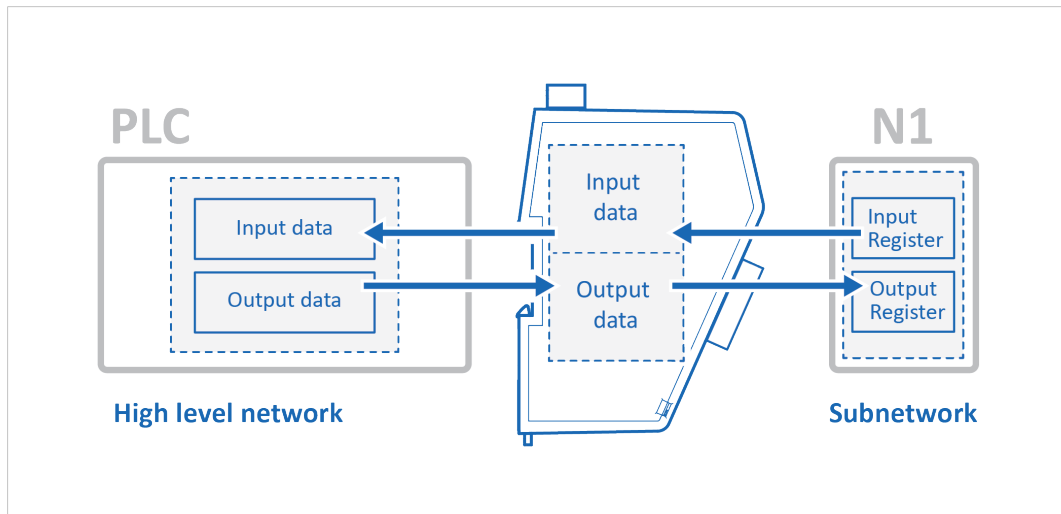
**Request process data**

Request process data from the *serial subnetwork* nodes, specified in the Communicator configuration, and make the process data available on the slave interface and for the *high level network* master device.

**Transfer process data**

Transfer process data from the *high level network* master device and make it available on the slave interface and for the *serial subnetwork* nodes included in the configuration.

## 4.2 How the Data Exchange Works



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

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

The same memory locations are exchanged on the serial subnetwork.

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

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

### Input Data

This *Input data area* is read by the *high level network*.

The Communicator can handle up to 1500 bytes input data.

### Output Data

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

The Communicator can handle up to 1500 bytes output data.

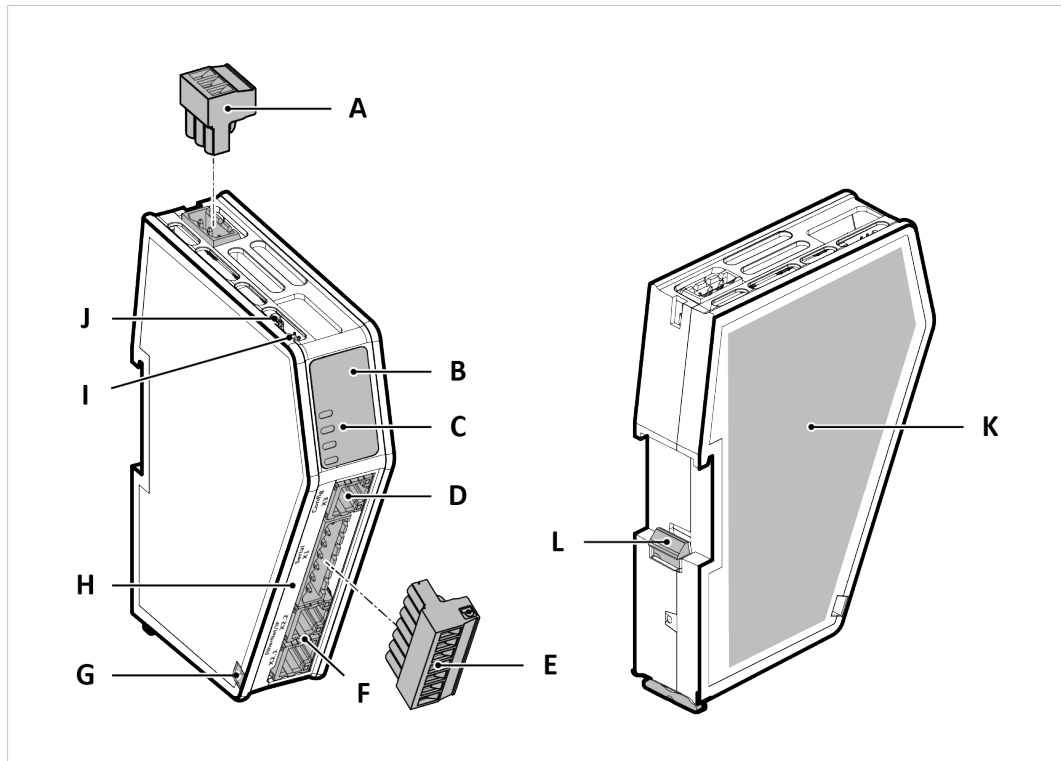
## 4.3 Data Integrity

A snapshot of the process data buffer between the Modbus Master and the slave interface is used during the operation of executing all the commands within one cycle.

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

## 5 Installation

### 5.1 External Parts



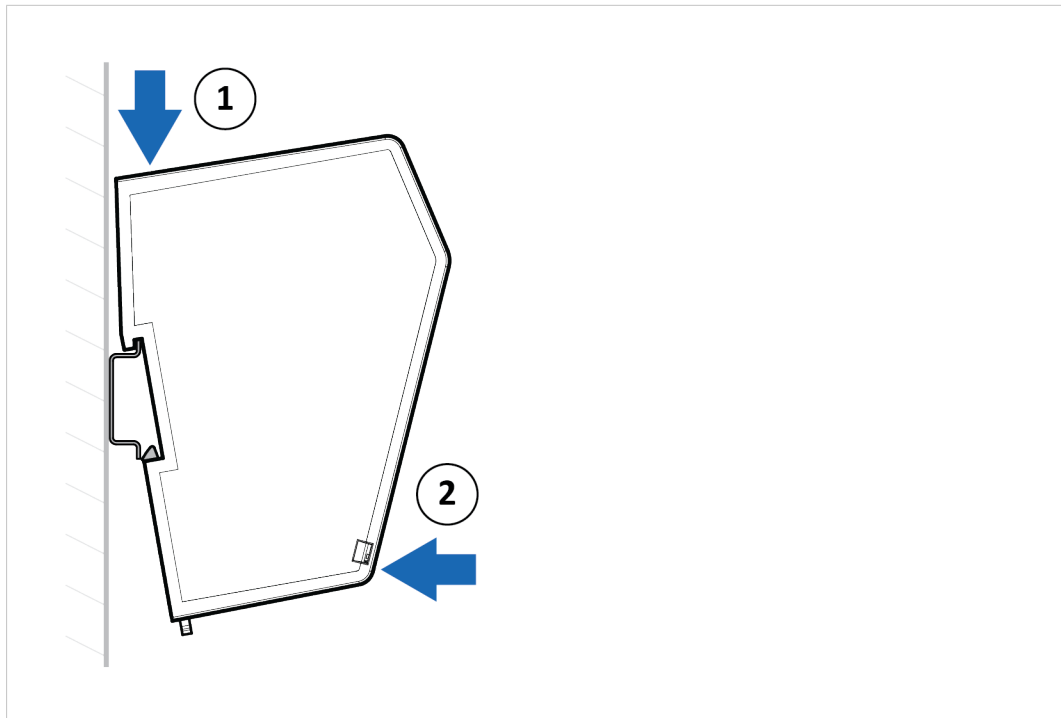
- |                               |  |  |
|-------------------------------|--|--|
| A. Power connector            | E. 7-pin connector                       | I. Factory reset button                          |
| B. Label with LED designation | F. Ethernet port x 2                     | J. Security switch                               |
| C. Status LEDs                | G. Cable tie mount                       | K. Laser engraved label with product information |
| D. Configuration port         | H. Laser engraved connectors designation | L. DIN rail locking mechanism                    |



## 5.2 DIN Rail Mounting



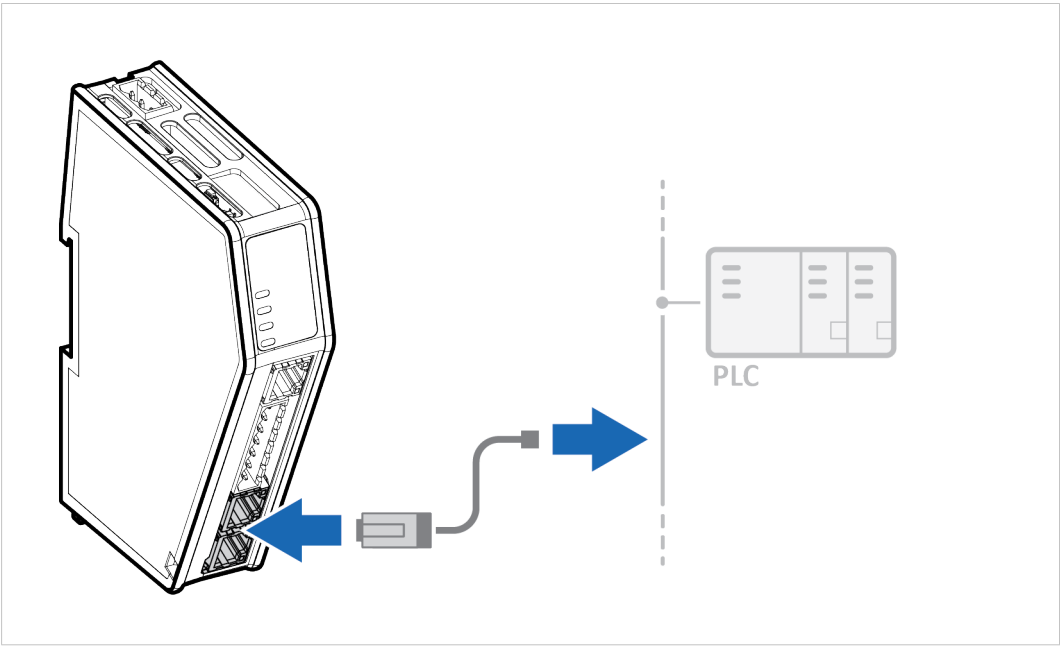
The equipment must be electrically grounded through the DIN rail for EMC compliance. Make sure that the equipment is correctly mounted on the rail and that the rail is properly grounded.



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 Connecting to EtherNet/IP Network




- 1. Connect the Communicator to your EtherNet/IP network.

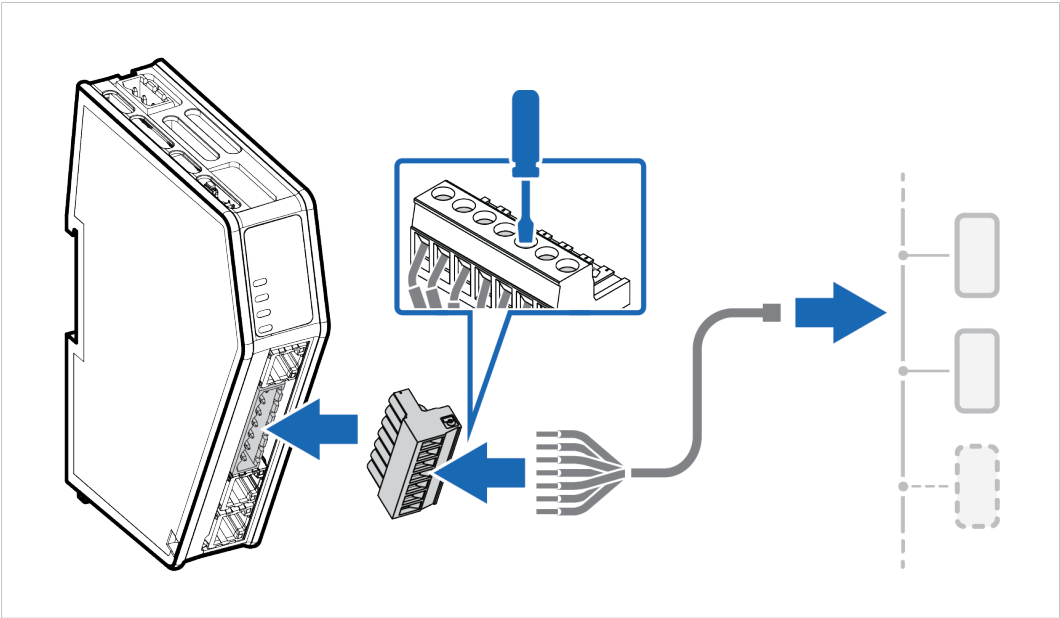
EtherNet/IP Connector		
	Pin	Description
	1	TD+
	2	TD-
	3	RD+
	4	
	5	
	6	RD-
	7	
	8	

To Do Next

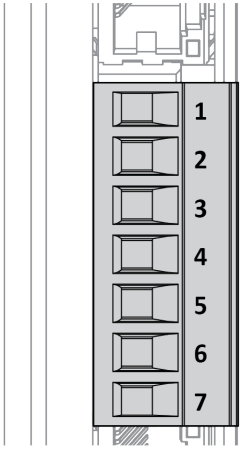
Check LED status, refer to [Communicator LED Indicators, p. 54](#).

5.4 Connecting to Serial RS232/RS485 Subnetwork

 Use minimum 90 oC copper (Cu) wire only.



- 1. Insert the cable wires into the 7-pin connector and tighten the wire clamp screws.


7-pin connector		
	Pin	Signal
	1	+5 V OUT
	2	RS485- A
	3	RS485+ B
	4	Signal GND
	5	Functional Earth (FE)
	6	RS232 Tx Output
	7	RS232 Rx Input


- 2. Connect the 7-pin connector to the Communicator.
- 3. Connect the Communicator to your serial subnetwork.

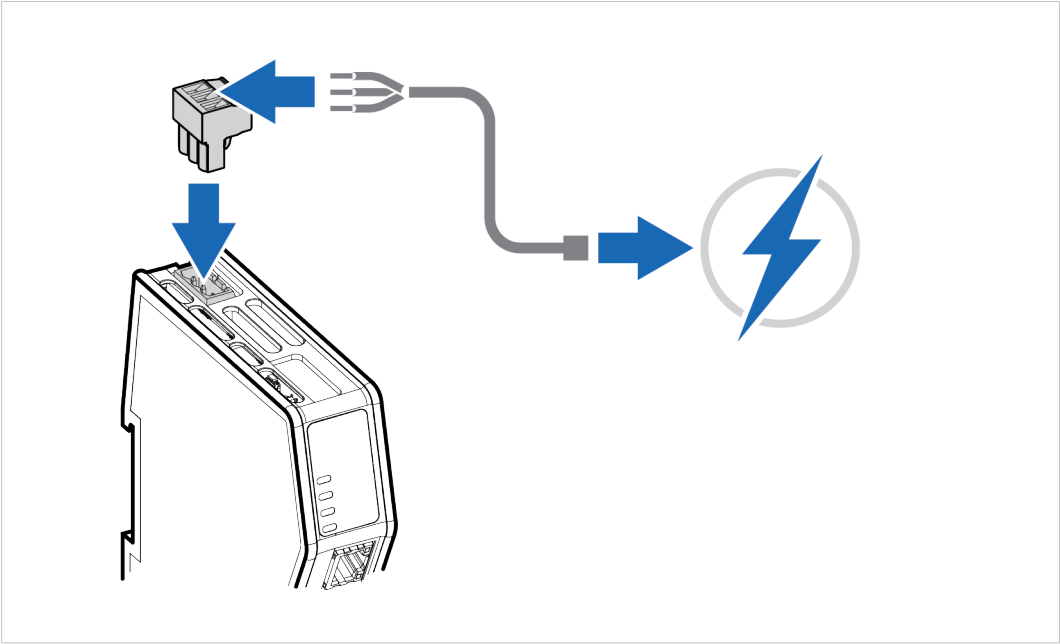
To Do Next

Check LED status, refer to [Communicator LED Indicators, p. 54](#).

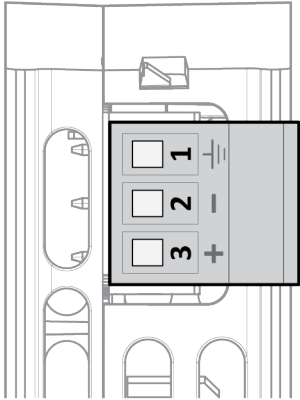
5.5 Connecting to Power

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

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



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

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

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, p. 54](#).

