MICHELL Instruments S904 Cost Effective Humidity Validator Instruction Manual

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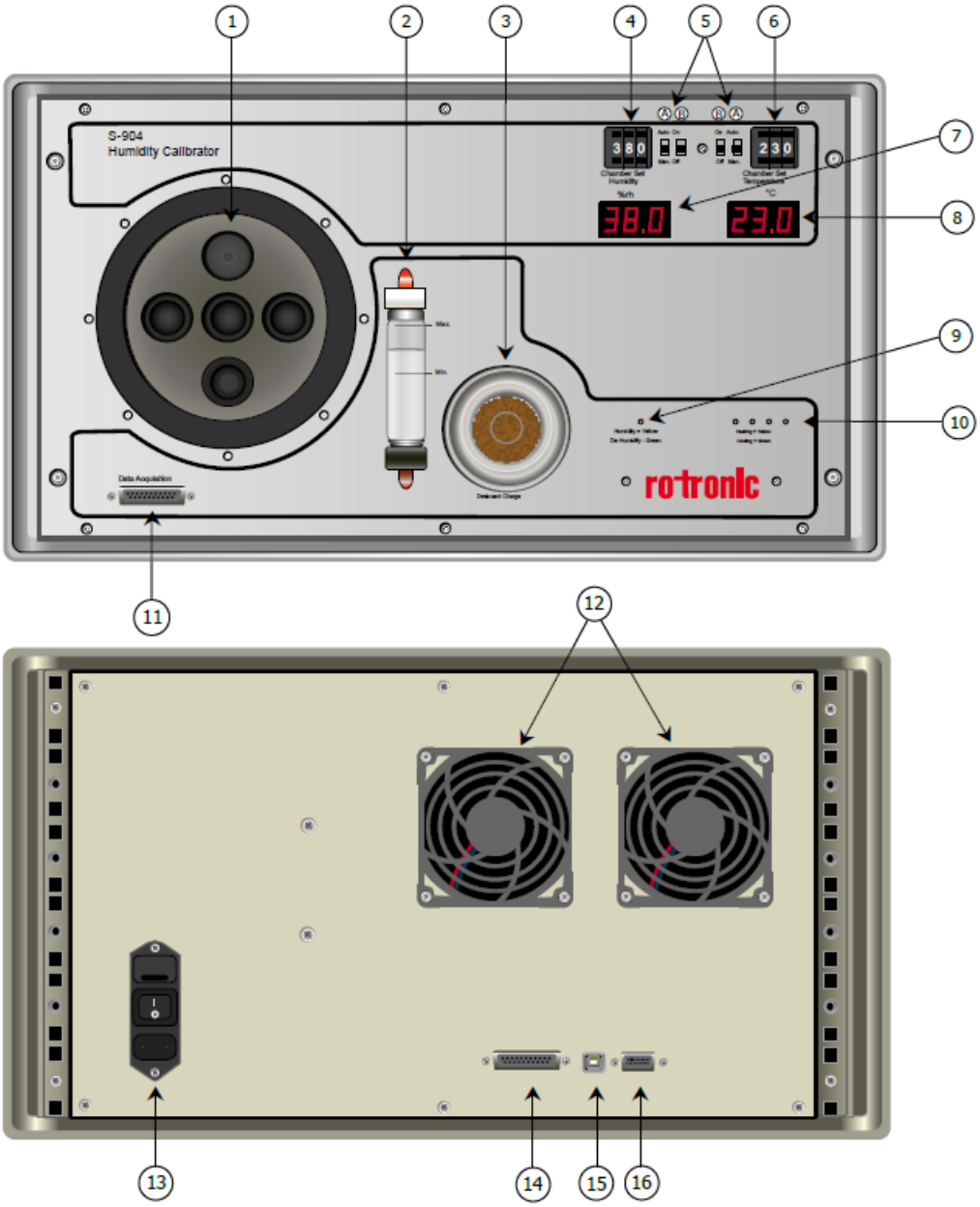
MICHELL Instruments S904 Cost Effective Humidity Validator

GENERAL DESCRIPTION

The S904 series are completely stand-alone and transportable calibrators for humidity sensors, requiring no external services other than mains power. This calibrator is ideal for companies or organizations looking to calibrate large num-bers of probes in a laboratory or field setting.
For more information please visit **www.processsensing.com**, **www.rotronic.com** or scan the QR-Code (also on the device), which gives you the direct access to the detailed Rotronic online manual.

