

Product manual | 13.01.2021

# ABB-free@home®

## USB-M-1.1

### USB-Interface, MDRC



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# 1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property, and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you pass the device on, also pass on this manual along with it.

ABB accepts no liability for any failure to observe the instructions in this manual.

If you require additional information or have questions about the device, please contact ABB or visit our Internet site at:

[www.BUSCH-JAEGER.com](http://www.BUSCH-JAEGER.com)

## 2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

ABB accepts no liability for any failure to observe the safety instructions.

### 2.1 Information and symbols used

The following Instructions point to particular hazards involved in the use of the device or provide practical instructions:



#### **Danger**

Risk of death / serious damage to health

- The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.



#### **Warning**

Serious damage to health

- The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.



#### **Caution**

Damage to health

- The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (reversible) injuries.



#### **Attention**

Damage to property

- This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.



#### **NOTE**

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.

The following safety symbols are used in the operating manual:



This symbol alerts to electric voltage.

## 2.2 Intended use

The device must only be operated within the specified technical data.

The USB-Interface, MDRC is suitable for installation on mounting rails according to DIN EN 60715.

The USB-Interface, MDRC makes the communication of a ABB-free@home® installation and a central Twisted Pair line possible.

## 2.3 Improper use

Each use not listed in Chapter 2.2 “Intended use“ on page 5 is deemed improper use and can lead to personal injury and damage to property.

ABB is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- Outdoor use
- Use of available connection options contrary to technical data.

## **2.4 Target group / Qualifications of personnel**

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

### 2.4.1 Operation

No special qualifications are needed to operate the device.

### 2.4.2 Installation, commissioning and maintenance

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

1. Disconnect
2. Secure against being re-connected
3. Ensure there is no voltage
4. Connect to earth and short-circuit
5. Cover or barricade adjacent live parts

## 2.5 Safety instructions



### **Danger - Electric voltage!**

Electric voltage! Risk of death and fire due to electric voltage of 100 ... 240 V. Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 100 ... 240 V supply system may only be performed by authorised and qualified electricians.
- Disconnect the mains power supply before installation / disassembly.
- Never use the device with damaged connecting cables.
- Do not open covers firmly bolted to the housing of the device.
- Use the device only in a technically faultless state.
- Do not make changes to or perform repairs on the device, on its components or its accessories.
- Keep the device away from water and wet surroundings.



### **Caution! - Risk of damaging the device due to external factors!**

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

## 2.6 Liability and warranty

Improper use, non-observance of this manual, the use of inadequately qualified personnel, as well as unauthorized modification excludes the liability of the manufacturer for the damages caused. It voids the warranty of the manufacturer.

## 3 Information on protection of the environment

### 3.1 Environment



#### **Consider the protection of the environment!**

Used electric and electronic devices must not be disposed of with domestic waste.

- The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2012/19/EU WEEE and 2011/65/EU RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

## 4 Setup and function

### 4.1 Introduction

The ABB-free@home® USB-Interface, MDRC USB-M-1.1 is a modular DIN-Rail Component (MDRC) for installation in the distributor on a mounting rail according to DIN EN 60715.

In applications in which a central device (e.g. a weather station) is to be made available for several ABB-free@home® systems, this can be done by adding a central Twisted Pair line.

The USB interface is connected to the System Access Point via USB (Type B). All USB interfaces in a building are then interconnected via a Twisted Pair cable.

The central line, like all individual ABB-free@home® systems, requires its own ABB-free@home® power supply and a System Access Point for configuring the weather station.

The device is connected to the System Access Point via a Type B USB cable and is operational as soon as the USB is connected. The USB-Interface, MDRC does not need to be configured, since this takes place automatically via the System Access Point.

The operating status is displayed via 3 LEDs. The bus part and the USB part are isolated galvanically from each other.

