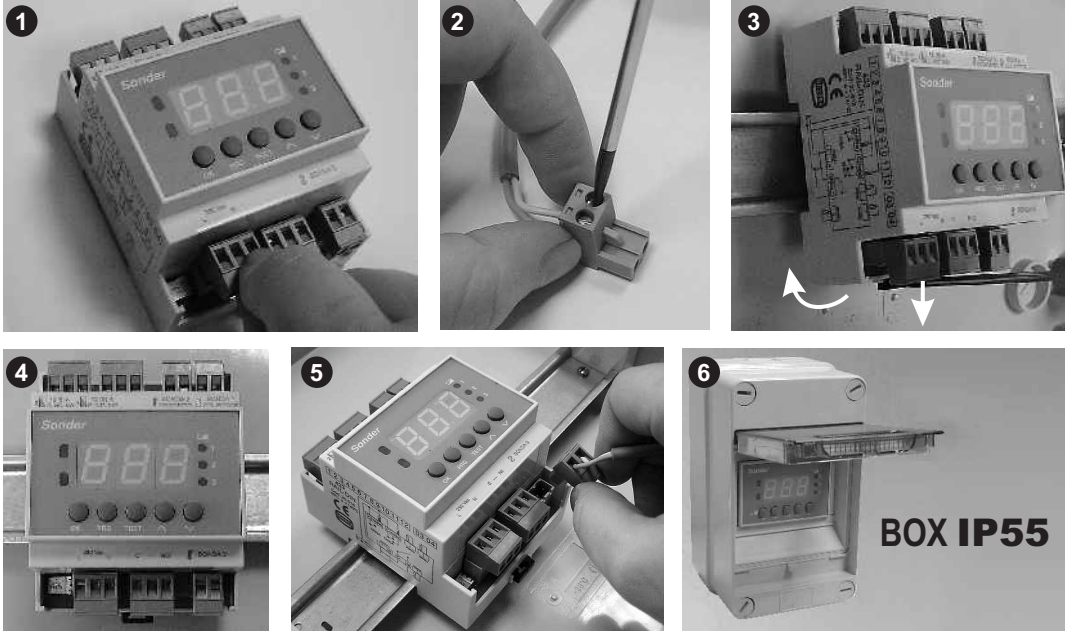


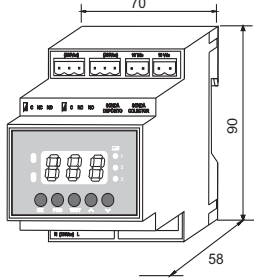
ALLEGRO 433 RAIL

Differential Thermostats

MOUNTING INSTRUCTIONS

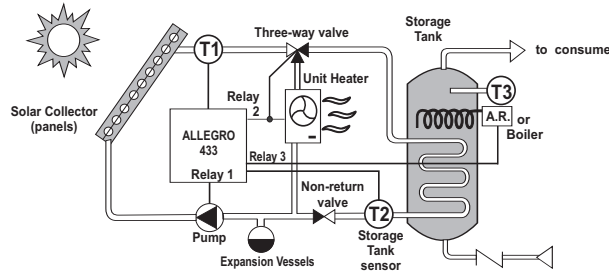


MEASURES



APPLICATION Solar Circuit

Ar2: In AAC mode



Guarantee conditions

This appliance has a two-years guarantee limited to replacement of defective parts.

We will not accept any responsibility for damage caused to the appliance by poor handling.

The guarantee does not include:
- Appliances with a damaged, effaced or altered series number.

- Appliances which have not been connected or used following the instructions that accompany it.

- Appliances which have been altered without the prior consent of the manufacturer.

- Appliances damaged by blows or liquid spills or gaseous emissions.

VERY IMPORTANT !:

The probe cable has to be kept as far away as possible from other electrical conductors.

The maximum length recommended under actual standard must be less than 3M.

It is the installer's responsibility to fit electrical protection suitable for the installation (STANDARDIZED).

Reserved the right of modify without prior notice.

ALLEGRO 433

Sonder Regulación, S.A.

