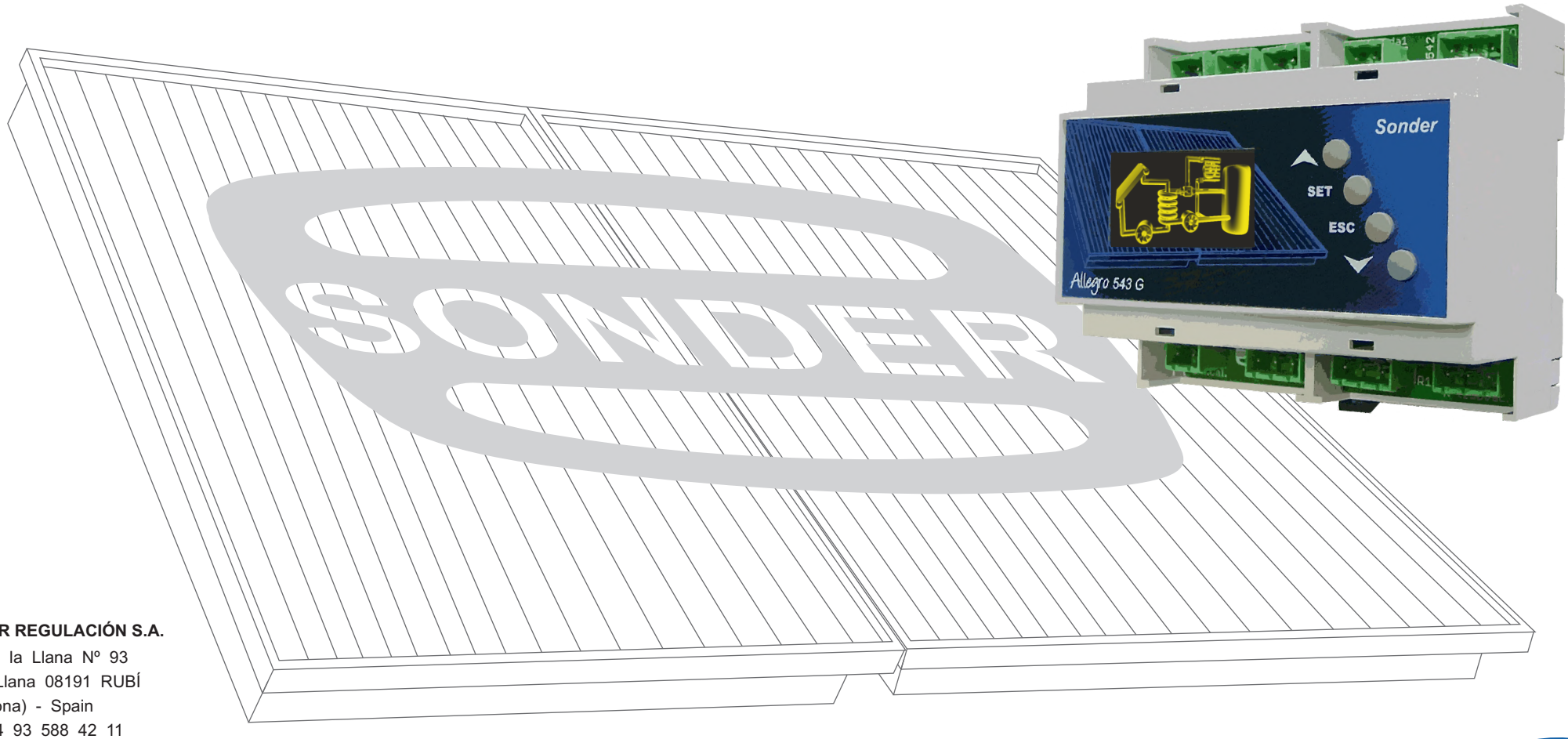
Allegro 543G



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Technical Installation and Use Manual

SONDER
Energy control

Notes

Notes

Contents

SAFETY INDICATIONS

- Before installing the Allegro 543G regulator, make sure that the ambient conditions are correct (working temperature, humidity, pollution and gas emission) as any of these factors can affect correct operation.

- When installing or repairing the Allegro 543G regulator, it must be disconnected from the mains.

- The Allegro 543G is an independent control device for surface-mounting and conduit-cabling for correct installation.

- The electrical connections must be as indicated in this manual and on the connection label on the side of the appliance. The connections to which this manual refers are those of the regulator. To connect the other installation components, users must consult the requirements of each appliance (collectors, tanks, valves, etc.). For the correct operation of the installation, check that the technical requirements of the elements are compatible.

- This regulator is not a safety device and must not be used as such. The installer is responsible for incorporating the appropriate protection for each type of installation **(approved)**.

- Assembly, electrical connection, start-up and maintenance must be carried out by qualified personnel only.

- If possible faults appear in the appliance that could cause damage or the malfunction of the installation, do not connect the appliance.

- If you have doubts about its operation or correct installation, do not connect the device to the mains and check with a professional technician.

- Sonder Regulación S.A. hereby reserves the right to make changes to the product, technical specifications or use and assembly instructions without prior notice.

WARRANTY CONDITIONS

This appliance has a two-year warranty. The warranty is limited to the replacement of the faulty part, which shall be delivered in the same material conditions as those in which it is received. Packaging, batteries, instructions or whatsoever other accessories included with this product shall not be replaced.

We decline liability for appliances that have deteriorated as a result of incorrect handling, ignoring the warnings given in this manual or technical ignorance of the installation requirements.

For whatever repair under warranty, the proof of purchase of the product must be presented within the term of this warranty, together with a description as precise as possible of the fault or the malfunctioning of the product according to the user.

Should the repair be out of warranty, the user shall be notified of the viability and the cost of the said repair. Our technical department's valuation may imply additional cost for the user.

This warranty does not include the following:

Appliances whose serial numbers have deteriorated, worn away or been modified.

Appliances whose connection or use has not been carried out in accordance with the indications given with the appliance.

Appliances that have been modified without the prior agreement of the manufacturer.

Appliances that have deteriorated as a result of contact with liquids or gases or as a result of blows.

Appliances subject to natural wear and tear or deterioration due to inappropriate use.

The costs resulting from the shipment or reception of the material.

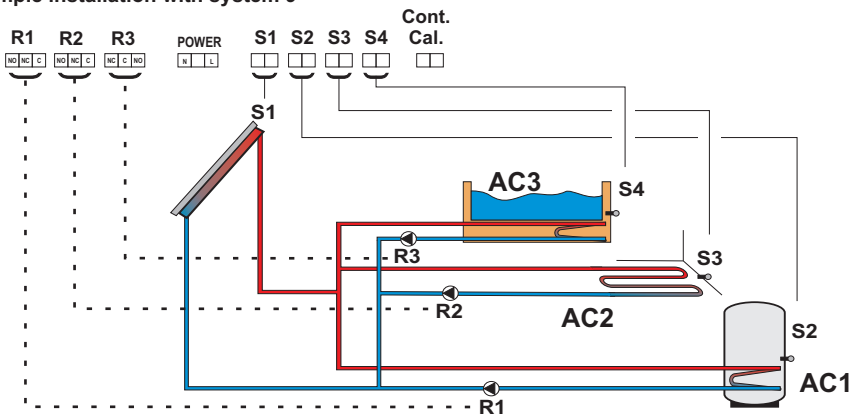
Claims for indemnification due to consequential loss, indemnification for use and indirect damages, as long as they are not subject to mandatory liability in accordance with legislation

EXAMPLE CHARGE PRIORITY OPERATION

When a system uses 2 or 3 accumulators (tanks, heating, swimming pools, etc.), priority can be indicated for charging them (accumulator priority parameter page 35). The minimum temperature of the accumulators is configured and the order in which they are to be charged is indicated, classifying them as priority and non-priority.

When an accumulator is below its priority temperature, it is charged exclusively until the temperature is reached. If, while this accumulator is charging, another falls below the temperature, the two accumulators become priorities and they are charged at the same time until each one reaches its minimum temperature.

Example installation with system 9

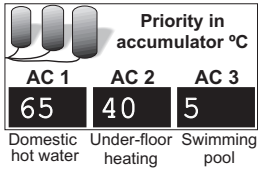


In winter

If the temperatures of AC1 and AC2 fall below 65 and 40, the installation heats both at the same time. When AC2 reaches 40, the installation heats only AC1 until it reaches 65 once this temperature is reached, no accumulators are in priority mode and the installation heats the three ACs until they reach 80, 45 and 25.

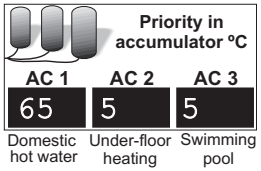
If, due to a lack of heat, any of them falls below their priority temperature, the priority is reactivated and the installation heats only the accumulator that is below its value.

In the case of excessive heat: AC1 has reached 80 and AC2 has reached 45, it heats the swimming pool that is used to dissipate the excess heat instead of accumulating it in the collectors, thus avoiding the overheating of the installation.



in summer

As the radiant under-floor heating is not activated in summer, the priority is set at 5°C and the alarm at 5°C to disable it and AC3 at 5°C and the alarm at 35°C so that it is not a priority. Accordingly, the system heats AC1 until it reaches 65°C. Once this temperature has been reached, it heats AC1 and AC3 at the same time until they reach their alarm temperature, when the system stops charging the accumulators.



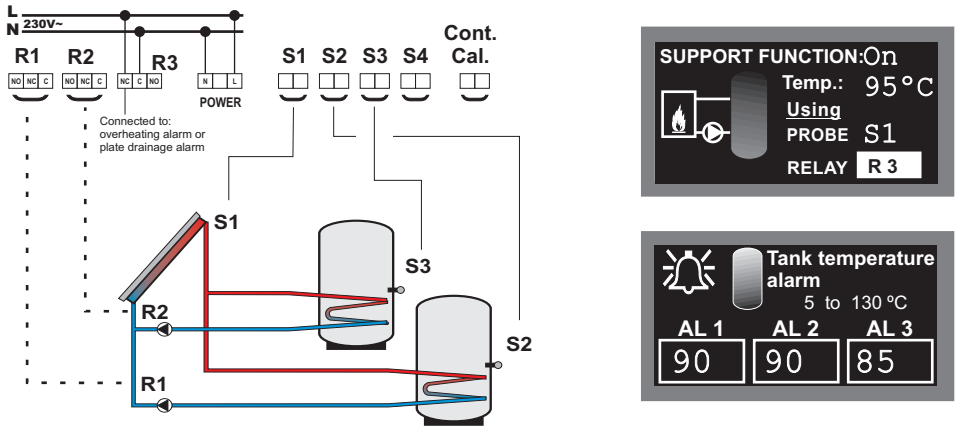
Example installations

In the systems without air heaters that are susceptible to the plates overheating, the support function can be used to implement a device to protect the plates, which would be activated with R3.

