AERMEC
air conditioning

MANUALE D'USO E INSTALLAZIONE
USE AND INSTALLATION MANUAL
MANUEL D'UTILISATION ET D'INSTALLATION
BEDIENUNGS- UND INSTALLATIONSANLEITUNG
MANUAL DE INSTRUCCIONES E INSTALACIÓN

Sistema VMF
Scheda termostato per ventilconvettori

VMF system
Thermostat board for fan coils

Système VMF
Platine thermostat pour ventilo-convecteurs

VMF-System
Thermostatplatine für Gebläsekonvektoren

Sistema VMF
Tarjeta de termostato para fan coils

VMF-EO

CE

AERMEC
COMPANY QUALITY SYSTEM
ICIM
ISO 9001:2008 - Cert. n° 0128
CISQ IQNet
AERMEC S.P.A.

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AVMFE0LJ 1101 - 6795745_03

Congratulations on your purchase of this Aermec "VMF-E0" ELECTRONIC THERMOSTAT BOARD KIT.
Made with top quality materials in strict compliance with safety regulations, "VMF-E0" will provide you with outstanding performance for a long time to come.

CONTENTS

WARNING: The VMF boards are designed to be applied to fan coils installed in indoor environments.

WARNING: Keep separate electrical connections from water connections. Water connections and drain should be on the side opposite of the electrical connections.

WARNING: the fan coil is connected to the power supply and water circuit. Operations performed by persons without the required technical skills can lead to personal injury to the operator or damage to the unit and surrounding objects.

WARNING Components sensitive to static electricity may be destroyed by voltages notably lower than those at the human perception threshold. These voltages form when you touch a component or electric contact of a unit, without first discharging accumulated static electricity from your body. The damage caused to the unit by an overvoltage is not immediately evident - it only appears after a certain period of operation.

STATIC ELECTRICITY ACCUMULATION

Any person not connected in a conductive manner with the electronic potential of his surrounding environment can accumulate electrostatic charges.

STANDARD PROTECTION AGAINST ELECTROSTATIC CHARGES

Earthing quality

When working with units sensitive to electrostatic electricity, ensure that people, workplaces and unit casings are correctly earthed. This will prevent the formation of electrostatic charges.

Avoid direct contact

Only touch the element exposed to electrostatic risk when absolutely essential (e.g. for maintenance).

Touch the element without coming into contact with either the contact pins or the wire guides. If you follow this rule, the energy of the electrostatic charges cannot reach or damage the sensitive parts.

Before taking measurements on the unit, it is necessary to discharge all electrostatic charges from your body: to do this, just touch an earthed metal object. Only use earthed measuring instruments.

POWER WITH A SINGLE-PHASE VOLTAGE OF 230V ONLY

Any other type of power supply could permanently damage the thermostat and fan coil.

MALFUNCTIONING

In case of malfunction, cut off power to the unit, then energise it again and restart the device. If the problem occurs again, call the local After-Sales Service immediately.

DO NOT TUG THE ELECTRIC CABLE

It is highly dangerous to pull, crush or tread on the electric cables, or to fix them with nails or drawing pins.

A damaged power cable can cause short circuits and injure people.

PACKAGE

The thermostats are shipped in standard cardboard box packaging.

DESCRIPTION

VMF-E0

ELECTRONIC THERMOSTAT BOARD FOR FAN COILS

The VMF-E0 accessory is an advanced electronic thermostat kit to be applied to the fan coils; it requires an interface inside the fan coil (VMF-E2; VMF-E2H), or on the wall (VMF-E4).

The VMF-E0 kit consists of:

- an E0-type thermostat board inserted in a protective box and easily applied to the side of the fan coil. The E0-type thermostat board has a protective fuse, a dip-switch for configuration, and connectors for connection with:
  - the power supply,
  - the earthing,
  - the valve control,
  - the fan motor control,
  - the ambient air temperature probe,
  - the water temperature probe,
  - the control panel (user interface),
  - the external contact,
  - the microswitch contact connected to the fan coil fin,
  - the fan coil network serial (TTL).

With the VMF-E0, you can manage:

- Three fan coil speeds in manual mode
- Continuous ventilation and thermostat control, by controlling the valves
- Automatic fan mode according to the load
- Season visualisation
- Visualisation of alarms and ventilation request
- Up to two ON/OFF 2- or 3-way valves
- The switch-on of an electric heater
- A germicidal lamp
- Plasmacluster filter
- An air temperature probe
- A water temperature probe, with minimum and maximum temperature and changeover functions
- Season change according to the water or air temperature (4-pipe systems)
- Input for "external contact". This is a digital input with the following logic: When open, the thermostat works normally; When closed, the fan coil is switched off
- Microswitch for fin contact
- Anti-freeze function
- Communication with other thermostats, via a dedicated serial based on the TTL logic standards

Description of the functions

• Operation in TTL network

The E0 thermostat is designed to communicate with other E0 and/or E1 and/or E18 thermostats via a dedicated serial based on the TTL logic standards. This serial communication is essential for the exchange of information within small fan coil networks (up to 6) with a maximum network length of 30 metres. It was designed, in fact, for small areas where the fan coils (more than one) need to be controlled from a single control point.

More specifically, this network always contains a Master (to which a user interface VMF-E2, VMF-E2H, VMF-E4 is connected) which controls the operation of the Slaves connected to it, according to the settings made on its user interface.

The Master fan coil is fitted with an E0-type electronic board (VMF-E0, or fan coils fitted as standard with board E0), or an E1-type board (VMF-E1) + user interface.

The Slave fan coil must be fitted with an E0-type electronic board (VMF-E0), or an E1-type board (VMF-E1).

All the fan coils of the TTL network must have the same type of configuration. Example: all standard, all with purifiers (Plasmacluster and/or germicidal lamps), or all with an additional coil (electric or with water).

On the basis of the settings received from the network and the ambient conditions detected by the probes, the electronic board on each single Slave fan coil acts (independently from the other fan coils) to switch the ventilation on and off in order to create the conditions requested by the user for that specific room.

• Cooling operation

Cooling operation requires a water circuit with chiller.

• Heating operation

Heating operation requires a water circuit with boiler, heat pump or solar system.

• Changeover (seasonal change)

The thermostat automatically selects the operating mode (Heating/Cooling), if that mode is permitted (water probe and settings).

- **Normal band**: Heating at 39°C; Cooling at 17°C.
- **Reduced band**: Heating at 35°C; Cooling at 22°C.
- **Dead band**: can be selected at 5°C or 2°C.

Water side changeover

- **Water temperature checks**

Enabling of water side ventilation (only active with water temperature probe). The thermostat identifies the ventilation enabling threshold in Heating mode (minimum controlled) and Cooling mode (maximum controlled); with the dip-switches it is possible to choose between two temperature bands.

Air side changeover

If the actual ambient temperature is lower than the set point by a value equal to the Dead Band, there is an automatic swap to Heating operation.

If the actual ambient temperature is higher than the set point by a value equal to the dead band, there is an automatic swap to Cooling operation.

In the fan coil networks, the values of the dead band are only those configured on the Master fan coil.

• Pause due to power failure

After a power failure, the unit restarts with the settings that were active prior to the pause.

• Delayed start-up

The unit can begin ventilation some time after start-up - usually up to 2'40" (pre-heating function).

The delay is zero-set in units with an

electric heater.

• Anti-freeze protection

Controls on OFF position. The fan coil can restart in heating mode (set point 12°C) if the ambient temperature falls below 7°C and the temperature of the water in the system is suitable.

In the fan coil networks, the Slave fan coils can activate the anti-freeze protection regardless of the settings on the Master fan coil.

If the anti-freeze protection is active on the Master fan coil, all the other Slave fan coils will also adopt a set point of 12°C, regardless of their ambient conditions.

• Ambient temperature probe

If the ambient temperature probe on the Slave fan coils is faulty, the temperature will be measured by the probe of the Master.

• Ambient probe correction

To obtain a better ambient temperature adjustment, the thermostat applies special algorithms to correct the ambient probe installed on the fan coil; the probe is in contact with the housing, and is therefore influenced by it.

The dynamic correction is a correction algorithm of the ambient probe which takes into account the particular operation status of the fan coil in any one moment. More precisely, there are two possible cases of dynamic correction:

- **Dynamic correction A:** in the case of systems without a valve (or with a downstream probe), the correction depends on the water and ambient temperatures.
- **Dynamic correction B:** in the case of systems with a valve and an upstream probe, the correction depends on the Valve and on the Water and Ambient temperatures. Unlike the previous correction, this one uses different time constants to calculate the appropriate correction (because the housing is influenced in a different way).

• Water probe

There is a water temperature probe in the heat exchanger of the unit.

The Slave fan coil can work without the water probe: if it is absent or faulty, the temperature will be measured by the Master probe alone. In this case, ventilation is always enabled on the Slave fan coil.

The water temperature probe can be positioned **downstream** or **upstream** from the shutoff valve, so also the dip-switches on the board must be set. The difference lies in the management of the ventilation of the fan coils with valve.

Setting the dip-switch as a **downstream probe** of the valve, ventilation start-up (changeover) is dependent on the temperature of the air in the room.

Setting the dip-switch as an **upstream probe** of the valve, ventilation start-up is dependent on the temperature of the water in the system. With this setting, the pre-heating function is activated, and there is a ventilation start-up delay of between 0" and 2'40".

To position the bulb on the delivery pipe upstream of the valve, the standard water probe must be replaced with the VMF-SW probe accessory.

• Ventilation

3-speed ventilation can be controlled both manually and automatically.

