EG1028II MZS - SINGLE ZONE MODULE FOR RADIANT SYSTEM

Warnings

⚠ This instruction is an integral part of the booklet of the appliance on which is installed. Please consult this booklet for general warnings and fundamental safety rules.

⚠ For a rapid and right assembly of the components follow carefully the sequences described in the various sections.

Standard supply

The accessory is supplied as follows:
- 1 Single Zone Module
- 1 Water temperature probe
- 1 Heating element 120 Ω

- 1 Instruction sheet
- 1 Jumper (to be used only in case of connection with M7 series control) - already installed in the board

Description

The single zone module MZS is an electronic device that communicates via a Modbus serial cable with wall thermostats series EEA649/EEB649/EFA649/EFB649 (equipped with humidity probe) and M7 series EEB749 - EFB749 (equipped with thermostat and temperature and relative humidity probe in the room).
The module allows the management of the motorised shut-off valve for the hydraulic circuits of radiant systems in Heating and Cooling mode.

Heating mode

For the supply of systems:
- at low temperature using the supplied water probe (radiant surfaces)
- at high temperature NOT using the supplied water probe (radiators, radiator fittings)

Cooling mode

For the supply of systems:
- at low temperature using the supplied water probe (radiant surfaces)

Water temperature probe T1

A corredo dell'apparecchio viene fornita una sonda temperatura acqua.
Probe operating range:
- Heating mode 20 °C to 40 °C
- Cooling mode 15 °C to 25 °C

⚠ Do not use the probe in high temperature circuits.

Positioning:
Place the probe on the system flow pipe/collector.

For use in high temperature circuits:
Leave the probe disconnected when switching on the appliance. The water temperature controls are disabled and the thermostat controls the room air temperature.

Controls EEA649/EEB649/EFA649/EFB649

Minimum requirements

To be able to use the MZS accessory for radiant management in heating and cooling, firmware version requirements are necessary:
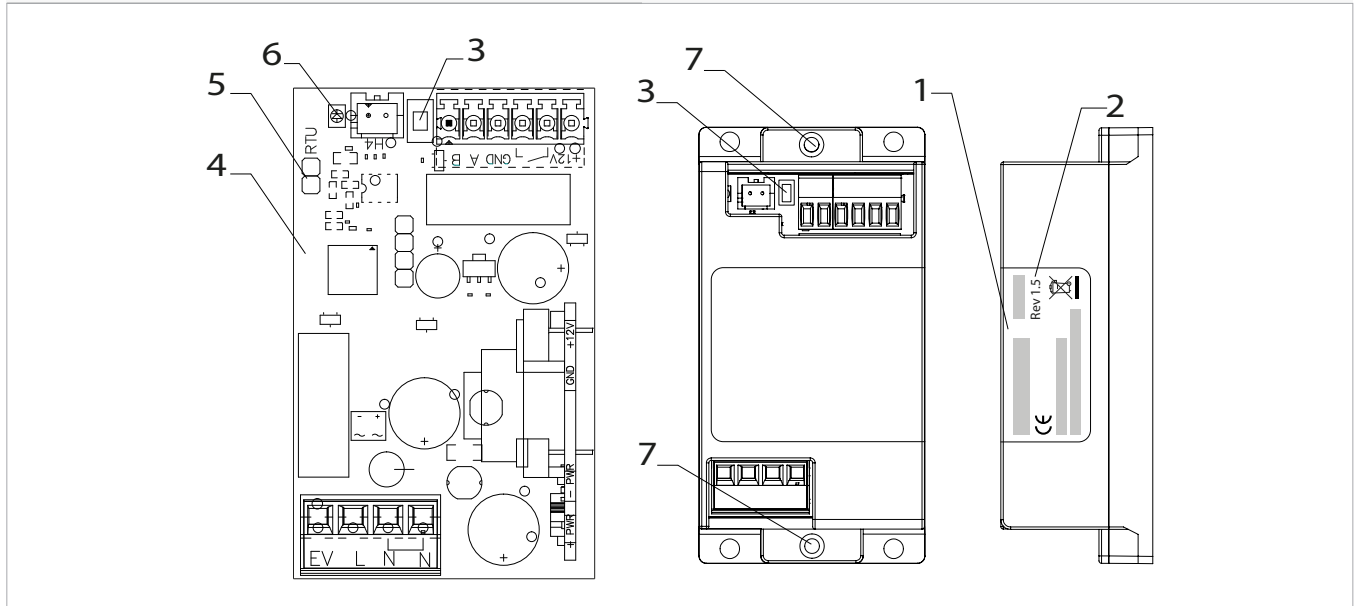- Firmware MZS 1.5 or higher

- Wall-mounted controls EEA649/EEB649/EFA649/EFB649 with firmware 2.7 or higher

The firmware version can be identified by the technical label:

MZS - Single Zone Module

1.	Technical label		**5.**	Jumper
2.	Firmware		**6.**	Led
3.	SW - button for pairing command and MZS		**7.**	Screws
4.	MZS tab			

⚠ To use the MZS Rev 1.6 accessory in conjunction with the EEA649-EEB649-EFA649-EFB649 controls, the Jumper must be removed.