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Cód: 5195 ING.V2.09/06

ALLEGRO 433 RAIL

Differential Thermostats

FUNCTIONS & PROGRAMMING

DESCRIPTION

The ALLEGRO 433 has two functions: firstly, differential control for 2 relays (relay 1 cuts in or out depending on the temperature difference between sensors T1 and T2, while relay 2 cuts in or out to act as a temperature alarm for the T2 tank sensor); and secondly, acting as an independent thermostat fitted with relay 3, controlled by the T3 sensor.

A typical operating set-up for a solar-panel installation.

How the differential control works: When the temperature difference between sensors T1 and T2 is greater than the value specified in dFA, relay 1 (connected to a pump) cuts in and the heat-transfer fluid will then circulate until the difference between T1 and T2 are the same or less than dFd.

When the tank temperature (T2) is greater than the temperature specified in Ald, relays 1 and 2 cut in: relay 1 to make the heat-transfer fluid start circulating, and relay 2 (connected to the unit heater) to cool the fluid; they cut out again when the tank temperature is lower than Ald - diF or when the temperature difference between the two sensors is less than dFd.

When the temperature of the collector (T1) is lower than the value specified in Ant, relay 1 cuts in to make the heat-transfer fluid flow until the temperature specified in Ant+ 2°C (differential) is reached, regardless of the tank temperature.

When the temperature rises above the value specified in tAL, Ar2 cuts in:

In AAC mode (Storage-tank Temperature Alarm – sensor T2), it activates relay 1, connected to the pump, so that the heat-transfer fluid starts circulating, and relay 2, connected to the unit heater, to cool the fluid; the relays cut out when the tank temperature drops below tAL tAL -1°C (fixed differential) or when the temperature difference between the two sensors is less than dFd.

In APL mode (Panel Temperature Alarm – sensor T1 – a mode specifically intended for installations with draining systems), it cuts out relay 1, connected to a fluid-circulation pump, and activates relay 2, connected to the panel-draining system; it is deactivated when the panel temperature falls below tAL -1°C (fixed differential).

How the independent thermostat works: when the temperature detected by sensor T3 is below the value [preset temperature minus the differential], relay 3 cuts in until the preset temperature is reached.

OPERATION

1. The screen displays the temperature of the back-up sensor (T3).
2. When **OK** is pressed, the temperature of the tank sensor (T2) is displayed.
3. When **TEST** is pressed, the temperature of the collector sensor (T1) is displayed.
4. When **TEST** is pressed down for 5 seconds, relay 1 is either turned on or turned off depending on its status: when it is ON, **on1** is displayed, and when OFF, the temperature of sensor T3 is displayed.
5. When **TEST** is pressed down for 5 seconds, relay 2 is either turned on or turned off depending on its status: when it is ON, **on2** is displayed, and when it is OFF, the temperature of sensor T3 is displayed.
6. When **▲** or **▼** is pressed, the preset temperature for sensor T3 is lowered or raised.

Note: carry out steps 4 and 5 to check that your installation is set up properly.

PARAMETERS

- **Differential (diF):** the temperature gap between connecting and reconnecting relays 2 and 3.

- **Minimum (LSE) and maximum (HSE) preset limits:** these are the values between which the preset value can be shifted and set.

- **Second relay (Ar2) alarm mode:** this selects the operating mode for tAL depending on whether the installation has panel draining or a unit heater.

- **Tank alarm (tAL):** when the temperature in the tank reaches the value shown in tAL, relays 1 and/or 2 cut in depending on the Ar2 mode.

- **Calibrating the collector sensor T1(CAc):** this function enables you to change the collector temperature that is displayed when **TEST** is pressed.

- **Calibrating the tank sensor T2(Cad):** this function enables you to change the temperature of the tank sensor that is displayed when **OK** is pressed.

- **Calibrating the back-up sensor T3(CAH):** this function enables you to change the temperature of the third sensor, which is displayed when the equipment is started up.

- **Activation differential (dFA):** for connecting relay 1 when the difference between the temperatures of the collector sensor and the tank sensor is greater than the preset value specified for this parameter.

- **Deactivation differential (dFd):** for disconnecting relay 1 when the difference between the temperatures of the collector sensor and the tank sensor is lower than the preset value specified for this parameter.

- **Anti-freeze option (Ant):** when the collector sensor value drops below this, relay 1 cuts in, and cuts out again when Ant + 2°C is reached.