- **Manual,** with the selector in position V1, V2 and V3. The fan is used with ON-OFF cycles at the selected speed.
- **Automatic,** with the selector on AUTO. The fan speed is managed by the thermostat, on the basis of the ambient conditions and the fan coil configuration.

Thermostat settings:

- **3-level thermostat**, With the selector on AUTO. The fan maintains the speed relating to one of the three predetermined steps, depending on the difference between ambient temperature and set point. Once it has reached the set point, the fan will switch off.
- **Modulated output thermostat**, With the selector on AUTO. The fan makes cycles, alternating the speeds according to the difference between ambient temperature and set point. Once it has reached the set point, the fan will switch off. This setting is not compatible with continuous ventilation management.

• Ventilation management

Ventilation settings:

- **Continuous ventilation.** Ventilation is always active. The temperature is controlled by intercepting the flow of water to the fan coil. This function requires the presence of a water valve (accessory), and cannot be activated simultaneously with the "modulated output thermostat" option.
- **Thermostat-controlled ventilation.** Ventilation switches off when the set temperature is reached (set point).

• Valve adjustment logics

With the **Thermostat-controlled ventilation** or **Modulated output thermostat** setting, the valve is managed with the following logics:

- **Heating** - the valve is managed to exploit the stack effect of the fan coil, and to provide heat even with the fan switched off. These settings also reduce the number of valve openings and closings; with hot water circulating in the fan coil, a request from the thermostat will produce ventilation immediately.
- **Cooling** - to make the best use of the unit's cooling capacity and perform a more accurate check on the ambient temperature, the valve opening does not coincide with ventilation.

• External contact

The board offers the possibility of a connection with an external contact. With a closed external contact, the unit is configured as in the thermostat OFF position (except when the thermostat is in the Anti-freeze Protection position or when the ambient probe is absent or faulty). This contact can be used to manage inputs such as a remote ON-OFF controlled, a presence sensor, a window contact, a faulty circulation pump signal, etc.

In fan coil networks, only the external contact of the Master fan coil is enabled. If the master input is closed, all the slave fan coils of the network are switched off.

• Microswitch contact

The board offers the possibility of a connection with the Microswitch contact located on the delivery fins. With the fins closed, the fan coil is 100% OFF.

In fan coil networks, when the fin of the Master fan coil is closed, ventilation stops but the electronic thermostat board and the other fan coils in the network carry on working.

• Emergency operation

In the event of a faulty ambient probe, the electronic board can automatically detect the problem and enable an emergency program to avoid any inconvenience for the user, who is immediately informed of the fault (LED indicator lights).

• Behaviour with a faulty water temperature probe

Ventilation is always active.

The season change is made on the basis of the difference between the setting made and the actual ambient temperature.

If the actual ambient temperature exceeds the Heating set point by a value equal to the dead band, there is an automatic swap to Cooling operation.

If the actual ambient temperature falls below the Cooling set point by a value equal to the dead band, there

is an automatic swap to Heating operation.

Heater switch-on and switch-off depends solely on the thermostat operation request.

In this case, a fixed correction of the ambient probe is envisaged, and is determined on the basis of the type of thermostat configured.

• Behaviour with a faulty ambient temperature probe

- 2-pipe system:

With the selector in the OFF/Aux position, ventilation switched off and the valve is closed

With the selector in the AUTO, V1, V2, V3 position, the Heating mode is fixed and the valve is always open. The ventilation makes on-off cycles of variable duration depending on the position of the temperature selector.

- 4-pipe system:

With the selector in the OFF/Aux position, ventilation switched off and the valve is closed

With the selector in the AUTO, V1, V2, V3 position, the Heating/Cooling mode is decided on the basis of the position of the temperature selector, activating the respective valve. The ventilation makes on-off cycles of variable duration depending on the position of the temperature selector.

• Behaviour with a faulty ambient temperature probe on a Slave fan coil

The board automatically assumes the reading of the ambient probe of the Master fan coil.

• Heating mode with electric heater (if present)

The electric heater must be enabled by configuring the dip-switches on the thermostat again. Activate the heater-operated heating by positioning the control panel selector on AUX.

Standard operation is of the ON-OFF type.

The electric heater intervenes when there is a thermostat operation request and the water temperature is sufficiently low.

It should be noted that when the thermostat starts up, the heater is OFF, so it will only be activated if the water temperature is below the enabling threshold (35°C with normal band and 31°C with reduced band).

In any case, the activation of the electric heater involves a similar ventilation management to that in Automatic mode. The electric heater cannot be used in modulated power thermostat configuration.

If the fan coil is operated with continuous ventilation, then the electric heater will switch off when the set point is reached; following the post-ventilation phase (described below), the ventilation continues at speed V1.

Electric heater operation involves pre-ventilation and post-ventilation phases in relation to its activation and deactivation.

It should be noted that the pre-ventilation phase (20" at V1) always corresponds to the activation of the electric heater, while the post-ventilation phase always corresponds to the deactivation of the electric heater (60" at V1).

Example: the thermostat requests fan operation with the heater activated (i.e. the water temperature is sufficiently low), so we will have 20" of ventilation at speed V1 (pre-ventilation) after which the thermostat will operate at the ventilation speed determined by the microprocessor on the basis of the difference between the actual ambient temperature and the set temperature. Once the set temperature has been reached, if the heater is still active (i.e. the water temperature is sufficiently low), we will have post-ventilation for 1min at speed V1.

It should be noted that when the heater is switched off during operation because the water temperature is sufficiently high, then after reaching the set temperature, ventilation continues at speed V1 for the remaining time needed to terminate the post-ventilation cycle.

Finally, please note that the heater is never enabled if the thermostat is in anti-freeze or emergency mode, due to the ambient probe.

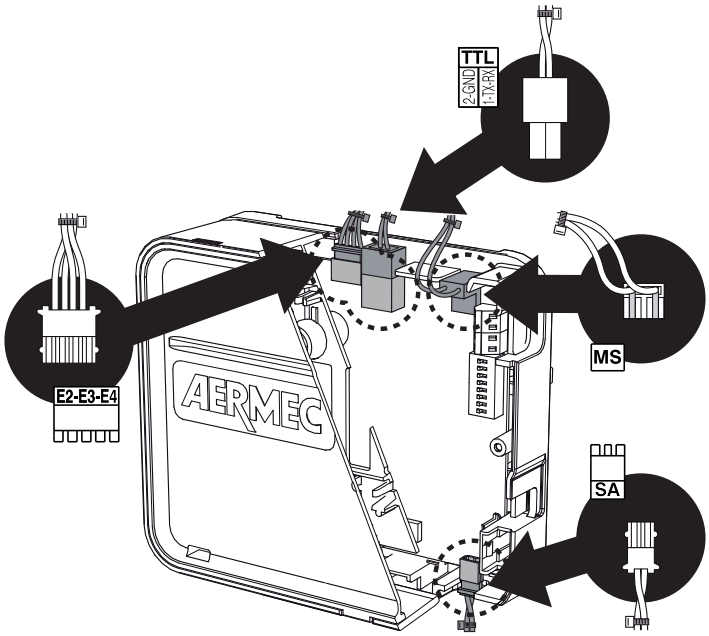
• Operation with purifying devices (if present)

If purifying devices are installed (Plasmacluster or bactericidal lamp), they must be enabled by configuring the dip-switches on the thermostat again.

With the selector on "Aux", the ambient is purified regardless of the thermostat operation requests.

Unlike the electric heater however, this type of accessory is even activated if the operation speed selector is not positioned on "Aux".

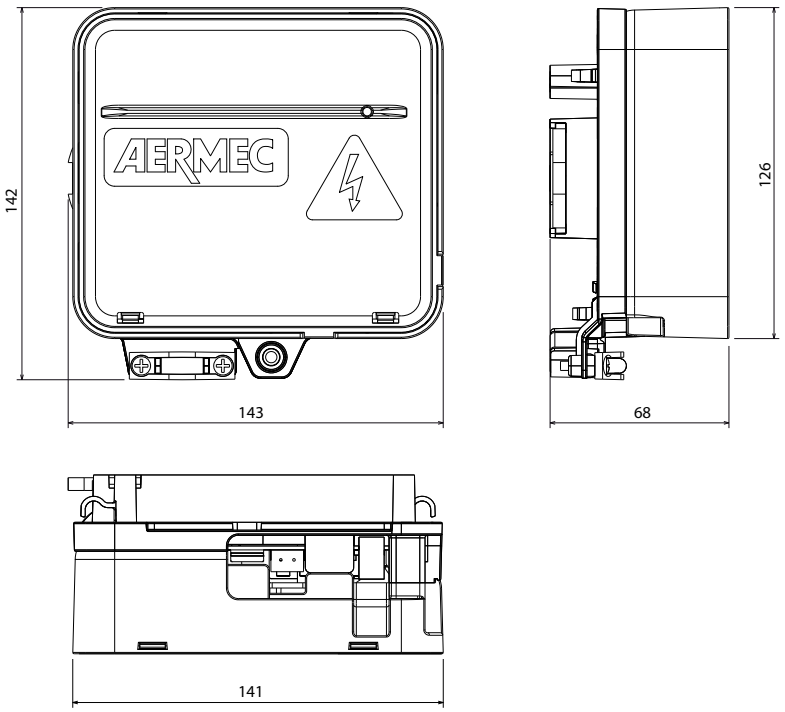
On "Aux", the fan will always operate at minimum speed, closing any shutoff element whose use is recommended with this function and thereby avoiding any ambient alterations (overheating / under-cooling).



