



InVENTer

Installation instructions

MZ-Home



Control device



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Disclaimer

This documentation represents a translation of the original German installation instructions. Once installation is complete, information regarding access to the installation instructions must be passed on to the user (tenant, owner, property management company, etc.).

The content of this documentation has been checked for compliance with the described components. Nevertheless deviations may still occur, therefore no guarantee of compliance can be provided.

This documentation describes the functionality of the standard scope.
For reasons of clarity, the documentation does not surport to cover all details on all types of the product and cannot cover every conceivable scenario for installation and assembly.

The illustrations in this document may differ slightly from the design of the product that you have purchased. The same functionality is ensured despite any design deviations.

This documentation is updated regularly. Necessary corrections and appropriate supplements are always included in subsequent editions. You can also find the latest version at www.inventer.eu/downloads.

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1 User and safety instructions

Thank you for purchasing this high quality product from inVENTer!

This section provides an overview of the basic safety precautions for safe and proper operation of your controller.

1.1 User information

Safety and warning instructions concept

The safety and warning instructions in these installation instructions have a uniform structure and are marked with a symbol on the left side of the instruction. A signal word in front of the text also indicates the hazard level. If several hazard levels exist, the highest level safety instruction is always used.

The safety and warning instructions contain the following information:



SIGNAL WORD: type and origin of the danger. Possible consequences of the danger!

- Measures to avoid the danger.

The signal word indicates the severity of the potential danger unless the preventive measures are taken:



DANGER means: Imminent danger of serious injury or death.



WARNING means: Possible danger of serious injury or death.



CAUTION means: Direct danger of minor/significant injury.



NOTICE Means: Direct or possible risk of property damage due to an adverse event/state.

If you see these signs, ensure you observe the described measures to prevent possible hazards and/or damage.

Other symbols and notices used in this documentation

In addition to the safety instructions, the following symbols are used:



A TIP symbol indicates practical and useful tips for handling your ventilation system.

Before each step, any additional tools and materials required for the activity are listed.



The graphics in Section 5: Installation show the interior wall.



Action required: Prompts you to perform a specific action.



Check the results: This requires you to check the results of the action you have performed.



Action focus: To be taken into account in the corresponding assembly step.

1.2 Safety instructions

The installation instructions are part of your MZ-Home controller and must be available at all times (see www.inventer.eu/downloads). When handing the system to a third party, the information regarding access to the installation instructions must be handed over also.

Before performing any work on the equipment/system, read the installation instructions carefully and observe all notices that refer to the installation process in this section. Also note the safety instructions that precede the described handling instructions. Non-observance of safety instructions could result in injury and/or property damage.

Intended use

The MZ-Home controller (also referred to in the text below as "controller", "MZ-Home controller") is a component of a decentralised iV ventilation system with heat recovery (product series iV-Smart+, iV14-Zero, iV-Light, iV-Compact, iV14-MaxAir, iV-Office, iV-Twin+) and is only to be used for controlling the corresponding ventilation units of the ventilation system from inVENTer GmbH.

Specifically, the following must be used:

- The MZ-Home controller for controlling the inVENTer ventilation units with heat recovery integrated into the system.
- The sensor technology paired with the controller (HYG18 humidistat, HYG12 humidistat, CS1 pressure monitor) for the delivery of temperature, humidity and CO₂ values to the MZ-Home controller, which in turn uses these values to control the inVENTer ventilation units with heat recovery.

Requirements for intended use

- Always observe the relevant standards, regulations and guidelines when installing the equipment / system. In particular also applicable building regulations, fire safety regulations and accident prevention regulations of the employers' liability insurance association.
- Use the units integrated into the ventilation system only in accordance with the applications that are described in this documentation and only in conjunction with the components that are recommended, approved and named by inVENTer GmbH in this documentation. Changes or modifications to the units are not permitted.
- Before starting work, you should have a project plan showing the number of ventilation units, the location of the ventilation units, the ventilation principle (cross ventilation, single room ventilation, extract ventilation) and the associated controllers. The exact positioning of the individual units and control units must be checked at the installation site and, if necessary, adapted to the local conditions with the involvement of the responsible planner or user.
- Your ventilation system is exclusively designed for use in ambient temperatures between -20 and 50°C.
- Trouble-free and safe operation of the equipment/system depends upon proper transportation, proper storage and installation as well as careful operation and maintenance.
- These installation instructions are only valid in conjunction with the installation and operating instructions of the corresponding ventilation unit with heat recovery and supplement these. All legal notices that are listed in the respective installation instructions also apply without restriction to this document.



- **DANGER:**

The unit may only be installed by a qualified electrician.

- When laying the power cable, observe the requirements of protection class II.
- Connect all units of a ventilation system to the same circuit breaker.
- Route and connect cables only while in a voltage-free state!
- The mains supply must correspond to the specifications on the type plate.
- Before working on electrical installations, disconnect all affected units from the power supply.
- Check before making any drill holes whether there are wires in the drilling area.



- **WARNING:** For joint operation of a ventilation unit with fireplaces, safety measures must be taken to prevent a negative pressure from developing in the building. The responsible chimney sweep and/or building planner decides which measures need to be carried out.



- **NOTICE:** Ensure adequate contact between the wires when connecting the MZ-Home controller.

- **NOTICE:** Laying cables whose sheathing is not resistant to plastering under plaster leads to short circuits and cable fire! Lay cables without a plaster-resistant cable sheath in the conduit.

- **NOTICE:** The use of too small a cable cross-section leads to too great a voltage drop and/or contact is not guaranteed!

Use wire ferrules with collars to connect braided wires.

- **NOTICE:** The unit has scratch-sensitive plastic surfaces. Do not touch the components with oily and/or dirty hands. Avoid contact with sharp or pointed objects, e.g. rings.

- When using several ventilation units controlled by several controllers, you must ensure that the ventilation units are synchronised with each other.

Any kind of use other than the intended use will exclude all liability claims.

Improper use

The MZ-Home controller is intended exclusively for the control of the ventilation units specified in the section on intended use. Any other use is strictly prohibited.

Qualified personnel

The equipment/system may only be set up, operated and cleaned in conjunction with this documentation and the documentation for the controllers.

Installation, electrical connection and commissioning of the equipment/system may only be performed by qualified personnel. Qualified personnel within the meaning of the safety notices in this documentation are persons who are authorised to install, put it into operation and identify equipment, systems and circuits in accordance with established safety procedures.

Conformity

The ventilation unit complies with the technical safety requirements and standards of electrical appliances for domestic use. It conforms to current European Union and United Kingdom directives.

2 System overview: MZ-Home controller

The MZ-Home controller is an electronic programming unit for controlling inVENTer® ventilation units with heat recovery.

It features Clust-Air technology (multi-zone control), easy installation, touch operation and a wide variety of possible uses.

The MZ-Home consists of an operating unit and up to four Clust-Air modules. Each Clust-Air module controls the ventilation units in one zone within the accommodation unit. This allows the MZ-Home to provide individual ventilation for up to four different areas (ventilation zones) within one accommodation unit. For each zone, the operating mode and ventilation level can be set manually or via a weekly timer.

The MZ-Home allows the control of the following maximum number of ventilation units:

Ventilation units from the product series	per controller	per Clust-Air module
iV-Smart+ / iV14-Zero / iV-Light / iV-Compact	16	4
iV14-MaxAir / iV-Office / iV-Twin+	8	2

On the MZ-Home controller, the operating mode of the ventilation unit, the setting of the air volume flow, the programming of a weekly timer and the automatic humidity monitoring is set separately for each zone.

An external interface also allows the scope of functions to be extended:

- Demand-based ventilation via sensor technology (CO2 sensor, VOC sensor¹⁾ [NO]), or
- integration of a safety device (e.g. pressure monitor, [NC]) with simultaneous operation of the ventilation units with fireplaces.
- Integration of the MZ-Home controller into an existing building management system via an analogue input (DC voltage)

Components

- Programming unit
- 1 ... 4 Clust-Air modules
incl. humidity and temperature sensor
- Top-hat rail switch-mode power supply
- Mounting box (optional)

¹⁾ VOC = volatile organic compounds

2.1 Construction

The MZ-Home controller consists of a programming unit and at least one up to a maximum of 4 Clust-Air module(s).

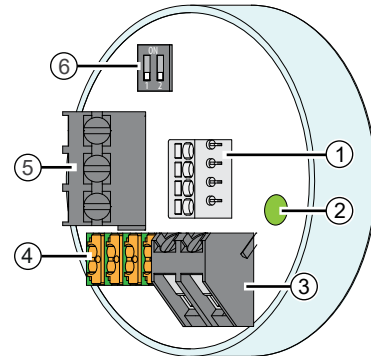
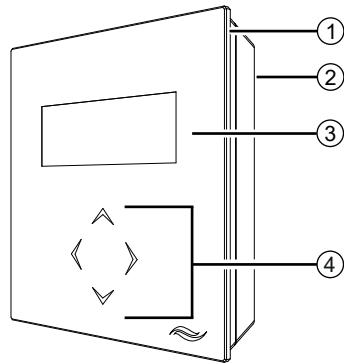
The operating unit is mounted directly on the interior wall by means of a mounting box. It serves as an operating and display interface for the user.

In addition to the operating unit, one Clust-Air module is required per ventilation area (zone). The Clust-Air module contains the electronics for the zone to be controlled and is mounted in it. It is mounted and connected in a flush-mounted box. After installation, we recommend a cover in the switch design or wallpapering over the flush-mounted box.

The humidity and temperature sensor is part of the Clust-Air module. It is supplied pre-assembled in a separate housing, it is installed in the room air flow and connected to the Clust-Air module for the appropriate zone.