SYSTEM COMPONENTS

There are two versions available: S904 and S904D
With the S904D version, the humidity and temperature set points of the chamber can be controlled with the supplied PC application software, enabling the operator to create completely automated calibration profi les for unattended laboratory operation.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S-904
Humidity Calibrator
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No.	Description
1	Chamber door
2	Water reservoir
3	Desiccant cell and indicator window
4	Relative humidity set point (%rh)
5	**A:** Manual/Auto switches for relative humidity / temperature control **MAN:** Setpoint is set by swi tch 4 (humidity) and switch 6 (temperature) **AUTO:** Remote control of relative humidity / temper ature set points **B:** ON/OFF switches for relative humidity / temperature control
6	Temperature setpoint (°C)
7	Humidity level indicator
8	Temperature level indicator
9	Humidity control indication LED: Humidify (yellow) / De-humidify (green)
10	4-Zone chamber temperature control indication LEDs: Heating (yellow) / Cooling (green)
11	Data aquisition connector / Blind plate **(S904D)**
12	Ventilation fans
13	Electrical mains connector, on/off switch and power input fuse
14	Data acquisition connector **(S904D)**
15	USB connection **(S904D)**
16	RS232 connection **(S904D)**

POWER ADAPTER INPUT

A single mains power supply between 100 to 240 V AC is required to operate the unit. The power supply connection is a 3-pin IEC plug located on the rear panel of the instrument. The ON/OFF switch and the power input fuse are in the same location, adjacent to the power socket. A 3-core power cable is provided.

Attention: The instrument must be connected to an electrical earth for safety purposes.

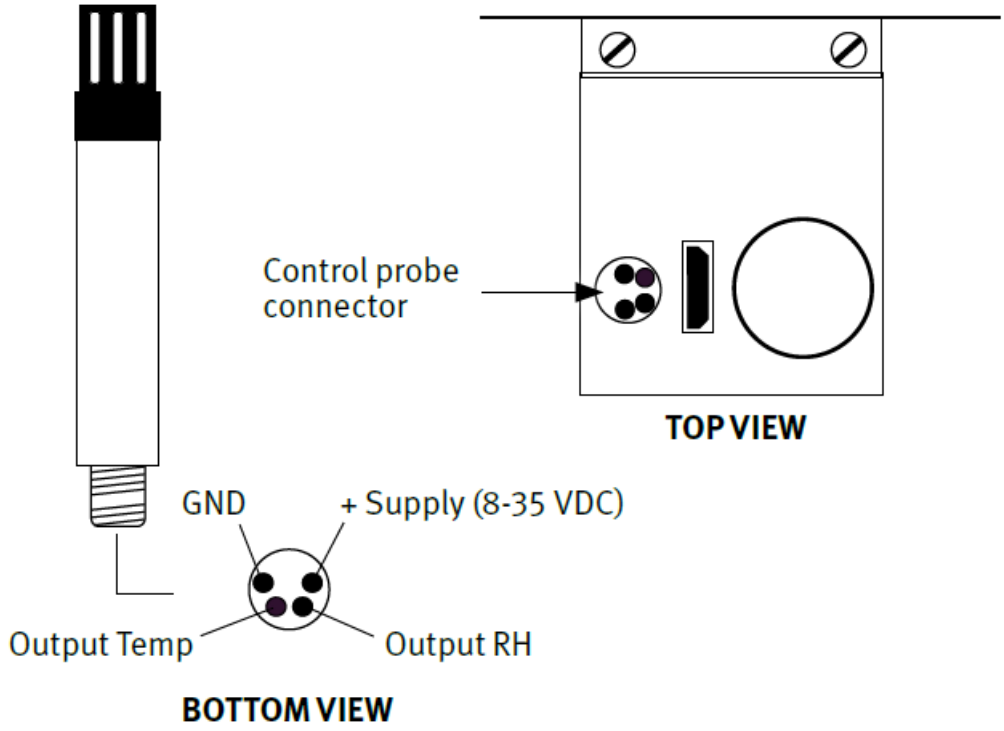
INSTALLATION

The S904 series' enclosure is designed for bench top mounting in a laboratory type environment. It must be positioned in a clean and level location with sufficient clearance at the rear of the enclosure for adequate ventilation.

NOTE: The S904 series is not designed to be fully portable. However it can easily be moved to any suitable location for use. Before moving ensure that any water in the reservoir is drained and the relative humidity control probe in the chamber is removed. The S904 series schould NOT be moved while in operation.

