BN ESSENTIAL Metered

Mounting and installation instructions

BACHMANN

We power your life.

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Thank you for choosing the BN ESSENTIAL Metered power strip from the Bachmann BlueNet series.

These instructions provide a quick overview of the mounting and technical information on the BlueNet power strip, hereinafter referred to as PDU (Power Distribution Unit).

These instructions are part of the PDU. Keep these instructions and the applicable documents in a safe place for future reference.

If the PDU is passed on to third parties, these instructions must also be passed on with the applicable documents.

Persons entrusted with work on the PDU must have carefully read and understood these instructions before starting any work. The basic prerequisite for safe operation is compliance with all the safety precautions and handling instructions in this manual.

Illustrations in these instructions are for basic understanding and may differ from the actual design.

Notes on these mounting and installation instructions

These mounting and installation instructions contain information on how to safely install and operate the power strip as well as other aspects of using the BN ESSENTIAL Metered power strip.

Content

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1 Safety precautions

- The national legal safety regulations (e.g. ArbSchG, UVV) apply to the use of the product.
- Any modifications to the product may only be made in consultation with Bachmann GmbH. In particular, no protective or safety devices may be modified or removed. Modifications are only permitted in a de-energised state insofar as modifications are necessary and have been agreed with Bachmann GmbH.
- The product must only be used if it is in perfect condition. If there is any damage, external damage, problems or faults, switch off the product immediately and contact BACHMANN customer service. Replace damaged power strips or have them repaired by the manufacturer.
- In the event of a power failure, malfunction or disconnection of the PDU from the power supply, residual voltage remains in the PDU and can lead to electric shocks.
- The power cable of the power strip must not be repaired. If the power cable is defective, it must be replaced by a qualified electrician in accordance with the currently applicable standards and regulations.
- This product is intended exclusively for commercial use only. Use by private individuals is not intended and may lead to hazards.
- When selecting the installation location, ensure that there is no high humidity or high temperatures (see technical data). Ensure that the heat generated during operation is dissipated.
- This device must not be used in the immediate vicinity of chemical emissions (e.g. oil mist, soldering vapours) or sources of dust.
- All requirements for users must be met.
- This device is not suitable for use in places where children are present.
- This device may only be used in areas with restricted access to unauthorised persons.
- This device must not be subjected to any mechanical stress or mechanical impact.

- Never use the power strip if it is moved from a cold to a warm room. The resulting condensation can cause a life-threatening electric shock as well as a short circuit and destroy the product. Allow the power strip to acclimatise before use.
- Only operate the power strip within the limits specified in the technical data.

Observing the safety instructions is an integral part of our warranty conditions.

The product fulfils the requirements of the applicable European and national directives and standards. CE compliance has been demonstrated, and the corresponding declarations are filed with the manufacturer.

The product meets the requirements of the applicable regulations and standards of the United Kingdom.

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Symbols in the instructions

Safety precautions are indicated by symbols in these instructions. The safety precautions are introduced by signal words that indicate the level of hazard.

DANGER!
Cause
This combination of symbol and signal word indicates a potentially dangerous situation that results in death or serious injury if not avoided.

WARNING!
This combination of symbol and signal word indicates a potentially dangerous situation that can result in death or serious injury if not avoided.

NOTE!
This combination of symbol and signal word indicates a potentially dangerous situation which can result in material damage if not avoided.

This symbol highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

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1.1 Intended use

The Power Distribution Unit (PDU) BN ESSENTIAL Metered is used exclusively as an accessory for electrical power supply and distribution in information technology facilities and is installed in corresponding cabinets or racks (front or rear mounting in standard 19" racks): Flexible installation both at the front and rear of rack systems, vertical and horizontal mounting).

BN ESSENTIAL Metered guarantees:

- the secure distribution of power in server racks with energy monitoring in enterprise server rooms, network & telecommunications cabinets, data centres, edge computing
- supply and monitoring of components in industrial automation applications in industrial control cabinets
- stable power supply for media technology infrastructure for AV (audio-video) installations
- power distribution with measuring function for test benches and device tests in laboratory and test environments
- integration into professional workstations with a need for measurable power supply

Function, features and applications

- The BN ESSENTIAL Metered PDU (Power Distribution Unit) can be used to (remotely) monitor the power and energy consumption of electrical IT devices. The PDU monitors the current, power (active, apparent and reactive power), energy consumption and voltage of all phases.
- 1U total height, 19" standard: Space-saving, rack-mountable, ideal for IT installations
- Industrial quality: Robust design for continuous operation
- Temperature monitoring in the server room

Any use beyond the intended use or any other use is considered misuse.