To remove the Jumper

- unscrew the two screw of the MZS box
- remove the cover
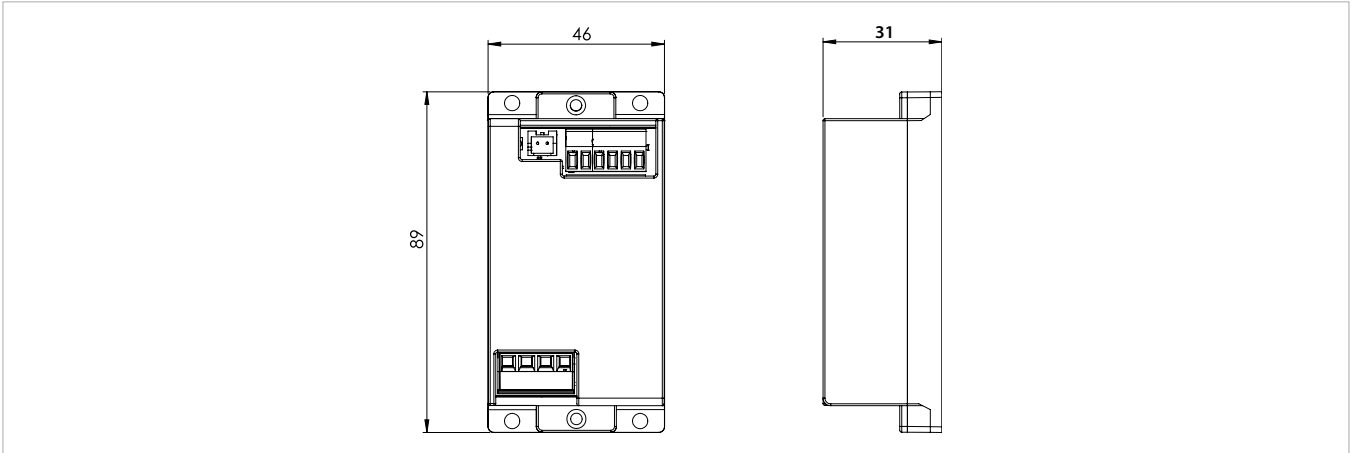- Remove Jumper
- Close the box of MZS

Wall control

1.	Technical label
2.	Firmware

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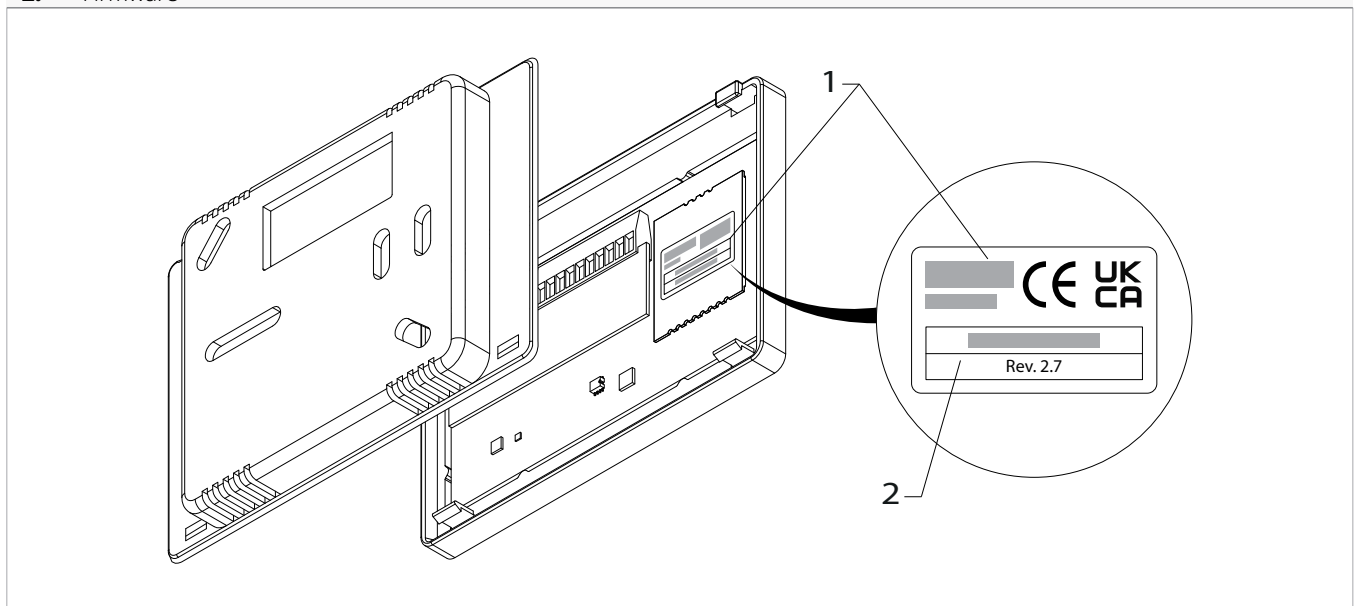
Mounting

The module can be mounted in the 503 built-in box behind the thermostat or in an electrical box located near the distribution manifold.
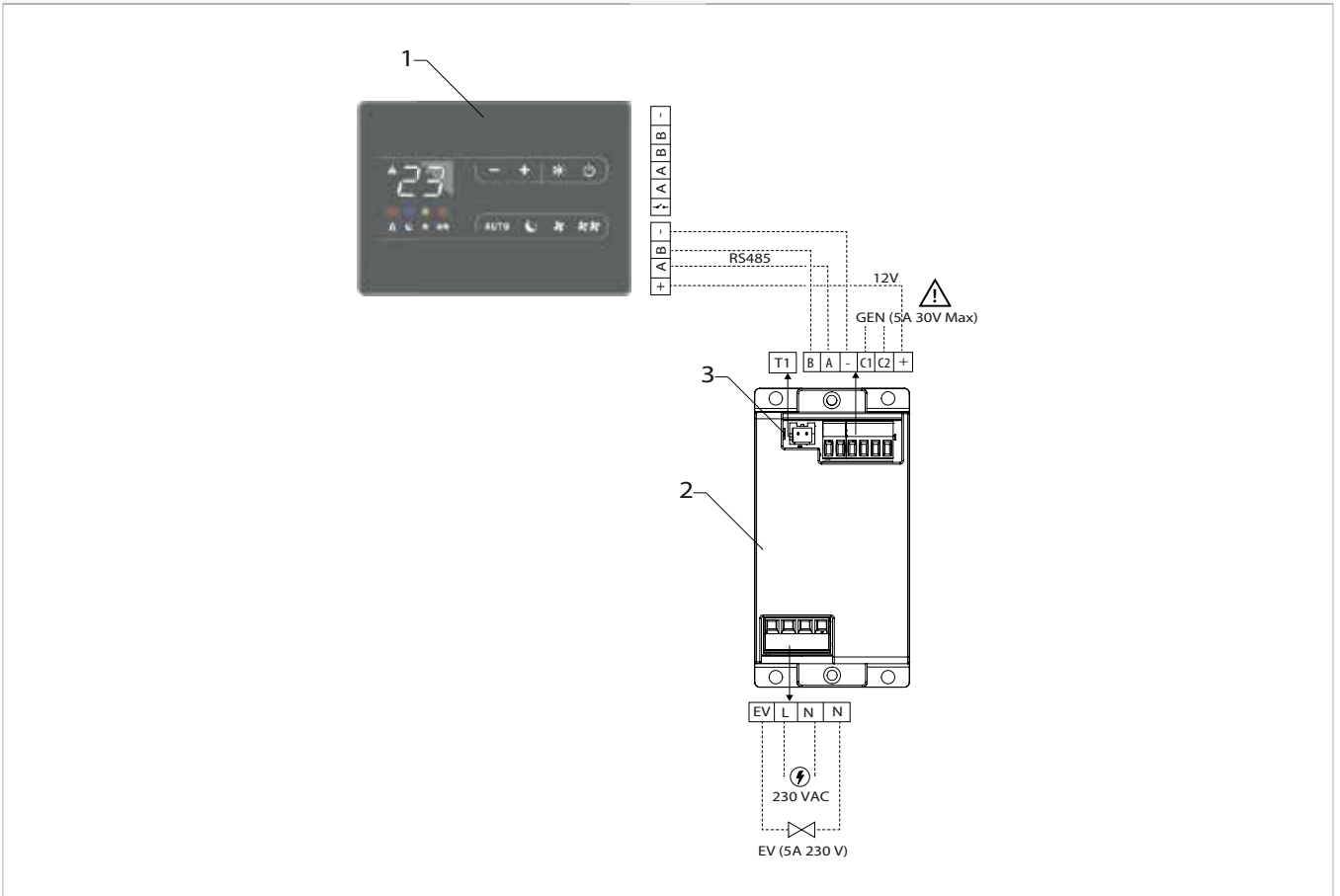

