

Anybus[®] Communicator[™] - Ethernet to PROFIBUS

STARTUP GUIDE

SP2984

Version 1.1

Publication date 2022-04-19



Important User Information

Disclaimer

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

HMS 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 Networks and is subject to change without notice. HMS 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 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 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.

Copyright © 2022 HMS Networks

Contact Information

Postal address:

Box 4126

300 04 Halmstad, Sweden

E-Mail: info@hms.se

1. Preface

1.1. About This Document

This document describes how to install Anybus® Communicator™.

For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please visit www.anybus.com/support.

1.2. Document Conventions

Safety Symbols

**DANGER**

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

**WARNING**

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

**CAUTION**

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

**IMPORTANT**

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

Information Symbols



NOTE

Additional information which may facilitate installation and/or operation.



TIP

Helpful advice and suggestions.

1.3. Trademarks

Anybus® is a registered trademark of HMS Networks.

All other trademarks are the property of their respective holders.

2. Safety

2.1. Intended Use

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

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

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

2.2. General Safety

**CAUTION**

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

**CAUTION**

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

**CAUTION**

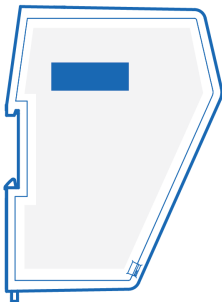
To avoid system damage, the equipment should be connected to ground.

**IMPORTANT**

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

3. Preparation

3.1. Support and Resources



For additional documentation and software downloads, FAQs, troubleshooting guides and technical support, please **scan the QR code located on the product cover to visit the Communicator support web page.**

You can also visit www.anybus.com/support and enter the product article number to search for the Communicator support web page. You find the **product article number** on the product cover.

