

**OPERATING INSTRUCTIONS FOR
LEEC HUMIDITY CABINET
MODELS SFC2 AND SFC3
WITH JUMO dTRON 316 CONTROLLER
& EAT100 OVER TEMP CUT OUT**

CONTENTS

- 1) GENERAL DESCRIPTION**
- 2) INSTALLATION**
- 3) TEMPERATURE SETTING PROCEDURE**
- 4) HUMIDITY CONTROL**
- 5) MAINTENANCE**

Revised: March 2008

LEEC Limited
Private Road No 7
Colwick Industrial Estate
Nottingham
NG4 2AJ

Tel: 0115 961 6222
Fax: 0115 961 6680

E-mail: sales@leec.co.uk
Web: www.leec.co.uk

1.0 GENERAL DESCRIPTION

LEEC Humidity Cabinets provide the user with extremely accurate and safe temperature control over a wide temperature range.

1.1 HEATING

Low wattage heaters are attached to the outer surface of the inner chamber in such a manner as to ensure even heating throughout the chamber.

1.2 TEMPERATURE CONTROLLER



The temperature is accurately controlled by a Jumo dTRON 316 microprocessor temperature controller. The controller uses the signal from a PT100 sensor located in the chamber to control the current supplied to the heaters. The temperature can be easily adjusted (see section 3 for full details). A separate digital temperature display unit sets the over temperature safety cutout. This is normally set to 2°C above the required chamber temperature.

1.3 OVER TEMPERATURE SAFETY CUT OUT



An EAT100-S002 digital cut out protects the contents of the chamber by allowing you to program an over temperature safety cut out set point. When the cabinet's chamber temperature goes out of limits, the cut out will disconnect the heaters. An audible alarm and visible red neon will bring to your attention any problems. A reset button is provided below the cut out for you to manually reset the heaters.

1.4 CIRCULATING FAN

Air is drawn through up through the chamber by a circulating fan, which is located at the top. Air is then returned to the base via a full width duct at the rear of the chamber. A door micro switch stops the fan when the outer door is opened.

1.5 HUMIDITY

A wide range of fixed relative humidities can be achieved by adding a suitable saturated salt solution directly into the base of the chamber. (See graph in section 4).

2.0 INSTALLATION

2.1 The power cable is factory fitted with a UK style 3-pin moulded plug. Connect the humidity cabinet to a 240V 50Hz mains supply only. The wires inside the power cable are colour coded as follows:

- **BROWN = LIVE**
- **BLUE = NEUTRAL**
- **GREEN/YELLOW = EARTH**

2.2 Your Humidity Cabinet is also protected by an internal 5A fuse, which isolates the supply if excessive current is drawn. The fuse holder is located on the rear of the cabinet. The green POWER light will illuminate if the supply is connected and the switch is on.

2.3 PRECAUTIONS

- Do not place your Humidity Cabinet in front of a window in direct sunlight.
- A qualified electrician or other competent person must carry out any electrical work required to install your Humidity Cabinet.
- Make sure that your Humidity Cabinet is not standing on its electrical supply cable.
- There are parts in your Humidity Cabinet that heat up. Always ensure there is adequate ventilation, as failure to do so can result in component failure. Keep all vent grilles clear.
- Before any cleaning or maintenance work is carried out, the mains supply must be switched off and the plug removed from the socket.

3.0 TEMPERATURE SETTING PROCEDURE

Switch your Humidity Cabinet on using the POWER switch located at the left hand side of the control panel. Press the RESET button to cancel the buzzer after initial switch on.

3.1 The Jumo dTRON 316 microprocessor temperature controller on your humidity cabinet has two LED displays. The upper display (red) represents the actual chamber temperature. The lower display (green) represents the target temperature. The controller has 4 buttons marked as follows:

PGM	-	Program key. Enters the programming mode.
▲	-	Increases the temperature set point
▼	-	Decreases the temperature set point.
EXIT	-	Exits the programming mode.

The **yellow 3** on the temperature controller illuminates when the heaters are operating.

3.2 The chamber operating temperature or set point (SP) can be altered by simply pressing the **▲** key to increase the temperature, or the **▼** key to decrease the temperature. When the required temperature has been entered, release the keys and the green display will blink once to confirm that a new target temperature has been stored.