Electric connection

Single connection diagram

1.	EEA649/EEB649/EFA649/EFB649 series wall-mounted control	**T1**	Water probe
2.	MZS Single zone module	**GEN**	Potential-free contact (activates 1 minute after EV activation)
3.	Led	**EV**	Motorised valve

Multiple connection diagram

1.	EEA649/EEB649/EFA649/EFB649 series wall-mounted control	**T1**	Water probe
2.	MZS Single zone module	**GEN**	Potential-free contact (activates 1 minute after EV activation)
3.	Led	**EV**	Motorised valve
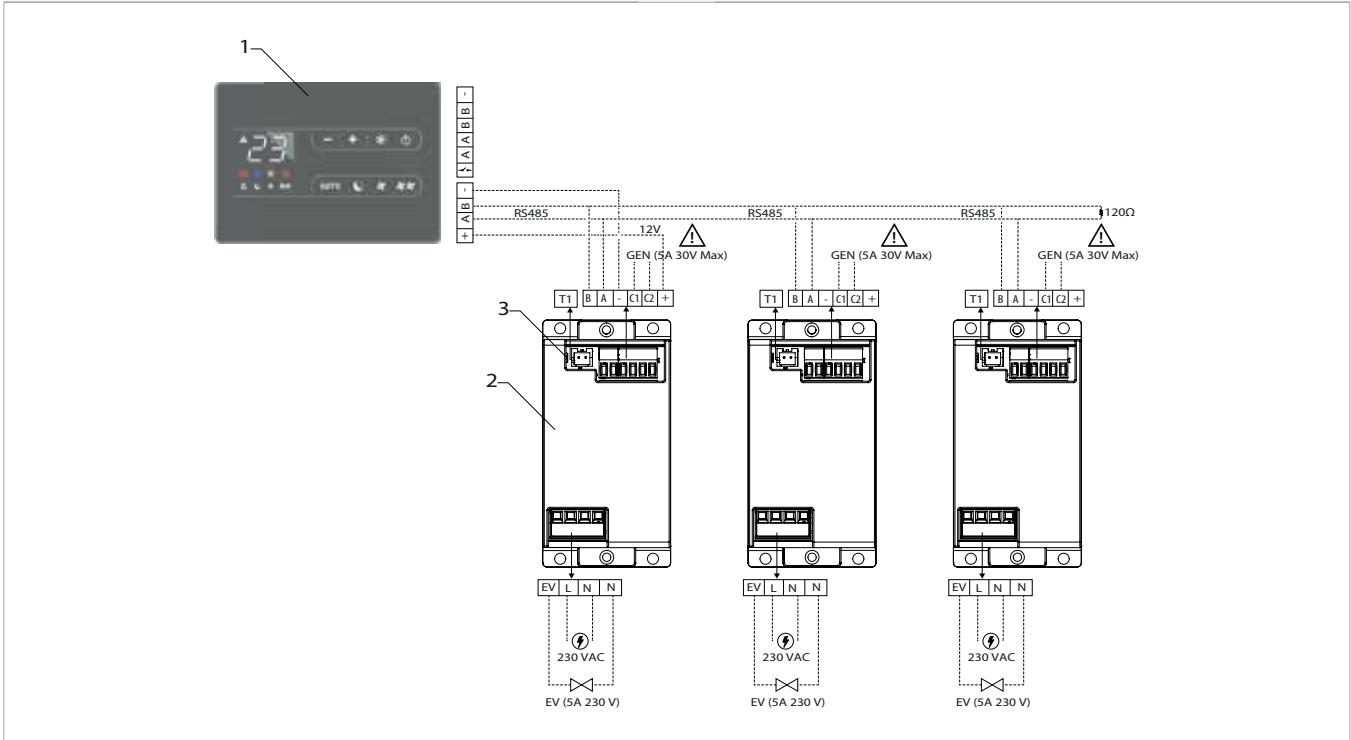
Connection diagram on a fancoil network

1.	Wall-mounted thermostat series EEA649 / EEB649 / EFA649 / EFB649	**T1**	Water probe
2.	Terminal electronic board	**GEN**	Potential-free contact (activates 1 minute after EV activation)
3.	MZS single zone module	**EV**	Motorised valve
4.	Led		

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Connection

For the connection:
- remove a portion of the insulation from the end of the cable
- follow the indication on the connection diagram
- insert the cable into the spring terminal
- insert the cable completely

⚠ The spring terminals allow the connection of rigid or flexible cables with sections from 0.2 to 1 mm². For cables provided with lugs with plastic collar the maximum section is reduced to 0,75 mm².