4. Installation

4.1. DIN Rail Mounting

**IMPORTANT**

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

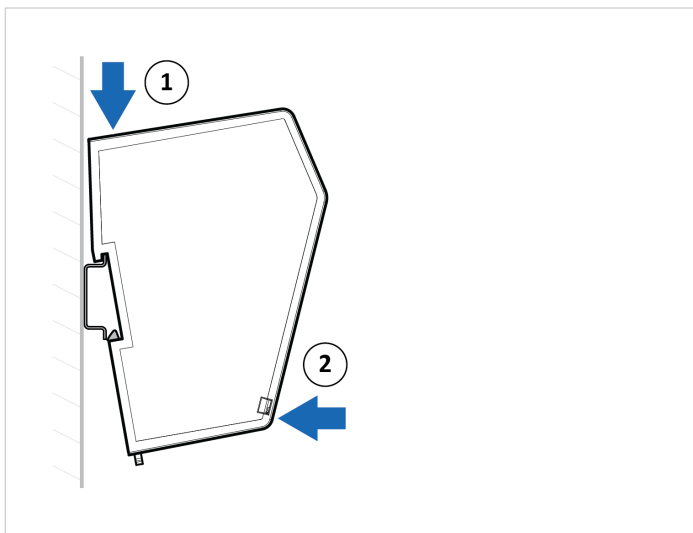


Figure 1. Attach the Communicator on the DIN rail

4.2. Connect the Upper Connector to Network 1

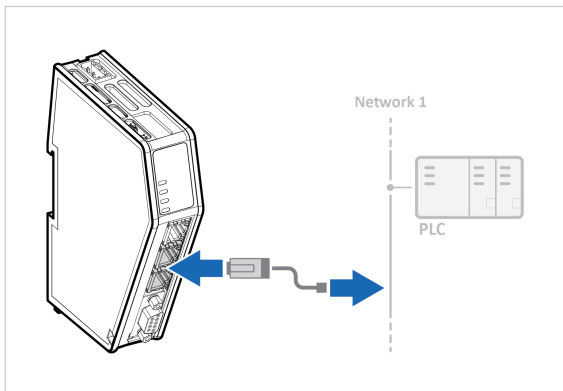


Figure 2. Connect the upper connector to network 1

1. Connect the Communicator to your EtherNet/IP™, Modbus TCP, PROFINET or EtherCAT network.

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

4.3. Connect the Lower Connector to Network 2

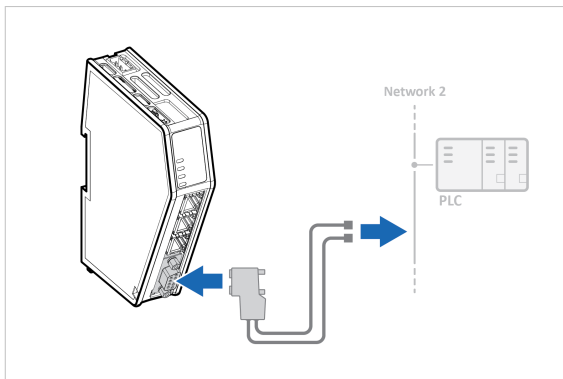


Figure 3. Connect the lower connector to network 2

1. Connect the Communicator to your PROFIBUS network.

PROFIBUS Connector	Pin	Description
	1	Not used
	2	Not used
	3	Line B
	4	RTS
	5	GND Bus
	6	+5 V Bus Out
	7	Not used
	8	Line A
	9	Not used
	Housing	PE

4.4. Rotary Switch Settings

4.4.1. Rotary Switches Default Setting

By default, the value on the three rotary switches are set to **000**.

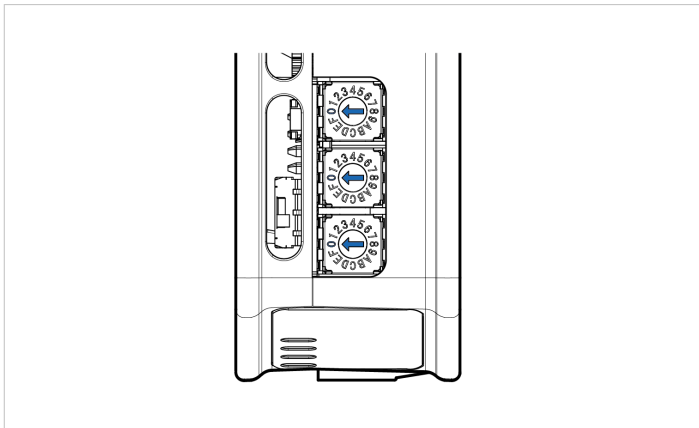


Figure 4. Rotary switches default setting **000**.

4.4.2. Set a Node Address with Rotary Switches

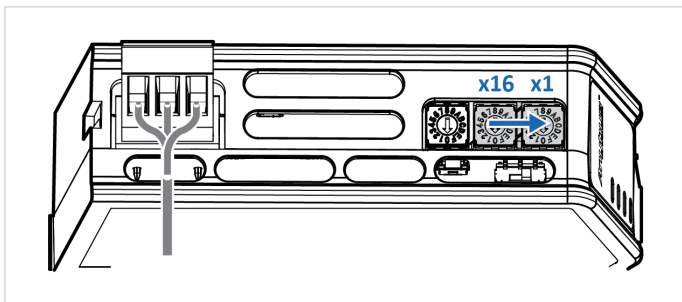
About the Rotary Switch Settings



TIP

Use Windows Calculator (or similar application) to convert between hexadecimal (hex) and decimal (dec).

- The default node address setting is 000.
- The node address values are set in hexadecimal (hex).
- Minimum value is 00.
- Each node address may only occur once in the network.
- The node address is read from the center rotary switch x16 to the front rotary switch x1.
- The rear rotary switch is not used, ensure that it is set to 0.



Before You Begin

Ensure that the Communicator is disconnected from power.

