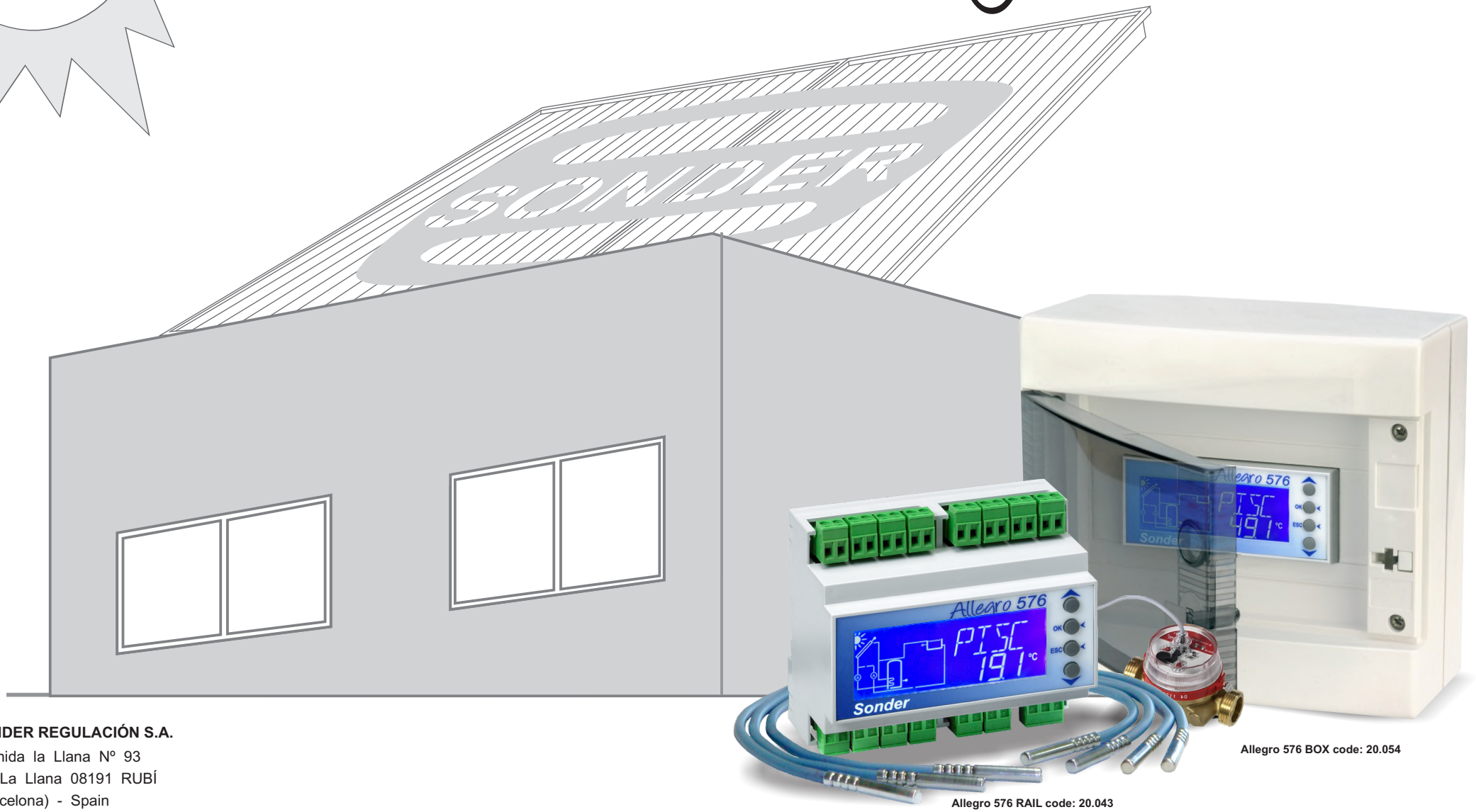
Allegro 576



Allegro 576 BOX code: 20.054

Allegro 576 RAIL code: 20.043

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Technical Installation & Operation Manual

SONDER
Energy control

NOTES

NOTES

CONTENTS

WARNINGS

SAFETY INSTRUCTIONS

- Before installing the Allegro 576 regulator, ensure that the environmental conditions (operating temperature, humidity, pollution and gas emissions) are suitable, as any of these factors can cause the unit to malfunction.

- When handling the Allegro 576 regulator, whether for installation or repairs, disconnect it from the electricity mains.

- The Allegro 576 is an independent control device for surface assembly with wiring through tubes for correct installation.

- Electrical connections other than those indicated in this manual and on the connection label on the side of the device are not permitted. The connections referred to in this manual are those of the regulator; to connect the rest of the components, please consult the corresponding instructions for each unit (collectors, tanks, valves, etc.). For correct operation of the installation, check that the technical needs of the elements are compatible.

- This regulator is not a security device nor can it be used as one; it is the responsibility of the installer to provide the protection most suited to each type of installation (**officially authorised**).

- The assembly, electrical connection, commissioning and maintenance procedures must be carried out by qualified personnel.

- Should you encounter any defects that could cause damage or malfunctions, do not connect the device.

- Should you have any doubts regarding the operation or correct installation of the device, do not connect it to the electricity mains and consult a professional technician.

- Sonder Regulación S.A. reserves the right to modify the product, technical data and assembly and use instructions without prior notification.

WARRANTY CONDITIONS

This device has Three-year warranty. The warranty is limited to the replacement of faulty parts, which will be restored to the same condition in which they were received. No packaging, batteries, instructions or any other accessories included with the product will be replaced.

We cannot accept any responsibility for devices damaged as a result of poor handling, omission of the warnings provided in this manual or technical ignorance with regard to the requirements of the installation.

For repairs during the warranty period, customers are required to provide proof of purchase and an accurate description detailing the defect or the anomalous behaviour of the product according to the user.

In the event of repairs outside the warranty, the user will be informed of their viability and cost. Assessments carried out by our technical department may incur an additional cost for the user.

The following cases are excluded from the warranty:

Devices whose serial number has been worn away, erased or modified.

Devices which were not connected or used in accordance with the instructions enclosed with the device.

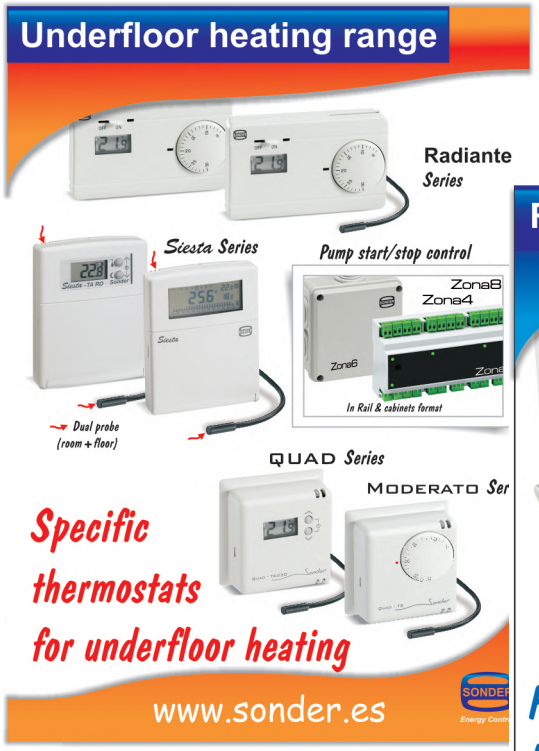
Devices that have been modified without prior agreement with the manufacturer.

Devices damaged due to knocks, spills or gas emissions.

Devices with normal wear and tear or which are damaged from inappropriate use.

Shipment and reception costs.

Requests for compensation for loss of earnings, usage compensation and indirect damage, unless the company is deemed legally responsible.