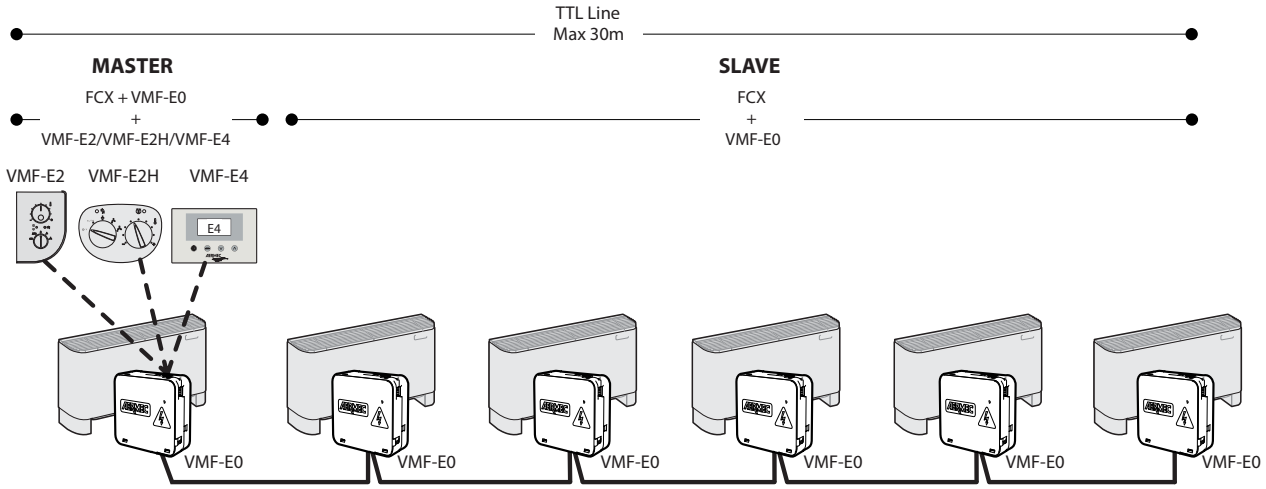
Adjusting a 2-pipe system				
	Upstream water probe		Downstream water probe	
	Water probe present	Water probe not fitted	Water probe present	Water probe not fitted
With valve	Water side changeover	Air side changeover	Air side changeover	Air side changeover
	Pre-heating delay	Pre-heating delay	No ventilation delay	Pre-heating delay
	Minimum and maximum controls active	No minimum and maximum control	Minimum and maximum controls active	No minimum and maximum control
	- Dynamic correction A:	Fixed correction	- Dynamic correction B:	Fixed correction
Without valve	Configuration not used		Water side changeover	Air side changeover
			No ventilation delay	No ventilation delay
			Minimum and maximum controls active	No minimum and maximum control
			- Dynamic correction B:	Fixed correction

Adjusting a 4-pipe system				
	Upstream water probe (Heating)		Downstream water probe (Heating)	
	Water probe (Heating)present	Water probe (Heating) absent	Water probe (Heating)present	Water probe (Heating)absent
With Valve	Delay for pre-heating	Delay for pre-heating	No ventilation delay	Delay for pre-heating
	Minimum temperature check activated (Heating)	Minimum temperature check deactivated (Heating)	Minimum temperature check activated (Heating)	Minimum temperature check deactivated (Heating)
	Maximum check activated if probe is present (Cooling)	Maximum check activated if probe is present (Cooling)	Maximum check activated if probe is present (Cooling)	Maximum check activated if probe is present (Cooling)
	- Dynamic correction A: / Fixed correction in Cooling, in absence of Cooling probe	Fixed correction	Dynamic correction B: / Fixed correction in Cooling, in absence of Cooling probe	Fixed correction
Without valve	Configuration not used		No ventilation delay	No ventilation delay
			Minimum temperature check activated (Heating)	Minimum temperature check activated (Heating)
			Maximum check activated if probe is present (Cooling)	Maximum check activated if probe is present (Cooling)
			Dynamic correction B: / Fixed correction in Cooling, in absence of Cooling probe	Fixed correction

DIMENSIONS [mm]



NETWORK SETTINGS



TTL NETWORK

- Consisting of up to 6 fan coils (one Master and 5 Slaves)
- Maximum TTL line length 30m.

The master fan coils are equipped with a control panel and an electronic board with microprocessor which has outputs in order to be inserted in a TTL network.

The Slave fan coils are equipped with an electronic board with microprocessor (VMF-E0 or VMF-E1 accessory) which has outputs in order to be inserted in a TTL network.

All the fan coils of the TTL network must have the same type of accessory.

The settings (or set points) of the panel on the main fan coil (Master) are received by the other fan coils (Slaves).

The units connected to the TTL network are automatically recognised (they require no configuration procedure).

ELECTRICAL WIRINGS

The essential indications to install the device correctly are given here.

The installer's experience will be necessary however, to perfect all the operations in accordance with the specific requirements.

Before beginning the installation, carefully read the information below:

- WARNING: check that the power supply is disconnected before carrying out any procedures on the unit.
- WARNING: before carrying out any work, put the proper individual protection equipment on.
- WARNING: the device must be installed in compliance with national plant engineering rules.
- WARNING: the electrical wirings and the installation of the units and their accessories must only be carried out by people possessing the technical/professional skills for system installation, transformation, extension and maintenance, and who are able to check these aspects in terms of safety and good working.

In particular, the electrical wirings require checks relating to:

- measurement of the electrical system insulation strength.
- Continuity of the protection wires.

- WARNING: install a device, main switch, or electric plug so you can fully disconnect the device from the power supply.
- WARNING: the unit is connected to the electrical mains. Any intervention by unqualified and untrained personnel could cause injury to the worker and damage to the equipment and surrounding environment.
- Check the mains voltage complies with the one requested for the device to be installed.
- The electrical wiring measurements must be carried out according to the regulations in force, taking into account the system load.
- For the power supply, use undamaged cables with a section suitable for the load. You are advised to make the connections using a single cable for each one. Do not make connections on the power supply cable: use a longer cable. Junctions can cause overheating and/or fires.
- Only use the appropriate tools for the electrical wirings.
- Make an earth connection for the indoor unit.
- Use twisted cables for the connections to the wired panel.
- Do not attempt to repair the unit yourself. An incorrect intervention can cause electric shocks and/or fires, so you are advised to contact your local After Sales Service. For any installation or technical intervention, please contact your local After Sales Service.
- All the cables must be piped or ducted until they are inside the fan coil. The cables leaving the pipe or raceway must be positioned in such a way that there are not traction or twisting stresses and they are anyway protected from outside agents.
- Stranded cables can only be used with cable terminals. Check the cable strands are well inserted.
- In installations with a 3-way valve, the minimum water temperature probe must be relocated from its standard housing in the coil, to the delivery pipe upstream from the valve. When relocating the water probe, the standard sensor must be replaced with an accessory VMF-SW sensor, fitted with a cable of suitable length.
- The connections must be made to the connectors on the electronic board.
- The electronic board is protected with a plastic box and a cover that can easily be removed with the help of a tool.
- The wiring diagrams are subject to continuous updates, so it is essential to use those on the accessory as your reference.
- Warning: the diagram showing the connections of the electronic board to the control board is printed inside its box cover.
- WARNING: make an earth connection for the system.

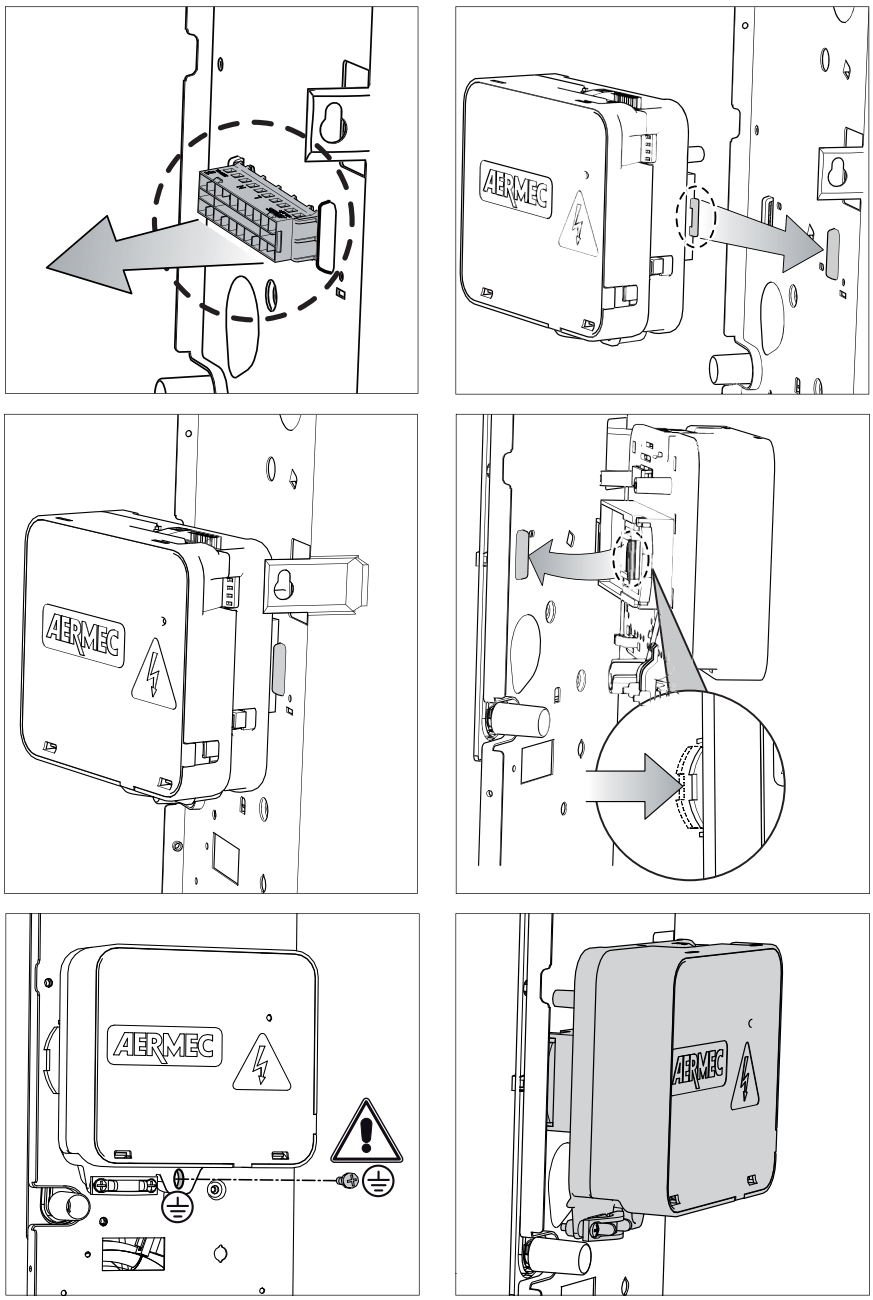
It is compulsory to connect the fan coil frame to the earthing system.