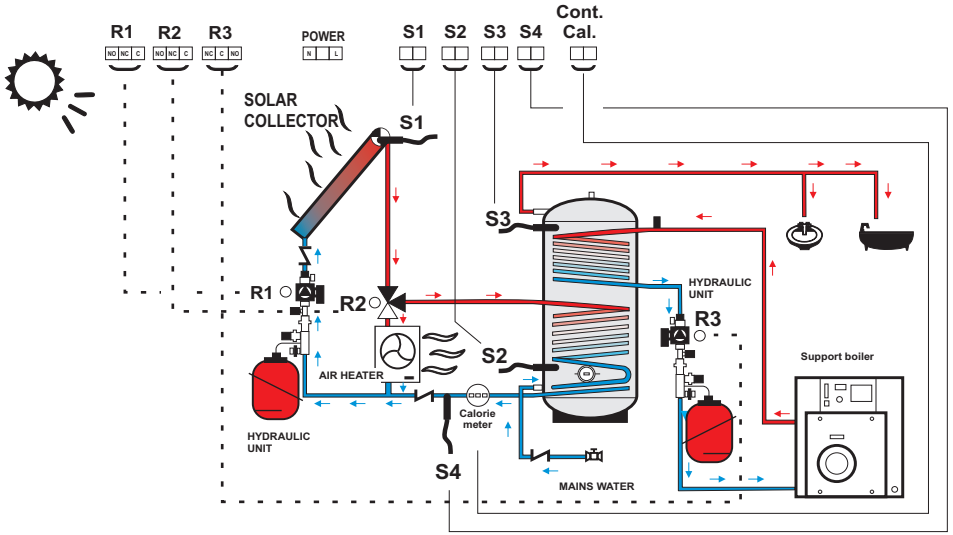
The support function is configured to regulate the probe S1 (that of the plate) and the setting is set at between 8°C and 120°C (depending on what the plates can withstand) and the device is connected to connector R3 between the voltage link and the normally closed link (NC and C, these connectors act as switches and do not supply voltage).

When the plate temperature reaches the setting, relay R3 is disabled, closing the contact between C and NC, which would detect an alarm and act accordingly, activating a cooling mechanism or simply activating an alarm. In the event of a mains failure, the alarm will also be activated, since the status of NC and C is the standby status of the relay. Therefore, a cooling system that uses energy other than the mains would be as effective.

PLATE COOLING USING THE SUPPORT FUNCTION IN SYSTEM 3



SUPPORT FUNCTION ON SYSTEM 1



Presentation

MATERIAL TO BE RECEIVED IN THE KIT

For the RAIL model: 20.029

- Thermal solar energy regulator
- 4 PTC2000 probes 3 m
- Technical manual
- Probe contact terminal

For the model in box:

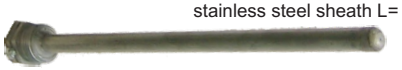
- Thermal solar energy regulator
- 4 PTC2000 probes 3 m
- Technical manual
- Probe contact terminal

POSSIBLE ACCESSORIES


stainless steel sheath L= 20 mm


stainless steel sheath L= 50 mm


stainless steel sheath L= 100 mm


stainless steel sheath L= 200 mm

Quick-installation pipe

Landline telephone control
3 channels + 3 alarms

Landline/mobile line telephone control
1 channel + 1 alarm

Calorie meter

Conductive silicone for sheaths

DESCRIPTION

First of all, thank you for your purchase and the trust you have placed in the appliance. We hope the Allegro 543G meets your installation requirements.

The Allegro 543G is a regulator for storing thermal solar energy with 3 outputs per relay of 12(5)A 250 V~ and 4 inputs per PTC2000 probe of 3 m and a range of -40ºC to +140ºC. It also has an impulse input. The relay has potential-free contacts, which means that they will act only as switches, and devices connected to the relay must be powered.

The Allegro 543G has 9 different pre-defined installation systems, which will help you configure your installation easily and quickly. Depending on the preferred system, you will be able to activate complementary functions, such as the support function, return increase, double pump, anti-freeze, calorie meter, tubular sensors and accumulator cooling, as long as the resources (probes and relays) required by the function are not occupied by the preferred system for configuring the installation.

TECHNICAL SPECIFICATIONS

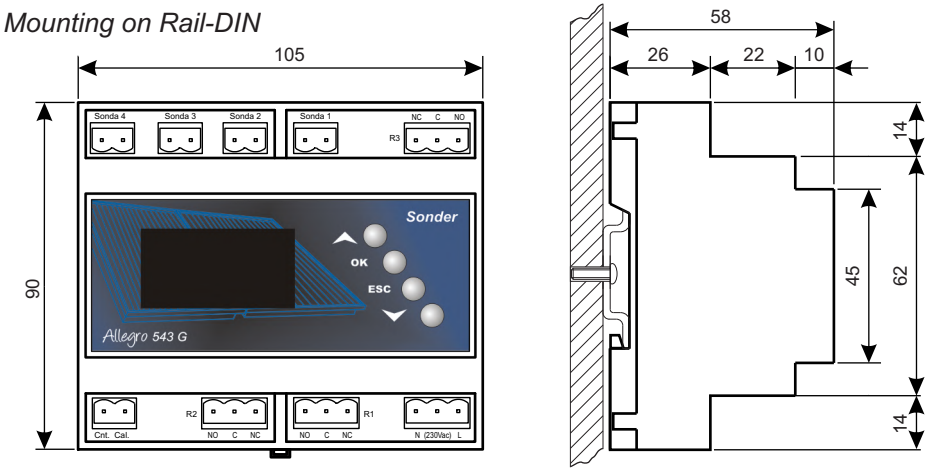
Power Supply	230 V AC +10% -15% 50/60Hz max. 2 VA.
Outputs	Three SPDT relays max. 250 V~, 12(5) A. Potential-free contacts (act as switches).
Inputs	4 PTC2000 probes / L = 3 m / Range: -40ºC to +140ºC + 1 Calorie meter

ºC	-20	-10	0	+10	+20	+30	+40	+50	+60	+70	+80	+90	+100	+110	+120
Ω	1323	1447	1579	1720	1865	2019	2180	2350	2525	2713	2911	3116	3326	3539	3754

Cabling	Min. section power =0.75 mm^2 / Min. section relays =1.5 mm^2 / Max. section =2.5 mm^2 / Type = H05v-k
Ambient	Temperature = from 0ºC to 40ºC / Humidity = from 20% to 85% / Pollution = 2
Operation	Software class A; Action type 1.B.
Tests	Assigned pulse voltage: 2500 V
	Pressure ball temperatures: 100ºC (voltage conductor anchor parts)
	75ºC (accessible plastic parts)

DIMENSIONS

Mounting on Rail-DIN



PARAMETERS

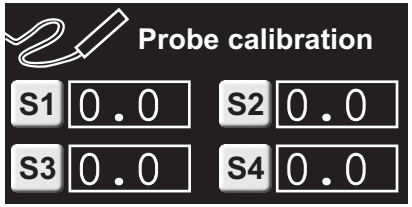
PROBE CALIBRATION

You can use this parameter to adjust the reading for each of your probes. Use a precision thermometer to take the reading and then adjust the probe to the temperature.

On the **PARAMETERS** menu, press ▲▼ until the Probe Calibration screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.



Scale: -9.0 to +9.0ºC / Preset at: 0.0º

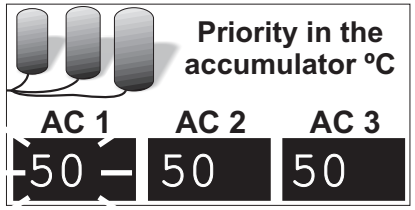
PRIORITY IN THE ACCUMULATOR

This parameter determines the order in which the accumulators will be charged if the installation includes more than one. You will find an example installation on page 37.

On the **PARAMETERS** menu, press ▲▼ until the activation differential screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.



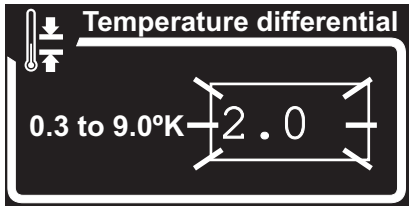
Scale: 5 to 100ºC / Preset: 5ºC

WARNING: The scale of this parameter can be affected by the configuration of the accumulator temperature alarm.

E.g. If the AC1 alarm is set at 70°C, you will not be able to set the priority above this value. If the priority is set at 60°C and you try to lower the alarm to 50°C, the same occurs. The alarm scale is also blocked.

PARAMETERS

TEMPERATURE DIFFERENTIAL



This parameter lets you configure the temperature differential.

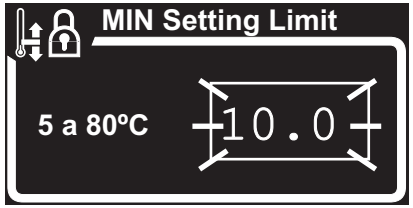
On the **PARAMETERS** menu, press ▲▼ until the temperature differential screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.

Scale: 0.3 to 9.0ºK / Preset at: 2.0ºK

MINIMUM SETTING LIMIT



This parameter will limit the minimum value to which the setting temperature can be adjusted for the support function.

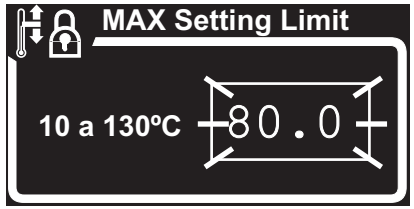
On the **PARAMETERS** menu, press ▲▼ until the Minimum Setting Limit screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.

Scale: 5 to 80ºC / Preset at: 10ºC

MAXIMUM SETTING LIMIT



This parameter will limit the maximum value to which the setting temperature can be adjusted for the support function.

On the **PARAMETERS** menu, press ▲▼ until the Maximum Setting Limit screen appears.