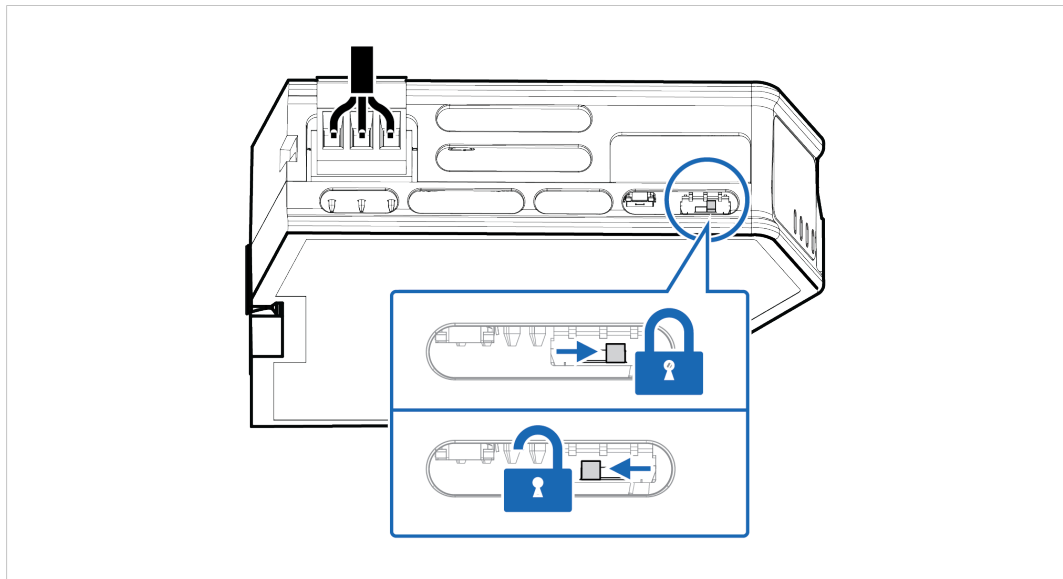
## 5.6 Security Switch



*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. Network specific parameters, configured via the PLC is still available.

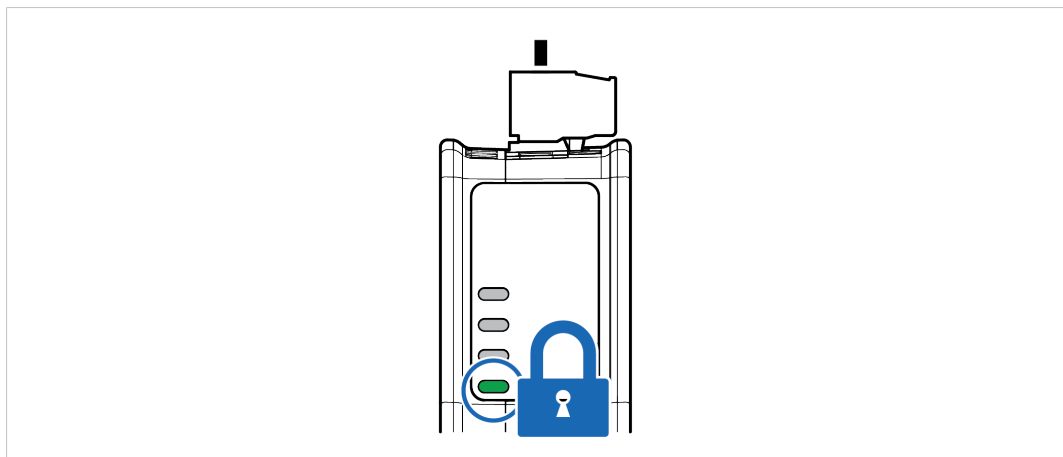
### To Lock and Unlock the Security Switch



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**.

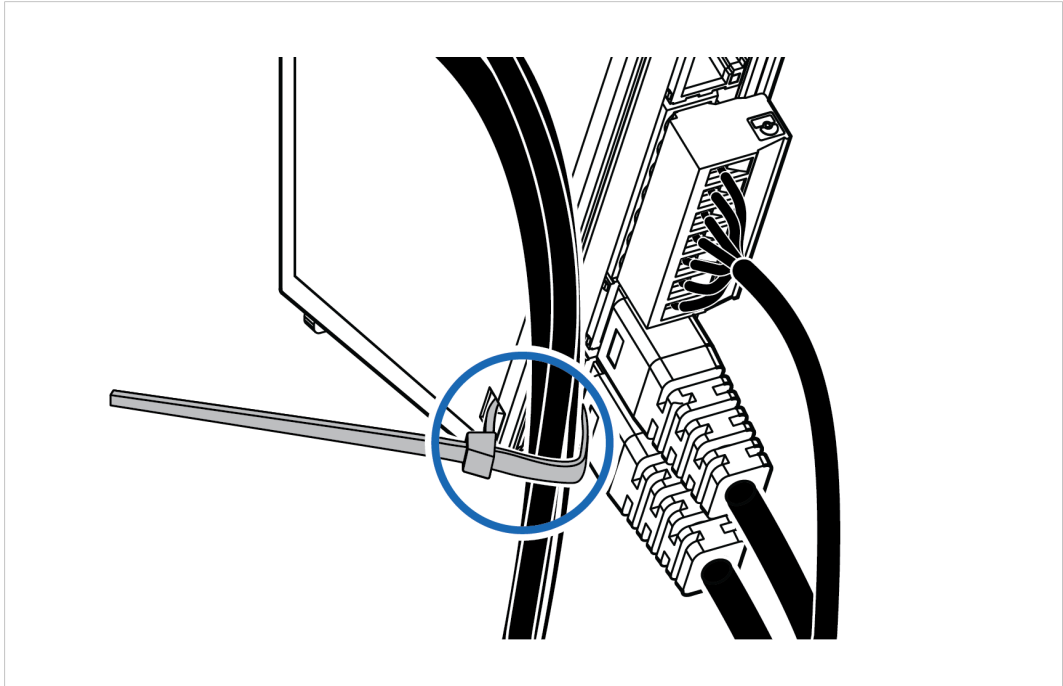
### Security Switch Status LED



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 Locking 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



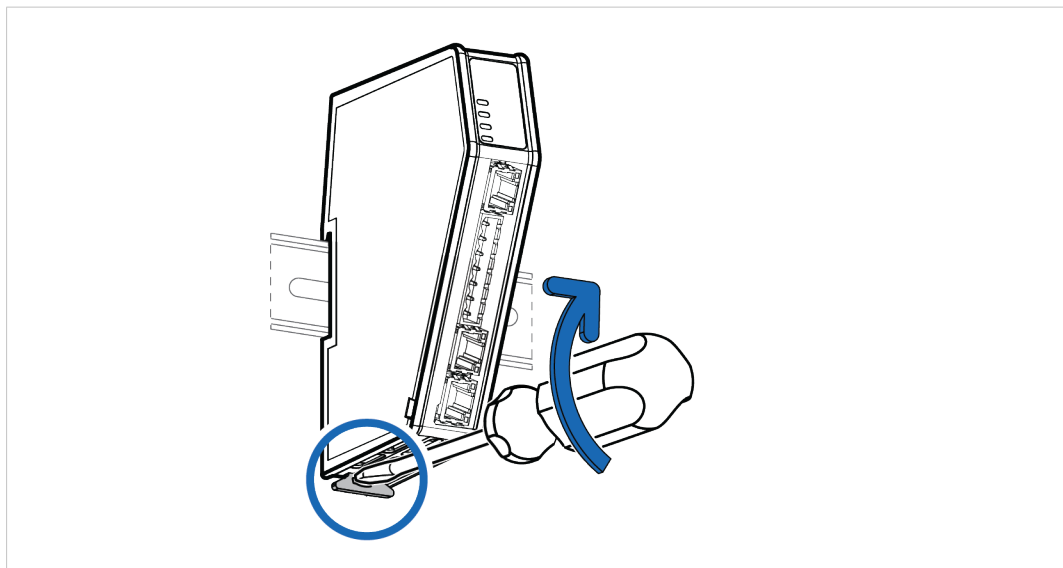
Be careful when removing the Communicator from the DIN-rail. If not removed properly, the DIN rail locking mechanism and the product cover can break.

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

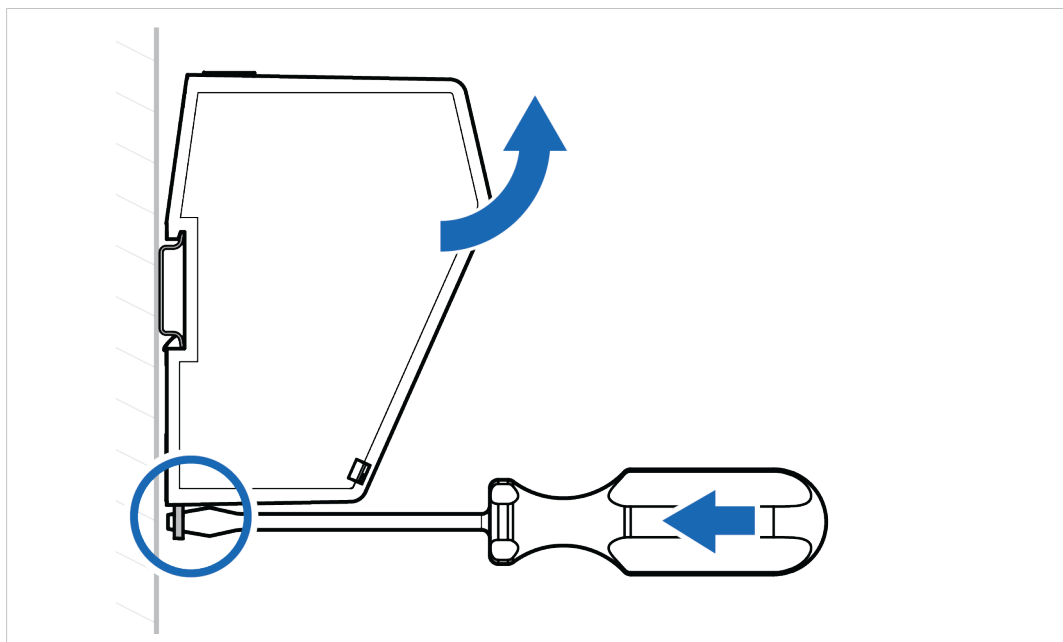
### Procedure

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.



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



## 6 Configuration Quick Guide

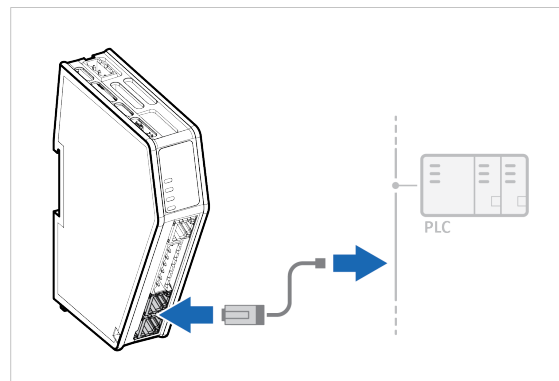
This section is intended to give you a short overview of the tasks you need to perform to configure the Communicator.

For detailed information, please refer to [Communicator Configuration, p. 28](#).

### 6.1 Prepare Configuration

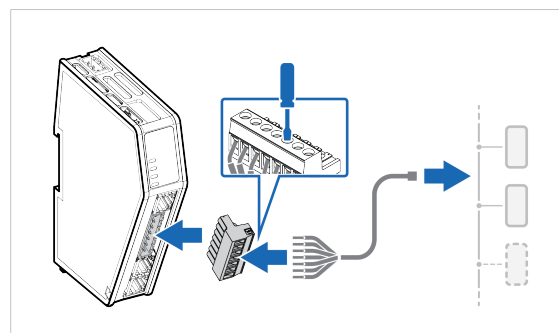
#### 1. Connecting to the high level network

Connect the Communicator to the EtherNet/IP high level network.



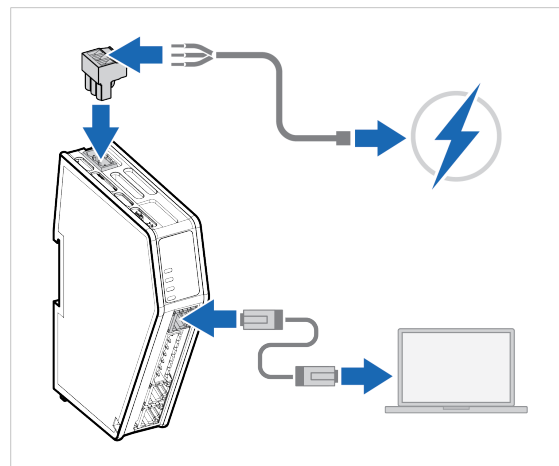
#### 2. Connecting the Communicator to the subnetwork

Connect the Communicator to the serial RS232/RS485 subnetwork.



#### 3. Connecting to PC and power

- Connect an *Ethernet cable* between the *Communicator configuration port* and your PC.
- Connect the Communicator to a power supply.





#### 4. Finding the Communicator on your PC

The Communicator default IP address is **192.168.0.10**.

##### Option 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.



##### Option 2

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

Use the software application HMS IPconfig to find the Communicator default IP address on your PC.

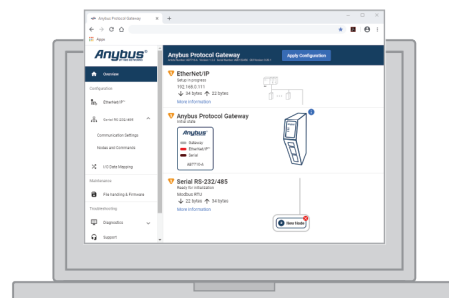
Download the installation files and user documentation from [www.anybus.com/support](http://www.anybus.com/support).



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

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

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



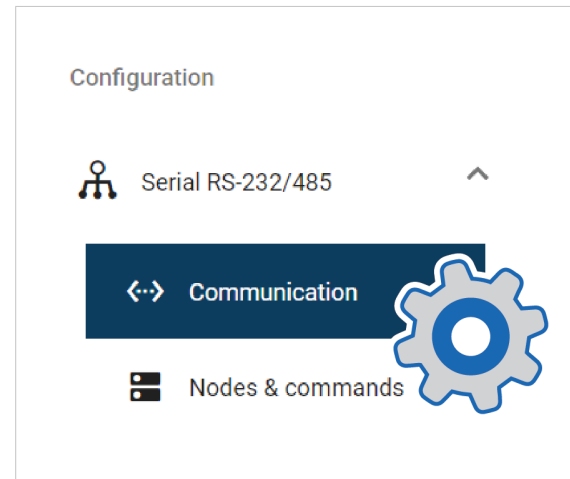
## 6.2 Setup New Configuration

Follow these steps to setup a new Communicator configuration.

### 1. Subnetwork configuration

In the **Communication** page:

Configure the basic settings Physical standard, Baud rate, Data bits, Parity and Stop bits.

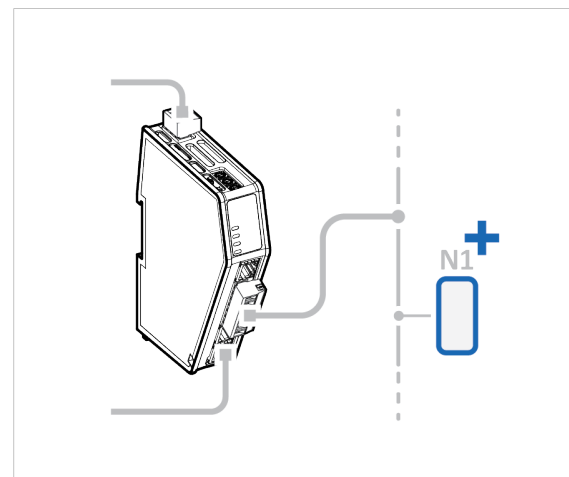


### 2. Add Nodes and Commands

In the **Nodes & commands** page:

- Add a node and configure the node settings.
- Add commands to the node and configure the command settings.

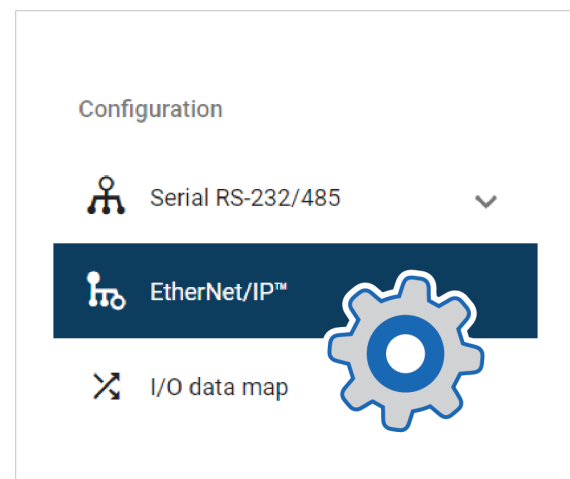
Repeat until you have added and configured all your nodes.