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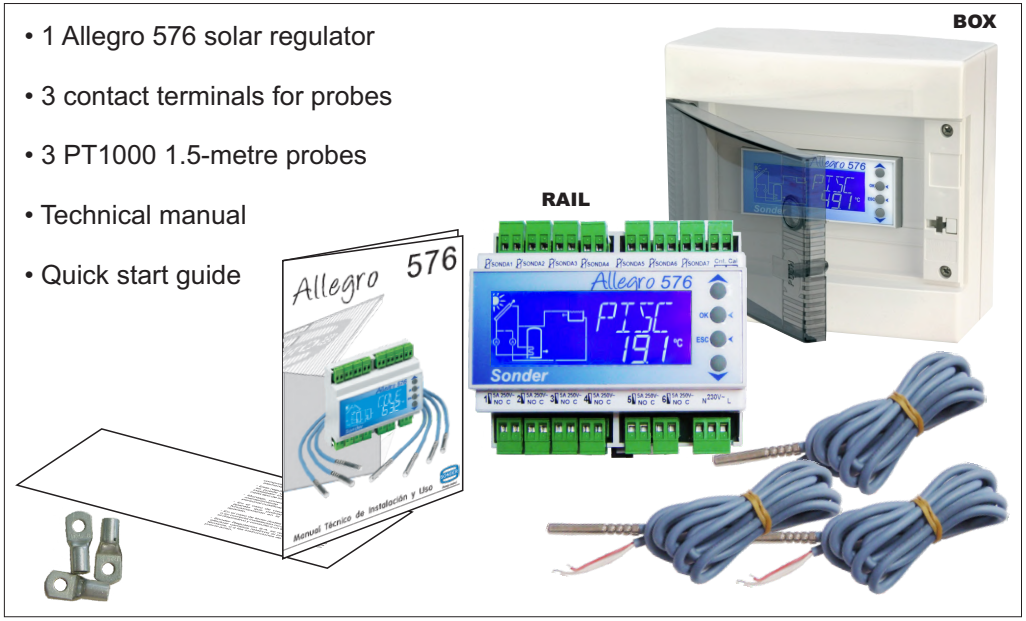
EQUIPMENT CONTAINED IN THE KIT

- 1 Allegro 576 solar regulator
- 3 contact terminals for probes
- 3 PT1000 1.5-metre probes
- Technical manual
- Quick start guide



POSSIBLE ACCESSORIES

Landline telephone control
3 channels
3 alarms

Telephone control - landline / mobile
1 channel
1 alarm

Consult us about models for remote management and data storage with SD card

Stainless-steel sheaths

Water meter with pulse output

Conductive paste for sheaths

DESCRIPTION

First of all we would like to thank you for your purchase and we hope that the Allegro 576 meets the needs of your installation.

The Allegro 576 is a thermal solar energy regulator with six 5A 250V~ relay outputs and seven PT1000 probe inputs (three 1.5 metre probes are included, each with a range of -50 ºC to +200 ºC), in addition to a pulse input. The relays are potential-free contacts, which means that they only act as switches and the devices connected to the relay need to be powered.

When programming the Allegro 576 you will find different predefined installation systems that will help you to quickly and easily configure your installation. Depending on the system you have chosen, you may activate additional functions, such as unit heater, independent thermostat, return increase, double pump, anti-frost, calorimeter and tubular sensors, provided that the resources (relays) required for the functions are not being used by the system chosen to configure your installation.

TECHNICAL SPECIFICATIONS

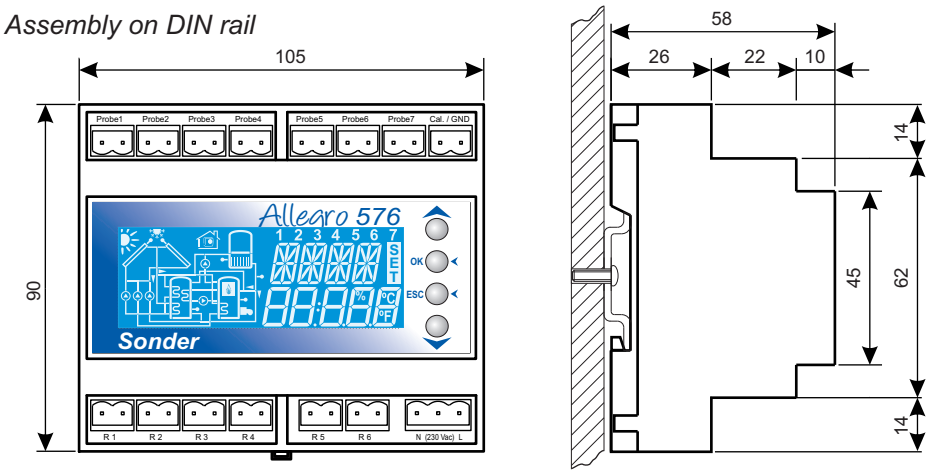
Input power	230 Vac +10% -15% 50/60 Hz max. 2 VA.
Outputs	6 SPDT relays max. 250 V~, 5 A. Potential-free contacts (acting as switches).
Inputs	7 PT1000 probes / Range: -50 ºC to +200 ºC + 1 calorimeter (pulses).

ºC	-40	-20	0	+20	+40	+60	+80	+100	+120	+140	+160	+180	+200
Ω	843	922	1000	1078	1155	1232	1309	1385	1461	1536	1611	1685	1758

Wiring	Min. power section = 0.75 mm² / Min. relay section = 1.5 mm² / Max. section = 2.5 mm² / Type = H05v-k.
Environment	Temperature = 0º C to 40 ºC / Humidity = 20% to 85% / Pollution = 2.
Operation	Software class A; Action type 1.B.
Tests	Assigned pulse voltage: 2500 V.
	Temperatures for high-pressure ball valve: 100ºC (parts supporting voltage conductors).
	75ºC (accessible plastic parts).

DIMENSIONS

Assembly on DIN rail



SETTINGS

Operation of the priorities

When a system uses several accumulators (tanks, heating, swimming pools, etc.) it can set a priority for charging them (accumulator priority setting on page 28). Their minimum temperature is configured and these temperatures are classified as priority and non-priority when charging. The tanks with the lower temperatures are given priority until they reach the temperature when they become non-priority.

When the sequential priority parameter is activated, it assigns the charge order in accordance with the numerical order and the temperatures. **The numerical order assigned to the accumulators is the numerical order of the relays.**

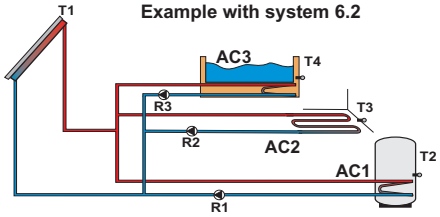
Sequential priority OFF

When an accumulator is below its priority temperature, it is charged exclusively until it reaches the temperature. If another accumulator falls below its priority temperature while the former is charging, both become priority and are both charged at once until one of them reaches its minimum temperature.

Sequential priority ON

When accumulator number 1 is below its priority temperature, it is charged exclusively until it reaches its priority temperature. If number 2 falls below its priority temperature while number 1 is charging, it cannot be charged until accumulator 1 reaches its minimum temperature (priority temperature).

Example with system 6.2



Example of operation

In winter

Accumulator priority ºC			Tank alarm ºC		
AC 1	AC 2	AC 3	AL 1	AL 2	AL 3
65	40	5	70	45	35
H. W.	U. H.	Swimming pool			

Sequential priority OFF

If the temperatures of AC1 and AC2 are below 65 and 40, the installation heats them both at once. When AC2 reaches 40, only AC1 is heated until it reaches 65. Once it reaches this temperature there are no other accumulators in priority mode and it heats all three accumulators until they reach 70, 45 and 35, respectively.

If one of them falls below its priority temperature, its priority is activated again and only the one below its priority value is heated.

In the case of excess heat: When AC1 has reached 70 and AC has reached 45, the swimming pool is heated to dissipate the excess heat instead of accumulating it in the collectors, thus preventing the installation from overheating.

Sequential priority ON

If the temperatures of AC1 and AC2 are below 65 and 40, the installation **only** heats AC1 (numerical order) until it reaches 65 ºC. Once it has reached this temperature it is no longer priority and the system then exclusively heats accumulator 2 until it reaches 40. As there are no other priority accumulators, the two accumulators are heated at once until their temperature alarms are triggered.

In summer

Accumulator priority ºC			Tank alarm ºC		
AC 1	AC 2	AC 3	AL 1	AL 2	AL 3
65	5	5	70	5	35
H. W.	U. H.	Swimming pool			

Since the underfloor heating does not need to be activated during the summer, its priority can be set to 5 ºC and its alarm to 5 ºC to deactivate it, and AC3 can be set to 5 ºC with its alarm to 35 ºC so it is not priority. The system then heats AC1 until it reaches 65 ºC, and once it reaches this temperature it heats AC1 and AC3 at the same time until they reach their alarm temperature, at which point the system stops charging the accumulators.

Accumulator priority ºC			Tank alarm ºC		
AC 1	AC 2	AC 3	AL 1	AL 2	AL 3
65	5	28	70	5	35
H. W.	U. H.	Swimming pool			

Since the underfloor heating does not need to be activated during the summer, its priority can be set to 5 ºC and its alarm to 5 ºC to deactivate it, and AC3 can be set to 28 ºC with its alarm to 35 ºC. The system then heats AC1 until it reaches 65 ºC, and once it reaches this temperature it heats AC3 until it reaches 28 ºC, then it charges AC1 and AC3 at the same time. If AC1 falls below 65 ºC while AC3 is charging, the system stops charging AC3 so it can charge AC1 until it reaches 65 ºC.