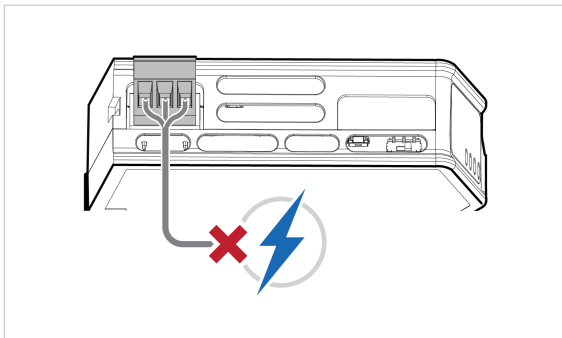
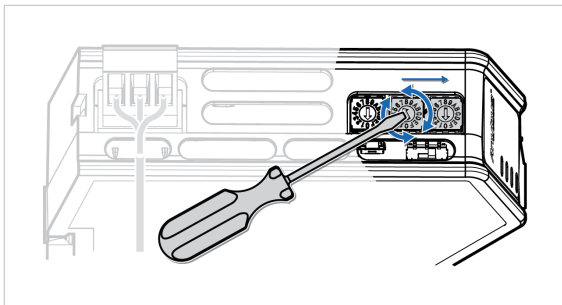


Figure 5. Disconnect Communicator from power

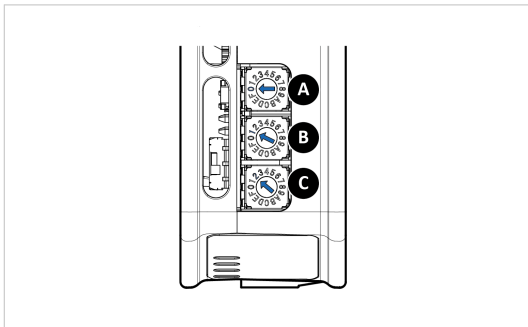
Procedure

Use a screwdriver to change the rotary switch position.

Ensure that the rotary switches engage correctly.



Example 1. To set the node address 12 hex = 18 dec



1. The rear rotary switch A is not used, ensure that it is set to 0.
2. Set the center rotary switch B to 1 hex.
3. Set the front rotary switch C to 2 hex.

The center rotary switch B 1 hex = 1 dec and the front rotary switch C 2 hex = 2 dec.

The node address expressed in decimal numbers is therefore $16 \times 1 + 2 = 18$.

To Do Next

Connect the Communicator to power. See [Connect to Power \(page 13\)](#).

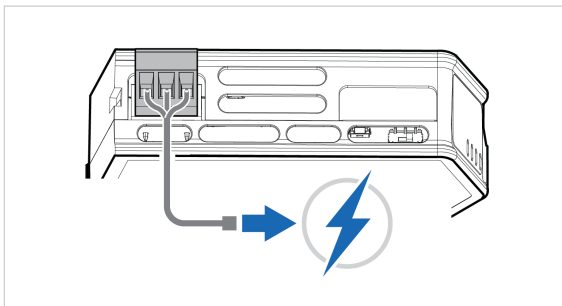


Figure 6. Connect Communicator to power

Result

The set node address is active as soon as the Communicator is powered on.

**NOTE**

Changing the address settings on the rotary switches during operation is ignored. For a new address to take effect, power cycle the Communicator.

4.5. Connect to Power



CAUTION

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



IMPORTANT

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

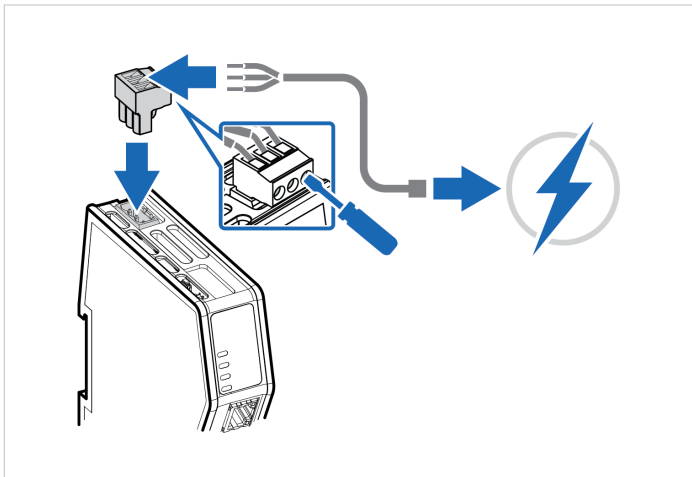
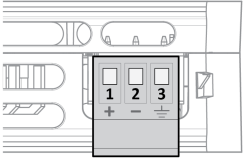