1.2 Requirements for the user

WARNING!
Risk of injury due to insufficiently qualified personnel!
If unqualified personnel carry out installation work on the device, there is a risk of serious injury and considerable material damage.

- The installation and electrical connection of the PDU (assembly of a non-plug-in supply cable) must only be performed by a qualified electrician. Operators must take a defective device out of service, disconnect it from the mains and contact the dealer or manufacturer.
- Only a qualified electrician is permitted to repair any defective electrical components on the PDU.
- Note: The operator is permitted to replace the controller unit and non-electrical components on the PDU.

Only persons who can be expected to perform this work reliably are authorised to perform any work. Persons whose ability to react is affected, e.g. by drugs, alcohol or medication, are not permitted. These instructions assume that the persons listed below possess the following qualifications for the various tasks:

Target audience qualification

IT specialist

The IT specialist has relevant technical training or experience in working with information technology systems and possesses basic electrical engineering knowledge. Due to their specialist training, IT specialists are capable of assessing and avoiding the consequences of their actions when handling the system and its components, as well as the associated dangers. The IT specialist's tasks include the following activities:

- Setting up hardware and software systems
- Installing updates
- Managing the PDU via the web interface and system diagnostics

Qualified electrician

The qualified electrician is qualified through technical training, knowledge, and experience, as well as knowledge of relevant standards and regulations, to perform work on electrical installations and independently recognize and avoid potential dangers. The qualified electrician is specifically trained for the working environment in which they operate and knows the relevant standards and regulations.

1.3 General safety precautions for installation and operation

The following general safety precautions must be observed for the installation and operation of the PDU. Danger of misuse! Misuse of the PDU can result in dangerous situations.

- Only use in closed, well-ventilated and dry rooms.
- Never use the PDU in explosive environments.

Danger of PDU damage due to condensation! Changes in humidity and temperature can result in condensation. Moisture in the PDU can cause damage and even destruction.

- Allow the PDU to acclimate when changing locations.
- Never switch on the PDU if condensation is visible.
- Working on live parts with wet hands can result in death. Avoid working with wet hands.
- Only connect to a power source whose voltage matches the specified rated voltage of the PDU. The corresponding values can be found on the PDU's rating plate.
- The building wiring must have suitable protection against short circuits and overload. The corresponding rated current values can be found on the PDU's rating plate.
- Never operate the PDU above its rated power.
- Do not touch live ports (sensor) directly with your fingers.

- The BN ESSENTIAL Metered PDU does NOT have a disconnecting for all-pole isolating device.

  - PDU with plug connection: The outlet powering the PDU must be easily accessible.

  For PDUs with fixed connection: A suitable disconnecting device must be available as part of the overall assembly (IT rack) or building wiring.

  → To achieve complete disconnection from the mains, pull the power plug from the electrical outlet. When removing the power plug from the electrical outlet, always pull directly on the power plug, not the cable.
- The PDU is designed for transient overvoltages of overvoltage category II. When operating with equipment where the peak voltage of overvoltage category II is likely to be exceeded, external measures must be taken to limit transients to the level of overvoltage category II.
- Use the PDU only when in a technically perfect condition. Never use the PDU with a damaged power cord.
- Do not bypass or deactivate the existing safety devices under any circumstances.
- The sum of the earth leakage currents of the connected devices could lead to increased touch current. During installation, it must be ensured that the protective earthing conductor of the PDU is connected to the protective earthing conductor of the building's electrical installation.
- The operation of PDUs with plug connection type A (e.g., CEE7/7) is only permitted at an outlet with an effective protective earthing conductor.
- The TFT display is not used to indicate whether the PDU and its outputs are powered. Devices connected to the power supply circuit by the PDU must be disconnected from the PDU before maintenance or repair work.
- There is a risk of crushing your fingers during installation or assembly work.
- The operator must not open the housing!

1.4 Mounting

Mounting the power strip incorrectly can cause the PDU to become loose and fall. Persons can be injured and material damage can occur.

- Handle the PDU with care and only use the intended mounting aids to install it.
- Never operate a damaged PDU and ensure it is immediately taken out of service. Contact the dealer and have it repaired.
- Ensure that the power cord and the cables of connected consumers are not kinked or pinched and that the insulation is not damaged.
- Route cables away from hot surfaces.
- Before connection it, check whether the cable length is sufficient for the desired mounting location.
- During installation, route all cables so that they are protected against mechanical damage.