MZ-Home operating unit

Clust-Air module (incl. humidity and temperature sensor)



- 1 Acrylic cover
- 2 Housing, consists of base plate and cover
- 3 Display unit
- 4 Control panel

- 1 Connecting terminal humidity and temperature sensor, 4-pole
- 2 Illuminated display coupling
- 3 External Interface, 2-pole
- 4 Connecting terminal BUS-control, 4-pole
- 5 Connecting terminal BUS-fan, 3 pole
- 6 DIP-Switch

Figure 1: Front view of MZ-Home operating unit (Fig. left) and Clust-Air module (Fig. right)

2.2 Function

The MZ-Home controller is a control unit for decentralised ventilation units with heat recovery from inVENTer GmbH.

Thanks to its unique Clust-Air technology (zone control), the MZ-Home controller is able to control up to four areas (zones) within an accommodation unit separately from each other. For each zone, the operating mode and output level can be set manually or via a weekly timer. Due to the automatic humidity monitoring, the controller also has demand-controlled ventilation if the interior humidity values are too high.

If connected, the information transmitted to the corresponding Clust-Air module by means of external sensors, e.g. CO2 sensor, is also included in the control of the ventilation units in a zone.

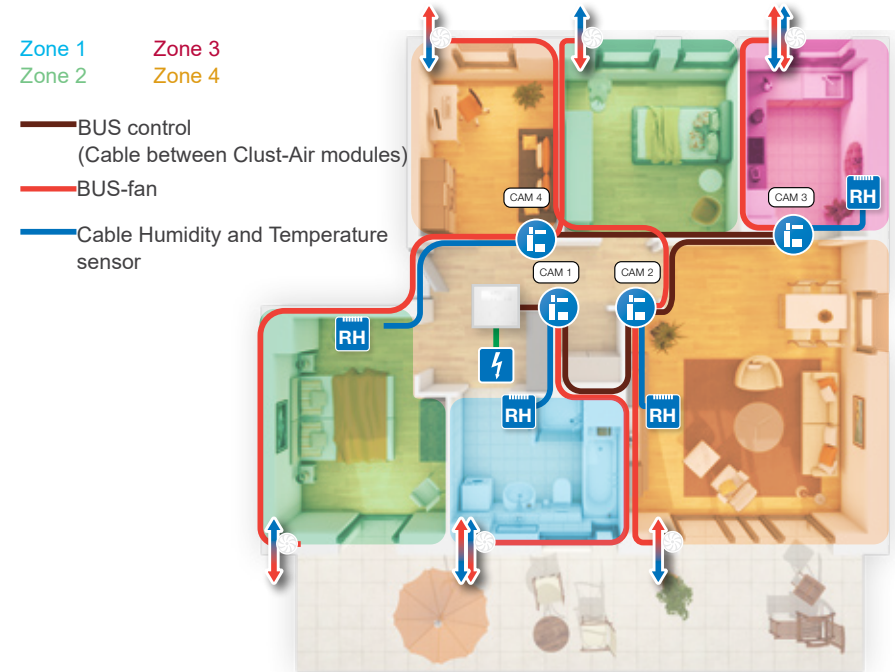


Figure 2: MZ-Home controller functional principle

MZ-Home controller without connected external interface

If no sensor is connected, the operating modes heat recovery, ventilation and OFF, as well as the pause function, can be set individually for each zone on the MZ-Home controller by weekly timer or manually.

Humidity monitoring cannot be selected manually, it is activated automatically by the sensor system if required. If the relative humidity in the interior exceeds the predefined limit value (can be changed on the controller), the MZ-Home controller switches all ventilation units connected to the Clust-Air module for the respective zone to ventilation mode with the air volume flow rate set on the controller. If the value falls below the limit value, the MZ-Home controller switches back to the previously set operating mode and ventilation level after a 20-minute run-on time.

For the ventilation units, three ventilation stages each for heat recovery and ventilation, as well as a ventilation stage for the dehumidification function can be defined and saved.

These can be changed between 25 % and 100 % efficiency of the reversing fan in 5 % steps. The new setting takes effect immediately, so that adjustments can be made purely by listening to changes in the sound level.

In addition, the brightness and the display duration of the display unit can be adjusted. This setting is also effective immediately.

MZ-Home controller with connected external interface

In all configurations, all of the controller's functions are available without a connected external interface. If the external interface on the MZ-Home controller is occupied, the range of functions of the controller is extended as follows:

The external interface is a bi-functional interface. It enables

- A: The connection of a sensor with potential-free switching contact (normally open contact), or the integration of a safety device (potential-free switching contact, e.g. pressure sensor (NC / NO contact) when the ventilation units are operated simultaneously with fireplaces, or
- B: Use as an analogue input for the integration of the ventilation system into an existing building management system.

There is an external interface on each Clust-Air module.

A: Interface configured as external switching contact (sensor system)

If sensors are connected to the MZ-Home controller's Clust-Air module, the range of functions is extended. In addition to automatic humidity monitoring, extended demand-controlled ventilation or the integration of a safety device is possible.

When connecting external sensors to the Clust-Air module, the **Ext. switch** input (**NO**, sensor system without safety device) or **CHIMNEY SWITCH (NO or NC, safety device)** can be selected for the respective zone (📖 MZ-Home operating instructions).

The sensor used must have a potential-free relay contact as its output.

Sensor	Input	Limit value exceeded	Limit value not reached
CO ₂ sensor VOC sensor	External switching contact (NO contact)	Change all ventilation units on the Clust-Air module to ventilation mode.	Change all ventilation units on the Clust-Air module to the originally set operating mode.
Pressure sensor (4 Pa)	Fireplace switching contact (normally closed or normally open contact)	Switch all ventilation units connected to the controller to OFF mode.	Switch all ventilation devices connected to the controller to the originally set mode.

• Connection of an external normally open contact, (NO):

If the predefined limit value (can be changed on the corresponding sensor) is exceeded, the sensor transmits a control signal to the respective Clust-Air module. The controller then switches all ventilation units connected to the Clust-Air module to ventilation mode.

The function remains active until the corresponding parameter falls below the pre-set limit again. Then all ventilation units connected to the Clust-Air module switch to the originally set operating mode and ventilation level.

- If a CO₂ sensor is connected, the CO₂ content in the interior is continuously measured. A CO₂ sensor can be ordered as an optional accessory.
- If a VOC sensor¹⁾ is connected, the composition of the air in the interior and the resulting air quality are measured continuously.

• Connection of a safety device, (NO or NC):

The external interface is used to integrate safety devices, e.g. a 4 Pa pressure sensor, into the ventilation system while simultaneously operating the ventilation system with fireplaces.

If this interface is used in conjunction with an external pressure sensor (4 Pa pressure sensor), the air pressure indoors is continuously monitored. As soon as this exceeds the safety-relevant limit, the sensor transmits this to the controller. This then switches all connected ventilation units off. The function remains active until the air pressure drops below the safety-relevant limit again. Then all ventilation units connected to the controller switch to the originally set operating mode and ventilation level.

¹⁾ VOC = volatile organic compounds



B: Interface configured as analogue input (integration into building control system)

If the interface is used as an analogue input, the ventilation unit can be integrated into an existing building control system. For this purpose, depending on the desired function, a predefined DC voltage is set in the building control unit for each Clust-Air module. The control voltage should have a resolution of 10 bits.

It is not possible to connect a potential-free switch and an analogue input to a single Clust-Air module simultaneously. A connected analogue input always has priority over a potential-free switching contact.

Depending on the control voltage, the following functions are available:

Function	Control voltage [V DC]
Manual control	$0.00 \leq U \leq 0.50$
Pause timer	$1.00 \leq U \leq 1.50$
Heat recovery ventilation level 1	$2.00 \leq U \leq 2.50$
Heat recovery ventilation level 2	$3.00 \leq U \leq 3.50$
Heat recovery ventilation level 3	$4.00 \leq U \leq 4.50$
Ventilation level 1	$6.00 \leq U \leq 6.50$
Ventilation level 2	$7.00 \leq U \leq 7.50$
Ventilation level 3	$8.00 \leq U \leq 8.50$

When connecting an analogue input to the Clust-Air module, the **Analogue** input for the respective zone must be selected in the **Settings** main menu (📖 MZ-Home operating instructions).

Deactivate interface

The interface on the Clust-Air module can be deactivated in the **Settings** (main menu (📖 MZ-Home operating instructions)).

2.3 MZ-Home controller factory settings

On delivery from the factory, the MZ-Home controller is configured with the following default settings:

Feature	Specification	Value
Ventilation level		
Ventilation level 1	All zones and operating modes	25 %
Ventilation level 2	All zones and operating modes	35 %
Ventilation level 3	All zones and operating modes	60 %
Ventilation level _EF		75 %
Operating mode		
Heat recovery	All zones	
Limit values		
Humidity	All zones	80 %
Weekly timer		
Zone 1 ... n	All zones	OFF
Operating mode	All weekdays	Heat recovery
Ventilation level	All weekdays	1
Inputs		
Zone 1 ... n	All zones	OFF
Filter change		
Interval		14 weeks
Display		
Screen brightness		99 %
Duration screen display		20 seconds
Language		
		German

2.4 Operating and display element: Programming unit

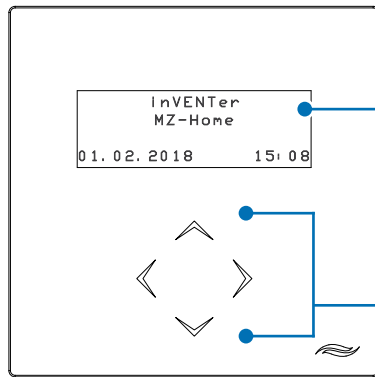


Figure 4: Programming unit front view

Display unit:

The display unit in the upper part of the operating unit is a liquid crystal display with backlighting. It consists of four lines of 20 characters each and displays functions and parameters. The screen display switches off automatically after 20 seconds without operation.