Figure 7. Connect to power

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

4.6. Security Switch

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

To Lock and Unlock the Security Switch

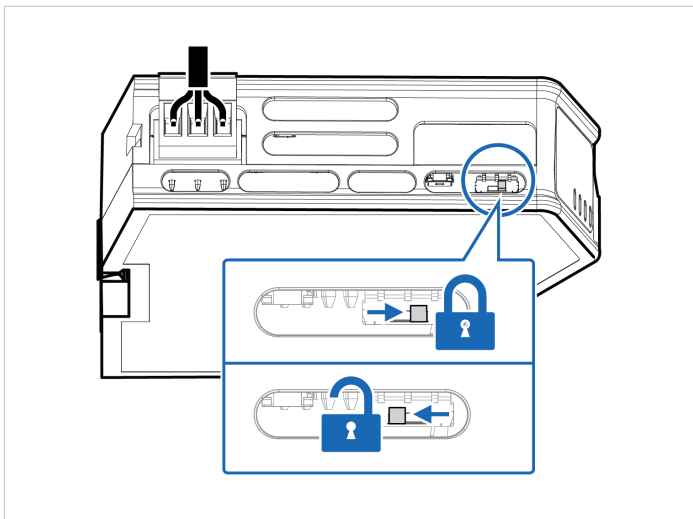


Figure 8. Security switch in locked and unlocked position

Use a pointed object, such as a ballpoint pen.

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

Security Switch Status LED

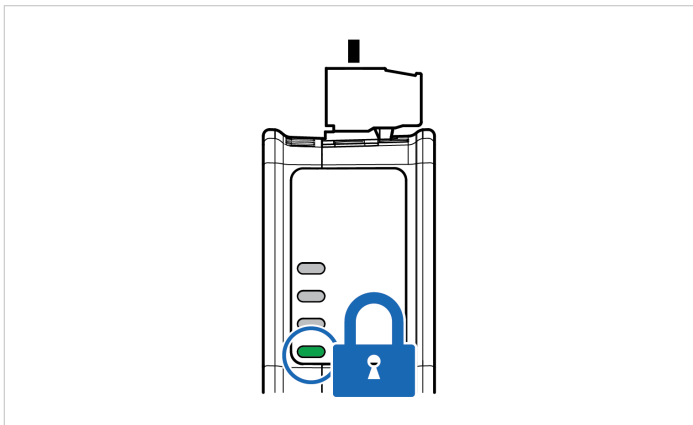


Figure 9. Security switch locked status LED

When the security switch is in its:

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

4.7. Lock the Cables

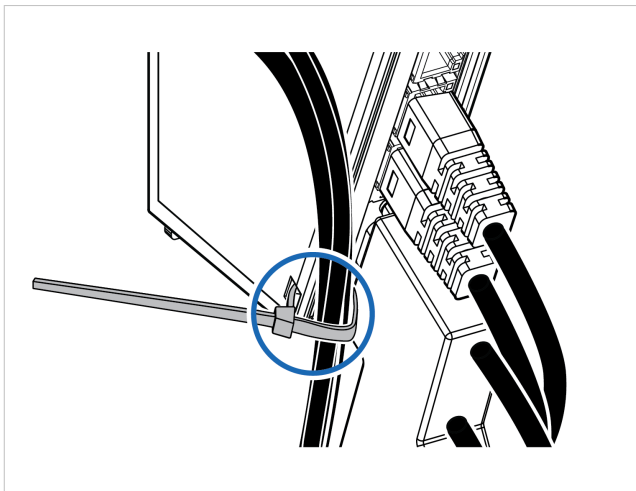


Figure 10. Lock the cables

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

4.8. DIN Rail Demount

Before You Begin



IMPORTANT

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

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

Procedure

Remove the Communicator from the DIN Rail:

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

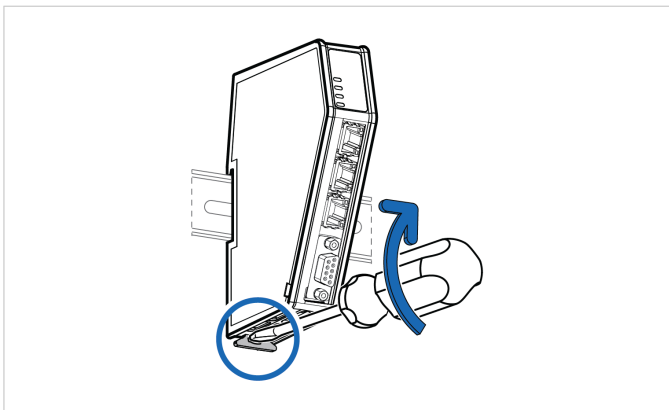


Figure 11. Unlock the Communicator

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

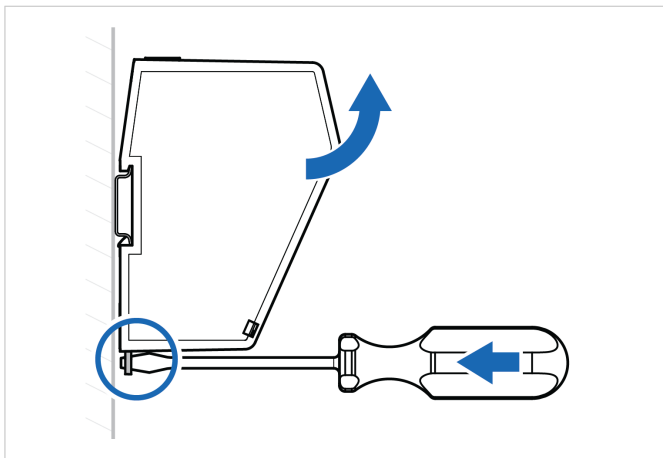


Figure 12. Unhook the Communicator

5. Configuration

5.1. Connect to PC and Power

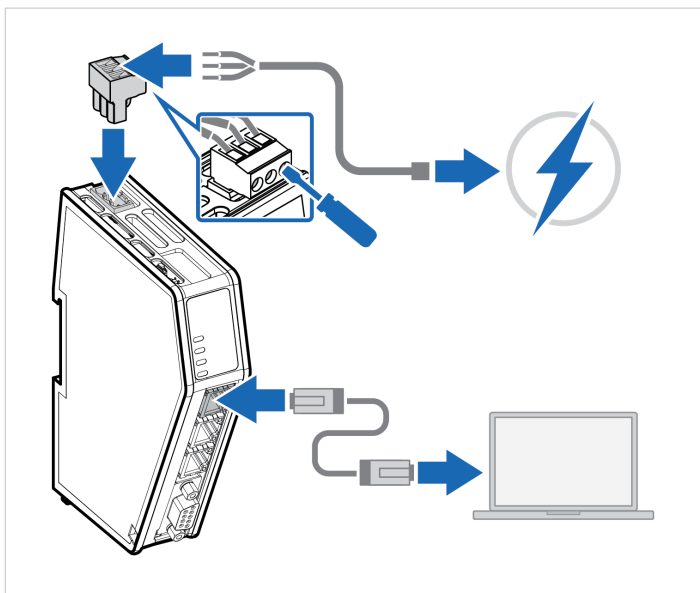


Figure 13. Connect to PC and Power

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

5.2. Find the Communicator on Your PC

The Communicator default IP address is 192.168.0.10.

To be able to access the Communicator built-in web interface.

Option 1 | Set a static IP address on the PC



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.

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

Note that when you change to a static IP address on your PC, internet access is lost.

