



ECA644 - ECA647 - EWF644 - EWF647 - ESE645 - ESE648  
EDA649 - EDB649 - EWG649 - EWW649  
E4T643 - E2T543 - B3V137  
B4V642 - B3V151- B3V152 - B10642

---

*We would first of all like to thank you for having chosen one of our products.*

*We are sure you will be happy with it because it represents the state of the art in the technology of home air conditioning.*

*By following the suggestions contained in this manual, the product you have purchased will operate without problems, giving you optimum room temperatures with minimum energy costs.*

*Innova S.r.l*

## Symbols

The pictograms in the next chapter provide the necessary information for correct, safe use of the appliance in a rapid,

unmistakable way.

## Editorial pictograms



User

Refers to pages containing instructions or information for the user.



Installer

Refers to pages containing instructions or information for the installer.



Service

Refers to pages containing instructions or information for the CUSTOMER TECHNICAL ASSISTANCE SERVICE installer.

## Safety pictograms



Warning

The operation described may cause physical harm if not carried out in accordance with safety regulations.



Dangerous electrical current

Make personnel aware that the operation described may lead to electrical shocks if not carried out in accordance with safety regulations.



High temperature danger

Of safety regulations, the risk of burns caused by contact with components with high temperatures.



Prohibition

Refers to prohibited actions.







## General table of contents

<b>1</b>	<b>GENERAL</b>	
1.1	General warnings . . . . .	5
<b>2</b>	<b>ECA644 - ECA647 - ESE645 - ESE648</b>	
2.1	Assembly, set-up and connection of on-board control panels ECA644, ESE645, ECA647, ESE648 . . . . .	6
2.2	Assembly . . . . .	6
2.3	Set-up of auxiliary dip-switch functions B and C. . . . .	7
2.4	CP presence contact input connection (only for ECA644 and ECA647 models) . . . . .	7
2.5	Air temperature probe assembly (only for models ECA644, ECA647) . . . . .	8
2.6	Cooling/Heating automatic settings (only for 4-tube units). . . . .	8
2.7	ECA644 and ECA647 connections . . . . .	9
2.8	ESE645 and ESE648 connections . . . . .	10
2.9	Continuous modulation circuit board for connecting remote thermostat (only for models ESE645 - ESE648) . . . . .	11
2.10	LED Indications (Ref. A) (only for models ESE645 - ESE648) . . . . .	11
<b>3</b>	<b>EDA649 - EDB649</b>	
3.1	Wall-mounted remote control panel assembly EDA649 - EDB649 . . . . .	12
3.2	Spring-loaded terminal connections -AB+ and CP . . . . .	12
3.3	CP occupancy contact input connection . . . . .	13
3.4	EDA649 - EDB649 Connections . . . . .	13
<b>4</b>	<b>EWV649 - EWG649</b>	
4.1	Wall-mounted remote control panel assembly EWV649 - EWG649 . . . . .	14
4.2	Spring-loaded terminal connections -AB+ and CP . . . . .	15
4.3	CP occupancy contact input connection . . . . .	15
4.4	EWV649 - EWG649 Connections . . . . .	16
<b>5</b>	<b>E4T643</b>	
5.1	Assembly and connections for on-board control panel E4T643 . . . . .	17
5.2	Assembly . . . . .	17
5.3	Air temperature probe assembly . . . . .	18
5.4	E4T643 Connections . . . . .	18
<b>6</b>	<b>SETTINGS MENU ECA644 - ECA647 - EWF644 - EWF647 - EDA/EDB649 - EWG/EWV649 - E4T643</b>	
6.1	Setup menu . . . . .	19
<b>7</b>	<b>E2T543</b>	
7.1	Assembly and connections for on-board control panel E2T543 . . . . .	22
7.2	Assembly . . . . .	22
7.3	Air temperature probe assembly . . . . .	23
7.4	E2T543 Connections . . . . .	23
7.5	Water probe kit management E2T543 . . . . .	23
<b>8</b>	<b>B3V137</b>	
8.1	Assembly and connections for on-board control panel B3V137 . . . . .	24
8.2	Assembly . . . . .	24
8.3	B3V137 Connections . . . . .	25
8.4	Warnings table . . . . .	25
<b>9</b>	<b>B4V642</b>	
9.1	Assembly and fitting of fan control for remote control B4V642 . . . . .	26
9.2	Assembly . . . . .	26
9.3	Connection diagram B4V642 with 3-speed thermostat . . . . .	27
9.4	B4V642 connections with 3-speed thermostat . . . . .	27
9.5	LED signals . . . . .	28
9.6	Water probe management with 3-speed thermostat . . . . .	28

<b>10</b>	<b>B4V642 + B3V151</b>	
10.1	B4V642 + B3V151 Connection Diagrams . . . . .	.29
10.2	B4V642 + B3V151 Connection Diagrams with seasonal switching . . . . .	.30
<b>11</b>	<b>B4V642 + B3V152</b>	
11.1	B4V642 + B3V152 Connection Diagrams . . . . .	.31
11.2	B4V642 + B3V152 Connection Diagrams with seasonal switching . . . . .	.32
<b>12</b>	<b>B10642</b>	
12.1	Assembly and fitting of fan control for remote control B10642. . . . .	.33
12.2	Assembly. . . . .	.33
12.3	LED signals . . . . .	.33
12.4	Connection diagram B10642 with 0-10V DC thermostats / signals. . . . .	.34
12.5	B10642 connections with 0-10V thermostats . . . . .	.34
<b>13</b>	<b>ED RS FULL FLAT VERSIONS</b>	
13.1	Full flat version connections . . . . .	.35
13.2	RS version connections . . . . .	.35
<b>14</b>	<b>VERSIONS WITH CONNECTIONS ON THE RIGHT</b>	
14.1	Motor connection in versions with hydraulic connections on the right BB0646 . . . . .	.36

## GENERAL

### 1.1 General warnings

-  This instruction is an integral part of the booklet of the appliance on which the kit is installed. Please consult this booklet for general warnings and fundamental safety rules.
-  This manual is designed only for the qualified and authorised installation technician, who must be sufficiently trained and in possession of all psycho-physical requirements as per the law.
- All operations must be carried out with care and according to best practices, and in compliance with workplace safety regulations.
-  After unpacking, check that the contents are intact and that all parts are included. If not, contact the agent who sold the appliance to you.
-  It is forbidden to modify the safety or adjustment devices without authorisation from and indications of the manufacturer.
-  It is forbidden to dispose of, or leave in the reach of children, the packaging materials which could become a source of danger.
-  Repairs or maintenance must be performed by the Technical Assistance Service or by qualified personnel in accordance with this manual. Do not modify or tamper with the appliance as this could create dangerous situations and the manufacturer will not be liable for any damage caused.

## ECA644 - ECA647 - EWF644 - EWF647 - ESE645 - ESE648

### 2.1 Assembly, set-up and connection of on-board control panels ECA644, ESE645, ECA647, ESE648

The controllers have two independent clean contacts for controlling a refrigerator unit, a boiler and a presence input. The 2 tube versions have a 230V output to power the summer and winter solenoid valve whereas the 4-tube versions have two independent 230V outputs for controlling a summer solenoid valve and a winter valve. The 10 k $\Omega$  water temperature probe positioned in the

compartment on the battery regulations the minimum level when heating (30°C) and the maximum level when cooling (20°C).

The board also has a function when there is no water probe, in such cases the fan stop thresholds are ignored.

### 2.2 Assembly

Slide the control panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).

To install the connection box:

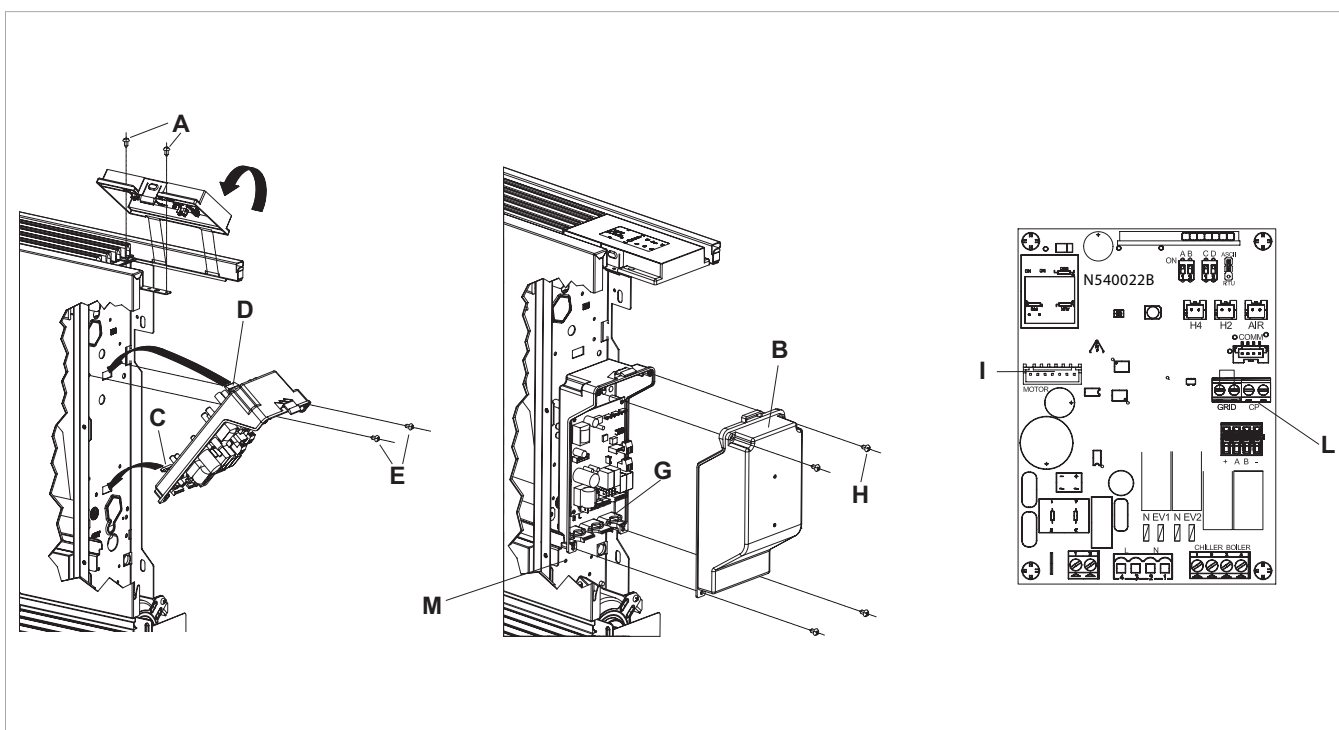
- open the box (ref. B);
- lock the lower tooth into its hole (ref. C) on the side of the device;
- hook the upper part of the box to the side (ref. D);
- fix it with the two fixing screws (ref. E);
- connect the grounding cable to the fan coil body (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- connect the fast connector of the MOTOR to the other on the board (ref. I) \*;
- on the two GRID block terminals (ref. L) there is a bridge that allows SLI and RSI versions to work without a microswitch.
- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch\*;
- connect the water probe to the H2 connector on the device.

The water temperature probe controls the temperature inside the batteries and determines when the fan starts according to pre-set parameters (minimum operation in winter and maximum in summer).\*\* Check that they are correctly inserted into the compartment on the battery.

- Connect the electrics, tidy cables and fix them with the three clevises supplied (ref. G);
- close the box with the 4 screws (ref. H);
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the control panel;
- place the screw head covers in their housing on the control panel;

\* For versions with hydraulic connections on the right, refer to the relevant paragraph

\*\* The regulation also works without a water probe connected



### 2.3 Set-up of auxiliary dip-switch functions B and C

There are two dip switches on the controller circuit board for configuring unit operation as per requirements.

- The night-time heating operation logic is modified by using dip switch C:
- in the ON position, the fan is always off, and heats the room using radiation and natural convection, as with traditional radiators; in the off position it operates as a normal fan.
- By positioning dip switch B to ON, when cooling, the fan operates at the minimum speed even after having

reached the set point, to allow for more uniform operation of the temperature probe and to avoid layering in the air. With the cursor in the OFF position, the functions are cycled (4 minutes ON, 10 minutes OFF).

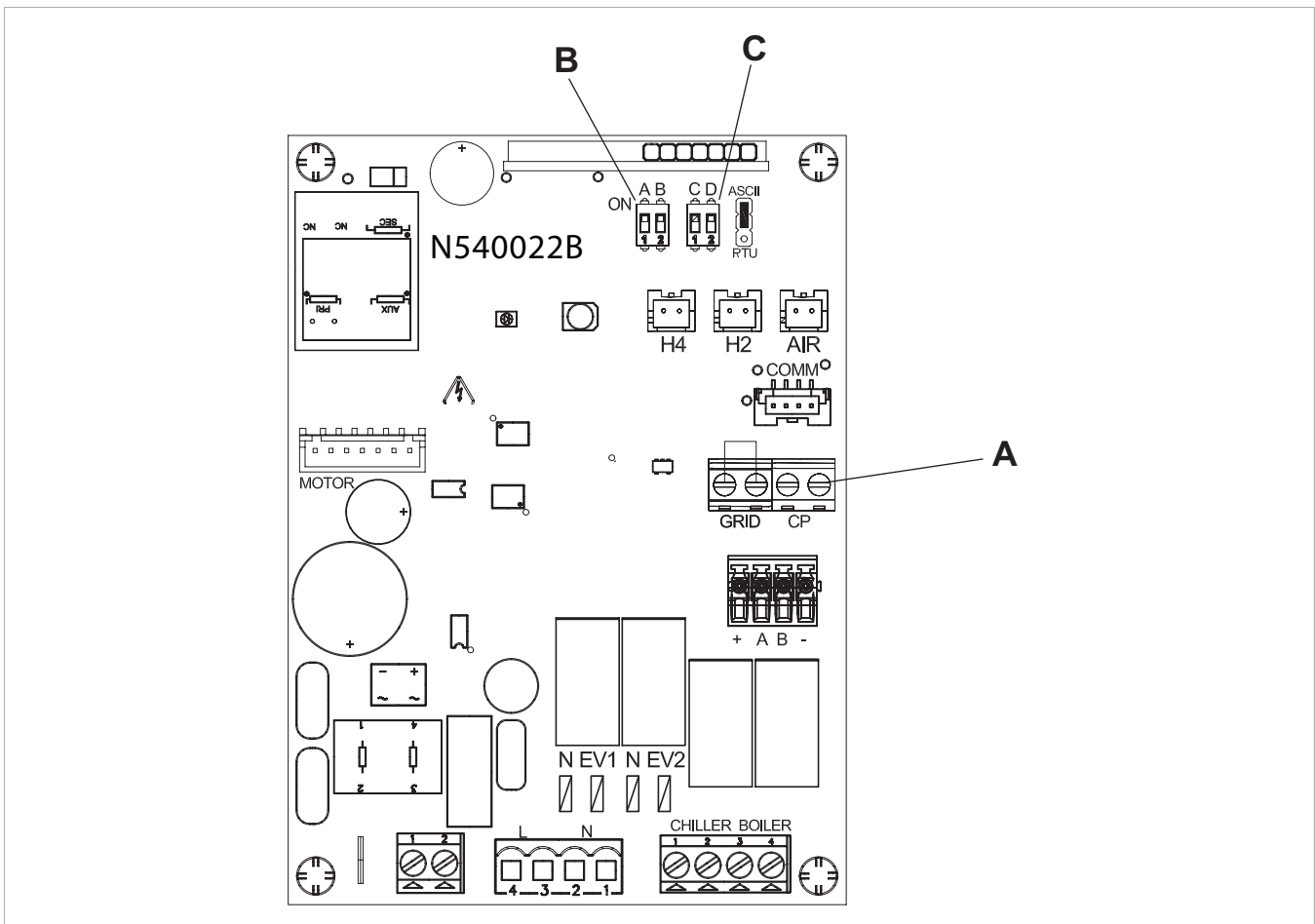
EN

### 2.4 CP presence contact input connection (only for ECA644 and ECA647 models)

On closing the contact connected to the CP input (ref. A) the panel is placed in stand-by mode.

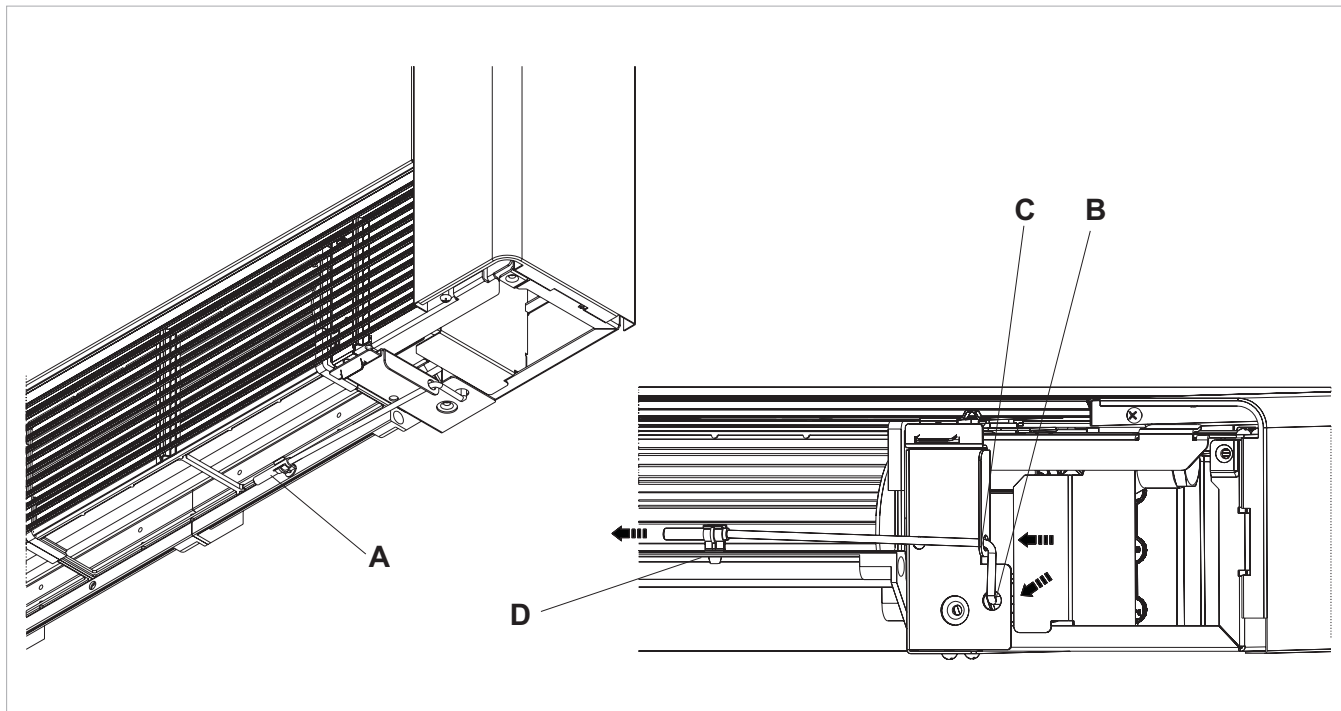
If the contact is open the unit is active, if the contact is closed it is deactivated when a key is pressed the ⚠ symbol flashes.