**For example:**

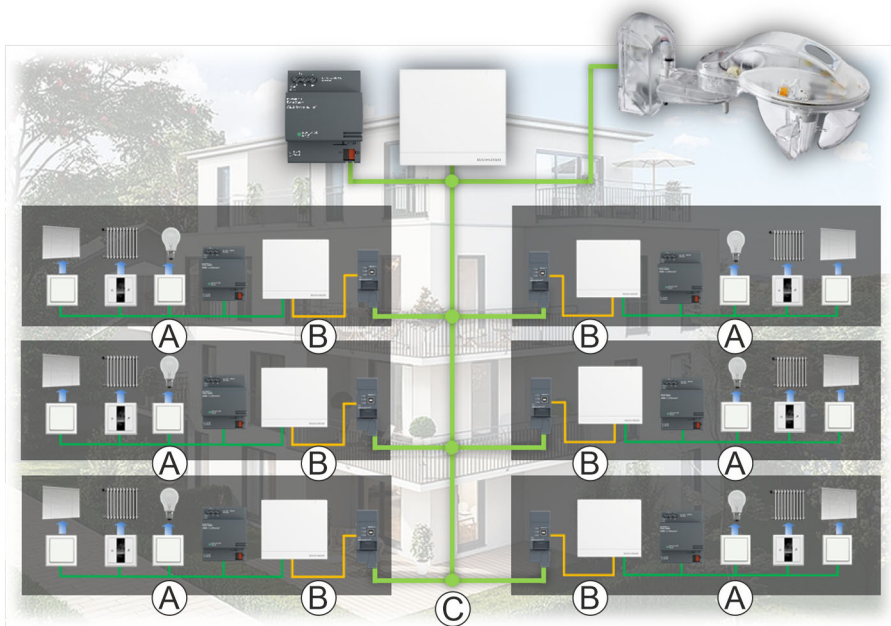


Fig. 1: Example of an apartment building installation

[A] Bus line

[B] USB

[C] Central line



#### Notice

The ABB-free@home® bus line [A] must not be connected directly with the central line [B].

## 4.2 Device overview

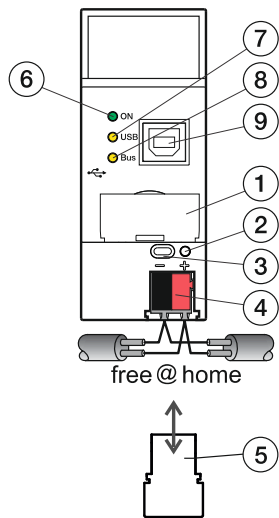


Fig. 2: Overview of devices

- [1] Label holder
- [2] No function
- [3] No function
- [4] Bus connection terminal
- [5] Cover cap
- [6] LED ON (green)
- [7] LED USB (yellow)
- [8] LED bus (yellow)
- [9] USB socket type B

### 4.3 Overview of types

Type	Product name	Product identity number
USB-M-1.1	USB-Interface, MDRC	2CDG510013R0011

Table 1: Overview of types

### 4.4 Scope of supply

The scope of supply contains the device including the bus terminal for coupling to the ABB-free@home<sup>®</sup> bus (central line).

## 5 Technical data

### 5.1 Technical data

<b>Designation</b>	
<b>Supply voltage</b> ABB-free@home® USB	Via free@home bus (21 - 30 V DC) 5 VDC
<b>Power consumption</b> ABB-free@home® USB	Max. 3 mA Max. 15 mA
<b>Power loss</b> ABB-free@home® USB Total power loss	Max. 100 mW Max. 75 mW Max. 200 mW
<b>Connectors</b> ABB-free@home® USB	free@home Connecting terminal, 0.8 Ø, single wire USB standard 1.1, type B socket, max. cable length 5 m
<b>Control and display elements</b> Green LED Yellow LED Yellow LED Programming LED and push-button	Display of operational readiness Display of USB operational readiness Display of connected free@home bus  Without function
<b>Protection rating</b>	IP20, according to DIN EN 60 529
<b>Protection class</b>	III according to DIN EN 61 140
<b>Insulation category</b> Overvoltage category Pollution degree	III according to DIN EN 60 664-1 II according to DIN EN 60 664-1
<b>Safety Extra Low Voltage</b>	SELV 24 V DC

