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Quick-Start Operating Guide

SmartDesiccator

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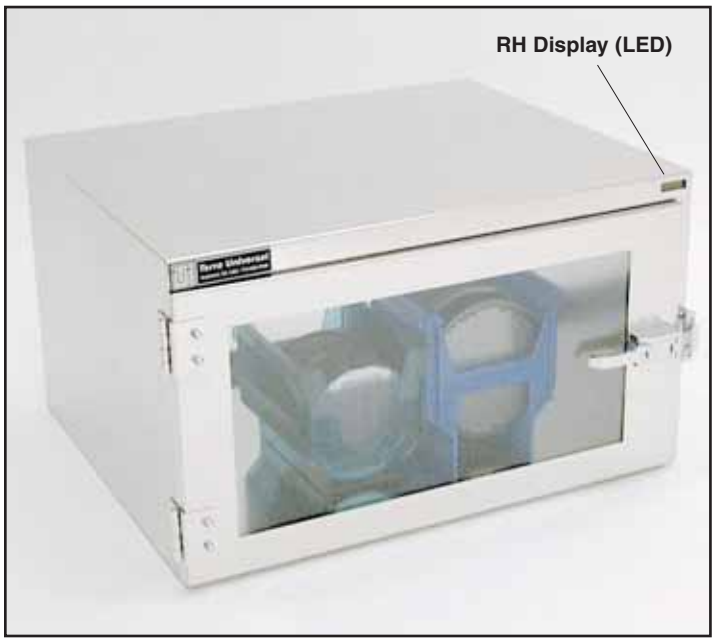
Safety Notice

A thorough familiarity with all operating guidelines is essential to safe operation of the product. Failure to observe safety precautions could result in poor performance, damage to the system or other property, or serious bodily injury or death.

The following symbols are intended to call your attention to two levels of hazard involved in operation:

WARNING!!!: Warnings are used when failure to observe instructions or precautions could result in injury or death.

CAUTION!!!: Cautions are used when failure to observe instructions could result in significant damage to equipment.



This manual provides information on installing and operating your Terra Universal SmartDesiccator.

1.0 Equipment Description

The SmartDesiccator™ extends shelf lives of stored materials by automatically maintaining the internal humidity level you select.

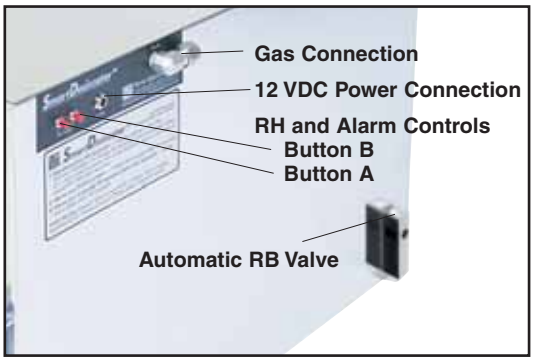
It maintains dry storage conditions by controlling the flow of dry purge gas, generally nitrogen, into the cabinet. A space-saving LED display continuously monitors the %RH (relative humidity) inside the chamber. After you enter a humidity set point, the SmartDesiccator™ turns the flow of nitrogen on and off to maintain the set point without wasting nitrogen.

This smart control system cuts nitrogen costs up to 78% when compared to flowmeter gas delivery systems. Terra's Automatic RB® (Relief/Bleed) Valve relieves system overpressures that could damage door seals.

Warning alarms monitor system function and alert operators of potentially damaging conditions. An "Open Door" visible alarm is activated if the door remains open for too long. An "RH Hi" alarm indicates if the system remains in high purge mode for too long, indicating a probably failure of the gas supply line.

2.0 Set-Up and Operation

Follow these steps to prepare your SmartDesiccator for operation using the factory-set parameters summarized below. To change any of these values, refer to "Changing Set-Up Mode Parameters."



Relative Humidity Offset (default = 0): allows the user to offset the relative humidity readings to match %RH values displayed by a test instrument. This is effectively a calibration procedure.

Open Door Alarm (default = 60 seconds): allows the user to change the time delay between when a door is opened and the open door alarm is activated.

High Relative Humidity Alarm (default = 180 seconds): allows the user to change the time delay between when the measured relative humidity level climbs above the set point value and when the "rH High" alarm is displayed.

Identification Parameter (default = 0): not used with the SmartDesiccator.

Purge-Off Delay (default = 30 seconds): allows the user to change the delay between the time when the system regains the humidity set point and the high-flow purge is de-activated. This delay ensures that ample purge is provided to remove moisture and contaminants from the changer. The longer the delay, the more nitrogen is consumed each time a humidity fluctuation triggers the high-flow purge.

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1. Connect a 1/4" N_2 (or other process gas) supply line externally regulated at 10 – 20 psi. See photo for fitting location.
2. Connect the 12VDC power supply to a standard 110VAC/60Hz power outlet.
3. **RH Set Point (Factory Setting: 10% RH)** — The RH set point is established during normal run mode. With the power ON, press and release Button A to view current set point. Then press Button A again to increase the set point, or Button B to decrease it.

After a four-second delay, during which time no buttons are pressed, the unit will store the new set point and return to normal operation, displaying the current RH level.

Recommended Minimum Settings: Although the RH level can be specified anywhere between 0 and 99.5% RH, the practical set point range is from room ambient (highest setting) down to the RH of the supply gas (lowest setting).