### 3. High level network configuration

In the **EtherNet/IP™** page:

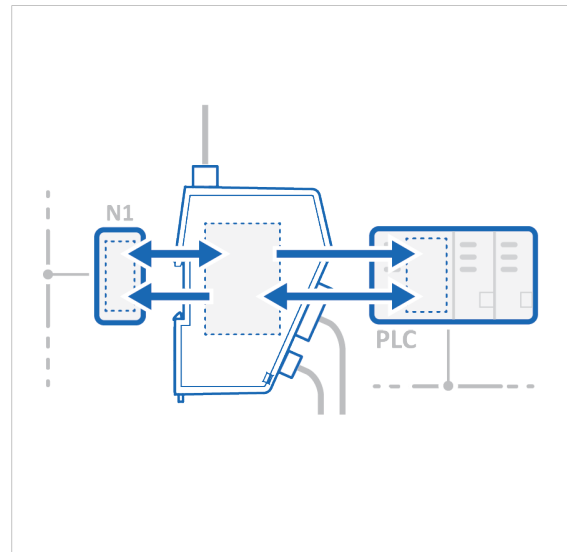
- Use Automatic I/O sizes provided by the subnetwork or choose to set them manually.
- Enable DHCP server or choose to set the IP addresses to a specific size.
- Apply the IP settings.



#### 4. I/O Data Mapping

The commands you added to the nodes are automatically mapped to the Communicator internal memory area.

View the added nodes and commands in the **I/O data map** page.



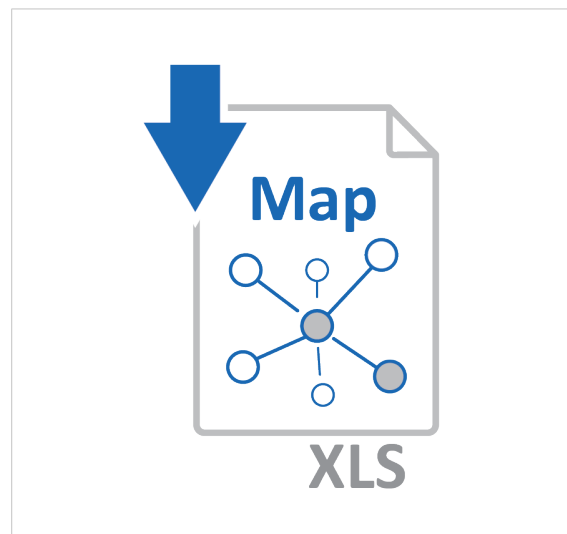
## 6.3 PLC Configuration

In the Communicator built-in web interface:

### 1. Export I/O data map

When you configure the communication between the Communicator and the PLC, you can use the I/O data map as a specification to ensure that the commands match.

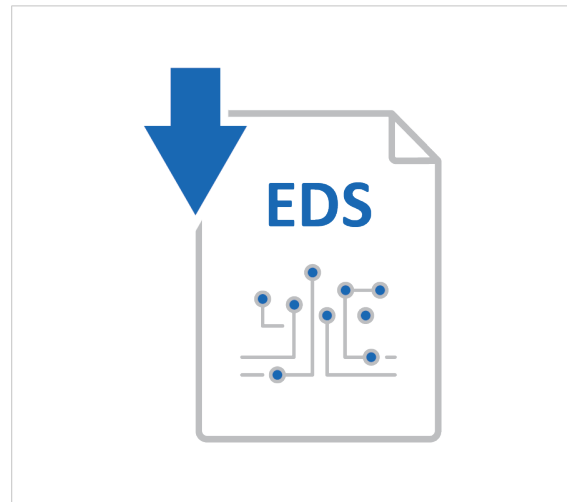
In the **I/O data map** page: You can download the I/O data mapping in a spreadsheet to your PC.



## 2. Download EDS File

Option if the PLC program requires a EDS (Electronic Data Sheet) file.

In the **EtherNet/IP™** page: Download the EDS file to your PC.



**In the PLC program:**

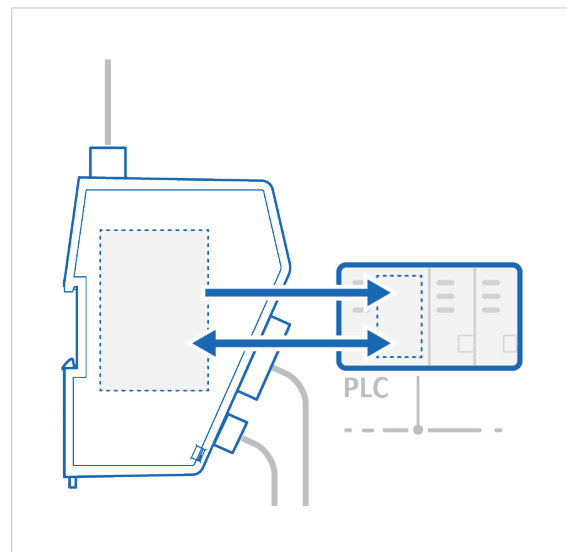
## 3. Import product file

Option if the PLC program requires a EDS (Electronic Data Sheet) file.

Import the EDS file into your PLC project.

## 4. Configure the communication

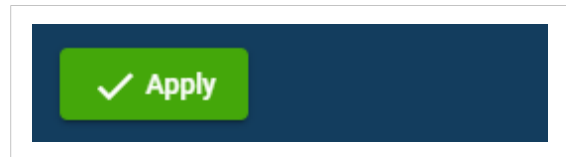
Configure the PLC to communicate with the Communicator according to the I/O data map created in the Communicator.



## 6.4 Verify Operation

### 1. Apply the configuration

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

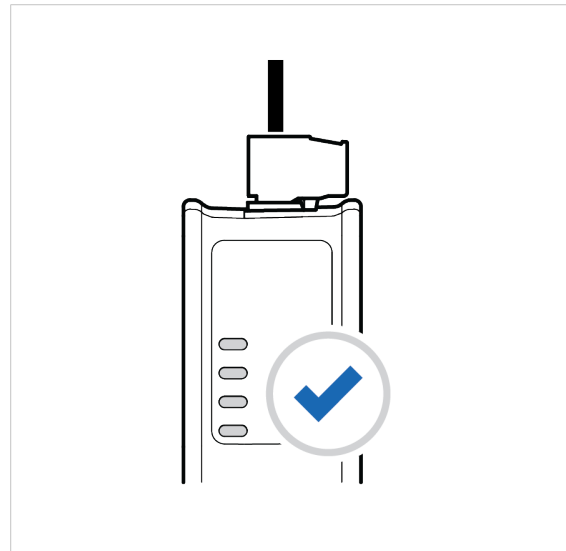


### 2. Verify status and LED indications

In the **Home** page:

Monitor the Communicator, network and node status.

You can also view the Communicator LED indications remotely.



### 3. Verify and monitor communication

In **Diagnostics**, use the:

- **Serial RS-232/485** page to verify that the serial commands are sent and received by the Communicator.
- **Event log** page to detect failures and unexpected behavior over time.



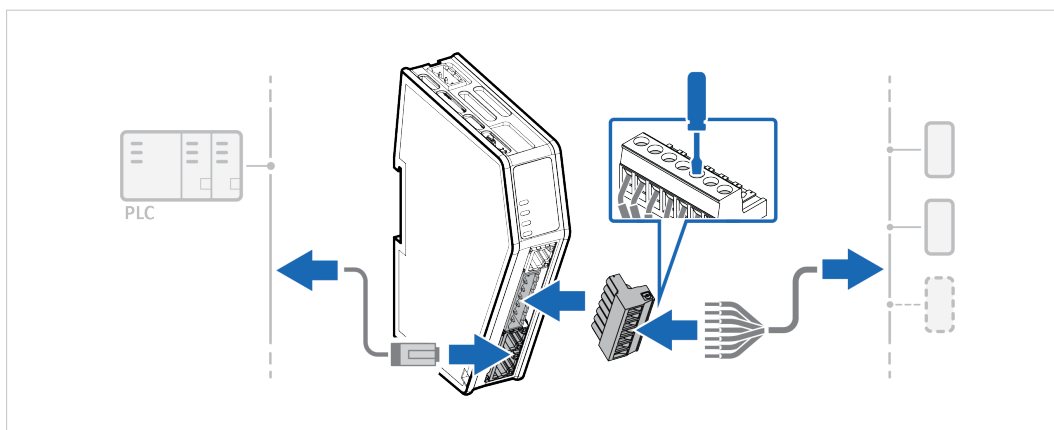
## 7 Communicator Configuration

This section is intended to give you detailed information about the tasks you need to perform to setup a new Communicator configure.

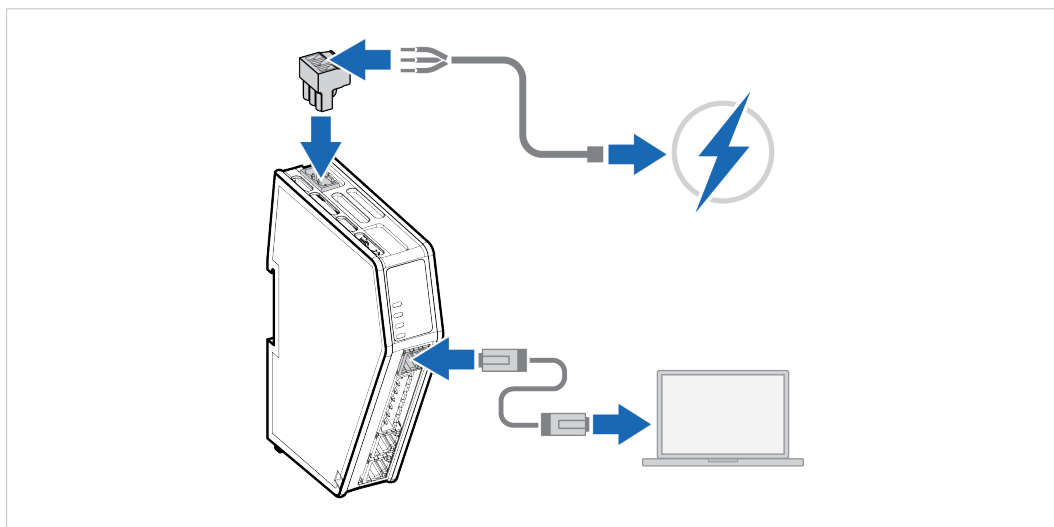
For a more brief overview of the configuration steps, please refer to [Configuration Quick Guide, p. 22](#).

### 7.1 Connecting the Communicator

#### Procedure



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



3. Connect an *Ethernet cable* between the *Communicator configuration port* and your PC.
4. 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](http://www.anybus.com/support).



The Communicator default IP address is **192.168.0.10**.



To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your PC Windows Firewall.



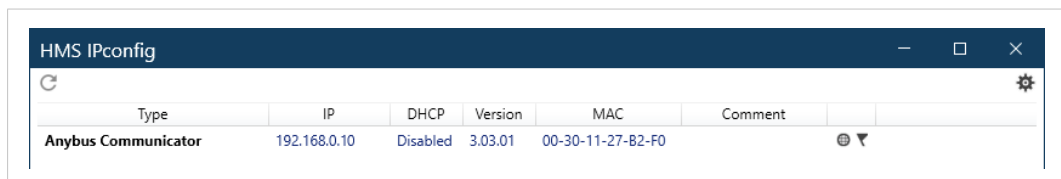
To access the Communicator built-in web interface from HMS IPconfig, ensure that port 3250 UDP is open in your PC Windows Firewall.



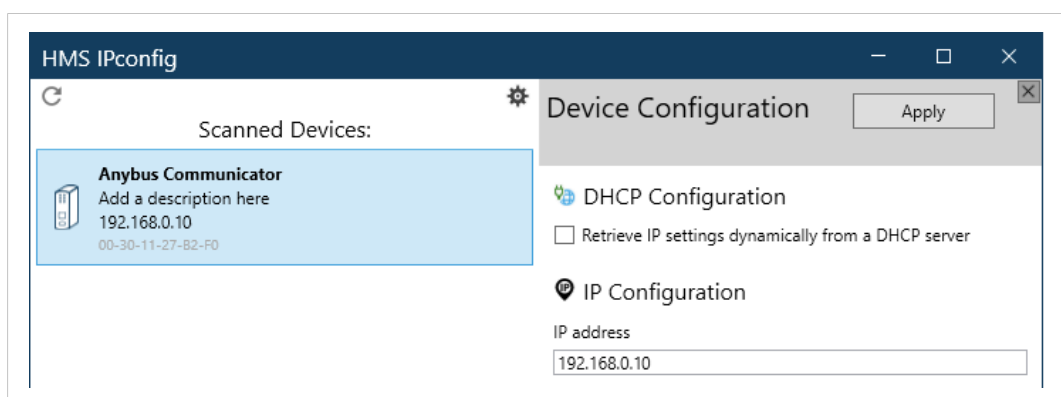
Make sure the security switch is unlocked. HMS IPconfig cannot detect the Communicator if the security switch is locked.

### Procedure

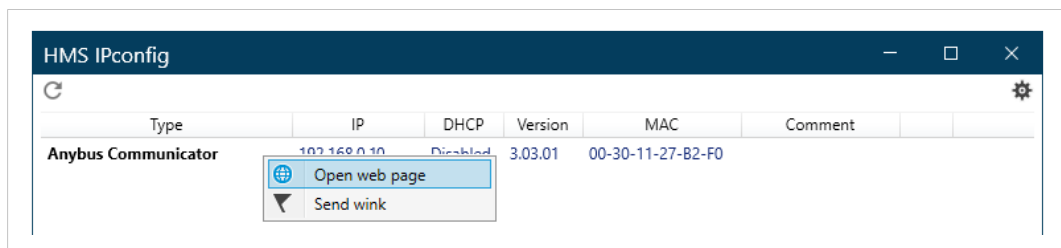
1. Install HMS IPconfig on your PC.
2. Open HMS IPconfig.
  - HMS IPconfig automatically starts scanning for compatible and active HMS devices.
  - Found HMS devices are added to the device list.



3. To open the settings pane, click on the Communicator in the device list.
4. Change the Communicator IP address to one within the same IP address range as your PC.

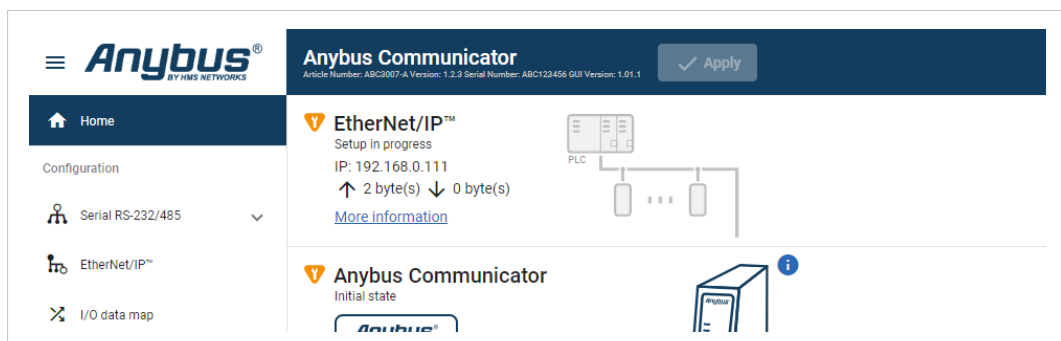


5. To open the Communicator built-in web interface, click **Open web page**.



## 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



The Communicator default IP address is **192.168.0.10**.



To access the Communicator built-in web interface, ensure that Port 80 TCP is open in your PC Windows Firewall.



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

### Procedure

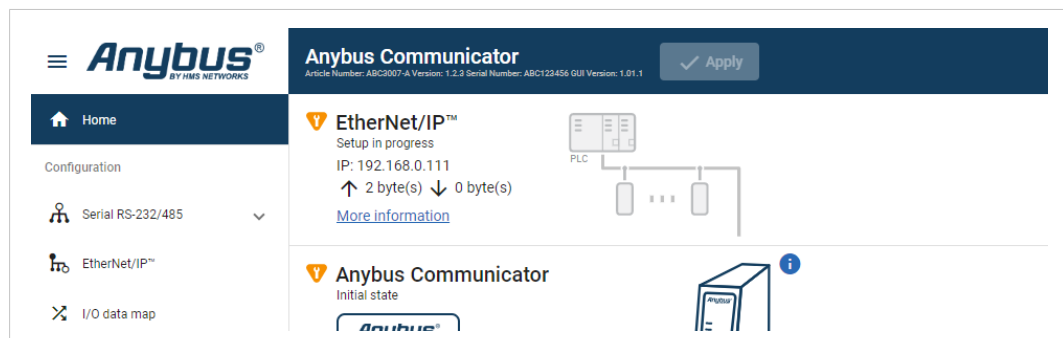
1. On the PC accessing the Communicator built-in web interface, set a static IP address within the same IP address range as the Communicator IP address.