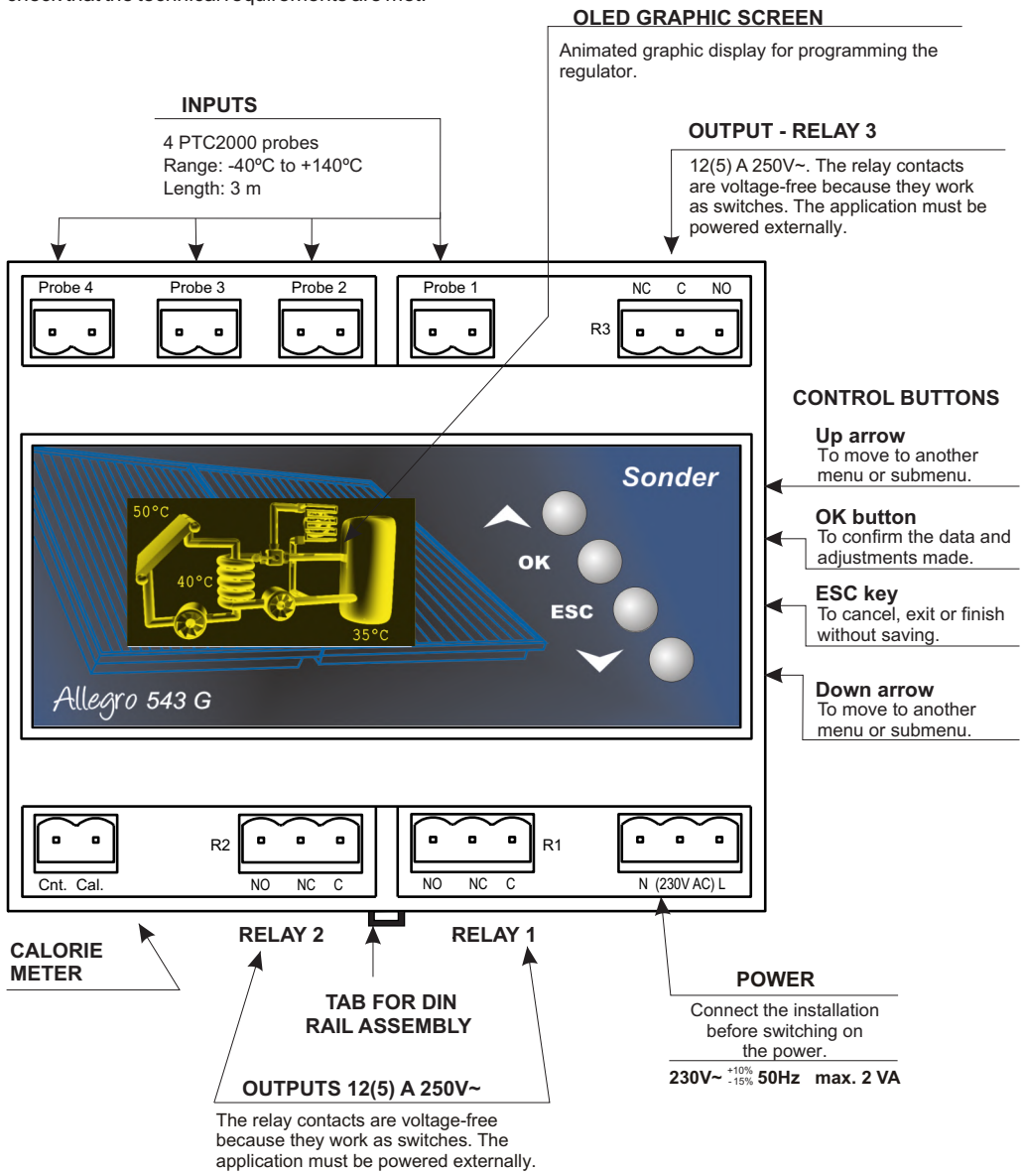
Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.

Scale: 10 to 130ºC / Preset at: 80ºC

PRESENTATION

Before making the electrical connections, we recommend you read the entire manual carefully and check that the technical requirements are met.



START-UP

The Allegro 543G is a thermal solar regulator with a dynamic OLED graphic screen. This will enable you to configure and adjust the installation easily and quickly.

For optimum operation, read this section carefully. It contains the procedures for adjusting the Allegro 543G to your installation.

Steps to follow:

- Once it has been installed and connected, you can turn on the Allegro 543G.

- Before configuring the system values and settings, perform the probe and relay test to check the correct operation of the installation (this step is explained on page 11)

- Once the operation has been checked, choose the system that best adapts to your type of installation from the nine possible configurations (page 16).

- All the parameters are configured at the factory with default values. If these values do not fit the needs of your installation, please check page 32 to configure them.

- If you wish to activate one of the functions, first of all make sure of the resources required by the function, the type (fixed, exclusive or shared) and check that the configured system leaves the necessary resources available.

Check **Resource Control,** this section contains a table with the fixed system resources and a list of resources for the functions.

The Allegro 543G has the following resources:

- Four PTC2000 probes (S1, S2, S3, S4)

- 3 relays 12(5)A 250V~ (R1, R2, R3)

- 1 impulse input (Cnt. Cal. - Calorie meter)

These resources are shared by systems and functions in different ways.

The systems use the resources in a fixed and shared manner (they are pre-assigned resources that can be shared with the functions).

The functions use them in a fixed or configurable and shared or exclusive way (when they are used exclusively, the resource cannot be shared by either a system or by another function).

If the function is chosen with one of the exclusive resources occupied by another function or by the current system, you will be shown a message on the screen indicating that the option is not possible due to the lack of resources.

If you are choosing a system that needs a resource that has been exclusively assigned by one of the active functions, you will also be shown an error message on the screen.

Practical examples

If you have configured systems 8 or 9, you will not be able to use the support functions, double pump and boiler return increase functions since they need an EXCLUSIVE relay or probe and systems 8 and 9 have all the resources occupied.

If you have configured systems 2, 3, 4, 5, 6 or 7 and you activate the support function, you will not be able to activate the boiler return increase functions since there is no relay for you to configure.

The antifreeze and calorie meter functions can be activated with all the systems since the probes that it requires are in shared mode.

PARAMETERS

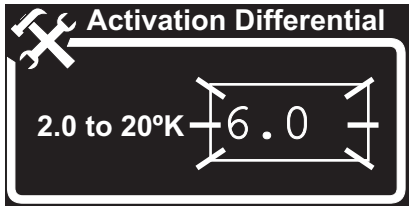
ACTIVATION DIFFERENTIAL

This parameter defines the temperature difference that there should be between the accumulator and the solar collector in order to activate the pump.

On the **PARAMETERS** menu, press ▲▼ until the activation differential screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.



Scale: 2.0 to 20ºK / Preset at: 6.0ºK

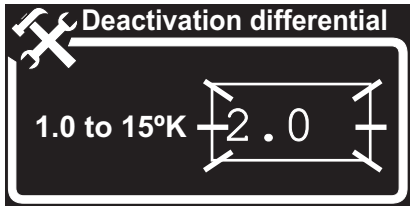
DEACTIVATION DIFFERENTIAL

This parameter defines the temperature difference that there should be between the accumulator and the solar collector in order to deactivate the pump (relay **R1**)

On the **PARAMETERS** menu, press ▲▼ until the deactivation differential screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.



Scale: 1.0 to 15ºK / Preset at: 2.0ºK

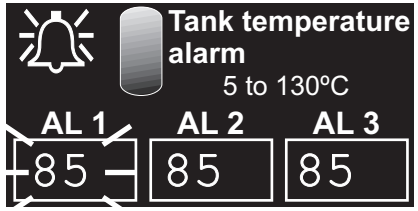
TANK ALARM

This parameter defines an accumulator temperature alarm. Depending on the system, it activates an air heater, a cooling system, another accumulator is charged or the circulation is stopped.

On the **PARAMETERS** menu, press ▲▼ until the temperature tank alarm screen appears.

Press **OK** to enter function adjustments and use the buttons ▲▼ to define the desired value.

Press **ESC** to move backwards and press **OK** to memorise the adjusted values.



Scale: 10 to 130ºC / Preset: 85ºC

PARAMETERS

For the normal use of your installation, the factory values are considered as the most common for each type of system. If they are suitable for you, the appliance is ready for your installation to be controlled and regulated. If, due to insulation requirements, you need any other adjustment, please read this section carefully.

To enter the menu when in normal operation mode, press any key (except **ESC**) and use the arrow buttons to move to **PARAMETERS**. Then press **OK**.

On the menu, you can adjust the parameters that will define the operation of the installation.

Defined values and scales for parameters

PARAMETER	SCALE	ADJUSTED
Activation differential	2.0 to 20.0ºK	6ºK
Deactivation differential	1.0 to 15.0ºK	2ºK
Temperature tank alarm *	5 to 130ºC	85ºC
Temperature differential	0.3 to 9.0ºK	2ºK
Minimum setting limit	5 to 80ºC	10ºC
Maximum setting limit	10 to 130ºC	80ºC
Probe calibration	-9.0 to +9.0ºC	0ºC
Priority in the accumulator *	5 to 130ºC	5ºC

* The values of the tank alarm and priority parameters in the accumulator are connected together so that the alarm cannot be below the value of the tank priority and the value of the tank priority cannot be higher than the alarm. This could block the parameter regulation scale.

RESOURCE CONTROL

Fixed resources used by systems

SYSTEM	1	2	3	4	5	6	7	8	9
Probe **S1**	X	X	X	X	X	X	X	X	X
Probe **S2**	X	X	X	X	X	X	X	X	X
Probe **S3**			X	X	X	X	X	X	X
Probe **S4**									X
Relay **R1**	X	X	X	X	X	X	X	X	X
Relay **R2**		X	X	X	X	X	X	X	X
Relay **R3**								X	X

Function resources

SUPPORT
- 1 exclusive and fixed relay: **R3**
- 1 configurable probe that can be shared

BOILER RETURN INCREASE
- 1 exclusive and configurable relay
- 1 exclusive and fixed probe: **S4**
- 1 configurable probe that can be shared

CALORIE METER
- 2 probes that can be shared

DOUBLE PUMP
- 1 configurable relay that can be shared
- 1 configurable relay in exclusive mode

ANTIFREEZE
- This will use the probes and relays it considers appropriate in shared mode (this will depend on the system that has been configured)

ACCUMULATOR COOLING
- This will use the probes and relays it considers appropriate in shared mode (this will depend on the system that has been configured)

TUBULAR SENSORS
- This will use the probes and relays it considers appropriate in shared mode (this will depend on the system that has been configured.

FACTORY VALUES

SYSTEMS System 1

PARAMETERS

Activation differential:	6ºK
Deactivation differential:	2ºK
Temperature differential:	2ºK
Minimum setting limit:	10ºC
Maximum setting limit:	80ºC

FUNCTIONS

Support	Setting:	50 ºC
Increase return	Activation differential:	4ºK
Antifreeze	Setting temperature:	5ºC
Double pump	Hours:	20 h
Tank alarm	Alarm at:	85ºC
Tank priority	Temperature:	5ºC

To reset the values and return to the factory settings from operation in normal mode:
- Press ▲ once to enter the menu,
- Press ▲ and **ESC** at the same time for 8 seconds.

All the statistical values, parameter settings, function activations and insulation type are reset, but the total operating hours of the relays and the megawatts/hours of the calorie meter are not reset.

DISPLAY ON SCREEN

During normal operation, the screen displays the system chosen and the reading of the probes for the corresponding system.

Through graphic animations, you will know if the pump is in operation at that time as well as the direction of the valve and, every 50 seconds, the screen will display the support functions, return and calorie meter if they are activated and, when they are in operation, the animation shall be displayed in movement.

The antifreeze, double pump, accumulator cooling and tubular sensor functions will be displayed if they are activated and in operation.

The screen provides access to the menu for configuring the parameters, functions and systems and viewing the statistics by pressing any key (except **ESC**)

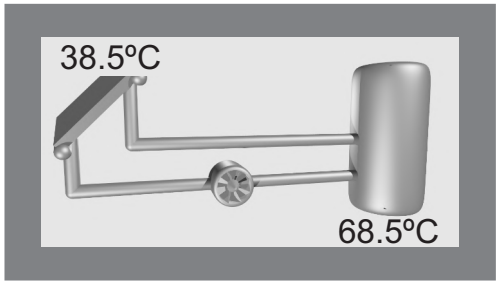
If you press and hold down **ESC** for 6 seconds, the programme enters the probe and relay test (page 11).

This screen also provides access to the value reset for the parameters, functions and systems.