Navigation arrows:

The 4 navigation arrows in the lower part of the operating unit are capacitive buttons. Touching any navigation arrow activates the display unit in the upper area of the operating unit, the start screen is displayed and the controller can be operated.

3 Electrical connection



DANGER

Exposed electrical components.

Electric shock and injury due to live components (230V, 50Hz)!

- Before working on electrical installations, disconnect all affected equipment from the power supply.
- Observe the requirements for protection class II when laying the power supply cable. Do not lay live cables.
- Lay the mains connecting cables and signal cables separately.
- Guide the system components of the ventilation system to the same automatic safety device.
- **Installation and connection must only be performed by qualified and trained personnel.**



NOTICE

Insufficient cable cross-section.

Excessive voltage drop and/or contact cannot be guaranteed!

Only use the following cable cross-sections:

- Power cable: max. 1.5 mm²
- Fan BUS: min. 0.75 mm² – max. 33 m length with star-shaped connection of the fans to the Clust-Air module
- Control BUS: 0.25 – 0.5 mm²



Notes on the electrical connection of the Clust-Air modules:

- **The Clust-Air modules are connected in series.** Please note the maximum distances (maximum cable lengths) between the individual modules.
- The connection terminals, depending on the connection, are either a screw terminal (fan BUS and external interface) or spring-loaded terminal (control BUS and humidity and temperature sensor). The terminals have a connection capacity of up to 1.5 mm². Use rigid wires or wires with wire ferrules in screw terminals. The spring-loaded terminals have a connection capacity of 0.1 to 0.5 mm². They are suitable for rigid wires.
- If wire ferrules are used, they must increase the cross-section. Their material thickness is not included.
- **Terminate the last Clust-Air module connected with a terminating resistor.**

Maximum cable lengths

Cable	Cross-section/cable type and cabling		Maximum length
Operating voltage	2x1.5 mm; 24 V DC	between switching power supply unit and operating unit	100 m
Control BUS	J-Y(ST)Y-2x2x0.8	between the operating unit and the last connected control module	200 m
Fan BUS	LiYY3x0.75-O; 6 ... 16 V DC	between control module and fans	
	Fan: Xenion	Star-shaped connection	33 m
		Connection in series ¹⁾ (4 units)	10 m
		Connection in series ¹⁾ (2 units)	20 m
Fan: Xenion EFP; Mini-Xenion	Star-shaped connection	20 m	
	Connection in series ¹⁾	10 m	
Humidity and temperature sensor	J-Y(ST)Y-2x2x0.8	between control module and sensor	15 m

¹⁾ Maximum distance between Clust-Air module and last connected ventilation unit

3.1 Wiring Options

- A** Programming unit rear view
- B** Control module
- C** Humidity and temperature sensor
- D** Terminating resistor, 120 Ω
- E** Fans: 1 ... 4 per control module
- F** Switching power supply unit

MZ-Home with 4 modules and 4 fans each

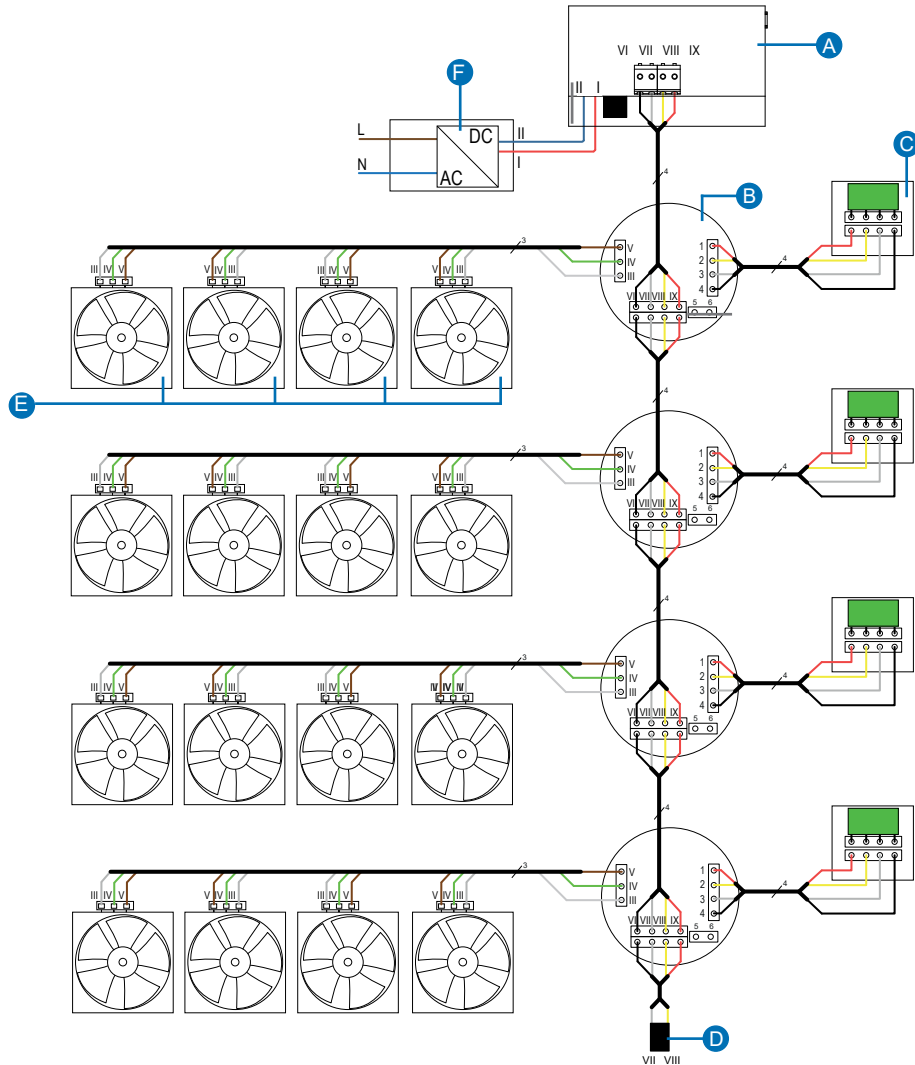


Figure 6: Connection example for the MZ-Home controller (connection of the fans to the module in series)

Clust-Air module connection

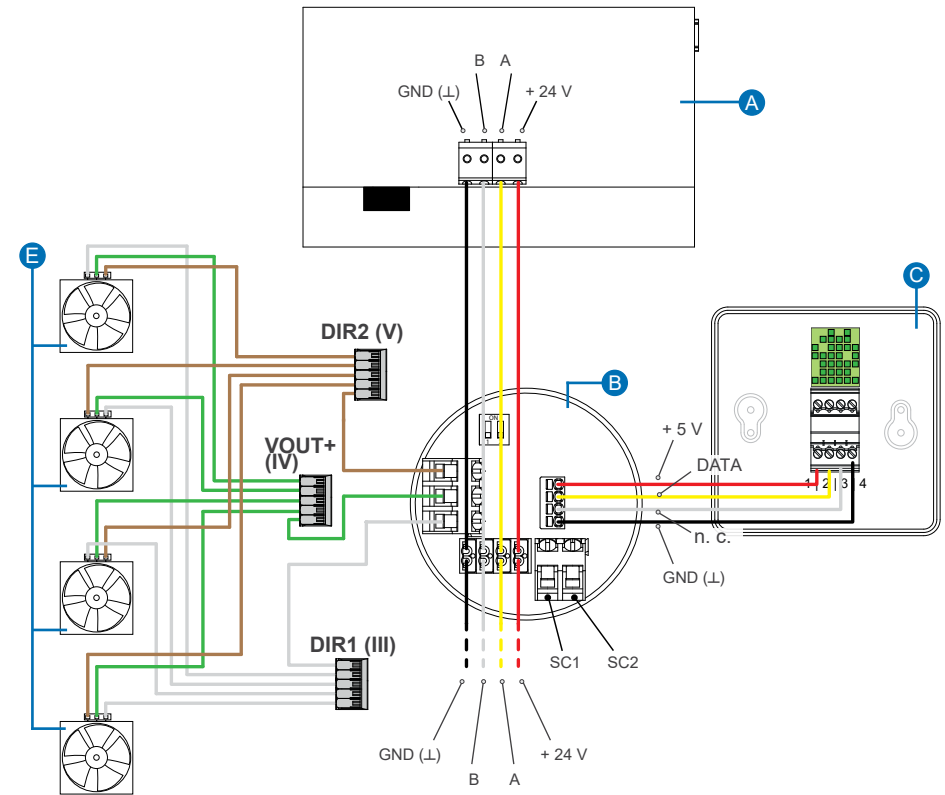


Figure 7: Wiring rear of MZ-Home operating unit and Clust-Air module (Connection of the ventilation units to the module in a star configuration)

3.2 Interfaces and terminal assignment

MZ-Home switching power supply unit

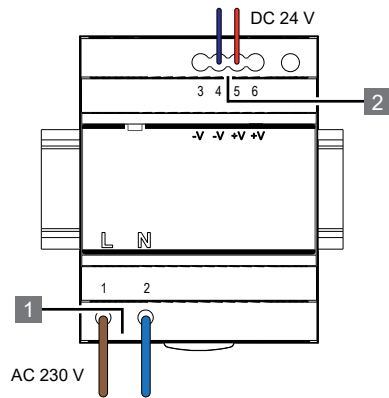


Figure 8: Interfaces for MZ-Home switching power supply unit

MZ-Home operating unit rear

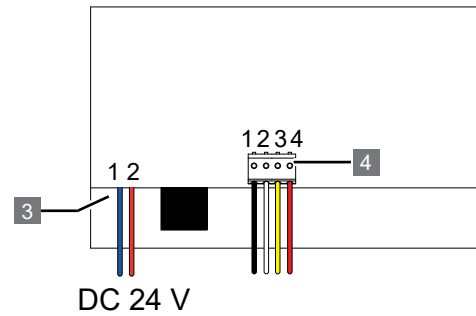


Figure 9: Interfaces on the rear of the MZ-Home operating unit

Clust-Air module (control module and humidity and temperature sensor)