Option 2 | Change the IP address on the Communicator configuration port

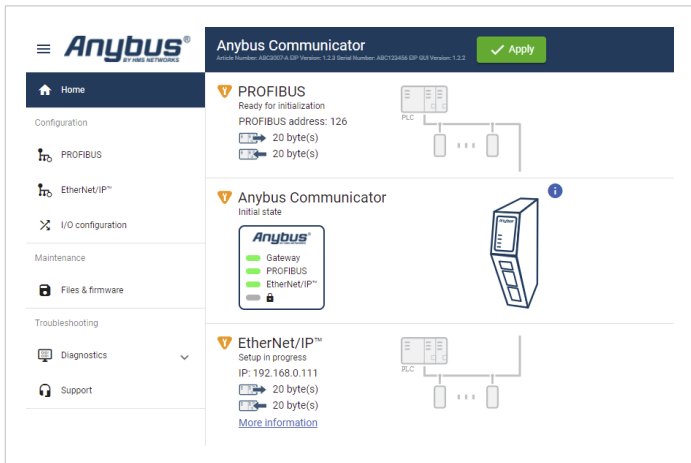


Use the software application HMS IPconfig to find and change the IP address on the Communicator configuration port, to one within the same IP address range as the PC accessing the Communicator built-in web interface.

To download the installation files, please visit www.anybus.com/support and enter the product article number to search for the Communicator support web page. You find the product article number on the product cover.

5.3. Configure the Communicator

5.3.1. Option for Communicator Variants with Preinstalled Networks



The screenshot displays the Anybus Communicator web interface. At the top, the title "Anybus Communicator" is shown with article and serial numbers, and an "Apply" button. The left sidebar contains navigation links: Home, Configuration, PROFIBUS, EtherNet/IP™, I/O configuration, Maintenance, Files & firmware, Troubleshooting, Diagnostics, and Support. The main content area is divided into three sections:

- PROFIBUS:** Status "Ready for initialization". PROFIBUS address: 126. Data rates: 20 byte(s) for both directions. Includes a network diagram showing a PLC connected to other devices.
- Anybus Communicator:** Status "Initial state". A status box shows "Gateway" (green), "PROFIBUS" (green), and "EtherNet/IP™" (green) with a lock icon. Includes an image of the physical device.
- EtherNet/IP™:** Status "Setup in progress". IP: 192.168.0.111. Data rates: 20 byte(s) for both directions. Includes a network diagram showing a PLC connected to other devices.

Figure 14. The Communicator built-in web interface example

Configure the Communicator

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

The built-in web interface takes you through the steps to configure the Communicator.

Support and Resources

If you need more in-depth information about the configuration, please visit www.anybus.com/support and enter the product article number to search for the Communicator support web page. You find the product article number on the product cover.

5.3.2. Option for Communicator Common Ethernet Variants

This instruction is valid for the Communicator variant ABC4091 Ethernet to PROFIBUS.

The screenshot displays the Anybus Communicator web interface. The top navigation bar includes the Anybus logo, the product name 'Anybus Communicator', and an 'Apply' button. A left sidebar contains navigation links: Home, Configuration, PROFIBUS, EtherNet/IP™, I/O configuration, Maintenance, Files & firmware, Troubleshooting, Diagnostics, and Support. The main content area is divided into three sections:

- PROFIBUS:** Status 'Ready for initialization'. Shows 'PROFIBUS address: 126' and two data rate options: '20 byte(s)' (selected) and '20 byte(s)'. Includes a network diagram showing a PLC connected to other devices.
- Anybus Communicator:** Status 'Initial state'. A legend indicates 'Gateway' (green), 'PROFIBUS' (green), and 'EtherNet/IP™' (green) are active, while a lock icon is present. Includes a photo of the physical device.
- EtherNet/IP™:** Status 'Setup in progress'. Shows 'IP: 192.168.0.111' and two data rate options: '20 byte(s)' (selected) and '20 byte(s)'. Includes a 'More information' link and a network diagram.

Figure 15. Communicator built-in web interface example

By default, the Common Ethernet Communicator is preconfigured with the EtherNet/IP™ to PROFIBUS IO networks.

Download firmware files

To download firmware files and user documentation for the desired Communicator network version, visit www.anybus.com/support and navigate to the product page for the specific product.

Change the preconfigured networks

To change the preconfigured networks, update the firmware:

1. Open the Communicator built-in web interface.
You can open the built-in web interface in HMS IPconfig or by entering the Communicator IP address in your web browser.
2. In the **Files & firmware** page **Firmware management** section, click **Upload**.
3. In the Upload Firmware window, click **Select firmware (.hiff)**.
4. In the Open dialog box, browse to and select the firmware file and click **Open**.
5. To start the firmware upgrade, click **Update firmware**.
 - The firmware file is validated and transferred.
 - The Communicator reboots and is reset to the factory default settings for the Communicator network variant you have updated to.