SETTINGS

For normal use of your installation the factory settings are considered to be the most common for each type of system. If they are of use to you, the device is ready to control and regulate your installation. If, due to the needs of your installation, you require other settings, read this section carefully.

In the menu you can adjust the parameters that define how the installation will operate.

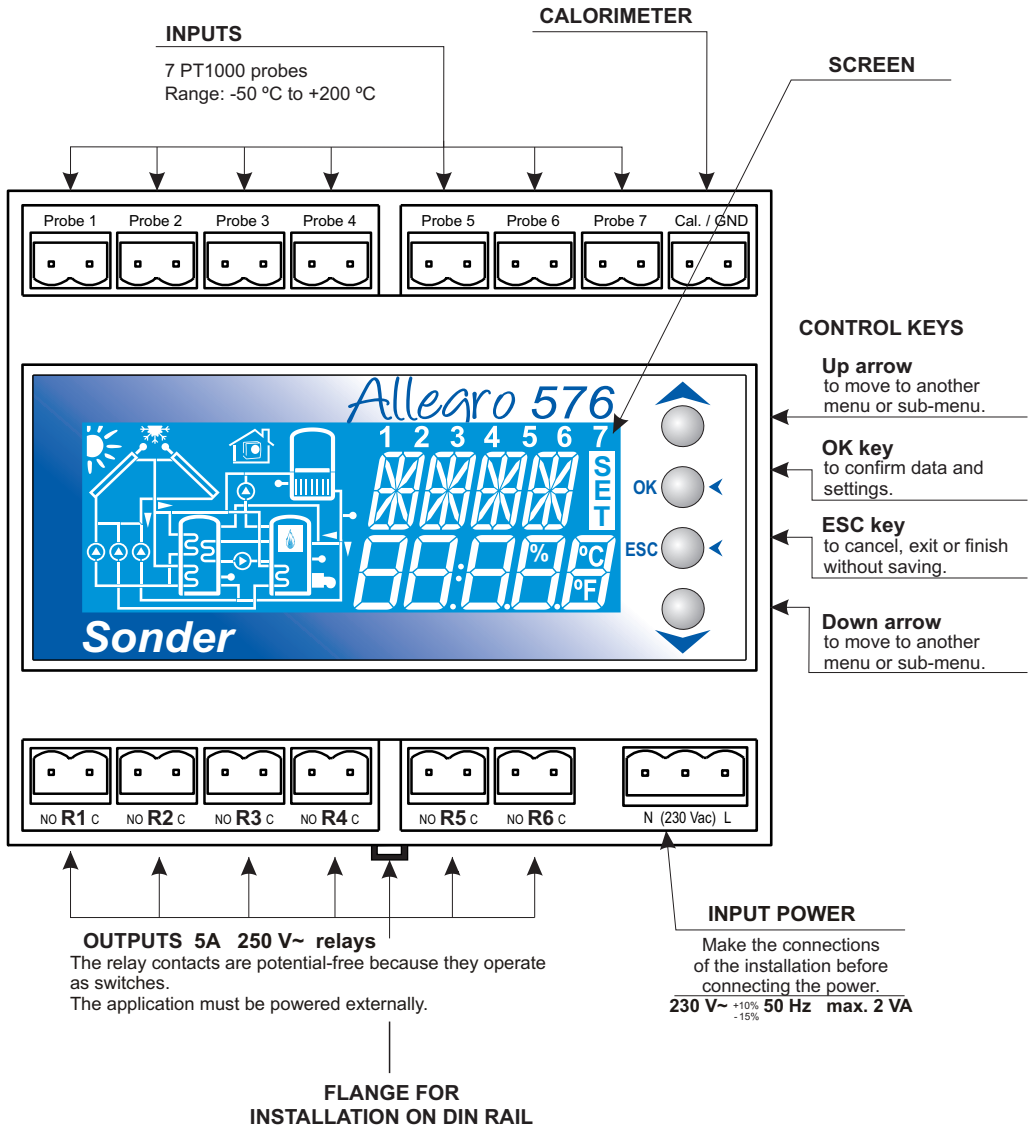
default values and setting ranges

SETTING	RANGE	ADJUSTED
Adjustment mode	Winter / Summer	Winter
Activation differential	4.0 to 20.0 ºC	6.0 ºC
Deactivation differential	1.0 to 4.0 ºC	2.0 ºC
Tank temperature alarm *	5 to 130 ºC	85 ºC
Temperature differential	0.3 to 9.0 ºC	2.0 ºC
Minimum setting limit	5 to 80 ºC	10 ºC
Maximum setting limit	90 to 130 ºC	90 ºC
Minimum ambient limit	6 to 17 ºC	6 ºC
Maximum ambient limit	18 to 30 ºC	30 ºC
Probe calibration	-10.0 to +10.0 ºC	0.0 ºC
Priority in the accumulator *	5 to 130 ºC	5 ºC
Accumulator cooling (1…6):	5 to 130 ºC	130 ºC
Sequential priority	ON/OFF	OFF
Display light	ON/OFF	OFF
Password	OFF (0) / ON (1...9999)	OFF

* The values of the *tank alarm* and *accumulator priority* settings are interrelated in such a way that the alarm cannot be set below the value of the tank priority and the tank priority value cannot be set above that of the alarm, since this can block the setting adjustment range.

CONNECTIONS

Before making any electrical connections it is advisable to carefully read the whole manual and ensure compliance with the technical requirements for correct operation of the installation.



GETTING STARTED

The Allegro **576** is a thermal solar regulator.

On the screen you can see diagrams showing all the information required to quickly and easily configure and adjust your installation.

In normal operation mode, the screen shows the status of the devices (pumps, relays, alarms, etc.) and the probe temperatures.

For optimal operation carefully read this section, which indicates the steps to follow to adapt the **Allegro 576** to your installation.

Steps to follow:

- Once installed and once the connections have been made, you can connect the Allegro 576 to the mains.
- Before configuring the system values and settings it is advisable to test the probes and relays to check the correct operation of the installation. (This step is explained on page 9.)
- Once you have verified the operation, choose the system that best suits your installation type from among the available configurations (pages 22 and 23). Remember that System 1 has 6 variants depending on the number of accumulators to be configured, although only 1 symbol is shown on the screen.
- All the settings are preset to factory default values. If these values do not suit the needs of your installation, consult page 26 to configure them.
- If you wish to activate one of the functions, first make sure you know what resources the function needs, the type (fixed, exclusive or shared) and check that the configured system leaves the required resources available:
  - Seven PT1000 probes (S1, S2, ..., S7)
  - Six 5A 250 V~ relays (R1, R2,..., R6)
  - 1 pulse input (Calorimeter).

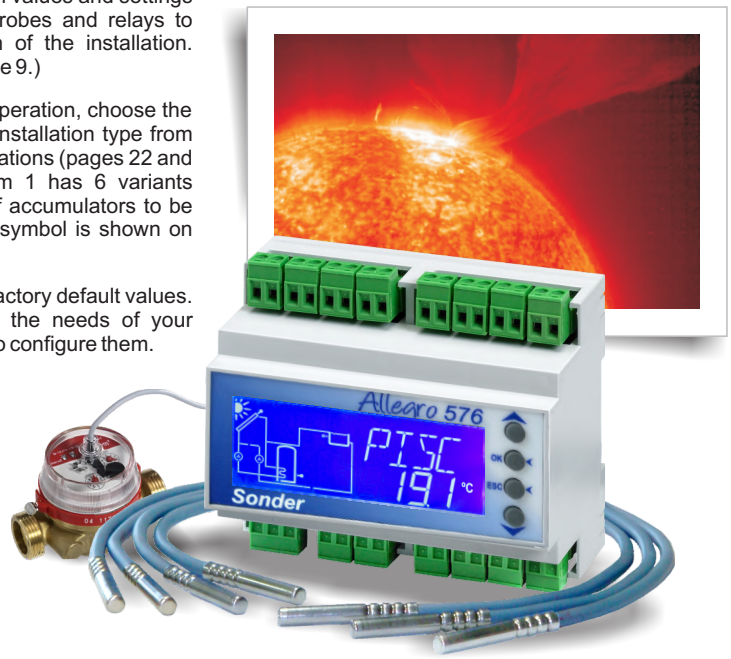
These resources are shared by systems and functions in different ways.

The probes and relays in the systems are pre-assigned and non-configurable. The probes can be shared by the systems and the functions

The relays cannot be shared between systems and functions (except the OR and AND functions).

The screen only shows the available systems, relays and probes, depending on the activated functions and systems.

If you need a function or system which is not shown, you will have to free the required resources first.



SETTINGS

Accumulator cooling

This parameter allows you to reduce the temperature of the accumulator by recirculating the collector, when it detects that the collector temperature is lower than the accumulator temperature.