The input cannot be connected in parallel to that of other electronic boards (use separate contacts).



## 2.5 Air temperature probe assembly (only for models ECA644, ECA647)

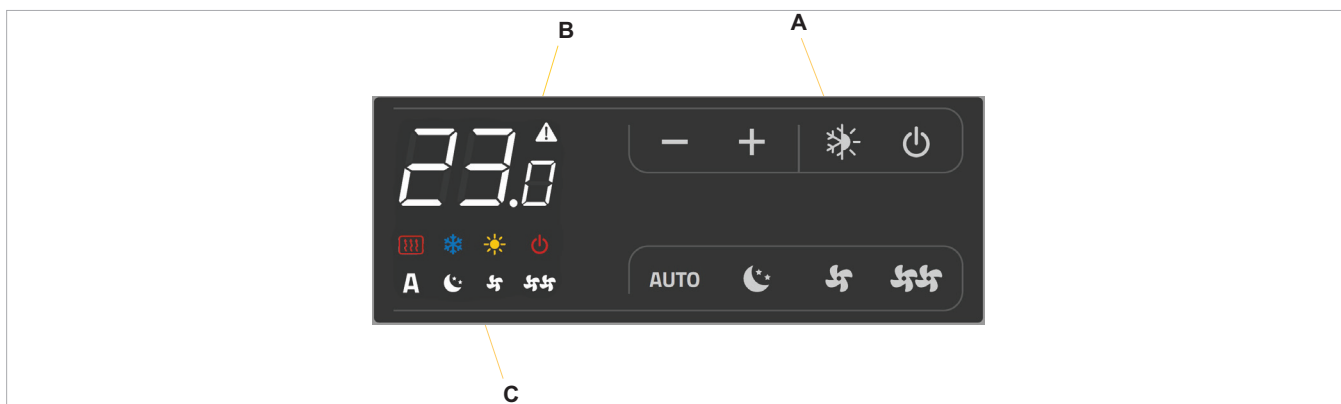
- To position the temperature probe (ref. A):
- pass the probe through the hole on the shoulder (ref. B)
- insert the probe into the lower hole (ref. C)
- fix the probe on the relevant hook (ref. D)



## 2.6 Cooling/Heating automatic settings (only for 4-tube units)

By regulating these settings, the system can select either heating or cooling automatically, excluding normal manual selection. This setting is particularly suitable for 4-tube versions. This regulation system can only be activated by a qualified and authorised installer. To activate this function, press the summer/winter key (ref. A) for 10 seconds until both the cooling (ref. C) and heating (ref. B) symbols come on together. To return to the cooling only or heating only setting, press and hold the summer/winter key (ref. A) for 10 seconds until the cooling (ref. C) and heating (ref. B) symbols switch off. Press the key again to select winter mode. Check the heating symbol is working (ref. B) (on

when set point is higher than ambient temperature, both are off when the set point is lower. Press the summer/winter key once to select summer mode. Check the cooling symbol is working (ref. B) (on when set point is lower than ambient temperature, both are off when the set point is higher). This selection is saved even if the power is turned off.





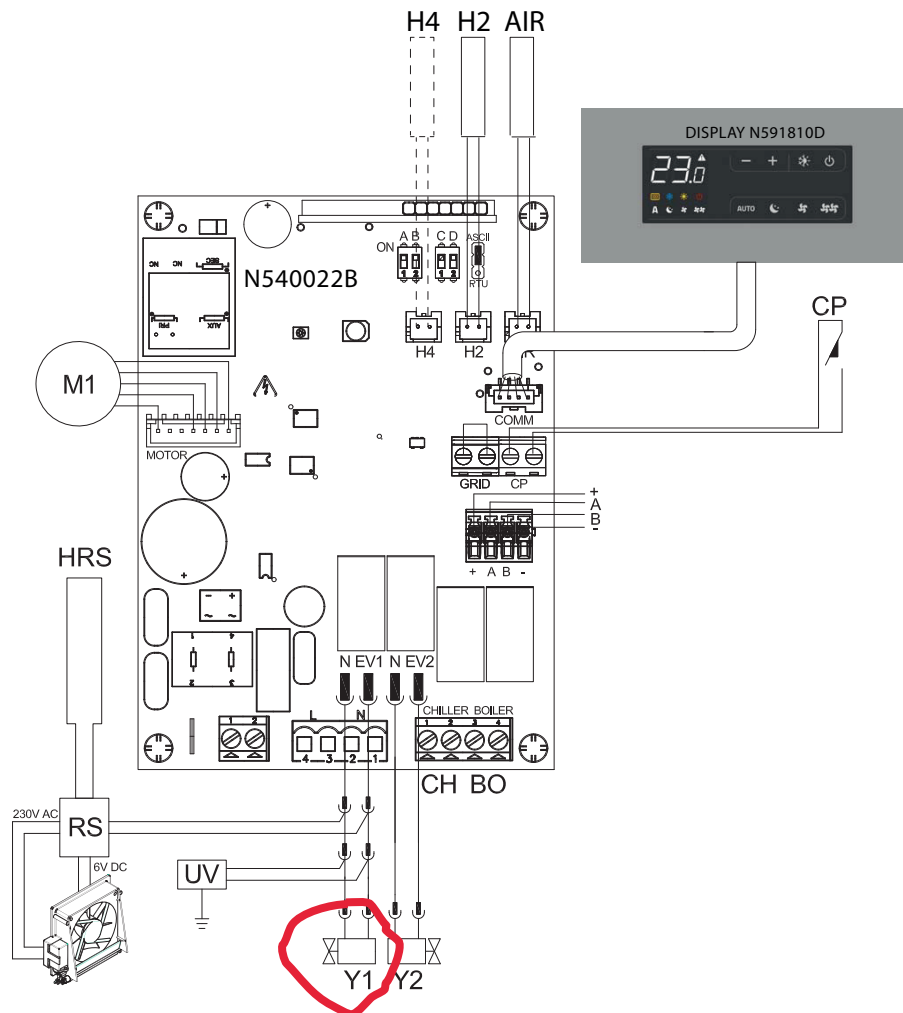
2.7 ECA644 and ECA647 connections

<b>H2*</b>	water temperature probe (10 kΩ)
<b>H4*</b>	water temperature probe 4 pipes (10 kΩ) (only for ECA 647)
<b>AIR</b>	air temperature probe (10 kΩ)
<b>M1</b>	DC inverter fan motor
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)
<b>Y2</b>	4 pipe water solenoid valve (ECA647 only) or mobile flap connection (ECA644 only). 230V/ 50Hz 1A output voltage.
<b>L-N</b>	230V/50Hz electrical power supply
<b>UV</b>	UV lamp connection

<b>BO</b>	boiler consent output (free contact max 1A)
<b>CH</b>	chiller consent output (free contact max 1A)
<b>CP</b>	presence input sensor (if closed, the fan coil unit is placed in standby).
<b>HRS</b>	RS water probe (10 kΩ) (ECA644 only)
<b>RS</b>	RS version cabling (ECA644 only)
<b>*</b>	If after switching the power on the board detects the H2 probe, start-up occurs in normal conditions with the minimum water temperature when heating (30°C) and maximum when cooling (20°C). The board also has a function when there is no probe, in such cases the fan stop minimum and maximum thresholds are ignored.

EN

ECA644, ECA647, EWF644, EWF647

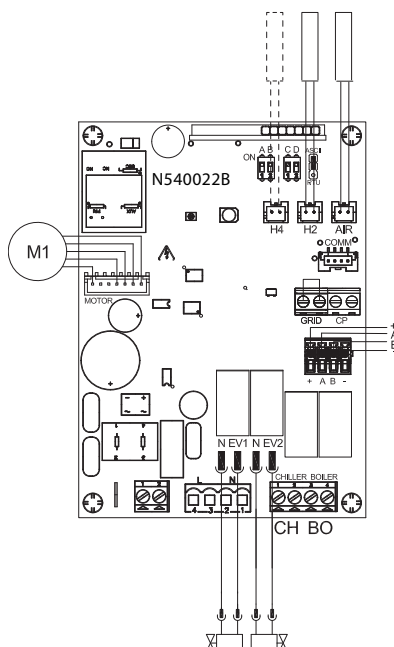


## 2.8 ESE645 and ESE648 connections

<b>+AB-</b>	serial connection for wall-mounted remote control EDA/EDB649 - EWG/EWW649 (respect AB polarity)
<b>H2**</b>	hot water temperature probe (10 kΩ)
<b>H4**</b>	cold water temperature probe (10 kΩ) (648 only)
<b>M1</b>	DC inverter fan motor
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)
<b>Y2</b>	4 pipe water solenoid valve (ESE648) or mobile flap (ESE645). (230V/ 50Hz 1A output voltage)
<b>L-N</b>	230V/50Hz electrical power supply
<b>BO</b>	boiler consent output (free contact max 1A)
<b>UV</b>	UV lamp connection

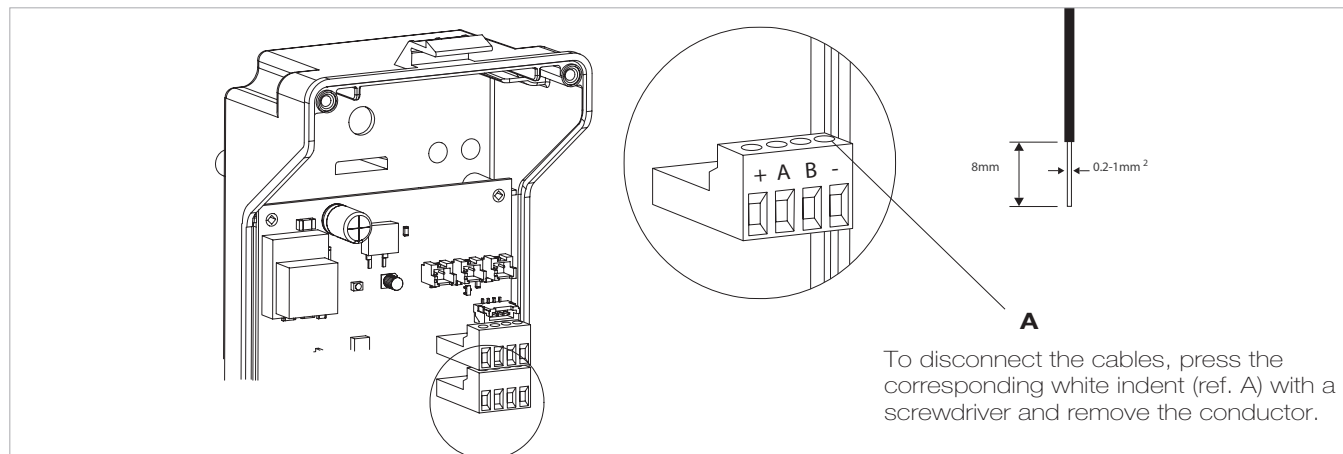
<b>CH</b>	chiller consent output (free contact max 1A)
<b>HRS</b>	RS water probe (10 kΩ) (ESE645 only)
<b>AIR</b>	Air probe optional (*)
<b>RS</b>	RS version cabling (ESE645 only)
<b>*</b>	Alternatively, connect the wall-mounted controller EDA/EDB649 - EWG/EWW649 to the air probe
<b>**</b>	If after switching the power on the board detects the H2 probe, start-up occurs in normal conditions with the minimum water temperature when heating (30°C) and maximum when cooling (20°C). The board also has a function when there is no probe, in such cases the fan stop minimum and maximum thresholds are ignored.

### ESE645, ESE648



Rigid or flexible wires with a 0.2 to 1 mm<sup>2</sup> cross-section (0.75 mm<sup>2</sup> if two wires are connected to the same terminal block) can be inserted in the 4 terminal blocks (ref. A) for connection of the wall-mounted controller EDA/EDB649 - EWG/EWW649. If the wires have wire end ferrules with a plastic collar, the maximum cross-section is 0.75 mm<sup>2</sup>.

Strip 8 mm of the wire, then if the wire is rigid, you can insert it easily whereas, if it is flexible, it is advisable to use long nose pliers. Push the wire completely in and check that it is anchored by pulling it gently.



## 2.9 Continuous modulation circuit board for connecting remote thermostat (only for models ESE645 - ESE648)

The circuit board for remote control is for all functions of the fan coil system from the wall-mounted remote control EDA/EDB649 - EWG/EWW649.

A remote control can be connected to a maximum of 30 fan coils that will be controlled in broadcast mode (simultaneous commands to all fan coils).

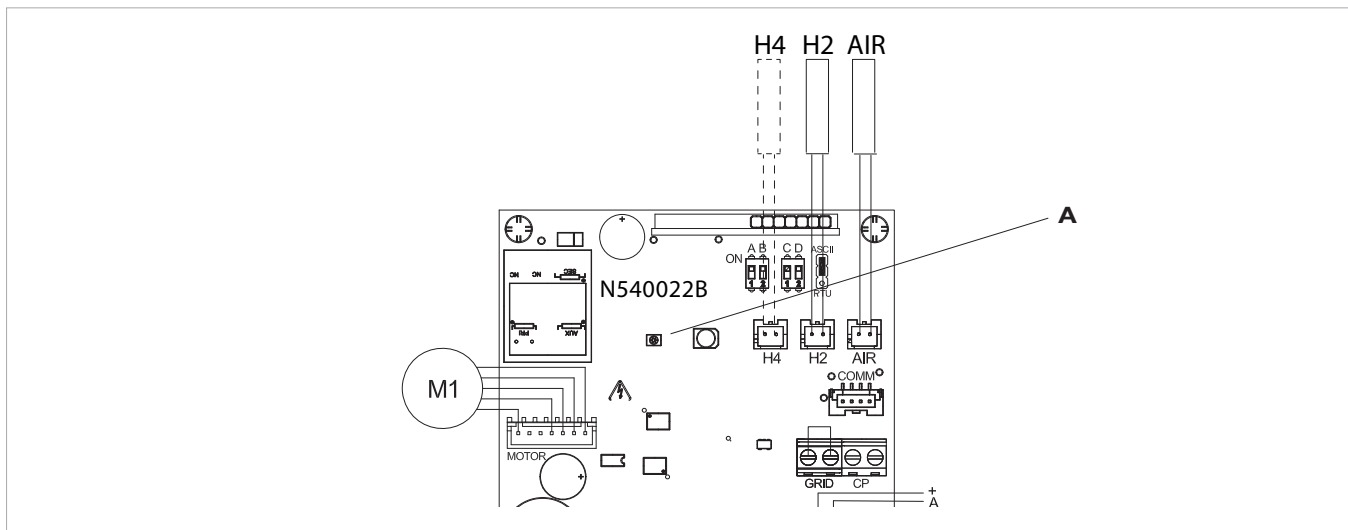
It can be installed on all versions, the board has a green LED that indicates the operational state and any anomalies.

The main operational parameters, the set point and the



room temperature are transmitted from the wall-mounted remote control EDA/EDB649 - EWG/EWW649 to all terminals connected to the network, allowing unified operation.

Refer to the instructions for this control for use of the fan coils.

The 10 kΩ water temperature probe positioned in the device battery regulations the minimum level when heating (30°C) and the maximum level when cooling (20°C).



## 2.10 LED Indications (Ref. A) (only for models ESE645 - ESE648)

	Green LED: Indicates that the unit is operational. Flashing indicates an anomaly.		LED off: unit is off or has no power.
---	---	---	---------------------------------------

### Segnalazioni d'errore

Error	Display
Communication error. The circuit board expects continuous information exchange on the serial line with the wall-mounted control EDA/EDB649 - EWG/EWW649. If this exchange is lost for more than 5 minutes, an error warning is displayed and the unit deactivated.	6 flashes + pause
Problem with fan motor (e.g. blockage caused by foreign objects, faulty rotation sensor).	2 flashes + pause
Water temperature probe fault for 2-tube versions (H2). In this case, ensure that the probe installed is 10 kΩ.	3 flashes + pause
Cold water temperature probe fault for 4-tube versions (H4). (Only for ESE648) positioned on the main battery.	5 flashes + pause
GRID contact open	Continuous rapid flashing
Water demand detected by probe H2 insufficient (above 20°C when cooling, below 30°C when heating). Stops the fan until the temperature returns to a suitable level to satisfy the demand*.	1 flashes + pause
Only for board ESE648 (4-tube machines): cold water demand detected by probe H4 insufficient (above 20°C). Stops the fan until the temperature returns to a suitable level to satisfy the demand*.	4 flashes + pause

\* If after having powered the board the water probe is detected, start-up takes place with the minimum and maximum water temperature thresholds.

The board also has a function when there is no probe, in such cases the fan stop thresholds are ignored.

## EDA649 - EDB649

### 3.1 Wall-mounted remote control panel assembly EDA649 - EDB649

The wall-mounted remote control EDA/EDB649 is an electronic thermostat (fitted with an optional temperature probe which can be remotely installed in one of the fan coils connected to it) with the possibility to control one or more units (up to max. 30) fitted with an electronic controller for remote control ESE645 or ESE648.

- Install the wall-mounted remote control EDA/EDB649 away from doors and/or windows and from heat sources (radiators, fan coils, hobs, direct sunlight), on internal walls and around 1.5m from the floor.