1.5 Transporting

During transport, the PDU can tip over or move. Persons can be injured and material damage can occur.

- Pack the PDU in the packaging so that it cannot move.
- Secure the packaging so that it cannot move.

1.6 Storage

The PDU is not protected against all environmental influences. The PDU can be damaged if it is exposed to certain environmental influences.

- Keep the PDU clean and dry.
- Store the PDU in a closed room.

1.7 Maintenance and repair

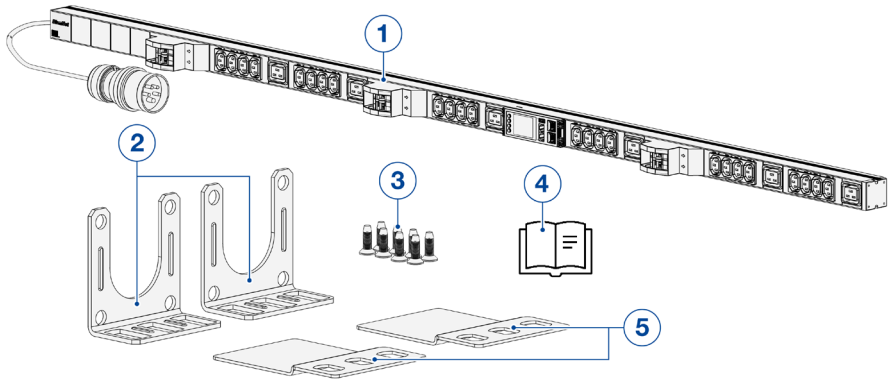
If the BN ESSENTIAL Metered is not properly maintained or repaired, components may no longer function properly and safety devices may be disabled. Persons may be injured.

- Do not maintain or repair the BN ESSENTIAL Metered yourself.
- Please contact BACHMANN Customer Service if the BN ESSENTIAL Metered needs to be maintained or repaired.

2 Delivery scope and overview

2.1 Delivery scope of PDU

The following figure shows an example of the delivery scope of one variant (using the example of the BN ESSENTIAL Metered, 3-phase, 32A variant).



1. PDU
2. Mounting bracket (2x) for 19” horizontal mounting
3. Screw (8x) for 19" mounting brackets
4. Mounting and installation instructions and applicable documents
5. Mounting bracket (2x) for 0U vertical mounting

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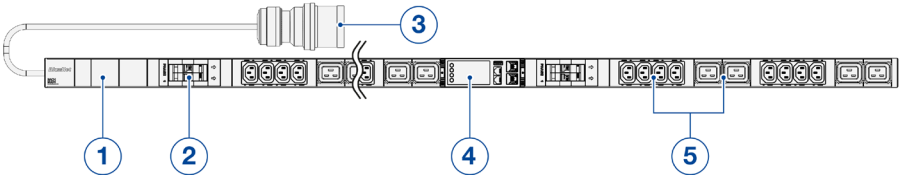
2.2 Overview of the PDU

BN ESSENTIAL Metered PDU: Remotely operable Power Distribution Unit with metering functionality and optionally connectable sensors

There are two variants:

- BN ESSENTIAL Metered, 1-phase
- BN ESSENTIAL Metered, 3-phase

Example: The BN ESSENTIAL Metered, 3-phase, 32A variant consists of the following components:



1. Metering unit 3-phase PDU
2. Circuit breaker
3. Power connection plug
4. Controller (replaceable)
5. Outlets

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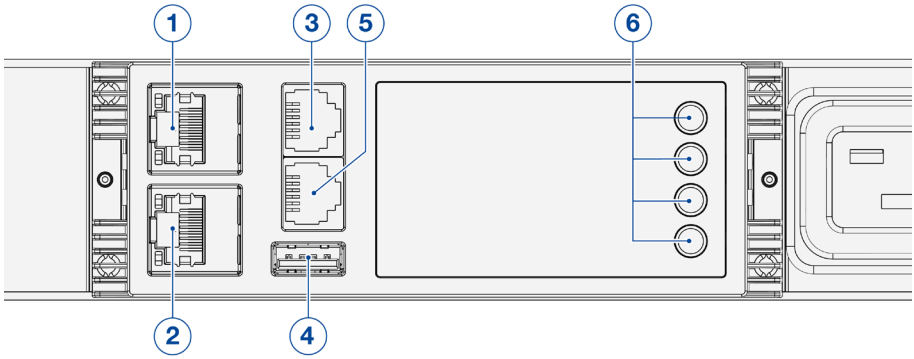
3 Control panel and interfaces