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

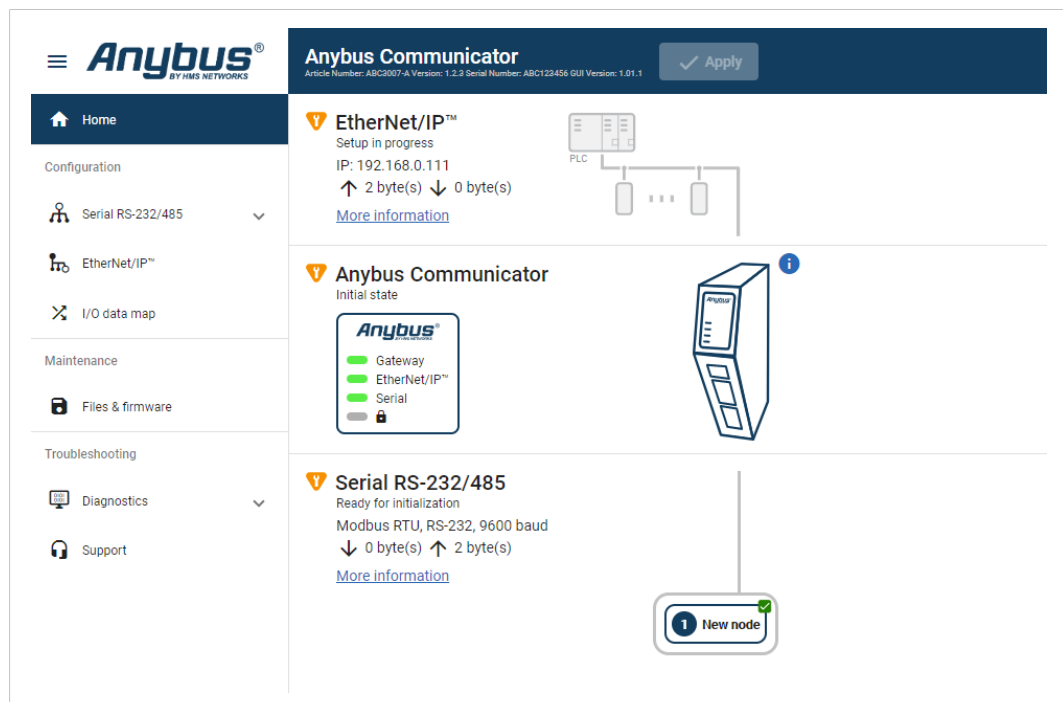


4. To open the built-in web interface Home page, press **Enter**.



## 7.4 Communicator Built-In Web Interface Overview

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



### Home

View the Communicator, network and node status.

### Apply

After configuration changes are made and verified, press Apply to make the settings take effect.

### EtherNet/IP™

High Level Network with Master. Configure I/O Size and IP settings.

### Serial RS-232/485

Serial Subnetwork with Nodes. Configure communication and add nodes and commands.

### I/O data map

View the added 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 General Subnetwork Settings

7.5.1 Setting Up Communication

Anybus Communicator

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

✓ Apply

Communication

Basic settings

Physical standard

RS232

Baud rate

19200 baud

Data bits

8 data bits

Parity

None

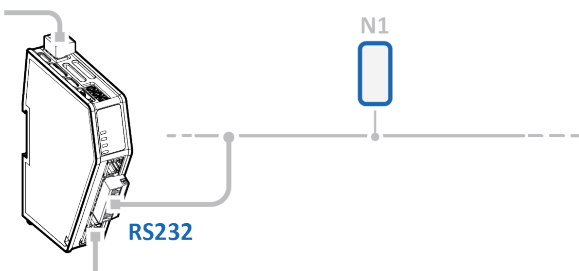
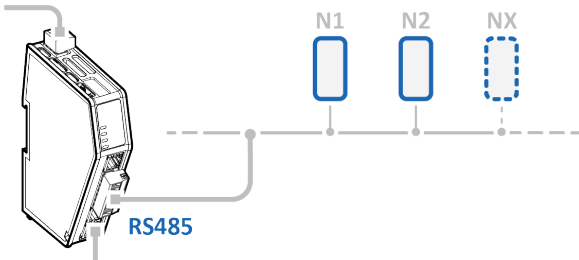
Stop bits

1 stop bit

Physical standard

Specify the physical interface type for the device connected to the Communicator.

1. Select a *physical standard* from the **Physical standard** drop-down menu.

Setting	Value	Description
Physical standard	RS-232 Default standard	Use RS-232 when one <i>single node</i> is connected to the subnetwork. <div></div>
	RS-485	Use RS-485 when <i>multiple nodes</i> are connected to the subnetwork. <div></div>

Baud rate

Specify the baud rate, number of signal units transmitted per unit time that's needed to represent the data bits.

2. Select a *baud rate* value from the **Baud rate** drop-down menu.

Setting	Value
Baud rate	1200 baud
	1800 baud
	2400 baud
	4800 baud
	9600 baud   Default value
	19200 baud

Setting	Value
	35700 baud
	38400 baud
	57600 baud
	115200 baud
	128000 baud

**Data bits**

Data bits is the rate at which data is processed/transferred.

The rate for Modbus RTU is 8 data bits and can not be changed.

**Parity**

Specify if parity should be used to detect errors in the code.

3. Select *parity* value from the **Parity** drop-down menu.

Setting	Value	Description
Parity	None   Default value	No parity checking Parity bit is not transmitted
	Odd	Odd parity checking
	Even	Even parity checking

**Stop bits**

Specify the number of stop bits used to indicate the end of data transmission.

4. Select a *stop bits* value from the **Stop bits** drop-down menu.

Setting	Value
Stop bits	1 stop bit   Default value
	2 stop bit

**Apply configuration**

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

## 7.6 Nodes and Commands

A node represents a single device on the serial subnetwork.

Add nodes and set up the communication between the nodes and the master.

### Before You Begin

Obtain user documentation, from the manufacturers of the devices to communicate with, describing available registers and how to address them.

### 7.6.1 Add Node



*The maximum number of nodes that can be added is 31.*

The screenshot shows the 'Anybus Communicator' web interface. The top header includes the logo and version information. The left sidebar has a 'Nodes and commands' menu item highlighted. The main content area is titled 'Nodes' and features a 'Modbus RTU' icon. Below the icon is an 'Add node' button. To the right, the 'Node settings' section contains input fields for 'Slave address' (value 1), 'Name' (value 'New node'), 'Timeout time' (value 1000 ms), 'Reconnection ti...' (value 10000 ms), and 'Retries' (value 0). There is also an 'Address format' dropdown set to 'Address (0, 1,...)'. Below these settings is a 'Modbus commands' section with an 'Add' button and a table with columns: Active, Command name, Function, Quantity, and Address. The table currently has one entry, 'New node', with a dropdown menu to its right.

1. In the web-interface left sidebar menu, click **Nodes & commands**.
2. Click **Add node**.
  - A new node is added to the node list.

## 7.6.2 Node Settings

Ensure that the Communicator Basic settings, on the Communication page, match the Node settings.

1. In the node list, select a node to configure.
2. Configure the *Node settings*.

Setting	Value	Description
Slave address	1 to 247	Node ID, also called node address, is the node's identity on the subnetwork.  The node id is a number between 1 and 247.  By default, the node is assigned the next available number.  The same node id cannot be used on multiple nodes.
Name	N/A	By default, the node is assigned the name New node and the corresponding Slave address. The node name can be changed.
Timeout time	10 ms to 10 000 ms Default value: 1000 ms.	If a command in a transaction fulfills the specified timeout time value for all specified retries, the remaining transactions defined for the node will be skipped in the current cycle.  The maximum addition to the cycle length is only one instance of the timeout setting.  Specify how long the Communicator should wait before sending the message again, when no response is received from the node.  If the timeout time is exceeded, the Communicator continues to send the message until the maximum number of retries has been reached.
Reconnection time	Min 10 ms Max 60 000 ms Default 1000 ms	Specify for how long the Communicator should wait before attempting to reconnect, if the node is disconnected.  The default value is 10 000 ms.  Reconnect time (10 ms) is not applicable for the <i>broadcast node</i> , that hold transactions destined to all nodes.
Retries	0 to 10 Default value: 0	Specify the number of attempts the Communicator should make, when no response is received from the node.
Address format	Address   Default format Register Modicon Modicon extended	Specify the address format.  Address: 0, 1, 2, ... Register: 1, 2, 3, ... Modicon: 00001/10001/30001/40001 Modicon extended: 000001/100001/...

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

### 7.6.3 Add Command



The maximum number of commands that can be added to a node is 150.

The screenshot shows the 'Anybus Communicator' software interface. On the left, under 'Nodes', there is a 'Modbus RTU' icon and a list with one node labeled '1 New node'. A '+ Add node' button is above the list. The main area is titled 'Node settings' and contains fields for 'Slave address' (1), 'Name' (New node), 'Timeout time' (1000 ms), 'Reconnection ti...' (10000 ms), and 'Retries' (0). Below these is an 'Address format' dropdown set to 'Address (0, 1,...)'. Under 'Modbus commands', there is a '+ Add' button and a table of commands. The table has columns for 'Active', 'Command name', 'Function', 'Quantity', and 'Address'. One command is listed: 'New command' with function 'Read Holding Registers (3)', quantity '1', and address '0'. 'Duplicate' and 'Delete' buttons are to the right of the table.

Active	Command name	Function	Quantity	Address
<input checked="" type="checkbox"/>	New command	Read Holding Registers (3)	1	0

1. In the node list, select a node to configure.
2. In the command list, click **Add**.  
→ A new command is added to the command list.

### 7.6.4 Command Settings

For Modbus command reference guide, refer to [Modbus Command Register, p. 69](#).

The screenshot displays the 'Anybus Communicator' web interface. The top header includes the Anybus logo and version information. The main area is divided into three sections:

- Nodes:** A sidebar on the left showing a 'Modbus RTU' icon and a list of nodes. The first node is 'New node' and is selected.
- Node settings:** A central panel for configuring the selected node. It includes fields for 'Slave address' (1), 'Name' (New node), 'Timeout time' (1000 ms), 'Reconnection ti...' (10000 ms), and 'Retries' (0). There is also an 'Address format' dropdown set to 'Address (0, 1,...)'.
- Modbus commands:** A table listing configured commands. The first command is 'New command' with the function 'Read Holding Registers (3)', a quantity of 1, and an address of 0. It is marked as 'Active'.
- Command settings sidebar:** A panel on the right for configuring the selected command. It includes fields for 'Command name' (New command), 'Modbus command' (Read Holding Regist...), 'Address' (0), 'Quantity' (1), 'Update mode' (Cyclically), and 'Update time' (1000 ms).

1. In the node list, select a node to configure.
2. In the command list, select a command to configure.  
→ The command sidebar opens, on the right side of the screen.



## 3. Configure the Command settings.

Setting	Value	Description
Command name	N/A	By default, the node is assigned the name New command.  The Command name can be changed.
Function Modbus command	N/A	The command type defines what the node should perform when the command is executed.  Select a command type from the drop-down menu.
Read quantity	1 to 125	Specifies the number of registers to read to follow in the read data field. Appear when Modbus command Read Write Multiple Registers (23) is selected.
Address	0 to 65 535	Specify the address in the slave device Modbus holding register, define by the node.  The address acts as an address to the data position, where the data is read from or written to.  Modbus holding register addresses starts at 0. Modbus address 0 = Register 1
Write quantity	Read Write Multiple Registers (23) 1 to 123	Specifies the quantity of registers to follow in the write data field. Appear when Modbus command Read Write Multiple Registers (23) is selected.
Quantity	Read Holding Registers (3) Read Input Registers (4) 1 to 125  Write Multiple Coils (15) 1 to 1968  Write Multiple Registers (16) 1 to 123  Read Coils (1) Read Discrete Inputs (2) 1 to 2000	The Quantity parameter appear when you select a Modbus command that can address more than one data object.  Example when Quantity is set: For the Modbus Command <i>Read Input Registers (4)</i> you need to set the Quantity in order to define the array of data.  Example when no Quantity is set: For the Modbus Command <i>Write Single Coil (5)</i> you do not need to set the Quantity parameter because there can not be an array of data. The command is used to write a single output to either ON or OFF in a remote device.  For Write Single Coil (5), Write Single Register (6) and Mask Write Register (22) Quantity cannot be set.
Update mode	Cyclically On data change	Specify when a transaction shall be sent to the slave. The transaction is issued cyclically, at the interval specified in the Update time parameter.
Update time	10 ms to 60 000 ms	Update mode parameter must be set to Cyclically. The Update time parameter appear when Cyclically is select.  Specify how often, in steps of 10 ms, the transaction are going to be issued.

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

## 7.6.5 Activate/Deactivate Command

Modbus commands

+ Add Duplicate Delete

Active	Command name	Function	Quantity	Address
<input checked="" type="checkbox"/>	New command	Read Holding Registers (3)	1	0

The command default status is **Active**.

To deactivate/activate a command, select the command and click the **slide toggle**.

## 7.6.6 Duplicate Command

When you duplicate a command, all settings are preserved.

Modbus commands

+ Add Duplicate Delete

Active	Command name	Function	Quantity	Address
<input checked="" type="checkbox"/>	New command	Read Holding Registers (3)	1	0

To duplicate:

- One command, select the command and click **Duplicate**.
- Multiple commands, select the checkbox in front of each command you want to duplicate and click **Duplicate**.

→ The duplicated command are added at the bottom of the Command list.

## 7.6.7 Delete Command

Modbus commands

+ Add Duplicate Delete

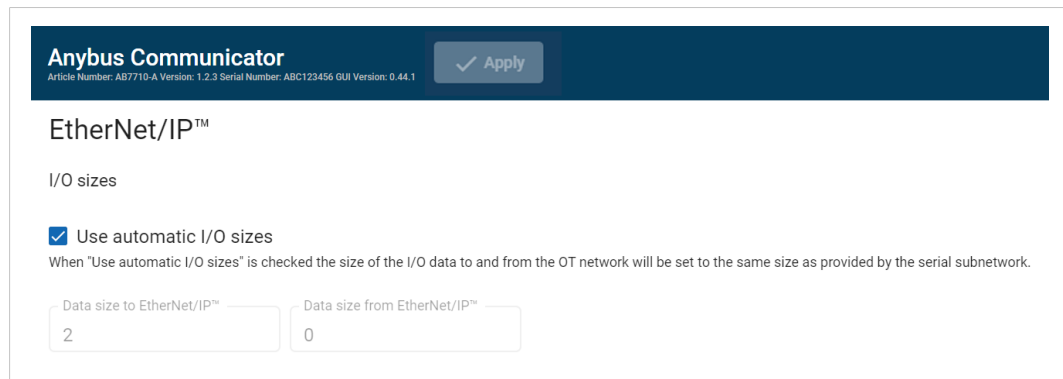
Active	Command name	Function	Quantity	Address
<input checked="" type="checkbox"/>	New command	Read Holding Registers (3)	1	0

1. To delete:
  - One command, select the command and click **Delete**.
  - Multiple commands, select the checkbox in front of each command and click **Delete**.
2. To confirm, click **Yes**.

## 7.7 High Level Network Settings

Configure the EtherNet/IP network settings.

### 7.7.1 To Use Automatic I/O Sizes



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

✓ Apply

### EtherNet/IP™

I/O sizes

☒ Use automatic I/O sizes

When "Use automatic I/O sizes" is checked the size of the I/O data to and from the OT network will be set to the same size as provided by the serial subnetwork.

Data size to EtherNet/IP™: 2

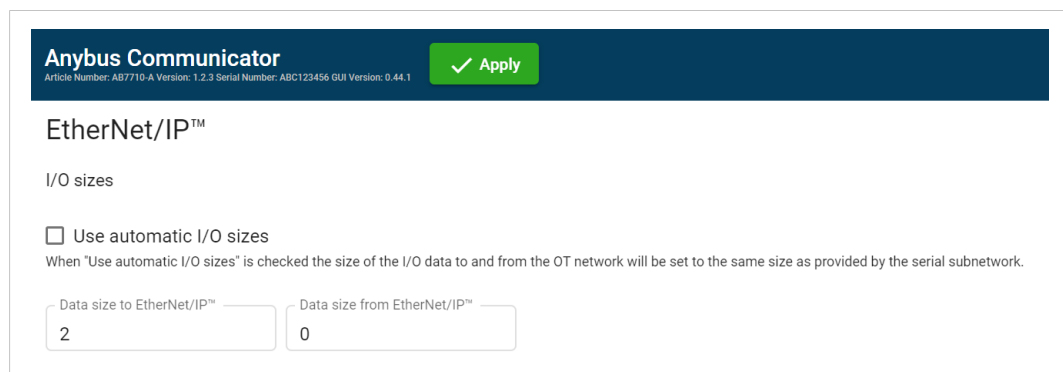
Data size from EtherNet/IP™: 0

By default, the Communicator is set to use automatic I/O sizes.

The size of the input data, *Data Size to EtherNet/IP*, and the output data, *Data Size from EtherNet/IP*, is determined by the subnetwork configuration.

In the Communicator built-in web interface, the **Use Automatic I/O Sizes** checkbox is selected.

### 7.7.2 To Configure I/O Sizes Manually



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

✓ Apply

### EtherNet/IP™

I/O sizes

☐ Use automatic I/O sizes

When "Use automatic I/O sizes" is checked the size of the I/O data to and from the OT network will be set to the same size as provided by the serial subnetwork.