- In the **SETTINGS** menu press ▲▼ until the **REFRIG ACUMULADOR** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 5 ºC to 130 ºC / Default: 130 ºC

Sequential priority

This parameter defines the charging priorities according to the accumulator number, if the installation has more than one. (see page 31).

- In the **SETTINGS** menu press ▲▼ until the **PRIO SECUENCIAL** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: OFF to ON / Default: OFF

Display light

Parameter that defines the type of display lighting: timer (15 minutes without keyboard activity) or always on.

- In the **SETTINGS** menu press ▲▼ until the **LIGHT** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: OFF(15 min. and when a key is touched)
ON (always on) / Default: OFF

Password

This parameter denies unauthorised access to the Allegro 576 configuration. The user can only view statistics, screen light, change summer/winter and perform the probe and relay tests.

- In the **SETTINGS** menu press ▲▼ until the **PASSWORD** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: OFF (0) to ON (1...9999) / Default: OFF (0)

SETTINGS

Maximum ambient limit

This parameter limits the maximum value for the ambient thermostat function temperature setting.

- In the **SETTINGS** menu press ▲▼ until the **LIM MAX AMBIENTE** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 18 ºC to 30 ºC / Default: 30 ºC

Probe calibration (T1 - T7)

With this parameter you can adjust the reading for each of the probes. Use a precision master thermometer to take the reading and then adjust the probe to this temperature.

- In the **SETTINGS** menu press ▲▼ until the **CALIBR SONDAS** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: -10.0 ºC to +10.0ºC / Default: 0.0 ºC

Tank priority (1 to 6)

This parameter determines the order in which the accumulators will be charged, if the installation has more than one. (see page 31).

- In the **SETTINGS** menu press ▲▼ until the **PRIO DEPOSITO** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 5 ºC to 130 ºC / Default: 5 ºC

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

FOR EXAMPLE: If AC1 has its alarm set to 70 ºC, you cannot set the priority above this value. If the priority is set to 60 ºC and you try to reduce the alarm to 50 ºC, the same thing happens and the range of the alarm is blocked.

PROBE, RELAY AND METER TEST

This menu allows you to:

- View the current temperature of each of the probes, their assignment and operation. If the reading is not correct, check that the probe is correctly connected and its cables are not cut.
- Enter **forced manual mode**: Manually connect and disconnect the relays to check that the installation is working correctly.
- Finally, you will find the flow meter (l/min), showing whether there is a flow in the circuit and whether the Allegro 576 is receiving the pulses from the meter.
- When you exit **TEST** mode all the relays will update their status to system regulation status.

Press ESC for 6 seconds to enter test mode from normal operation mode:

- You will see the current temperature of each probe (its shows which probe it belongs to).
- Press OK to move on to the next probe (S1 to S7).

- Then move on to the relays (forced manual), where you can manually activate/deactivate each relay.
  - Press **OK** to activate/deactivate relay **R1**.
  - Press ▲▼ to move on to the next relay.

With the password ON: After 15 minutes without touching a key, the system returns to normal operation and the relays return to the status required by the system at that time.

With the password OFF: The system does not exit the test menu until the **ESC** key is pressed **(forced manual mode)**.

It is very important to press ESC to exit manual mode when you finish, since system regulation is deactivated this mode and operations are limited to the established manual orders

TIPS

PROBES

- It is advisable only to use original probes (1.5m PT1000). Should they need to be extended, they must be welded together avoid losing the reading value and the joint must be shrink wrapped to insulate against humidity.
- The probes of the panels must be installed at the output leading to the installation.
- The accumulator probes must be installed inside the accumulator.
- Under no circumstances should the probe cables be laid in the same channel as the electrical cables.

RELAYS

- The relays that activate the devices of your installation supply a voltage of 230 V~ and a maximum current of 5(3) A (max. charge of 10A from the three relays) so there is no need to independently power valves, pumps, etc.
- Ensure that electrical connections from the devices to the contacts of the relays have been made correctly before connecting the **Allegro 576** terminal to the mains.

SCREEN DISPLAY

In normal operation, the screen cyclically (5 seconds each screen) displays the chosen system, the activated functions, and the readings of the probes for this system (identified by flashing name and symbol).

Moreover, you can see if the pumps are operating, the direction of the three-way valves and whether there are any temperature alarms, given that they are indicated by flashing the symbol of the device.

On the screen a sun appears above the panels. This symbol indicates that:

- the temperature is tending to rise,

- the temperature of the panels is higher than the average temperature.

- the panels are currently transferring heat to the accumulator.

The titles move to show the full name and the start is shown by an asterisk.

The screen can be lit permanently or the timer function can be activated (after 15 minutes without touching a key it switches off and comes back on when any key is pressed).

From this screen you can access:

- The **menu** to configure the settings, functions, systems and to see the statistics, by pressing both keys together for 5 seconds.

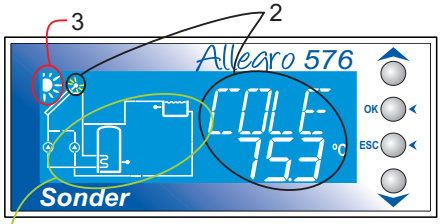
- The **probe, relay and meter test**, by pressing **ESC** for 6 seconds (page 9).

- The **reset values function** for the parameters, functions and systems, provided that the password is deactivated (value = 0). All the values are reset except the total operating time of the relays and the total MWh of the meter; these values belong to the statistics menu (page 12).

- The **manual mode** to force operation of the installation. To start this mode the password must be deactivated and you have to enter in probe and relay test mode (page 9).

If you are in configuration mode in a menu and do not touch any keys for 15 minutes, the device will return to normal operation without saving the changes.

Screen: Normal Operation Mode



This screen informs you that:

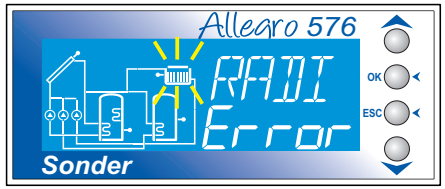
1 - The chosen system is 2.2

2 - The temperature reading is from the collectors

(*COLE* name and flashing probe symbol)

3 - The temperature is tending to rise

Normal Operation Mode with probe error



This screen informs you that:

- The probe assigned to the radiator has a reading error

SCREEN LIGHT TIMER (LIGHT parameter OFF)

- **If you do not touch any keys for 15 minutes, the screen light will switch off**
- **Press any key to switch it back on**

SETTINGS

Tank temperature alarm

This parameter defines a temperature alarm for each accumulator; depending on the system, a unit heater or cooling system is activated, another accumulator is charged or circulation is stopped.

- In the **PARÁMETROS** menu press until the **AL TEMP DEPÓSITO** screen and the number corresponding to the tank appear.
- Press **OK** to enter the function settings, and use to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 5 ºC to 130 ºC / Default: 85 ºC

Temperature differential

This parameter allows you to configure the temperature differential for the settings of all the functions (except ambient thermostat, which has its differential set to 0.3 ºC).

- In the **PARÁMETROS** menu press until the **DIF TEMPERATURA** screen appears.
- Press **OK** to enter the function settings, and use to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 0.3 ºC to 9.0 ºC / Default: 2.0 ºC

Minimum setting limit

This parameter limits the minimum value for the support function temperature setting.

- In the **PARÁMETROS** menu press until the **LIM MIN CONSIGNA** screen appears.
- Press **OK** to enter the function settings, and use to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 5 ºC to 80 ºC / Default: 10 ºC

Maximum setting limit

This parameter limits the maximum value for the support function temperature setting.

- In the **PARÁMETROS** menu press until the **LIM MAX CONSIGNA** screen appears.
- Press **OK** to enter the function settings, and use to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 90 ºC to 130 ºC / Default: 90 ºC

Minimum ambient limit

This parameter limits the minimum value for the ambient thermostat function temperature setting.

- In the **PARÁMETROS** menu press until the **LIM MIN AMBIENTE** screen appears.
- Press **OK** to enter the function settings, and use to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 6 ºC to 17 ºC / Default: 6 ºC

SETTINGS

For normal use of your installation the factory settings are considered to be the most common for each type of system. If they are of use to you, the device is ready to control and regulate your installation. If, due to the needs of your installation, you require other settings, read this section carefully.

To access the menu from normal operation mode, press any key (except **ESC**), use the arrows to move to **PARÁMETROS**, and then press **OK**.

In the menu you can adjust the settings that will define the operation of the installation.

- Winter or summer mode
- Activation differential
- Deactivation differential
- Temperature alarm in tanks 1 to 6
- Temperature differential (general for all settings)
- Minimum setting limit
- Maximum setting limit
- Minimum ambient limit
- Maximum ambient limit
- Separate calibration for each probe (T1 to T7)
- Priority of tanks 1 to 6
- Cooling of accumulators 1 to 6
- Sequential priority
- Display light
- Password (programming protection)

Summer / Winter mode

This parameter allows you to choose between two different settings for tank priorities and alarms without having to change them one by one.