It is compulsory to tighten the screw that fixes the thermostat box on the side of the fan coil, as this is what allows the earth connection of the entire system.

ELECTRICAL WIRINGS

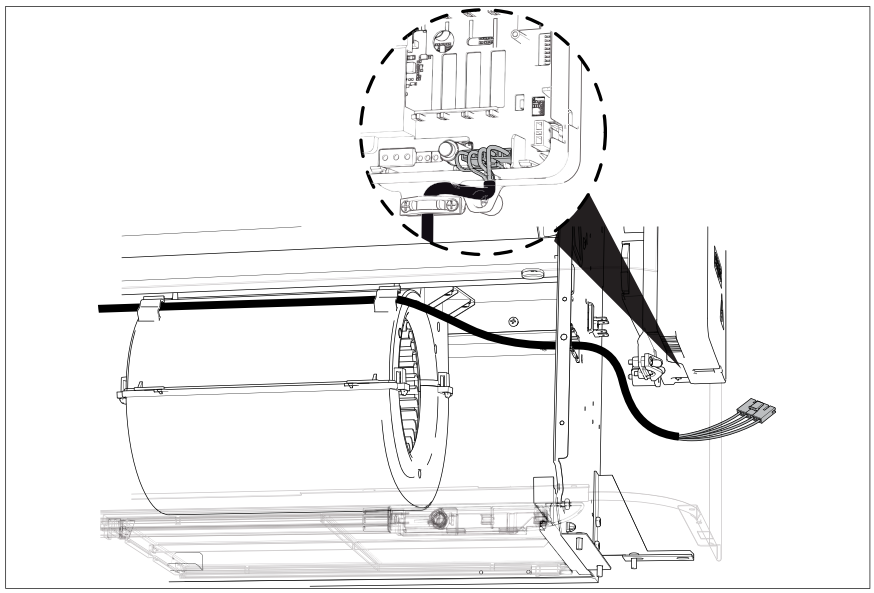
CONNECTIONS TO THE BOARD

- The installation of the VMF-E0 kit requires that the standard control board is removed from the fancoil.
- Mount the thermostat housing to the side of the fan coil units, on the connections that were of the control board.
- Remove the cover of the thermostat housing.
- WARNING: make an earth connection for the thermostat board. It is compulsory to tighten the screw that fixes the thermostat box on the side of the fan coil, as this is what allows the earth connection of the entire system.
- Connect the power supply cables. Warning: respect the L and N polarities.
- Connect the electric cables of the electric motor. Respect the speed sequence: if the motor has 4 or more speeds, choose the 3 required.
- Connect the electric cables of the air temperature probe (SA).
- Connect the electric cables of the water temperature probe (SW).
- Connect the cables for the external contact (if envisaged).
- Connect the cables for the microswitch (if envisaged).
- Connect the TTL mains cables (if connected to the mains).
- Connect the cables of the control panel (if envisaged).
- Check all the connections and relative cables are well fixed.
- Arrange the cables so there is no risk of them being cut, crushed, jerked, scraped, or generally damaged.
- Check the board fuse is undamaged and possesses the necessary features.
- Close the box with the cover.
- Fix the power supply cables and valve cables using the cable clamp.



DANGER: It is compulsory to tighten the screw that fixes the thermostat box on the side of the fan coil, as this is what allows the earth connection of the entire system.

WARNING: Keep separate electrical connections from water connections. Water connections and drain should be on the side opposite of the electrical connections.



ELECTRONIC BOARD CONNECTIONS

Connections key:

L - N = Power supply
230V AC - 50Hz
Screw clamps
Minimum cable section = 0.5mm²
Maximum cable section = 2.0mm²

⏚ = EARTH connection
Screw clamp
Minimum cable section = 0.5mm²
Maximum cable section = 2.0mm²

Y1 = VC/VF control
Screw clamps
Minimum cable section = 0.5mm²
Maximum cable section = 1.3mm²
Maximum cable length = 30m

Y2 = Accessory control
Screw clamps
Minimum cable section = 0.5mm²
Maximum cable section = 1.3mm²
Maximum cable length = 30m

N = Neutral
Faston-type connector
Minimum cable section = 0.5mm²

FUSE = Protection fuse
Delayed 2A fuse

V3 = Motor control
Maximum speed
Faston-type connector
Minimum cable section = 0.5mm²
Maximum cable section = 2.0mm²

V2 = Motor control
Average speed
Faston-type connector
Minimum cable section = 0.5mm²
Maximum cable section = 2.0mm²

V1 = Motor control
Minimum speed
Faston-type connector
Minimum cable section = 0.5mm²
Maximum cable section = 2.0mm²

SA = Air probe
Analogue input
Removable-type connector
Maximum cable length = 3m

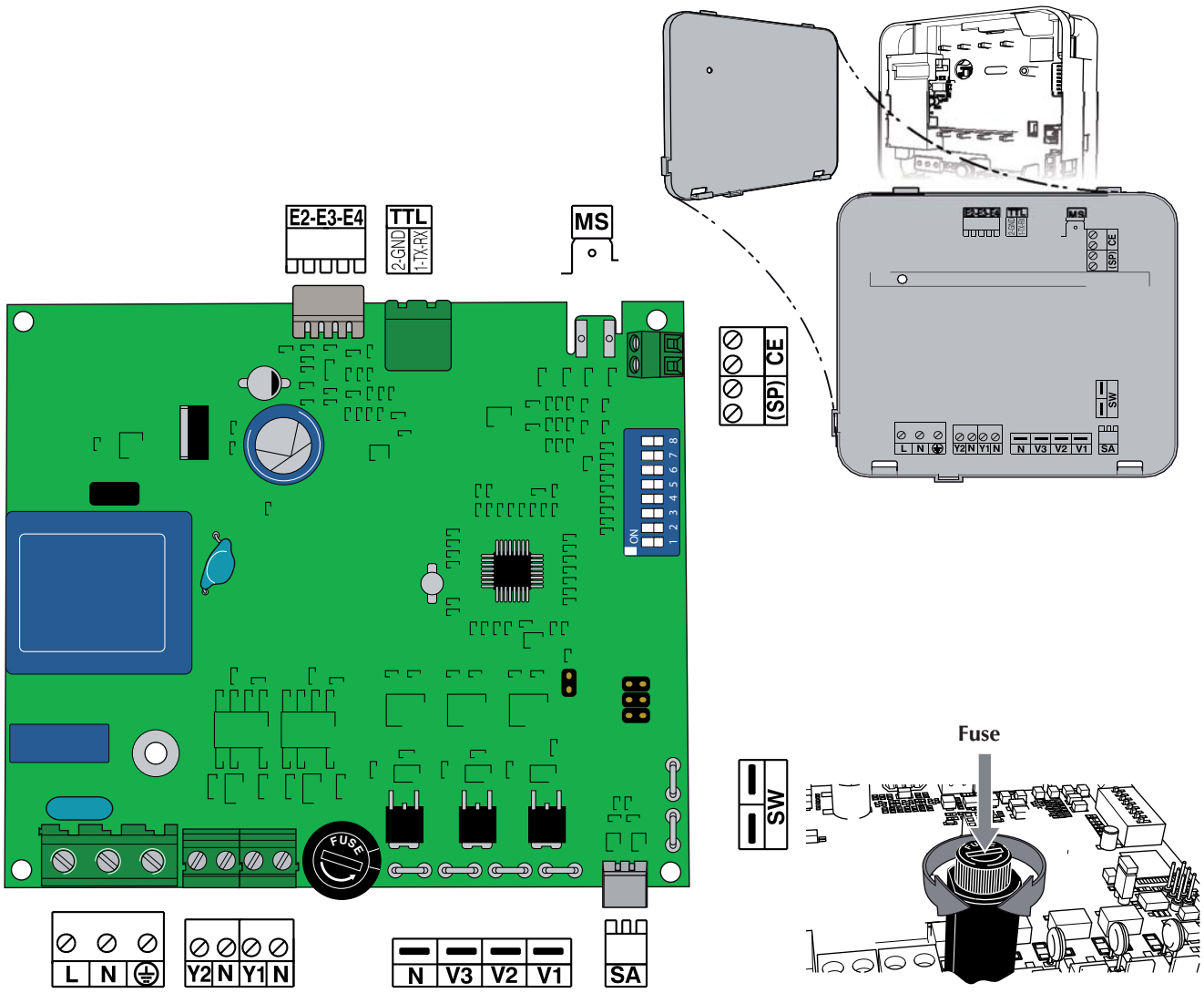
SW = Water temperature probe
Analogue input
Faston-type connector
Maximum cable length = 3m