Data size to EtherNet/IP™: 2

Data size from EtherNet/IP™: 0

1. Deselect the **Use Automatic I/O Sizes** checkbox.
2. Enter a value for *Data Size to EtherNet/IP* and a value for *Data Size from EtherNet/IP*.

### 7.7.3 To Use DHCP Server

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

✓ Apply

IP Settings

☒ DHCP enabled

IP address  
192.168.0.111

Subnet mask  
255.255.255.0

Gateway address  
192.168.0.1

Primary DNS  
0.0.0.0

Secondary DNS  
0.0.0.0

By default, the IP settings are provided by the high level network DHCP server.

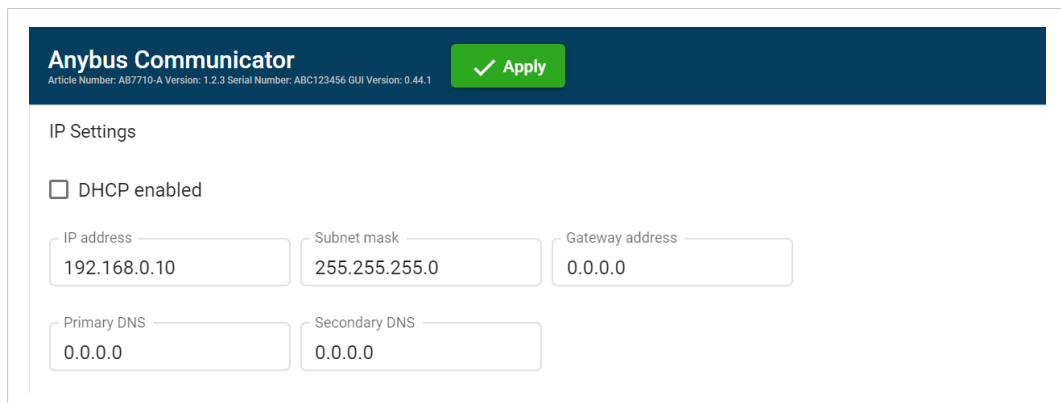
The **DHCP enabled** checkbox is selected.

#### Default Communicator IP Settings

The Communicator comes with the following factory default IP settings:

Setting	Default value
IP address	0.0.0.0
Configuration port	
Subnet mask	0.0.0.0
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.
DHCP	Enabled
ACD (Address Conflict Detection)	Enabled
Domain name	There is no default Domain name.
Host name	There is no default Host name.

### 7.7.4 To Configure IP Settings Manually



The screenshot shows the 'Anybus Communicator' configuration window. At the top, there is a header bar with the title 'Anybus Communicator' and a green 'Apply' button. Below the header, the 'IP Settings' section is visible. It includes a checkbox for 'DHCP enabled' which is currently unchecked. Below this, there are four input fields: 'IP address' (192.168.0.10), 'Subnet mask' (255.255.255.0), 'Gateway address' (0.0.0.0), 'Primary DNS' (0.0.0.0), and 'Secondary DNS' (0.0.0.0). A green 'Apply' button is located at the top right of the configuration area.

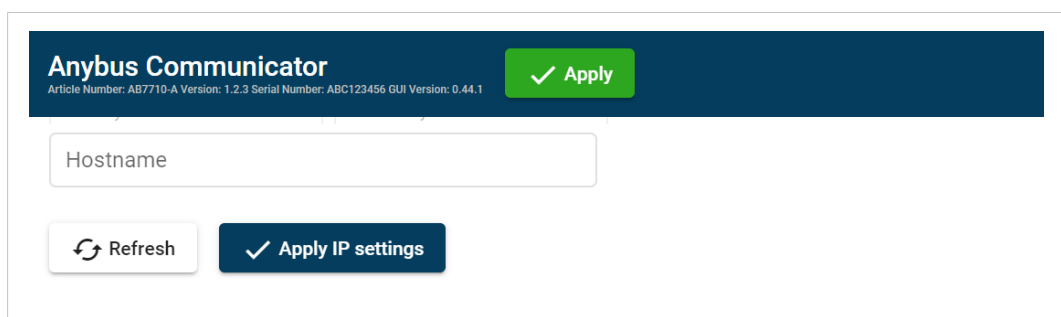
1. Deselect the **DHCP enabled** checkbox.
2. Configure the IP settings.

Setting	Description
IP address	Assign a static IP address to the Communicator, on the network where it is installed.
Subnet mask	The subnet mask is used to identify the network address of the static IP address.
Gateway address	Assign a default internal IP address to the Communicator.
Primary DNS	In a primary/secondary DNS server setup.
Secondary DNS	In a primary/secondary DNS server setup. The secondary server provide redundancy in the DNS network.

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

3. To apply the settings, click **Apply IP Settings**.

### 7.7.5 Naming the Host

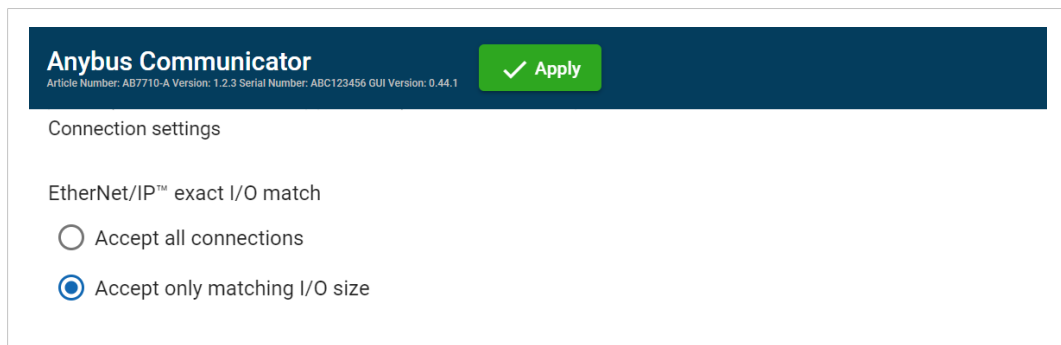


The screenshot shows the 'Anybus Communicator' configuration window for naming the host. It features a header bar with the title 'Anybus Communicator' and a green 'Apply' button. Below the header, there is a text input field labeled 'Hostname'. At the bottom, there are two buttons: a 'Refresh' button with a circular arrow icon and an 'Apply IP settings' button with a green checkmark icon.

You can label the Communicator.

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

### 7.7.6 Connection Settings



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

✓ Apply

Connection settings

EtherNet/IP™ exact I/O match

☐ Accept all connections

☒ Accept only matching I/O size

When the EtherNet/IP Master (PLC) opens a connection to the Communicator, it specifies an I/O data size.

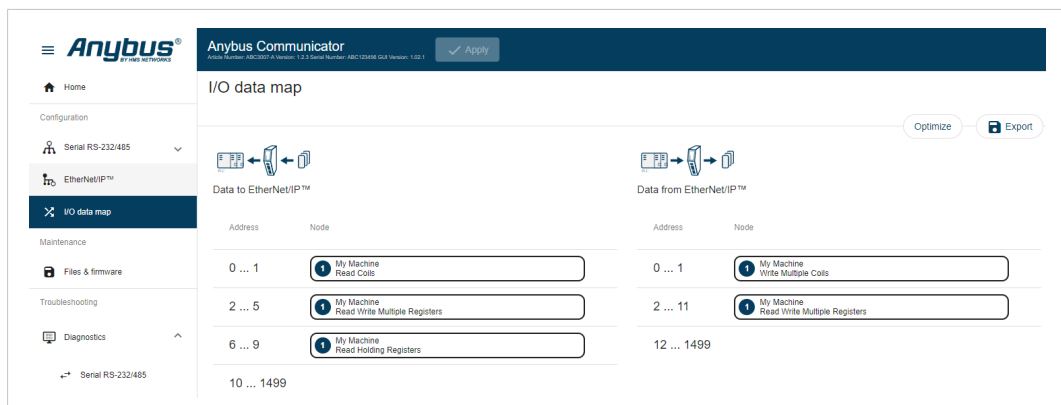
By default the Communicator is set to **Accept Only Matching I/O Sizes**.

The connections must match the I/O size configured on the EtherNet/IP page, refer to [To Use Automatic I/O Sizes, p. 41](#) and [To Configure I/O Sizes Manually, p. 41](#).

You can change to **Accept All Connections**.

The Communicator will accept all connections with an I/O size that is equal to or smaller than the configured I/O size in the Communicator.

## 7.8 I/O Data Map



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

✓ Apply

I/O data map

Optimize Export

Address	Node
0 ... 1	My Machine Read Coils
2 ... 5	My Machine Read Write Multiple Registers
6 ... 9	My Machine Read Holding Registers
10 ... 1499	

Address	Node
0 ... 1	My Machine Write Multiple Coils
2 ... 11	My Machine Read Write Multiple Registers
12 ... 1499	

On the **I/O data map** page the data communication between the subnetwork (Node) and the high level network (PLC) is mapped.

The allocated I/O area is auto-generated based on how the settings on the **Serial communication** page and the **Nodes and commands** page are configured.

It is possible to set the I/O area manually, if you want to pro-actively allocate more I/O for future expansions without re-configuring the PLC. Refer to [To Configure I/O Sizes Manually, p. 41](#).

### 7.8.1 Optimize the I/O Data Map

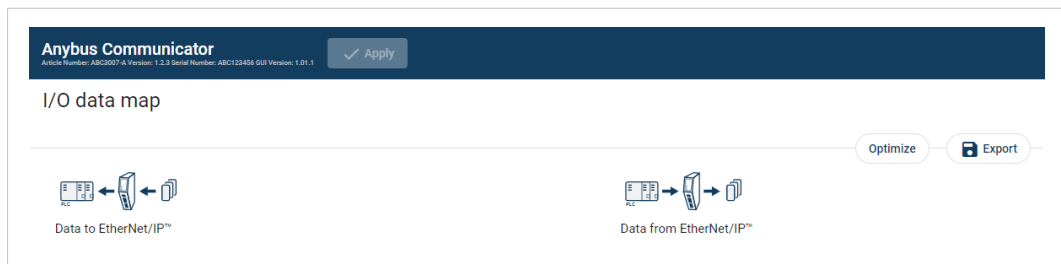
The optimize function is used to automatically remove gaps between the mapping.



Optimize remove gaps between the data objects in the map and should be used with care on already commissioned systems. Expected mapping in the PLC may change.



*If you optimize the I/O data map, the current I/O data map will be overwritten.*



To optimize the map:

1. Click **Optimize**.
2. To confirm, click **OK**.

## 7.8.2 Endian Swap

By default EtherNet/IP uses the little-endian format.

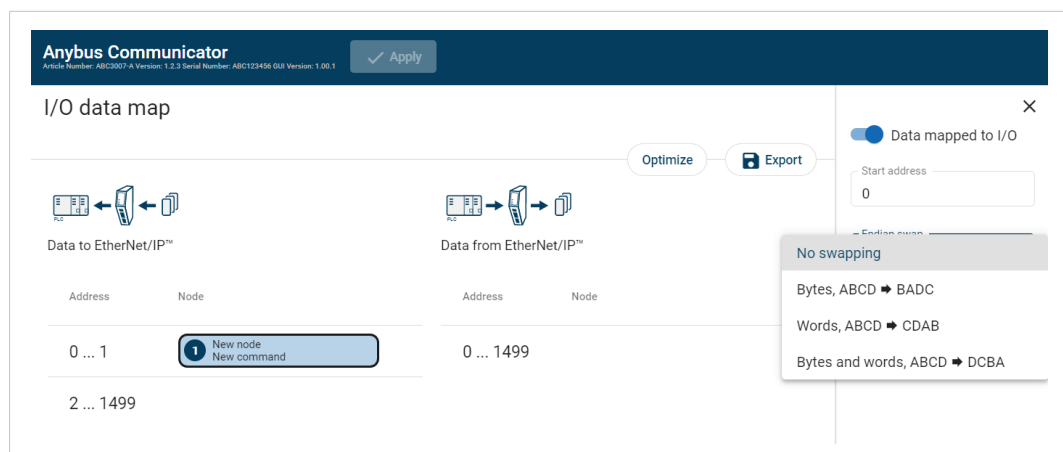
### Big-endian

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.

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



To reverse the byte order:

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

Setting	Description
No swapping	Default setting No swapping is performed on the data.
Byte swap	Swap 2 bytes AA BB CC DD becomes BB AA DD CC
Word swap	Swap 4 bytes AA BB CC DD becomes CC DD AA BB
Byte and Word swap	AA BB CC DD becomes DD CC BB AA

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



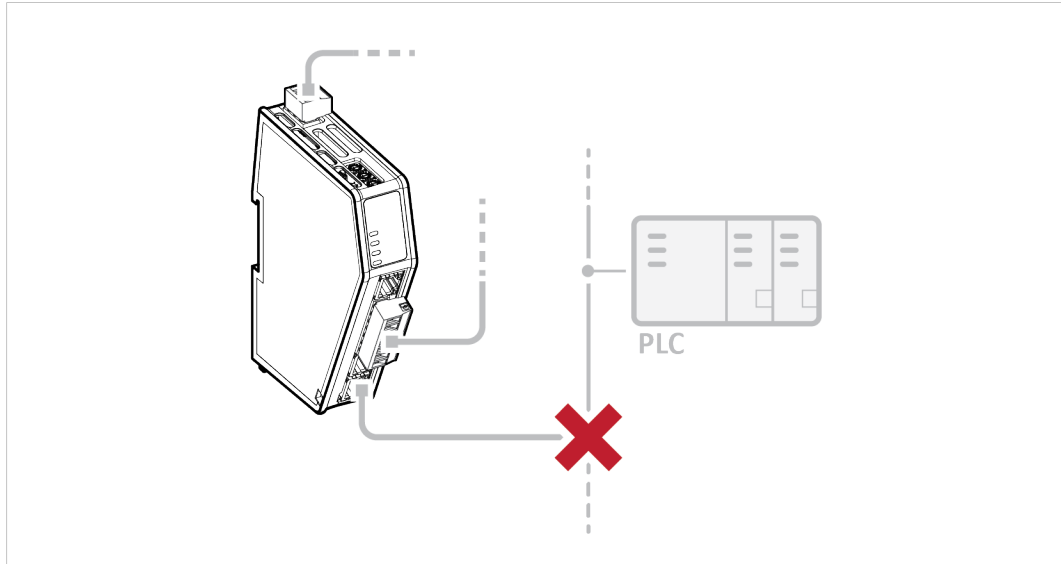
## 7.9 Apply Configuration

### Before You Begin



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

### Disconnect the Communicator from the EtherNet/IP™ network



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

If there is active communication on the EtherNet/IP™ network when you try to apply the configuration, the configuration will be rejected.

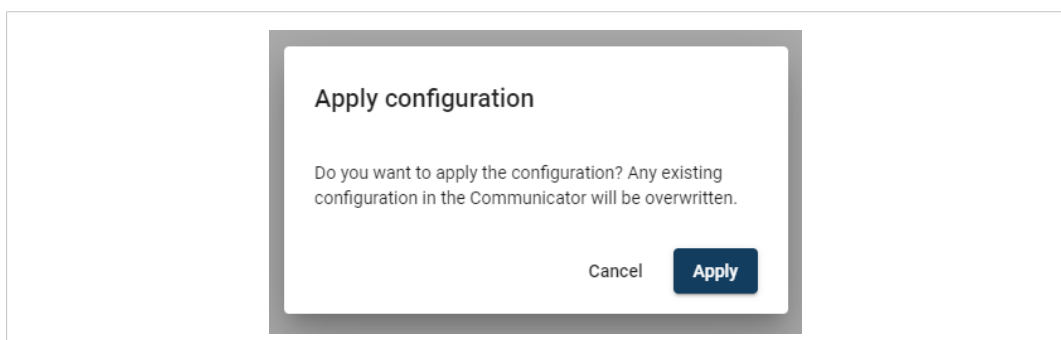
### Procedure

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

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



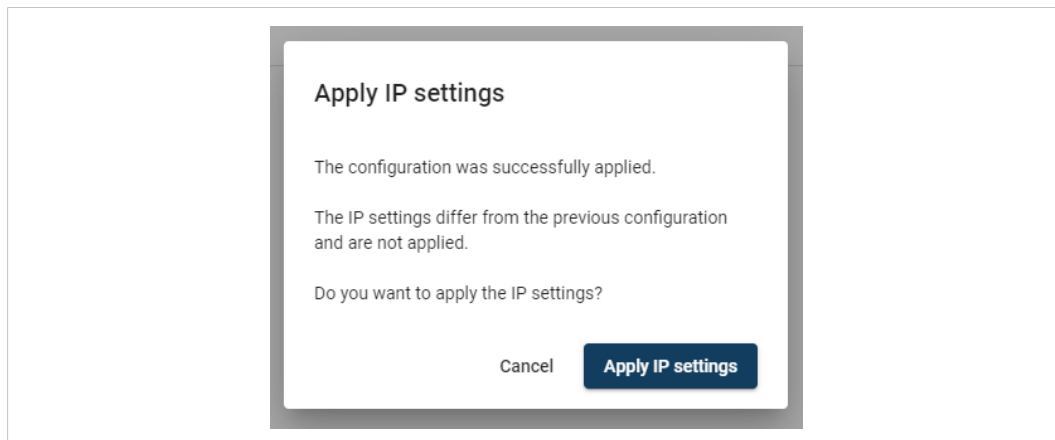
2. To confirm download, click **Apply**.