Because the unit is accurate to ± 2%RH, your setpoint should be at least 2° above 0 (recommended minimum setting is 4°). Otherwise, the system could attempt to attain a negative reading and remain on high purge mode all the time.

3.0 Changing Set-Up Mode Parameters

Refer to the descriptions above for each of the set-up mode parameters. Before proceeding, make sure that the SmartDesiccator is connected to a 0.25" nitrogen (or other process gas) supply line externally regulated at 10 – 20 psi.

3.1 Relative Humidity Offset (default = 0)

3.1.1 To change parameter settings, you must first enter the Set Up Mode. To do so, disconnect the 12VDC plug from the side of the unit.

3.1.2 While pressing and holding both red buttons (labeled “A” and “B”), reconnect the 12VDC plug to power.

3.1.3 Release the “A” button only. The LED will show “**-rh-**” to indicate the Relative Humidity Offset Parameter.

3.1.4 Release the "B" button. The display should read "0," the factory setting. Press the "A" button to increase this value. The settable range is –10 to +10. When the upper range limit is reached, displayed values will cycle to the lower range limit.

3.2 Open Door Alarm (default = 60 seconds)

3.2.1 To advance to the Open Door parameter, press and hold the “B” button. The display should read “**door**”.

3.2.2 Release the “B” button. The display should indicate “60”, the factory setting in seconds. Press the “A” button to increase this value. The settable range is from 0 – 255; when the value reaches 255 it will cycle to 0 and continue climbing. Release when the desired alarm delay appears.

3.3 RH Hi Alarm (Default setting = 180 seconds)

3.3.1 To advance to the RH Hi Alarm parameter, press and hold the “B” button. The display should read “**rH**”.

3.3.2 Release the “B” button. The display should indicate “180”, the factory setting in seconds. Press the “A” button to increase this value. The settable range is from 0 – 255; when the value reaches 255 it will cycle to 0 and continue climbing. Release when the desired alarm delay appears.

3.4 Identification Parameter (default = 0)

3.4.1 Press and hold the “B” button again to view the Identification Parameter, which is not used with SmartDesiccators.

3.5 Purge-Off Delay (default = 30 seconds)

3.5.1 To advance to the Purge-Off Delay parameter, press and hold the “B” button. The display should read “**purgG**”.

3.5.2 Release the “B” button. The display should indicate “30”, the factory setting in seconds. Press the “A” button to increase this value. The settable range is from 0 – 255; when the value reaches 255 it will cycle to 0 and continue climbing. Release when the desired alarm delay appears.

3.5.3 Press and hold the “B” button. The display will show “**donE**” to indicate the end of the parameter set up mode.

3.5.4 Release the “B” button to return to Operation Mode. The display will read the current measured relative humidity level inside the chamber. The values that have been established will be stored and reloaded each time the SmartDesiccator is powered up.

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4.0 Maintenance

Both acrylic and static-dissipative PVC desiccators can be periodically cleaned with clean, lukewarm water and a clean nonabrasive cloth. If desired, a mild, non-abrasive detergent may also be used. Use only light pressure when cleaning.

If the outside of the acrylic is exceptionally dirty or gritty, rinse the surface first by lightly swabbing a saturated cloth over the surface and allowing surfactants to drain away. Avoid rubbing dirt or grit into the surface. Turn the cloth often and replace with a clean cloth frequently. Dry the acrylic by blotting gently with a clean, dry cloth.

If you clean the inside of a desiccator with water, you should dry the inside surface thoroughly and then purge the cabinet with nitrogen for several hours before reintroducing moisture-sensitive stored materials.

CAUTION!!!:

- **Do not clean acrylic or static-dissipative products with alcohol or other strong cleaning agents.**
- **Do not expose static-dissipative PVC to extreme heat or direct sunlight.**
- **A Terra stainless steel shield is required on the bottom of each static-dissipative PVC desiccator chamber to prevent scratching.**

Special Care of Static-Dissipative PVC Plating

Although static-dissipative PVC has greater tensile strength than plexiglass, it is not as rigid, and so it tends to bow if not supported adequately. For this reason, you should not stack static-dissipative PVC desiccators or place heavy objects on top of them.

These desiccators should also be kept away from temperature extremes; avoid prolonged exposure to temperatures over 80 degrees Fahrenheit. Always avoid scratching the surfaces.

Replacing Desiccator Doors

Under normal operating conditions, TUI desiccators should operate for years without warping of doors, particularly when doors are equipped with stainless steel frames. Even if some warping should occur, the Dual Purge System and NitroWatch will ensure that the desiccator maintains a positive internal pressure.

If your desiccator should experience warping, you should first attempt to determine the cause. Does your system incorporate an Automatic RB Valve? Is the pressure of incoming nitrogen set too high?

Call Terra Universal for any required replacement doors (we will need the model number, which is printed on a label affixed to the lower right side of every standard TUI desiccator). To replace a door, simply remove the screws that hold the door in place and reinstall the new door. The back panel is similarly secured by a number of screws; make sure that you do not overtighten these, or the plexiglass will crack!

After replacing gaskets you may need to realign the desiccator doors; refer to “System Set-Up.”

Testing and Replacing Humidity Sensor

If a discrepancy is observed between the displayed %RH and that of an independent humidity calibrator, the humidity scale can be compensated accordingly (see “Set-Up” instruction on page 2).

The NitroWatch humidity sensor requires no calibration. The sensor should be tested periodically and replaced as necessary (about every 5 years under normal use).

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Thank you for ordering from Terra Universal!

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