- In the **PARÁMETROS** menu press ▲▼ until the **MODE** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: SUMMER or WINTER / Default: WINTER

Activation differential

This parameter defines the temperature difference required between the accumulator and the solar collector for the pump to activate.

- In the **PARÁMETROS** menu press ▲▼ until the **DIF ACTIVACIÓN** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 4.0 ºC to 20.0 ºC / Default: 6.0 ºC

Deactivation differential

This parameter defines the temperature difference required between the accumulator and the solar collector for the pump to deactivate.

- In the **PARÁMETROS** menu press ▲▼ until the **DIF DESACTIVACIÓN** screen appears.
- Press **OK** to enter the function settings, and use ▲▼ to define the desired value.
- Press **ESC** to go back and press **OK** to save the adjusted values.

Range: 1.0 ºC to 4.0 ºC / Default: 2.0 ºC

CONFIGURATION

Once all the connections have been made and the device is connected to the mains, the device shows the screen operating in normal mode with the factory settings (page 12).

Press ▲▼ both keys together for 5 seconds to show the main menu on the screen. Here you can use the keys ▲▼ to choose a sub-menu.

Press **OK** to enter the chosen sub-menu, such as Functions.

Press the keys ▲▼ to move around the sub-menu until you find the function you want to configure. These screens indicate the status of the function.

Press **OK** in the desired function to configure the values (the value to be changed flashes). When ▲▼ you have changed the value, press **OK** to save and move on to the next value. When all the values for this function have been changed, save the changes and return to the sub-menu.

Press **ESC** to return to the functions sub-menu without saving the changes.

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

Press **ESC** again to return to normal regulation operation and after 15 minutes without touching any keys the screen light will switch off. Press any key to return to normal mode.

This method is applicable to all configuration menus and sub-menus.

FACTORY SETTINGS

SYSTEMS

Active system: **1.1 (1 tank + 1 pump)**

SETTINGS

Regulation mode:	**winter**	Probe calibration (S1…S7):	**0.0 ºC**
Activation differential:	**6.0 ºC**	Tank priority (1…6):	**5.0 ºC**
Deactivation differential:	**2.0 ºC**	Sequential priority:	**OFF**
Tank temperature alarm (1…6):	**85 ºC**	Tank cooling (1…6):	**130 ºC**
Temperature differential:	**2.0 ºC**	Light:	**OFF**
Minimum setting limit:	**10 ºC**	Password:	**OFF**
Maximum setting limit:	**90 ºC**		

FUNCTIONS (all the functions are switched off and there are no factory settings)

Independent thermostat 1	Ambient thermostat 1	Double pump	Return increase
Independent thermostat 2	Ambient thermostat 2	Calorimeter	Unit heater
Independent thermostat 3	Anti-frost	Tubular sensors	OR function
			AND function

RESETTING VALUES AND RESTORING FACTORY SETTINGS

From operation in normal mode with the screen switched on (the password must be OFF, value =0)
Press **ESC** to enter the probe and relay test menu, continue pressing it until you see that all segments of the screen light up and the system returns to normal mode.

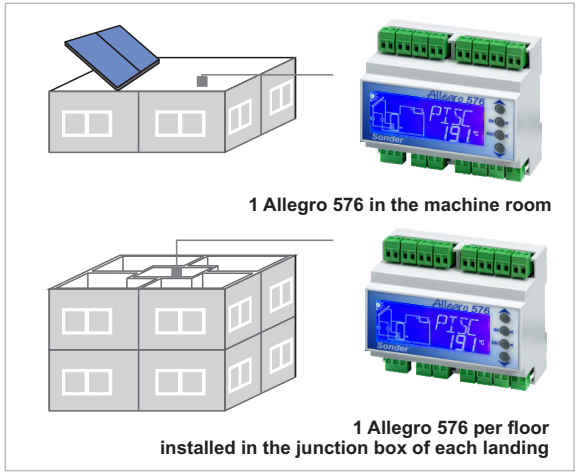
All the statistical values, parameter settings, function activations and the installation type are reset, but the total operation hours of the relays and the megawatts/hours of the calorimeter are not reset.

If the password is activated it is impossible to reset the values and restore the factory settings. To do so, it is necessary first to deactivate the password (value =0) in the settings menu.
If an unauthorised user tries to reset the values, he would press the ESC key for 10 seconds and only be able to enter the probe and relay test. When you exit the test, the relays return to their original status.

BLOCK APARTMENTS

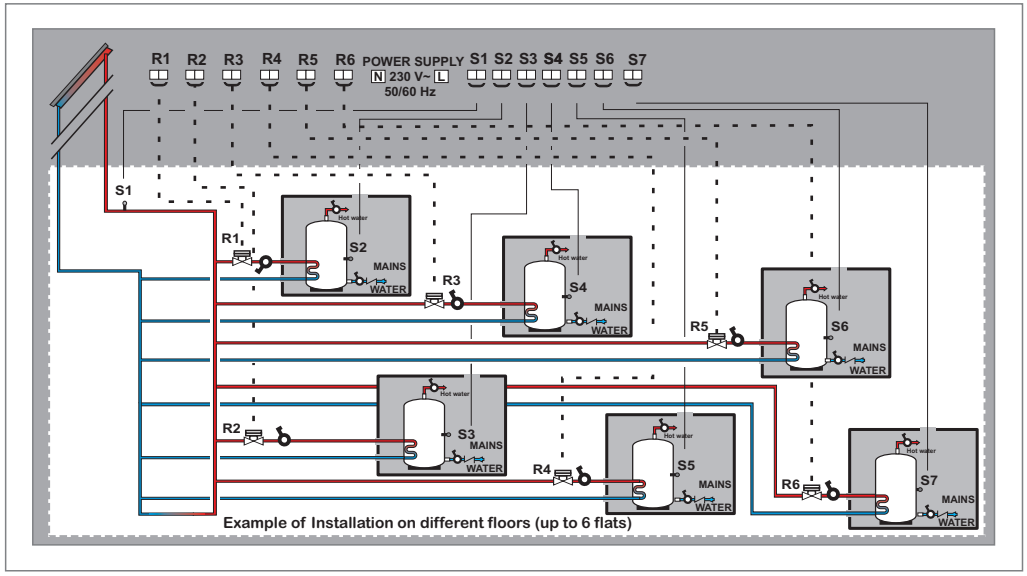
For this type, the installation is as follows:

- 1 Allegro 576 per landing. It can control up to 6 apartments per floor. The unit will be installed in the communal area of the landing in the fuse box and probe 1 will be installed on the outgoing circuit.
- 1 Allegro 576 installed in the general meter room. In order to control collectors and additional functions such as cooling by unit heater, calorimeter, etc.
- If the building has fewer apartments per landing, the resources can be used for other landings, or common devices such as the unit heater, collectors etc.



1 Allegro 576 in the machine room

1 Allegro 576 per floor installed in the junction box of each landing

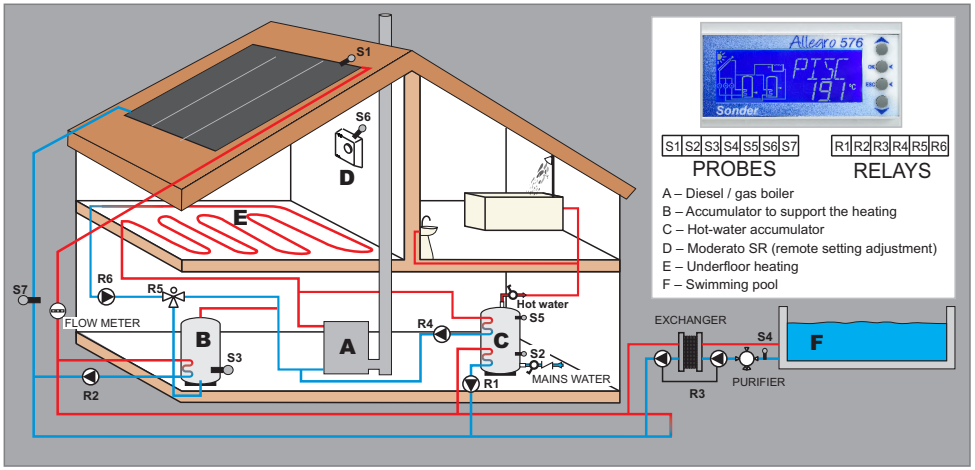


Example of Installation on different floors (up to 6 flats)