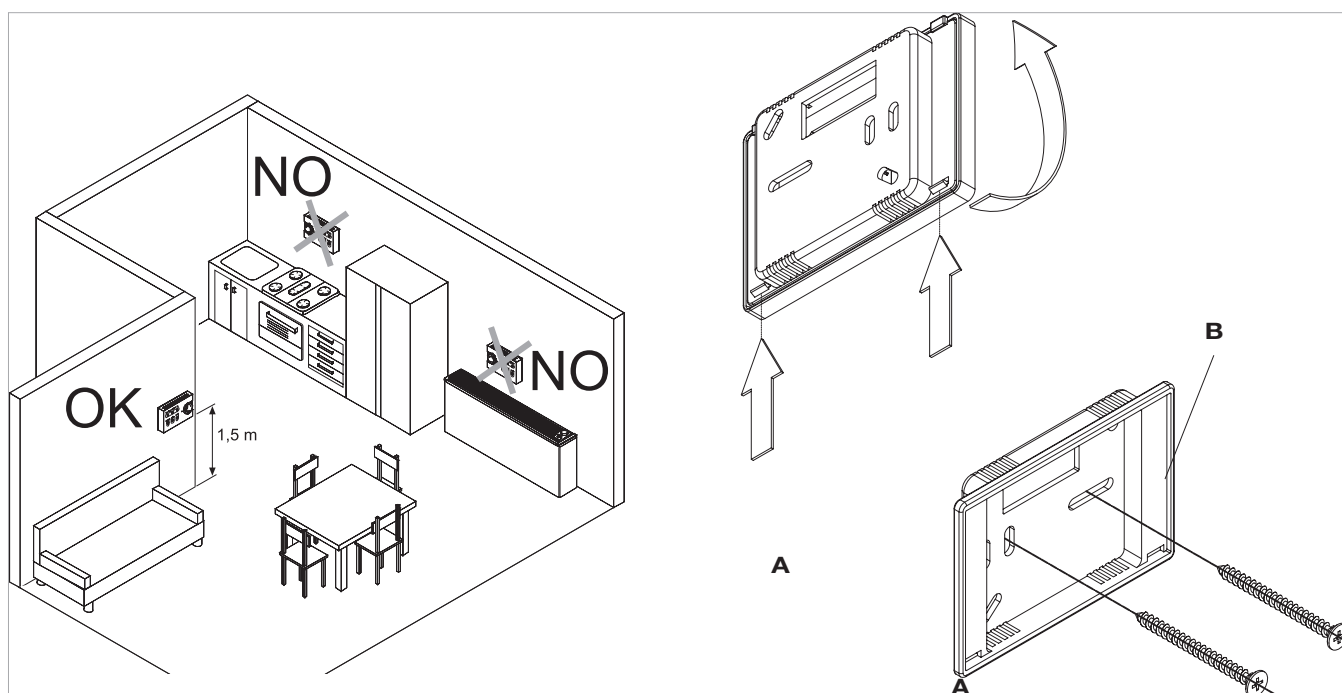
The wall-mounted remote control is inside the pre-assembled package, therefore prior to affixing to the wall, the two parts should be separated by unhooking the two

protruding teeth on the rear (A).

Use the base of the controller (ref. B in diagram) to trace the fixing points on to the wall (use two opposing holes).

Then proceed with the following operations:

- drill holes in the wall;
- pass the cables through the window on the base;
- fix the base of the controller to the wall using suitable screws and wall plugs;
- make the electrical connections then close the controller taking care not to crush the conducting wires.

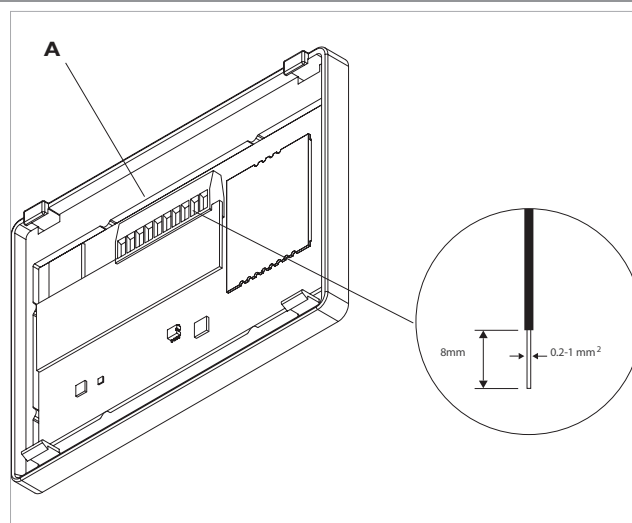


### 3.2 Spring-loaded terminal connections -AB+ and CP


Rigid or flexible wires with a 0.2 to 1 mm<sup>2</sup> cross-section can be inserted in the spring-loaded terminal blocks for the serial connection. If the wires have wire end ferrules with a plastic collar, the maximum cross-section reduced to 0.75 mm<sup>2</sup>.


For correct and safe connection, carry out the following operations:

- Strip back the wires by 8mm as shown below;
- if the cable is rigid the end of the wire can be inserted easily, whereas with flexible cable it may be easier to use a long pointed pair of pliers to insert correctly.
- Push the wire completely in and check that it is anchored by pulling it gently.
- To disconnect the cables, press the corresponding white indent (ref. C) with a screwdriver and remove the conductor.



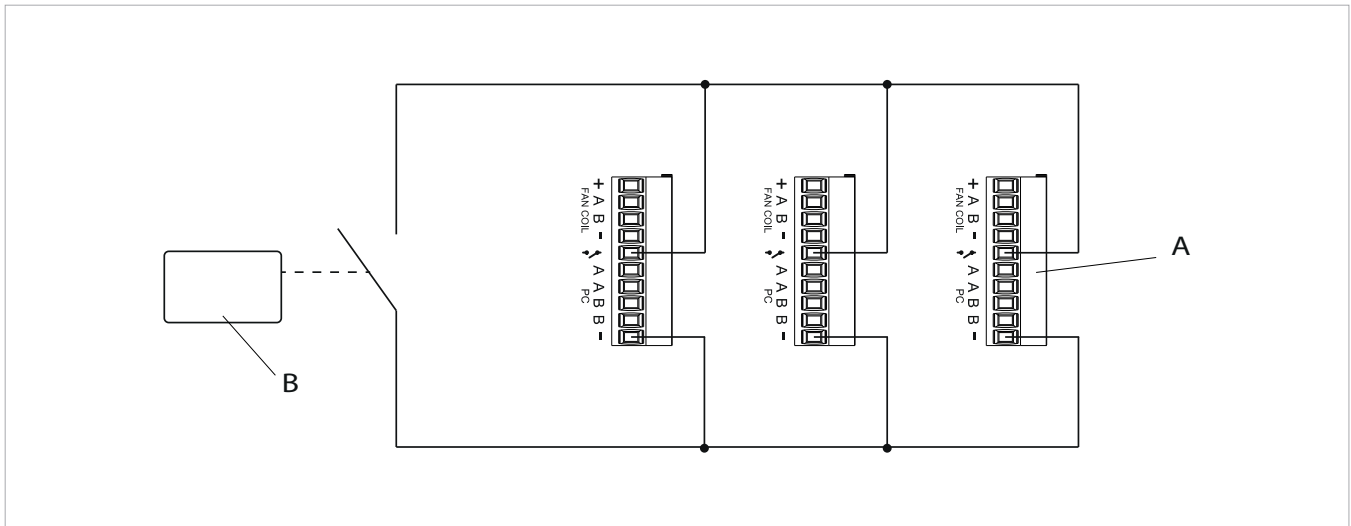
### 3.3 CP occupancy contact input connection

On closing the contact connected to the CP input (ref. A) the panels are placed into stand-by. If the contact is open the units are active, if the contact is closed they are deactivated when a key is pressed the  symbol flashes.

-  The input cannot be connected in parallel to that of other electronic boards (use separate contacts).

	contact CP
-	contact -

<b>A</b>	remote control terminal block
<b>B</b>	auxiliary relay

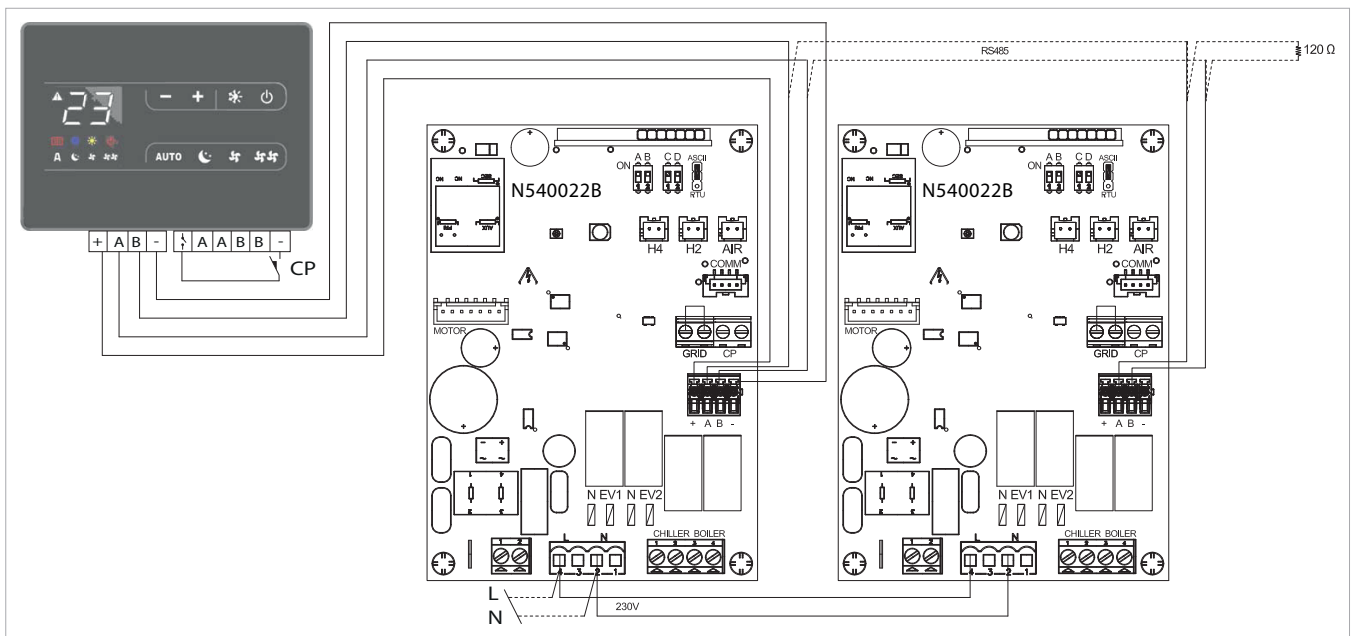


### 3.4 EDA649 - EDB649 Connections

Connect the RS485 line of the wall-mounted remote control to one or more (up to a maximum of 30) devices fitted with electronics for remote control ESE645 or ESE648 using a suitable two-core cable for serial connections RS485 keeping the power supply cables separate.

- Chase out the wall in order to minimise the length of the leads;
- complete the line with the supplied 120 Ω heating element;

- do not make "star" connections;
- The RS485 cable connection is polarised, respect the "A" and "B" indications on every periphery connected (for connecting, it is preferable to use a shielded two-core cable with a minimum thickness of 0.35 mm<sup>2</sup>);
- connect the + and - power terminals on the wall mounted terminal block, 12 V DC, to one of the boards ESE645 or ESD 648, respecting polarity.



## EWG649 - EWW649

### 4.1 Wall-mounted remote control panel assembly EWW649 - EWG649

The wall-mounted remote control EWG/EWW649 is an electronic thermostat (fitted with an optional temperature probe which can be remotely installed in one of the fan coils connected to it) with the possibility to control one or more units (up to max. 30) fitted with an electronic controller for remote control ESE645 or ESE648.

- Install the wall-mounted remote control EWG/EWW649 away from doors and/or windows and from heat sources (radiators, fan coils, hobs, direct sunlight), on internal walls and around 1.5m from the floor.

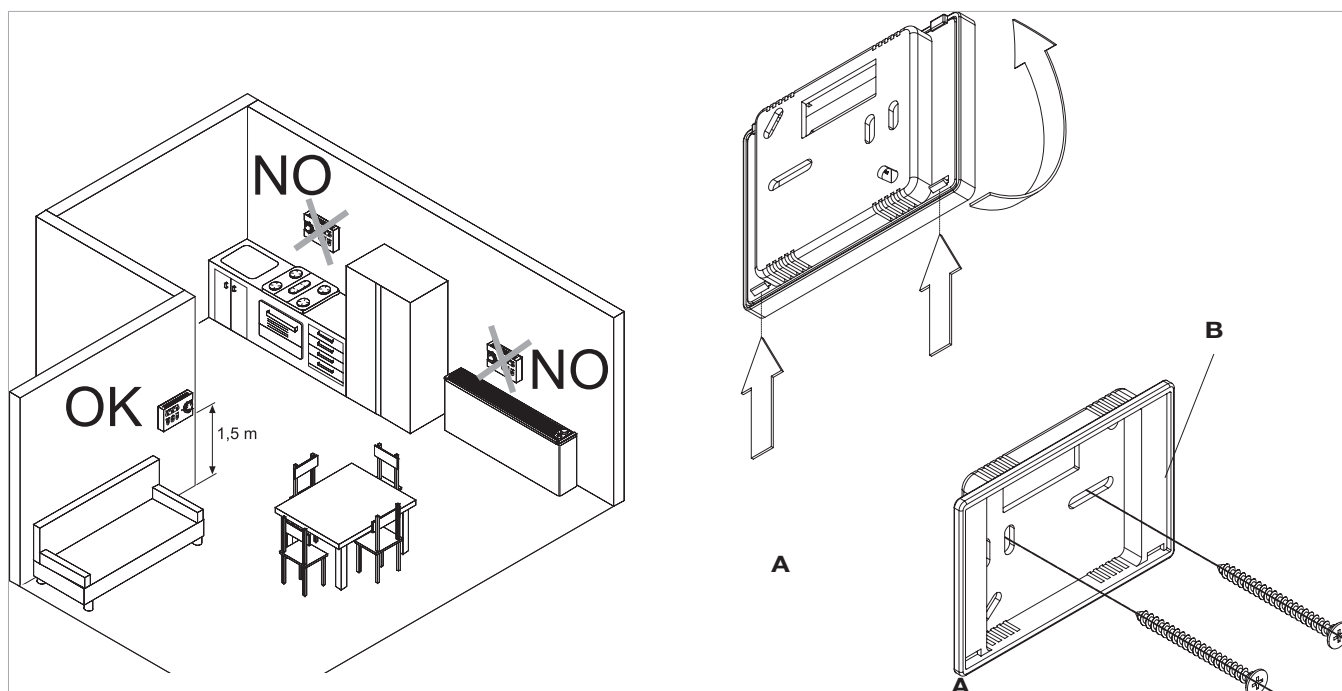
The wall-mounted remote control is inside the pre-assembled package, therefore prior to affixing to the wall, the two parts should be separated by unhooking the two

protruding teeth on the rear (A).

Use the base of the controller (ref. B in diagram) to trace the fixing points on to the wall (use two opposing holes).

Then proceed with the following operations:

- drill holes in the wall;
- pass the cables through the window on the base;
- fix the base of the controller to the wall using suitable screws and wall plugs;
- make the electrical connections then close the controller taking care not to crush the conducting wires.



## 4.2 Spring-loaded terminal connections +AB- and CP

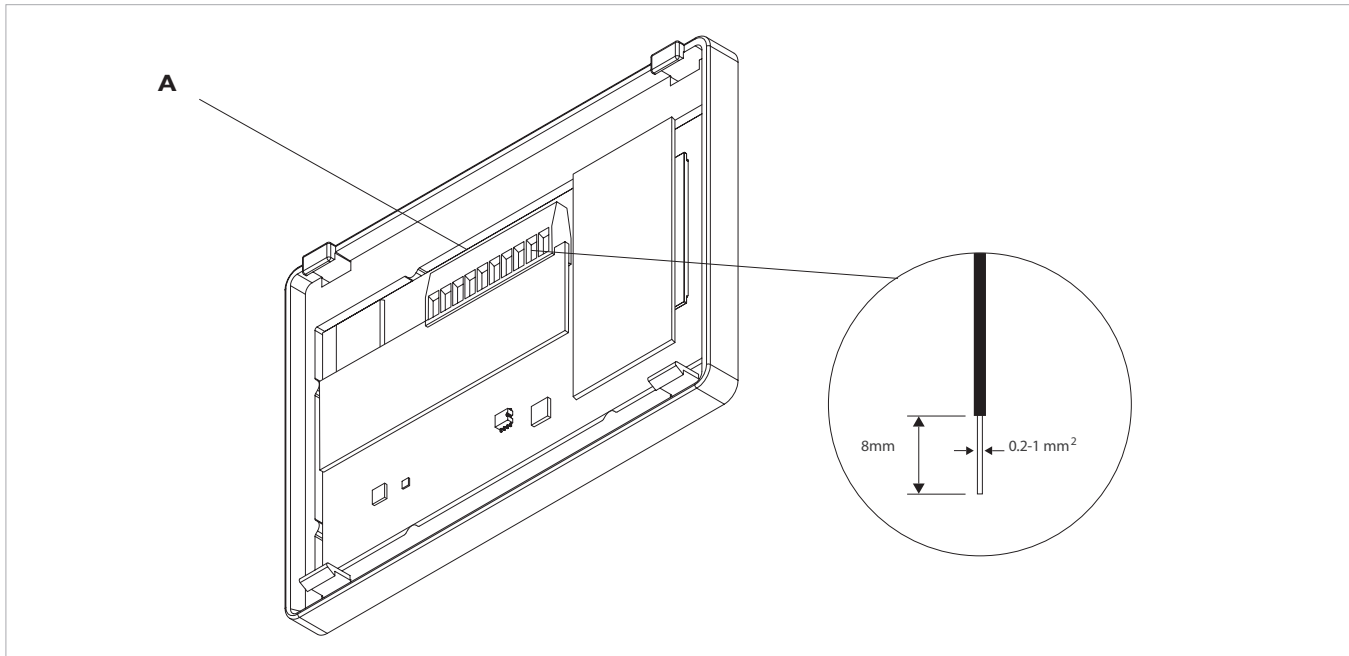
Rigid or flexible wires with a 0.2 to 1 mm<sup>2</sup> cross-section can be inserted in the spring-loaded terminal blocks for the serial connection. If the wires have wire end ferrules with a plastic collar, the maximum cross-section reduced to 0.75 mm<sup>2</sup>.

For correct and safe connection, carry out the following operations:

- Strip back the wires by 8mm as shown below;
- if the cable is rigid the end of the wire can be inserted

- easily, whereas with flexible cable it may be easier to use a long pointed pair of pliers to insert correctly.
- Push the wire completely in and check that it is anchored by pulling it gently.
- To disconnect the cables, press the corresponding white indent (ref. C) with a screwdriver and remove the conductor.

