

# Anybus<sup>®</sup> Communicator<sup>™</sup> - Ethernet to PROFIBUS

## STARTUP GUIDE

SP2984

Version 1.10

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## Important User Information

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# 1. Preface

## 1.1. About This Document

This document describes how to install Anybus<sup>®</sup> Communicator<sup>™</sup>.

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

### 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**

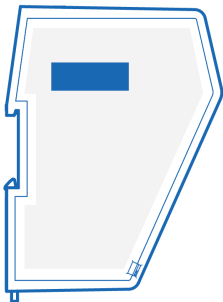
To avoid system damage, the equipment should be connected to ground.

**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](http://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.

## 3.2. HMS Software Applications

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

### HMS IPconfig

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

**NOTE**

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

**NOTE**

HMS IPconfig is only available for Windows.

## 4. 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.

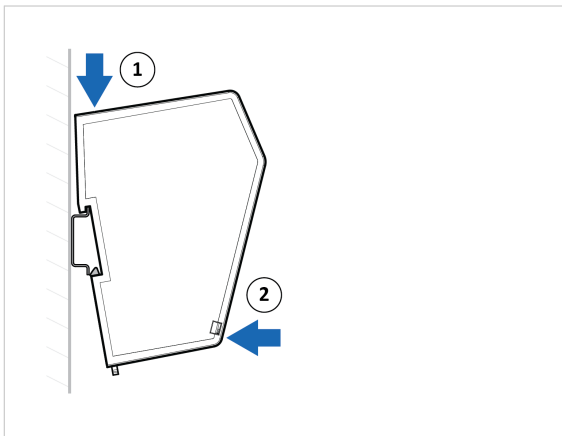


Figure 1. Attach the Communicator on the DIN rail



## 4.2. Connect the Upper Connector to Network 1

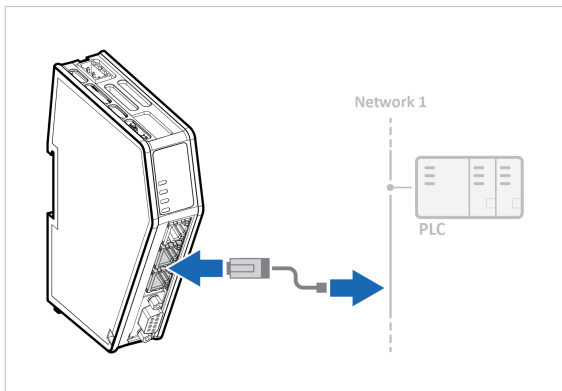


Figure 2. Connect the upper connector to network 1

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

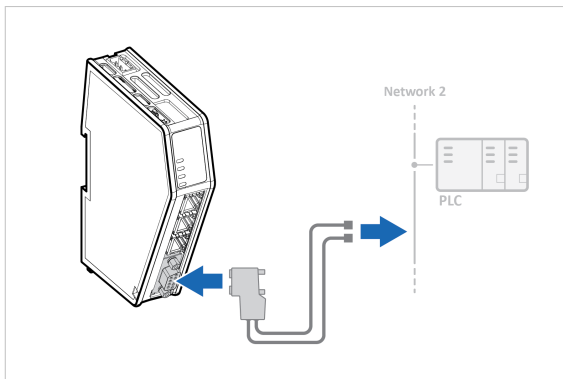


Figure 3. Connect the lower connector to network 2

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**.

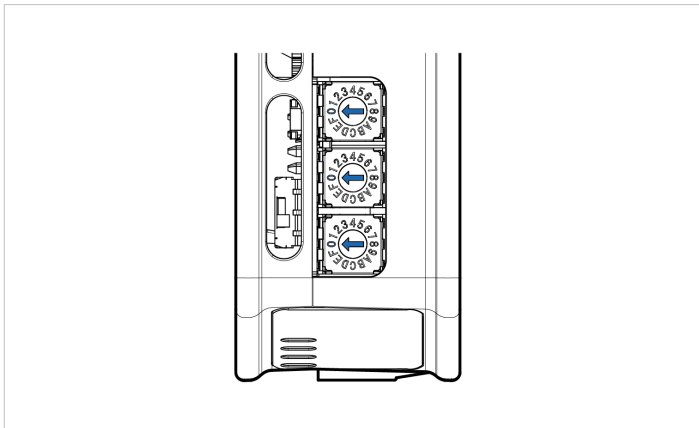


Figure 4. Rotary switches default setting **000**.

