

Anybus[®] Communicator[™] - PROFIBUS to EtherCAT MDevice

STARTUP GUIDE

SP3136

Version 1.0

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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® 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.

1.4. About the EtherCAT Terminology

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

Master is called **MainDevice**

Abbreviated: **MDevice**

Slave is called **SubordinateDevice**

Abbreviated: **SubDevice**

2. Safety

2.1. Intended Use

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

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

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

2.2. General Safety

**CAUTION**

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

**CAUTION**

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

**CAUTION**

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

**IMPORTANT**

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

3. Cyber Security

3.1. General Cyber Security



IMPORTANT

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



IMPORTANT

After completing the configuration of the Communicator, lock the security switch to prevent unauthorized access to the Communicator built-in web interface.

4. Preparation

4.1. Cabling

Have the following cables available:

- Ethernet cable for configuration
- Ethernet cable for connecting to network
- PROFIBUS cable for connecting to network
- Power cable

4.2. Mechanical Tools and Equipment

Have the following tools available:

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

4.3. HMS Software Applications

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

HMS IPconfig

**NOTE**

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

**NOTE**

HMS IPconfig is only available for Windows.

4.4. Third-Party Software Applications

Microsoft Excel

Microsoft Excel, or equivalent software application that supports the Office Open XML Workbook (xlsx) file format. Needed to open and read the **Event log** file.

4.5. Software License Information

For license agreements regarding the third-party software used in the Communicator, refer to the *LICENSE.txt* file(s) included in the Communicator firmware update package zip file.

To download the Communicator firmware update package zip file, please visit www.anybus.com/support.



TIP

Have the product article number available, to search for the product specific support web page. You find the product article number on the product cover.

5. Installation

5.1. 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.

**IMPORTANT**

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

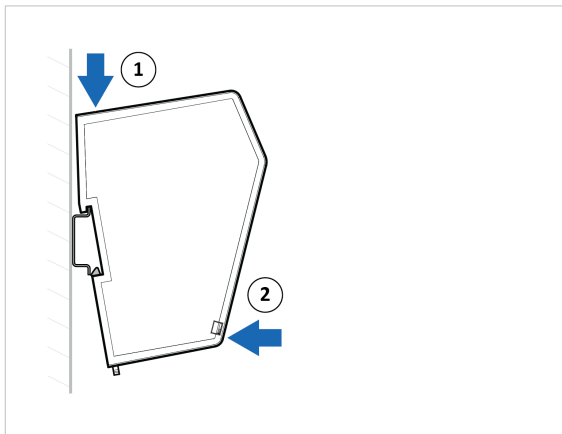


Figure 1. Attach the Communicator on the DIN rail

5.2. Connect to PROFIBUS Network

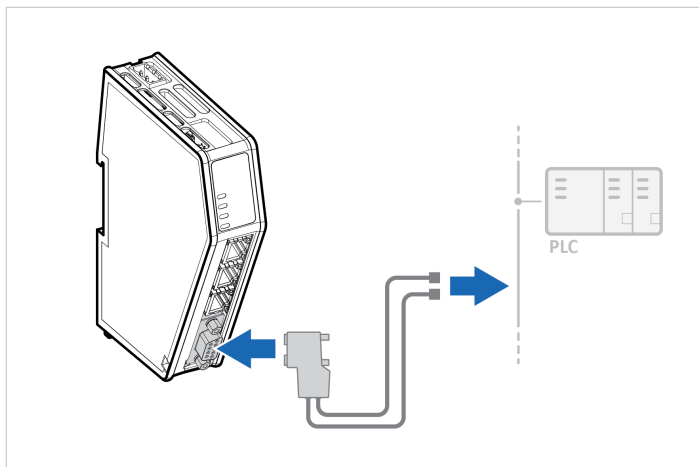


Figure 2. Connect to PROFIBUS network

PROFIBUS Connector	Pin	Description
	1	Shield
	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