INSTALLING THE RH & T. CONTROL PROBE

The HT961T00 relative humidity and temperature control probe is supplied as an accessory with the S904 series. This control probe is removed during transportation. To install the control probe remove the chamber door and plug in the probe. This internal control probe is delivered with its own calibration certificate.



FILLING THE WATER RESERVOIR

Before operation the water reservoir located on the front panel must be filled with distilled water (supplied with the instrument). Use the bottle supplied to fill the water reservoir.

1. Remove the red plastic cap from the top of the reservoir.
2. Carefully fill with clean distilled water to a level between the two indicator lines.
3. Replace the red cap on the water reservoir after filling

DESICCANT

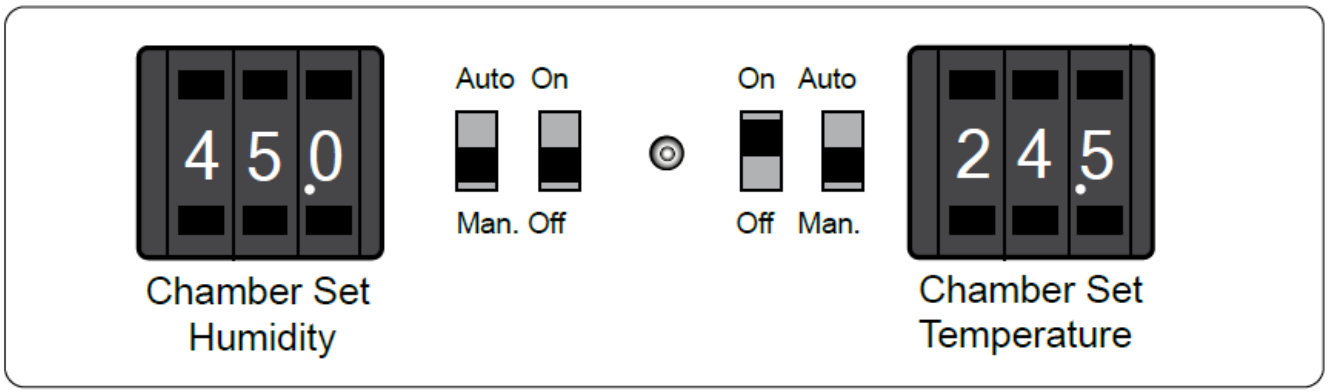
The S904 series has a container filled with a desiccant which is used to dry the air. The desiccant container can be accessed by following these steps:

1. Remove the clear plastic screw cap on the front panel.
2. Pull out the desiccant container using the fingertips.
3. Fill with desiccant up.

OPERATION

After installing the instruments for calibration, switch on the S904 Series by using the ON/OFF switch on the rear panel of the instrument.
The desired percentage of relative humidity and temperature (in °C) can be manually set by using the humidity and temperature setting switches when the AUTO/MAN switches are in the MAN position. Humidity or temperature control can be enabled or disabled individually using the associated ON/OFF switch.

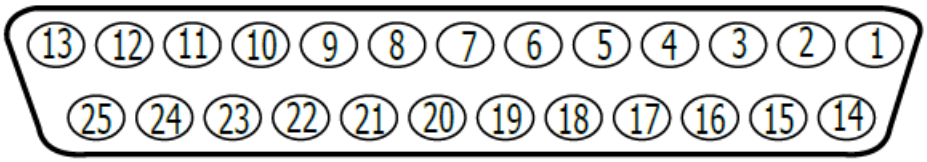
NOTE: Sufficient time must be allowed for the S904 Series to thermally stabilize before mon-itoring the humidity and temperature readings.



25 PIN D-SUB CONNECTOR

S904
These two connectors provide % RH and temperature outputs from the chamber control probe. 15 free pins wired from the internal chamber connector to the front panel connector can be used for any purpose.

S904D
These two connectors provide 6 channels for data acquisition, a +14.5 V supply, ground connection and 9 free pins wired from the internal chamber connector to the rear panel connector that can be used for any purpose.



