

Calibration

Each unit is calibrated against standards traceable to the National Institute of Standards and Technology.

Calibration certificates

In addition to the normal calibration procedure, each unit can be supplied with its own traceable calibration certificate.

Calibration interval time

Under normal ambient conditions (0 to 50°C, 0 to 70% RH) and for an accuracy $\pm 2\%$ RH, we recommend an annual calibration.
For an accuracy $\pm 5\%$ RH we recommend calibration every five years.
For environments with airborne chemicals or for high humidity and high temperature conditions we recommend more frequent calibration.

Limited Warranty

This product is warranted by Ohmic Instruments Company to be free of defects in material and workmanship for one year after delivery. A product found to be defective for these reasons within this period will be repaired or replaced free of charge by Ohmic. We give no other warranties. Ohmic Instruments Co. shall not be liable for any damages or losses, whether direct or indirect. The warranty cannot be transferred or assigned to third parties.

All specifications are subject to change without prior notice.



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Instruction Manual Humidity Generator / Calibrator Model S-503

Introduction

The S-503 Humidity Generator / Calibrator enables users of humidity sensors, transmitters and read-out devices to quickly and accurately generate reference humidity conditions. The S-503 accepts five 0.73" (18.5mm) diameter transmitters simultaneously.

Description	Model
Humidity Generator / Calibrator, incl. power supply, desiccant, certificate	S-503
Accessories	Part Number
0.25 kg desiccant	A-000170
Adapter for 0.31" (8mm) transmitter (5 pcs.)	A-000180
Adapter for 0.47" (12mm) transmitter (5 pcs.)	A-000190
Blind stop (5 pcs.)	A-000200
Special front 5x \varnothing 18.5mm and 2x M36x1.5mm	A-000210
Blind stop M36x1.5mm (1 pc.)	A-000211

Principle of Operation

A vapor saturator or desiccant chamber is coupled to the test chamber on a proportional base. The electronics assure a fast ramping to the RH setpoint. The actual test chamber humidity is displayed, as well as the actual test chamber temperature.

The S-503 utilizes a high accuracy reference sensor which has been tested to a traceable reference. The overall accuracy between 20 and 80% RH is $\pm 2\%$ RH. It is recommended to verify the test chamber with an external, traceable RH indicator or a chilled mirror dewpoint meter.

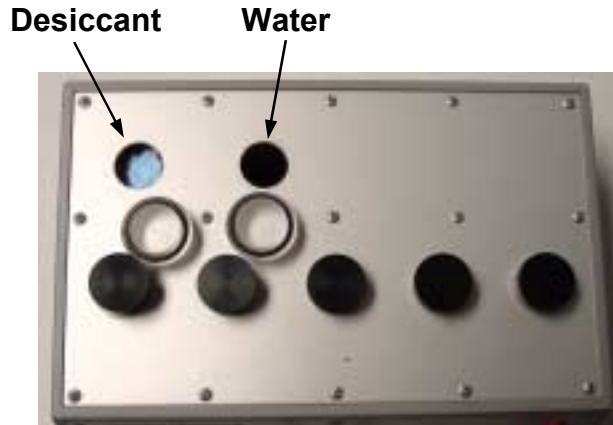
Getting Started

The desiccant chamber should be filled with 25 grams of distinct blue colored desiccant. The water chamber should be filled with 25 cc of distilled water.

WARNING: DO NOT OVERFILL, AS THE WATER CAN FLOW DIRECTLY TO THE TEST CHAMBER, CAUSING MALFUNCTIONING OF THE GENERATOR.

Specifications

Power	12V DC (120 or 230V AC adapter included)
Relative humidity range	10 to 80% RH
Relative humidity setpoints	10, 20, 30, 50, 70, and 80% RH
Relative humidity accuracy	$\pm 2\%$ RH
Relative humidity stability	Better than 0.5% RH
Stabilization time to setpoint	Approx. 10 minutes
Operating temperature	60 to 100°F (15 to 35°C)
Temperature accuracy	$\pm 0.5^\circ\text{F}$ ($\pm 0.3^\circ\text{C}$)
Transmitter power supply	15V DC $\pm 10\%$ at 30mA max.
Display	3½ digit LCD, 0.5" (12.7mm) high
Voltage readout	0 to 1, 0 to 5, and 0 to 10V
Current readout	4 to 20mA
Desiccant chamber	0.9 oz. (25 g) capacity
Saturator chamber	25ml capacity
Dimensions	9.45 x 7.28 x 3.15" (240 x 185 x 80mm)
Probe entry	5 x $\varnothing 0.73$ " (18.5mm)
Weight	3.3 lbs. (1.5 kg)



Important Notes

1. Stabilize the unit to room temperature before use.
2. Do not transport the unit when filled with water. Before transport all water should be drained.
3. Always close the test chamber ports before use.