EXEMPLES

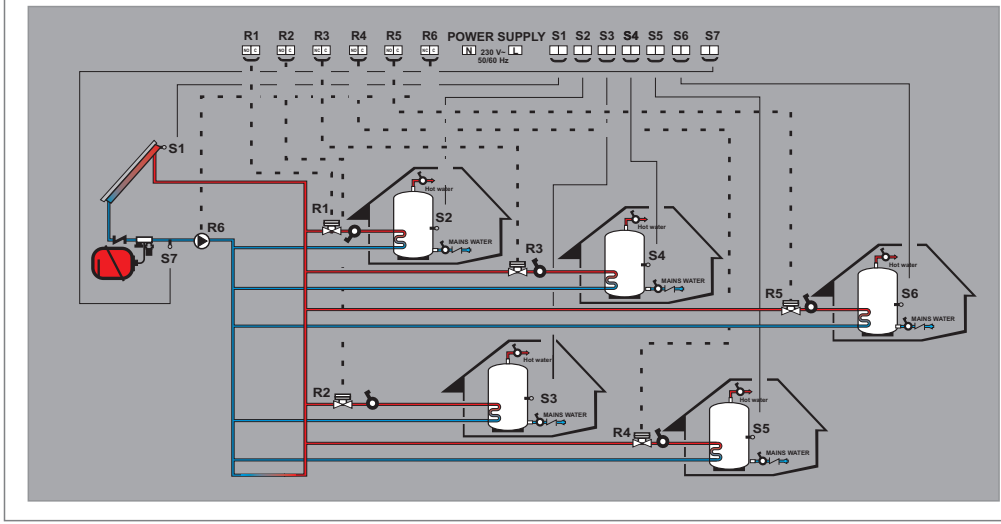
HOUSE

In a house, the Allegro 576 provides central control of all the devices in your installation (collectors, radiators, underfloor heating, hot water, swimming pool heating, collector cooling, calorimeter, etc.) for up to a maximum of 6 outputs (relays) and 7 probes.



CONDOMINIUM

In a condominium the Allegro 576 provides central control of the devices. With the **OR function** configured as follows: Slave relay: R6 and Main relays: R1, R2, R3, R4 and R5. When any of the main relays is activated, R6 is activated and starts the circulation of the installation.



OPERATION

RESOURCE CONTROL

Resources used by the Systems (probes in shared mode / relays in exclusive mode)

SYSTEM	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	4.1	5.1	5.2	5.3	6.1	6.2	6.3
Probe **S1**	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Probe **S2**	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Probe **S3**		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Probe **S4**			X	X	X	X								X	X	X	X	X	X
Probe **S5**				X	X	X													
Probe **S6**					X	X													
Probe **S7**						X													
Relay **R1**	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Relay **R2**		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Relay **R3**			X	X	X	X								X	X	X	X	X	X
Relay **R4**				X	X	X													
Relay **R5**					X	X													
Relay **R6**						X													

Function resources

INDEPENDENT THERMOSTAT 1 / 2 / 3
- 1 exclusive relay
- 1 configurable probe, shared with the system

ENVIRONMENT THERMOSTAT 1 / 2
- 1 exclusive relay
- 2 configurable probes, shared with the system

BOILER RETURN INCREASE
(preheating of the heating circuit)
- 1 exclusive, configurable relay
- 2 configurable probes, shared with the system

CALORIMETER
- 2 configurable probes, shared with the system

UNIT HEATER
- 1 exclusive relay
- 1 configurable probe, shared with the system

DOUBLE PUMP
- 1 relay, shared with the system
- 1 configurable relay in exclusive mode

ANTI-FROST
- It will use the probes and relays deemed suitable in a shared manner (this will depend on the system being configured)

TUBULAR SENSORS
- It will use the probes and relays deemed suitable in a shared manner (this will depend on the system being configured))

OR FUNCTION
- 1 relay conditioned to the status of any of the chosen relays

AND FUNCTION
- 1 relay conditioned to the status of any of the chosen relays

SOFTWARE MAP

menu

PROBE, RELAY AND METER TEST

Press ESC for 5 seconds

- Temperatures S1 to S7
- Relays R1 to R7
- Meter L/MIN

Press both keys for 5 seconds

STATISTICS

OK / ESC

- Partial statistics zones 1 to 6
- Total statistics zones 1 to 6
- Maximum temperature zones 1 to 7
- Minimum temperature zones 1 to 7
- Average temperature zones 1 to 7
- Partial litre counter
- Partial calorimeter
- Total calorimeter

FUNCTIONS

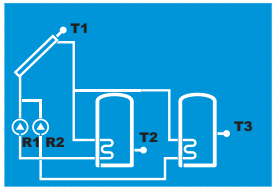
OK / ESC

- Independent thermostat 1
- Independent thermostat 2
- Independent thermostat 3
- Ambient thermostat 1
- Ambient thermostat 2
- Anti-frost protection
- Double pump alternation function
- Activation of cooling by unit heater
- Calorimeter
- Specific function for tubular sensors
- Increase of the return temperature from the heating circuit
- OR function
- AND function

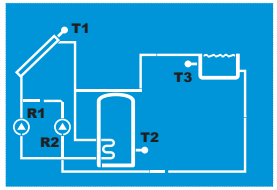
SYSTEMS

System 2 — 3 probes + 2 relays

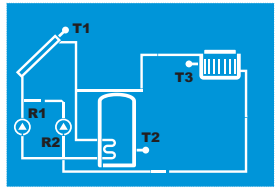
2.1 collector array + 2 pumps + 2 tanks



2.2 collector array + tank + swimming pool + 2 pumps

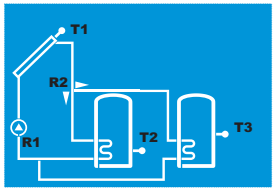


2.3 collector array + tank + heating + 2 pumps

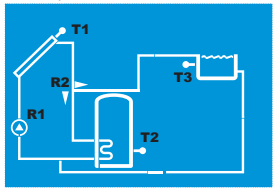


System 3 — 3 probes + 2 relays

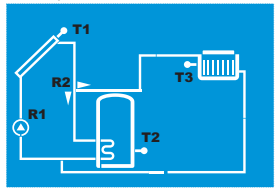
3.1 collector array + 2 tanks + pump + 3-way valve



3.2 collector array + tank + swimming pool + pump + 3-way valve

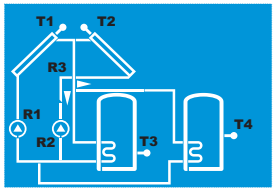


3.3 collector array + tank + heating return + pump + 3-way valve

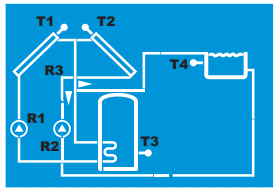


System 5 — 4 probes + 3 relays

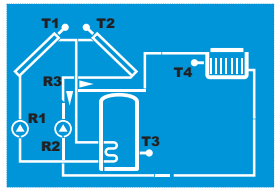
5.1 2 collector arrays (east and west) + 2 tanks + 2 pumps + 3-way valve



5.2 2 collector arrays (east and west) + tank + swimming pool + 2 pumps + 3-way valve

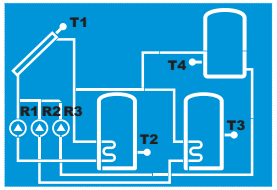


5.3 2 collector arrays (east and west) + tank + heating + 2 pumps + 3-way valve

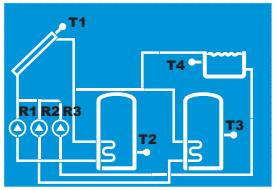


System 6 — 4 probes + 3 relays

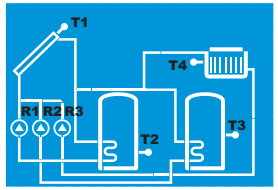
6.1 collector array + 3 tanks + 3 pumps



6.2 collector array + 2 tanks + swimming pool + 3 pumps



6.3 collector array + 2 tanks + heating + 3 pumps



SYSTEMS

The resources of the systems are pre-assigned and fixed, which means that each system has a probe and a specific relay assigned for each element of the selected system. The probes can be shared with the functions, but the relays only operate exclusively; if a relay is being used by a system it cannot be assigned to a function (except for functions that only need a relay as a reference: double pump, OR, AND, etc.)

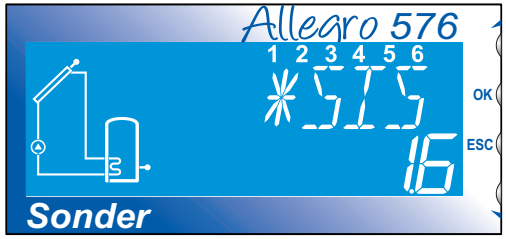
If you configure the functions before the systems, you will see that some of the systems cannot be selected and will not be shown on the menu. If the system you want is not shown on the menu, it is because a function is activated that needs exclusive relays and there are not enough relays free. You will have to deactivate a function in order to be able to configure the system.