<b>Designation</b>	
<b>Temperature range</b>	
Operation	- 5 to +45°C
Transport	-25 to +70 °C
Storage	-25 to +55 °C
<b>Ambient conditions</b>	
Maximum humidity	95%, no dew permissible
Air pressure	Atmosphere up to 2,000 m
<b>Design</b>	
Rail mounting device (MDRC)	Modular installation device
Construction type	Pro M
Housing/colour	Plastic, grey, halogen free
<b>Dimensions</b>	
Dimensions	90 x 36 x 63.5 mm (H x W x D)
Installation width MW	2 modules à 18 mm
<b>Mounting</b>	On mounting rail 35 mm according to DIN EN 60 715
<b>Built-in position</b>	Any
<b>Weight</b>	0.08 kg
<b>Fire classification</b>	Flammability V-0 acc. to UL94
<b>CE marking</b>	According to EMC and low-voltage guidelines

Table 2: Technical data

## 5.2 Dimensional drawings

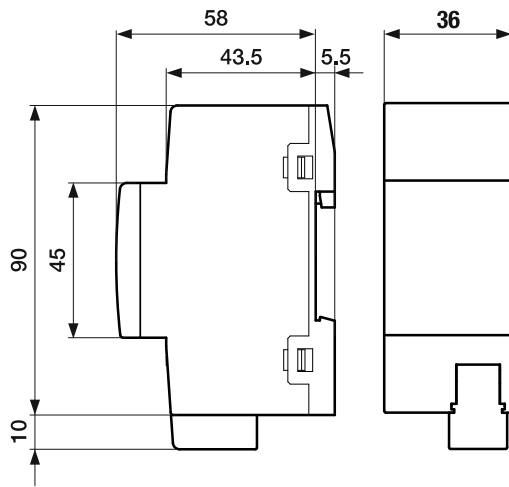


Fig. 3: Dimensions in mm

## 6 Connection, installation / mounting

### 6.1 Requirements for the electrician



#### **Danger - Electric voltage!**

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

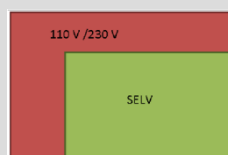
The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).



#### **Danger - Short-circuit in the low-voltage line**

- Risk of death due to short-circuit
- Risk of death due to electrical voltage of 230 V during short-circuit in the low-voltage line.
  - During mounting observe the spatial division (> 10 mm) of SELV electric circuits to other electric circuits.



- If the minimum distance is insufficient, use electronic boxes or insulating tubes.
- Observe the correct polarity.

## 6.2 Mounting / dismantling

### 6.2.1 Mounting

#### Installation

To install the device, perform the following steps:

- Latch the modular DIN rail component onto the mounting rail.

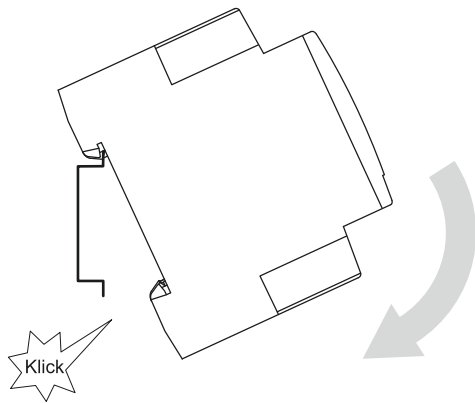


Fig. 4: Installation on mounting rails

#### Dismantling

To dismantle the device, perform the following steps:

- Press the device down [1] and then fold it toward the front [2].