→ The configured settings are downloaded and applied to the system.

If you have made changes to the IP settings you are prompted to apply these settings.

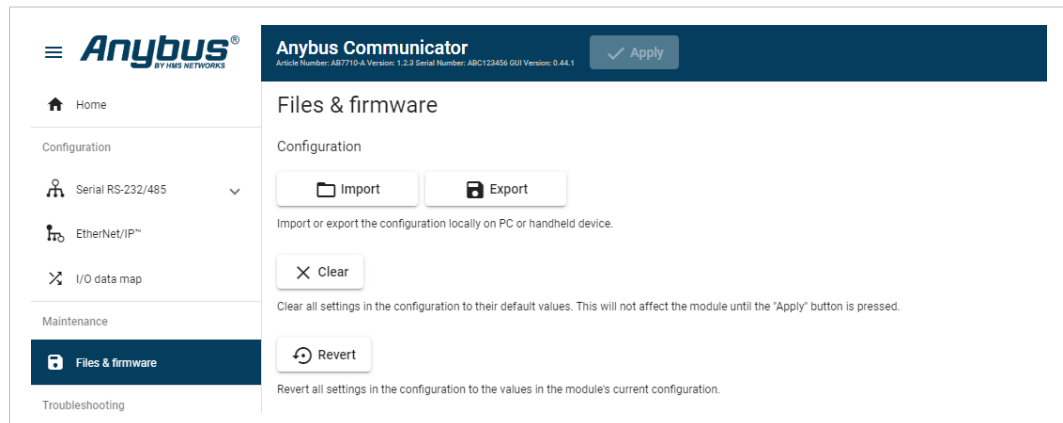
3. To apply the IP settings, click **Apply IP settings**.



## 7.10 Use an Existing Configuration

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

### Procedure



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

1. On the Files & firmware page, click **Export**  
→ The configuration is saved in a 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.

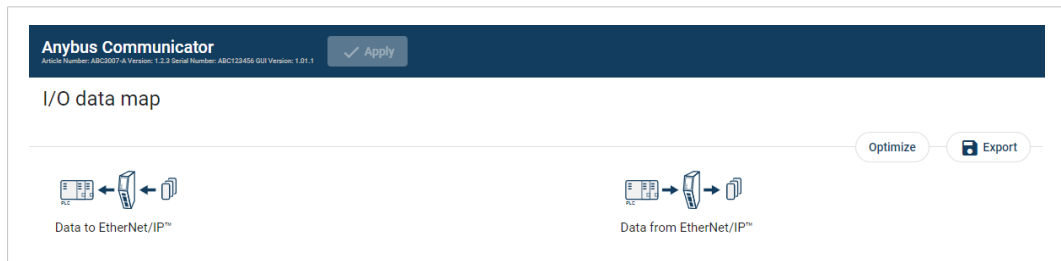
To apply the settings, click **Apply** in the web-interface header, and follow the instructions.

## 8 PLC Configuration

### 8.1 Export I/O Data Map

When configuring the communication between the PLC and the nodes on the subnetwork, use the I/O data map as a specification to ensure that the commands match.

In the Communicator built-in web-interface:



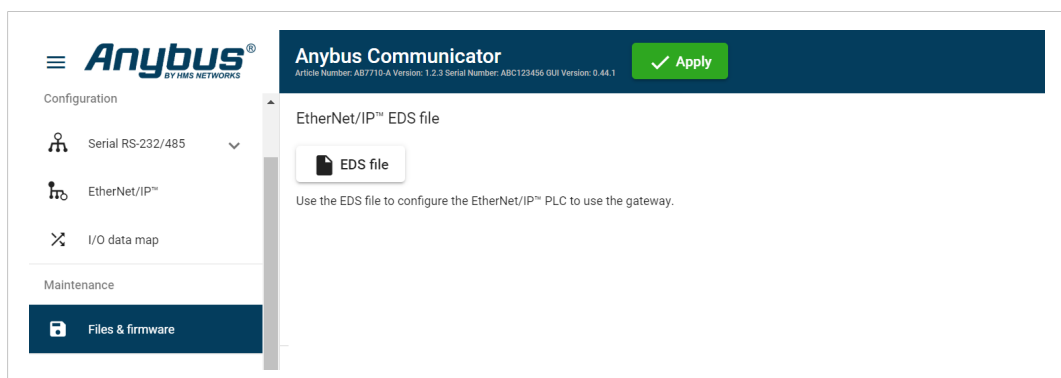
On the I/O data map page you can export the I/O data map in an Excel XLS file, where all the nodes and transactions are listed.

To export the I/O data map:

1. Click **Export**.  
→ An Excel XLS file with the mapping is downloaded to your PC.

### 8.2 Export Product EDS file

Option if the PLC program requires a product file, EDS (Electronic Data Sheet) file, describing how the Communicator can be used on the high level network.



You find the EtherNet/IP™ EDS file on the Communicator built-in web interface EtherNet/IP™ page, Files & firmware page and on the Support page.

To export the EDS file:

1. Click **EDS file**.  
→ The EDS file is downloaded to your PC.

## 8.3 CIP Objects

Supported Common Industrial Protocol (CIP) objects.

Object name	Class	Description
Identity object	0x01	The identification object
Message router object	0x02	Message router
Assembly object	0x04	Assembly object
Connection manager object	0x06	Connection manager object
DLR object	0x47	Device level ring object
QoS object	0x48	Quality service object
TCP/IP Interface object	0xF5	Handles TCP/IP configuration
EtherNet/IP Link object	0xF6	Handles EtherNet/IP configuration

## 9 Verify Operation

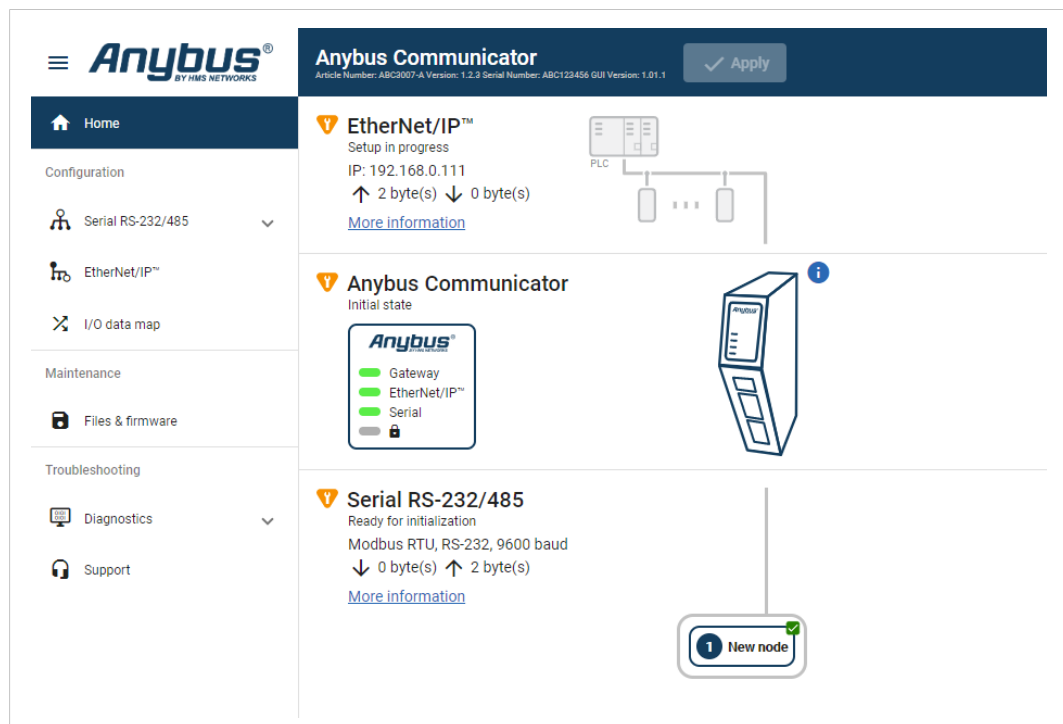
### Before You Begin

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

Refer to [Installation, p. 14](#).

### 9.1 Communicator Status Monitor

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



#### Gateway status

Overview the Communicator LED indications remotely.

Refer to [Communicator LED Indicators, p. 54](#).





#### Node Status

Overview the status for each node added to the subnetwork.

#### Network Status and Settings

Overview communication status and the current networks settings.

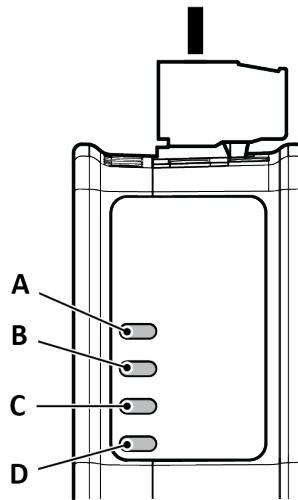
**Status Symbols**

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

## 9.2 Communicator LED Indicators



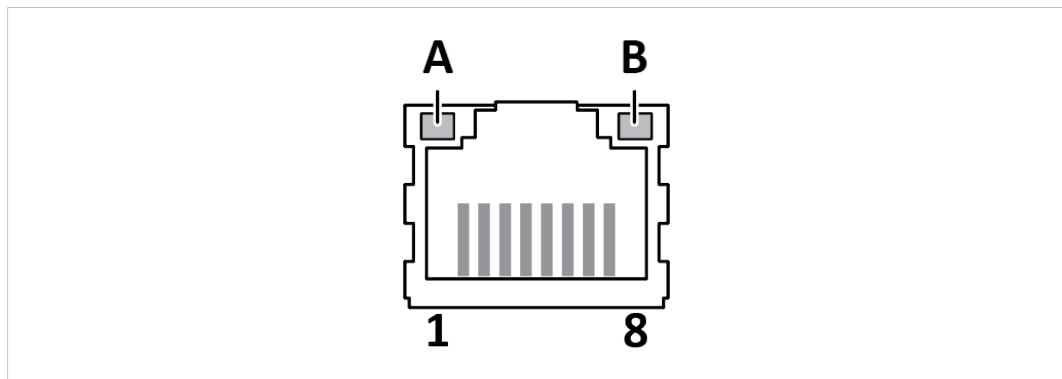
Before you can verify operation you must configure the Communicator.



	LED A	LED B	LED C	LED D
Operation Status	Gateway status	EtherNet/IP - Adapter	Subnetwork	Security switch
<b>Off</b>	No power	No power/Exception/ No EtherNet/IP IP address	No power/Exception/ Subnetwork not running	No power/Security switch is unlocked/ Exception/Fatal error
<b>Green, flashing</b>	Startup phase	EtherNet/IP online, no connections established	Running, one or more nodes are offline	N/A
<b>Green</b>	Operational	EtherNet/IP online, one or more connections established	Running	Security switch is locked
<b>Red</b>	Exception/Fatal error	Duplicated EtherNet IP address/Fatal error	Fatal error	N/A
<b>Red, flashing</b>	Invalid configuration	One or more connections timed out	All nodes are offline	N/A
<b>Green/Red, flashing</b>	Power up self-test/ Firmware update/ Firmware recovery	N/A	N/A	N/A



### 9.3 Ethernet LED Indicators



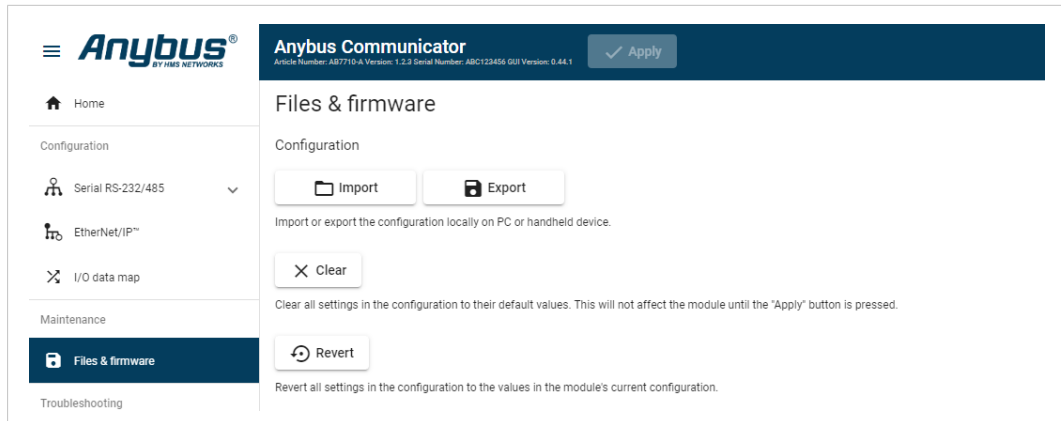
LED A	Function
Off	No link (or no power)
Green	Link (100 Mbit/s) established
Green, flashing	Activity (100 Mbit/s)
Yellow	Link (10 Mbit/s) established
Yellow, flashing	Activity (100 Mbit/s)
LED B	Function
Off	Not used

## 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 Communicators.



To export a configuration file:

1. 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 Communicators with the same settings, you can import a configuration file.

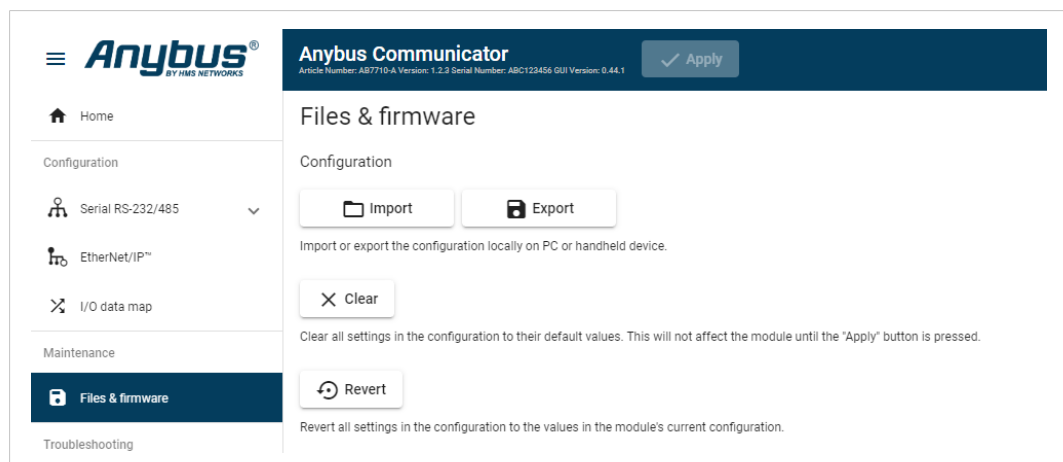
#### Before You Begin



*Importing a configuration replaces the current applied configuration.*

Supported file format is `.conf`.

#### Procedure



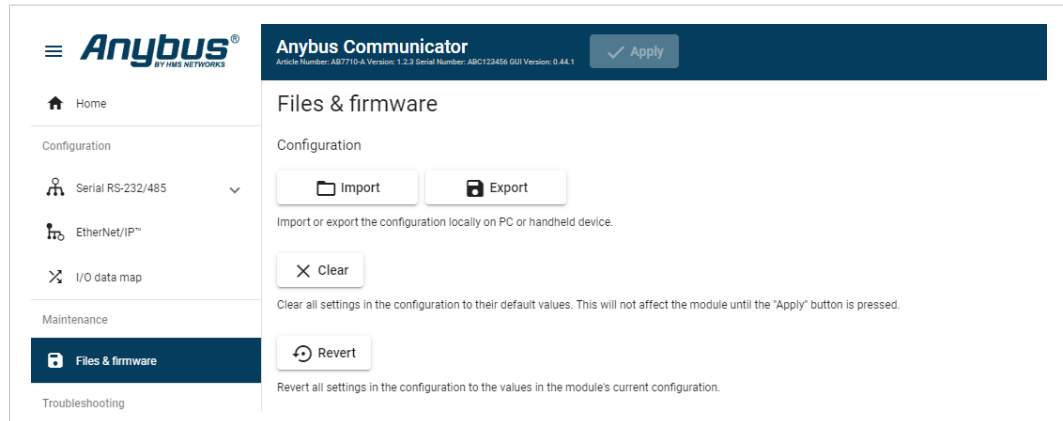
Import configuration file:

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



To clear the configuration:

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.

You can revert all changes done to the settings in the current configuration.

To Revert the configuration:

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 Firmware and Configuration Compatibility

#### Compatibility after firmware upgrade

Current configuration is still compatible after upgrading the firmware.

#### Compatibility after firmware downgrade



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

### 10.3.2 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
- that 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.