## 4.4.2. Set a Node Address with Rotary Switches

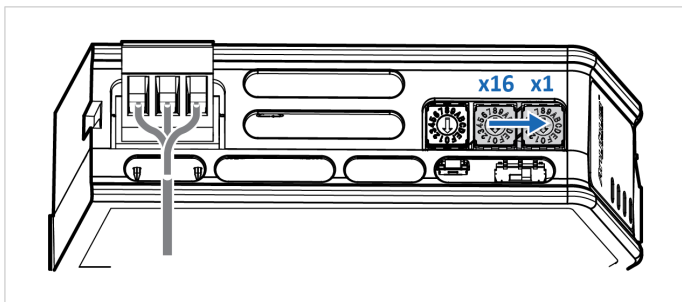
### About the Rotary Switch Settings



#### 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.

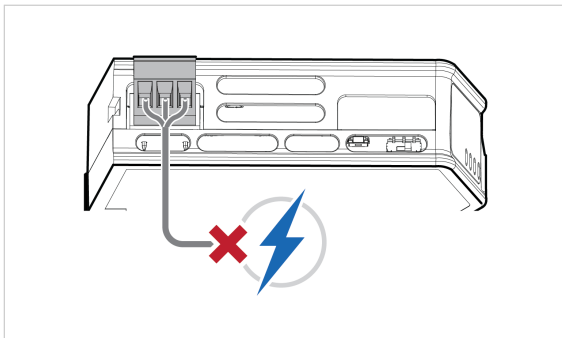
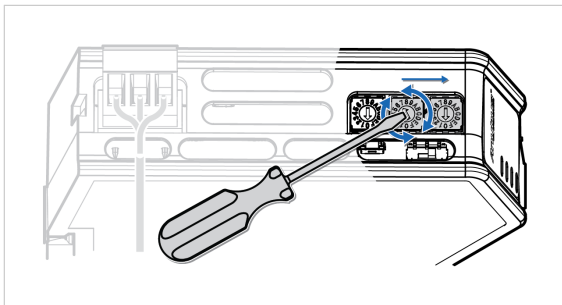


Figure 5. Disconnect Communicator from power

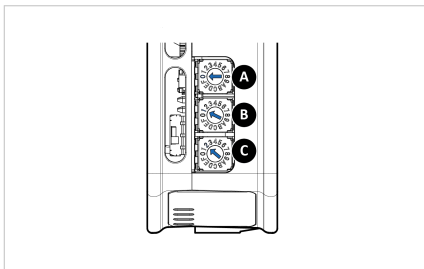
**Procedure**

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 \(page 14\)](#).