- **Parameter-programming access time (tPP):** this specifies how long PRG must be pressed and held down to access parameter-programming (in seconds).

PROGRAMMING THE PARAMETERS

1. When the power is turned on, the display shows "--", "433", "--" and the temperature of sensor T3.
2. If you wish to change the preset values for the parameters, press **PRG** and hold it down for the time specified in tPP (the factory setting is 5 seconds), and then diF is displayed.
3. Press **OK** to access the parameter value.
4. Press **▲** or **▼** to set the desired value. Press **OK** again, and the value will be stored in the memory.
5. Press **▲** to display the next parameter. Then carry out step 3 again.
6. To exit parameter-setting, press **PRG**, or wait for 40 seconds without pressing any key. The display will show "--" and then the real temperature.

Note: the values are stored in a non-volatile memory so that they remain stored even when the equipment is not powered.

- **Parameter-access code:** the factory setting is zero (disabled). If it is not zero proceed as follows to access the parameters:

A. - "PAS" is displayed for a moment and then the message "0"; use the up/down arrows to select the predetermined code giving access to the parameters.

B. - Press **OK**: if the selected number is the right one, "diF" is displayed. If it is not right, access to programming is denied, and "--" is displayed.

FACTORY SETTINGS

CODE	FUNCTION	VALUE	SCALE
-	.....Preset temperature.....	40.0°C	30.0 to 90.0°C
diF	.....Tem. differential (Hysteresis).....	1.0°C	0.3 to 9.0°C
HSE	.....Upper preset limit.....	55°C	30.0 to 90.0°C
LSE	.....Lower preset limit.....	30°C	30.0 to 90.0°C
Ar2	.....Second-relay alarm mode.....	AAC	AAC / APL
tAL	.....2nd-relay alarm temp. (fixed differ. at 1°C).....	60	15.0 to 99.0°C
Cac	.....Collector sensor calibration.....	0.0°C	-9.0 to 9.0°C
Cad	.....Tank sensor calibration.....	0.0°C	-9.0 to 9.0°C
CAH	.....Third-sensor calibration.....	0.0°C	2.0 to 15.0°C
dFA	.....Activation differential.....	8	1.0 to 11.0°C
dFd	.....Deactivation differential.....	4	-20.0 to 10.0°C
Ant	.....Anti-freeze option.....	5	3 to 40 Secs.
tPP	.....Parameter-programming time.....	5 secs.	0 to 99
PAS	.....Parameter-access code.....	0 Desactivated	

WARNING SYMBOLS

⊕ "LOAD/CARGA": A fixed light point under this symbol means "ON". The number indicates the relay to which the LED corresponds.

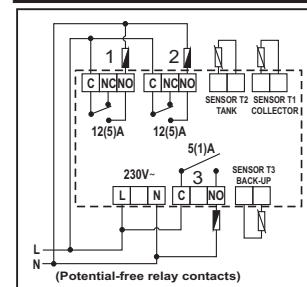
⊕ Tank-temperature alarm (parameter Ald). Relays 1 and 2 are connected.

⊕ "ES" Sensor error: indicates that the sensor or its cables are cut or disconnected. Relay 1 is activated.

888 "888" Parameter-table memorization error. The relays are deactivated.

ErP Programming error: dFA must be greater than dFd. The relays are deactivated.

ELECTRICAL WIRING



TECHNICAL SPECIFICATIONS

Display	.....3 digits.
Collector sensor T1:	..... PTC 2000 Ohm. IP67.
Tank sensor T2:	..... PTC 2000 Ohm. IP67.
Back-up sensor T3:	..... PTC 2000 Ohm. IP67.
Resolution:	.....0.1°C.
Power supply:	.....230 V~ +10%, -15%. 50/60Hz.
Sensor wiring:	.....without polarity.
Relays 1 and 2:	.....12(5)A 250V~.
Relay 3:	.....5(1)A 250V~.
Section value for cable to be connected:	.....1.5mm.
Length of sensor cable	.....less than 3 m.
Protection level – outer casing:	.....IP55.
Working temperature:	.....-5°C to 45°C.
Storage temperature:	.....from -20 to 60°C.