When the password is activated, the **Allegro 576** allows you to consult the types of systems and when you select another system you will be asked to enter the password to configure the change.

- To access the system menu press **OK** (with the display on) and use the arrows to move to **SYSTEMAS.**

- Press **OK**.
- The menu contains 19 installation systems you can choose from.

- Each one of the systems has a diagram to identify its operation.



- Use the keys to move on to the next system. To confirm the chosen system press **OK** and press the **ESC** key to return the previous menu.
- Once the system has been configured, the unit saves the changes and returns to normal operation.

The representation of the units on these diagrams is symbolic.

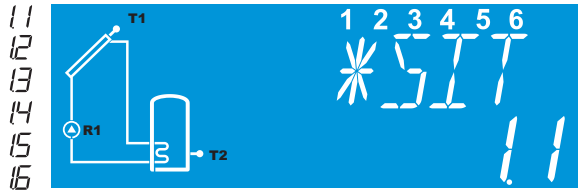
One solar panel means there is one array of solar collectors, but when there are 2 it means that there is one array of solar collectors facing east and another facing west.

The accumulator symbols can refer, according to the type of installation, to one accumulator, several accumulators, a swimming pool, an underfloor heating system, panel exchangers, etc.

The probe symbol indicates which device the probe belongs to.

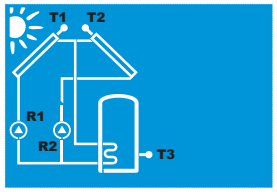
System 1 Required resources: 2 probes + 1 relay

1 collector array + 1 tank (configurable for up to 6 tanks) + 1 pump

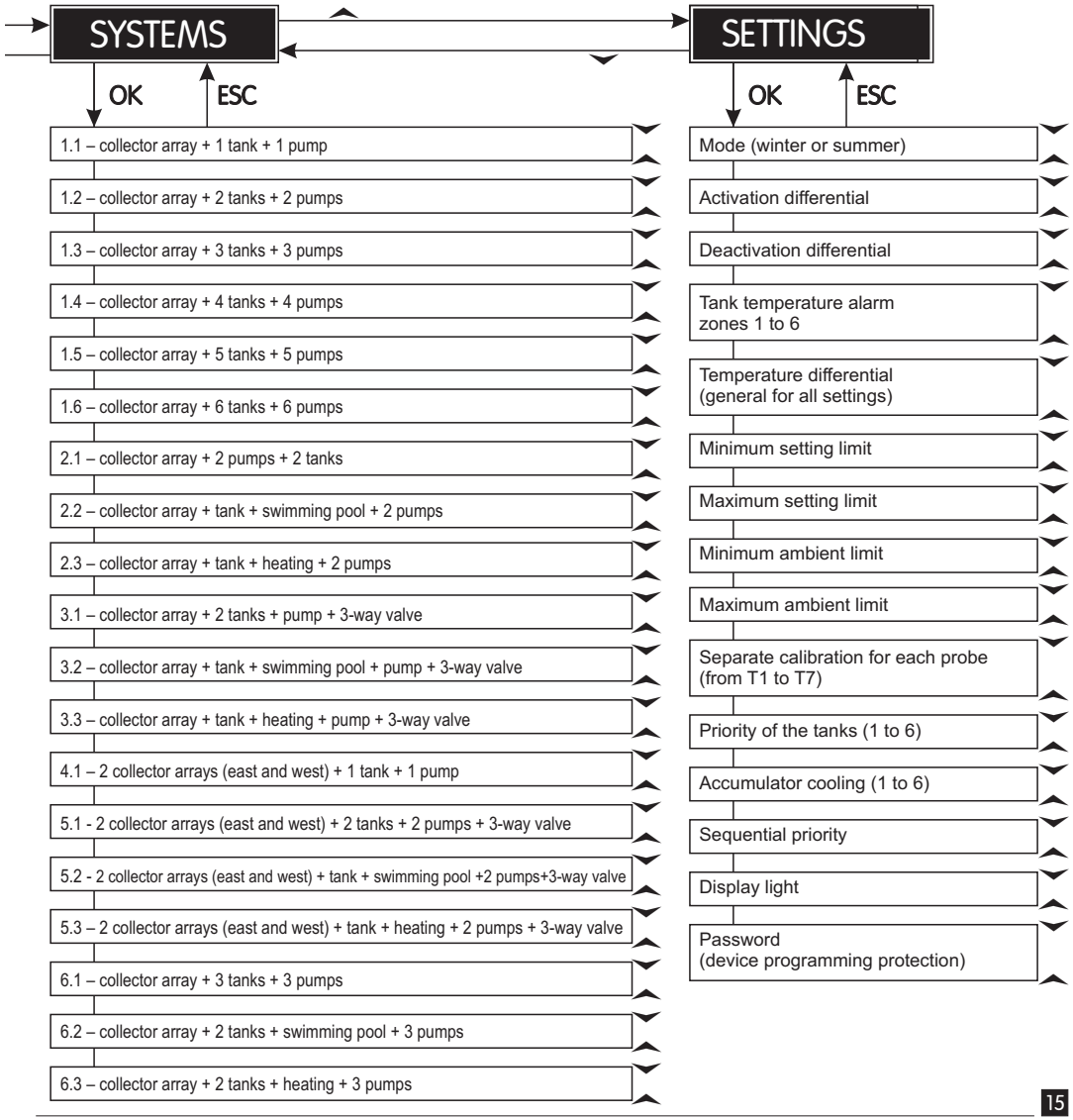


System 4.1 3 probes + 2 relays

2 collector arrays (east and west) + 1 tank + 1 pump



SOFTWARE MAP



STATISTICS

In this menu you will find all the data that the Allegro 576 has compiled since it has been in operation. You can use it to optimise your installation as it provides information about operation times, maximum and minimum temperatures, in addition to the water meters and calorimeters.

All this data allows you to assess the performance of the installation according to the weather conditions and your configuration.

To access the statistics menu, press ▲▼ for 5 seconds (with the screen lit), use the arrows to select the **statistics** menu and then press **OK**. In the menu you will find:

- Partial operation hours zone 1 to 6
- Total operation hours zone 1 to 6
- Maximum temperature zones 1 to 7
- Minimum temperature zones 1 to 7
- Average temperature zones 1 to 7
- Partial litre counter
- Partial calorimeter
- Total calorimeter

Partial operation hours (R1 to R6)

This indicates how long each tank has been in operation since the last reset.

Press **OK** to reset the values to zero.
Press ▲▼ to move on to the next value.
Press **ESC** to go back.

Total operation hours (R1 to R6)

This indicates how long each tank has been operating since the Allegro 576 was installed. **The value of this statistic cannot be reset to zero.**

Pressing **OK** does effect any change.
Press ▲▼ to move on to the next value.
Press **ESC** to go back.

Maximum temperatures (T1 to T7)

This indicates the maximum temperature reading of each one of the probes. No readings are registered for probes that are not connected and as such they produce an error.

Press **OK** to reset the values to zero.
Press ▲▼ to move on to the next value.
Press **ESC** to go back.

FUNCTIONS

Summary of functions

FUNCTION	DESCRIPTION	RESOURCES
Thermostat 1, 2, 3 independent	Regulates the temperature of a probe (heating, underfloor heating, etc.) regardless of the chosen solar system.	1 shared and configurable probe 1 configurable exclusive relay
Thermostat 1, 2 ambient	Controls a remote adjustment probe. This probe regulates the temperature of a room and modifies the temperature setting without having to configure it in the Allegro 576.	2 shared and configurable probes 1 configurable exclusive relay
Anti-frost	In installations that use water without coolant as a heat-transfer liquid, the heat of the installation is used to prevent the circuit from freezing.	1 or 2 shared probes 1 or 2 shared relays
Double pump (alternation)	Allows you to double a pump in your installation so that the two pumps work in alternation.	2 configurable relays 1 exclusive and 1 shared
Cooling by unit heater	Allows you to cool a part of the circuit by means of an independent device or recirculation	1 shared and configurable probe 1 configurable exclusive relay
Calorimeter	It measures the energy supplied by the solar collector to your installation by means of reading two probes and the pulse input.	2 shared and configurable probes
Tubular sensor	Reduces the reading delay for probes installed outside the collector by means of brief recirculation.	No resources required
Return increase	Controls a valve to increase the temperature of the heating return circuit to use the solar heat from the accumulator for heating.	2 shared and configurable probes 1 configurable exclusive relay
OR	The status of one relay is conditioned by the status of ANY of the chosen relays. This function is executed after the AND function.	No resources required
AND	The status of one relay is conditioned by the status of ALL the chosen relays.	No resources required.