CE = External contact
Digital input
Screw clamps
Minimum cable section = 0.2mm²
Maximum cable section = 1.0mm²
Maximum cable length = 100m

MS = Microswitch
Sliding contact
Maximum cable length = 3m

TTL = Local serial
Removable-type connector
Shielded cable size AWG22-3
(0,34 mm² - 3 poles + shield)
Total maximum cable length = 30m
(see the diagram showing the connections between the units)

E2-E3-E4 = Connection to the control panel
Dedicated connector
Shielded Twisted Pair cable (Data transmission cable), size AWG 22-24
(0.33 - 0.20 mm² - 4 poles + shield



DIP-SWITCH SETTINGS

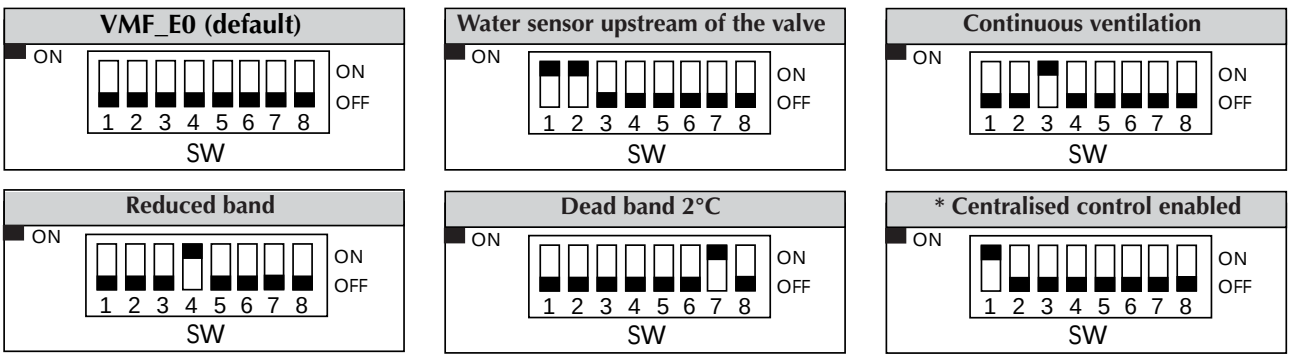
Turn off the power to the unit.
This operation should be carried out in the installation phase, by suitably trained and qualified personnel only.
The dip-switches are on the electronic board. They can be used to obtain the following functions:
*The Continuous Ventilation and Modulated Output Thermostat settings are not compatible.

They can be used to obtain the following functions:

Position	Functions
Dip 1 (Default **OFF**)	**Check water valve**
OFF	No shut-off valve
ON	Shutoff valve present
Dip 2 (Default **OFF**)	**Position water temperature sensor**
OFF	Water temperature sensor downstream from shutoff valve
ON	Water temperature sensor upstream from shutoff valve
Dip 3 (Default **OFF**)	**Ventilation control**
OFF	Thermostat-controlled ventilation
ON	*Continuous ventilation
Dip 4 (Default **OFF**)	**Ventilation enabling**
OFF	Enabling normal band
ON	Enabling reduced band
Dip 5 (Default **OFF**)	****System type selection (See table)**
OFF	Combinations between Dip 5 and Dip 6
ON	
Dip 6 (Default **OFF**)	****System type selection (See table)**
OFF	Combinations between Dip 5 and Dip 6
ON	
Dip 7 (Default **OFF**)	**Dead band**
OFF	Dead band 5°C
ON	Dead band 2°C
Dip 8 (Default **OFF**)	**Thermostat settings**
OFF	3-level thermostat
ON	*Modulated output thermostat

Functions dependent on the combination of 2 Dip		
Dip 6	**Dip 5**	****Type of system**
OFF	OFF	Two-pipe system - Two-pipe system with electric heating element
OFF	ON	four-pipe system
ON	OFF	Two-pipe system with Plasmacluster / Bactericide lamp
ON	ON	Two-pipe system with bactericide lamp always on

SOME EXAMPLES:



E0 TECHNICAL CHARACTERISTICS	
Power supply	230V AC +/-10%, 50-60 Hz
Max input power (excluding loads controlled by TRIACs)	2.5VA
Digital inputs	2 free contacts
Analogue inputs	No. 2, for reading NTC 10K probes
Digital outputs	No. 5 - 230V AC with Triac
Assembly	On the machine
Protection rating	IP20 (referring to the containment plastic)
Storage conditions	-20T80°C, humidity 80% non-condensing
Operating conditions	0T50°C, humidity 80% non-condensing
Software class	Class A
OUTPUTS: Control of fan	
Voltage	230V AC
Max. current	0.7 A

E0 CONNECTION SPECIFICATIONS	
Power supply	Screw terminals, 5mm pitch
	Cable section - min=0.5mm^2 max=2.0mm^2
Accessory control outputs (Valves-Plasmacluster germicidal lamp, etc.)	Screw terminals, 5mm pitch
	Cable section - min=0.5mm^2 max=1.3mm^2
	Maximum cable length = 30m
EC digital input	Screw terminals, 3.81mm pitch
	Cable section - min=0.2mm^2 max=1.0mm^2
	Maximum cable length = 100m
MS digital input - Sliding contact	Maximum cable length = 3m
Analogue inputs (SA-SW)	Quick plug-in connections
	Maximum cable length = 3m
TTL local serial	Screw terminals, 3.81mm pitch
	Cable section - min=0.2mm^2 max=1.0mm^2
	Maximum cable length = 30m

COMPLIANCE WITH EC MARK

The following directives are used for reference:

· Low Voltage Directive 2006/95/CE

· Electromagnetic Compatibility Directive 2004/108/CE

CARACTERÍSTICAS TÉCNICAS E0	
Alimentación	230Vac +/-10%, 50-60 Hz
Potencia Máx. Absorbida (excluidas cargas dirigidas por los TRIAC)	2.5VA
Entradas Digitales	N° 2 contactos limpios
Entradas Analógicas	2 para la lectura de las sondas NTC 10K
Salidas digitales	N° 5, 230 Vac a Triac
Montaje	A bordo de la máquina.
Grado de protección	IP20 (referido a la protección plástica)
Condiciones de almacenamiento	-20T80 °C, humedad 80% no condensada
Condiciones de funcionamiento	0T50 °C, humedad 80% no condensada
Clase de software	Clase A
SALIDAS: Mando del ventilador	
Tensión	230Vac
Corriente máxima	0.7 A

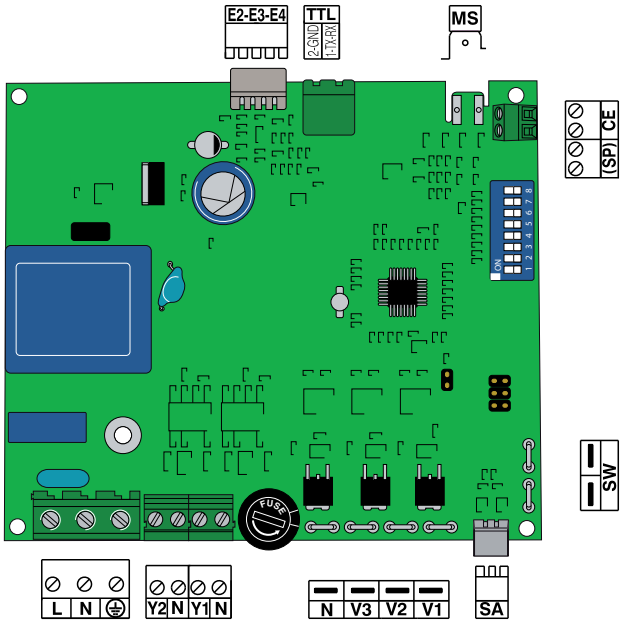
CONEXIONES ESPECÍFICAS E0	
Alimentación	Bornes de tornillo paso 5 mm
	Sección del cable mín=0.5 mm^2 máx=2.0 mm^2
Salidas mando accesorios (Válvulas-Plasmacluster lámpara germicida etc…)	Bornes de tornillo paso 5 mm
	Sección del cable mín=0.5 mm^2 máx=1.3 mm^2
	Longitud máx. del cable = 30 m
Entrada Digital CE	Bornes de tornillo paso 3.81 mm
	Sección del cable mín=0.2 mm^2 máx=1.0 mm^2
	Longitud máx. del cable = 100 m
Entrada Digital MS Contacto deslizante	Longitud máx. del cable = 3 m
Entradas Analógicas (SA-SW)	Conexiones rápidas por encastre
	Longitud máx. del cable = 3 m
Serial local TTL	Bornes de tornillo paso 3.81 mm
	Sección del cable mín=0.2 mm^2 máx=1.0 mm^2
	Longitud máx. del cable = 30 m

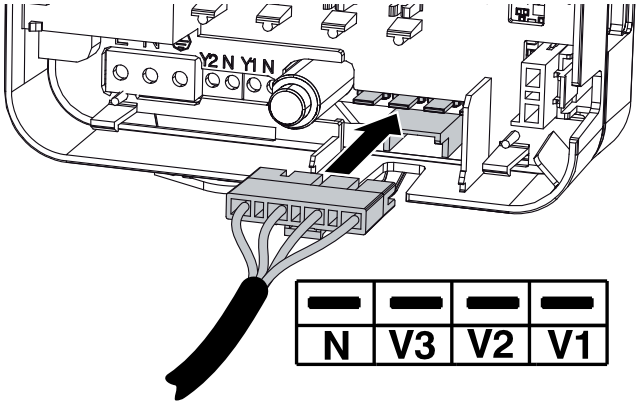
CORRESPONDENCIA CON LA MARCA CE

Las siguientes directivas son de referencia:

· Directiva de Baja Tensión 2006/95/CE

· Directiva Compatibilidad Electromagnética 2004/108/CE.