		Function	Specification
1	ETH 1	Connects PDU to Ethernet	RJ45 port Data transmission rate up to 1 Gbit/s
2	ETH 2	Connects PDU to Ethernet	RJ45 port Data transmission rate up to 1 Gbit/s
3	Sensor port 1	Connects optional sensor	RJ12 port
4	USB-A port		
5	Sensor port 2	Connects optional sensor	RJ12 port
6	Softkeys	Navigation in the display	Delete Scroll up Scroll down ENTER

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4 Mounting

WARNING!
Risk of injury
To avoid injuries:

- Wear suitable protective clothing when mounting the device.
- Handle the BN ESSENTIAL Metered PDU with care.

Mounting bracket variants

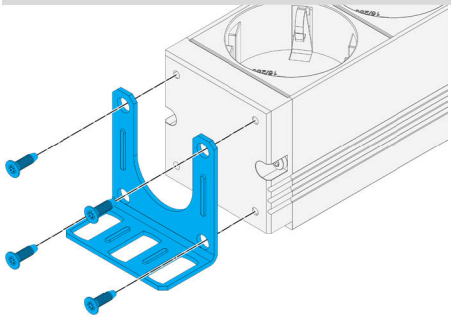
As an alternative to the mounting bracket shown below (supplied mounting bracket: Art. No. 940.142), there are mounting brackets that can be inserted into the profile groove on the back of the product: Mounting bracket Art. No. 940.143

4.1 Installing the mounting bracket

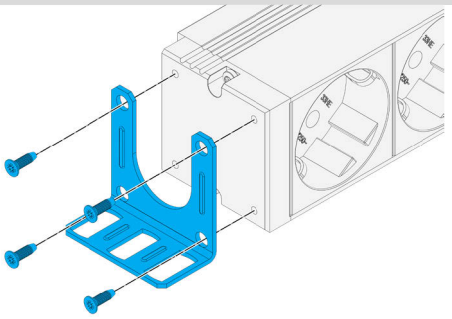
Mounting variants:

- Mounting bracket 0°
- Mounting bracket 90°
- Mounting bracket 180°
- Mounting bracket 270°

The following graphics show two examples of how to mount the BN ESSENTIAL Metered, 19" variant.



Installing the mounting bracket (4 screws)



Installing the 90° mounting bracket

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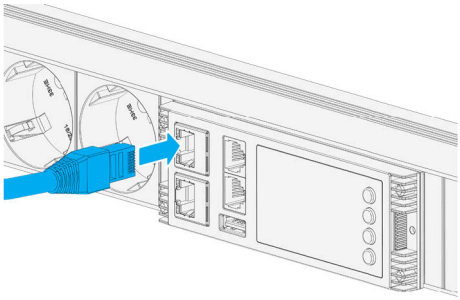
4.2 Connecting the network cable and sensors

The network cables or sensors are mounted on the controller at the respective ports:

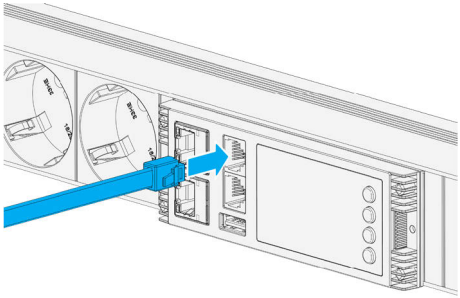
- Network cable at an RJ45 Ethernet port of the controller
- Sensors at an RJ12 port of the controller

Connecting the network cable



1. Insert the plug of the network cable into one of the two RJ45 Ethernet ports on the device.
2. Properly route the network cable to the network distributor and insert the plug.

Connecting sensors



1. Insert the plug from the BN ESSENTIAL Metered sensor into one of the two RJ12 ports on the device.

5 Operation

The BlueNet BN ESSENTIAL Metered operating instructions for the firmware can be downloaded as a PDF from www.bachmann.com.

NOTE!
The rated current of 16 A applies to an ambient temperature of +30°C. Deviations from this reference temperature with the same rated current lead to an earlier tripping time.

6 Storage

NOTE!
When storing the BlueNet BN ESSENTIAL Metered, observe the information in chapter 1.6 "Storage" on page 10.