EN



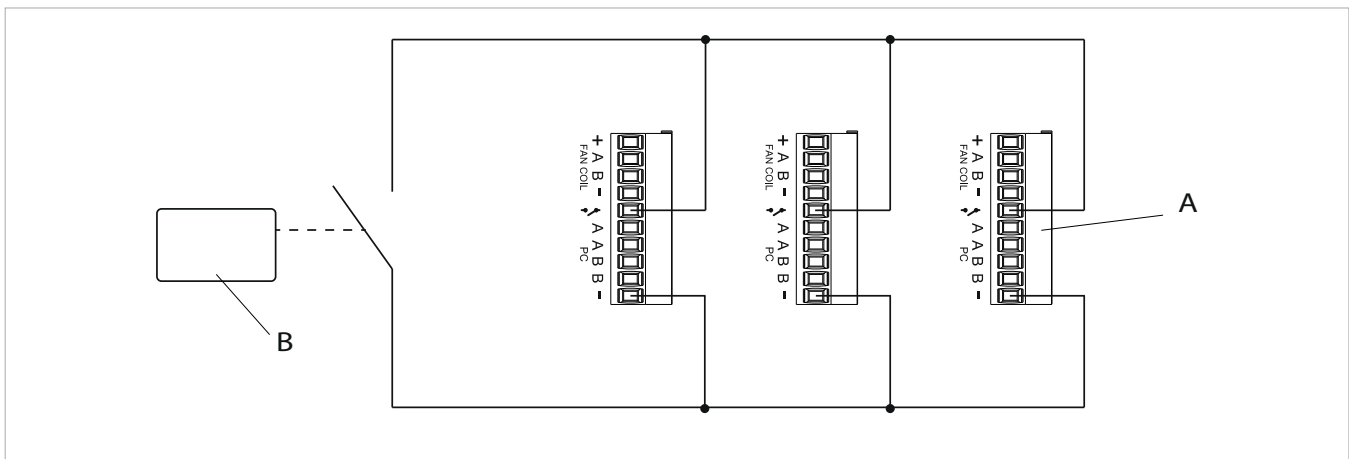
## 4.3 CP occupancy contact input connection

On closing the contact connected to the CP input (ref. A) the panels are placed into stand-by. If the contact is open the units are active, if the contact is closed they are deactivated when a key is pressed the ⚠ symbol flashes.

- ⚠ The input cannot be connected in parallel to that of other electronic boards (use separate contacts).

	contact CP
-	contact -

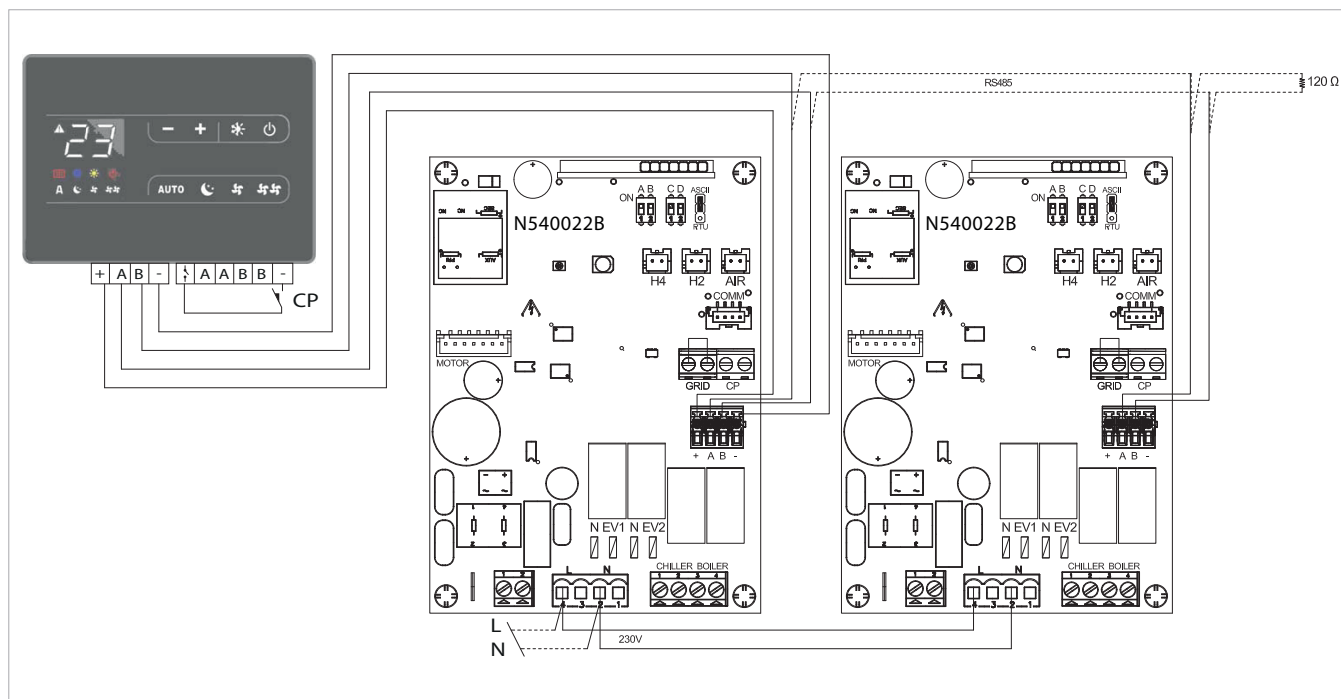
<b>A</b>	remote control terminal block
<b>B</b>	auxiliary relay



### 4.4 EWW649 - EWG649 Connections

Connect the RS485 line of the wall-mounted remote control to one or more (up to a maximum of 30) devices fitted with electronics for remote control ESE645 or ESE648 using a suitable two-core cable for serial connections RS485 keeping the power supply cables separate.

- Chase out the wall in order to minimise the length of the leads;
- complete the line with the supplied 120 Ω heating element;
- do not make "star" connections;
- The RS485 cable connection is polarised, respect the "A" and "B" indications on every periphery connected (for connecting, it is preferable to use a shielded two-core cable with a minimum thickness of 0.35 mm<sup>2</sup>);
- connect the + and - power terminals on the wall mounted terminal block, 12 V DC, to one of the boards ESE645 or ESD 648, respecting polarity.





## E4T643

### 5.1 Assembly and connections for on-board control panel E4T643

The on-board controller is a panel with 8 capacitive keys and amber display that contains the AUTO function (step ventilation adjustment).

The E4T643 thermostat can be set from 5 to 40°C, has a winter and summer selector and the 10 kΩ water temperature probe positioned in the compartment on the battery regulations the minimum level when heating (30°C) and the maximum level when cooling (20°C). It is suitable

for installing on board and has a 230V output for controlling a solenoid valve.

It can furthermore control the 4 tube versions, any resistance outputs or the full flat actuator for mobile grills via a relay fitted to the board.

The board also has a function when there is no H2 probe, in such cases the fan stop thresholds are ignored.

### 5.2 Assembly

Slide the control panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A). To install the connection box:

- open the box (ref. B);
- lock the lower tooth into its hole (ref. C) on the side of the device;
- hook the upper part of the box to the side (ref. D);
- fix it with the two fixing screws (ref. E);
- connect the grounding cable to the unit structure (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- connect the fast connector of the MOTOR to the other on the board (ref. I) \*;
- on the two GRID block terminals (ref. L) there is a bridge that allows in-built SLI and RSI versions to work without a microswitch.

For versions in-built into the formwork, follow the microswitch connection instructions on the instruction sheet of the vanity panel.

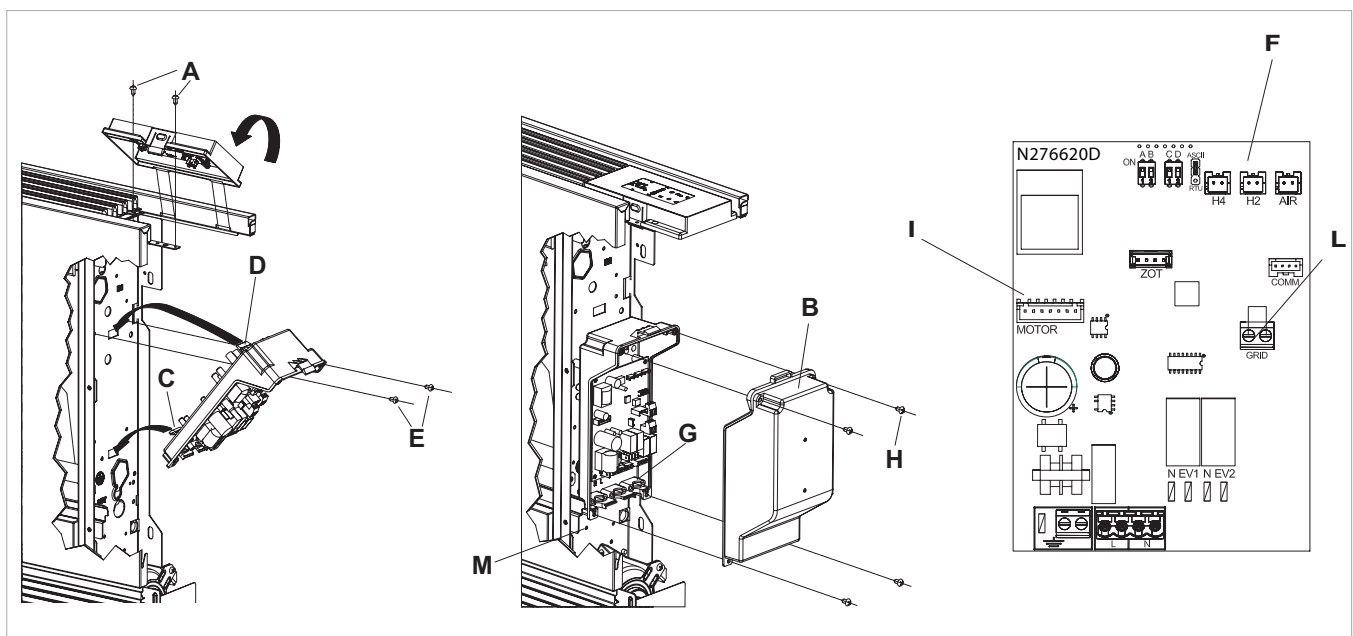
For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch\*;

- connect the water probe connector (ref. F) on the unit. The water temperature probe controls the temperature inside the batteries and determines when the fan starts according to pre-set parameters (minimum operation in winter and maximum in summer).\*\*
- Check that they are correctly inserted into the compartment on the battery.
- Connect the electrics, tidy cables and fix them with the three clevises supplied (ref. G);
- close the box with the 4 screws (ref. H);
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the control panel;
- place the screw head covers in their housing on the control panel;

**\*N.B.:** \* For versions with hydraulic connections on the right, refer to the relevant paragraph

\*\* If after switching the power on the board detects the H2 probe, start-up occurs in normal conditions with the minimum and maximum functions.

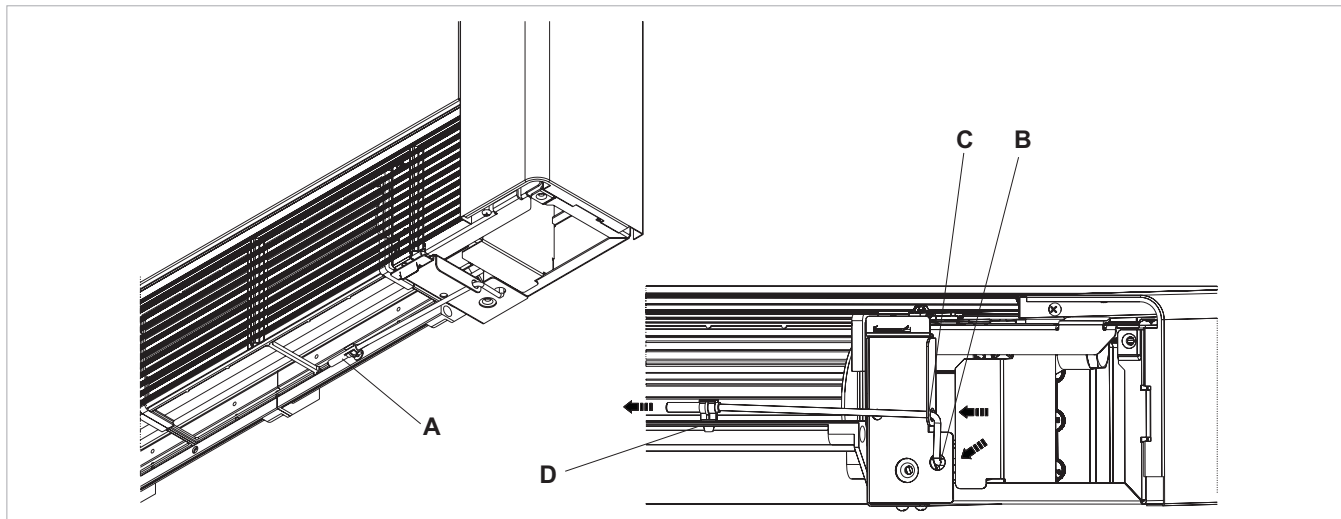
The board also has a function when there is no H2 probe, in such cases the fan stop thresholds are ignored.



### 5.3 Air temperature probe assembly

To position the temperature probe (ref. A):  
 - pass the probe through the hole on the shoulder (ref. B)

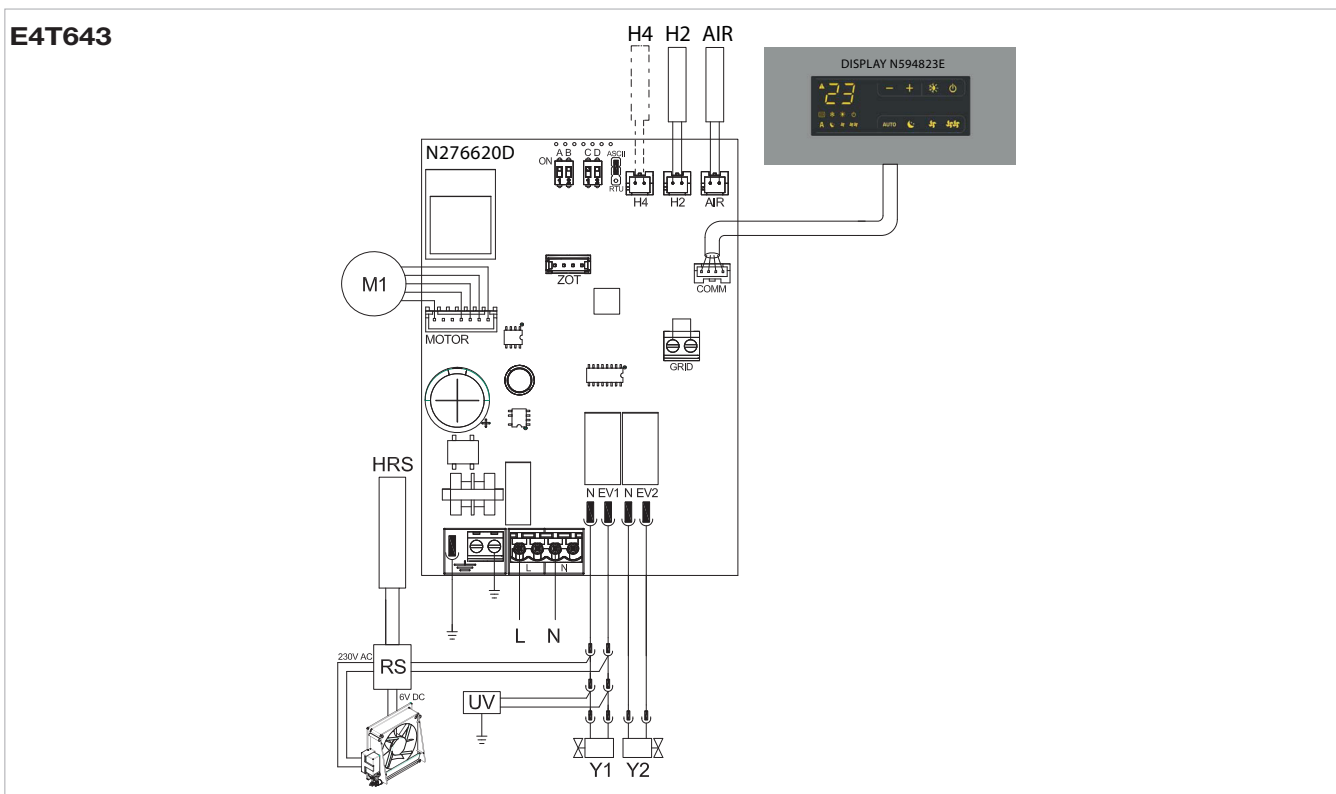
- insert the probe into the lower hole (ref. C)  
 - fix the probe on the relevant hook (ref. D)



### 5.4 E4T643 Connections

<b>H2*</b>	water temperature probe (10 kΩ)
<b>H4</b>	water temperature probe 4 pipes (10 kΩ)
<b>AIR</b>	air temperature probe (10 kΩ)
<b>M1</b>	DC inverter fan motor
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)
<b>Y2</b>	Mobile flap connection. 230V/ 50Hz 1A output voltage.
<b>L-N</b>	230V/50Hz electrical power supply
<b>UV</b>	UV lamp connection


<b>HRS</b>	RS water probe (10 kΩ)
<b>RS</b>	RS version cabling
<b>*</b>	If after switching the power on the board detects the H2 probe, start-up occurs in normal conditions with the minimum water temperature when heating (30°C) and maximum when cooling (20°C). The board also has a function when there is no probe, in such cases the fan stop minimum and maximum thresholds are ignored.



## SETTINGS MENU ECA644 - ECA647 - EWF644 - EWF647 - EDA/ EDB649 - EWG/EWW649 - E4T643


### 6.1 Setup menu

Through the remote control, the access to Setup menu will be available from display off:

Key	Operation	Display
	- press the key "ON" for 10 sec. - the device turns on and the temperature appears - continue to press until "Ad" appears	<b>Ad</b>

Use the icons **--+** to move inside the menu.

Use the icon  to select menu items and to confirm changes made.

Pressing  and confirming the change will switch to the next item.

