



AHC-80 plus

PSYCHROMETRIC CONTROLLER
OF AIR RELATIVE HUMIDITY
AND TEMPERATURE

Ver.01



AHC80PL1-07T-10842

1. DESCRIPTION

The **AHC-80 plus** is a psychrometric controller that has two totally configurable stages. It is designed to control the relative humidity of the air and temperature for the: acclimatization of stocking of fruits and flowers, air conditioning, textile industry, laboratories, operating rooms, concrete durability trials, wood drying, among other applications.

The measurement is made using the temperature difference between a dry bulb and a wet bulb. It is a psychrometric, acknowledged as a precise and stable method for determining the relative humidity of the air.

This controller is very user friendly, and offers the user a great deal of ease in adjusting the configuration parameters.

2. TECHNICAL SPECIFICATION

- Power supply: 115/230Vac (50/60Hz)
- Control temperature: -5.0 to 50.0°C (±0.1°C)
- Control humidity: 40 to 100%RH (±1%RH)
- Operating temperature: 0 to 50 °C
- Operating humidity: 10 to 90%RH (without condensation)
- Maximum current per output: 8(3)A/250Vac 1/4HP
- Dimensions: 71 x 28 x 71mm

3. CONFIGURATION

3.1 - Temperature and humidity control (SETPOINTS)

- Press **SET** for two seconds until the following figure appears **SEB**.
- If the function **SE1** has a value of 0 or 1 **EH** will appear as well as with the values of the adjusted temperature and humidity.
- If the function **SE1** has a value of 2 or 3 **H-1** **H-2** will appear as well as with the value of the adjusted humidity.
- Use the keys **▼** and **▲** to modify the values, and when ready, press **SET** to confirm.

3.2 - Parameters alteration (advanced functions)

- Access the advanced functions by pressing simultaneously the keys **▼** and **▲** for 2 seconds until appears **Fun**, releasing after that. Soon appears **Code**, so press **SET** (short touch).
- Use the keys **▼** and **▲** to enter the access code (123), when ready press **SET**.
- Use the keys **▼** and **▲** to access the desired function.
- After select the function, press **SET** (short touch) to visualize the value configured for that function.
- Use the keys **▼** and **▲** to change the value and, when ready, press **SET** to save the configured value and return to functions menu.
- To return the normal operation, press **SET** (long touch) until **--** appears.

3.3 - Advanced functions

Fun	Description	Minimum	Maximum	Unit
Code	Access code (123)	-99	999	-
PRE	Atmospheric pressure	400	800	mmHg
SE1	Operating mode for the 1st stage	(*)	(*)	-
Lo1	Minimum setpoint allowed for the 1st stage	-5.0 (1.0)	50.0 (100)	°C (%RH)
Hi1	Maximum setpoint allowed for the 1st stage	-5.0 (1.0)	50.0 (100)	°C (%RH)
dF1	Control differential (hysteresis) for the 1st stage	0.1 (1.0)	20.0	°C (%RH)
dL1	Delay for restart of the output for the 1st stage	0	999	sec.
SE2	Operating mode for the 2nd stage	(**)	(**)	-
Lo2	Minimum setpoint allowed for the 2nd stage	1.0	100	%RH
Hi2	Maximum setpoint allowed for the 2nd stage	1.0	100	%RH
dF2	Control differential (hysteresis) for the 2nd stage	1.0	20.0	%RH
dL2	Delay for restart of the output for the 2nd stage	0	999	sec.
EBn	Cyclical timer for the 2nd stage - time on	1	999	sec.
EDF	Cyclical timer for the 2nd stage - time off	1	999	sec.
Ind	Preferential indication	(***)	(***)	-
Adc	Address of the instrument on the network RS-485	001	247	-

(*) Operating mode for the 1st stage

- REF** Refrigeration
- HEA** Heating
- DEH** Dehumidification
- HUM** Humidification

(***) Preferential indication

- E-h** Temperature / humidity
- t** Only temperature
- h** Only humidity

(**) Operating mode for the 2nd stage

- DEH** Dehumidification
- HUM** Humidification

4. STANDARDIZATION (LOCAL CALIBRATION)

Recommended execution when:

- the probe is substituted;
- the length of the sensor cable is altered.