Control module

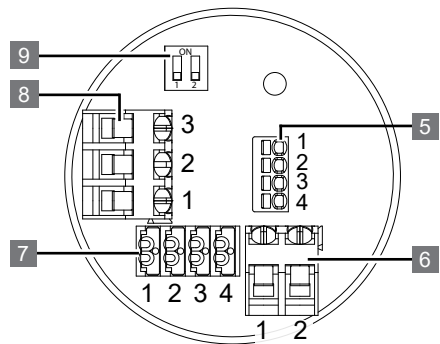


Figure 10: Interfaces on the MZ-Home control module

Humidity and temperature sensor

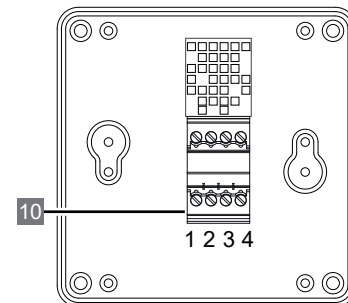


Figure 11: Interface on the humidity and temperature sensor FTS-15 MZ

3.3 Terminal assignments

Connector	Terminal	Name	Meaning
Switching power supply unit (Fig. 8)			
1	1	AC/L	Phase
	2	AC/N	Neutral conductor
2	3, 4	+ 24 V	Controller operating voltage
	5, 6	GND (⊥)	
Rear of MZ-Home controller operating unit (Fig. 9)			
3	1	GND (⊥)	Controller operating voltage
	2	+ 24 V	
4	1	GND (⊥)	Dimensions
	2	B	Data line B
	3	A	Data line A
	4	+ 24 V	Supply voltage
Control module (Fig. 10)			
5	1	+ 5 V	Supply voltage
	2	DATA	Data line
	3	n. c.	Not occupied
	4	GND (⊥)	Dimensions
6	1	SC1	Switching contact 1, analogue (+)
	2	SC2	Switching contact 2, analogue (-)
7	1	GND (⊥)	Dimensions
	2	B	Data line B
	3	A	Data line A
	4	+ 24 V	Supply voltage
8	1	DIR1 (III)	Direction signal 1
	2	VOU+ (IV)	Fan operating voltage
	3	DIR2 (V)	Direction signal 2
9		DIP switch	Zone assignment of the module; Procedure: Page 20f.
Humidity and temperature sensor (Fig. 11)			
10	1	+ 5 V	Supply voltage
	2	DATA	Data line
	3	n. c.	Not occupied
	4	GND (⊥)	Dimensions

3.4 Zone assignment on the DIP switch of the Clust-Air module

The existing fans must be divided into zones, according to the ventilation concept.

A Clust-Air module is used to control all ventilation units connected to the module. Observe the following notes when dividing:

- At least 1 (max. 4) Clust-Air module(s) is required,
- Connect a maximum of 4 ventilation units with Xenion reversing fan per Clust-Air module,
or
Per Clust-Air module connect a maximum of 2 ventilation units with Xenion EFP reversing fan
or
Mini-Xenion,
- Assign ventilation units operated in pairs to the same zone,
- For assignment/addressing of the zones, start with zone 1 and assign consecutively;
the modules themselves do not necessarily have to be switched in sequence:

Example 1 | Example 2 correct assignment:

Module 1 = Zone 1 | Zone 3
Module 2 = Zone 2 | Zone 1
Module 3 = Zone 3 | Zone 4
Module 4 = Zone 4 | Zone 2



Example incorrect assignment:

Module 1 = Zone 1
Module 2 = Zone 2
Module 3 = Zone 2
Module 4 = Zone 4



The ventilation zone is assigned at the DIP switch on the Clust-Air module.

Structure of the DIP switch

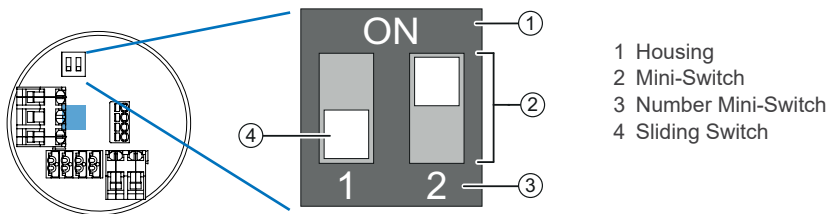


Figure 12: Position and structure of the DIP switch



NOTICE

If the zone assignment/addressing at the DIP switch is wrong, the controller cannot control the ventilation units assigned to the zone!

- Assign zones starting with zone 1 and consecutively.
- Observe switch positions, orientation and labelling of the DIP switch.

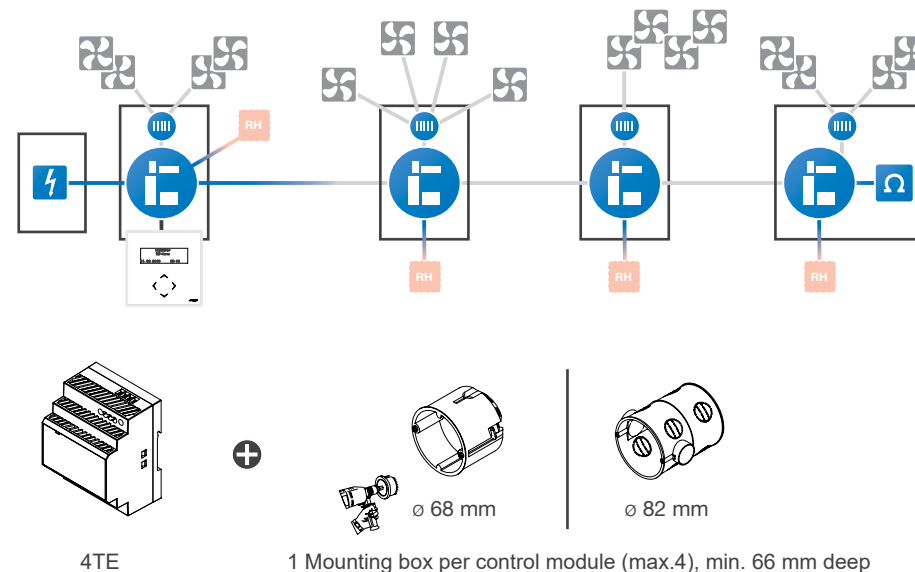
Switch positions

Accommodation area	Switch position on the DIP switch	Description
Zone 1		Both switches are off. The slide switches are set to 1/2.
Zone 2		Switch 1 is switched on. The slide switch is in the ON position. Switch 2 is switched off. The slide switch is set to 2.
Zone 3		Switch 1 is switched off. The slide switch is set to 1. Switch 2 is switched on. The slide switch is in the ON position.
Zone 4		Both switches are on. The slide switches are set to ON.

4 Preparing for installation

- Read the "Installation" and "Electrical connection" sections carefully before installation to avoid installation errors. The installation and connection of the entire ventilation system must be carried out by qualified and trained personnel.
- Before and during installation, note the safety regulations in order to avoid electrical accidents.
- Check the delivery for completeness and transport damage upon receipt using the delivery note. Report missing items immediately.
- Only install all ventilation system devices intended for indoors
 - on finished and flat interior walls.
 - in rooms which are free from aggressive or corrosive gases and extreme dust exposure.
- The MZ-Home controller is installed on the interior wall via a mounting box. Recommended installation height: 1.50 m floor to lintel height (reachability for operation).
- The number of mounting boxes required depends on the planned number of zones: One wall opening = MZ-Home operating unit and one Clust-Air module; Each additional Clust-Air module = one additional box. Observe the maximum distances (📖 3: Electrical connection).
- Make sure that the ventilation zones are correctly assigned on the Clust-Air module. The zone is assigned at the DIP switch (📖 3.4: Zone allocation).
- The base plate of the humidity/temperature sensor is mounted directly on the wall. Select the mounting location of the humidity/temperature sensor at medium room height within the ventilation zone. The measured values at the installation site must correspond to those in the room in order to obtain accurate measurement results. The sensor must not be exposed to direct sunlight.

4.1 Principle sketch: Connection options for ventilation units



4.2 Installation dimensions

Designation	Width [mm]	Height [mm]	Depth [mm]	Ø [mm]
Wall openings				
Wall opening for flush-mounted box 60x66	–	–	66	82
Wall opening for flush-mounted plasterboard box 68x61	–	–	61	68
Installation elements				
Flush-mounted box 60x66	76	–	66	60
Flush-mounted plasterboard box 68x61	75	–	61	68
Control cabinet box	71	71	56	–
Operating unit housing MZ-Home controller	115	115	17	–
Top-hat rail switch-mode power supply unit (4HP)	70	93	56	–
Humidity/temperature sensor FTS15-MZ	71	71	27	–

Table 1: Installation accessories and installation dimensions

4.3 Dimensional drawings of controller components

Base plate housing of MZ-Home operating unit

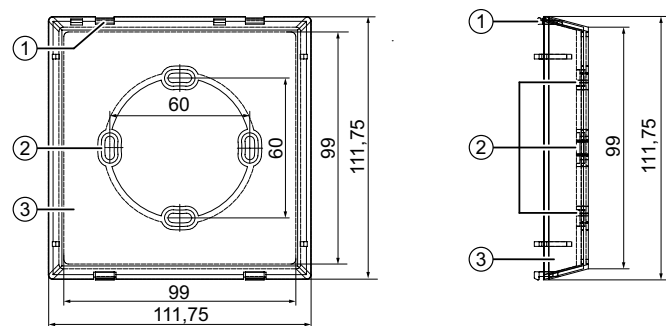


Figure 13: Dimensioned drawing base plate MZ-Home operating unit

- 1 Snap-in hook for the operating unit cover
- 2 Box fixing screw (4 x)
- 3 MZ-Home operating unit base plate