For RS485 serial connection:

The wall-mounted remote control can be connected through a RS485 serial line to one or more device, for a maximum of 30.
The devices must be equipped with an electronic board suitable for remote control.

For the connection:
- follow the indication on the connection diagram
- connect respecting the "A" and "B" polarization

⚠ Use a bipolar shielded cable suitable for the RS485 serial connection with a minimum section of 0,35 mm².

⚠ Keeping the bipolar cable separate from power supply cables.

⚠ Chase out the wall in order to minimize the length of the leads.

⚠ Complete the line with the 120 Ω resistance.

⊖ It is forbidden make "star" connections.

Advanced Menu

In addition to the normal adjustments given in the operating manual commands, the advanced menu can be accessed through the control.

To access the advanced menu
- with the display off, hold down ⏻ for 10 seconds
  The device turns on and the temperature appears.

- keep pressed until the indication 🄰🄳 appears.

To navigate in the menu
- Use the icons ━╋

To select a menu item and to confirm the changes made
- press the key ⏻ for about 2 seconds
  During the modification the symbol flashes to remind you that you are in the setup menu.
  Confirming the change takes you to the next item.

To exit the menu
- press the icon ⏻ for 10 seconds
- or wait 30 seconds the automatic shutdown

⚠ After a period of 30 seconds from the last action, the display turns off.

Menu items

Ad: ModBus address

uu: WiFi

ub: Adjust buzzer volume

br: Adjust the brightness

di: Digital input

UC: UV lamp options

rH: Radiant module options (MZS) in Heating

rC: Radiant module options (MZS) in Cooling

hb: Not used

Ab: Not used

rb: Reset Modbus

Fr: Factory reset

ot: Offset probe T

oh: Not used

Sc: Scale

rE: Not used

Radiant module configuration (MZS) in Heating rH

To configure Heating based on system type

rH setting	Fancoil	Radiant	Note
0	Enabled	Disabled	Default settings
1	Disabled	Enabled	T1 probe mandatory
2	Enabled	Enabled	T1 probe mandatory
3	Enabled	Enabled (high temperature)	(1) (2)
4	Disabled	Enabled (high temperature)	(1) (2)

1. Due to the different working temperatures of the two types of terminals, the installation of a mixing valve for the radiant terminal circuit is recommended. Mixing valve and controller are the responsibility of the installer. Temperature values of probe T1 are given in the section Water temperature probe T1.
2. Recommended mode with radiators. In this mode there is no control/alarm for high temperature.

⚠ After changing the parameter switch off and on again to store the setting.

Radiant Module Configuration (MZS) in Cooling rC

To configure Cooling based on system type

Setting rC	Fancoil	Radiant	Note
0	Enabled	Disabled	Default settings
2	Enabled	Enabled	T1 probe mandatory

⚠ After changing the parameter switch off and on again to store the setting.

Relative humidity monitoring

The wall control has a relative humidity control in the room used with a safety function in Cooling mode.

⚠ Changing these parameters must be considered carefully. An incorrect setting could cause condensation to form on surfaces with possible damage to structures and objects.

Outputs are switched off with:
- rC parameter set to 2
- measured humidity value > of the value set in parameter rL (default 65 % R.H.)

⚠ In this situation, the LED stays switched on.

Outputs are switched on again with:
- measured humidity value < the difference between the values set in parameters rL and ri

Radiant Menu

Through the settings menu it is possible to access the Radiant menu.

⚠ Access to the Radiant menu items is only possible if the set value for rH or rC is > 0.

To access the Radiant menu
- from the settings menu press the ⚞ button for 5 seconds
  The first Radiant menu item H0 appears.

To navigate in the menu
- use the icons ━ ✛

To select a menu item and to confirm the changes made
- press the key ⏻ for about 2 seconds
  During the modification the symbol flashes to remind you that you are in the setup menu.
  Confirming the change takes you to the next item.

To exit the menu
- press the icon ⚞
  You return to the first item in the settings menu.
- or wait 30 seconds the automatic shutdown

⚠ After 30 seconds from the last action the control goes out and the settings is memorized.

Menu items

Visible items with rH > 0

H0: D1EV2 - Switch-off differential EV2 in heating (radiant)

H1: D2EV2 - Switch-on differential EV2 in heating (radiant)

HL: RLO - Minimum temperature H4 for radiant heating

HH: RHI: Maximum temperature H4 for radiant heating

Visible items with rC > 0

C0: D3EV2 - Switch-off differential EV2 in cooling (radiant)

C1: D4EV2 - Switch-on differential EV2 in cooling (radiant)

CL: RFLO - Minimum temperature H4 for radiant cooling

CH: RFHI - Maximum temperature H4 for radiant cooling

**rL:** RAF_RH - Maximum relative humidity limit for cold radiant

ri: RAF_RH_IST - Relative humidity limit hysteresis

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Parameters

Item	Register ID	Description	Default	Minimum	Maximum	m.u.
H0	D1EV2	Switch-off differential EV2 in heating (radiant)	- 0.2	- 5.0	0.0	°K
H1	D2EV2	Switch-on differential EV2 in heating (radiant)	- 0.5	- 5.0	0.0	°K
HL	RLO	Minimum temperature T1 for radiant heating	20.0	0.0	100.0	°C
HH	RHI	Maximum T1 temperature for radiant heating	40.0	0.0	100.0	°C
C0	D3EV2	Switch-off differential EV2 in cooling (radiant)	0.2	0.0	5.0	°K
C1	D4EV2	Switch-on differential EV2 in cooling (radiant)	0.5	0.0	5.0	°K
CL	RFLO	Minimum temperature T1 for radiant cooling	15.0	5.0	30.0	°C
CH	RFHI	Maximum T1 temperature for radiant cooling	25.0	15.0	30.0	°C
rL	RAF_RH	Humidity limit for EV2 switch-off in radiant cooling	65	10	90	%
ri	RAF_RH_IST	Single humidity hysteresis for EV2 deactivation in radiant cooling.	5	1	30	%