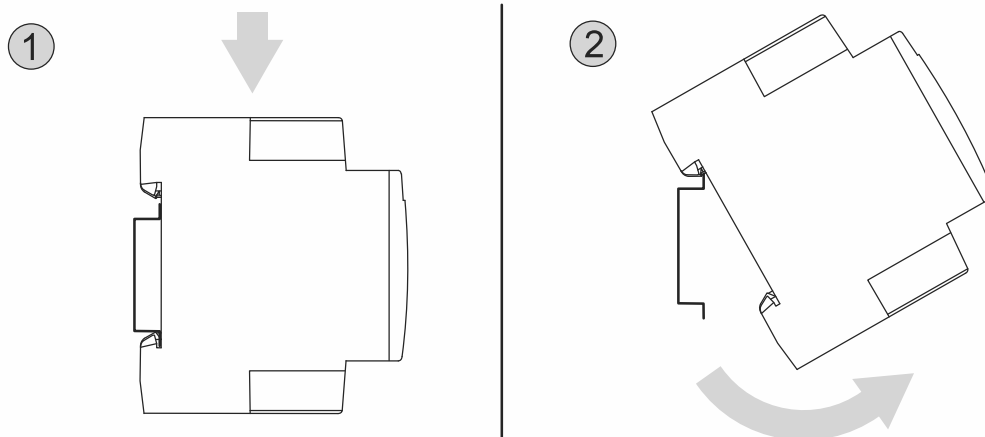


Fig. 5: Removal from the mounting rails

### 6.3 Electrical connection

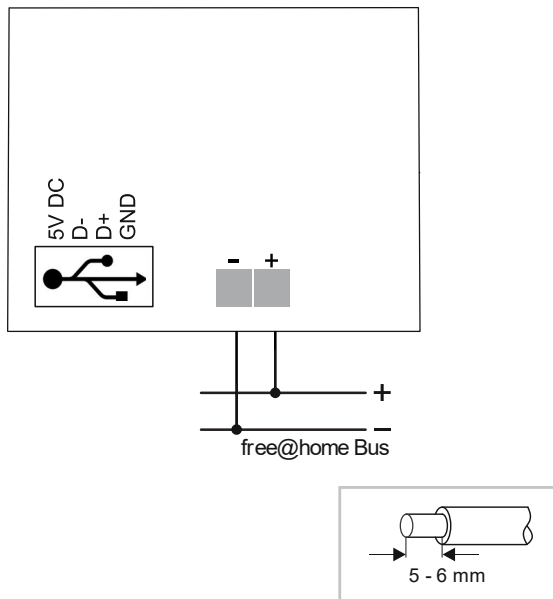


Fig. 6: Electrical connection



#### Notice

- The bus line connection is established by means of the enclosed bus connection terminal (red/black).
- The USB connection is established by means of the Type B USB socket.

## 7 Commissioning

### 7.1 Initial commissioning

The device connected to the bus line is automatically recognized by the system after a few seconds. Parameterisation is not required.

- All devices connected to the central line are now recognised automatically and displayed consecutively in the Web application.
- Devices on the central line, e.g. the weather station, cannot be configured from the individual system, but only with the System Access Point.
- It can take up to 10 minutes until all devices are displayed. This can be accelerated by carrying out a reset for the line.

## 8 Operation

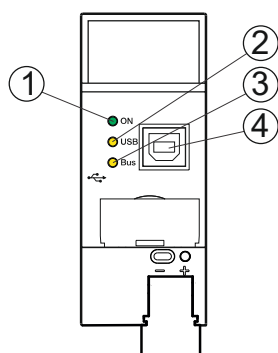


Fig. 7: Control elements

[1] LED ON (green):

- The LED lights up permanently when the USB is connected.

[2] LED USB (yellow):

- The LED lights up permanently when the USB is connected.
- The LED flashes during the USB data traffic.

[3] LED bus (yellow):

- The LED lights up permanently when the USB and the ABB-free@home<sup>®</sup> are connected.
- The LED flashes during ABB-free@home<sup>®</sup> data traffic.

[4] USB socket type B

## 9 Maintenance

### 9.1 Maintenance-free device

The device is maintenance-free. In case of damage, e.g. during transport or storage), do not perform repairs. Once the device is opened, the warranty is void.

Access to the device must be guaranteed for operation, testing, inspection, maintenance and repairs (according to DIN VDE 0100-520).

### 9.2 Cleaning



#### **Caution! - Risk of damaging the device!**

- When spraying on cleaning agents, these can enter the device through crevices.
  - Do not spray cleaning agents directly onto the device.
- Aggressive cleaning agents can damage the surface of the device.
  - Never use caustic agents, abrasive agents or solvents.

Clean dirty devices with a soft dry cloth.

- If this is insufficient, the cloth can be moistened slightly with a soap solution.

## 10 Notes

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