Allow the chamber temperature to stabilise before using the cabinet.

3.3 OVER TEMPERATURE SAFETY CUT OUT

A digital safety cut out unit with a red LED display provides essential over temperature protection for the contents of your cabinet. The display is normally blank until the red button is pressed. The red button enables you to set a value, and the small black rotary knob allows you to adjust that value.

3.4 SETTING THE OVER TEMPERATURE CUT OUT

If, for example, you would like to operate your Humidity Cabinet at +37°C, an over temperature value needs to be programmed into the cut out. We recommend that the value is set to **2 degrees higher** than your operating temperature. In the example above, the over temperature cut out set point needs to be set +39°C. To do this follow steps 1 - 3 below:

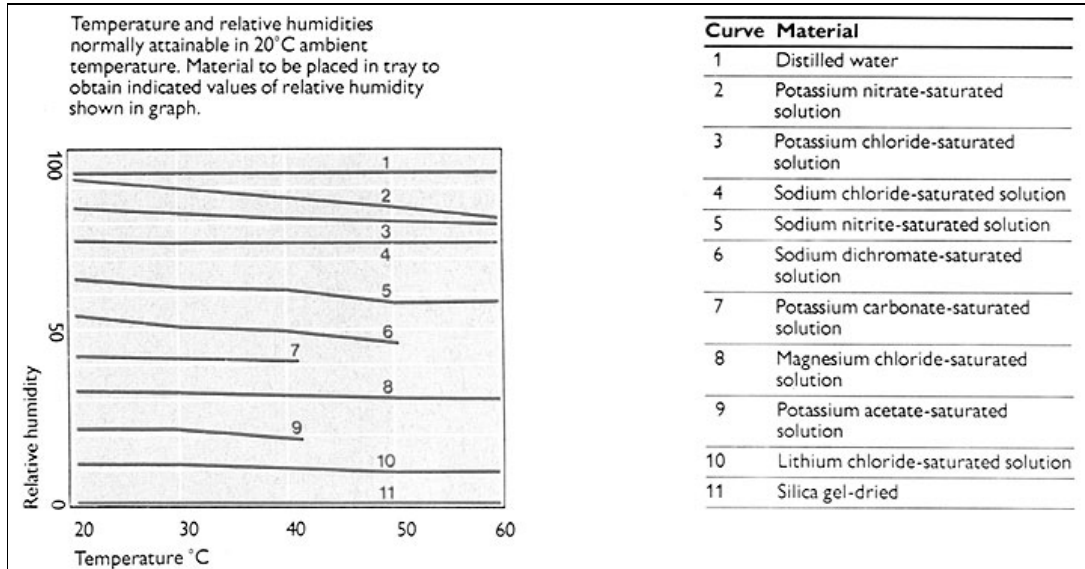
- 1) Press & hold the red button. The display will illuminate.
- 2) Whilst holding the red button, turn the rotary black knob clockwise to increase the displayed value or anti-clockwise to decrease.
- 3) Once the value of your choice is displayed, release the red button. The new value will be stored and retained in permanent memory.

3.5 OVER TEMPERATURE NEON, BUZZER & RESET BUTTON

If the chamber overheats, a warning buzzer will sound and the red overheat neon will illuminate. **The heaters will automatically disconnect to prevent further overheating.** Once the chamber temperature has stopped rising, and has fallen below the safety cut out set point, the heaters will re-connect automatically. The buzzer & neon will remain on until a member of staff has acknowledged the alarm. To reset the buzzer & alarm, press the reset button along side illuminated neon.

4.0 HUMIDITY CONTROL

A wide range of fixed and relative humidities can be achieved by adding suitable saturated salt solutions directly into the base of the chamber. The relative humidity of air in contact with saturated salt solutions reaches known equilibrium values at certain temperatures.



Salts Graph

The graph above shows the temperatures and relative humidities for several of the more common saturated salts. The distilled water/saturated salt solution should be topped up regularly and should fully cover the floor to a depth of 1 cm at all times.

5.0 MAINTENANCE

No routine maintenance is necessary but regular cleaning of the inner chamber is essential.

5.1 Keep all ventilation grilles clear and unobstructed.