Humidity and temperature sensor FTS15-MZ

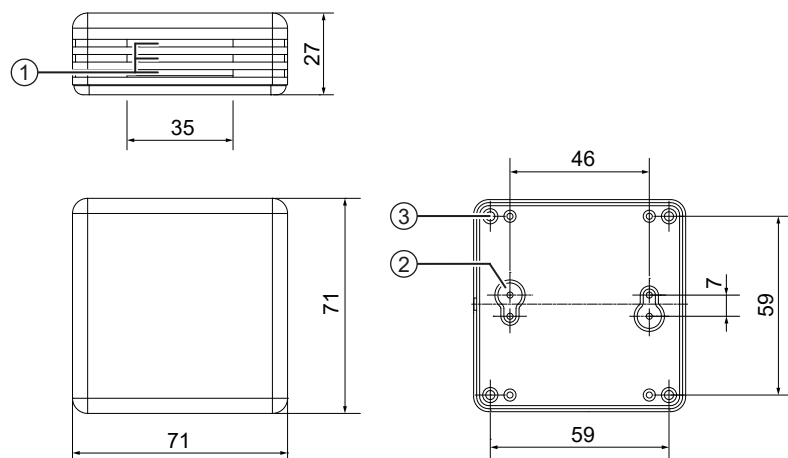


Figure 14: Dimensioned drawing of MZ-Home humidity and temperature sensor

- 1 Ventilation slots
- 2 Fixing points on base plate of humidity and temperature sensor (2 x)
- 3 Pin guides on base plate of humidity and temperature sensor (4 x)

5 Installation and assembly



DANGER

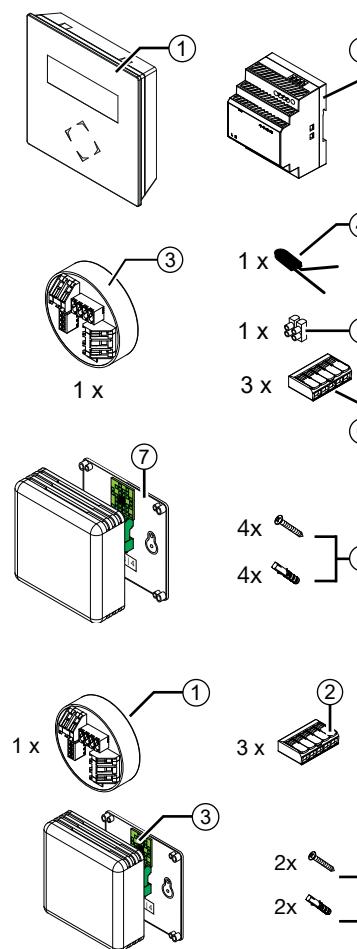
Exposed electrical components.

Electric shock and injury due to live components (230V, 50Hz)!

- Installation and connection must only be performed by qualified and trained personnel.

5.1 Check the scope of supply

Check the delivery for completeness and transport damage upon receipt using the delivery note. Report missing items immediately.



MZ-Home basic set

- 1 MZ-Home operating unit
- 2 Control cabinet switch-mode power supply unit MZ-Home
- 3 Control module CAM17
- 4 Terminating resistor 120 Ω
- 5 Lustre terminal for operating voltage cable
- 6 Connection terminal for fan BUS, 5-pole
- 7 Humidity/temperature sensor FTS15-MZ, pre-assembled
- 8 Fixing material (4 x)

Additional Clust Air Module CAM17

- 1 Clust-Air module CAM17
- 2 Connection terminal for fan BUS, 5-pole
- 3 FTS15-MZ, pre-assembled
- 4 Fixing screws and dowels (2 x)

5.2 Routing wires and attaching the mounting box

Requirements:

- The milled holes for the mounting box(es) on the interior wall are created: 1 mounting box per module.

► Route the wires needed to connect the controller to the installation site:

A. Supply line between the control cabinet and the installation location of the MZ-Home operating unit:
Top-hat rail switch-mode power supply unit: DC 24 V

B. Control BUS (4-wire, e.g. J-Y(ST)Y-2x2x0.8),



NOTICE: Incorrect wiring of the Clust-Air modules leads to malfunction/non-function of the controller!

- Lay the control BUS lines in sequence.

- between the** wall opening of the first control module (and installation location of the operating unit) **and** the wall opening for the second control module.
- Lay the control BUS (4-wire, e.g. J-Y(ST)Y-2x2x0.8) **one behind the other** between the remaining wall openings for the Clust-Air modules.

C. Fan BUS (3-wire, e.g. LiYY3x0.75-O) **between** the wall opening of the ventilation unit **and** the installation location of the control module of the corresponding zone.

D. Humidity sensor connection cable (4-wire, e.g. J-Y(ST)Y-2x2x0.8), **between** the wall opening for the respective control module **and** the installation location for the humidity and temperature sensor: in the air flow of the room, at medium room height (approx. 1.40 m).

E. optional when **connecting the external interface:**

- Signal cable, 2-wire (external interface), between the mounting location of the respective control module **and** the mounting location for the optional sensor.
- Supply cable to the mounting location of the external sensor

⇒ You have laid the required cables.

- Lay the cables in the mounting box at the respective mounting location (if necessary).
- Install the mounting box on the interior wall.

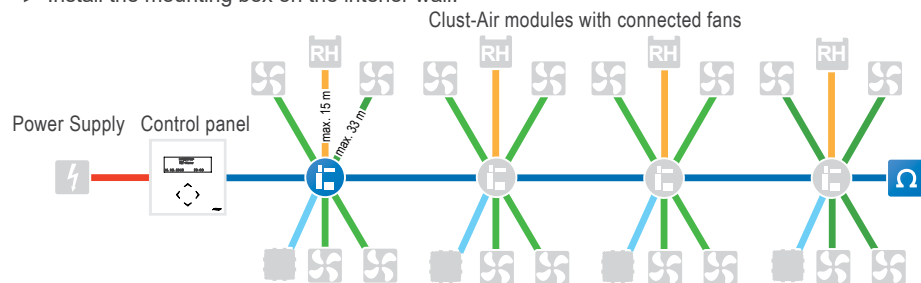


Figure 15: Principle sketch of cable routing for star-shaped connection of the ventilation units

5.3 Mounting the Clust-Air modules

The MZ-Home operating unit is mounted on a mounting box. The first Clust-Air module is also connected in this.

Distributing fan cables

We recommend the star-shaped connection of fans to the relevant control module. The distribution of wires to the fan in this case takes place within the prepared mounting box using 5-pole terminal blocks. Alternatively, the fans can be connected in sequence. In this case, no distribution takes place. The fan BUS is attached directly to the terminal on the control module. Note the connection capacity of the screw terminal of no more than 1.5 mm².



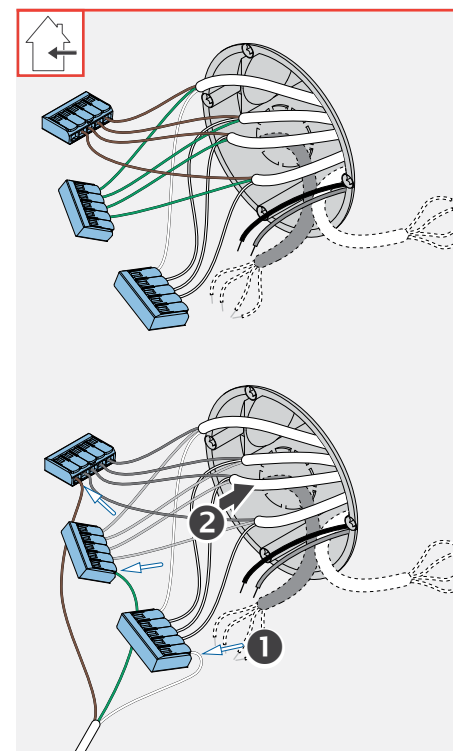
Stripping tool, connection terminals (5-pole, 3 x), fan connecting cable (3-wire), crimping pliers

Requirements:

- The mounting box incl. cables is mounted.

► Attach all fan BUS cables of the same colour in one pole each of the connection terminal, 5-pole.

⇒ A maximum of 4 poles are occupied with 1 wire each.



► Attach the wire ends of the additional connecting cable, 3-wire, to the terminal block of the corresponding colour (1).

► Place the connected terminal blocks in the mounting box (2).


⇒ The connecting cable extends out of the mounting box.

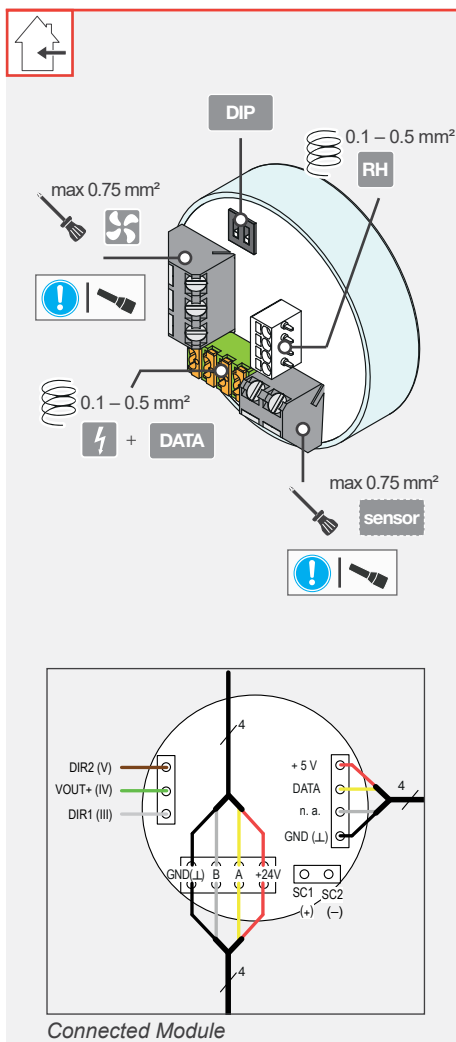
Display example: First control module

Connecting the control modules

The control module contains the electronics for controlling the inVENTer ventilation units with heat recovery within a ventilation zone, as well as a humidity and temperature sensor. The control module is placed in the mounting box after connection.