To exit from menu:

- press the icon  for 10 sec.
- or wait 30 sec. for automatic shutdown

**⚠** After 30 seconds from the last action, the control goes off and the settings is memorised.

#### Menu items

<b>Ad</b>	Address	<b>rb</b>	Modbus reset
<b>uu</b>	Wifi	<b>Fr</b>	Factory reset
<b>Ub</b>	Adjust buzzer volume	<b>ot</b>	Offset probe T
<b>br</b>	Adjust the brightness	<b>oh</b>	Reserved
<b>di</b>	Digital input	<b>Sc</b>	Scale
<b>rZ</b>	Radiant zone	<b>rE</b>	Reserved

#### Set the modbus address

To set the address:

Display	Operation
<b>Ad</b>	- the setting range is from a minimum of 01 to a maximum of 99 - increase or decrease the number with the icons <b>--+</b>

#### Enable or disable WiFi

Display	Operation
<b>uu</b>	- select "YS" to enable the wifi - select "rs" to reset the settings - select "no" to disable the wifi

**⚠**This function can only be used for controls with integrated wifi card (EWF644 - EWF647 - EWG649 -

EWW649)  
**⚠** By default, wifi is enabled.

### Adjusting buzzer volume

To change the volume:

Display	Operation
Ub	<ul style="list-style-type: none"> <li>- the volume setting range is from 00 (min) to 03 (max)</li> <li>- Increase or decrease the volume with the icons <b>- +</b></li> </ul>

⚠ The volume changes after you confirm the modification.

### Adjusting the brightness of the display

To adjust the brightness:

Display	Operation
br	<ul style="list-style-type: none"> <li>- the brightness adjustment range is from 00 to 01</li> <li>- increase and decrease the brightness with the icons <b>- +</b></li> </ul>

⚠ The brightness changes after confirming the modification.

20 sec. The message "01" will appear. Press **-** to decrease brightness "00". Wait 30 sec. for the correct settings to be verified.

⚠ You can also reduce the brightness of the display through the control's key. From the display off, press the icon **+** for


### Settings of the digital input

To change the digital input, select "di" menu:

Display	Operation
di	<ul style="list-style-type: none"> <li>- CP / clean contact (default)</li> <li>- CO / cooling open</li> <li>- CC / cooling close</li> </ul>

⚠ By default, digital input is set to CP.

⚠ For return to the default settings, set the digital input to "CP".

⚠ By selecting one of the other inputs (CO,CC) the seasonality is locked. It is not possible to modify it through the key  of the control.

### Enable the radiant zone

Display	Operation
rz	<ul style="list-style-type: none"> <li>- select "no" to disable the radiant zone</li> <li>- select "YS" to enable the radiant zone</li> </ul>

⚠ This function can only be used for wall controls (EDA649 - EDB649 - EWG649 - EWW649) combined with the EF1027 board.

⚠ By default the radiant zones are disabled.

### Reset modbus

Display	Operation
rb	<ul style="list-style-type: none"> <li>- select "no" to keep the current settings</li> <li>- select "YS" to reset the settings</li> </ul>

**Factory reset**

To reset the control to factory settings:

Display	Operation
Fr	<ul style="list-style-type: none"> <li>- select "YS" to reset the settings</li> <li>- select "no" to keep the current settings</li> </ul>

**Probe T regulation offset (room temperature probe)**

Display	Operation
ot	<ul style="list-style-type: none"> <li>- the adjustment range is from -9 to 12</li> </ul>

⚠ Use this adjustment carefully.

⚠ Use this adjustment only after having actually detected a discrepancy compared with the actual room temperature using a reliable device.

⚠ Adjust the value in a range of - 9 °C to + 12 °C, at variations of 0,1 °C.

⚠ After 30 seconds from the last action, the control goes off and the settings is memorised.

**Scale**

To change the temperature unit:

Display	Operation
Sc	<ul style="list-style-type: none"> <li>- select °C o °F</li> </ul>

## E2T543

### 7.1 Assembly and connections for on-board control panel E2T543

The on-board controller with speed selector and ON/OFF key, room thermostat adjustable from 5 to 40°C, winter summer selector and minimum winter temperature function

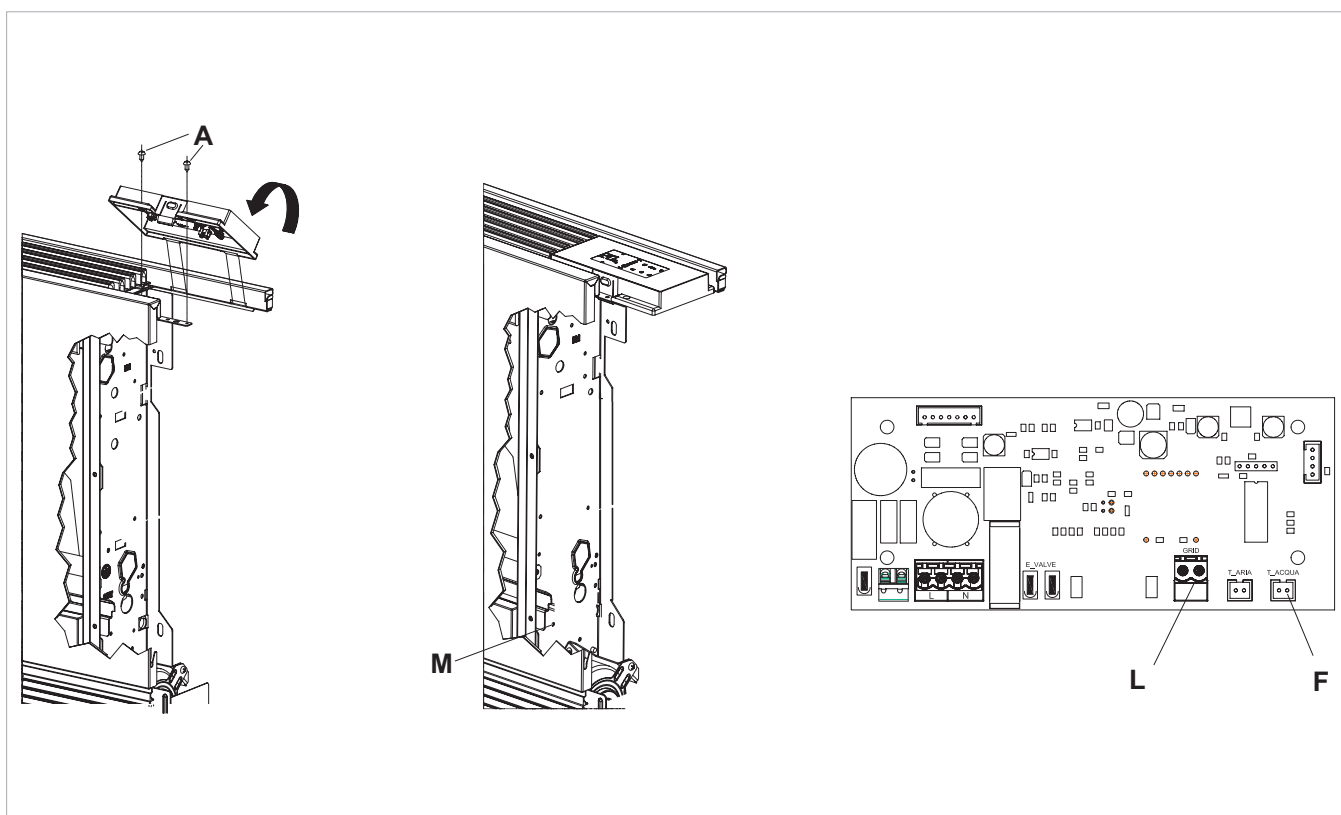
(30°C) and maximum summer temperature (20°C) is suitable for fitting on board the unit and has a 230V - 1A output for controlling a solenoid valve.

### 7.2 Assembly

Slide the control panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A). To install the board:

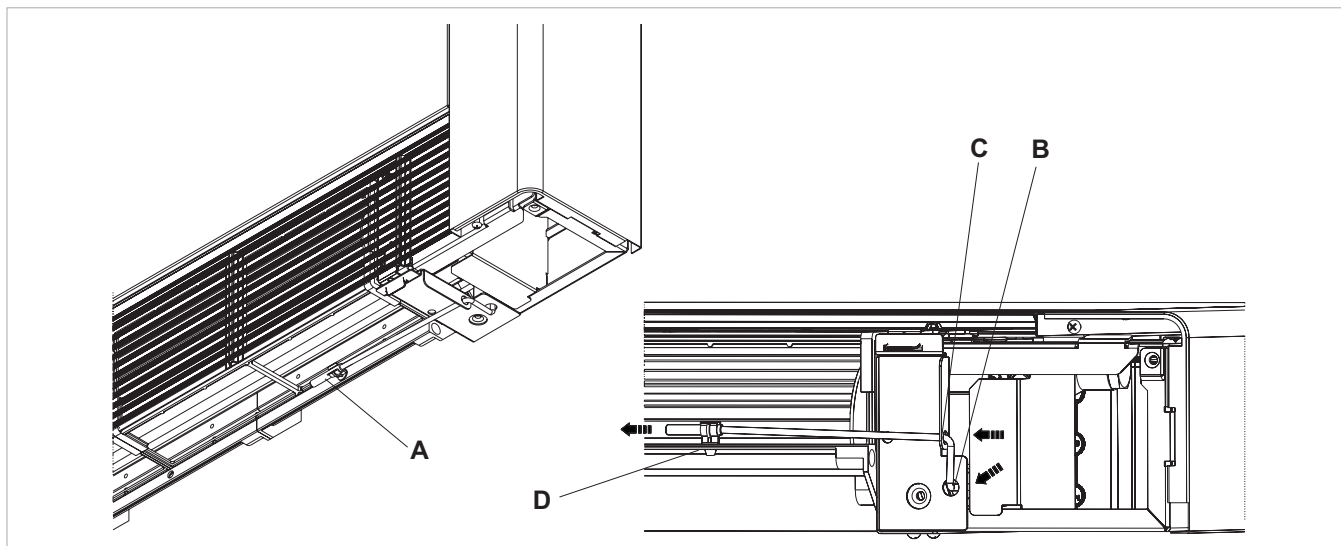
- connect the grounding cable to the unit structure (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- connect the fast connector of the MOTOR to the other on the board (ref. I) \*;
- N.B.:** should the board not be fitted in the factory, the fan motor must be rotated 180° due to the length of the standard fan coil cable.
- on the two GRID block terminals (ref. L) there is a bridge that allows SLI and RSI versions to work without a microswitch.
- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch;
- N.B.:** should the two brown terminals on the unit be too short, replace them with those included in the kit packaging.

- connect the water probe connector H2 (ref. F) on the unit.
- The water temperature probe controls the temperature inside the batteries and determines when the fan starts according to pre-set parameters (minimum operation in winter and maximum in summer). Check that they are correctly inserted into the compartment on the battery.
- make the electrical connections, tidy the cabling;
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the control panel;
- place the screw head covers in their housing on the control panel;
- \* For versions with hydraulic connections on the right, refer to the relevant paragraph



### 7.3 Air temperature probe assembly

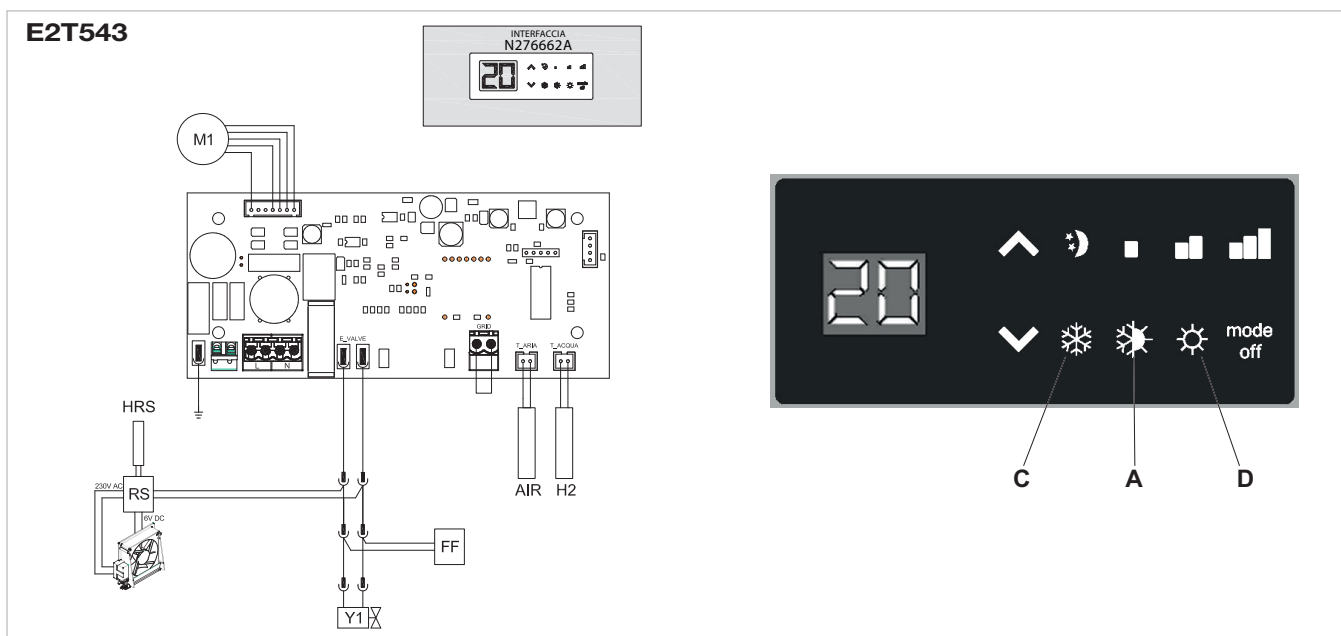
- To position the temperature probe (ref. A):
- pass the probe through the hole on the shoulder (ref. B)
- insert the probe into the lower hole (ref. C)
- fix the probe on the relevant hook (ref. D)



### 7.4 E2T543 Connections

<b>H2</b>	water temperature probe (10 kΩ)
<b>M1</b>	DC inverter fan motor
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)
<b>L-N</b>	230V/50Hz electrical power supply

<b>RS</b>	RS version cabling
<b>HRS</b>	RS water probe (10 kΩ)
<b>AIR</b>	air temperature probe (10 kΩ)
<b>FF</b>	output for mobile suction panel servo (power output 230V/ 50Hz 1A)



### 7.5 Water probe kit management E2T543

If the board detects the water temperature detecting probe on the device positioned in the relevant compartment of the battery, it starts in normal conditions. If the probe is not connected, its absence is indicated by the blue and red LEDs flashing together, and operation stops.

To confirm operation without the probe, press and hold the summer/winter button for 5 seconds (ref. A).

This condition is saved by the board for future start-ups.

In any case, as and when the probe is connected, the unit

returns to normal operation with temperature thresholds.

If the unit operates with the probe connected and the water temperature is not suitable for active functioning (over 20°C when cooling, under 30°C when heating) the fan will stop and the anomaly will be indicated by the corresponding LED flashing (cooling: blue C or heating: red D).

## B3V137

### 8.1 Assembly and connections for on-board control panel B3V137

The on-board controller with speed selector and ON/OFF key and TERM room thermostat is suitable for fitting on board the

unit and has a 230V output for controlling a solenoid valve.

### 8.2 Assembly

Slide the control panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).

To install the board on the fan coil:

- connect the grounding cable to the unit structure (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);

- connect the fast connector of the MOTOR to the other on the board (ref. I) \*;

**N.B.:** should the board not be fitted in the factory, the fan motor must be rotated 180° due to the length of the standard fan coil cable.

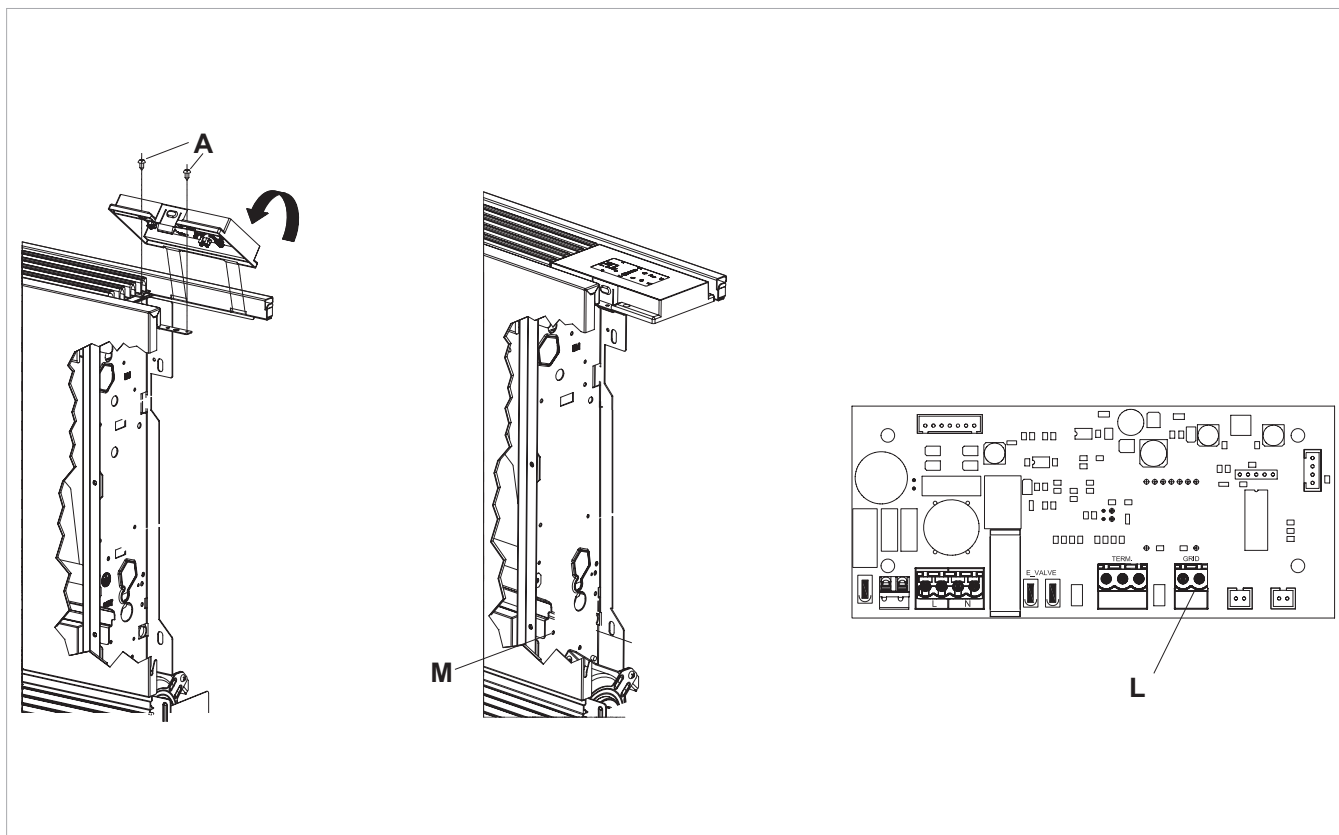
- on the two GRID block terminals (ref. L) there is a bridge that allows SLI and RSI versions to work without a microswitch.

- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch\*.

- **N.B.:** should the two brown terminals on the unit be too short, replace them with those included in the kit packaging.

- make the electrical connections, tidy the cabling;
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the control panel;
- place the screw head covers in their housing on the control panel;

\* For versions with hydraulic connections on the right, refer to the relevant paragraph

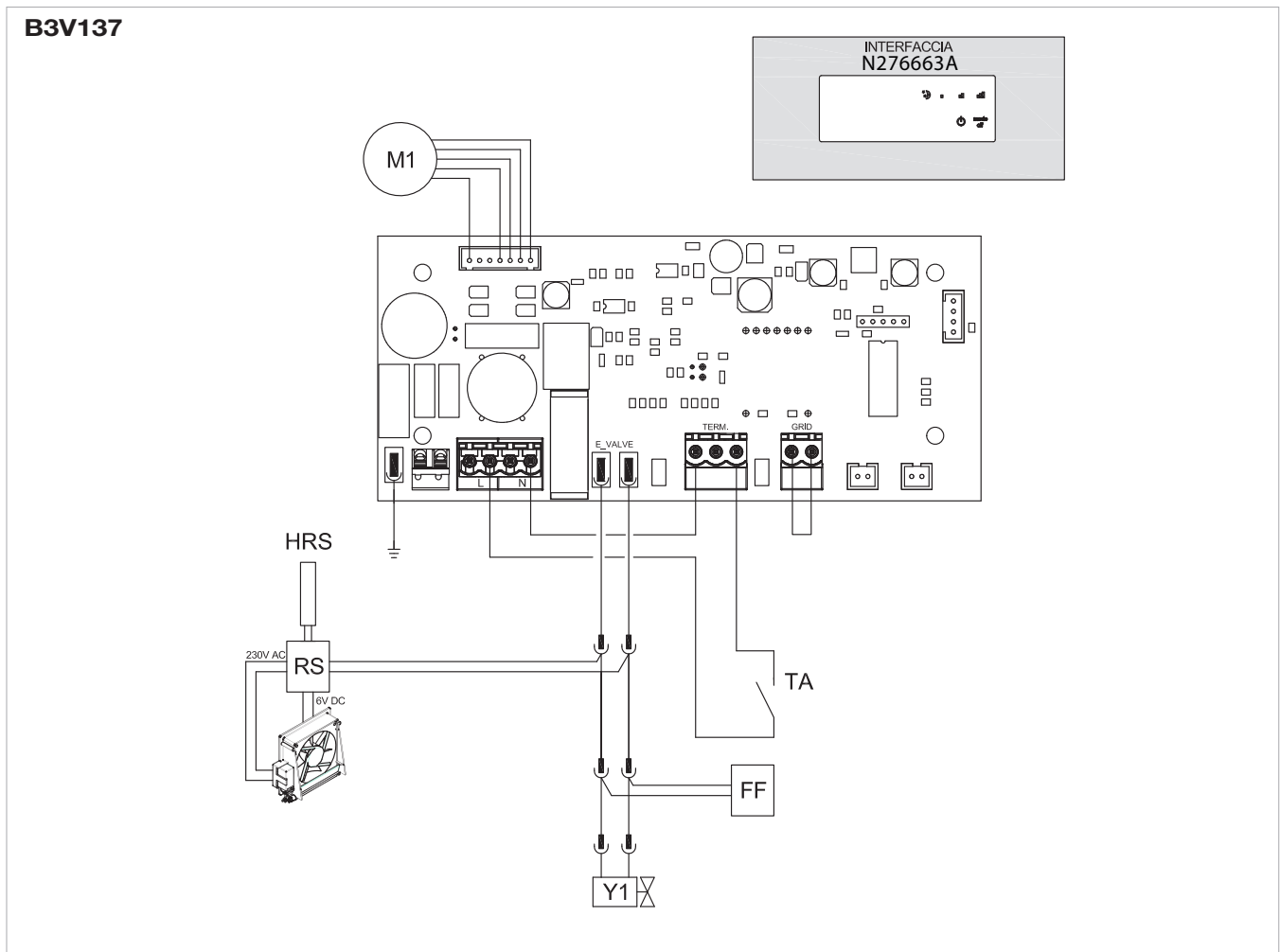




### 8.3 B3V137 Connections







<b>TA</b>	230V connection permission from room thermostat
<b>M1</b>	DC inverter fan motor
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)

<b>L-N</b>	230V/50Hz electrical power supply
<b>RS</b>	RS version cabling
<b>FF</b>	output for mobile suction panel servo (power output 230V/ 50Hz 1A)
<b>HRS</b>	water probe for RS version (10 kΩ)



### 8.4 Warnings table

The board provides diagnostics in the event of anomalies, which can be interpreted from combinations of LEDs. The following table summarises the warnings.

- Flashing LED : TA contact open
- Flashing LED : TA contact closed;
- 4 flashing LEDs: GRID contact open;
-  LED on: supersilent speed active (400 rpm).
-  LED on: minimum speed active (680 rpm).
-  LED on: medium speed active (1,100 rpm).
-  LED on: maximum speed active (1,500 rpm).

## B4V642

### 9.1 Assembly and fitting of fan control for remote control B4V642

Assembled on-board the unit, this card allows the regulation of the motor with fixed speeds; it can be combined with control panels with thermostat and with all control panels

available in the market.

It has a 230 V output to pilot the summer and winter solenoid valve.

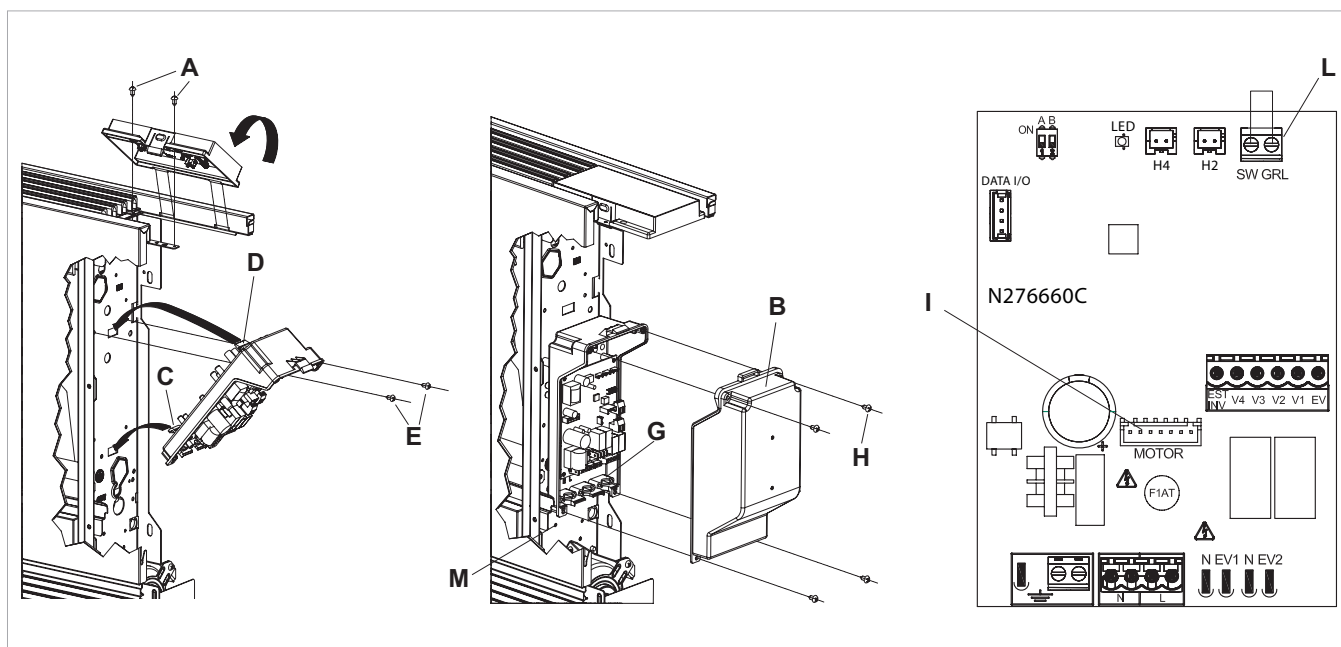
### 9.2 Assembly

Slide the blanking panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).

To install the connection box:

- open the box (ref. B);
- lock the lower tooth into its hole (ref. C) on the side of the device;
- hook the upper part of the box to the side (ref. D);
- fix it with the two fixing screws (ref. E);
- connect the grounding cable to the unit body (ref. M) using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- on the two SW GRL block terminals (ref. L) there is a bridge that can be used as an alarm (open = alarm).
- For other versions, remove the bridge and connect the two terminals originating on the grill safety microswitch\*;

- connect the fast connector of the MOTOR to the other on the board (ref. I);
- Connect the electrics, tidy cables and fix them with the three clevises supplied (ref. G);
- close the box with the 4 screws (ref. H);
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the blanking panel;
- place the screw head covers in their housing on the blanking panel;
- \* For versions with hydraulic connections on the right, refer to the relevant paragraph



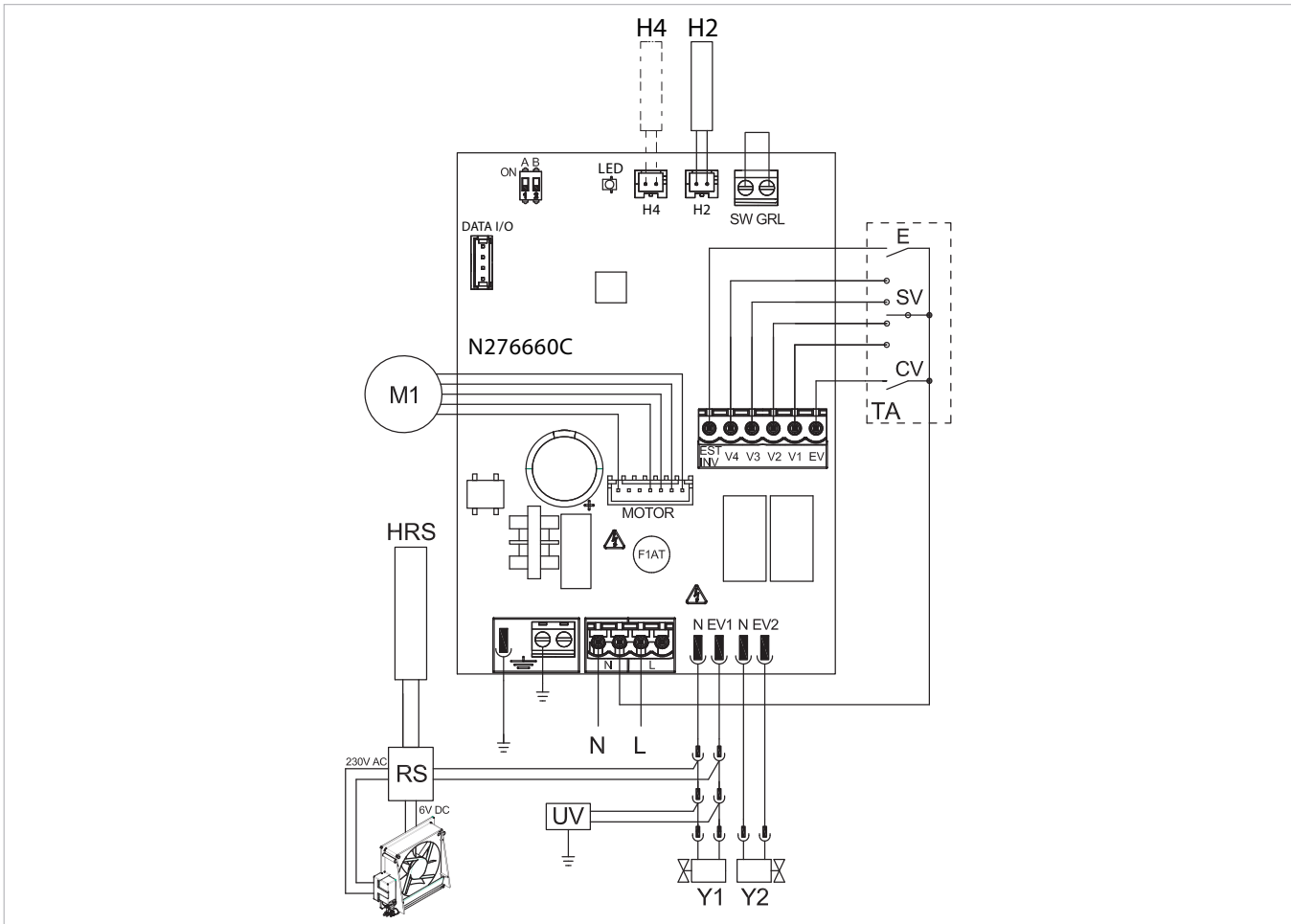
### 9.3 Connection diagram B4V642 with 3-speed thermostat

make the electrical connections to a thermostat fit for use

<b>L-N</b>	electrical supply 230V-50Hz
<b>EV</b>	solenoid valve permission input
<b>V1</b>	maximum fan speed
<b>V2</b>	medium fan speed
<b>V3</b>	minimum fan speed
<b>V4</b>	supersilent speed
<b>E</b>	heating selection input, cooling / see paragraph on Water Probe Management (8.6)
<b>Y2</b>	full flat connection 230V/ 50Hz 1A)
<b>Y1</b>	water solenoid valve (230 V/ 50 Hz 1A output voltage)
<b>UV</b>	UV lamp connection

according to the diagram

<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS (10 kΩ)
<b>M1</b>	DC inverter fan motor
<b>TA</b>	3-speed room thermostat (to be purchased, installation and connection to be made by installed)
<b>CV</b>	thermostat permission
<b>SV</b>	speed selector
<b>H2*</b>	water temperature probe (10 kΩ)
<b>H4*</b>	water temperature probe 4 pipes (10 kΩ)
<b>*</b>	positioned in the on-board battery. See paragraph on Water Probe Management (8.6)



### 9.4 B4V642 connections with 3-speed thermostat

The CV input is the board ON/OFF which when open puts the board in stand-by. It must be bridged to the L terminal on the 230V power supply to activate solenoid valve Y1. The 4 speed inputs V1, V2, V3 and V4, when bridged to the L terminal on the 230V power supply, activate the fan if the S1 input to which the grill safety microswitch is connected is closed. The sequence is: maximum speed (1400 rpm on terminal V1), medium speed (1100 rpm on terminal V2), minimum speed (680 rpm on terminal V3) and supersilent speed (400 rpm on terminal V4). Connect the three thermostat speeds to 3 out of the 4 available inputs as per the characteristics and use of the

room: connect, for example, medium speed V2, minimum V4 and supersilent V4 for residential applications, when greater silence is required, whereas V1, V2 and V3 can be connected for commercial applications where the thermal yield is more important. If multiple inputs are simultaneously closed, the motor will run at a number of revs equal to that of the connection with the highest speed. Multiple cards can be connected in parallel to a single thermostat, also using different speeds.

### 9.5 LED signals

The LED (ref. A) is off if the CV input is not closed (stand-by condition).

It turns on when the CV contact is closed and indicates normal operation.

- Flashes frequently if the grille microswitch S1 is activated due to the filter cleaning operation
- 1 flash + pause indicates a fan stoppage alarm due to unsuitable water (with H2 water probe connected).
- 2 flashes + pause due to a motor alarm (e.g. blockage caused by foreign objects, faulty rotation sensor).

- 3 flashes + pause indicates a disconnected or faulty water probe alarm.

### 9.6 Water probe management with 3-speed thermostat

If the B4V642 board is used with electromechanical thermostats, or with other commercial controllers with water probe, the on-board probe H2 should not be connected and the fan is controlled by the remote control.

If on the other hand the controller is not set up for managing the water probe, this function can be performed by the board, by connecting the 10 kΩ probe on the battery to the H2 connector on the board (ref. B).

In this case the board carries out the minimum temperature function for heating operations and maximum temperature function for cooling. Therefore, if the water temperature is not suitable for active operation (above 20°C when cooling, under 30°C when heating) the fan is stopped and the anomaly is signalled by a single flash + pause of the LED (ref. A).

The discrimination between heating/cooling is actuated via the

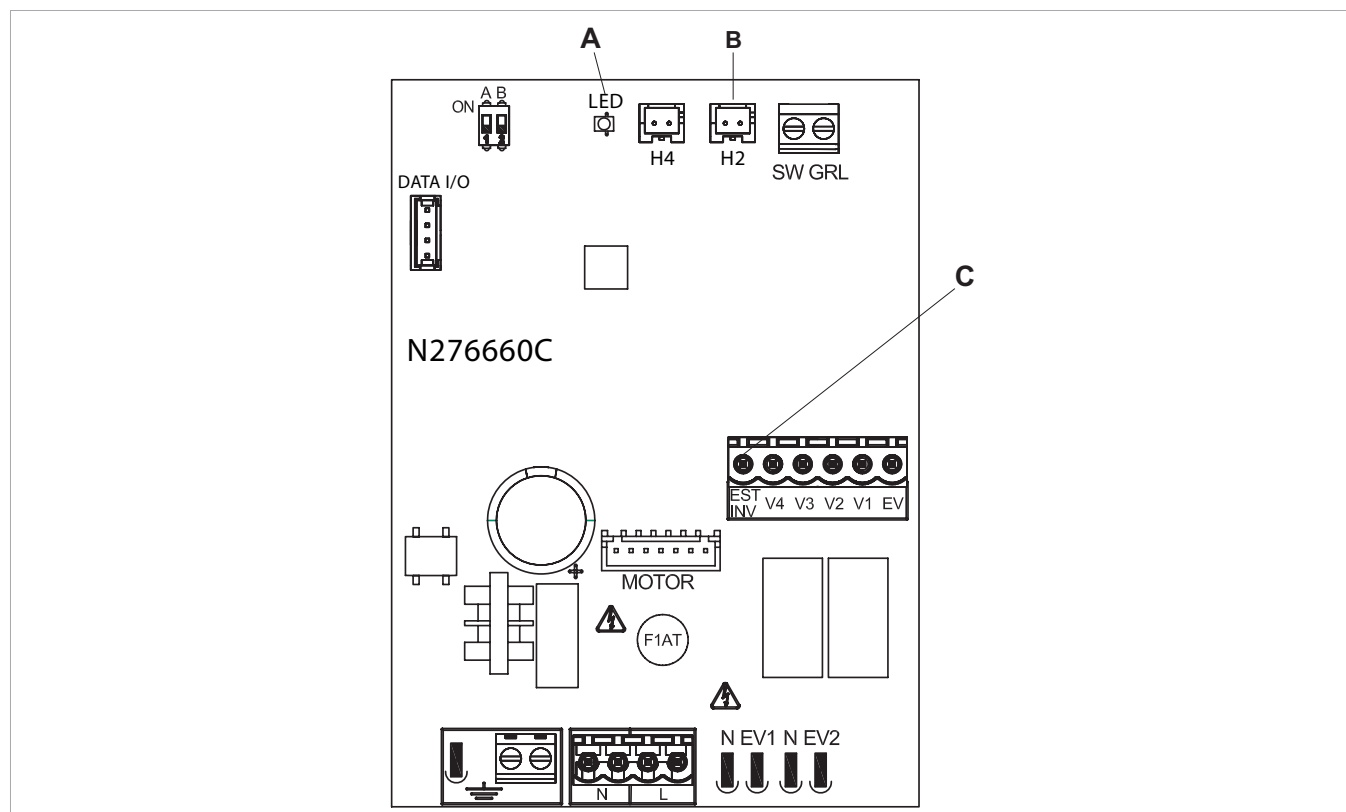
Summer-Winter (ref. C) input of the board: leaving it open the board activates heating, closed activates cooling.

