

INSTRUCTIONAL MANUAL

**CAT. 71227 Series
SECADOR™ 4.0 Autodesiccator Vertical**

&

**CAT. 71228 Series
SECADOR™ 4.0 Autodesiccator Horizontal**



Electron Microscopy Sciences
P.O. Box 550
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An Introduction to SECADOR™ Autodesiccators

All SECADOR™ Auto Desiccators are made of long-lasting co-polyester resin in an array of colors. These desiccators block virtually all harmful UV lights. A feature of this item includes patented sealed doors equipped with a precision digital hygrometer. A loop, located on the door of the desiccator, allows for the placement of a padlock for added security and prevention of opening by any unauthorized personnel. Each desiccator has a removable bottom shelf, under which desiccant cartridges can be placed as needed. The desiccator shelves are made of clear polystyrene, which are designed for strength as well as perforated for air flow.

The vertical SECADOR™ Auto Desiccators have two door latches on the right side and can be stacked up to three units high (4.0 units stackable to two (2) high)). Be sure to leave enough space in front for the door to be opened. Please note that shelves must be angled at 45° to fit through the door opening, and then leveled to rest upon the desired shelf rail. When all shelves are in place and secured on the shelf rails, the distance between them is 110mm (a minimum of 4 3/8").

These co-polyester resin autodesiccators, unlike acrylic ones, can be cleaned with a variety of detergents as well as disinfected. We recommend avoiding abrasive cleaners as they may damage the unit's surface. Use a clean, soft cloth.

Important Information

CAUTION:

- Do not autoclave
- Do not place in direct sunlight
- Do not attempt to put pressure or vacuums inside the cabinet
- Do not place near a heating device
- Use only within ambient temperature ranges of 5°C to 40°C
- For indoor use only
- Do not place in areas with smoke or steam
- Do not place any explosive or hazardous chemicals in the cabinets

For the authorized personnel:

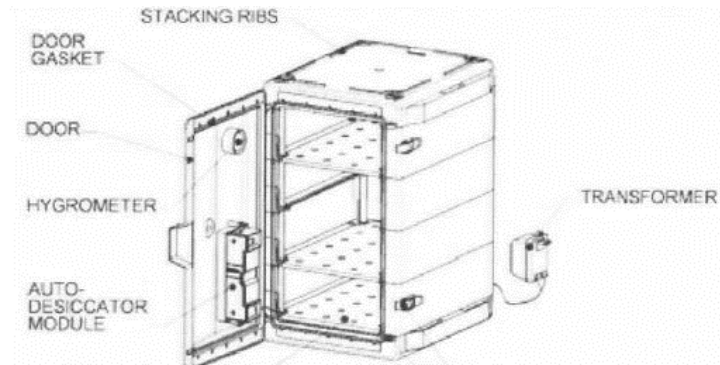
Please be aware that if the aforementioned cautionary statements are not followed, you may be putting the unit at risk for damage. All SECADOR™ Autodesiccators are molded in sections which are then sealed tight using silicon gaskets and unexposed steel bolts. These autodesiccators are assembled in a precise manner and therefore its parts and pieces should not be altered under any circumstances, especially the nuts and bolts.

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Instructions

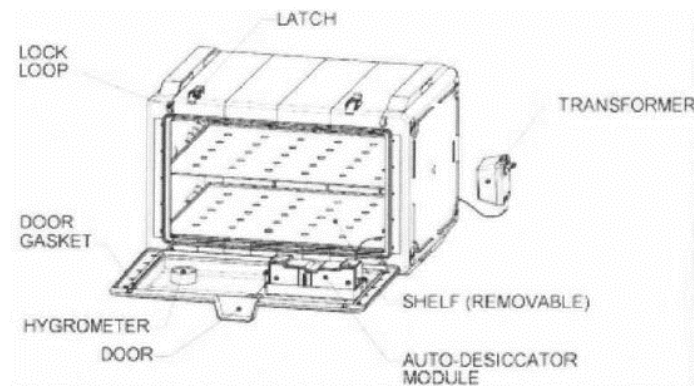
1. Place the desiccator on a flat, horizontal surface. Leave room for the door to open. The door is fitted with the SECADOR™ Autodesiccator module, which is housed in a polycarbonate case. The two apertures in the door exterior must be left clear to allow for proper ventilation of the module.



2. Connect the electrical cord to the supplied transformer and remove it from the packaging.

3. Locate the electrical cord extending from the desiccator.

4. With the transformer unplugged, from the power source, fully insert each of the two terminals, at the end of the electric cord, under each of the screw covers on the transformer (one terminal per screw cover). The SECADOR™ Autodesiccator module is not polarized, therefore, either terminal can be attached to either screw.



5. Fasten the terminals to the transformer by tightening the screws with a screwdriver.

6. Plug the transformer into a 120VAC outlet. The green light located inside the module will illuminate to indicate power ON.

7. Once plugged in, the dehumidifying cycle will begin and the desiccator's moisture will be absorbed by the silica gel beads contained within the module.

8. Following is a brief heating cycle within the electrical unit and then by a discharge cycle (when the moisture is released externally).

9. The cabinet should remain closed for at least 8 hours in order to bring the relative humidity to levels 25% rH or lower.

10. The module contains 4 ports of air flow that are opened and closed by flapper valves. Do not attempt to adjust the valves, as they were precisely installed, as were the nuts and bolts.

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Digital Hygrometer

The digital hygrometer supplied in this kit is a purposely designed, highly precise hygrometer for use in measuring the relative humidity (%rH) levels inside a desiccator. Be sure to gently remove and discard the clear, factory-applied display protector that covers the display. There is also a battery isolator strip that preserves battery life until unit is used. Remove the isolator strip, by unscrewing the battery cover, grasping the free end of the battery isolator strip and then pulling to remove it. Contact with the battery is now active and the Hygrometer will function as indicated in the specifications below.