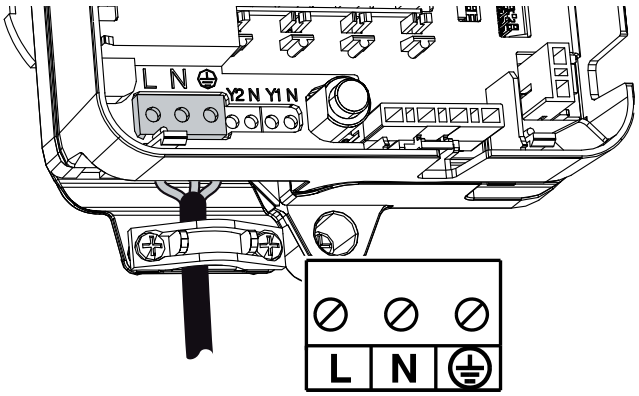


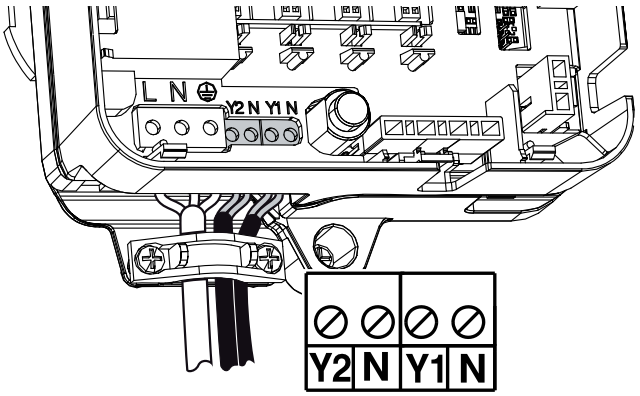


Alimentazione motore ventilatore
Fan motor power supply
Alimentation du moteur du ventilateur
Stromversorgung Ventilatormotor
Alimentación motor ventilador

Alimentazione elettrica
Power supply
Alimentation électrique
Stromversorgung
Alimentación eléctrica

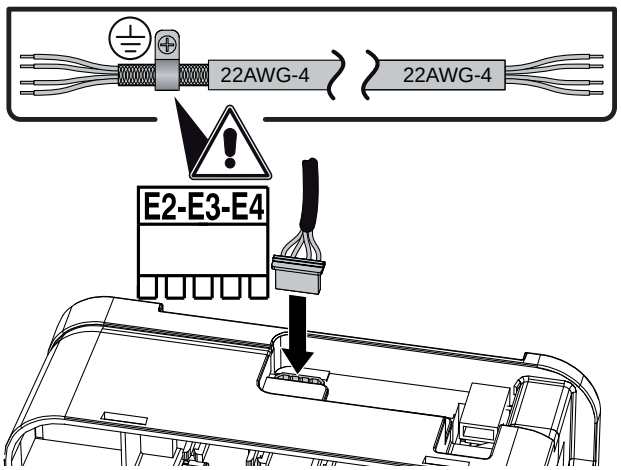
Y1 Comando valvola VC/VF + Y2 Comando accessorio
Y1 VC/VF control + Y2 Accessory control
Y1 Commande VC/VF + Y2 Commande accessoire
Y1 Steuerung VC/VF + Y2 Steuerung des Zubehörteils
Y1 Mando VC/VF + Y2 Mando Mando accesorio

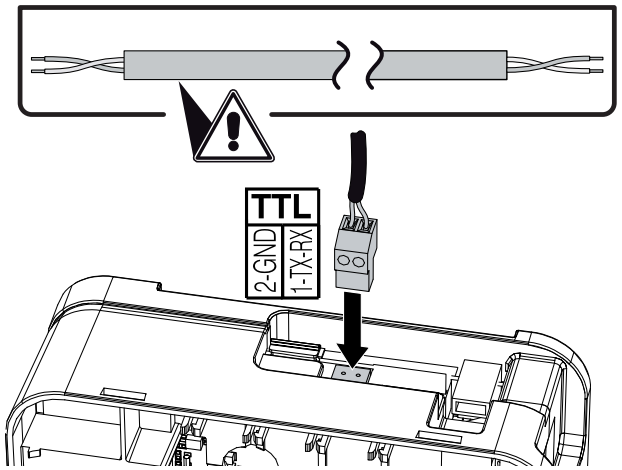




Collegamento al pannello comandi
Connection to the control panel
Raccordement au panneau de commande
Anschluss an die Bedientafel
Conexión al tablero de mandos

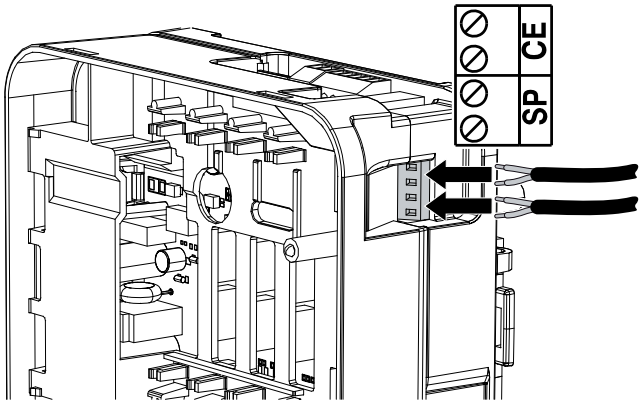
TTL Seriale locale
TTL Local serial
TTL Liaison série locale
TTL Lokale serielle Schnittstelle
TTL Serial Local



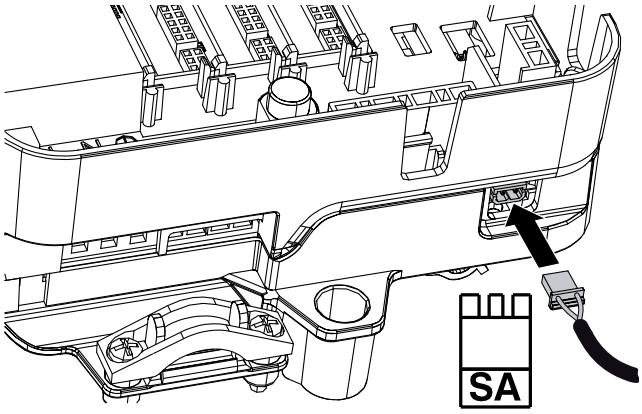


COLLEGAMENTI • CONNECTIONS • RACCORDEMENTS • ANSCHLÜSSE • CONEXIONES

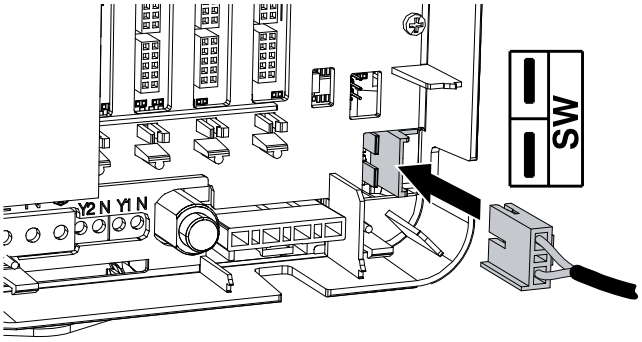
SP Sensore presenza + CE Contatto esterno
SP Presence sensor + CE External contact
SP Capteur de présence + CE Contact extérieur
SP Anwesenheitssensor + CE Außenkontakt
SP Sensor de presencia + CE Contacto externo



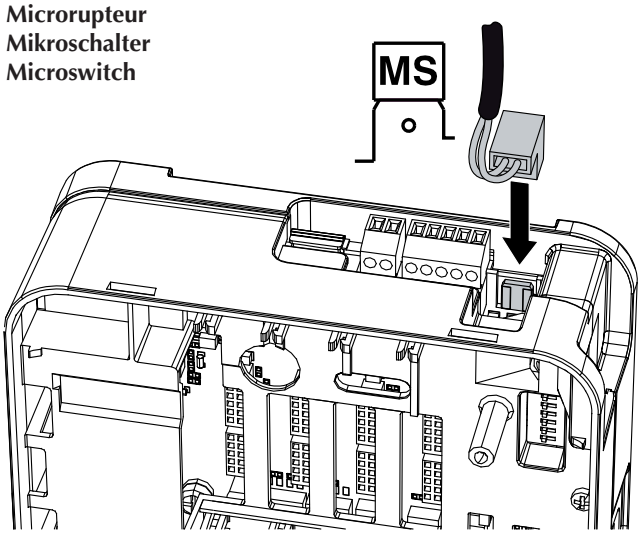
Sonda temperatura aria
Air probe
Sonde d'air
Lufttemperaturfühler
Sonda aire



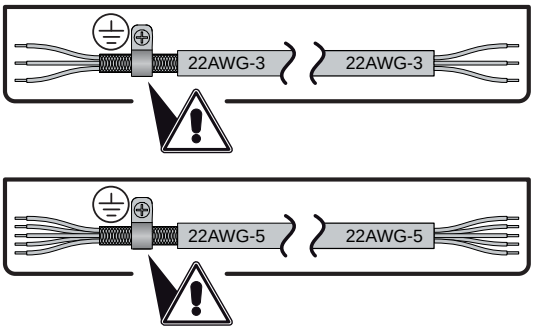
Sonda acqua su scambiatore riscaldamento
Water probe on heating exchanger
Sonde d'eau sur échangeur de chauffage
Wassertemperaturfühler auf Wärmetauscher für Heizbetrieb
Sonda de agua en intercambiador de calentamiento