If after having connected the probe it is disconnected or measures incorrect values the anomaly is signalled by 3 flashes + pause of the LED (ref. A) and operation is stopped.

To confirm operation without a probe, turn the power to the board off and then on again.

This condition is saved by the board for future start-ups.

In any case, as and when the probe is connected, the unit returns to normal operation with temperature thresholds.



## B4V642 + B3V151

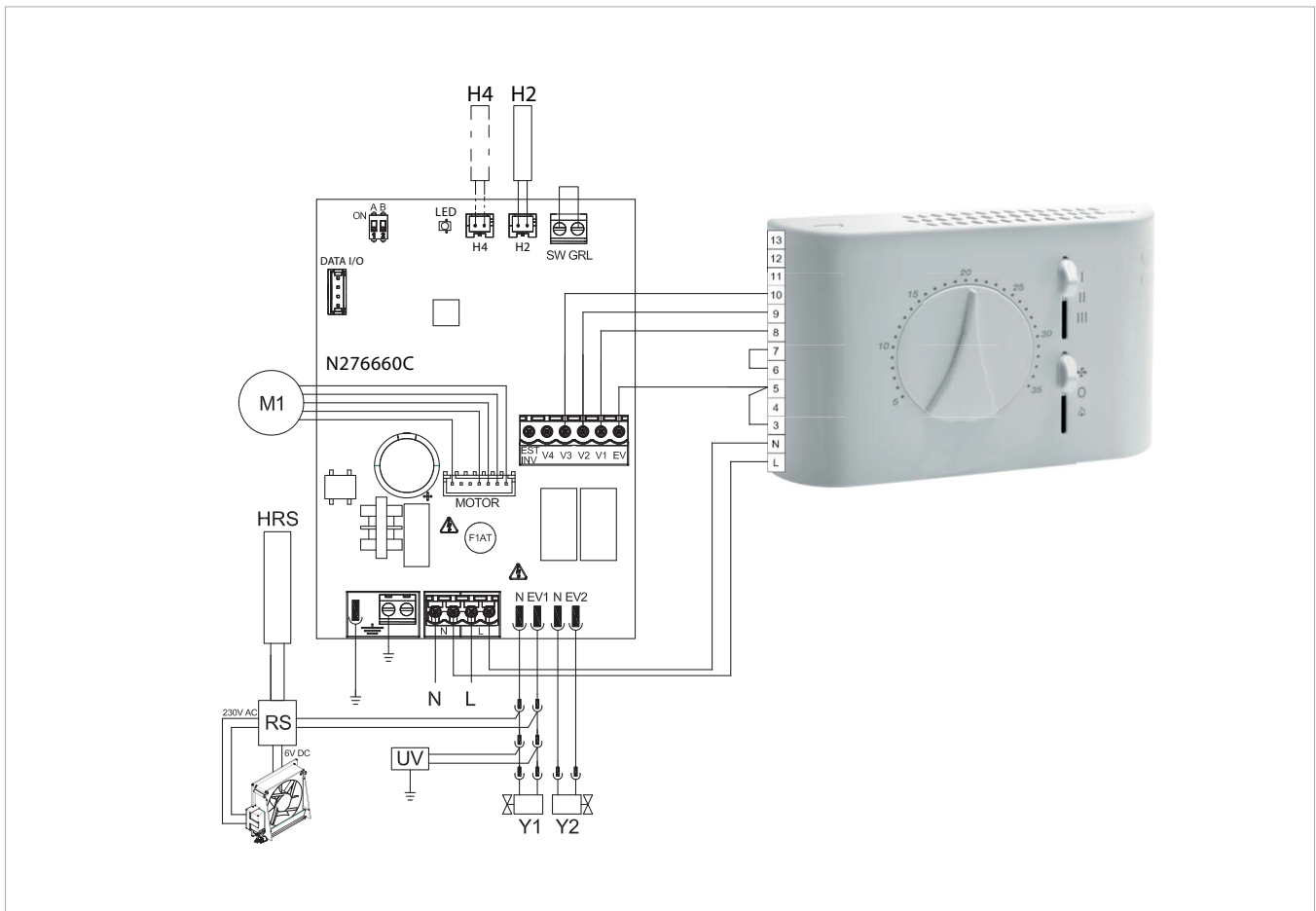
### 10.1 B4V642 + B3V151 Connection Diagrams

Wall control with thermostat, summer/winter selector and speed selector in connection with B4V642.

For 2-pipe units.

<b>L-N</b>	Electrical power supply 230V-50 Hz
<b>EV</b>	Permission input
<b>V1</b>	Maximum fan speed (1,400 rpm)
<b>V2</b>	Medium fan speed (1,100 rpm)
<b>V3</b>	Minimum fan speed (680 rpm)
<b>V4</b>	Supersilent speed (400 rpm).

<b>Y1</b>	Water solenoid valve (230 V/ 50 Hz 1A output voltage)
<b>Y2</b>	Mobile suction panel commander (power output 230V/ 50Hz 1A)
<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS 10 kΩ
<b>M1</b>	DC inverter fan motor



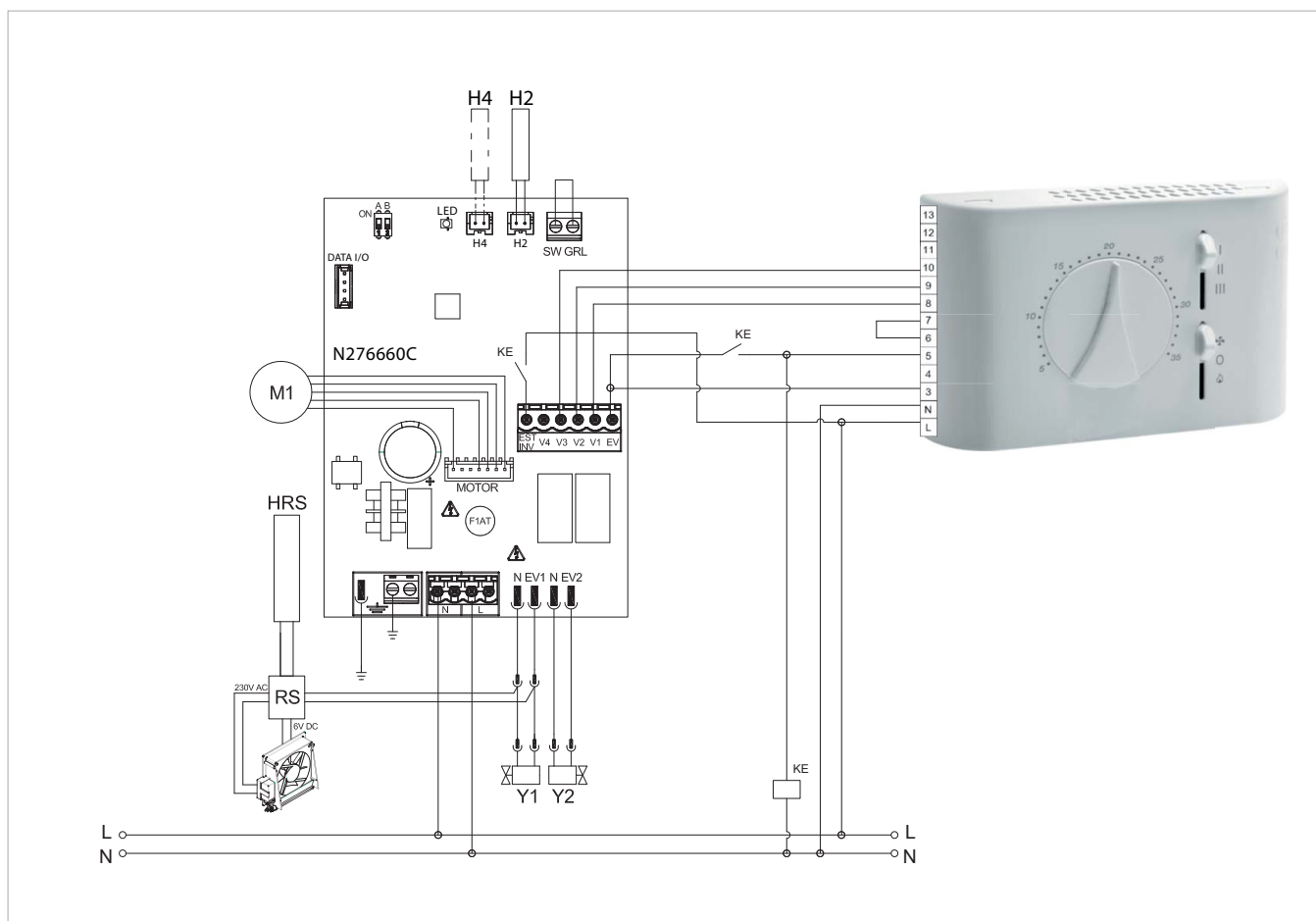
## 10.2 B4V642 + B3V151 Connection Diagrams with seasonal switching

Wall control with thermostat, summer/winter selector and speed selector in connection with B4V642.

For 2-pipe units.

<b>L-N</b>	Electrical power supply 230V-50 Hz
<b>EV</b>	Permission input
<b>V1</b>	Maximum fan speed (1,400 rpm)
<b>V2</b>	Medium fan speed (1,100 rpm)
<b>V3</b>	Minimum fan speed (680 rpm)
<b>V4</b>	Supersilent speed (400 rpm).
<b>Y1</b>	Water solenoid valve (230 V/ 50 Hz 1A output voltage)

<b>Y2</b>	Mobile suction panel commander (power output 230V/ 50Hz 1A)
<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS 10 kΩ
<b>M1</b>	DC inverter fan motor
<b>KE</b>	Auxiliary relay (not included in the supply)



## B4V642 + B3V152

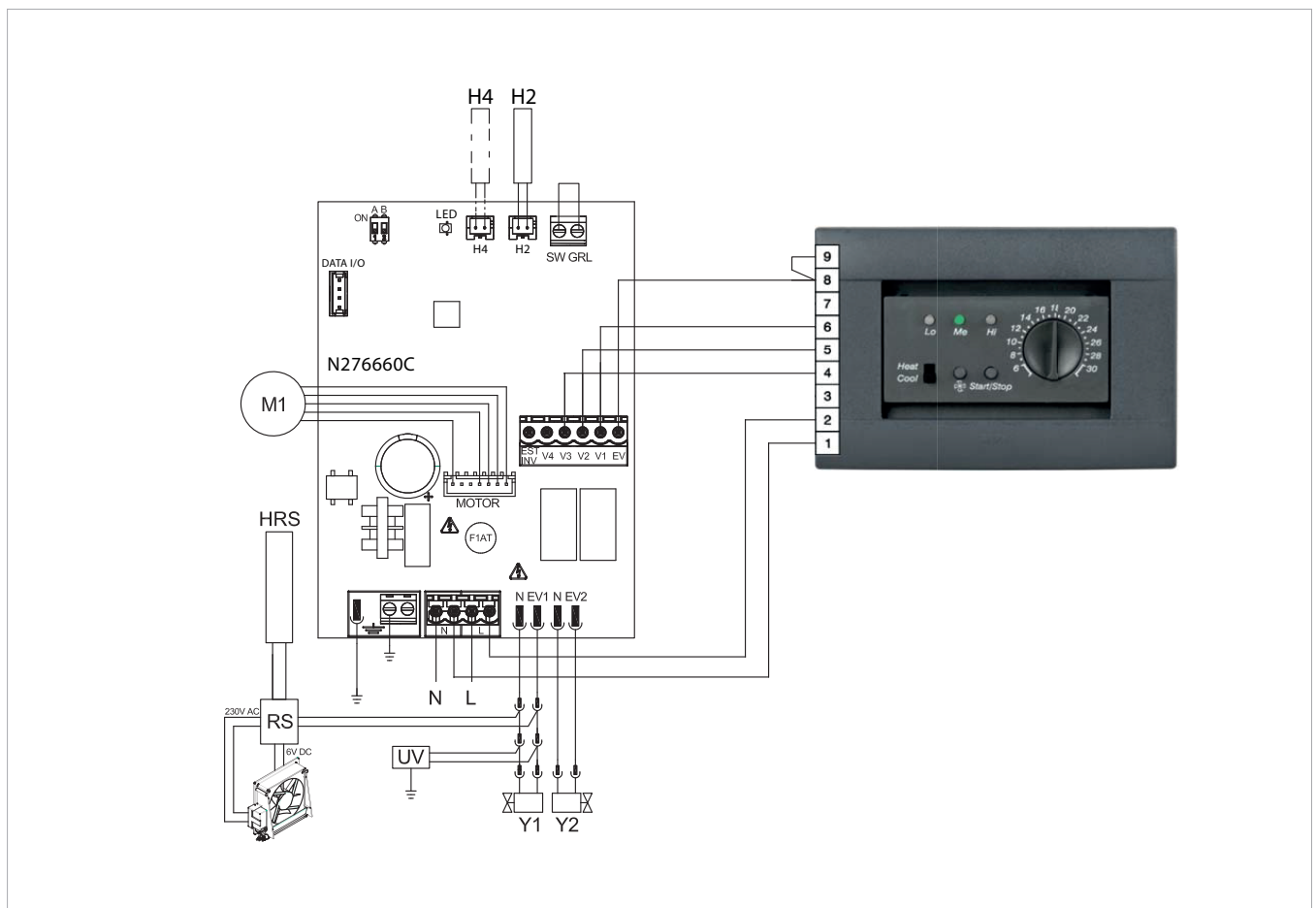
### 11.1 B4V642 + B3V152 Connection Diagrams

Built-in wall control with thermostat, summer/winter selector and speed selector in connection with B4V642.

For 2-pipe units.

<b>L-N</b>	Electrical supply 230V-50Hz
<b>EV</b>	Permission input
<b>V1</b>	Maximum fan speed (1,400 rpm)
<b>V2</b>	Medium fan speed (1,100 rpm)
<b>V3</b>	Minimum fan speed (680 rpm)
<b>V4</b>	Supersilent speed (400 rpm).

<b>Y1</b>	water solenoid valve (230 V/ 50Hz 1A output voltage)
<b>Y2</b>	Mobile suction panel commander (power output 230V/ 50Hz 1A)
<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS 10 kΩ
<b>M1</b>	DC inverter fan motor



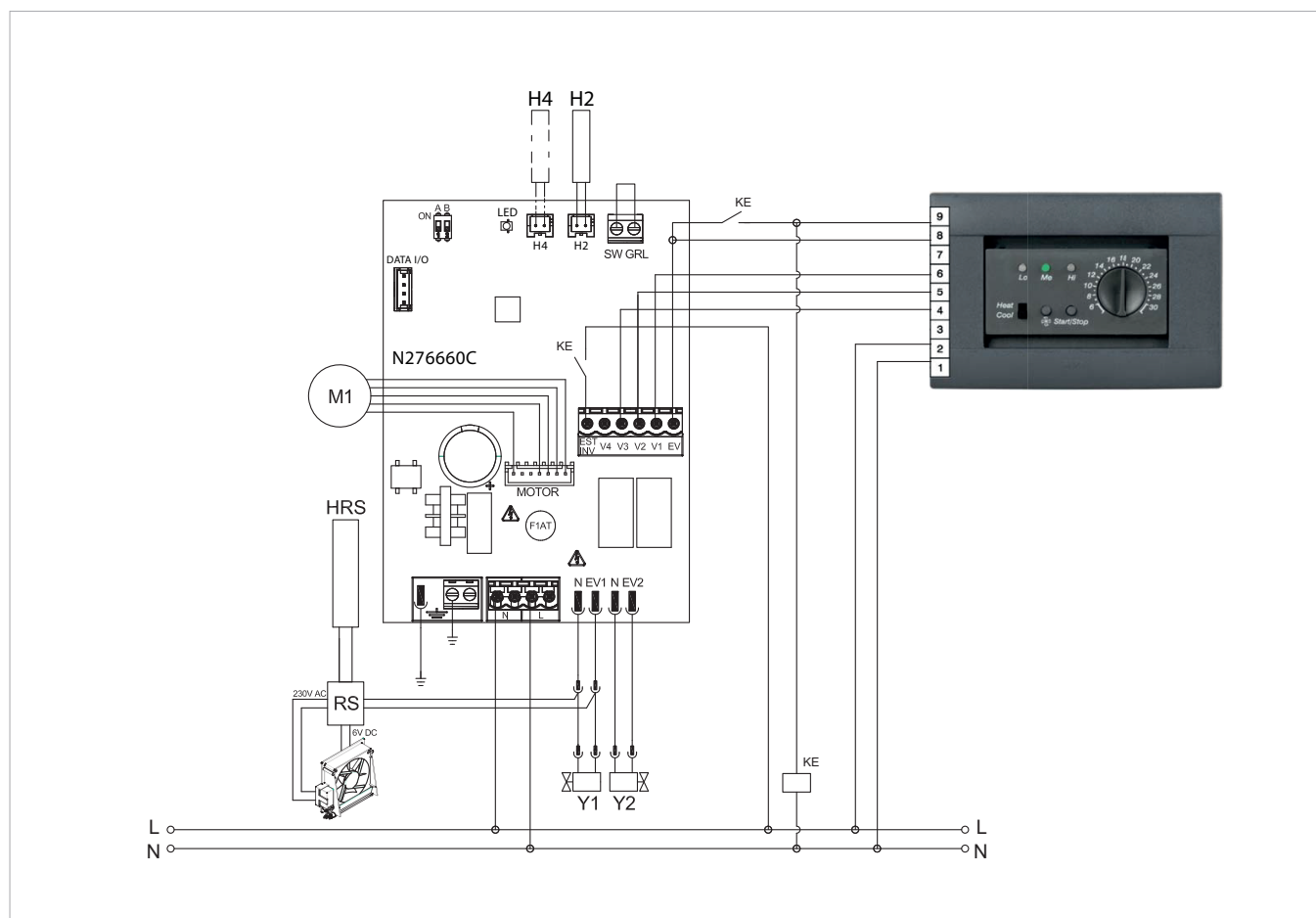
### 11.2 B4V642 + B3V152 Connection Diagrams with seasonal switching

Built-in wall control with thermostat, summer/winter selector and speed selector in connection with B4V642.