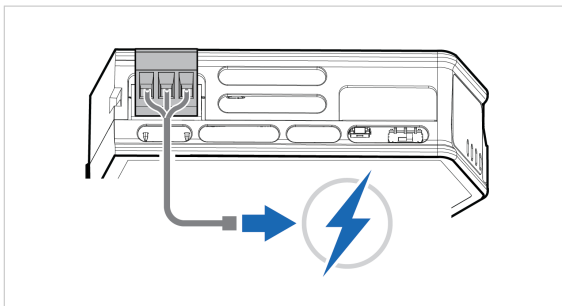


Figure 6. Connect Communicator to power

**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.

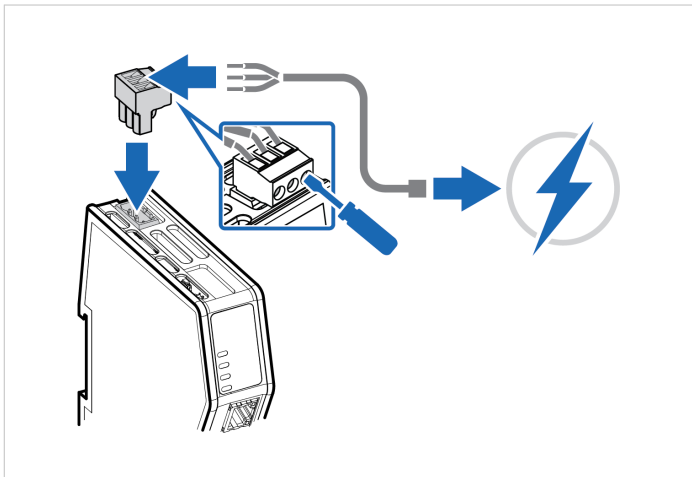
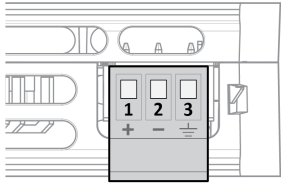


Figure 7. Connect to power



| 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

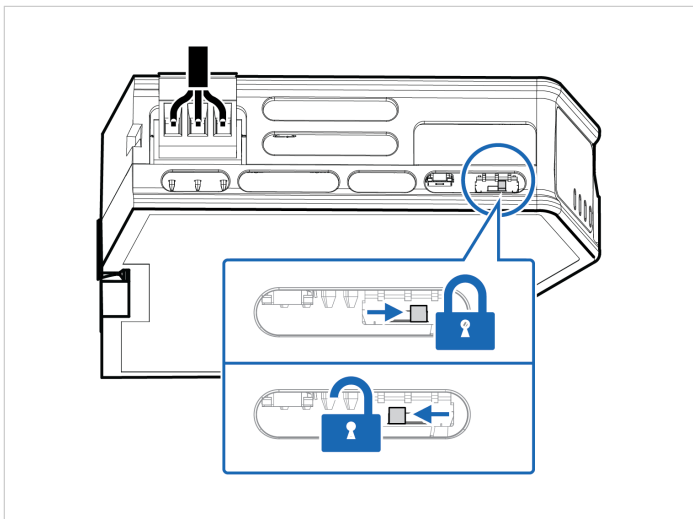


Figure 8. Security switch in locked and unlocked position

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

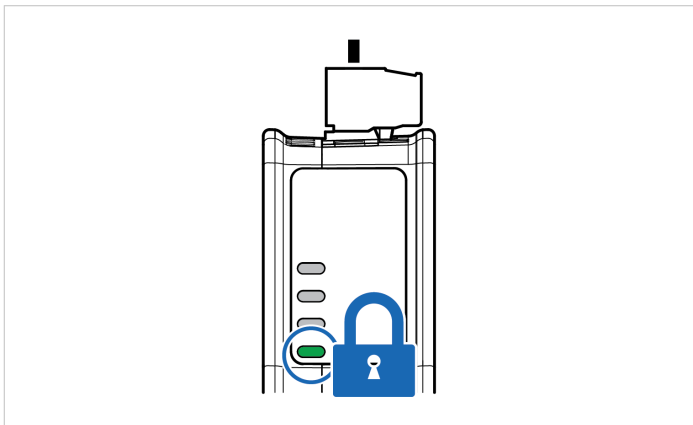


Figure 9. Security switch locked status LED

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

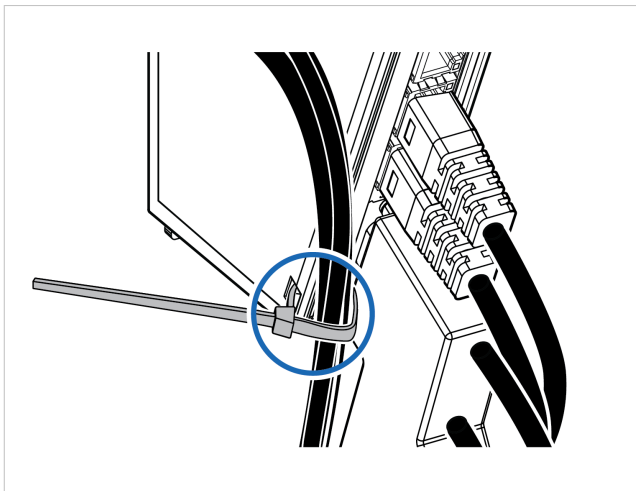


Figure 10. Lock the cables

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.