Microswitch
Microswitch
Microrupteur
Mikroschalter
Microswitch



RS485 - COLLEGAMENTI • CONNECTIONS • RACCORDEMENTS • ANSCHLÜSSE • CONEXIONES



La schermatura di ogni cavo deve essere collegata a terra in un solo punto
Every shield cable must be connected to the ground
Le blindage de chaque cable doit être branché à la terre en un seul point.
Der Schirm eines jeden Kables wird nur an einem Erdungspunkt angeklemmt
La pantalla de cada cable debe ser conectada a tierra en un solo punto

LEGENDA • KEY • LEGENDE • LEGENDE • LEYENDA

IG = Interruttore generale • Master switch • Interrupteur général • Hauptschalter • Interruptor general

M = Morsettiera • Control board • Bornier • Klemmleiste • Caja de conexiones

MS = Microinterruttore • Dip-switch • Microrupteur • Mikroschalter • Microinterruptor

MV = Motore ventilatore • Fan motor • Moteur du ventilateur • Ventilatormotor • Motor ventilador

PE = Collegamento di terra • Earth connection • Mise à la terre • Erdung • Toma de tierra

SA = Sonda ambiente • Ambient probe • Sonde ambiante • Raumtemperaturfühler • Sonda ambiente

SC = Sonda ambiente • Control card • carte de contrôle • Steuerplatine • Tarjeta de control

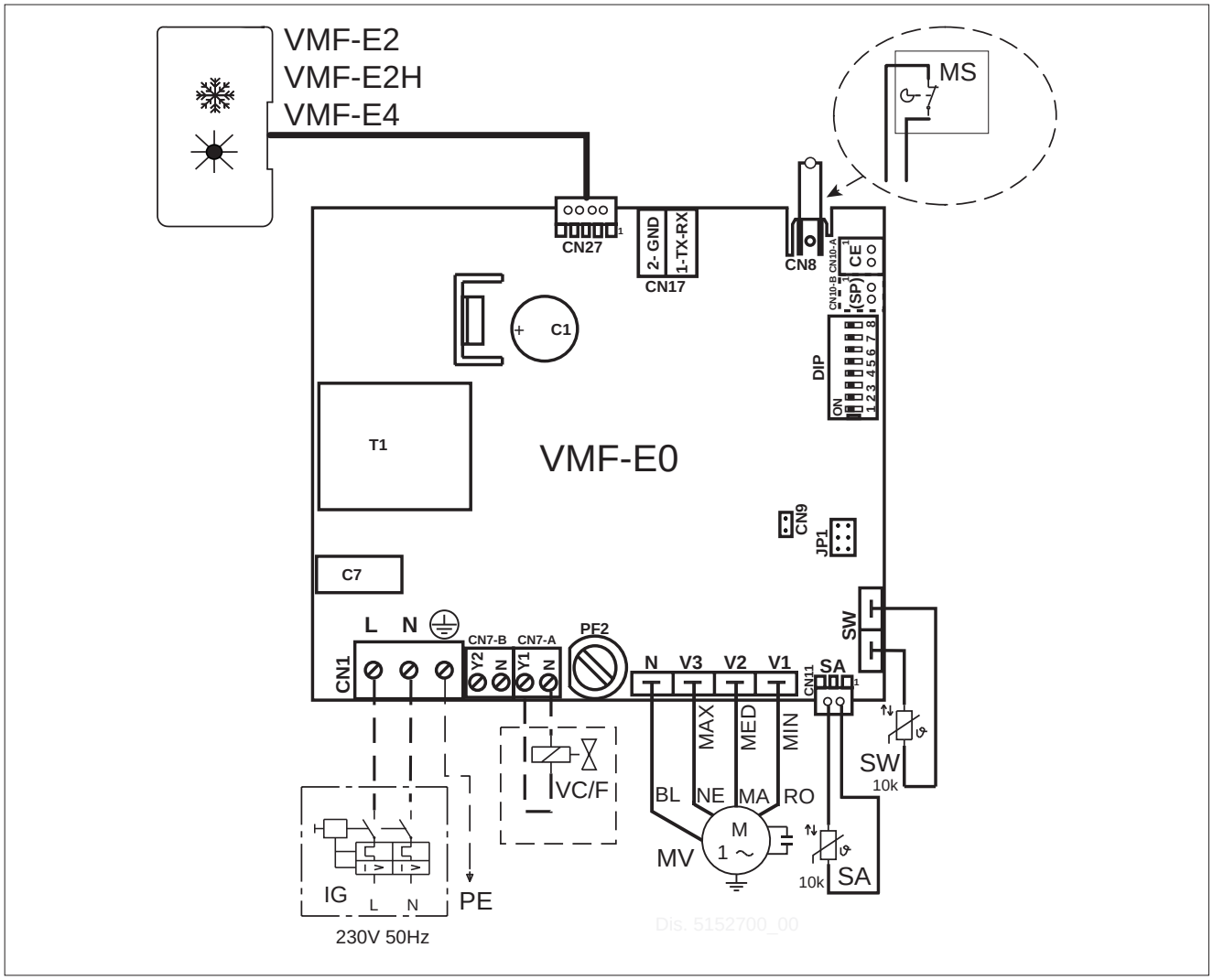
SW = Sonda minima temperatura acqua • Minimum water temperature probe • Sonde de température minimale de l'eau Sonde für Mindest-Wassertemperatur • Sonda mínima temperatura del agua

VCH = Valvola solenoide • Solenoid valve • Vanne solénoïde • Magnetventil • Válvula solenoide

⬚ = Componenti forniti optional • Components supplied as optional extras • Composants fournis en option Als Option lieferbare Teile • Componentes opcionales facilitados

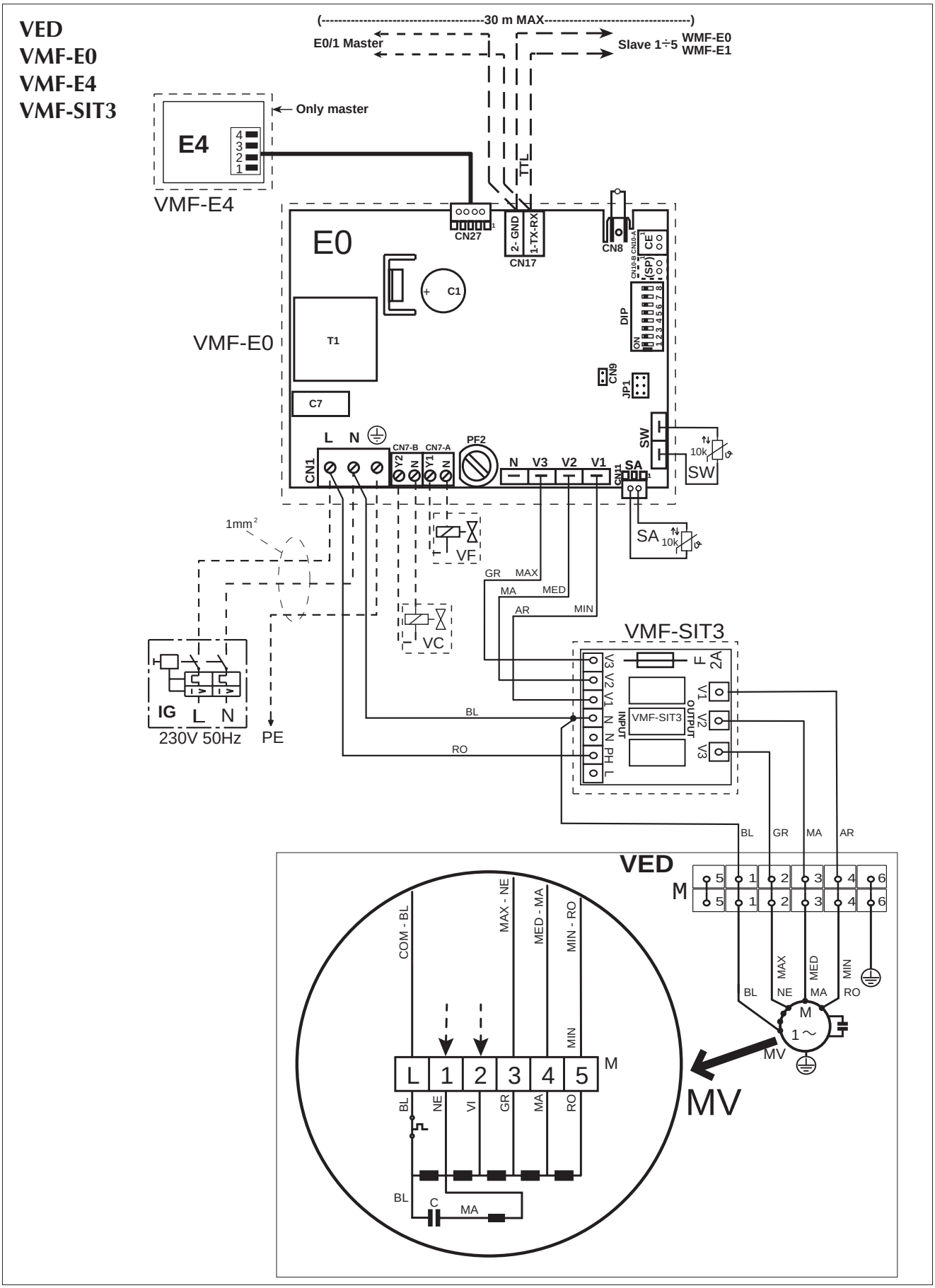
– – – = Collegamenti da eseguire in loco • Connections to be made on site • Branchements à effectuer sur les lieux Vor Ort auszuführende Anschlüsse • Conexiones que realizar in situ