When connecting the external interface (connection of an external sensor or safety device, integration into the building management system), additionally follow the instructions for action in italics and grey.

 Stripping tool; Control BUS (4-wire); Crimping pliers



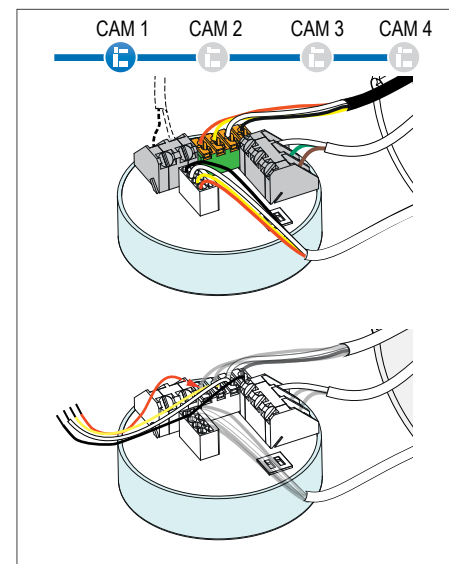
Requirements:

- The fan wires are distributed.


 **NOTICE:** If the terminals are connected incorrectly, the MZ-Home controller or connected components will not work!


- Ensure the correct terminal assignment when connecting the cables.

Terminal	Meaning	Colour
Connection terminal control BUS		
⊥	GND	Black
B	Data line B	White
A	Data line A	Yellow
+ 24 V	Supply voltage 24 V DC	Red
Fan BUS connection terminal		
DIR1	Direction signal 1	White
VOUT+	Fan operating voltage	Green
DIR2	Direction signal 2	Brown
Connection terminal humidity and temperature sensor		
⊥	GND	Black
n. c.	Not occupied	White
DATA	Data line	Yellow
+ 5 V	Supply voltage 5 V DC	Red
External interface		
SC1	Potential-free or analogue +	
SC2	Potential-free or analogue -	

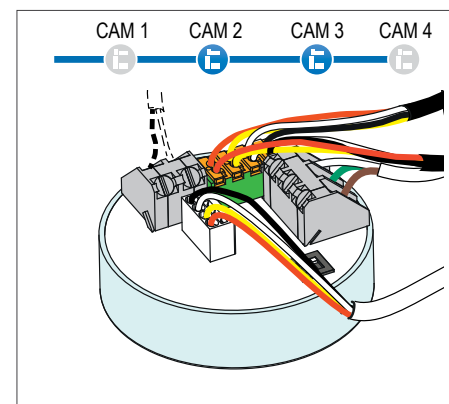


► Connect the wires in the control module:

- Fan BUS**, 3-wire, to the 3-pole screw terminal;
 - Control BUS**, 4-wire, to the 4-pole double terminals:
 - Red wire (+) in the right-hand connection pole;
 - Yellow wire (A) in the second pole from the right;
 - White wire (B) in the second pole from the left;
 - Black wire (⊥) in the left connection pole
-  Use the label attached to the control module to help you.


 **NOTICE:** If the control BUS is not terminated, the controller will not work!

- Attach the 120 Ω terminating resistor to the last connected module instead of the second control BUS line (see Fig. 4).

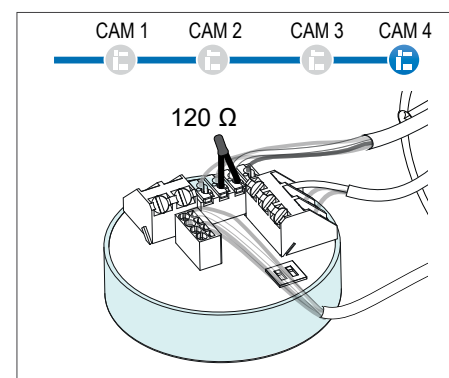


- Humidity and temperature sensor**, 4-wire, in the white 4-pole terminal:
 - Red wire (+) in the right-hand connection pole
 - Yellow wire (DATA) in the second pole from the right;
 - White wire (n. c.) in the second pole from the left;
 - Black wire (⊥) in the left connection pole.

- Optional: **Sensor cable**, 2-wire, to the 2-pole screw terminal.

 **On the first connected module:**

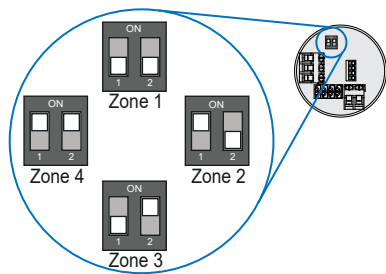
► Attach an additional control BUS, 4-wire, in the remaining 4-pole double terminal. The colour sequence corresponds to that of the control BUS. This is connected to the operating unit.



On the last connected module:

► Attach the terminating resistor in the two middle poles (A and B) of the remaining double terminal, 4-pole, for the control BUS.

Zone assignment on the control module



Requirements:

- The fan wires are distributed.



NOTICE: Incorrect zone assignment/ addressing at the DIP switch.

- Controller does not work!
- Assign zones starting with zone 1 and consecutively.
- Note switch positions (📖 3.4)

- ▶ Remove the protective film from the DIP switch.
- ▶ Assign zone 1 to the module using the DIP switch. (📖 3.4: Zone assignment)

- ▶ Place the connected and assigned control module in the mounting box.

⇒ **First connected control module:**
The operating voltage cable and the control BUS protrude into the interior.

⇒ **Other control modules:**
All cables and the control module are in the box. After commissioning, these can be covered.

Zone	Switch position	
	Switch 1	Switch 2
1	OFF	OFF
2	ON	OFF
3	OFF	ON
4	ON	ON

Do not cover the modules until the coupling (commissioning) has been completed, otherwise the indicator lights will no longer be visible for easy checking.

Recommendation for covering the boxes for additional Clust-Air modules:

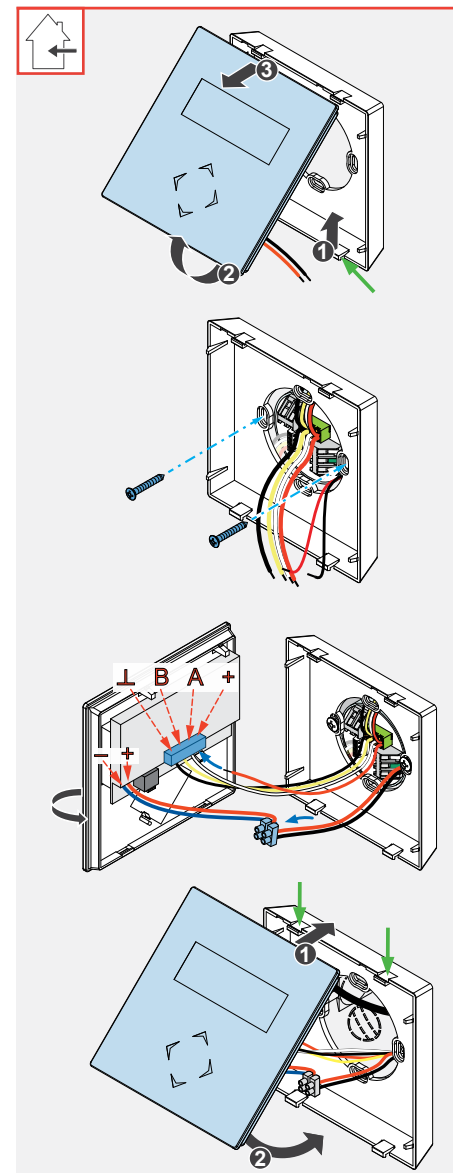
- Cover in switch design.
- Commercially available dummy cover for wallpapering over the box.

5.4 Installing the MZ-Home operating unit

The MZ-Home operating unit is mounted on a mounting box. We recommend mounting on the box in which the first Clust-Air module is also connected.



Tools: Screws, screwdriver



Requirements:

- The operating voltage cable has been laid.
- The Clust-Air module is connected.

- ▶ Press in the two latching hooks (green arrow) in the lower area of the base plate on the operating unit (1). The cover of the operating unit disengages from the base plate in the lower area.
- ▶ Lift the operating unit cover from the operating unit base plate towards the front (2,3).

- ▶ Screw the operating unit base plate to the mounting box using 2 fixing screws.



NOTICE: If the terminals are connected incorrectly, the MZ-Home controller or connected components will not work!

- Ensure the correct terminal assignment when connecting the cables.

- ▶ Connect the 2-wire cable (operating voltage) protruding from the mounting box to the cable on the back of the operating unit cover using a luster terminal.

- ▶ Attach the 4-wire control BUS protruding from the mounting box to the 4-pole terminal on the back of the operating unit cover.

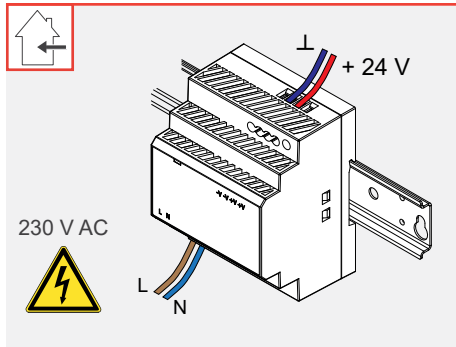
- ▶ Turn the cover on the operating unit.
 - ⇒ The cables point in the direction of the box.