5.3. Connect to EtherCAT Network

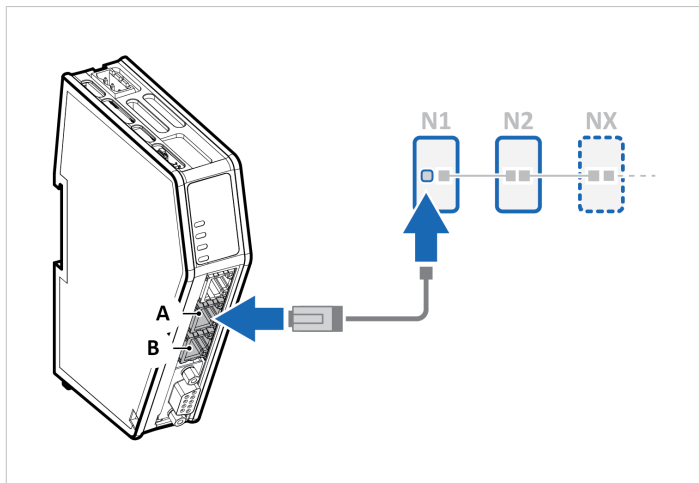


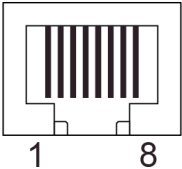
Figure 3. Connect to EtherCAT network

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



NOTE

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

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

5.4. Rotary Switch Settings

5.4.1. Rotary Switches Default Setting

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

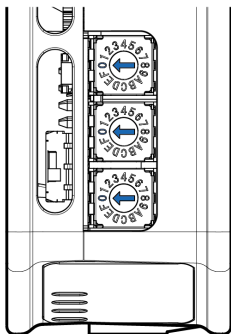


Figure 4. Rotary switches default setting **000**.

5.4.2. Set a Node Address with Rotary Switches

About the Rotary Switch Settings

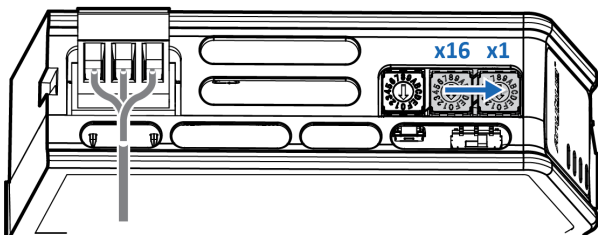
To set a node address for the PROFIBUS server, use the rotary switches located on the top front of the Communicator .



TIP

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

- The default node address setting is 000.
- When the node address setting is 000, you can set the node address via the Communicator built-in web interface.
- The node address values are set in hexadecimal (hex).
- Minimum value is 00.
- Supports PROFIBUS node addresses 0-126 Dec (0-7E Hex).
- 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.

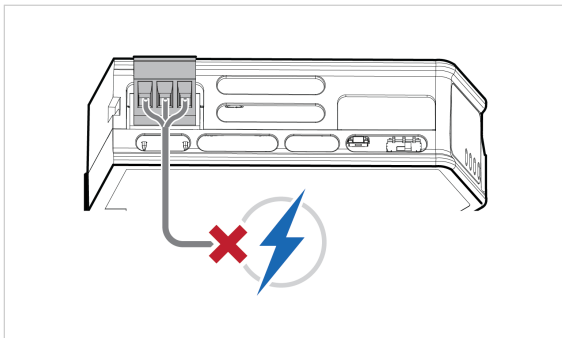
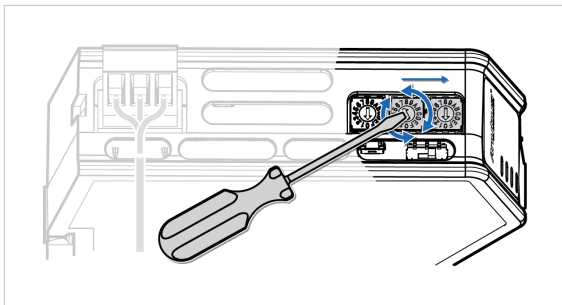


Figure 5. Disconnect Communicator from power

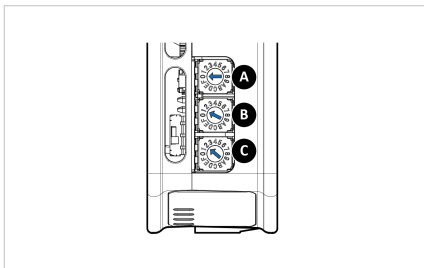
Procedure

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

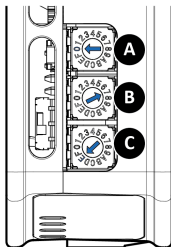


1. The rear rotary switch A is not used, ensure that it is set to 0.
2. Set the center rotary switch B to 1 hex.
3. Set the front rotary switch C to 2 hex.