S904 (Standard)	
Pins	Function
1, 2, 3, 4, 5, 6, 7, 8 & 14, 15, 16, 17, 18, 19, 20	Free (Unused)
21 (Front panel only)	Ground

9 (Front panel only)	Control probe output, Temperature 0…100 °C, 0…10 V fixed output
22 (Front panel only)	Control probe output, %rh 0…100 %rh, 0…10 V fixed output
24 (Front panel only)	External set point control enable input 0 V DC / Not connected = Manual control 5 V DC = Enable external set point control
10 (Front panel only)	Temperature setpoint control input 0…10 V, 0…100 °C
23 (Front panel only)	%rh setpoint control input 0…10 V, 0…100 %rh
11,12,13,25	Reserved – Do not use
S904 (Digital)	
1, 2, 3, 4, 5 & 14, 15, 16, 17	Free (Unused)
9	Channel 1 Control probe output, Temperature 0…100 °C, 0…10 V fixed output
22	Channel 2 Control probe output, %rh 0…100 %rh, 0…10 V fixed output
24 (Front panel only)	External set point control enable input 0 V DC / Not connected = Manual control 5 V DC = Enable external set point control
8	Channel 3
20	Channel 4
7	Channel 5

19	Channel 6
6	Channel 7
18	Channel 8
25	+14.5 V supply
21	Ground
10, 11, 12, 13, 23, 24	Reserved – Do not use

Free (Unused)
These pins are wired from the 25-pin connector inside the chamber to straight through to the 25-pin connector on the front panel and can be used for any purpose. These pins have a maximum current rating of 100 mA, and a maximum voltage rating of 50 V, which must not be exceeded.

Ground
This pin is connected to the ground of the internal power supply.

Control Probe Outputs, Temperature and %rh
These are fixed 0…10 V outputs from the control probe inside the chamber, ranged from 0 to 100 °C and 0…100 %rh respectively.

External set point control
To enable external setpoint control, connect +5 V to this pin with respect to ground.

Channels 1-2 (S904D)
These channels are connected to the built-in RH probe and are always logged by the S904D Lab-view® software.

Channels 3-8 (S904D)
These channels accept a 0 to 10 V input and can also be logged by the S904D Labview® software.

V Supply – PIN 25 (S904D)
This pin is connected to the internal power supply of the S904D and can be used to provide power to probes inside the chamber.

NOTE: For safety purposes the power supply is fitted with a thermal cut-out that is connected to the rear panel 25-pin connector only. It is important that this thermal cut-out is not by-passed, or the instrument may be damaged in the event of a fault.

Ground – PIN 21 (S904D)
This pin is connected to the ground of the internal power supply.

Reserved – Do not use – PINS 10, 11, 12, 13, 23, 24

TECHNICAL DATA

Humidity	
Generator range	10…90 %rh
Accuracy control element	£ ±1 %rh (10…70 %rh) £ ±1.5 %rh (70…90 %rh)
Stability	±0.2 %rh (20…80 %rh)
Temperature	
Generator range	10…50 °C (50…122 °F) (lowest T set point = 10 °C (18 °F) below ambient)
Accuracy	±0.1 °C (±0.2 °F)
Stability	±0.1 °C (±0.2 °F)
Chamber	
Ramp Rate From +20 to +40°C (+68 to +104°F) +40 to +20°C (+104 to +68°F)	 1.5 °C/minute (2.7 °F/minute) 0.7 °C/minute (1.2 °F/minute)
Control element	Removable relative humidity sensor

General	
Probe ports	Up to 5 – sensor body diameters 5 – 25 mm (0.2 – 0.98”) accommodated by port adapters
Chamber volume	2000 cm3 (122.1 in3)
Chamber dimensions	105 x 105 x 160 mm (4.13 x 4.13 x 6.3”) (w x h x d)
Instrument dimensions	520 x 290 x 420 mm (20.5 x 11.4 x 16.5”) (w x h x d)
Setpoint resolution	0.1 for humidity and temperature
Displays	3 digit LED, 10 mm (0.39”) characters
Supply	100…240 V AC, 50/60 Hz, 100 VA
Weight	20 kg (44 lbs)

DELIVERY PACKAGE

- S904 or S904D
- Power cable
- Water bottle
- Desiccant
- HT961 internal reference
- Door
- Port adapater key
- Final functional test (graph)
- Calibration vertificate internal reference
- S904D only: USB cord

Documents / Resources

	MICHELL Instruments S904 Cost Effective Humidity Validator [pdf] Instruction Manual S904, Cost Effective Humidity Validator, Effective Humidity Validator, Humidity Validator, S904, Validator

References

- Process Sensing Technologies | Monitoring Instruments
- Process Sensing Technologies | Monitoring Instruments
- Measurement Solutions - Humidity, Temperature, CO2 and Differential Pressure Measurement (EN_US)