- ▶ Hook the operating unit cover into the two latching hooks in the upper area (green arrows) of the operating unit base plate.

- ▶ Press the lower section of the operating unit cover in the direction of the base plate.

The cover audibly engages in the two lower latching hooks of the base plate.

5.5 Connecting the switching power supply unit



Requirements:

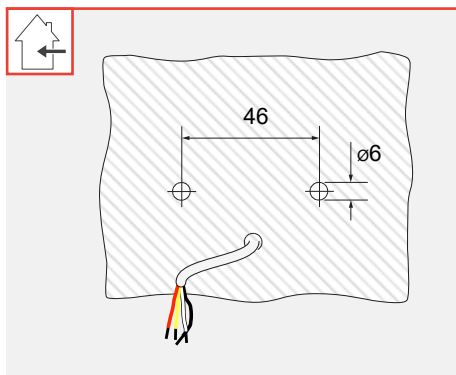
- The cables are routed to the installation site.
- ▶ Secure the switching power supply unit to the control cabinet's DIN rail. It requires 4 HP of space.
- ▶ Connect the switching power supply unit: (📖 3.4: Terminal assignments)
 - Attach the phase conductor to terminal L.
 - Attach the neutral conductor to terminal N.
 - Attach the (red) wire to the (+) terminal.
 - Attach the (blue) wire to the (-) terminal.

⇒ The control cabinet switching power supply unit is connected.

5.6 Installing the humidity and temperature sensor

i Select the installation location of the humidity/temperature sensor at medium room height (1.40 m) within the zone controlled by the respective control module. The measured values at the installation site must correspond to those in the room in order to obtain accurate measurement results. The sensor must not be exposed to direct sunlight.

Drill with Ø 6 mm drill bit, dowels, screws, screwdriver



Requirements:

- The connection cable of the humidity and temperature sensor is connected to the Clust-Air module.
- No lintels in the location of the planned drill holes.

- ▶ Drill two holes, Ø 6 mm, to fix the base plate.
 - Centre-to-centre distance: 46 mm, horizontal
 - The drill holes are located in each case above or below the connection cable for the humidity and temperature sensor.

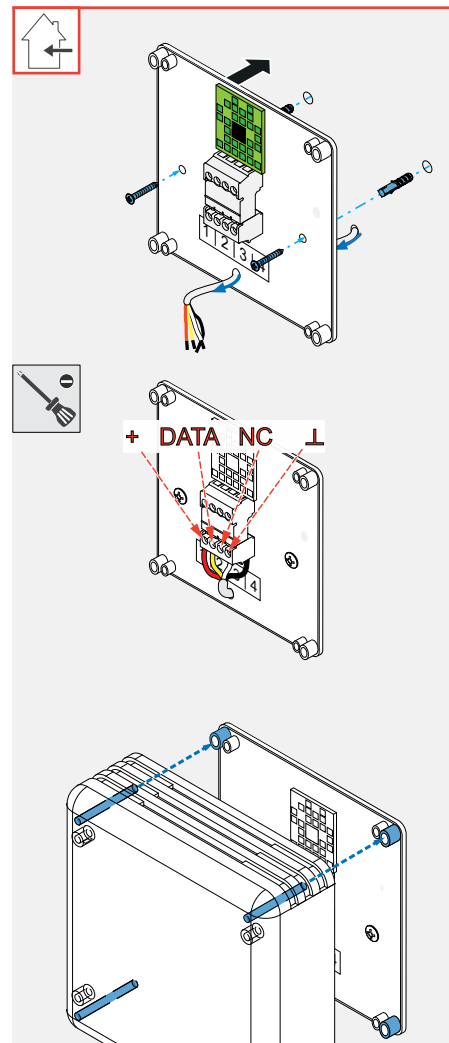
⇒ The holes for the humidity and temperature sensor are in place.



NOTICE

If the sensor board is damaged and/or worn, there will be no accurate measurement of the air humidity!

- Do not touch the circuit board of the humidity and temperature sensor when attaching it.
- Complete building/renovation work before mounting the humidity and temperature sensor.



- ▶ Create the holes in the base plate:
 - Two holes, 46 mm centre-to-centre distance, to the right and left of the connection terminal, for fixing the base plate to the interior wall;
 - A hole for the cable feed-through.
- ▶ Lay the connection cable through the cable feed-through that has been created.
- ▶ Fix the base plate to the interior wall with dowels and fixing screws.
- ▶ Secure the humidity and temperature sensor connection cable in the terminal, 4-pole.

Terminal	Meaning	Colour
1	+ 5 V Supply voltage + 5 V DC	Red
2	DATA Data line	Yellow
3	n. c. Not occupied	White
4	⊥ GND	Black



NOTICE:

- For optimum flow and reliable measurement results, align the ventilation slots on the humidity and temperature sensor upwards and downwards.

- ▶ Fit the mounting pins on the cover into the pin guides on the base plate. The ventilation slots are aligned upwards and downwards.

⇒ The humidity and temperature sensor is installed.

6 Commissioning

Commissioning is essentially limited to checking the modules connected to the controller and the function of the control panel (function of the navigation arrows). Commissioning takes about 30 seconds.



NOTICE

Unrecognised devices connected to the MZ-Home controller

cannot be coupled and therefore cannot be controlled!

- Assign an address for each Clust-Air module via the DIP switch.
- Check whether the MZ-Home controller has recognised all connected devices.

6.1 Function test

Requirements:

- The ventilation unit and the controller (including modules and sensors) are installed.
- Mains voltage is present.



By simultaneously touching the navigation arrows ◁ and ▷ (or ▽ and △) for longer than 5 seconds, the function check screen can be called up again.

Step 1: Ensure that the MZ-Home controller recognises all connected modules

► Switch on the controller.

⇒ Controller searches for internally connected devices.

► Check by means of the numbers in the line **Devices** if all connected modules are recognised:

```
FRAM. . . ok
Devices. . . 1 1 0 0
done
```

Digit order:

First digit = assigned zone 1

Second digit = assigned zone 2, etc.

Digit meaning:

1 = Module recognised

0 = Module not recognised

Step 2: Check the function of the control panel/ capacitive buttons

► The controller automatically switches to the display to check the function of the capacitive buttons.

⇒ The function of the buttons is displayed.

```
Button Test
UP: 0      DOWN: 0
LEFT: 0    RIGHT: 0
```



On the button function test screen, **each button** must first be **assigned the value 0** (button is not pressed).

If one or more buttons are assigned the value 1, there is an error:

- 1 Check the cable routing in the operating unit:
Remove the control BUS/operating voltage cable from the vicinity of the keypad.
- 2 Carry out a new function test.

► Check the function of the individual buttons by touching the buttons (navigation arrows) one after the other.

⇒ When the button is touched, the respective number changes from 0 to 1.

Feature	Meaning	Number 0	Number 1
UP	Navigation arrow △	Button not pressed	Button pressed
DOWN	Navigation arrow ▽		
LEFT	Navigation arrow ◁		
RIGHT	Navigation arrow ▷		



After approx. 30 seconds, the MZ-Home controller automatically switches to the start screen. By simultaneously pressing the navigation arrows △ and ▽ for longer than 5 seconds, you can manually switch to the start screen.

⇒ You have checked the function of the operating unit.

6.2 Coupling

Requirements:

- All Clust-Air modules connected to the controller have been recognised.

The coupling of the CAM17 Clust-Air modules to the operating unit takes place automatically about 30 seconds after the controller is switched on.

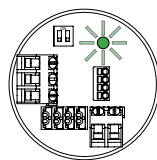
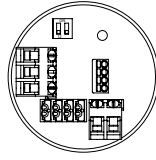
The modules are coupled one after the other, in ascending order.

⇒ The number of connected units is displayed in the **Found** line.

⇒ The indicator light on the coupled module is on.

```
searching. .
found: 4
```

If a module is successfully coupled, the green light indicator on the module lights up as visual feedback. This makes it immediately visible which module is not connected correctly.

Display	LED lights up	LED does not light up
Meaning	Clust-Air module coupled	Clust-Air module not coupled
		

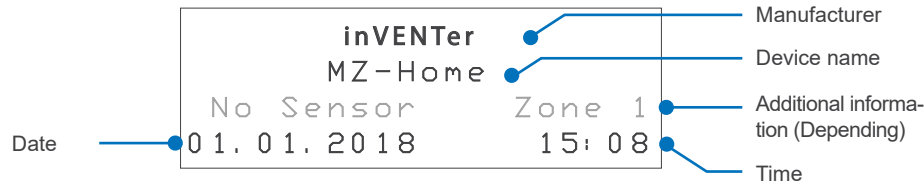
If no connected units have been coupled, the screen displays "0 zones found". The start screen is then displayed.

6.3 Start screen

The start screen is the standard display when the MZ-Home controller is activated. The start screen displays the inVENTer logo, the current date and time. Depending on the situation, current deviations are displayed on the start screen (e.g. no humidity sensor connected to a zone).

► Make sure that all information is displayed correctly on the MZ-Home screen.