For 2-pipe units.

<b>L-N</b>	Electrical supply 230V-50Hz
<b>EV</b>	Permission input
<b>V1</b>	Maximum fan speed (1,400 rpm)
<b>V2</b>	Medium fan speed (1,100 rpm)
<b>V3</b>	Minimum fan speed (680 rpm)
<b>V4</b>	Supersilent speed (400 rpm).
<b>Y1</b>	water solenoid valve (230 V/ 50Hz 1A output voltage)

<b>Y2</b>	Mobile suction panel commander (power output 230V/ 50Hz 1A)
<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS 10 kΩ
<b>M1</b>	DC inverter fan motor
<b>KE</b>	Auxiliary relay (not included in the supply)





## B10642

### 12.1 Assembly and fitting of fan control for remote control B10642.

When fitted on board the machine it allows for managing the motor, with modulated speed; motor regulation can be made using an analogue 0-10V DC input with 25 kΩ impedance.

For board B10642 control outputs these impedance values must be considered, especially when controlling more than one unit in parallel.

It has a 230 V output to pilot the solenoid valve.

### 12.2 Assembly

Slide the blanking panel into its housing in the upper part of the device and fix it with the two fixing screws (ref. A).

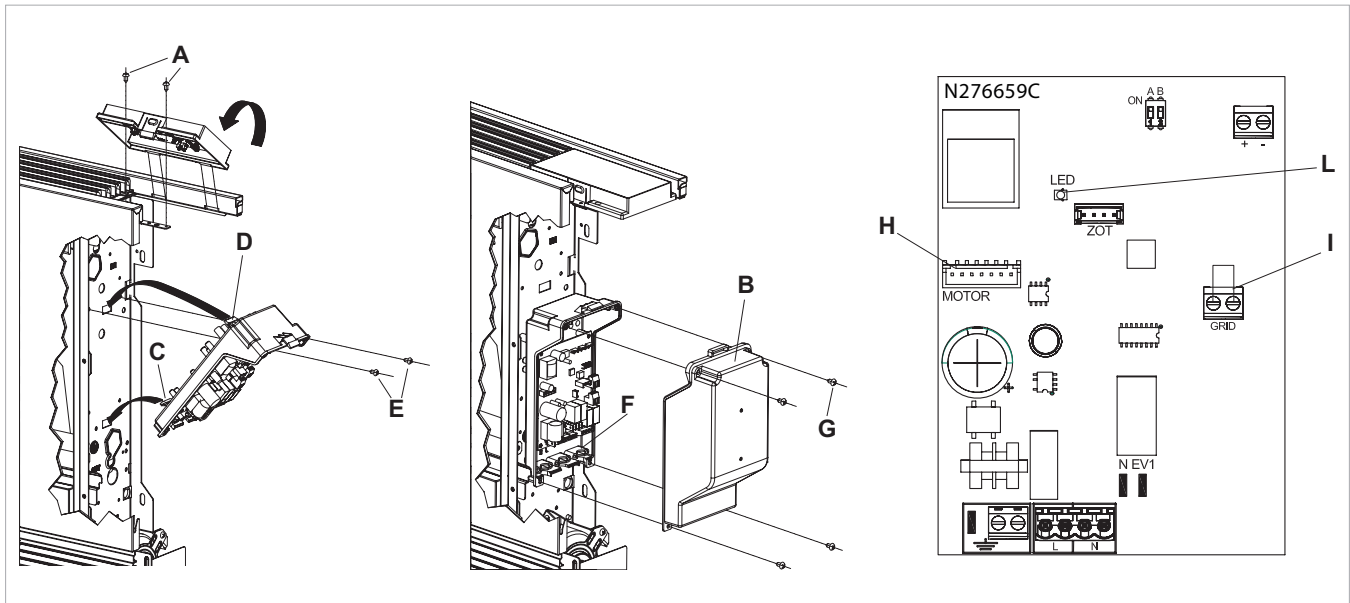
To install the connection box:

- open the box (ref. B);
- lock the lower tooth into its hole (ref. C) on the side of the device;
- hook the upper part of the box to the side (ref. D);
- fix it with the two fixing screws (ref. E);
- connect the grounding cable to the unit structure using the fixing screws (the minimum force that must be applied for tightening screws must be around 2N);
- on the two GRID block terminals (ref. I) there is a bridge that can be used as an alarm (open = alarm).
- For other versions, remove the bridge and connect the two terminals originating on the grille safety microswitch;\*
- connect the fast connector of the MOTOR to the other

on the board (ref. H);

- Connect the electrics, tidy cables and fix them with the three clevises supplied (ref. F);
- close the box with the 4 screws (ref. G);
- refit the vanity plate on the side of the unit;
- tighten the upper screws on the blanking panel;
- place the screw head covers in their housing on the blanking panel;

\* For versions with hydraulic connections on the right, refer to the relevant paragraph



### 12.3 LED signals

The LED (ref. L) is off if the input signal is less than 0.9V. It turns on with values greater than 1V and indicates normal operation.

- Flashes frequently if the grille microswitch S1 is activated due to the filter cleaning operation

- 2 flashes + pause due to a motor alarm (e.g. blockage caused by foreign objects, faulty rotation sensor).

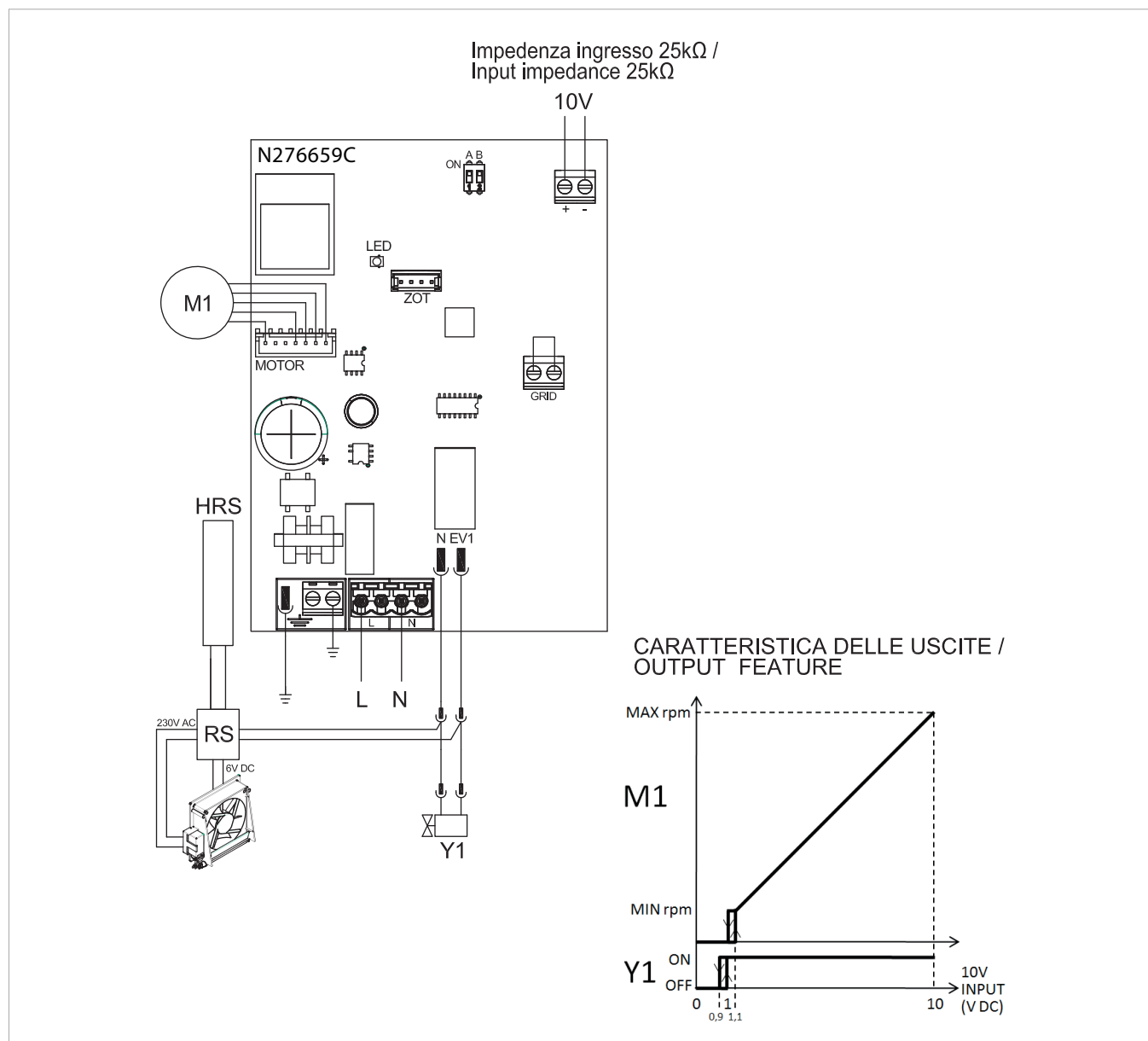
## 12.4 Connection diagram B10642 with 0-10V DC thermostats / signals

make the electrical connections to a thermostat fit for use

according to the diagram

<b>L-N</b>	Electrical power supply 230V-50 Hz
<b>10V</b>	Appliance piloting input 0÷10 V
<b>Y1</b>	water solenoid valve (230V/ 50Hz 1A output voltage)

<b>RS</b>	RS version cabling
<b>HRS</b>	water probe for RS (10 kΩ)
<b>M1</b>	DC inverter fan motor



## 12.5 B10642 connections with 0-10V thermostats

The 10V input, if the GRID input is closed, activates solenoid valve Y1 and regulations fan revolutions.

The speed "ramp" provides for linear regulation from the minimum value (400 rpm) to the maximum value (1,400 rpm) for voltage values  $\geq 1.1V \div 10 V$  DC.

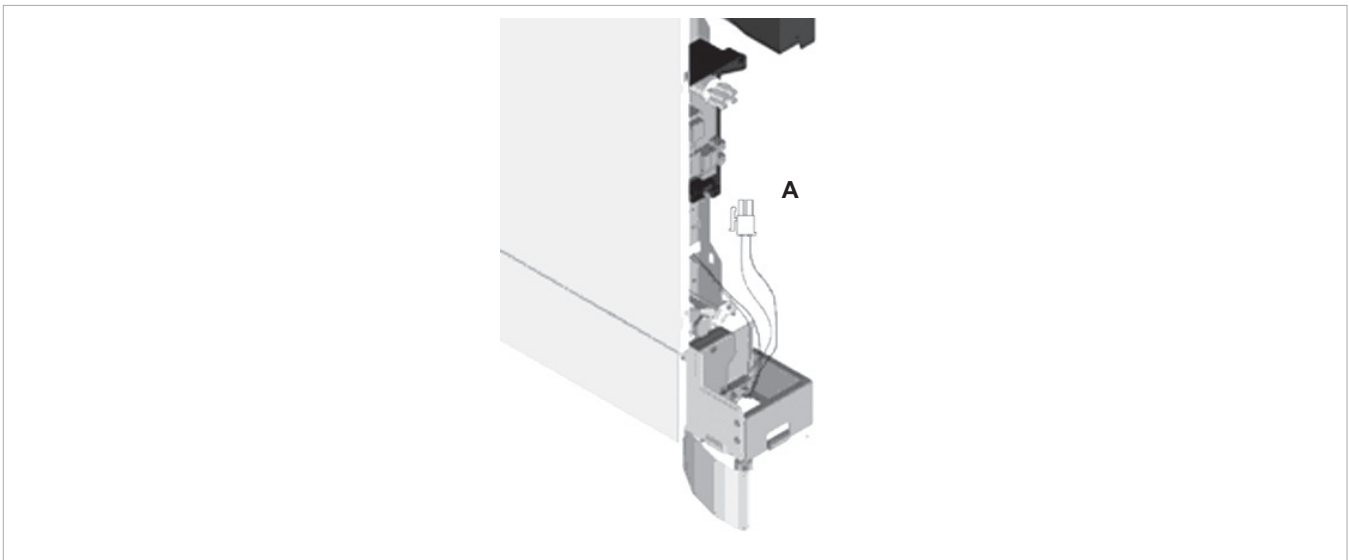
The motor is off when values are lower than 1V DC.

The Y1 solenoid valve is activated for power values  $> 1V$  DC and switches off then the power drops below 0.9V DC.

## ED RS FULL FLAT VERSIONS

### 13.1 Full flat version connections

In this version, the servo mechanisms charged with moving the grill are pre-wired to the unit. They can be connected to the Y2 output on the panels using a dedicated connector (ref. A).



### 13.2 RS version connections

In RS versions, connect the dedicated quick connector to the solenoid valve Y1 output on the circuit board (see Connections paragraph).

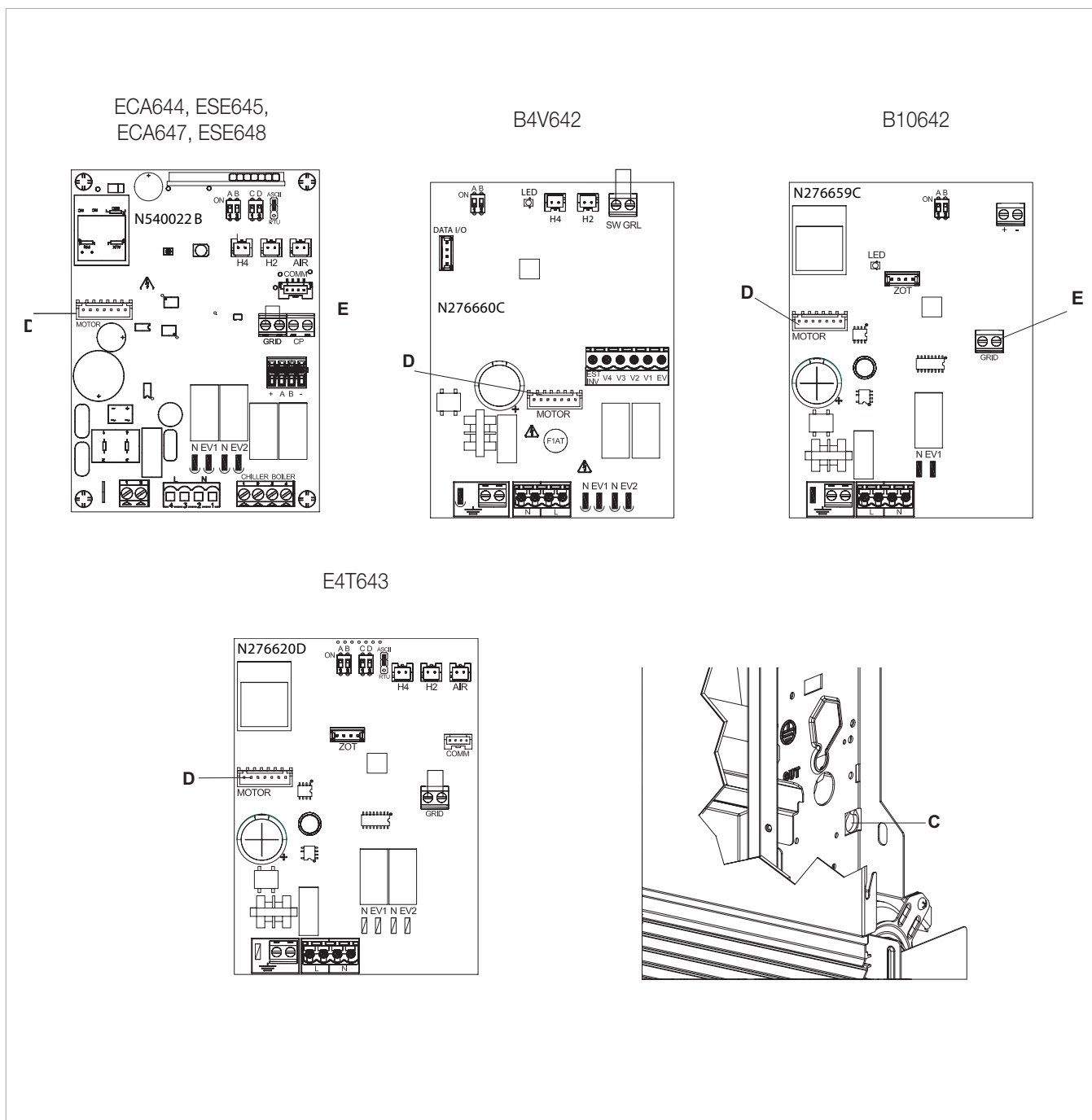
## VERSIONS WITH CONNECTIONS ON THE RIGHT

### 14.1 Motor connection in versions with hydraulic connections on the right BB0646

Should the battery hydraulic connection positions need to be inverted from the left to the right hand side of the unit, the electrical connection box is also inverted, but as the fan motor and the grill safety micro switch must stay in position, the BB0646 kit must be used as an accessory.

The cable, with male/female connectors, is connected to the motor on the right and to the quick connector on the left (MOTOR) on the board (ref. D).

The cables should be passed behind the unit through the dedicated hole (ref. C).











INNOVA s.r.l.  
Via I Maggio, 8 - 38089 Storo (TN) - ITALY  
tel. +39.0465.670104 fax +39.0465.674965  
info@innovaenergie.com  
www.innovaenergie.com

N2735411 - Rev. 00