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 $16 \times 1 + 2 = 18$.

Example 2. To set the node address 7E hex = 126 dec



- The rear rotary switch A is not used, ensure that it is set to 0.
- Set the center rotary switch B to 7.
- Set the front rotary switch C to E.

The center rotary switch B 7 hex = 7 dec and the front rotary switch C E hex = 14 dec.

The node address expressed in decimal numbers is therefore $16 \times 7 + 14 = 126$.

To Do Next

Connect the Communicator to power. See [Connect to Power](#) (page 16).

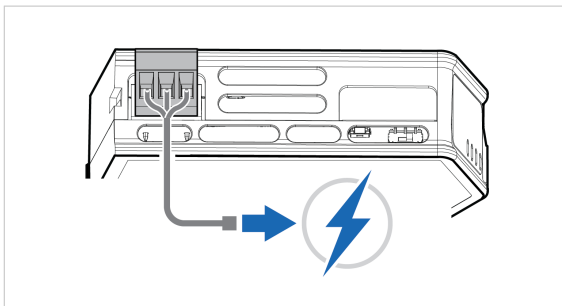


Figure 6. Connect Communicator to power

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.

5.5. Connect to Power



CAUTION

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



IMPORTANT

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

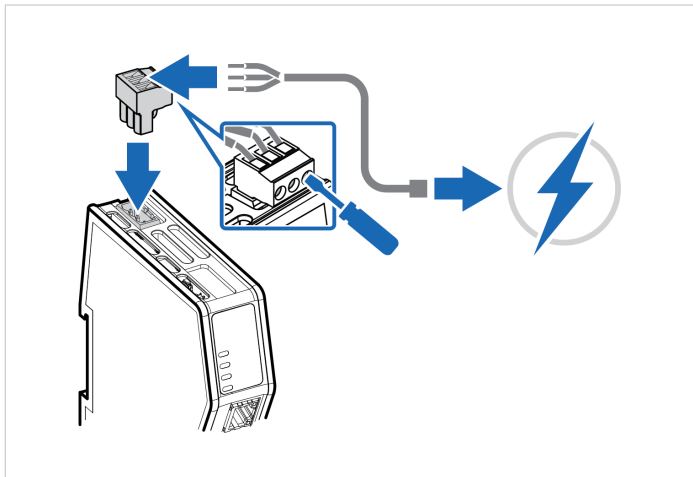
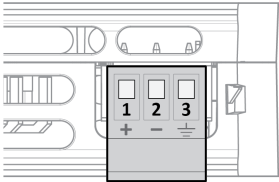


Figure 7. Connect to power

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

5.6. Security Switch



IMPORTANT

After completing the configuration of the Communicator, lock the security switch to prevent unauthorized access to the Communicator built-in web interface.

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

To Lock and Unlock the Security Switch

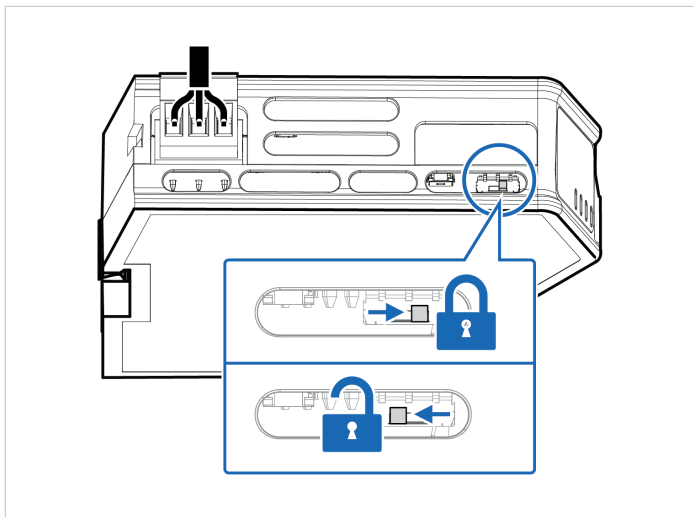


Figure 8. Security switch in locked and unlocked position

Use a pointed object, such as a ballpoint pen.