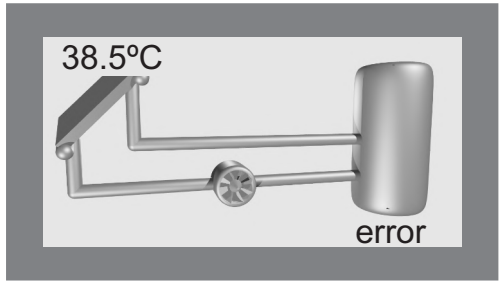
If you are in configuration on any menu and you do not press any key for 1 minute, the appliance exits to normal operation without memorising the changes.

From the normal operation mode, it passes to screensaver mode after 14 minutes if no button is pressed.

Screen: Normal mode operation



Normal mode operation with probe error



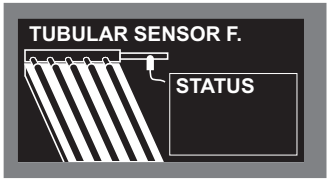
If no key is pressed during 14 minutes, the programme enters screensaver mode !

FUNCTIONS

TUBULAR SENSOR FUNCTION

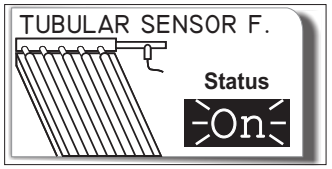
This updates the reading of the probes installed outside the collectors through recirculation during 30 seconds when it detects that the temperature has increased 2º K with regard to the last reading memorised.

On the **FUNCTIONS** menu, press ▲▼ until you come to the tubular sensors function and press **OK**.
A screen is displayed showing the status.
Press **OK** to display a screen with information about the function. Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCTIONS** menu.



Function adjustments

This screen lets you activate/deactivate the function.
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ to change its value or **OK** to move on to the next function.



SUMMARY

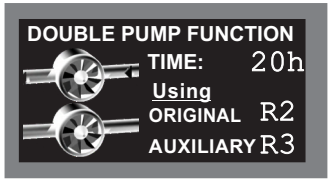
FUNCTION	DESCRIPTION	RESOURCES
Support	This controls an external heat source through the thermostat for the additional heating of the solar accumulator with a fuel-oil or gas burner, etc.	1 exclusive and configurable probe 1 exclusive and fixed relay
Increase Return	This controls a valve for increasing the temperature of the heating return circuit to make use of the solar heat from the accumulator for heating.	2 probes, 1 exclusive and fixed and 1 shared and configurable 1 exclusive configurable relay
Calorie meter	This measures the energy applied to your installation by the solar collector through the reading of two probes and the impulse input.	2 shared and configurable probes
Antifreeze	On installations that use water without cooling as a heating liquid, the installation heat is used to prevent the circuit from freezing.	1 or 2 shared probes 1 or 2 shared relays
Double pump (Alternation)	This lets you double pump in your installation so that the pumps work alternatively.	2 configurable relays 1 exclusive and 1 shared
Cooling Accumulator	This lets you reduce the accumulator temperature through the recirculation of the collector.	Does not need resources
Tubular Sensor	This reduces the reading delay for probes installed outside the collector through a short recirculation process.	Does not need resources

FUNCTIONS

DOUBLE PUMP ALTERNATION FUNCTION

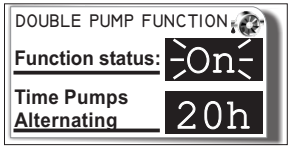
This function lets you double pump in your installation so that the pumps work alternately.

On the **FUNCIONES** menu, press ▲▼ until you come to the double pump function and press **OK**.
A screen is displayed where you can see the status and operation time for each pump and the resources used.
Press **OK** to display a screen with information about the function. Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCIONES** menu.

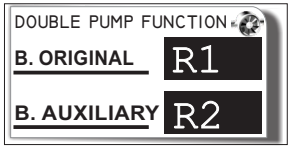


Function adjustments

On the first screen, you can activate/deactivate the function and establish the total time for the operation of each pump before it is changed.
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.



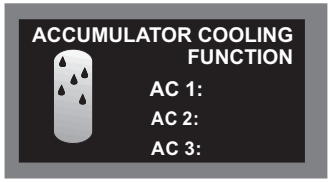
Press **OK** to move on to the second screen, where you can select the relays to command each pump.
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.



ACCUMULATOR COOLING FUNCTION

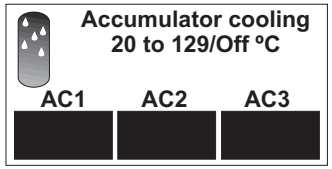
This function lets you reduce the temperature of the accumulator through the recirculation of the collector when it detects that the collector temperature is lower than that of the accumulator

On the **FUNCIONES** menu, press ▲▼ until you come to the accumulator cooling function and press **OK**.
A screen is displayed showing the status, temperature and resources used.
Press **OK** to display a screen with information about the function. Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCIONES** menu.



Function adjustments

On the screen, you can activate/deactivate the function and configure the temperature for each of the three accumulators.
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ to change its value or **OK** to move on to the next function.

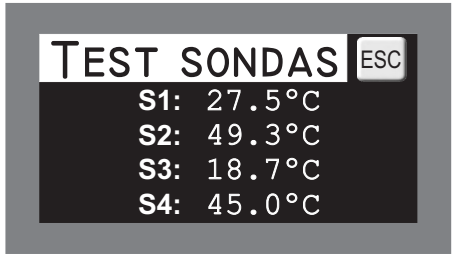


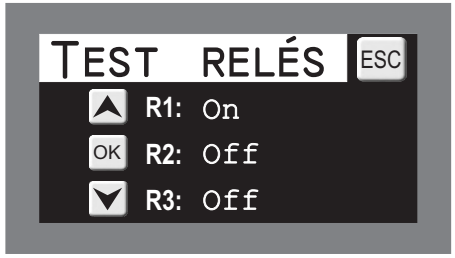
PROBE AND RELAY OPERATION TEST

From operation in normal mode:

- Press and hold down **ESC** for 6 seconds to enter the probe test, which displays the current temperature of all the probes. This information will let you check the setting of each probe and its correct operation. If the reading of one or more probes is incorrect, check that they are connected correctly and that their cables have not been cut.

- Press **ESC** once to enter the relay test (forced manual test). From this menu, you can activate/deactivate each relay manually.
Press ▲ to activate/deactivate relay **R1**
Press **OK** to activate/deactivate relay **R2**
Press ▼ to activate/deactivate relay **R3**





It is very important to press ESC to exit the test when you have finished since, while you are in the test, the Allegro 543G disables the system regulation !

RECOMMENDED

PROBES

- It is recommended that you use only original probes (3 m PTC2000). If you need to extend them, remember that they should be extended by soldering so as not to lose the reading value.

- The plate probes must be connected to the corresponding outputs to the installation.

- The accumulator probes must be connected to the interior.

RELAYS

- The relays that operate the devices of your installation are potential-free contacts and work only as switches. Consequently, they must be powered independently, as corresponds to each device.

- Make sure that the connections to the relay contacts are correct (the layout of the connections of relays 1 and 2 are different from those of relay 3)

CONFIGURATION

Once all the connections have been made and the appliance has been connected to the power supply, the screen is displayed in normal mode operation.

If you press any button (**OK**, ▲ , ▼) except **ESC**, the screen displays the main menu for choosing the submenu you wish to enter using the buttons ▲ ▼.

Press **OK** to enter the submenu, e.g. Functions.

Press the buttons ▲ ▼ to move around the submenu until you find the function you want to configure. These screens indicate the status of the function and its values.

Press **OK** on the desired function to find an initial screen with information about the function. Press **OK** again to move to the screen for adjusting the function values.

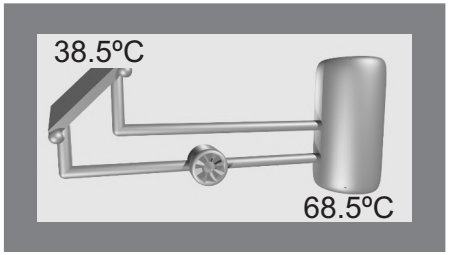
Press **OK** to save the changes and exit to the functions submenu, saving the changes made.

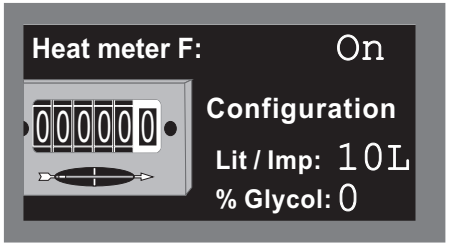
Press **ESC** to return to the functions submenu without saving the changes.

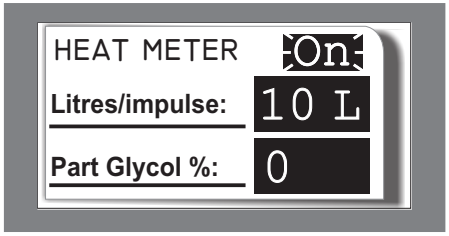
Press **ESC** again to return to the menu.

Press it again to exit to the normal appliance regulation operation.

This method applies to all the configuration menus and submenus.





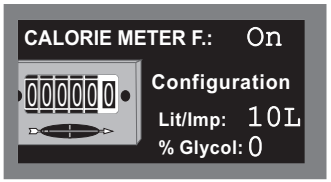


FUNCTIONS

CALORIE METER FUNCTION

This function measures the quantity of energy applied to your installation by the solar collector through the reading of two probes (one at the input and one at the output of the part of the installation that is to be controlled) and the impulse input (measures the installation flow volume).

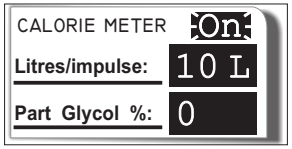
On the **FUNCTIONS** menu, press ▲▼ until you come to the calorie meter function and press **OK**.
This displays a screen where you can check the status and the configuration.
Press **OK** to display a screen with information about the function.
Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCTIONS** menu.



Function adjustments

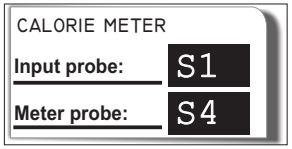
On the first screen, you can activate/deactivate the function, adjust the configuration of the impulse input and the composition of the heating liquid.

Press **OK** to display the value to be modified in



flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

Press **OK** to move on to the second screen, where you can select the input probe and the meter probe (at the input and output of the accumulator to calculate the amount of heat transferred).
Press **OK** to display the value to be modified in

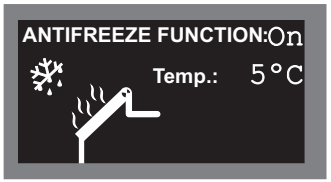


flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

ANTIFREEZE FUNCTION

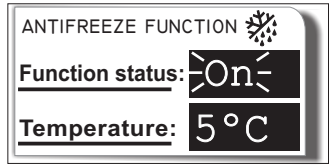
The antifreeze function has been designed for installations that use water as a heating liquid since, as it does not contain antifreeze, the heat of the installation is used to prevent the circuit from freezing.

On the **FUNCTIONS** menu, press ▲▼ until you come to the support function and press **OK**.
A screen is displayed showing the status, temperature and resources used.
Press **OK** to display a screen with information about the function.
Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCTIONS** menu.