In these cases, small deviations may arise when measuring temperatures, which may be compensated. For this purpose, proceed in the following manner:

- Place the probe fully into a bucket of water that is a temperature similar to that of the chamber;
- Keep this water moving, and monitor the temperature using a good quality thermometer (reference).

- Wait a few minutes for the temperatures of the dry bulb and the wet bulb to stabilize and equalize to the temperature indicated by the reference thermometer, pursuant to what is described below:

- Simultaneously press **▼** and **▲** for ten seconds until **CAL** appears.
- Releasing the keys, the temperature will appear to be adjusted, according to the reference thermometer.
- Use the keys **▼** and **▲** to adjust the value and, when ready, press **SET** to memorize the new value.

REMARKS 1 The length of the sensors cable may be increased by the user itself, using a PP 2x24 AWG cable, additionally supplied by Full Gauge Controls upon request.

Substitute the cordon that covers the humid bulb by another one double cordon made of white cotton, when necessary.

REMARKS 2: In order to obtain a reliable humidity indication, wait at least 20 minutes for the temperatures to stabilize, then reinstall the probe.

5. VISUALIZATION OF THE TEMPERATURE OF THE WET BULB

To visualize the temperature of the wet bulb, all you have to do is touch the key **SET**. The message **E-2** will appear, and then the temperature measured by the wet bulb.

6. MAXIMUM AND MINIMUM LOGS

Press **▲**. The display will indicate **E** followed by the maximum and minimum temperatures registered. Then the **h** will appear, followed by the minimum and maximum humidity levels registered.

Note: To restart the records you just have to keep the **▲** key pressed during the viewing of the minimum and maximum temperatures until **SE** is displayed.

7. VISUALIZATION OF THE OTHER VARIABLE

If the function **Ind** is configured to only visualize the temperature or only visualize the humidity, you may visualize the other variable through a simple touch of the key **▼**.

8. INSTALLATION OF THE PROBE FOR THE AHC-80 plus

1. Attach the stainless steel reservoir through the 2 holes. (fig. 01)
2. Fill the plastic recipient with water. (fig. 02)
3. Place the plastic recipient in the stainless steel reservoir, as indicated in the figure. (fig. 03)

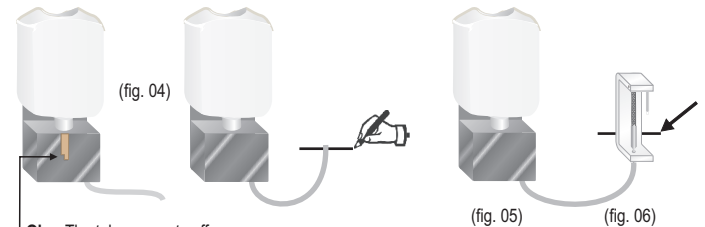


4. Leave the silicon hose (disconnected from the probe) with it pointing down, let the water run until you notice bubbles of air rising in the plastic recipient. This process will guarantee that there is no air inside the hose.

5. Slowly lift the end of the silicon hose (fig. 04), using the upper level of the water in the hose to determine the level inside the reservoir. Using chalk, mark this level on the wall.

6. Use the mark made on the wall to position the probe (fig. 05) so that the stainless steel part (fig. 06) of the probe has its middle positioned to the center of the mark. Guaranteeing that through communication vessels, there is water up to half of the stainless steel part, and so we have the humid covering in the liquid.

7. Connect the silicon hose to the probe. Take care that the covering is in contact with the water, and that there is plenty of water in the plastic recipient.



Obs: The tube can not suffer alterations in the cut.