Error signals

1.	Led
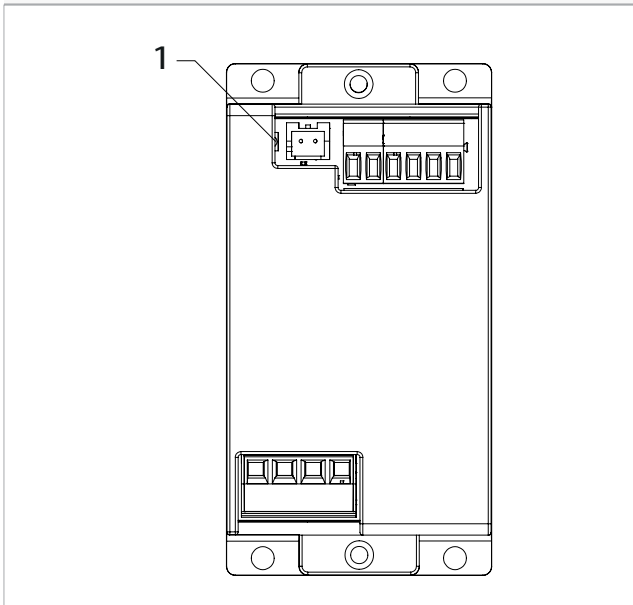
The MZS accessory has a status LED.

LED signals
- LED off
  Device switched off or without power supply.
- LED on
  Normal operating of the device.
- LED 1 flash / pause
  Alarm for water temperature probe T1 not suitable. If the water temperature is not between HL and HH in Heating or CL and CH in Cooling, the outputs are kept active for 5 minutes and then switched off for 45 minutes.
- LED 5 flashes / pause
  Alarm Probe T1 disconnected or faulty.

Controls EEB749/EFB749

Minimum requirements

To be able to use the MZS accessory for radiant management in heating and cooling, firmware version requirements are necessary:
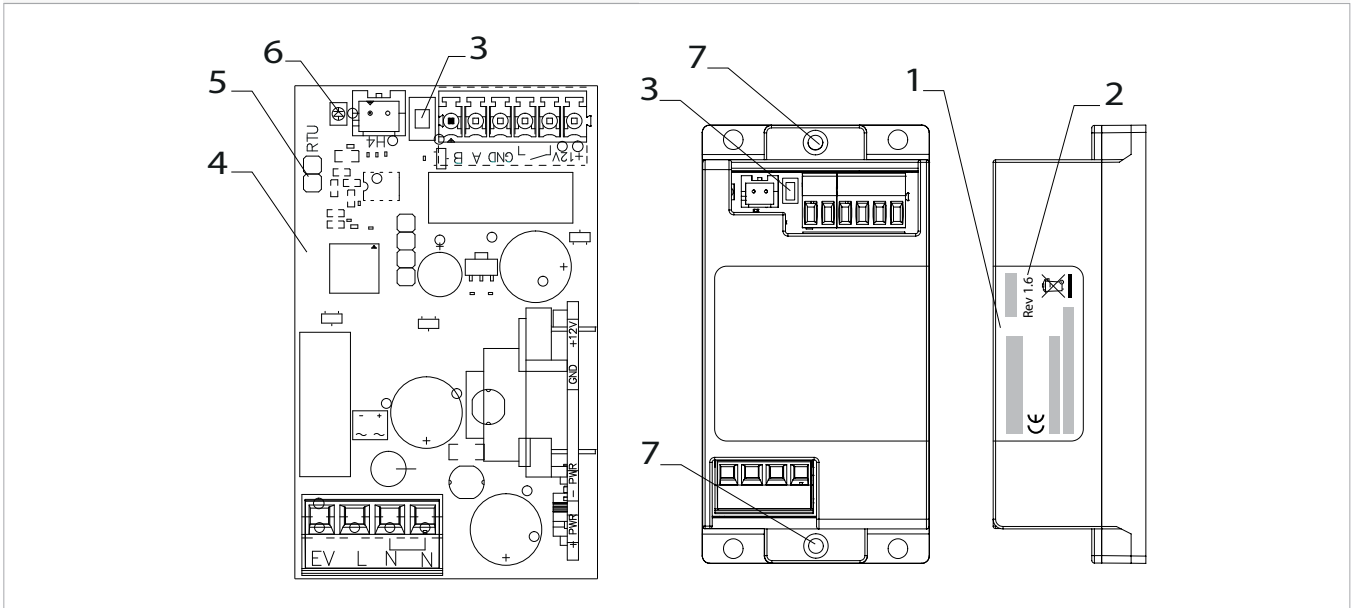
· Firmware MZS 1.6 or superior

· Matching wall controls EEB749/EFB749 with firmware 1.6 or higher

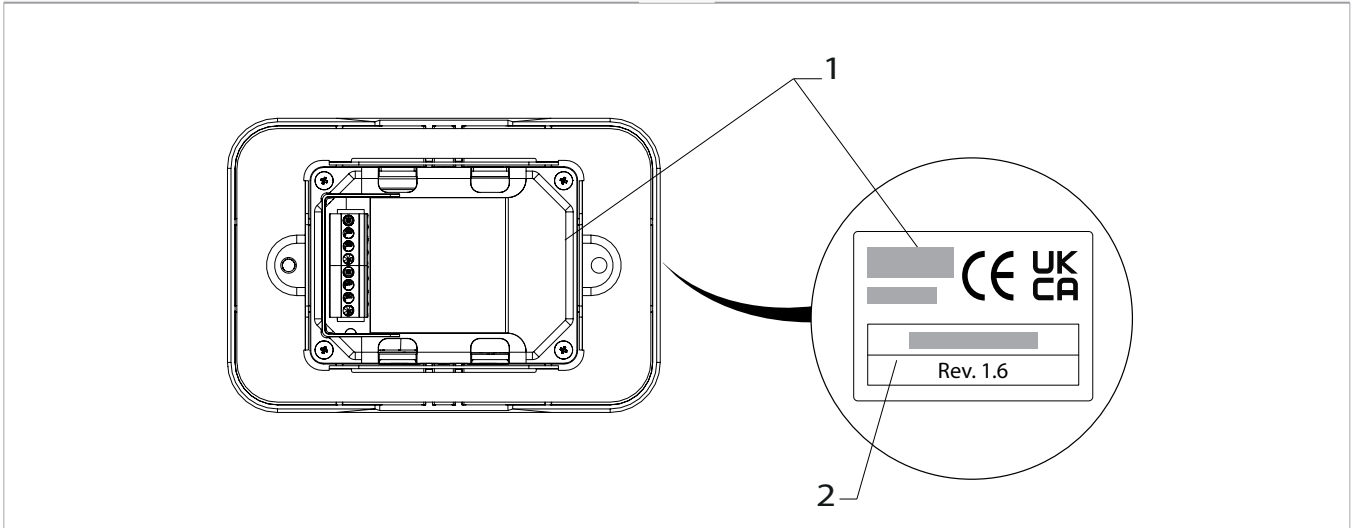The firmware version can be identified by the technical label:

1.	Technical label		**5.**	Jumper
2.	Firmware		**6.**	Led
3.	SW - button for pairing command and MZS		**7.**	Screws
4.	MZS tab			

1.	Technical label	**2.**	Firmware

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Mounting

The module can be mounted either in an electrical box located near the distribution manifold.

Electric connection

Single connection diagram

1.	M7 Series Wall Thermostat Ref. EEB749/EFB749	**GEN**	Potential-free contact (activates 1 minute after EV activation)
2.	MZS single zone module	**EV**	Motorised valve
3.	Led		
T1	Water probe		

Multiple connection diagram

1.	M7 Series Wall Thermostat Ref. EEB749/EFB749	GEN	Potential-free contact (activates 1 minute after EV activation)
2.	MZS single zone module		
3.	Led	EV	Motorised valve
T1	Water probe		
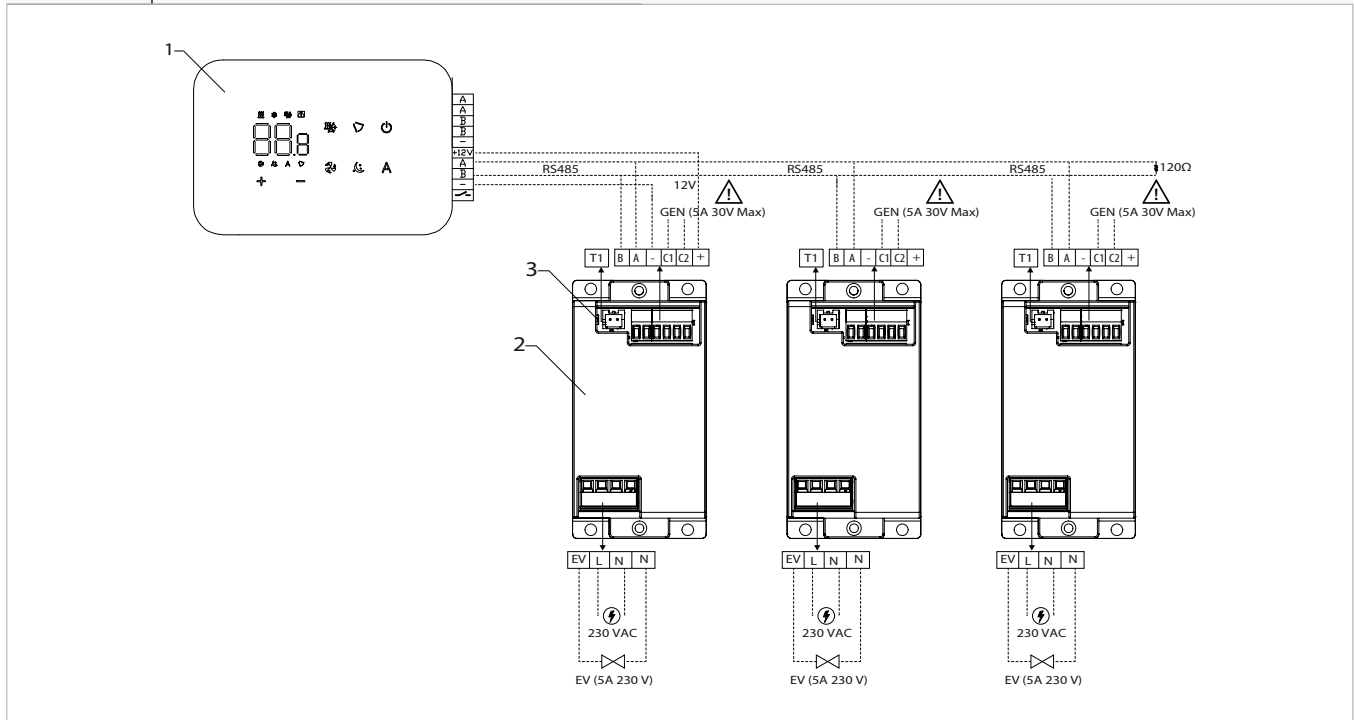
Connection diagram on a fancoil network

1.	M7 Series Wall Thermostat Ref. EEB749/EFB749	T1	Water probe
2.	Terminal electronic board	GEN	Potential-free contact (activates 1 minute after EV activation)
3.	MZS single zone module		
4.	Led	EV	Motorised valve

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Connection

For the connection:
- remove a portion of the insulation from the end of the cable
- follow the indication on the connection diagram
- insert the cable into the spring terminal
- insert the cable completely

⚠ The spring terminals allow the connection of rigid or flexible cables with sections from 0.2 to 1 mm². For cables provided with lugs with plastic collar the maximum section is reduced to 0,75 mm².

For RS485 serial connection:

The wall-mounted remote control can be connected through a RS485 serial line to one or more device, for a maximum of 16.

The devices must be equipped with an electronic board suitable for remote control.

For the connection:
- follow the indication on the connection diagram
- connect respecting the "A" and "B" polarization

⚠ Use a bipolar shielded cable suitable for the RS485 serial connection with a minimum section of 0,35 mm².

⚠ Keeping the bipolar cable separate from power supply cables.

⚠ Chase out the wall in order to minimize the length of the leads.

⚠ Complete the line with the 120 Ω resistance.

⊖ It is forbidden make "star" connections.

Basic menu

In addition to the normal adjustments given in the control user's manual, the basic and advanced menus can be accessed through the control.