7 Transport

The following requirements must be met to ship the power strip properly:

- The PDU is packaged and shipped separately from electrical end devices
- The PDU cannot shift within the packaging
- The packaging has been secured against shifting

8 Cleaning

Only clean the PDU with a dry, soft cloth. Ensure that the power supply has been disconnected during cleaning.

Harsh cleaning agents or sharp objects may damage the PDU. If the PDU is not properly cleaned, components may no longer function properly and safety devices may be disabled. Persons may be injured.

NOTE!
Only clean the power strip with a dry, lint-free cloth.

9 Eliminating faults

9.1 Fault table

Fault description	Cause	Remedy
No display	Display is switched off.	Press a button on the PDU to switch on the display.
	Controller is defective.	Replacing the controller. (See chapter 9.2 “Replacing the controller” on page 20)
	No mains voltage available.	• Check the upstream, on-site fuses (if present). • Switch on on-site power supply.
	PDU is not connected correctly.	Check connections.
Outlet is without function/de-energised	No mains voltage available.	• Check fuse (if available). • Switch on on-site power supply.
After inserting the controller, the error message appears in the display: "Standalone device – Insert Controller into PDU and power cycle”	No contact from controller to PDU.	Remove the controller again and use pressure to insert it again into the PDU. It may be necessary to force a controller restart by pressing the two outer buttons on the controller.

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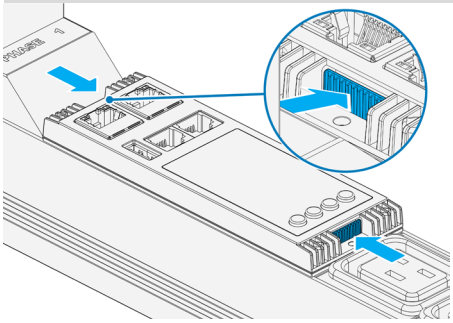
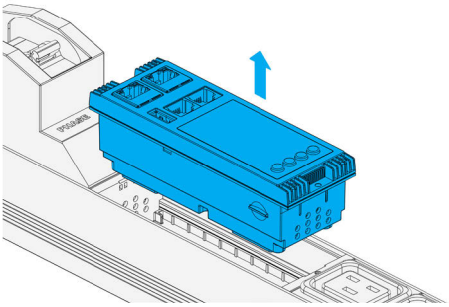
9.2 Replacing the controller

The PDU does not need to be unplugged from the power supply when replacing the controller. The controller can be replaced during operation.



Press latches



Removing the controller

1. Press on the latches on both sides and pull the controller upwards.
2. Remove the controller.
3. Insert new controller and lock it into place. Note: Ensure that the unit is inserted quickly and without pausing. Inserting it slowly or with hesitation can lead to faulty contact or damage.
4. Dispose of controller properly (see chapter 11 “Disposal” on page 21).

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10 Removing the PDU

DANGER!
Danger to life due to electric current!
Contact with live devices can pose a danger to life. Switched-on electrical devices can cause the most serious injuries.

- Before starting to remove it, switch off the main electrical supply and disconnect it permanently.

1. Disconnect all plug connections from the PDU.
2. Disconnect the PDU from the power supply.
3. Remove the PDU from the rack.

11 Disposal

Do not dispose of electrical equipment with household waste! Recycle electrical equipment and dispose of electrical equipment at the local collection point.

- When the end of use is reached, dispose of the PDU in accordance with the locally applicable disposal regulations.
- Observe the applicable WEEE directives when disposing of the PDU.
- Do not force open the PDU under any circumstances. Contact BACHMANN Customer Service if you have any questions about proper disposal.

12 Technical data

Voltage		
Input	230 V~/400V~	
Output	230 V~ each outlet	
Frequency	50/60 Hz	
Overvoltage category II		
Current		
Input	1-phase	16 A
	3-phase	32 A
Outlet type	C13 and/or C19, number freely configurable, compatible with locking cable (e.g., P-Lock, V-Lock) Country-specific outlets CEE 7/3, CEE 7/5 (UTE), BS 1363 (UK), T13, T23	
Mechanics		
Dimensions (L x W x H)	19": 437.4 mm x 44 mm x 47 mm (incl. controller: 58.6 mm) 0U / vertical mounting: Long configuration-dependent x 44 mm x 47 mm (incl. controller: 58.6 mm, for 3-phase PDUs 95.4 mm)	
Controller	Hot-swappable, with integrated power supply unit	
Display	2.0" TFT colour display with automatic rotation	
Mounting bracket Installing in 90° steps	Sheet steel	