Trouble Shooting

Unit does not dry

- Possibly caused by condensation or water on the wall of the test chamber. Open chamber and wipe carefully with a dry cloth and allow to dry for approx. 15 minutes.
- Should the test chamber be fully floated with water: Remove the water and allow to dry for two days with open ports.
- Desiccant might be used up (pink or transparent color). Replace with fresh dark blue ultra dry desiccant.

Unit too moist or too dry

- Chamber temperature could be extremely cold or hot. Stabilize to room temperature.
- Cover is open or there is leakage through cover.

Large deviations

Large deviations when just starting are usually a result of a difference in temperature between the transmitter under test and the actual chamber temperature. Allow to stabilize for at least one hour.

Front Panel Functions

S-503



S-503 Digital



Input Select

- | | |
|-------------------|---|
| Temp | Shows actual test chamber temperature. |
| RH | Shows actual test chamber relative humidity. |
| 10V | Shows the actual output of a transmitter under test with an output of 0 to 10V. Display reads from 0 to 100% RH. |
| 5V | Shows the actual output of a transmitter under test with an output of 0 to 5V. Display reads from 0 to 100% RH. |
| 1V | Shows the actual output of a transmitter under test with an output of 0 to 1V. Display reads from 0 to 100% RH. |
| mA | Shows the actual output of a transmitter under test with an output of 4 to 20mA. Display reads from 0 to 100% RH. |
| Setpoint | Selects the desired relative humidity: 10, 20, 30, 50, 70, or 80% RH. |
| Humidify | When lit, indicates that the vapor saturator is activated. |
| De-Hum. | When lit, indicates that the desiccant chamber is activated. |
| 15 Vdc | +15 Vdc supply for a transmitter under test. |
| Input Volt | Connect to + signal of transmitter under test with voltage output (0 to 1, 0 to 5, or 0 to 10V). |
| Input mA | Connect to + signal of transmitter under test with current output (2-wire 4 to 20mA). |
| Gnd | Common ground for - signal and - power supply. |

Connecting a Transmitter

The S-503 Generator / Calibrator accepts standard probes of 0.73" (18.5mm) diameter. Adapters for other sizes are available from Ohmic. The S-503 has a built-in power supply of 15V DC for the transmitters under test.

For example, if the transmitter under test has a 0 to 10V output, the output signal should be connected to the Voltage input and the Input select switch should be set to 10V. The actual reading of the transmitter is shown on the display from 0 to 100% RH. To see the actual relative humidity the Input select switch should be set to "RH".

NOTE: BEFORE PLACING THE TRANSMITTER IN THE TEST CHAMBER REMOVE TEFLON OR STAINLESS STEEL FILTER. USE SLOTTED CAP ONLY!

Operating Instructions

1. The unit must be used at normal room temperature (approx. 20°C) and must be stabilized for a minimum of 1 hour.
2. Power the unit with the supplied 12V DC adapter (connection at rear of instrument).
3. Make sure the test entries are closed. Switch the unit to "RH" and choose the desired humidity.
4. Install the humidity transmitter to be tested (without filter) into the test chamber.
5. If applicable, connect the transmitter to the built-in power supply and readout.
6. Press "ON". The unit will now, depending on the humidity set, start to dry or humidify until it reaches its setpoint.
7. If the humidity probe is connected to the built-in power supply and read-out, switch to the corresponding input sensitivity. If the transmitter has an output of 0 to 10V, switch to "10V". For 0 to 5V, switch to "5V". For 0 to 1V, switch to "1V", and for 4 to 20mA, switch to "mA". The display shows the actual output of the transmitter under test.

Maintenance

Replenish desiccant when colorless. Use only dark blue, ultra dry desiccant. Add distilled water to the water compartment if needed.

Changing the desiccant should be done very carefully. To remove desiccant:

1. Remove the bolt at the bottom of the drying chamber. Take care not to turn over the unit.
2. Remove the top plug of the drying chamber. Gently stir the granulate with a pencil or screwdriver into a bucket. The desiccant can be regenerated by heating it to 300°F (150°C) for one to two hours.
3. Use only genuine desiccant to refill.

IMPORTANT: DO NOT SHAKE OR TURN OVER THE INSTRUMENT AS WATER MAY FLOW INTO THE TEST CHAMBER.