### 10.3.3 Update Firmware

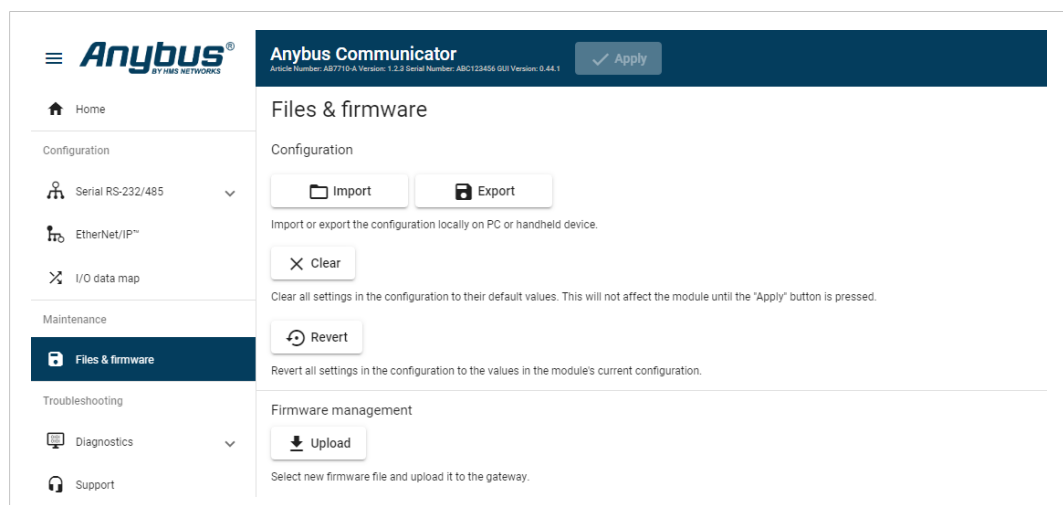
#### Before You Begin



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



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.

# 11 Troubleshooting

## 11.1 Diagnostics

### 11.1.1 Serial RS-232/485 Data Monitor

On the Serial RS-232/485 page you can monitor how the data flow between the nodes and the PLC changes over time.

The screenshot shows the 'Anybus Communicator' software interface for monitoring Serial RS-232/485 data. The left sidebar contains navigation options: Home, Configuration (Serial RS-232/485, EtherNet/IP, I/O data map), Maintenance (Files & firmware), and Troubleshooting (Diagnostics, Serial RS-232/485, Event log). The main area displays a table of data flow messages. The table has three columns: Time (d:hh:mm:ss.ms), Direction (indicated by a blue arrow icon), and Data (hexadecimal values). The data is displayed in Hexadecimal format, as indicated by the 'Hex' button being selected. The table shows several messages, including a 'Start' message at 0:03:53:36.759 and a 'Stop' message at 0:03:53:36.959.

Time (d:hh:mm:ss.ms)	Direction	Data
0:03:53:36.759	→	32 3c e8 41 97 f2 5b 3a 55 1c ba 42 33 e8 70 a8 bf 90 71 e4 31 ec b8 09 37 e8 08 30 9c 13 94 df d9 fc 5a f3 a4 c3 11 ba 5c bd 7a a7 f8 fa 17 d2 1c cb 76 7a a0 4e db eb 60 ad f0 24 1c a3 f0 d7 0a 4f 2b 6b 80 89 29 75 cf a8 b1 cf 09 04 3c f2 3c 89 fd d7 d1 6e 27 92 2d c2 39 ea c2 9c fd 77 ee 3e 50 86
0:03:53:36.810	→	ce 0a 03 7a f4 46 e3 10 6d eb b6 2e f9 da 0f 02 ec 8a 51 c8 98 ec df 89 92 49 3d 13 a0 80 b7 f8 5e 84 58 e4 1d ca a3 e8 eb b5 40 41 25 ca 92 dd 73 de 7e e5 db d2 60 af 42 9c 08 e1 dc c8 dd bc b0 ec 02 15 ae 3e 7f 55 1b af a1 11 4d fa 8c 95 76 d2 bb af a8 af 20 92 e1 5a ee 98 97 38 51 62 33 64 cf ec
0:03:53:36.859	→	80 d3 99 b2 a5 2f 06 77 8b ba 87 87 ff 5e fc db 1f 72 84 cd 26 5d f0 b6 a0 6f 96 c6 2a d2 c2 00 75 c8 49 7e 9c 81 e0 81 a4 bc d7 f3 33 1f 29 ac bf b4 49 39 14 07 ed b9 97 e2 52 40 0d 23 4c 28 75 c9 d6 90 2e 00 e2 ca 38 51 df ec 24 00 ef 61 69 e4 15 5a 7d 25 33 87 69 ad 27 4e 35 06 2e 4b a1 48 9f 9f
0:03:53:36.910	→	d9 c5 b5 36 aa 7e e0 3a 60 f3 21 5a b7 84 2d cd 75 81 75 45 0a 0b fc 2c 07 93 c9 ad 73 04 79 c8 66 18 35 9d 5a c5 bc 52 db 29 9f fa 21 23 a4 72 23 75 3b 34 91 d5 2f d8 59 91 1e ab 3a 6e 99 7f 86 97 2b 64 44 68 e2 2d ca 3d 3a 46 bf 31 0f 96 f5 eb 96 84 1c 1d 67 c8 bf 05 22 90 49 49 1e 84 59 b6 be 1e
0:03:53:36.959	→	50 b6 7f d8 c1 41 60 f9 b3 e3 05 8d d0 2b 44 60 37 02 a4 ad 3f 7e a6 78 b4 e8 31 08 53 20 f6 45 e5 c5 06 65 b0 1c a5 07 f0 71 9f c1 eb 97 5a 27 6d 43 ee ca f6 d7 e5 55 db 01 30 ff 95 56 a5 1e 69 8e 43 d3 c6 d2 ad 20 12 e9 87 26 90 56 ff e4 c5 35 31 3d 64 e9 3f 40 47 a5 c6 9f 24 71 3f 3a 49 cd e2 81

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

#### Choose 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**.

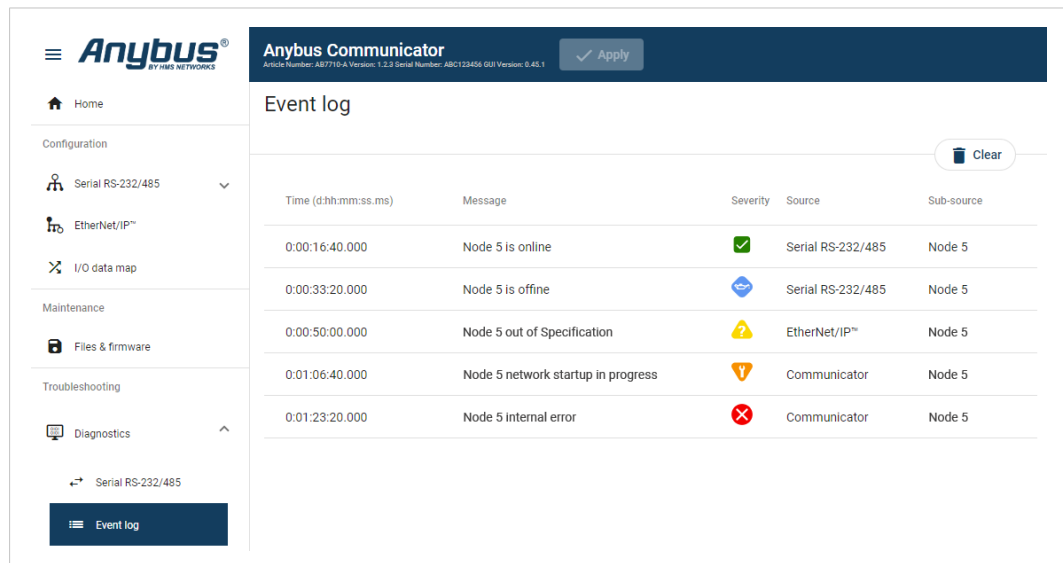
To end the data flow, click **Stop**.

#### Export data flow

To export the data flow, click **Export**.

→ An Excel file with the data flow is downloaded to your PC.

## 11.1.2 Event Log



### How To Analyze the Information

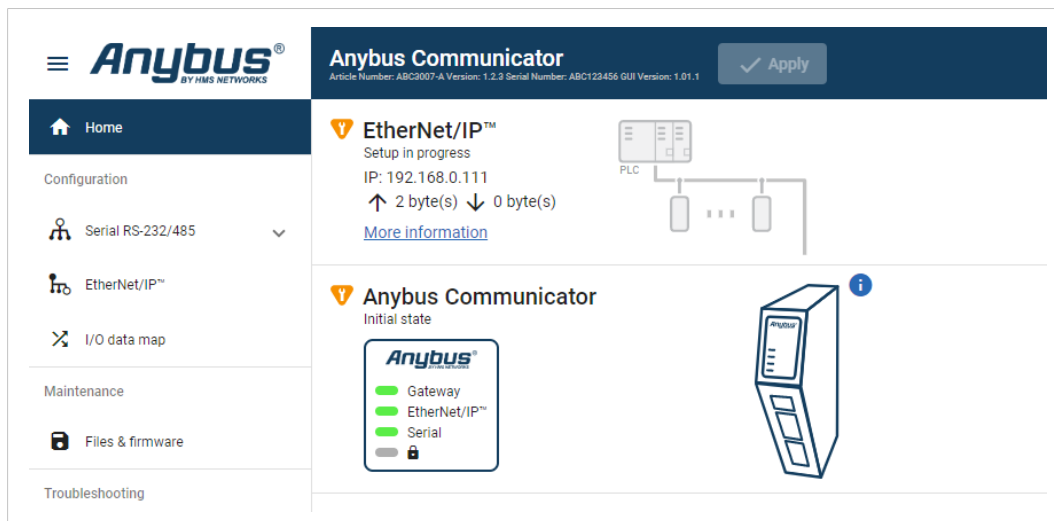
The log follows the FIFO principle, first in and first out. The oldest (first) value is processed first.

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, refer to <a href="#">Communicator Status Monitor, p. 52</a> .	
Source	0	Communicator
	1	High level network, EtherNet/IP™
	2	Subnetwork, Serial RS-232/485
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: 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.

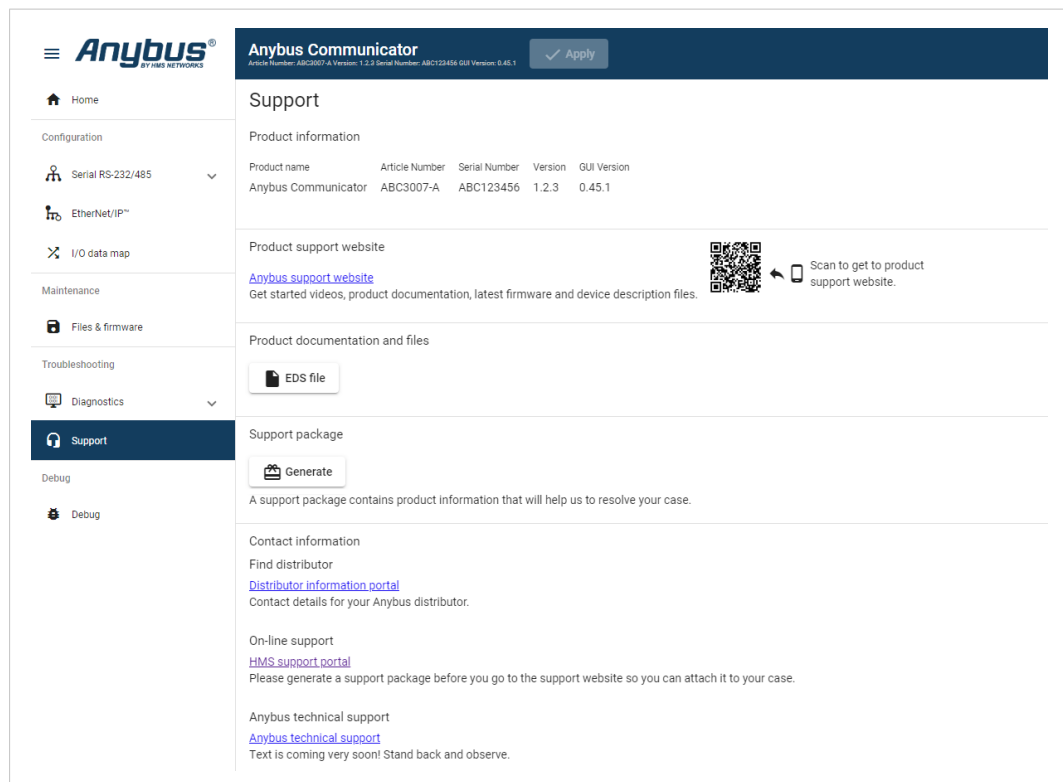


For information about the LED indication, refer to [Communicator LED Indicators, p. 54](#).



## 11.2 Support

### 11.2.1 Support Package



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

1. 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.

## 11.3 Reset to Factory Settings

### Before You Begin

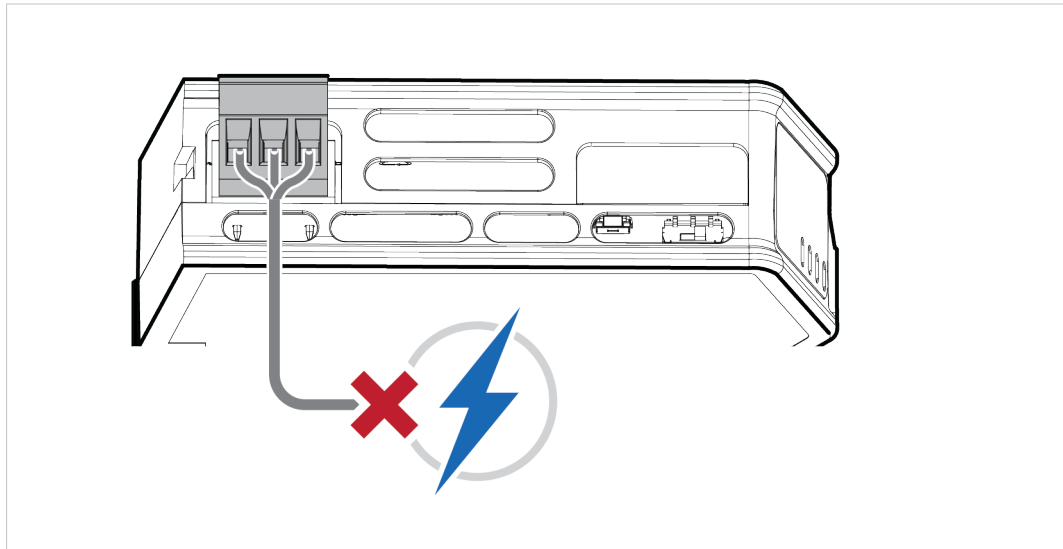
Factory reset will reset any on site made configuration changes and set the Communicator to the same state as leaving HMS production.