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Functions	
Ports	2 x 1 Gbit/s Ethernet RJ12 for sensor ports (up to 2 sensors) USB-A
Protocols	Supported network protocols include IPv4, IPv6, DHCP, DNS, NTP, HTTP, HTTPs, SNMPv2/v3, SNMP Trap, SMTP, SSH, Syslog, Telnet
Measured values	Active power, apparent power, reactive power, voltage, current, frequency, power factor, active energy
Optional functions	Length and type of current input cable configurable, power plug configurable, thermal fuse 10 A/16 A, fine-wire fuse 10 A/16 A, SPD, thermomagnetic MCB
Circuit breaker tripping at a rated current of 16 A (at an ambient temperature of +30°C)	After 1 hour (deviations from the reference temperature +30°C with the same rated current lead to an earlier tripping time.)
Integrated web server with graphical user interface	

Continuous current values		
Ambient temp.	Max. permissible continuous current	Operation above these continuous current values does not lead to direct damage, but to premature tripping of the circuit breaker. This can lead to unwanted shutdowns during operation.
+40°C	15.5 A	
+45°C	15.25 A	

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Ambient conditions	
Maximum altitude	3000 m
Ambient temperature during mounting and use	-5°C – 45°C
Ambient temperature during transport and storage	-15°C – 65°C
Relative humidity (non-condensing)	5 - 90 %
Overvoltage category	II
Protection class	IP20
Conformity / approval / standards	
CE	2014/35/EU (Low Voltage Directive)
EU Directives and Regulations	2011/65/EU (RoHS Directive), 2014/30/EU (EMC Directive), and Regulation (EU) 2024/2847 (Cyber Resilience Act)
Reach	(EC) 1907/2006
EMC	DIN EN IEC 61000-3-2:2019, DIN EN IEC 61000-6-2:2019, and DIN EN IEC 61000-6-4:2019, DIN EN55032:2019 Class A/B, DIN EN55035:2020 Class A/B
Safety	DIN EN IEC 62368-1:2025, IEC 61984:2008, IEC 60320-1:2021, DIN VDE 0620-2-1:2021, and DIN VDE 0620-1:2021

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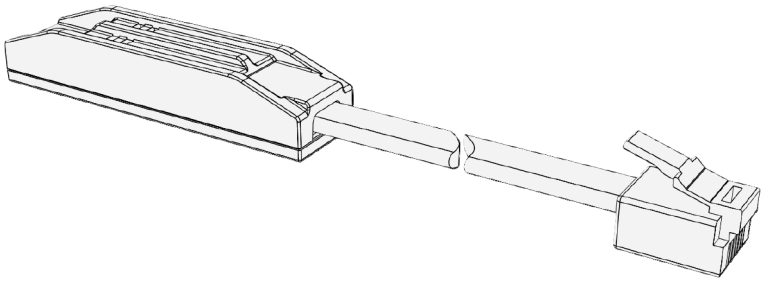
13 Accessory sensors

Sensors:

- 329.3176 Temperature sensor
- 329.3104 Combination sensor temperature and humidity



13.1 Sensor for temperature

Article number	329.3176
Designation	Temperature sensor
Port	
Cable length	2.0 m
Connector	RJ-12, 4p
Measurement	
Measurement accuracy temperature	± 0.5°C
Further product features	
Fixation of sensor head by integrated magnets or by means of mounting hole (Ø 3mm)	
Interface	digital
Dimensions (sensor head)	10 mm x 40 mm x 7 mm
Delivery scope	1x temperature sensor in poly bag
Ambient conditions	
Temperature range (recommended)	0°C - 60°C
Temperature range (maximum)	0°C - 85°C
Protect from direct sunlight.	

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13.2 Combination sensor for temperature and humidity

Article number	329.3104
Designation	Combination sensor temperature and humidity
Port	
Cable length	2.0 m
Connector	RJ-12, 4p
Measurement	
Measurement accuracy humidity	± 2% RH
Measurement accuracy temperature	± 0.3°C
Further product features	
Mounting depth	3 millimeters
Interface	digital
Dimensions (sensor head)	10 mm x 40 mm x 7 mm
Delivery scope	1x combination sensor in poly bag
Ambient conditions	
Temperature range (recommended)	0°C - 60°C
Temperature range (maximum)	-40°C - 85°C
Protect from direct sunlight.	

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