Function adjustments

On the next screen, you can activate/deactivate the function and establish the temperature at which the pump will be activated and the accumulator water will be circulated around the installation circuit up to the solar collector.
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

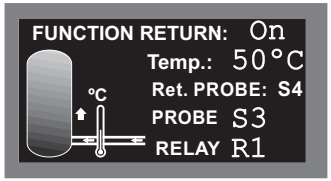


FUNCTIONS

RETURN INCREASE FUNCTION

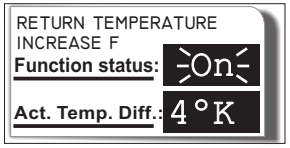
With the return increase function, you can control a valve by diverting the domestic hot water circuit flow to increase the heating return circuit temperature. This will let you use the solar heat of the accumulator for heating.

On the **FUNCTIONS** menu, press ▲▼ until you come to the return function and press **OK**.
This displays a screen where you can check the status and the configuration.
Press **OK** to display a screen with information about the function.
Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCTIONS** menu.



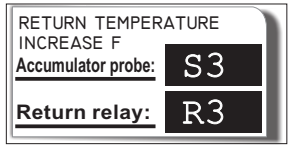
Function adjustments

On the first screen, you can activate/deactivate the function and establish the temperature differential between the solar circuit accumulator and the heating circuit return for it to be activated.
Press **OK** to display the value to be modified



in flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

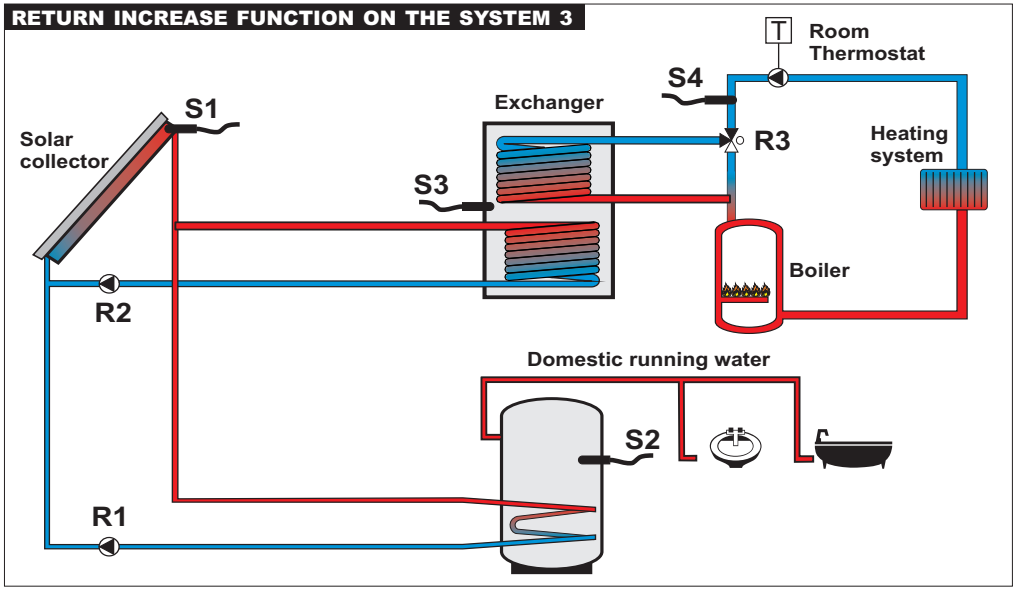
Press **OK** to move on to the second screen where you can select the probe to be shared with the accumulator and the relay that operates the return circuit valve.
The S4 probe on the heating return circuit is in fixed mode.



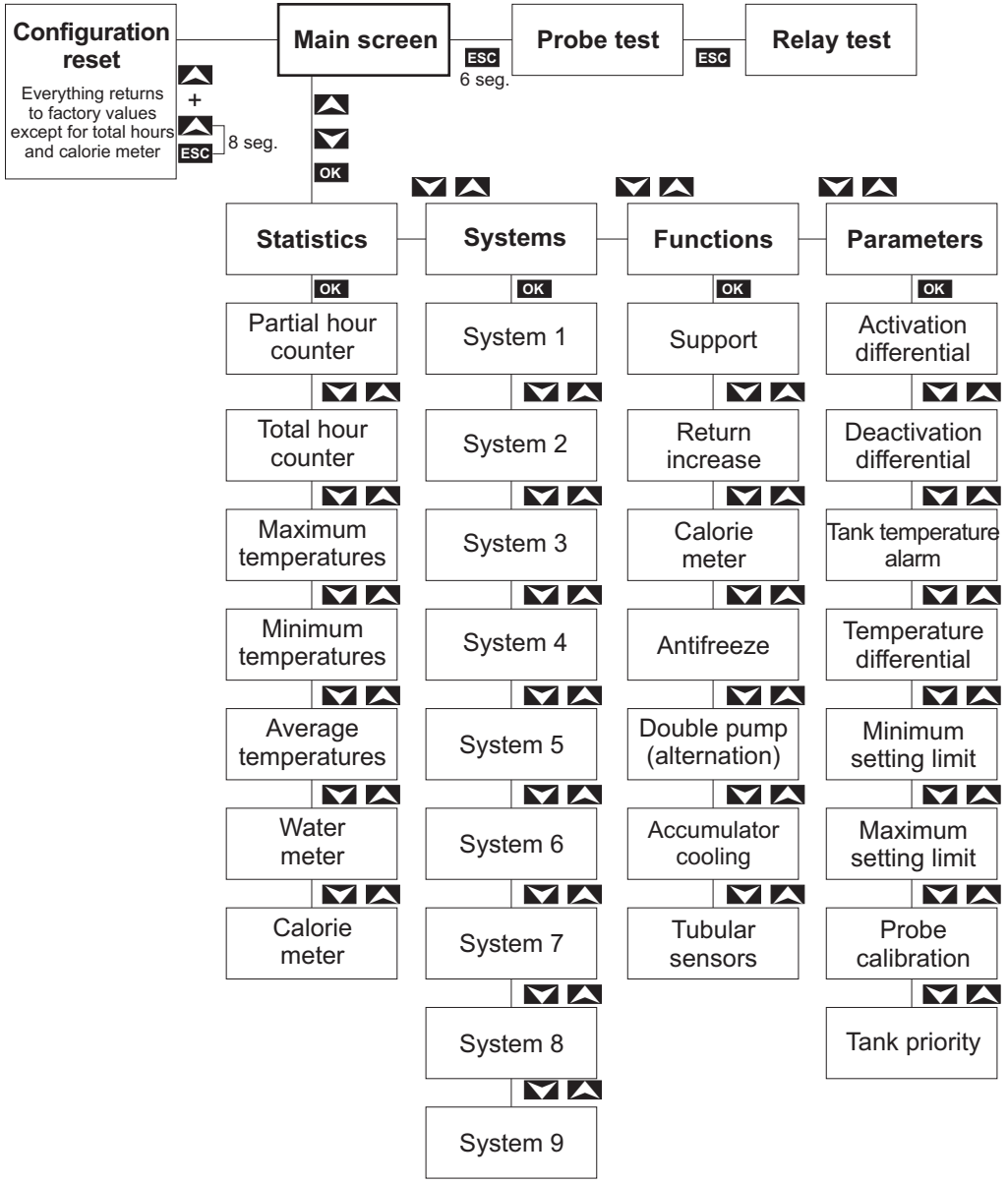
Press **OK** to display the value to be modified in flashing mode. Press ▲▼ To change its value or **OK** to modify the next value.

Example application

RETURN INCREASE FUNCTION ON THE SYSTEM 3



MENU MAP



The submenus contain the information screens and screens for adjusting the values for functions, parameters and systems.

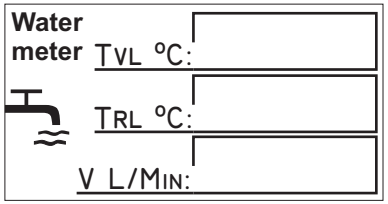
STATISTICS

This menu contains all the information the Allegro 543G has collected since its operation, with which you can optimise your installation, since it will provide information about operating times, maximum and minimum temperatures as well as the water and calorie meters. All this information will let you assess the use of the installation in accordance with the weather conditions and its configuration.

To enter the menu, in normal operation mode, press any button (except **ESC**). The screen displays the **STATISTICS** menu. Press **OK** to enter the submenu.

WATER METER

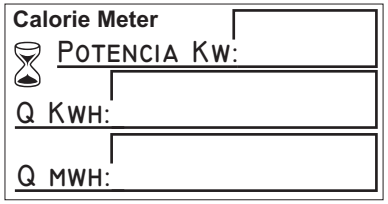
This submenu displays the inlet water temperature (TvL), the outlet temperature to the accumulator that is to be controlled (TrL) and the heating liquid flow volume at the time.



CALORIE METER

The calorie meter will provide information about the power being supplied at that time by the plates to the installation measured by the meter, the partial kWh (press **OK** to reset to zero) and the megawatts per hour.

With this information, you can see the heat provided to the installation by the solar collectors and see the performance of the installation.

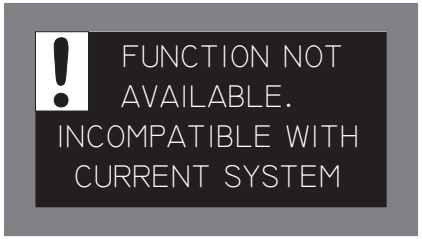


FUNCTIONS

To access the system menu, press any button (except **ESC**) and use the arrows to move to **FUNCTIONS**. Press **OK**, this contains 5 additional functions for your installation:

- Support function
- Return increase function
- Calorie meter function
- Double pump function
- Antifreeze function

Before activating a function, check that the resources required by each function are free or shared; otherwise, the appliance will display an error message and exit the functions menu, leaving the function deactivated.



All the functions leave the factory deactivated !

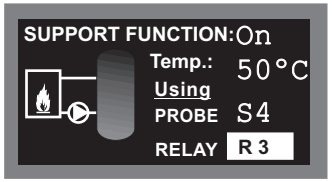
SUPPORT FUNCTION

This function lets you control an external or additional heat source by means of the independent thermostat for the additional heating of the solar accumulator with a fuel-oil or gas burner or electrical element.

On the **FUNCTIONS** menu, press ▲▼ until you come to the support function and press **OK**.

A screen is displayed showing the status, temperature and resources used.

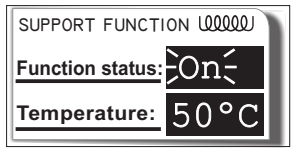
Press **OK** to display a screen with information about the function. Press **OK** again to enter function adjustments and press **ESC** to return to the **FUNCTIONS** menu.



Function adjustments

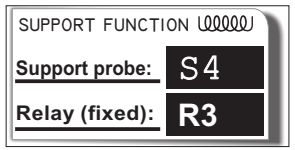
On the first screen, you can activate/deactivate the function and establish the temperature that the accumulator must reach.