NOTE: The Hygrometer may be pre-installed in the door housing of the desiccator. If this is the case, then you will first need to remove the Hygrometer from the housing. Do this by removing the plastic retaining tube surrounding the Hygrometer, remove Hygrometer from housing and follow instructions above to remove the isolator strip. Reinstall Hygrometer into housing by refitting plastic retaining tube.

Digital Hygrometer Technical Specifications

Display

- Hygrometer Display is refreshed every 10 seconds.
- Hygrometer displays a 2-digit number followed by %rH for relative humidity (rH) values between 10% and 80%rH.
- If Hygrometer senses %rH below 10%, then display reads "<10%rH".
- If Hygrometer senses %rH above 80%, then display reads ">80%rH".

Accuracy at 25°C

- The long term drift/variation in the accuracy of the Hygrometer is 0.5%rH per year.
- For %rH values from 20 to 80% the Hygrometer accuracy is $\pm 3\%$ rH.
- For %rH values from 10 to 20% the Hygrometer accuracy is $\pm 7\%$ rH.

Operational Temperature Range

- 5° to 37°C (40° to 100°F).
- Hygrometer sensor will be permanently damaged if exposed to temperatures above 70°C (158°F).

Battery

- Hygrometer is powered by the common CR-2032 Battery (3 Volt).
- Battery Life is 1 year.
- Low Battery symbol (LoBat) will appear in the display when the remaining battery voltage level is low. The Hygrometer will continue to operate normally for approximately 3 to 4 weeks from the first appearance of the "LoBat" symbol.

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



Hygrometer Two-Point Calibration Procedure

EMS recommends that the Hygrometer be calibrated once every 2 years. As noted earlier, long term drift/variation in the accuracy of the Hygrometer is 0.5%rH per year. Calibration may be performed more frequently at user's discretion.

Two-Point Calibration Procedure process described below uses two pre-determined %rH levels (33%rH and 75%rH) to which the Hygrometer will be independently and serially exposed. The Hygrometer self-calibrates using its internal software in order to attain the Accuracy Range values described above. The following materials are needed to perform this calibration:

- Hygrometer to be calibrated
- Phillips Head Screwdriver with small drive tip
- Humidity Calibration Standard to produce 33%rH*
- Humidity Calibration Standard to produce 75%rH*
- Small tweezers or forceps to reposition Jumper Wire

*Use your preferred humidity calibration standard and follow manufacturer's instructions for all humidity calibration standards.

1. Prepare the 75%rH Humidity Calibration Standard by following the instructions supplied with the standard.
2. Locate battery cover on the back of the Hygrometer. Unscrew cover and remove battery from Hygrometer by releasing spring tab on the left of the battery.
3. The Jumper Wire Terminal is located in the top left of the batter compartment. Take note of the factory *default position* of the Jumper Wire . Remove Jumper Wire from the factory default and reposition onto the 75%rH calibration . NOTE: The Jumper Wire positioning diagram for both 33%rH and 75%rH calibration points is also engraved on the bottom left of the Hygrometer housing.
4. As quickly as possible, insert battery and secure battery cover. The following symbol should appear in the display  indicating the Hygrometer is now in calibration mode. Place Hygrometer into container with the 75%rH Humidity Calibration Standard and allow 10 minutes to elapse.
 - 4a. If the 75%rH Calibration was successful then the  symbol will disappear and the display will steadily show "75%rH". If this is true, please proceed to Step 5, if not, go to Step 4b.
 - 4b. If the 75%rH Calibration failed, then the display will continuously flash "75%rH". If this happens, please go back to Step 2 and repeat this process.
5. Remove the 75%rH Humidity Calibration Standard from the container.
6. Prepare the 33%rH Humidity Calibration Standard by following the instructions supplied with the standard.
7. Locate the battery cover on the rear of the Hygrometer. Unscrew the cover and remove battery from the Hygrometer by releasing the spring tab on the left of the battery.

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8. Remove Jumper Wire from 75%rH calibration location $\begin{matrix} \circ \\ \circ \\ \circ \end{matrix}$ and reposition the Jumper Wire to the 33%rH calibration location $\begin{matrix} \circ \\ \circ \\ \circ \end{matrix}$.
9. Working as quickly as possible, insert battery and secure battery cover. The following symbol should appear in the display $\begin{matrix} \circ \\ \circ \\ \circ \end{matrix}$ indicating the Hygrometer is now in calibration mode. Place Hygrometer into container with the 33%rH Humidity Calibration Standard and allow 10 minutes to elapse.
- 9a. If the 33%rH Calibration was successful then the $\begin{matrix} \circ \\ \circ \\ \circ \end{matrix}$ symbol will disappear and the display will steadily show "33%rH". If this is true, please proceed to Step 10, if not, go to Step 9b.
- 9b. If the 33%rH Calibration failed, then the display will continuously flash "33%rH". If this happens, please go back to Step 7 and repeat this process.
10. Locate the battery cover on the rear of the Hygrometer. Unscrew the cover and remove battery from the Hygrometer.
11. Remove Jumper from 33%rH calibration location $\begin{matrix} \circ \\ \circ \\ \circ \end{matrix}$ and reposition the Jumper Wire to the factory default $\begin{matrix} \circ & \circ \\ \circ & \circ \end{matrix}$, reinsert battery and secure battery cover.
12. The two-point calibration process is complete. Return Hygrometer to the desiccator. NOTE: There is a white space provided on the battery cover panel onto which you can write the future date on which you would like to perform a recalibration of the Hygrometer.

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For any questions or for ordering information,
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