Figure 16: MZ-Home controller start screen



The start screen switches itself off after 20 seconds (factory setting) without any input.

i The display and setting menus can be selected from the start screen. If the start screen is displayed, settings can be made on the controller (see separate operating instructions for the MZ-Home controller, www.inventer.eu/downloads)

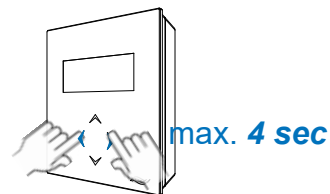
Menu navigation

Touch the navigation arrows on the control panel to select the menu:

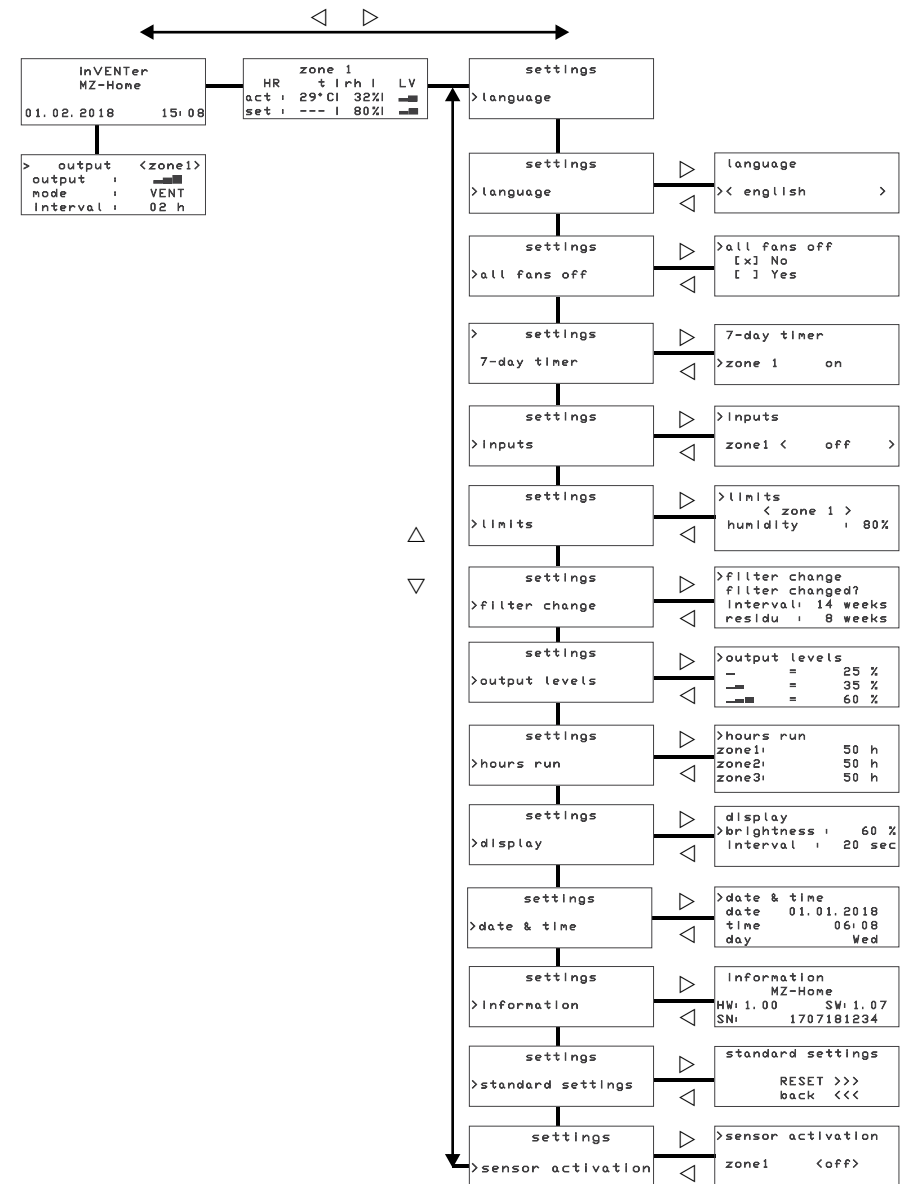
- Navigation arrow ∇ : You reach the manual control. Here, the weekly timer settings can be overridden for 1 - 8 hours. When the weekly timer is deactivated, the ventilation level and operating mode are set here.
- Navigation arrow \triangleright : You reach the following main menus (see 6.4 - Menu structure):
 - Main menu Zone display.
 - Main menu Settings.
- Navigation arrow \triangleleft : You switch through the main menus in reverse.

To return from submenus to the respective higher-level menu, use the navigation arrow \triangleleft to select the first line of the menu and touch the navigation arrow \triangleleft .



i By **briefly** touching the navigation arrows \triangleleft and \triangleright **simultaneously**, you can **return to the start screen** from any screen.



6.4 Overview of the MZ-Home menu structure



7 Technical data

Feature	Value
Type of protection (DIN EN 61558)	IP20
Protection class	II
Input voltage power supply unit/mains voltage [V AC] [Hz]	230, 50
Output voltage power supply unit/operating voltage [V DC]	24
Conformity	 

MZ-Home operating unit

Feature	Value
Protection class	III
Operating voltage [V DC]	24
Control BUS voltage [V DC]	24
Power consumption in standby [W]	Max. 0.5
Power consumption [W]	Max. 2.5
Operating temperature [°C]	0 – 60
Dimensions [H x W x D in mm]	119 x 119 x 27.5

Clust-Air module CAM17

Feature	Value
Protection class	III
Operating voltage [V DC]	24
Output voltage control BUS [V DC]	24
Output voltage fan BUS [V DC]	6.7 – 15.3
Analogue input (optional)	Control voltage 0 – 10 V DC; Resolution 10 bit
External switching contact (optional)	Potential-free normally open contact (pressure sensor: NC or NO contact)
Power consumption [W]	Max. 18

Humidity and temperature sensor FTS15-MZ

Feature	Value
Adjustment range humidity sensor [% rH]	40 – 80
Humidity sensor interval [%]	5

8 Scope of supply

Check the delivery for completeness and transport damage upon receipt using the delivery note. Report missing items immediately, and at the latest within 14 days to your supplier, distributor or factory representative.

- MZ-Home operating unit
- Clust-Air module CAM17 (1 x)
- Humidity and temperature sensor FTS15-MZ
- Switching power supply unit
- Accessory pack (terminals, terminating resistor)

Component	Order number
MZ-Home controller	1001-2008
Clust-Air module CAM17	1003-0119

9 Accessories and spare parts

Accessories

Component	Order number
Clust-Air module CAM17	1003-0119
CO ₂ sensor CS1	1004-0145
Flush-mounted plasterboard box 61x68	1003-0084
Flush-mounted box 60x66	3002-0244
Bus cable J-Y(ST)Y2x2x0.8 Lg	1004-0113
Round cable LiYY-O 3x0.75 (33m)	1004-0020

Spare parts

Component	Order number
MZ-Home operating unit, white	2006-0103
MZ-Home control module	3002-0258
Humidity/temperature sensor FTS15-MZ	3002-0264
S power supply unit NT15-MZ	3002-0260

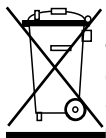
10 Troubleshooting and disposal

Troubleshooting

Fault	Possible cause	Remedy
Screen lights up without display	Controller crashed.	Touch the navigation arrows ◀ and ▶ simultaneously for less than 5 seconds until the start screen appears.
		Briefly disconnect the controller from the power supply.
The MZ-Home controller does not recognise a connected Clust-Air module	Incorrect zone assignment at the DIP switch	Check whether the switch position of the DIP switch on the Clust-Air module is assigned to the correct zone (📖 3.4: p. 20).
	Zone double-occupied.	Assign each Clust Air module its own zone. Do not assign zones twice.
	Clust-Air module incorrectly or not connected	Check wiring.
	No electrical contact	Check cables. Ensure cables are stripped sufficiently (approx. 6.5 mm). Do not connect the cable too tautly.
Navigation arrow cannot be operated.	Cables in the operating unit do not have sufficient distance to the keypad.	Remove the cables in the operating unit from the vicinity of the keypad. (bend away slightly).
	Capacitive button is defective.	Carry out a function test, (📖 p. 34). With result button does not work: The operating unit must be replaced.
"No sensor" indicator flashes permanently on the start screen.	No humidity and temperature sensor connected to Clust-Air module.	Deactivate the sensor of the affected Clust-Air module (📖 separate operating instructions; www.inventer.de/downloads).
Faulty measuring results of the humidity sensor	Insufficient flow through the sensor	Check that the ventilation slots and the sensor are facing the same side.

If you cannot eliminate the fault, please contact your factory representative or our technical customer service. Information on how to do this can be found in 📖 12: Service.

Dismantling and disposal



Dismantle the MZ-Home controller before disposal. Dispose of the product in compliance with the applicable national regulations. The products described in these installation and operating instructions are largely recyclable due to their low-pollutant processing. Contact an electronic appliance disposal company to arrange environmentally friendly recycling and disposal. Ensure that each product's packaging is sorted correctly for disposal.

For dismantling steps and disposal recommendations, please refer to the separately available dismantling instructions at www.inventer.eu/downloads.

11 Guarantee and warranty

Guarantee

The guarantee refers to the defect-free condition of the product at the time of purchase and covers all defects that were present at the time of purchase. Failure to observe the intended use will invalidate all guarantee claims.

Outside Germany, the national guarantee provisions of the country in which the system is sold apply. Please contact the distributor for your country.

Manufacturer warranty

inVENTer GmbH provides a five-year warranty for electronic components. This covers premature product wear.

Further information about the warranty is available at www.inventer.eu/garantie

12 Service

Complaints

Check the delivery for completeness and transport damage upon receipt using the delivery note. Report missing items immediately, and at the latest within 14 days to your supplier, distributor or factory representative.

Guarantee and warranty claims

In the case of a guarantee or warranty claim, contact your local distributor or factory representative.

In all cases, please return the complete unit to the manufacturer. The warranty is an additional offering by the manufacturer and in no way affects the applicable law.

Accessories and spare parts

To order parts for your controller, contact your nearest factory representative or our service staff.

Technical customer service

For technical support contact our service staff:

 +49 (0) 36427 211-0
 +49 (0) 36427 211-113
 info@inventer.de
 <http://www.inventer.eu>

Annex 1: Connection log

Ventilation device	Floor	Room name and position	Ventilation zone (CAM)	Starting direction	
				Supply air	Exhaust air
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

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