To access the basic menu
- with the display off, hold down ⏻ for 10 seconds

  The device turns on and ⊡⊓ *appears*
- keep pressed until the indication ⊓⊓ appears
- release the ⏻ key

  The symbol ⊡⊏ *appears*

To navigate in the menu
- use the icons ✛ ⚊

To select a menu item and to confirm the changes made
- press the icon ⏻

  Confirming the change takes you to the next item.

To exit the menu
- press the icon ⏻ for 10 seconds
- or wait 30 seconds the automatic shutdown

⚠ After 30 seconds from the last action the control goes out and the settings is memorized.

Menu items

ot: AIR probe offset (air probe setting)

ur: Value read by the R.H. sensor

ut: Probe Offset PT4

uS: Humidity setpoint

ui: Humidity hysteresis

CF: Scale

ub: Buzzer volume

uu: Wi-Fi reset

uP: Wi-Fi pairing

⚠ Please refer to the installation manual of the control for in-depth discussion of the menu items.

Advanced Menu

⚠ **To access the advanced menu, it is first necessary to access the basic menu. See section "Basic menu" 11.**

Through the control panel, it is possible to access the advanced menu.

To access the advanced menu
- from the basic menu press ⅄

  Appears ⊡⊡.

- press the ✛ key once

  Appears ⊡⸾
- press ⏻ to confirm and log in

 *The advanced menu is accessed.*

To navigate in the menu
- use the icons ✛ ⚊

To select a menu item and to confirm the changes made
- press ⏻ for 2 seconds
  Confirming the change takes you to the next item.

To exit the menu
- press ⏻ for about 10 seconds
  Appears ⌐⌐.
- press ⏻ for about 10 seconds
  The display turns off.
- or wait 30 seconds after the last action
  The display is switched off automatically.

⚠ After a period of 30 seconds from the last action, the display turns off.

Pr: Not used

of: Options for digital output

rH: Radiant heating options with R20

rC: Radiant cooling options with R20

UC: Not used

Ac: Not used

Ah: Not used

Ed: Not used

Fr: Not used

⚠ Please refer to the installation manual of the control for in-depth discussion of the menu items.

Menu items

Ad: Not used

Radiant module configuration (MZS) in Heating rH

To configure Heating based on system type

rH setting	Fancoil	Radiant	Note
0	Enabled	Disabled	Default settings
1	Disabled	Enabled	T1 probe mandatory
2	Enabled	Enabled	T1 probe mandatory
3	Enabled	Enabled (high temperature)	(1) (2)
4	Disabled	Enabled (high temperature)	(1) (2)

1. Due to the different working temperatures of the two types of terminals, the installation of a mixing valve for the radiant terminal circuit is recommended. Mixing valve and controller are the responsibility of the installer. Temperature values of probe T1 are given in the section Water temperature probe T1.
2. Recommended mode with radiators. In this mode there is no control/alarm for high temperature.

⚠ After changing the parameter switch off and on again to store the setting.

Radiant Module Configuration (MZS) in Cooling rC

To configure Cooling based on system type

Setting rC	Fancoil	Radiant	Note
0	Enabled	Disabled	Default settings
2	Enabled	Enabled	T1 probe mandatory

⚠ After changing the parameter switch off and on again to store the setting.

Relative humidity monitoring
The wall control has a relative humidity control in the room used with a safety function in Cooling mode.

⚠ Changing these parameters must be considered carefully. An incorrect setting could cause condensation to form on surfaces with possible damage to structures and objects.

Outputs are switched off with:
- rC parameter set to 2
- measured humidity value > of the value set in parameter uS (default 50 % R.H.)

⚠ In this situation, the LED stays switched on.

Outputs are switched on again with:

- measured humidity value < of the difference between the values set in the parameters uS and ui

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Radiant Menu

Through the settings menu it is possible to access the Radiant menu.

⚠ Access to the Radiant menu items is only possible if the set value for rH or rC is > 0.

To access the advanced menu
- from the advanced menu press 𝔸
  Appears ⬚⬚.
- Press 5 times ✛
  Appears ⬚⬚.
- press ⏻ to confirm and log in
 *The advanced menu is accessed.*

To navigate in the menu
- use the icons ✛ ⚊

To select a menu item and to confirm the changes made
- press ⏻ for 2 seconds
  Confirming the change takes you to the next item.

To exit the menu
- press ⏻ for about 10 seconds
  Appears ⬚⬚.
- press ⏻ for about 10 seconds
  The display turns off.
- or wait 30 seconds after the last action
  The display is switched off automatically.

⚠ After a period of 30 seconds from the last action, the display turns off.

Menu items

Visible items with rH > 0

oH: OHR - Radiant heating setpoint offset from SP (default 0)

H0: HH0R- Shutdown differential in radiant heating (default - 0.2 °C)

H1: HH1R- Ignition differential in radiant heating (default - 0.5 °C)

HL: RLO - Minimum T1 temperature for radiant heating (default 20 °C)

HH: RHI: Maximum T1 temperature for radiant heating (default 40 °C)

Visible items with rC > 0

oC: OCR - Radiant cooling setpoint offset from SP (default 0).

C0: HC0R - Shutdown differential in radiant cooling (default 0.2 °C)

C1: HC1R - Ignition differential in radiant cooling (default 0.5 °C)

CL: RFLO - Minimum T1 temperature for radiant cooling (default 15 °C).

**CH:** RFHI - Maximum T1 temperature for radiant cooling (default 25 °C).

Parameters

Item	Register ID	Description	Default	Minimum	Maximum	m.u.
oH	OHR	Radiant Heating Setpoint Offset Adjustment	0.0	- 10.0	10.0	°C
H0	HH0R	Switch-off differential EV2 in heating (radiant)	- 0.2	- 5.0	1.0	°K
H1	HH1R	Switch-on differential EV2 in heating (radiant)	- 0.5	- 10.0	0.0	°K
HL	RLO	Minimum temperature T1 for radiant heating	20.0	0.0	100.0	°C
HH	RHI	Maximum T1 temperature for radiant heating	40.0	0.0	100.0	°C
oC	OCR	Radiant Cooling Setpoint Offset Adjustment	0.0	- 10.0	10.0	°C
C0	HC0R	Switch-off differential EV2 in cooling (radiant)	0.2	- 1.0	5.0	°K
C1	HC1R	Switch-on differential EV2 in cooling (radiant)	0.5	0.0	10.0	°K
CL	RFLO	Minimum temperature T1 for radiant cooling	15.0	5.0	30.0	°C
CH	RFHI	Maximum T1 temperature for radiant cooling	25.0	15.0	30.0	°C

Pairing of control and unit

To pair the control with the MZS
- with control switched on, at the same time press
  🌀 and 𝔸 for about 10 seconds
  In the display area, where the setpoint is indicated, appears the number of connected devices.
  The displayed value flashes.