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

Security Switch Status LED

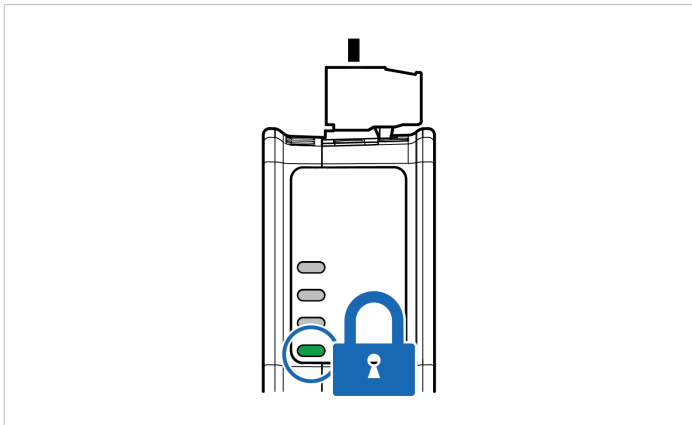


Figure 9. Security switch locked status LED

When the security switch is in its:

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

5.7. Lock the Cables

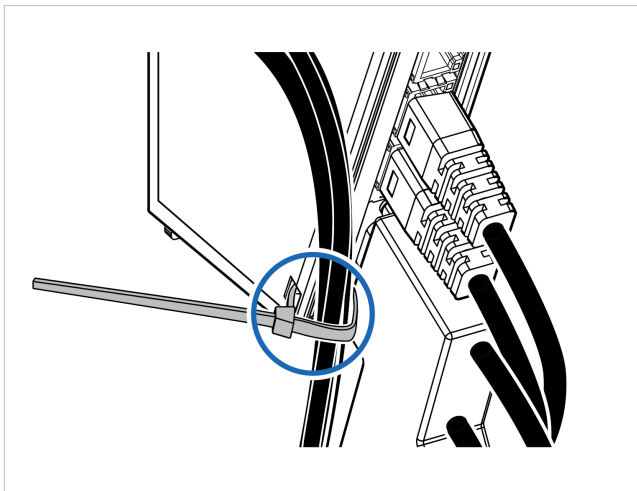


Figure 10. Lock the cables

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

5.8. DIN Rail Demount

Before You Begin



IMPORTANT

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

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

Procedure

Remove the Communicator from the DIN Rail:

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

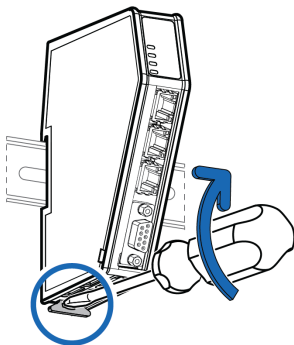


Figure 11. Unlock the Communicator

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

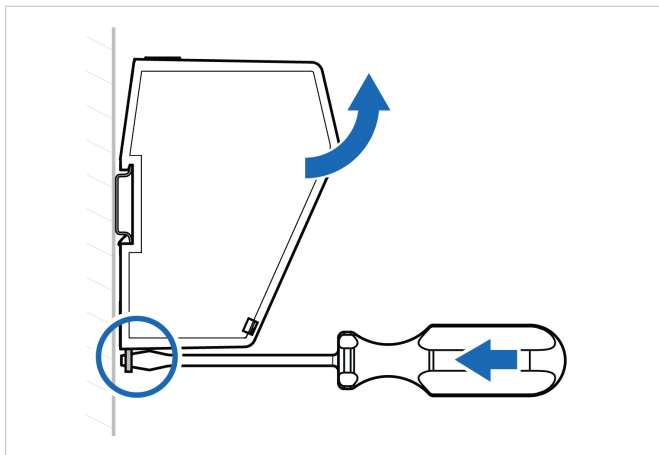


Figure 12. Unhook the Communicator

6. Configuration

6.1. Connect to PC and Power

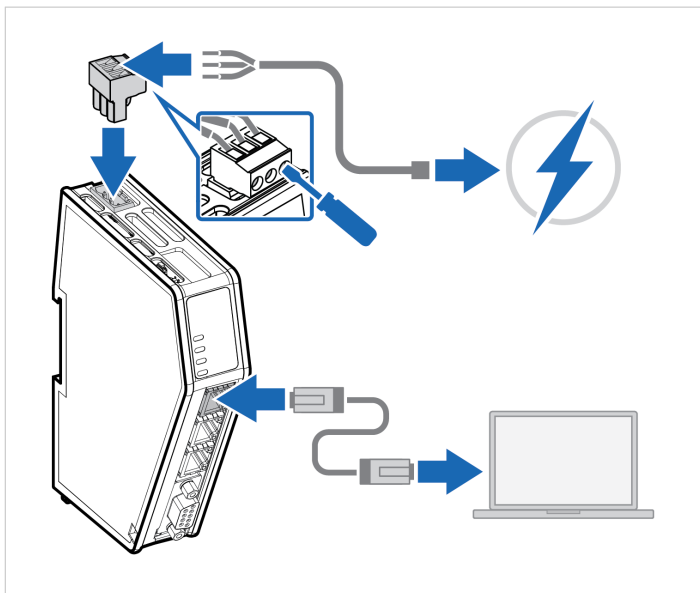


Figure 13. Connect to PC and Power

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

6.2. 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 and enter the product article number to search for the Communicator support web page. You find the product article number on the product cover.

6.3. Configure the Communicator

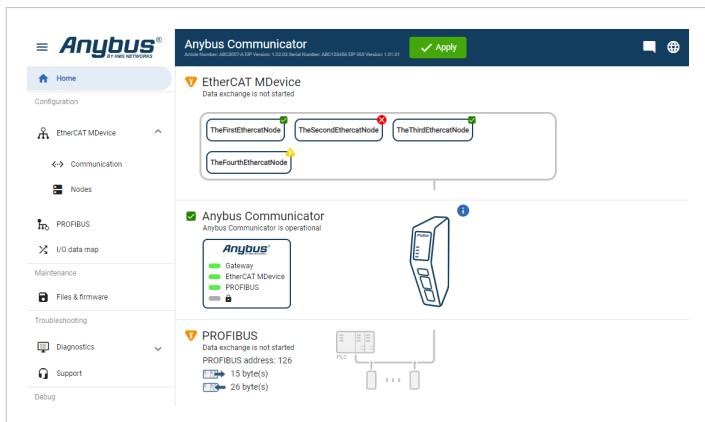


Figure 14. The Communicator built-in web interface Home page

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.

7. Technical Data

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

7.1. Technical Specifications

Article identification	ABC3100
Configuration connector	RJ45
Communication connector	PROFIBUS DSUB connector
EtherCAT MDevice connector	RJ45 x 2
Power connector	3-pin screw connector
Power supply	12-30 VDC, Reverse voltage protection and short circuit protection
Power consumption	Typical: 160 mA @ 24 V Max: 400 mA @ 12 V
Storage temperature	-40 to +85 °C
Operating temperature	-25 to +70 °C
Humidity	EN 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

8. Communicator LED Indicators

This topic applies to different product variants for different networks.

**NOTE**

Before you can verify operation you must configure the Communicator.

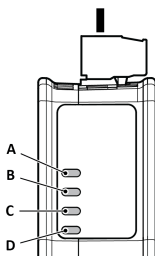


Figure 15. Gateway status (A), Network connection (B)/(C) and Security switch (D)

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

Connection to client device				
- LED B for product: ABC3107 EtherNet/IP, ABC3128 Modbus TCP, ABC3113 PROFINET, and ABC3190 Common Ethernet - LED C for product: ABC3100 PROFIBUS				
Operation status	PROFIBUS	EtherNet/IP	Modbus TCP	PROFINET
Off	No power/No data exchange	No power/No IP address	No power/ No IP address	No power/No connection with IO controller
Green, flashing	Clear, data exchange	EtherNet/IP online, no connections established	Modbus TCP online, no messages received	Used by engineering tools to identify the node on the network
Green, one flash	N/A			Connection with IO controller established, IO controller in STOP state or IO data is inaccurate.
Green, solid	Operate, data exchange	Running, one or more connections established		
Red, solid	N/A	IP address conflict detected		N/A
Red, one flash	Parameterization error	N/A		Station name not set
Red, two flash	Configuration error	N/A		IP address not set
Red, three flash	N/A			Expected Identification differs from Real Identification
Red, flashing	N/A	One or more connections timed out	Connection timeout	N/A

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

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

Fatal Error and Exception Error

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

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

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

9. EtherCAT LED Indicators

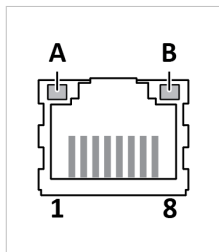


Figure 16. LED A. Activity LED B. Not used

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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