Press **OK** to display the value to be modified in



flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

Press **OK** to move on to the second screen, where you can select the support probe (this must be located in the accumulator).
The relay R3 is fixed
Press **OK** to display the value to be modified in

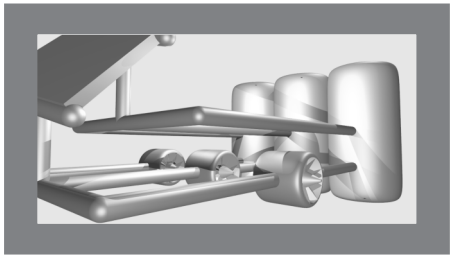


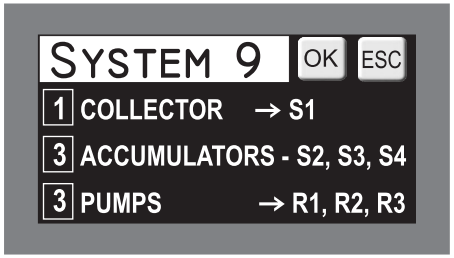
flashing mode. Press ▲▼ to change its value or **OK** to modify the next value.

SYSTEMS

SYSTEM 9

■■ 1 collector, 3 accumulators and 3 pumps





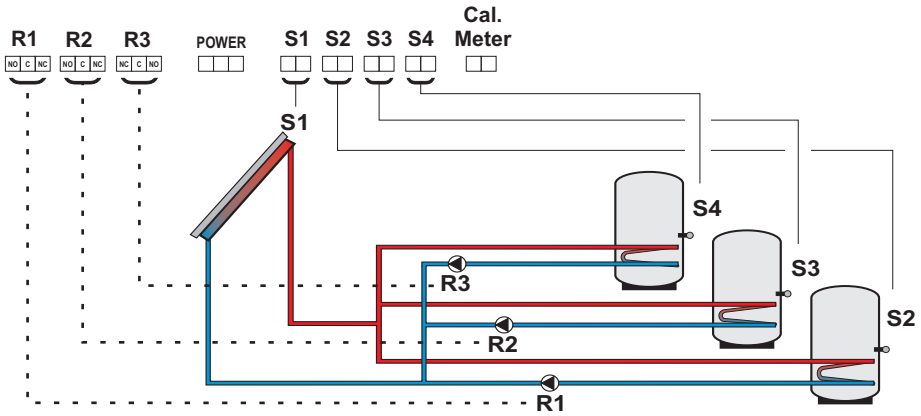
The solar collector uses the S1 probe, the accumulators (or devices to be heated) probes S2, S3 and S4. The pumps are operated using the relays R1, R2 and R3.

Operation

If the activation temperature difference between the collector field (S1) and one of the three accumulators (S1, S2, S3) is exceeded, the corresponding pump on the solar circuit (R1, R2, R3) is activated. Taking into account the adjustment of the priority switch (see page 37), the accumulators (S1, S2, S3) will be charged one after the other until the temperature difference between the collector field (S1) and the accumulators (S2, S3, S4) falls below its corresponding deactivation value or the maximum temperature of the accumulators is reached.

With this system, the following functions can be activated: calorie meter, antifreeze, tank cooling and tubular sensors.

Terminal connections

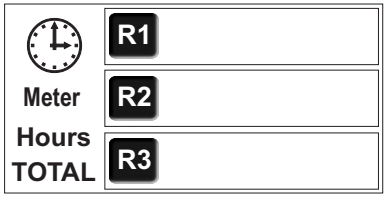


STATISTICS

HOURS COUNTER

This will provide information about the operation hours of each relay, even though they are not active.
With the partial counter, you can obtain statistics by periods, since you can press **OK** to set the values to zero.

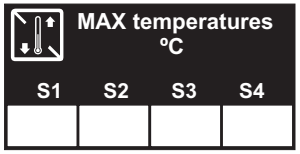
It has two sections: partial hours counter and total hours counter.
With the total counter, you can see the operation hours since the Allegro was installed.

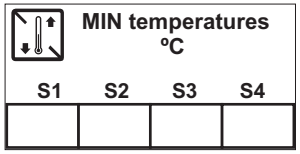


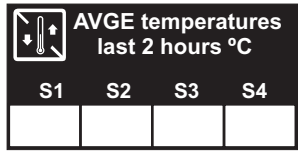
TEMPERATURES

This will provide you with information about the maximum and minimum temperatures read by the probes. These values can be reset to zero by pressing **OK** whenever you want to measure a specific period.

It also has a screen that shows the average temperature over approximately the last two hours.
When one or more probes are not connected, the maximum and minimum temperature readings for the probe are displayed with value = 0







- To access the systems menu, press any button (except **ESC**) and use the arrows to move to **SYSTEMS.**

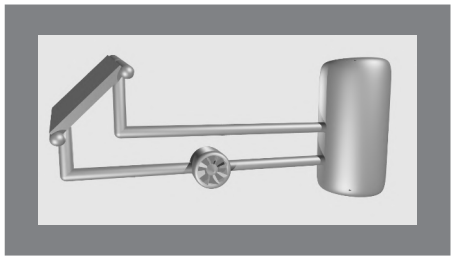
- Press **OK**.

- There are 9 installation systems for you to choose from.

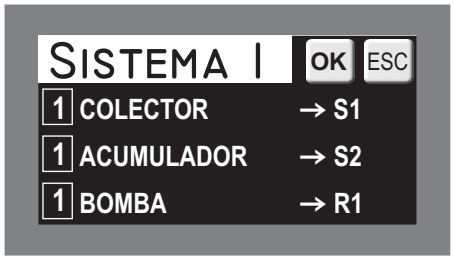
If you choose a system that needs any of the resources that are being used by active functions required in exclusive mode, a screen will be displayed with information about the problem and you will be returned to the previous systems screen.

The representation of the equipment on these systems is symbolic.

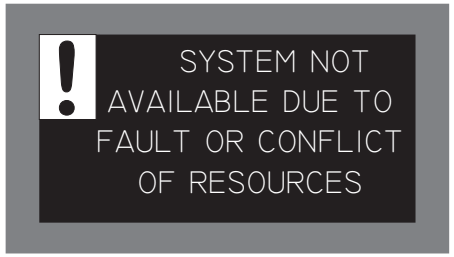
A solar plate refers to a field of solar collectors. However, when there are 2, it means that there is one field of solar collectors facing east and another field facing west.



- Each one has a graphic screen and an information screen on resources that is displayed when **OK** is pressed.

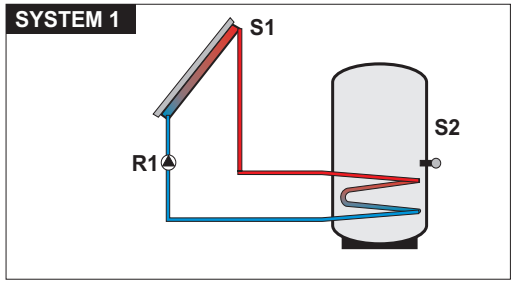


- To confirm the chosen system, press **OK**. To see the next system, press the button **ESC**. This returns to the graphic screen of the system and you can use the buttons to move to the next system.



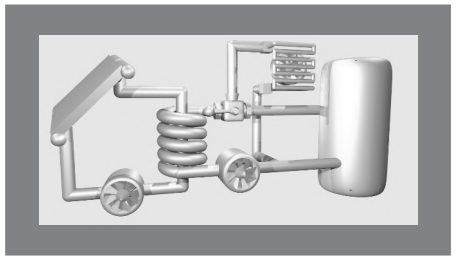
The accumulator symbols refer to one accumulator, several accumulators, a swimming pool, an under-floor radiant heating system, plate exchangers etc., depending on the type of installation.

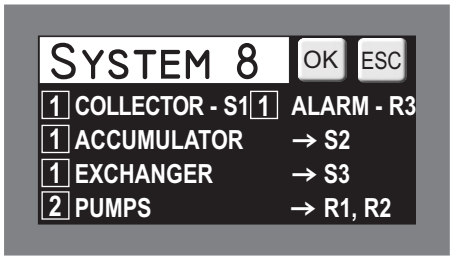
R = RELAY / S = PROBE



SYSTEM 8

■■ 1 collector, 1 accumulator, 1 exchanger, 2 pumps and 1 temperature alarm





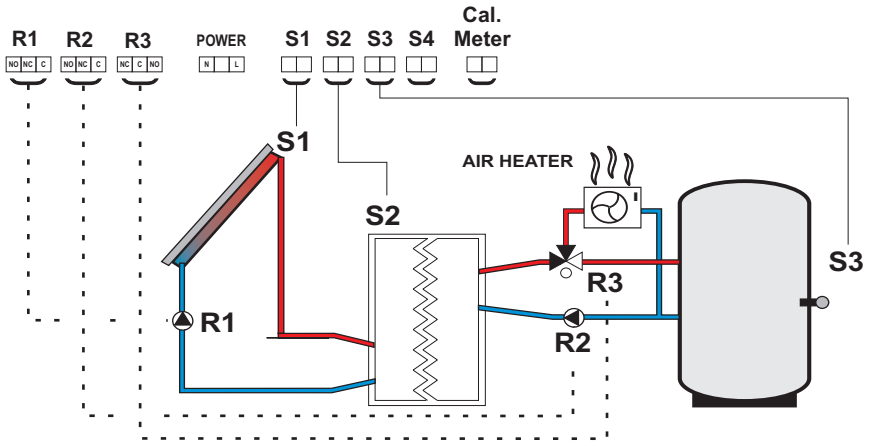
The collector field uses the probe S1 (connect to the output of the collector to the installation). The accumulator needs probe S3 (the probe will be connected to the interior of the accumulator). The exchanger is commanded by probe S2. The pumps will be operated by relays R1 and R2 and the temperature alarm, which will activate the wind generator with relay R3.

Operation

When the temperature difference between probes S1 and S2 is higher than that defined in the activation differential, relay R1 will be activated (connected to a pump) and the circuit heating liquid will circulate until the difference between S1 and S2 is equal to or less than the deactivation differential.
When the temperature difference between probes S2 and S3 is higher than that defined in the activation differential, relay R2 will be activated (connected to a pump) and the accumulator water will circulate until the difference between S2 and S3 is equal to or less than the deactivation differential.
When the tank temperature (S3) is higher than that defined in the tank alarm, relays R2 and R3 are activated. R2 for the heating liquid to circulate and R3 (connected to the air heater) to cool the liquid, and they are deactivated when the tank temperature is less than the tank alarm minus the differential or when the temperature difference between the two probes is less than the deactivation differential.

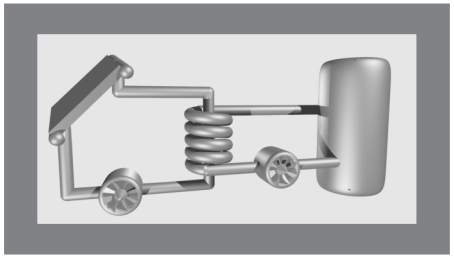
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors.