1.	SW - button for pairing command and MZS
2.	Led
3.	MZS
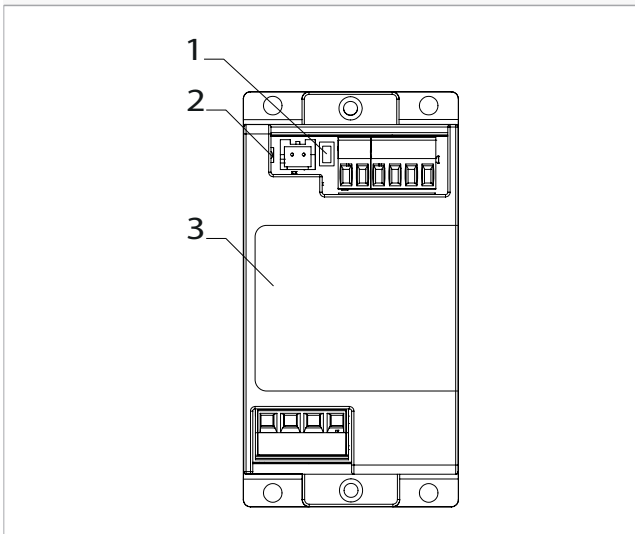
To pair the control with the MZS
- press the SW button for 3 seconds
  The LED flashes
- wait for the procedure to complete
  The LED stops flashing.

On the wall mounted control panel
  Appear the number assigned to the fancoil.
  Then appears the number of connected devices.
- press ⏻ to exit the menu

Reset pairing

⚠ **To reset the pairing settings, it is first necessary to access the "Basic menu" 11.**

To reset pairing settings
- access the basic menu
- press A
- press ┼
  All the way to the 02 menu.
- press ⏻

To reset a single fancoil
  Appears Ad
- press ┼
  Appears r d
- press ⏻ to access the menu
- use the ┼ ⊤ icons to move inside the menu
  The assignment numbers assigned to the fancoils appear.
- select the fancoil to be reset
- press ⏻ to confirm
  _ _ appears, with an acoustic signal.
  The device is removed.

To exit the r d setting
- press ⏻ for 5 seconds
  Exit the r d setting.
  Back to menu 02.

To reset all fancoils
  Appears Ad

- press ┼ until r5 appears
  Appears r5
- press ⏻ to access the menu
- use the ┼ ⊤ icons to move inside the menu
- select No to maintain all fancoils
- select Yes to reset the fancoils
- press ⏻ to confirm

Operation of LED interface present on MZS module

If the device is being paired
  The LED flashes

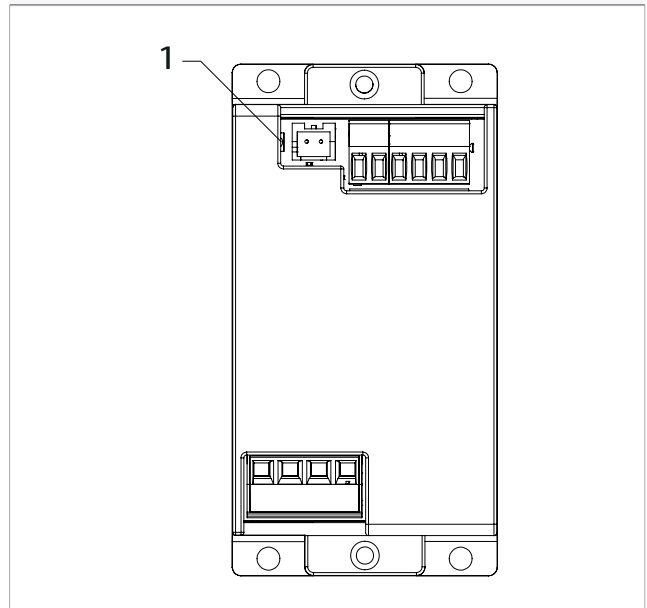**If the device is paired and functioning**
  LED on

If the device is in alarm status
  The LED flashes

⚠ The LED flashes according to the type of alarm. To check the alarm type, please refer to the following section "Error signals" 14

Error signals

| **1.** | Led |

The MZS accessory has a status LED.

LED signals
- LED off
  Device switched off or without power supply.
- LED on
  Normal operating of the device.
- LED 1 flash / pause
  Alarm for water temperature probe T1 not suitable. If the water temperature is not between HL and HH in Heating or CL and CH in Cooling, the outputs are kept active for 5 minutes and then switched off for 45 minutes.
- LED 5 flashes / pause
  Alarm Probe T1 disconnected or faulty.
- LED 6 flashes / pause
 *Communication error alarm with control panel.*

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Alarm display on wall control panel

⚠ In the event of an alarm, the device still maintains active functions.

⚠ The symbol ⚠ is displayed on the wall control panel to indicate alarms.

⚠ **To access the Setup menu, it is necessary to access the Basic menu. See section "Basic menu" 11.**

To visualise errors on the wall control panel
  – access the basic menu
  – press 𝔸
    Appears ⬜⬜.
  – press ✛
    Appears �８⌐.
  – press ⏻ to access the menu
    Then the number assigned to the fancoil appears and then the error is displayed.

Displayed alarms
  – F5   T1 water temperature probe disconnected or faulty
    None of the modes can be activated.
  – E8   Communication error
    Communication error between the wall control panel and the MZS. No operation of the device can be activated.
  – h2o   Incorrect water temperature
    In heating, the water temperature is < 20 °C or > 40 °C.
    In cooling, the water temperature is < 15 °C or > 25 °C.

⚠ Error E8 is displayed without the error display procedure on the wall control panel.

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