Configure the Communicator

To configure the Communicator:

1. Open the Communicator built-in web interface.
You can open the built-in web interface in HMS IPconfig or by entering the Communicator IP address in your web browser.
2. The built-in web interface takes you through the steps to configure the Communicator.
For in-depth information about the configuration, refer to the user manual for the installed Communicator network variant.

6. Technical Data

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

6.1. Technical Specifications

Article identification	ABC4021, ABC4014, ABC4018, ABC4023
Configuration connector	RJ45
Upper connector	RJ45 x 2
Lower connector	9-pin D-sub
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 (W x H x D) with connectors included
Mounting	DIN-rail

7. Communicator LED Indicators



NOTE

Before you can verify operation you must configure the Communicator.

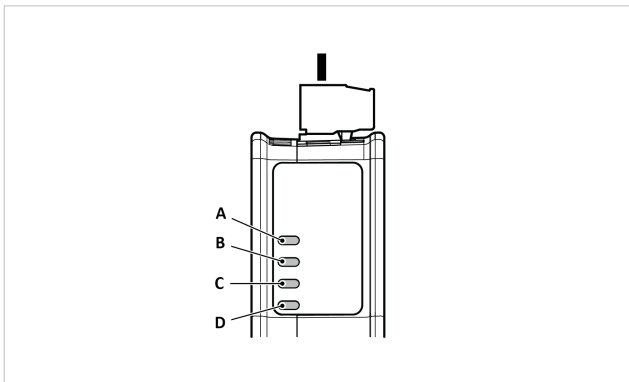


Figure 16. Gateway status (A), Lower connector (B), Upper connector (C) and (D) Security Switch

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

LED B - Network 1, Upper connector				
Operation Status	EtherCAT	EtherNet/IP	Modbus TCP	PROFINET
Off	No power/EtherCAT device in 'INIT'-state	No power/No EtherNet/IP IP address	No power/ No Modbus TCP IP address	No power/No connection with IO controller
Green, flashing	EtherCAT device in 'PRE-OPERATIONAL'-state	EtherNet/IP online, no connections established	Modbus TCP online, no messages received	Used by engineering tools to identify the node on the network
Green, one flash	EtherCAT device in 'SAFE-OPERATIONAL'-state	N/A	N/A	Connection with IO controller established IO controller in STOP state or IO data bad
Green, solid	EtherCAT device in 'OPERATIONAL'-stat	EtherNet/IP online, one or more connections established	Modbus TCP online, at least one message received	PROFINET online, one or more connections established
Red, solid	FATAL event	Duplicated EtherNet/IP IP address	IP address conflict detected	FATAL event
Red, one flash	Unsolicited state change Slave device application has changed the EtherCAT state autonomously.	N/A	N/A	Station name not set
Red, two flash	Sync Manager watchdog timeout	N/A	N/A	IP address not set
Red, three flash	N/A	N/A	N/A	Expected Identification differs from Real Identification
Red, flashing	Invalid configuration	One or more connections timed out	Connection timeout	One or more connections timed out
Green/Red, flashing	EtherCAT RUN (green) and ERROR (red) LED combined*	N/A	N/A	N/A

*The EtherCAT RUN (green) and ERROR (red) LED behaviors are combined in LED (C)/(D). This can cause LED (C)/(D) to alternate between red and green. The LED behavior still represents the states described in the table above.

LED C - Network 2, Lower connector	
Operation Status	PROFIBUS
Off	No data exchange
Green, flashing	Clear, data exchange
Green, one flash	N/A
Green	Operate, data exchange
Red	FATAL event
Red, one flash	Parameterization error
Red, two flash	PROFIBUS configuration error
Red, three flash	N/A
Red, flashing	N/A
Green/Red, flashing	N/A

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

Fatal Error and Exception Error

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

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

LED	Fatal Error	Exception Error
A	Red, solid	Red, solid
B	Red, solid	Off
C	Red, solid	Off
D	Off	Off