AR	= Arancio	**AR**	= Orange	**AR**	= orange	**AR**	= Orange	**AR**	= Naranja
BI	= Bianco	**BI**	= White	**BI**	= blanc	**BI**	= Weiß	**BI**	= Blanco
BL	= Blu	**BL**	= Blue	**BL**	= bleu	**BL**	= Blau	**BL**	= Azul
GR	= Grigio	**GR**	= Grey	**GR**	= gris	**GR**	= Grau	**GR**	= Gris
GV	= Giallo-Verde	**GV**	= Yellow-green	**GV**	= jaune-vert	**GV**	= Gelb/Grün	**GV**	= Amarillo-Verde
MA	= Marrone	**MA**	= Brown	**MA**	= marron	**MA**	= Braun	**MA**	= Marrón
NE	= Nero	**NE**	= Black	**NE**	= noir	**NE**	= Schwarz	**NE**	= Negro
RO	= Rosso	**RO**	= Red	**RO**	= rouge	**RO**	= Rot	**RO**	= Rojo



Los esquemas eléctricos están sujetos a modificaciones continuas, por lo tanto es obligatorio tomar la referencia de los que se encuentran a bordo de la máquina.
All wiring diagrams are constantly updated. Please refer to the ones supplied with the unit.
Nos schémas électriques étant constamment mis à jour, il faut absolument se référer à ceux fournis à bord de nos appareils.
Die Schaltpläne werden ständig aktualisiert, deswegen muss man sich stets auf das mit dem Gerät gelieferte Schaltschema beziehen.
El cableado de las máquinas es sometido a actualizaciones constantes. Por favor, para cada unidad remitirse a los esquemas suministrados con la misma.

VED
VMF-E0
VMF-E4
VMF-SIT3



Gli schemi elettrici sono soggetti ad un continuo aggiornamento, è obbligatorio quindi fare riferimento a quelli a bordo macchina.
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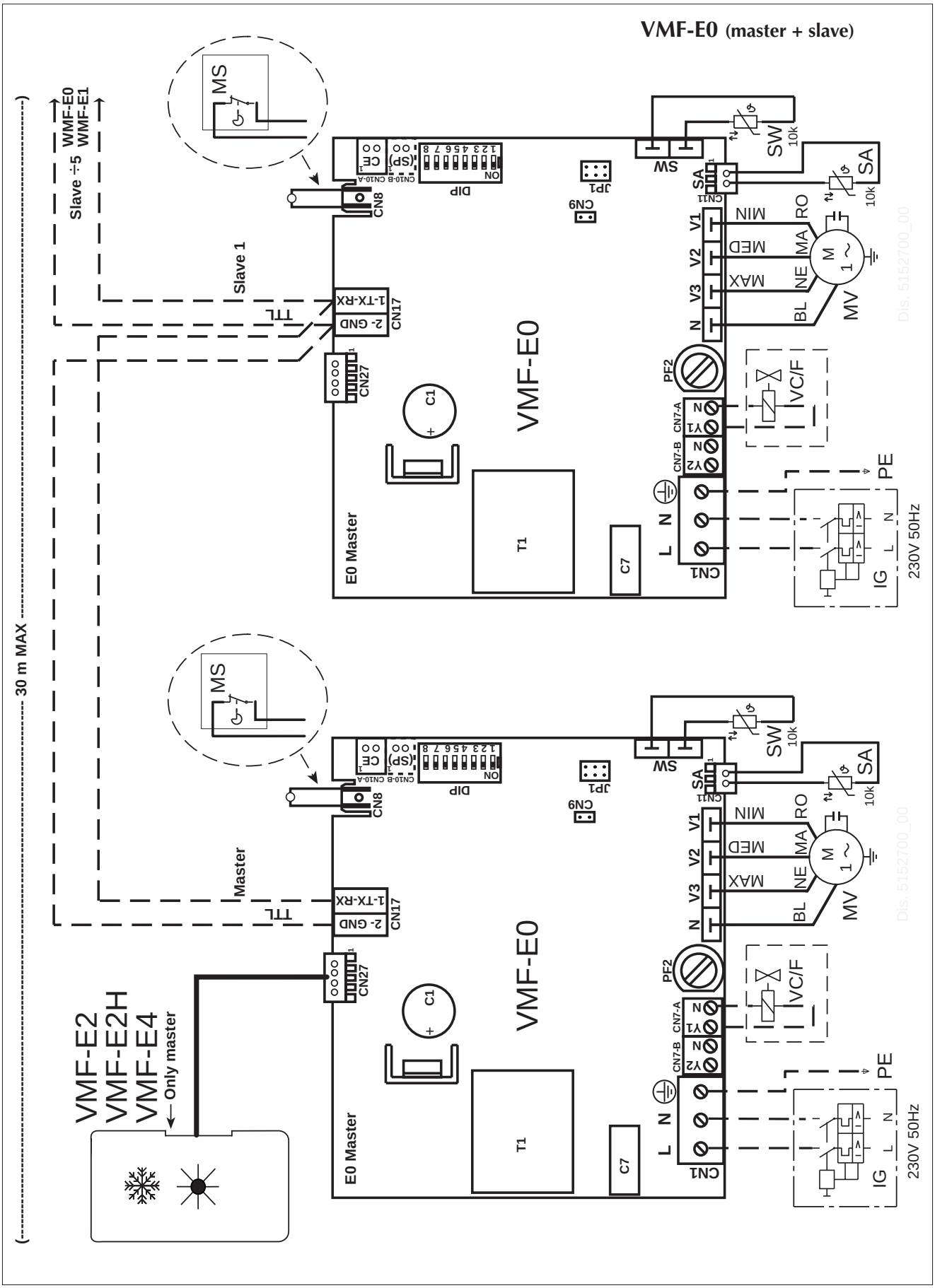

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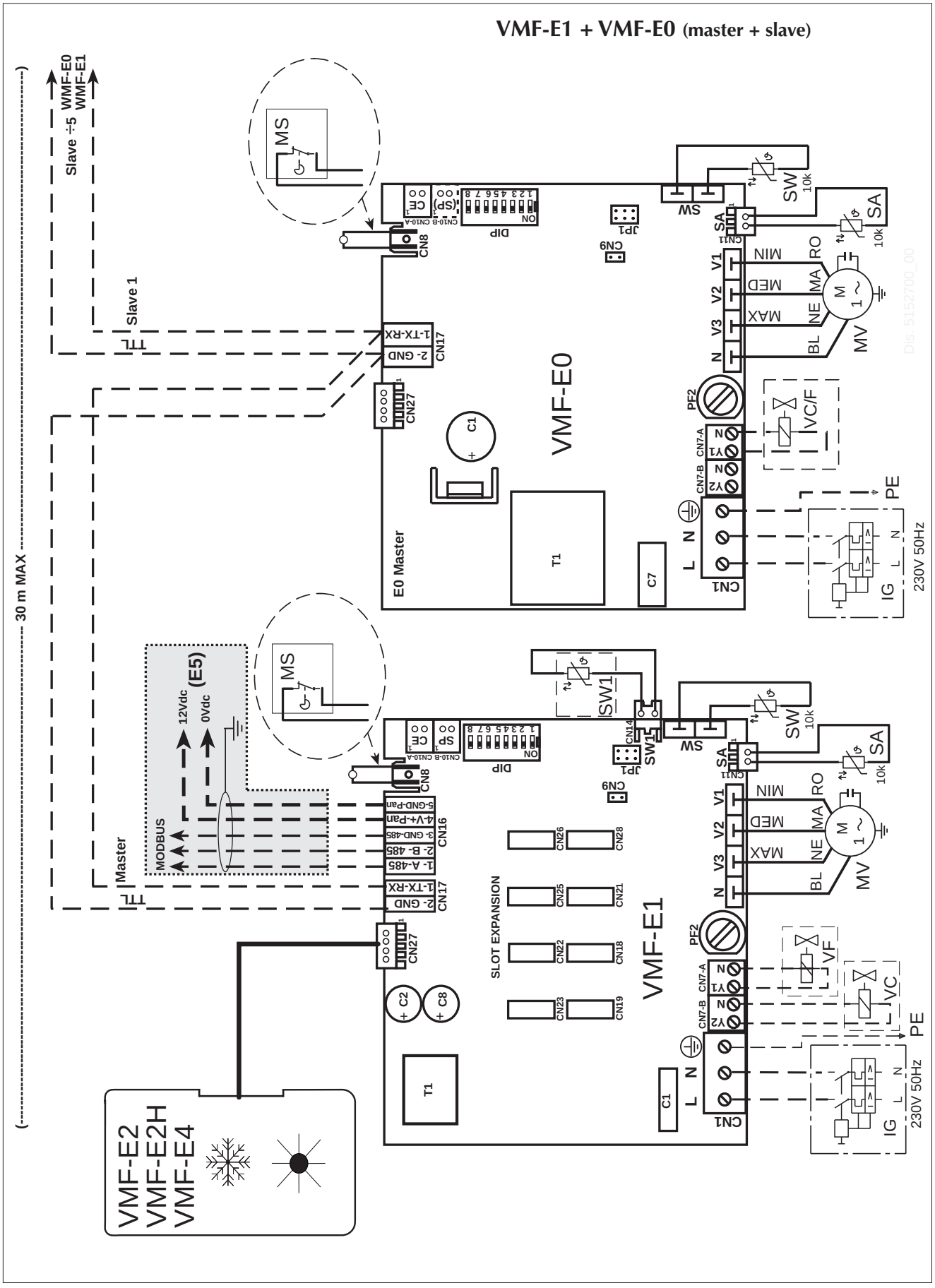

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