9. MESSAGES AND SIGNS

- ERR** Sensor for the dry bulb is disconnected or is not in operating range
- ErE** Sensor for the wet bulb is disconnected or is not in operating range
- LLL** Excessive difference in temperature between the dry and wet bulbs
- HHH** Temperature of the wet bulb is higher than the dry bulb

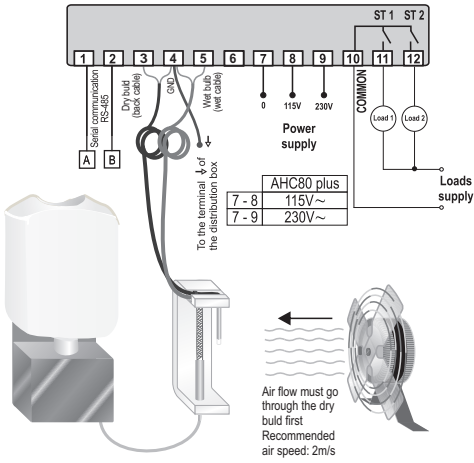
Atmospheric pressure (in mmHg): **PRE**

The formula for calculating the atmospheric pressure based on the altitude is:

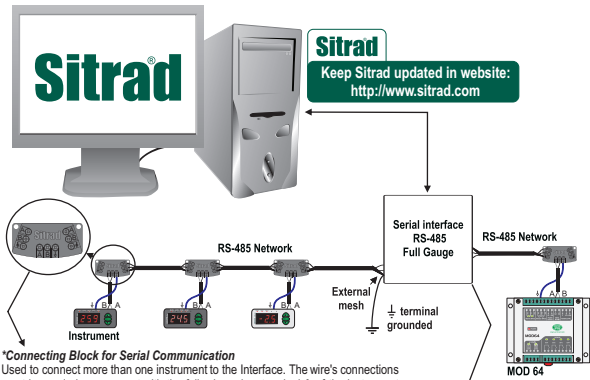
$$P(\text{mmHg}) \cong 0,0000446171x^2 - 0,091019x + 759,787$$

where x = altitude (in meters)

10. ELECTRICAL CONNECTIONS



Integrating Controllers, RS-485 Serial Interface and Computer



***Connecting Block for Serial Communication**
Used to connect more than one instrument to the Interface. The wire's connections must be made in agreement with the following rules: terminal A of the instrument connects to the terminal A of the connecting block, that must be connected with the terminal A of the Interface. Repeat the action for terminals B and \perp , being \perp the cable shield. The terminal \perp of connecting block must be connected to the respective terminals \perp of each instrument.
***Sold Separately**

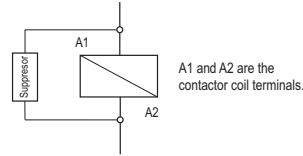
RS-485 Serial Interface
Device used to establish the connection Full Gauge Controls' instruments with the Sitrad®.

IMPORTANT

According to the chapters of norm IEC 60364:

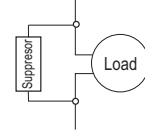
- 1: Install protector against overvoltage on the power supply
- 2: Signal cables of the computer may not be joined with electric conduit through which the electric input and the activation of the loads run
- 3: Install transient suppressors (RC filters) parallel to the loads as to increase the product life of the relays.

Schematic for the connection of suppressors to contactors



A1 and A2 are the contactor coil terminals.

Schematic for the connection of suppressors to direct activation loads



For direct activation the maximum specified current should be taken into consideration.



ENVIRONMENTAL INFORMATION

Package:

The packages material are 100% recyclable. Just dispose it through specialized recyclers.

Products:

The electro components of Full Gauge controllers can be recycled or reused if it is disassembled for specialized companies.

Disposal:

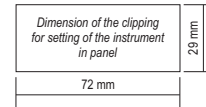
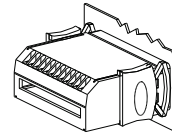
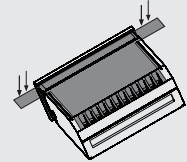
Do not burn or throw in domestic garbage the controllers which have reached the end-of-life. Observe the respectively law in your region concerning the environmental responsible manner of dispose its devices. In case of any doubts, contact Full Gauge controls for assistance.



PROTECTIVE VINYL:

This adhesive vinyl (included inside the packing) protects the instruments against water drippings, as in commercial refrigerators, for example. Do the application after finishing the electrical connections.

Remove the protective paper and apply the vinyl on the entire superior part of the device, folding the flaps as indicated by the arrows.



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