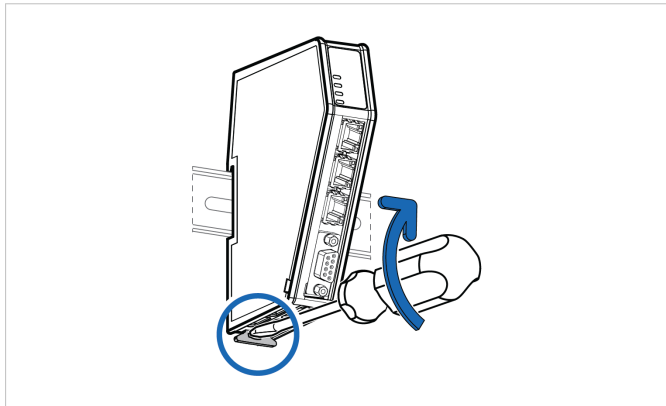


Figure 11. Unlock the Communicator

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

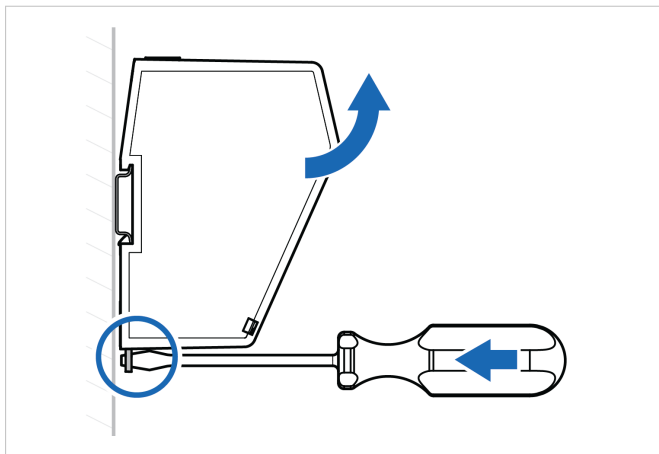


Figure 12. Unhook the Communicator

## 5. Configuration

### 5.1. Connect to PC and Power

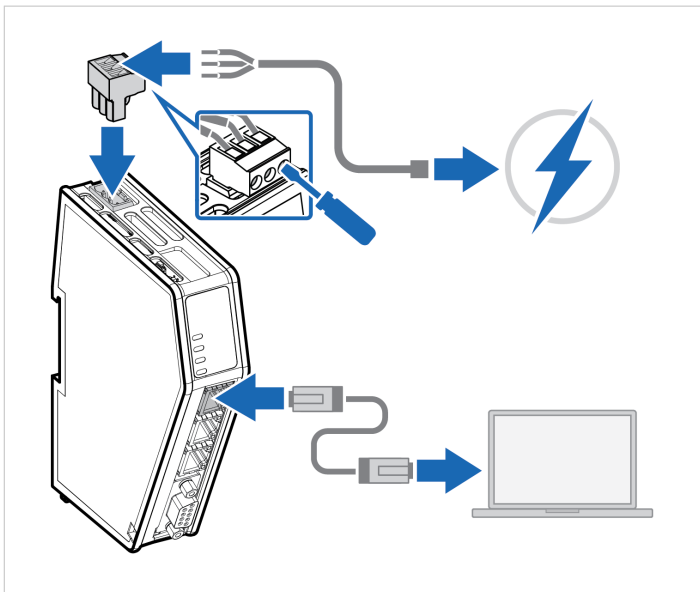


Figure 13. Connect to PC and Power

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 you may need to adjust the IP settings, choose one of the following methods:

### 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](http://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

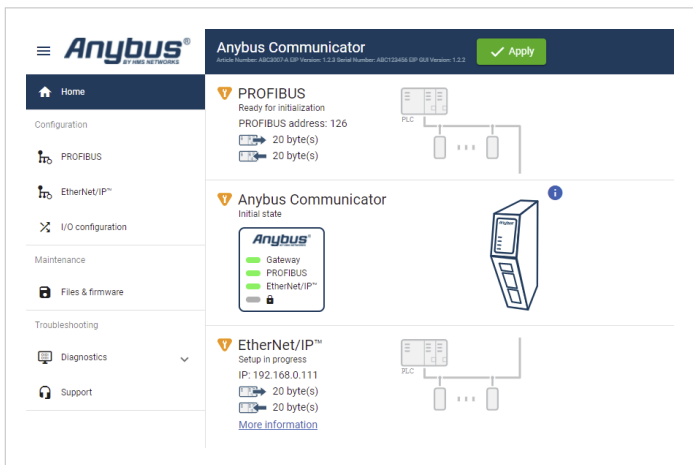


Figure 14. The Communicator built-in web interface example

#### 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](http://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 lists navigation options: 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, each set to '20 byte(s)'. Includes a network diagram showing a PLC connected to other devices.
- Anybus Communicator:** Status 'Initial state'. A legend indicates 'Gateway', 'PROFIBUS', and 'EtherNet/IP™' are all active (green). Includes an image of the physical device.
- EtherNet/IP™:** Status 'Setup in progress'. Shows 'IP: 192.168.0.111' and two data rate options, each set to '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](http://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](http://www.anybus.com).

### 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<br>EN 60068-2-30: Damp heat, +25°C – +55°C, 95% RH, 2 cycles |
| Vibration               | See datasheet   |
| Housing material        | Plastic, See datasheet for details  |
| Protection class        | IP20  |
| Product weight          | 150 g   |
| Dimensions              | 27 x 144 x 98 mm (W x H x D) with connectors included   |
| Mounting                | DIN-rail  |

## 7. Communicator LED Indicators



### NOTE

Before you can verify operation you must configure the Communicator.

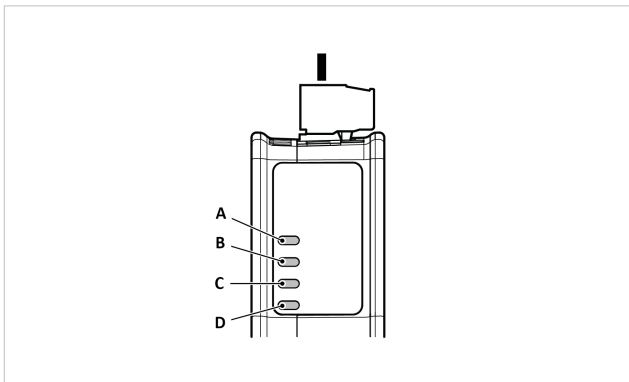


Figure 16. Gateway status (A), Lower connector (B), Upper connector (C) and (D) Security Switch

| 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 |

| <b>LED B - Network 1, Upper connector</b> |  |   |  |   |
|---|--|---|--|---|
| <b>Operation Status</b>                   | <b>EtherCAT</b>  | <b>EtherNet/IP</b>                                      | <b>Modbus TCP</b>                                | <b>PROFINET</b>   |
| <b>Off</b>                                | 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   |
| <b>Green, flashing</b>                    | 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                           |
| <b>Green, one flash</b>                   | EtherCAT device in 'SAFE-OPERATIONAL'-state  | N/A   | N/A  | Connection with IO controller established<br>IO controller in STOP state or IO data bad |
| <b>Green, solid</b>                       | 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                                    |
| <b>Red, solid</b>                         | FATAL event  | Duplicated EtherNet/IP IP address                       | IP address conflict detected                     | FATAL event   |
| <b>Red, one flash</b>                     | Unsolicited state change<br>SubDevice application has changed the EtherCAT state autonomously. | N/A   | N/A  | Station name not set  |
| <b>Red, two flash</b>                     | Sync Manager watchdog timeout  | N/A   | N/A  | IP address not set  |
| <b>Red, three flash</b>                   | N/A  | N/A   | N/A  | Expected Identification differs from Real Identification                                |
| <b>Red, flashing</b>                      | Invalid configuration  | One or more connections timed out                       | Connection timeout                               | One or more connections timed out   |
| <b>Green/Red, flashing</b>                | 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             |

## 8. Ethernet LED Indicators

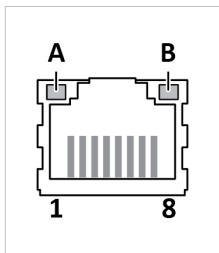


Figure 17. LED A. Activity LED B. Not used

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

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



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