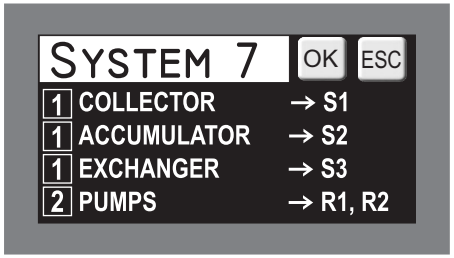
Terminal connections



SYSTEM 7

■■ 1 collector, 1 accumulator, 1 exchanger and 2 pumps





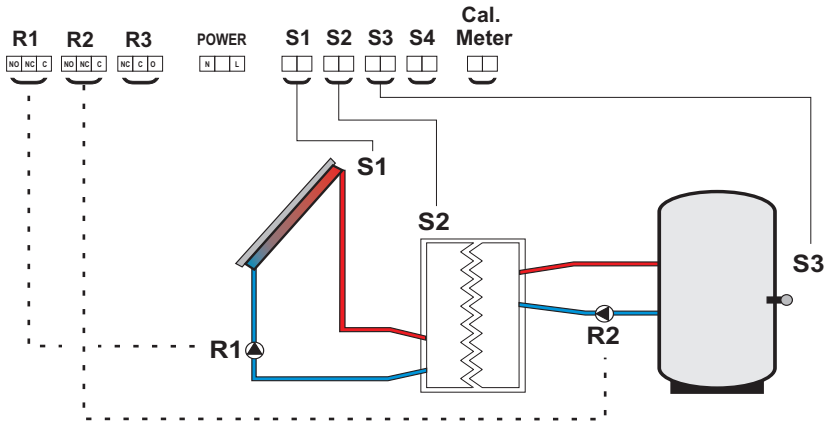
The collector field 1 uses probe S1 and the exchanger uses probe S2 (connect to the output of the collectors to the installation). The accumulator needs probe S3 (the probe will be connected to the interior of the accumulator) and the pumps are operated by relays R1 and R2.

Operation

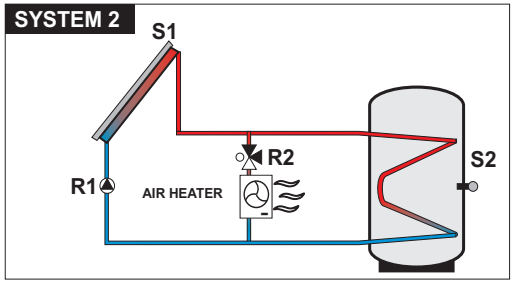
When the temperature difference between the collector field S1 and the exchanger (S2) is higher than the activation differential, the solar circuit pump (R1) is activated. The pump is deactivated when the deactivation temperature difference is reached.
When the temperature difference between the probes S2 (exchanger) and S3 is higher than the activation differential, the accumulator circuit pump (R2) is activated. The pump is deactivated when the deactivation temperature difference is reached.

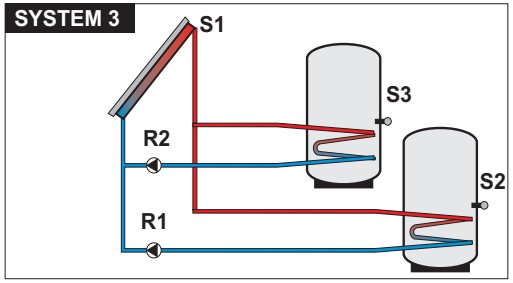
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

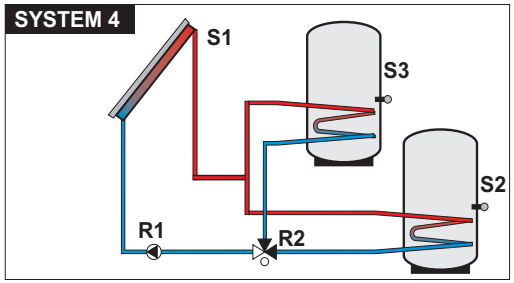
Terminal connections

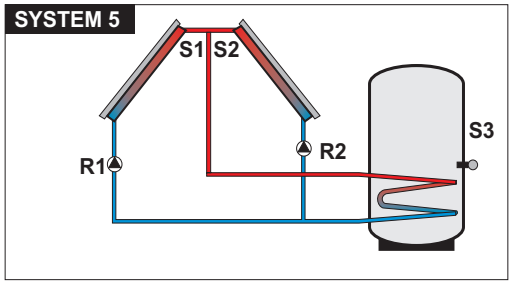


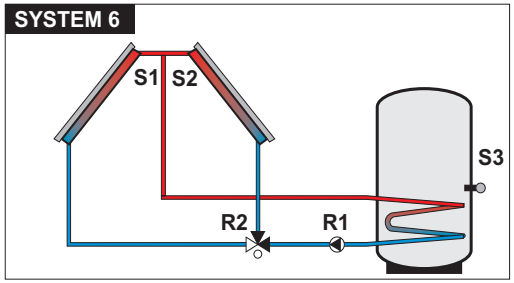
R = RELAY / S = PROBE

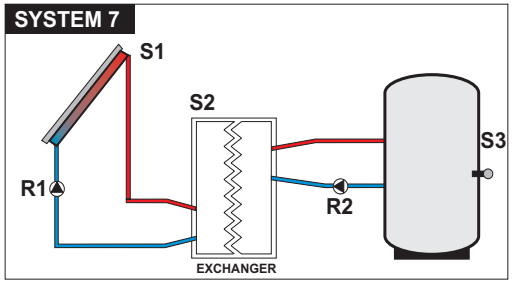


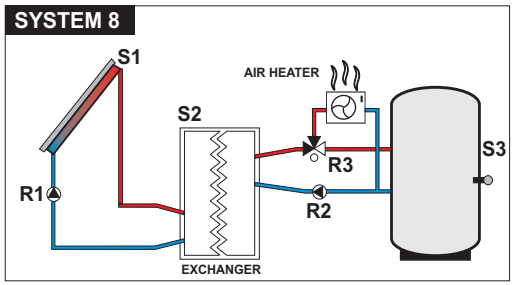


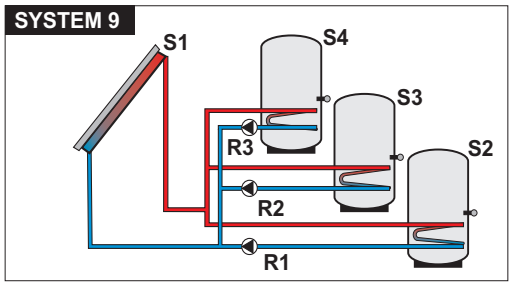






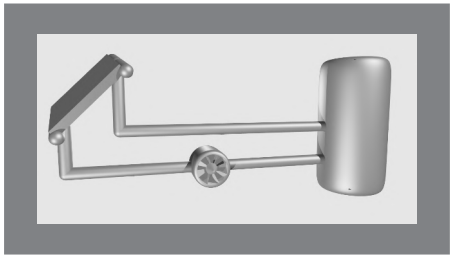


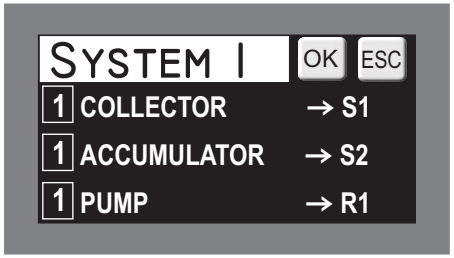




SYSTEM 1

■■ 1 collector, 1 accumulator and 1 pump





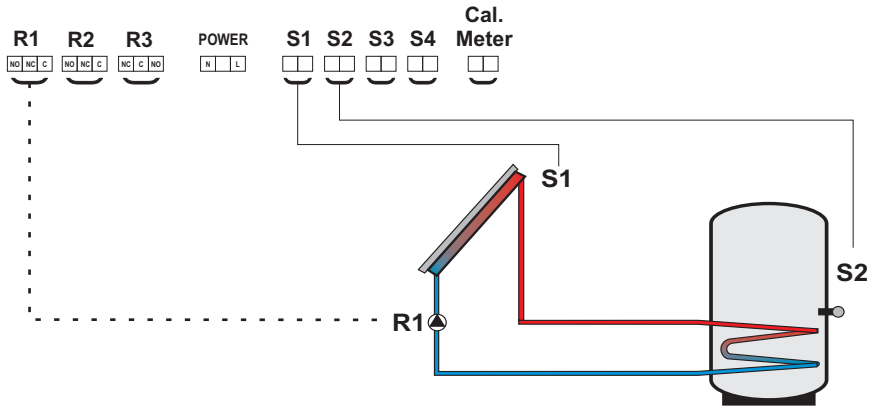
The collector uses probe S1 (connect to the output of the collector to the installation), the accumulator probe S2 (the probe will be connected to the interior of the accumulator) and the pump are operated by relay R1.

Operation

The solar circuit pump R1 is activated when the activation temperature difference between the collector field S1 and the accumulator S2 is reached. If the temperature difference between the collector field S1 and the accumulator S2 falls below the deactivation temperature difference, the solar circuit pump R1 is deactivated.

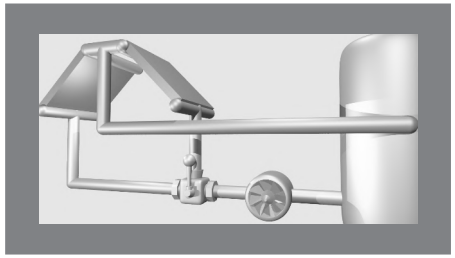
With this system, the following functions can be activated: support, boiler return increase, calorie meter, antifreeze, double pump, tank cooling and tubular sensors.

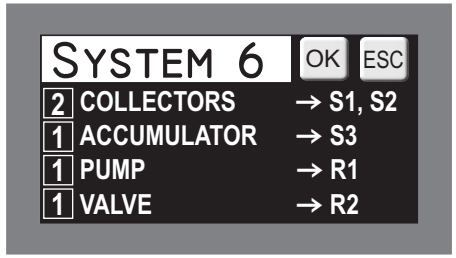
Terminal connections



SYSTEM 6

■■ 2 collectors (east/west), 1 accumulator, 1 pump and 1 valve





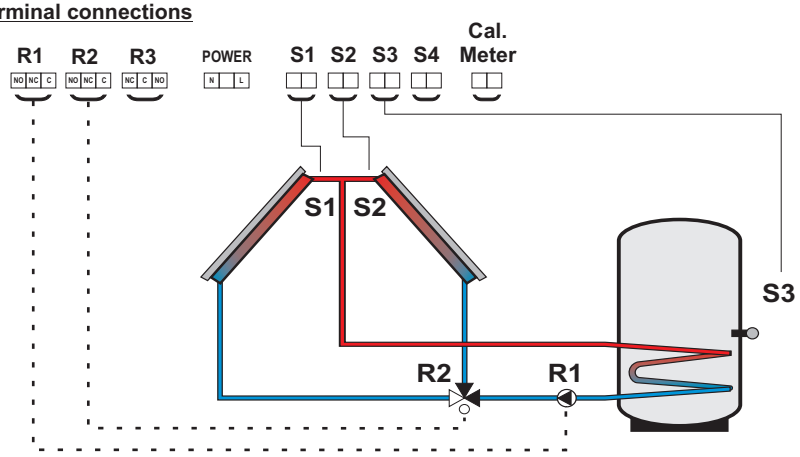
The collector field 1 uses probe S1 and the collector field 2 uses probe S2 (connect to the output of the collectors to the installation). The accumulator needs probe S3 (the probe will be connected to the interior of the accumulator) and the pump is operated by relay R1 and the valve by relay R2.