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

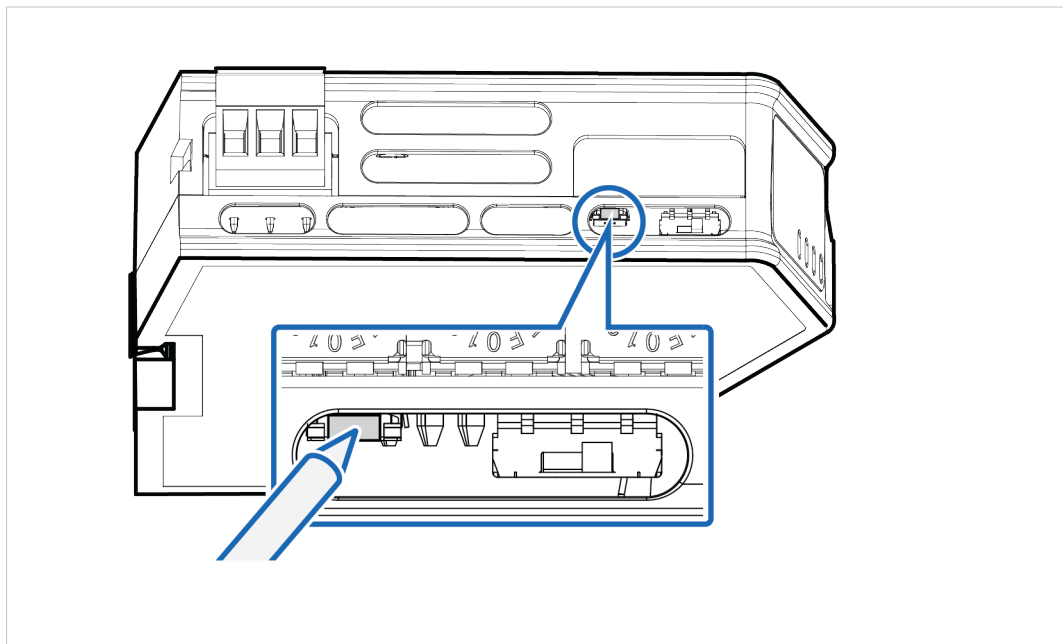
### Procedure

To reset the Communicator:

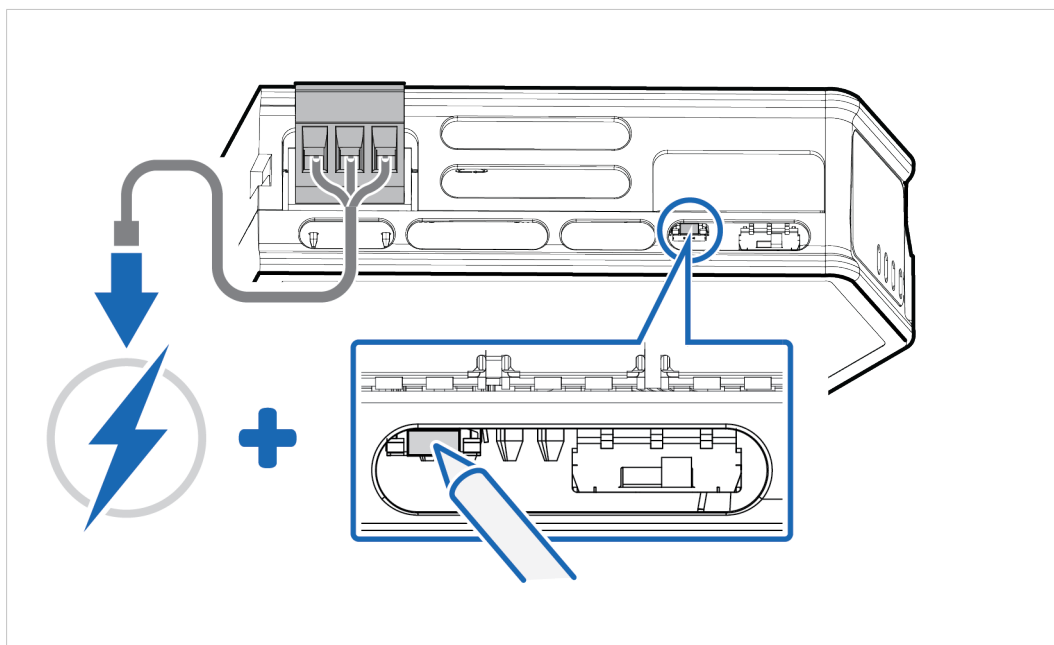
1. Disconnect the Communicator from power.



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



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



4. Release the **reset** button.

#### Result

- The Communicator automatically reboots.
- When the Communicator has successfully rebooted, the Communicator is reset to the current configuration before the reset was performed.

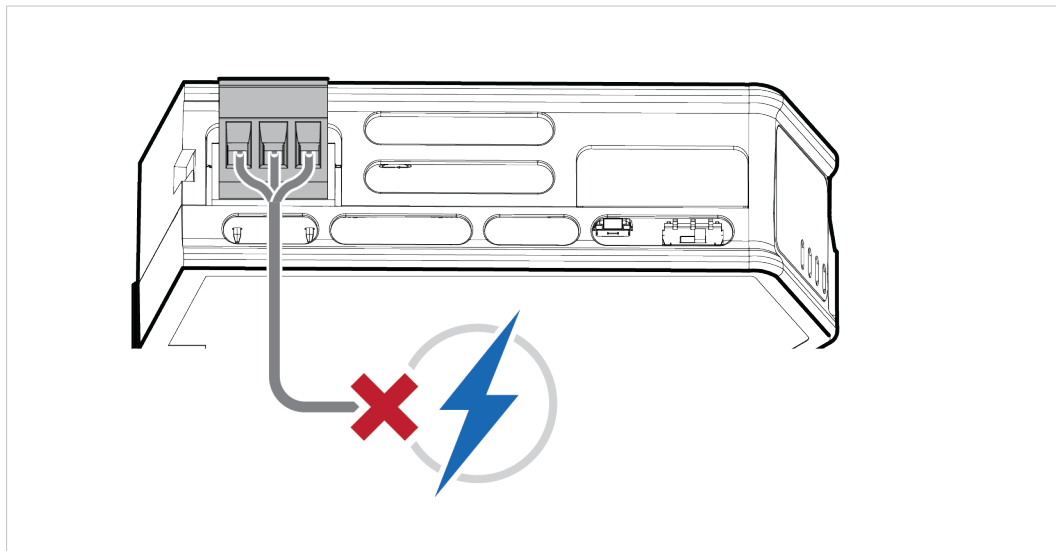
## 11.4 Firmware Upgrade Error Management

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

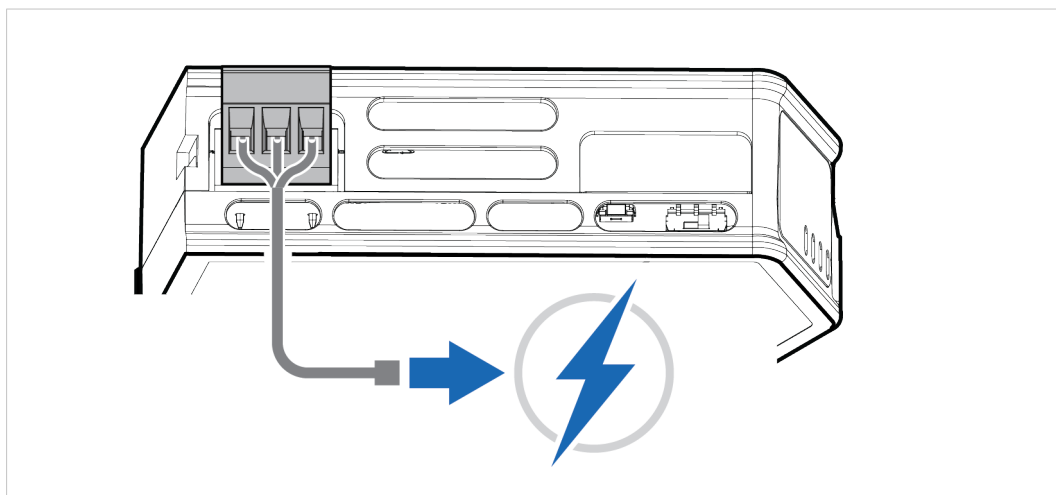
The last working firmware is still available on the flash, but it is not active.

To complete the interrupted firmware update:

1. Disconnect the Communicator from power.

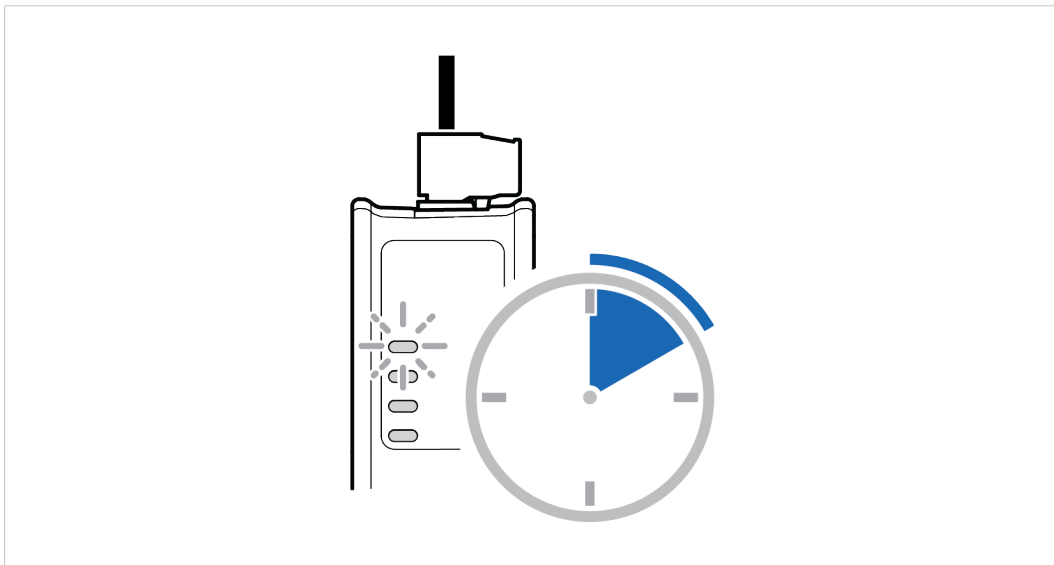


2. Reconnect the Communicator to power.

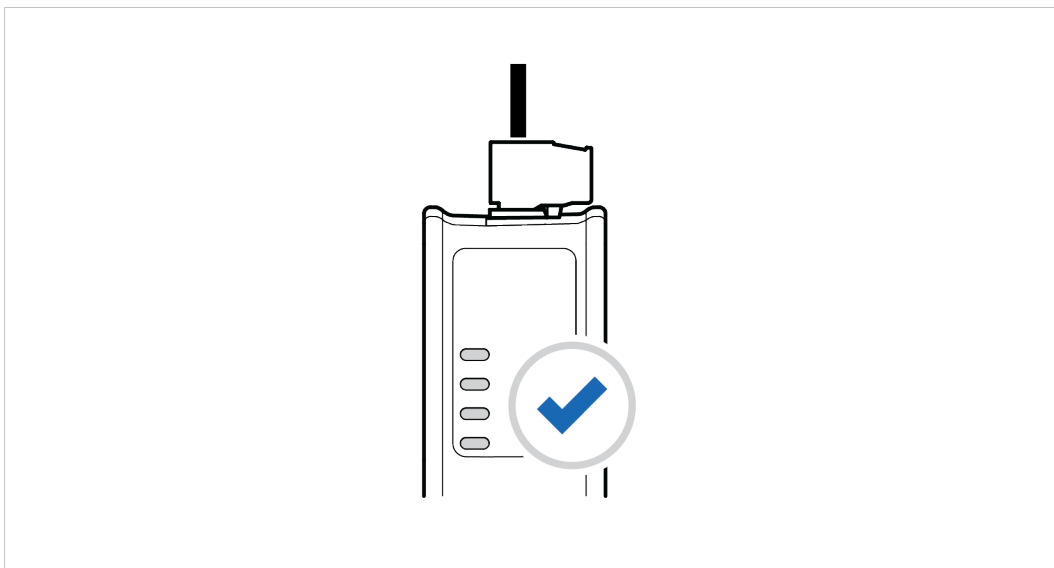


3. Leave the Communicator for 10 minutes.

The *Gateway status* led indicator flashes red and green until the firmware upgrade is completed.

**Result**

→ The Communicator recover and return to normal operation.



To check LED status, refer to [Communicator LED Indicators, p. 54](#).

## 12 Technical Data

### 12.1 Technical Specifications

Article identification	ABC3007-A
Communication connector	RJ45 x 2
Configuration connector	RJ45
Serial connector	7-pin screw connector
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 60068-2-78: 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 (H x W x D) with connectors included
Mounting	DIN-rail

Additional technical data and information related to the installation and use of this product can be found at [www.anybus.com/support](http://www.anybus.com/support).

## A Reference Guides

### A.1 About Input Registers and Holding Registers

Modbus data is most often read and written as registers which are 16-bit pieces of data.

Holding registers and Input registers are both 16-bit registers.

#### Input registers

Input registers can only be read.

#### Holding registers

Holding registers can be read or written.

These registers can be used for a variety of things such as inputs, outputs, configuration data, or other requirement for holding data.

### A.2 Modbus Data Model

Discretes Input	Single bit	Read-Only	Data can be provided by the I/O system.
Coils	Single bit	Read-Write	Data can be alterable by the application program.
Input Registers	16-bit word	Read-Only	Data can be provided by the I/O system
Holding Registers	16-bit word	Read-Write	Data can be alterable by the application program.

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

For more information refer to the Modbus organisation website.

### A.3 Modbus Command Register

Nr	Command	Function Code	Description
1	Read Coils	0x01	Read from 1 to 2000 contiguous status of coils in a remote device.
2	Read Discrete Inputs	0x02	Read from 1 to 2000 contiguous status of discrete inputs in a remote device.
3	Read Holding Registers	0x03	Read the contents of a contiguous block of holding registers in a remote device.
4	Read Input Registers	0x04	Read from 1 to 125 contiguous input registers in a remote device.
5	Write Single Coil	0x05	Write a single output to ON or OFF in a remote device.
6	Write Single Register	0x06	Write a single holding register in a remote device.
15	Write Multiple Coils	0x0F	In a sequence of coils, force each coil to either ON or OFF in a remote device.
16	Write Multiple Registers	0x10	Write a block of contiguous registers in a remote device.
22	Mask Write Register	0x16	In a single transaction, modify the contents of a specified holding register using a combination of an AND mask, an OR mask, and the register's current contents. Can be used to set or clear individual bits in the register.
23	Read/Write Multiple Registers	0x17	Performs a combination of one read operation and one write operation. The write operation is performed before the read.

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

For more information refer to the Modbus organisation website.

## A.4 Modbus Exception Codes

Exception Code	Name	Description
01	Illegal Function	The slave does not recognize or permit the function code.
02	Illegal Data Address	The data address (register number) is not an permitted address for the slave. If multiple registers were requested, at least one was not permitted.
03	Illegal Data Value	The value is not accepted by the slave.
04	Server Device Failure	An irreversible error occurred while the slave was attempting to perform the requested action.
05	Acknowledge	The request is accepted and in process.
06	Server Device Busy	The server is processing the request. Retransmit the message when the server is free.
08	Memory Parity Error	Used for function code 20 and 21 and reference type 6. When the server tried to read record file a parity error was detected in the memory. Troubleshooting/Maintenance may be required to solve the error.
0A	Gateway Path Unavailable	The Communicator is configured incorrectly or overloaded.
0B	Gateway Target Device Failed to Respond	No response was received from the target device.

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

For more information refer to the Modbus organisation website.

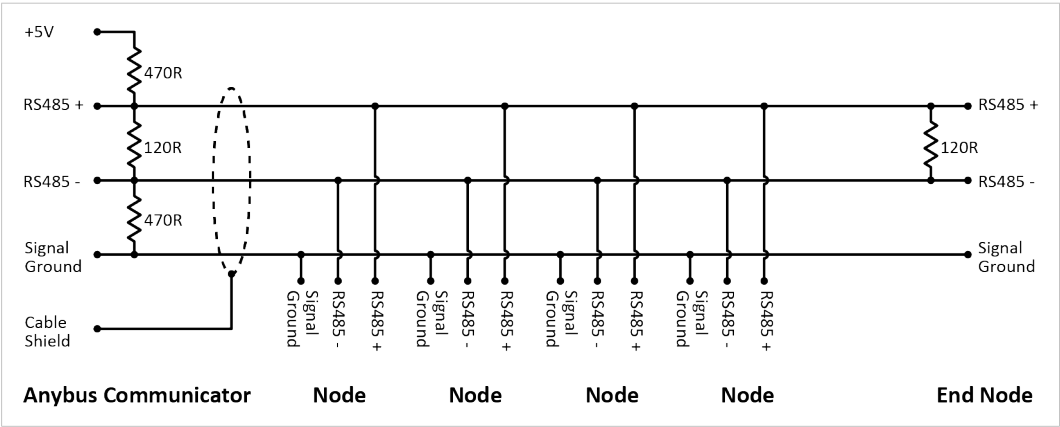
## A.5 ASCII Table

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
<b>0x</b>	NUL 0	SOH 1	STX 2	ETX 3	EOT 4	ENQ 5	ACK 6	BEL 7	BS 8	HT 9	LF 10	VT 11	FF 12	CR 13	SO 14	SI 15
<b>1x</b>	DLE 16	DC1 17	DC2 18	DC3 19	DC4 20	NAK 21	SYN 22	ETB 23	CAN 24	EM 25	SUB 26	ESC 27	FS 28	GS 29	RS 30	US 31
<b>2x</b>	(sp) 32	! 33	" 34	# 35	\$ 36	% 37	& 38	' 39	( 40	) 41	* 42	+ 43	, 44	- 45	. 46	/ 47
<b>3x</b>	0 48	1 49	2 50	3 51	4 52	5 53	6 54	7 55	8 56	9 57	: 58	; 59	< 60	= 61	> 62	? 63
<b>4x</b>	@ 64	A 65	B 66	C 67	D 68	E 69	F 70	G 71	H 72	I 73	J 74	K 75	L 76	M 77	N 78	O 79
<b>5x</b>	P 80	Q 81	R 82	S 83	T 84	U 85	V 86	W 87	X 88	Y 89	Z 90	[ 91	\ 92	] 93	^ 94	_ 95
<b>6x</b>	` 96	a 97	b 98	c 99	d 100	e 101	f 102	g 103	h 104	i 105	j 106	k 107	l 108	m 109	n 110	o 111
<b>7x</b>	p 112	q 113	r 114	s 115	t 116	u 117	v 118	w 119	x 120	y 121	z 122	{ 123	 124	} 125	~ 126	DEL 127



A.6 RS485/RS232 Electrical Connection

A.6.1 RS485 Typical Connection



A.6.2 RS232 Typical Connection