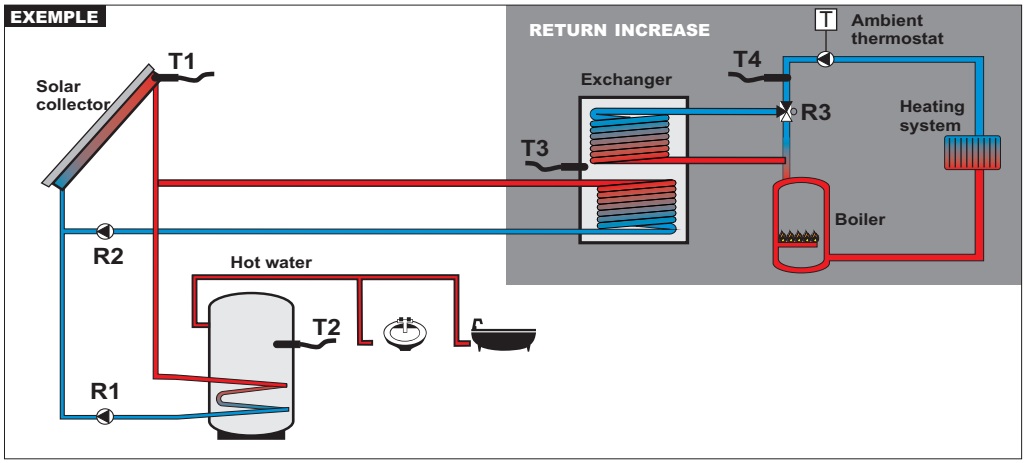
Tip: First of all configure the solar system you need for your installation and then the functions, since you may not be able to configure the rest of the functions according to relays the systems leaves frees.

FUNCTIONS

Increase of the circuit return temperature

The return increase function allows you to control a valve by diverting the course of the hot-water circuit to increase the temperature of the heating return circuit. This allows us to use solar heat from the accumulator for heating. It uses solar energy to preheat the water from the heating installation before adding the rest of the hot water from a backup source, either a boiler or a heating element.

- Press **OK** to enter the function settings, where you can activate/deactivate the function and set the temperature differential (0.3 to 9 ºC) between the accumulator of the solar circuit and the return from the heating circuit so that it is activated. It will select which probe is shared with the accumulator and the relay that activates the circuit return valve. Press ▼▲ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.



OR

*This function conditions the status of a relay based on the status of **any** of the selected relays. For example: if you choose R1 as the slave relay and R2, R4 and R6 as the main relays, R1 will be activated when R2 **OR** R4 **OR** R6 are activated. When they are all off, the slave relay switches off. The function is executed after **AND** (example of this function on page 24).*

- Press **OK** to enter the function settings, where you can activate/deactivate the function, choose the slave relay and the main relays that will condition the status of the slave relay. Press ▼▲ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

AND

*This function conditions the status of a relay based on the status of **all** the selected relays. For example: if you choose R1 as the slave relay and R2, R4 and R6 as the main relays, R1 will be activated when R2 **AND** R4 **AND** R6 are activated. When any one of the main relays is off, the slave relay switches off.*

- Press **OK** to enter the function settings, where you can activate/deactivate the function, choose the slave relay and the main relays that will condition the status of the slave relay. Press ▼▲ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

STATISTICS

Minimum temperatures (T1 to T7)

This indicates the minimum temperature reading of each one of the probes. No readings are registered for probes that are not connected and as such they produce an error.

Press **OK** to reset the values to zero.
Press ▼▲ to move on to the next value.
Press **ESC** to go back.

Average temperatures (T1 to T7)

This indicates the average temperature (reading for the last 2 hours) of each one of the probes. No readings are registered for probes that are not connected and as such they produce an error.

Press **OK** to reset the values to zero.
Press ▼▲ to move on to the next value.
Press **ESC** to go back.

Water meter

This sub-menu shows the amount of heat-transfer liquid that has passed through the meter (in litres).

Press **OK** to reset the values to zero.
Press ▼▲ to move on to the next value.
Press **ESC** to go back.

PARTIAL Energymeter

The KWh meter shows how much energy the panels have supplied the installation.

Press **OK** to reset the values to zero.
Press ▼▲ to move on to the next value.
Press **ESC** to go back.

This indicates the amount of heat provided to the installation by the solar collectors and the performance of the installation.

TOTAL Energymeter

The MWh meter shows how much energy the panels have supplied to the installation since commissioning. **The value of this statistic cannot be reset to zero.**

PPress **OK** to reset the values to zero.
Press ▼▲ to move on to the next value.
Press **ESC** to go back.

This indicates the total amount of heat provided to the installation by the solar collectors and the performance of the installation.

FUNCTIONS

The functions use the probes shared by the systems and the relays left free by the systems and other functions.

If you try to configure more functions than supported by the unit, the VOID message will appear on the screen and it will exit the function.

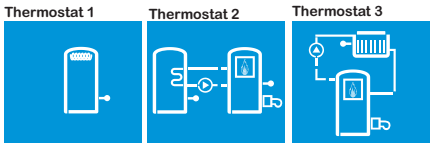
To access the functions menu, press ▲▼ for 5 seconds (with the screen lit), use the arrows to select the **functions** menu and then press **OK**. In the menu you will find:

- Independent thermostat 1
- Independent thermostat 2
- Independent thermostat 3
- Ambient thermostat 1
- Ambient thermostat 2
- Anti-frost protection
- Double pump alternation function
- Activation of cooling by unit heater
- Calorimeter
- Specific function for tubular sensors
- Increase of the return temperature from the heating circuit
- OR function
- AND function

Independent thermostat

This function allows you to regulate the temperature of a probe (underfloor heating, central heating, thermostat, etc.) regardless of the chosen solar system.

- Press **OK** to enter the function settings to activate/deactivate the function, set the setting probe (to select the temperature at which the room must be kept), the regulation probe (it will take the reading of the room temperature) and the relay to be activated. Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.



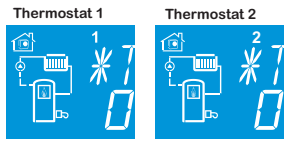
It has three independent thermostat functions, each one of which has a different icon so that you can easily tell which one the data on the screen relates to in normal mode.

Although the icons are different, they operate in the same way.

Ambient thermostat

*This function allows you to install one or two remote adjustment probes (**MODERATOR SR**) in your installation. This allows you to regulate the temperature of the room without having to change the temperature setting using the Allegro 576.*

- Press **OK** to enter the function settings where you can activate/deactivate the function, set the temperature to be regulated (10 to 90 ºC), the reading probe and the relay activated. Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.



Once you have configured and installed the remote probe you have to calibrate the reading on the button of the remote terminal with the value of the Allegro 576 reading. To do this:

- Set the button of the remote probe to 20 ºC.
- Enter **menú, parámetros** and **calibrado de sondas.**
- Change the value of the setting probe to 20 ºC

*Example setting probe **S4**: on screen the reading from this probe is 19.5 ºC, go to probe calibration and change the value of S4 from 0.0 to 0.5.*

Anti-frost

The anti-frost function has been designed for installations that use water as a heat-transfer liquid. Since it does not contain any anti-freeze, the heat of the installation is used to prevent the circuit from freezing.

- Press **OK** to enter the function settings, where you can activate/deactivate the function, set the temperature at which the pump is to be activated (-20 to 20 ºC) and the relay that will circulate the water from the accumulator through the circuit of the installation to the solar collector. Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

Double pump alternation

This function allows you to double a pump in your installation so that the two pumps work in alternation.

- Press **OK** to enter the function settings, where you can activate/deactivate the function and set the total time that each pump will operate before changing (4 to 120 hours). Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

Cooling by unit heater

This function allows you to reduce the temperature of a device by recirculating the circuit or a cooling device. The configured relay is activated when it detects that the temperature of the device is higher than the temperature of the circuit

- Press **OK** to enter the function settings, where you can activate/deactivate the function, set the temperature (40 to 140 ºC), the reading probe and the recirculation or unit heater activation relay. Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

Calorimeter

This function measures the amount of energy supplied to your installation by the solar collector by reading two probes (one at the input and the other at the output of the part of the installation you want to control) and the pulse input (it measures the flow rate of the installation).

- Press **OK** to enter the function settings, where you can activate/deactivate the function, adjust the configuration of the pulse input (1 to 200 litres per pulse), the composition of the heat-transfer liquid (0 to 100% glycol) the input probe and the meter probe (at the input and output of the accumulator to calculate the amount of heat transferred). Press the keys ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.

Tubular sensors

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

- Press **OK** to enter the function settings, where you can activate/deactivate the function. Press ▲▼ to change the flashing value and press **OK** to confirm the selection.
- Press **ESC** to return to the **FUNCIONES** menu.