Operation

If the activation temperature difference between one of the collector fields (S1 and S2) and the accumulator (S3) is exceeded, the solar circuit pump (R1) is activated. The switch valve (R2) always switches from the collector field with the highest temperature (S1, S2). The pump (R1) is deactivated when it reaches the deactivation temperature difference of both fields of collectors (S1, S2) in relation to the accumulator (S3) or when the maximum temperature of the accumulator is reached.

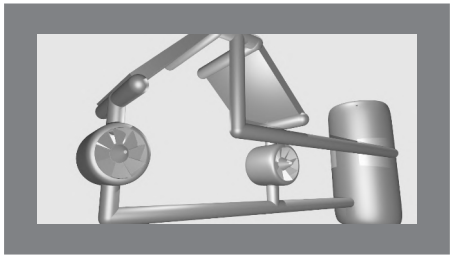
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

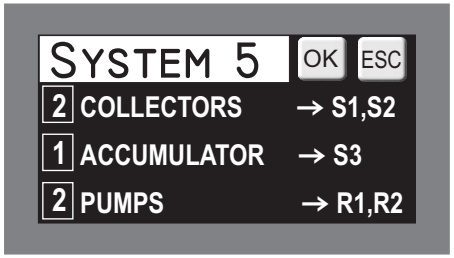
Terminal connections



SYSTEM 5

■■ 2 collectors (East/West), 1 accumulator, 2 pumps





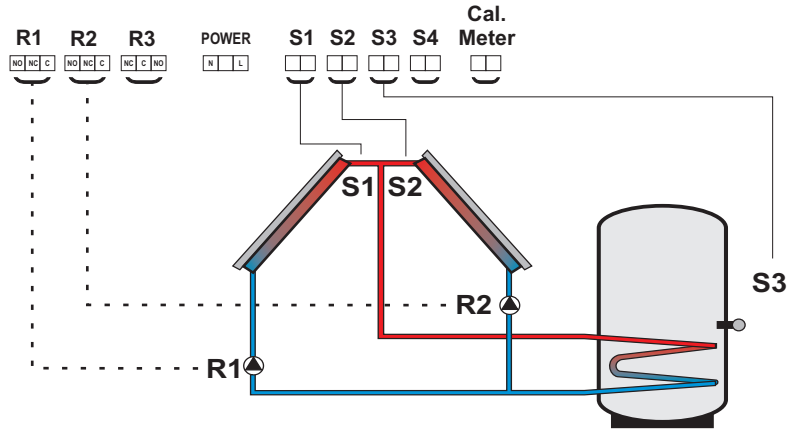
The collector field 1 uses probe S1 and the collector field 2 uses probe S2 (connect to the output of the collectors to the installation). The accumulator needs probe S3 (the probe will be connected to the interior of the accumulator) and the pumps are operated by relays R1 and R2.

Operation

Depending on the collector field (S1, S2) whose activation temperature difference with the accumulator (S3) is reached, the solar circuit pump (R1) is activated for the collector field 1 (S1) or the pump (R2) for the solar collector field 2. If the activation temperature difference of both solar collector fields (S1 and S2) is reached, both pumps (R1 and R2) are activated. The pumps are deactivated independently when the deactivation temperature of a collector field (S1 and S2) is reached in relation to the accumulator (S3) or when the maximum temperature of the accumulator is reached.

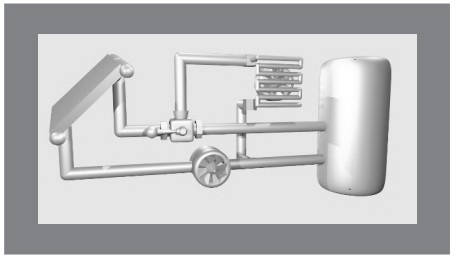
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

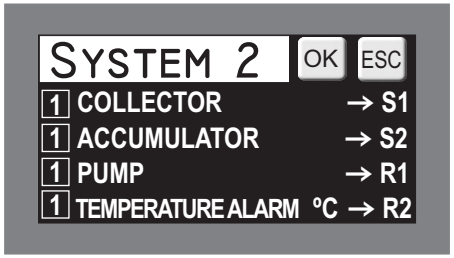
Terminal connections



SYSTEM 2

■■ 1 collector, 1 accumulator, 1 pump and 1 temperature alarm





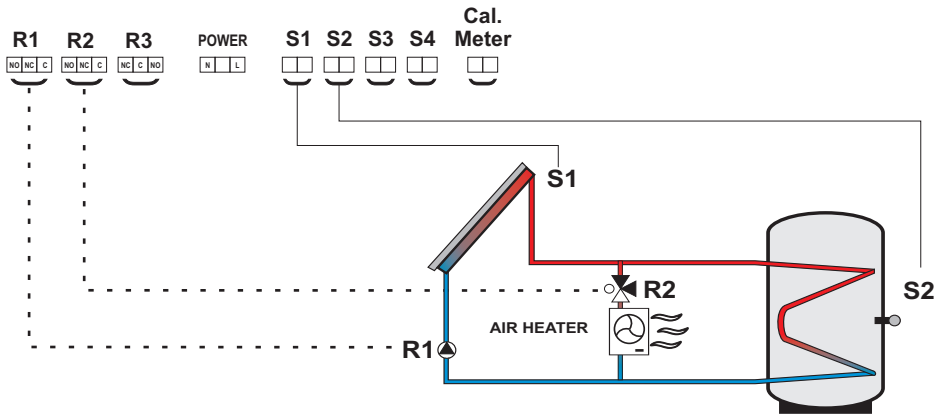
The collector uses probe S1 (connect to the output of the collector to the installation), the accumulator probe S2 (the probe will be connected to the interior of the accumulator) and the pump is operated by relay R1.

Operation

When the temperature difference between probes S1 and S2 is higher than that defined in the activation differential, relay R1 will be activated (connected to a pump) and the circuit heating liquid will circulate until the difference between S1 and S2 is equal to or less than the deactivation differential.
When the tank temperature (S2) is higher than that defined in the tank alarm, relays R1 and R2 are activated: R1 for the heating liquid to circulate and R2 (connected to the air heater) to cool the liquid and they are deactivated when the tank temperature is less than the tank alarm minus the differential or when the temperature difference between the two probes is less than the deactivation differential.

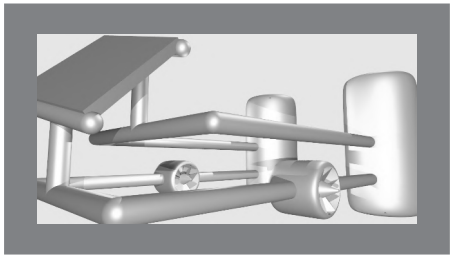
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

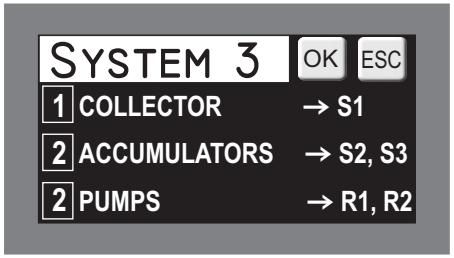
Terminal connections



SYSTEM 3

■■ 1 collector, 2 accumulators and 2 pumps





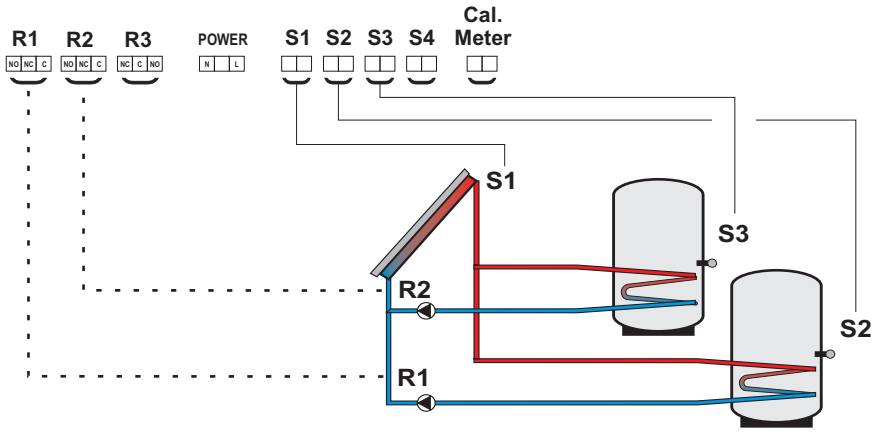
The collector uses probe S1 (connect to the output of the collector to the installation), the accumulators need probes S2 and S3 (the probes will be connected to the interior of each accumulator) and the pumps are operated by relays R1 and R2.

Operation

If the activation temperature difference between the collector field (S1) and one of the accumulators (S2, S3) is exceeded, the corresponding pump on the solar circuit (R1 or R2) is activated. Taking into account the adjustment of the priority switch (see page 37), the accumulators (S2 and S3) will be charged one after the other until the temperature difference between the collector field (S1) and the accumulators (S2 and S3) falls below its corresponding deactivation value or the maximum temperature of the accumulators is reached.

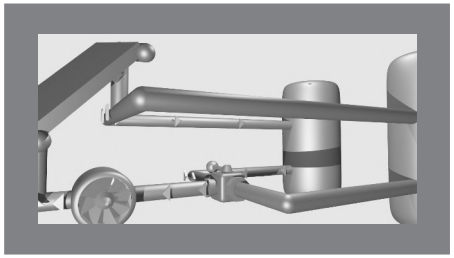
With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

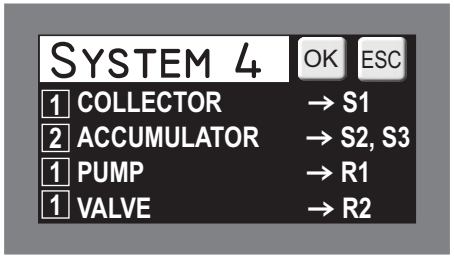
Terminal connections



SYSTEM 4

■■ 1 collector, 1 accumulator, 1 pump and 1 valve





The collector uses probe S1 (connect to the output of the collector to the installation), the accumulators need probes S2 and S3 (the probes will be connected to the interior of each accumulator) and the pump is operated by relay R1 and the valve by relay R2.

Operation

If the activation temperature difference between the collector field S1 and one of the accumulators (S2, S3) is exceeded, the corresponding solar circuit pump (R1) is activated and the priority switch valve switches to the accumulator that is to be charged, depending on its priority. Taking into account the adjustment of the priority switch (see page 37), the accumulators (S2 and S3) will be charged one after the other until the temperature difference between the collector field (S1) and the accumulators (S2 and S3) falls below its corresponding deactivation value or the maximum temperature of the accumulators is reached. When the accumulators have the same priority, the first to be heated will be the accumulator with the lowest temperature, alternating between accumulators when the temperature of the other plus the differential is exceeded.

With this system, the following functions can be activated: boiler return increase, calorie meter, antifreeze, tank cooling and tubular sensors. Support or double pump.

Terminal connections