CALIBRATION

Although ROTRONIC probes have excellent long-term stability, we still recommend that their calibration be checked regularly. One calibration per year is normally sufficient. Some of our customers, however, calibrate their probes more often; the range of calibration intervals extends from once a year to calibration before every measurement – depending on internal quality assurance procedures.

The long-term stability of ROTRONIC probes is better than 1 %RH per year under normal conditions. These exist when the concentration of contaminants/pollutants in the air does not exceed maximum allowable concentration (MAC) levels.

WHY IS CALIBRATION ESSENTIAL?

Many companies today work to ISO 9000 standards and are therefore obligated to calibrate their measuring equipment on a regular basis. Regulatory authorities such as the US FDA, EMEA, and Swissmedic also demand that measuring instruments are calibrated with traceability to national standards. Internal company quality standards may also specify that a specific measurement accuracy must be achieved and that this must be verifiable at all times. It is therefore in the interest of every user to have equipment calibrated and adjusted regularly in order to obtain the best possible performance. We offer calibration devices for all our probes. We can even supply you with suitable devices for the calibration of probes from other manufacturers.

WHAT ARE THE CALIBRATION OPTIONS?

1. You calibrate your devices yourself: with a HygroGen humidity and temperature generator or with your own calibration device and SCS-certified humidity standards
2. Calibration at ROTRONIC (see chapter «Services», page 156)
3. We come to you with our Calibration Mobile (selected countries)

CONTENTS

HYGROGEN2

Portable humidity and temperature generator to calibrate humidity and temperature measuring instruments (multi-point calibration).

Applications

The HygroGen2 is an autonomous, portable generator for calibration of humidity and temperature measuring instruments. The generator sets a new standard in portable calibration. The HygroGen2 works like a "mobile calibration laboratory" and is intended for companies that regularly need to calibrate a large number of probes. The calibrator allows simple, flexible calibration with the advantage that the calibrated instruments can be quickly returned to service. The HygroGen2 offers numerous outstanding benefits particularly to the pharmaceutical industry.

Touch screen monitor

Features

- Generates a stable reference environment
- Reaches equilibrium humidity in typically 5 minutes
- Excellent temperature uniformity
- Suitable for all humidity and temperature probes
- Calibrates up to 6 probes simultaneously
- Standard range of application: 5...95 %RH, 0...60 °C
  Extended ranges: 2...99 %RH, -5...60 °C (optional)
- Easy-to-use touch screen monitor
- DVI interface for external monitor
- USB interface for connection of keyboard, mouse and ROTRONIC HC2 probes
- The integrated HW4 software ensures easy calibration and adjustment of all ROTRONIC probes
- External heated connections for a dew point mirror reference are standard. This allows the user to adjust the reference probes with extremely high precision or to reduce the total calibration uncertainty
- The water quality is kept at a high level by a UV sterilizer, preventing algae and bateria growth
- Automatic calibration of HC2 probes (optional)
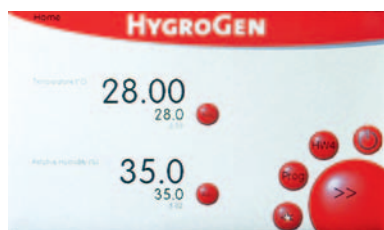
HygroGen2 chamber door with up to 6 probe connections. External monitor with HW4 software.

INCLUDED

- Instruction manual
- SCS / NVLAP (Americas) certificate for reference probe

TYPICAL ACCESSORIES

- See HygroGen2 accessories - page 76
- «AutoCal» automatic calibration
- Extended ranges of application «HumiExt» and «TempExt»

HygroGen2 specifications	Relative humidity	Temperature
Control		
Probe	Control or reference probe for HG2 with SCS certificate (Swiss Calibration Service) SCS-3T-4H, (Amercias-NVLAP Certificate 3T-4H)	
Controller	Integrated PC	
Range Optional	5...95 %RH 2...99 %RH	0...60 °C -5...60 °C
Stability in equilibrium	‹0.1 %RH	‹0.01 °C
Temperature homogeneity	‹0.05 °C (15...50 °C), ‹0.1 °C (5...60 °C), ±0.15 at 0 °C	
Working principle	Mixing of the air flows Drying: desiccant cartridge Humidity: piezo humidifier	Peltier element with radial chamber ventilation
Performance		
Response time	5 min. (35 to 80 %RH)	5 min. (20 to 30 °C)
Reference probe specification	±0.8 %RH (23 ±5 °C) ±2 %RH (0...60°C)	±0.1 K (23 ±5 °C) ±0.3 K (0...60 °C)
Typical calibration uncertainty	±1.5 %RH at 23 °C	±0.15 °C, 15...50 °C
System functions		
Water level	Low and high alarm, graphic display of the current level	
Water quality	UV-sterilized water in reservoir	
Desiccant status	Condition monitored during operation	
USB connections	7 on front panel, 2 at the back	
Dew point mirror connection	Inlet and outlet temperature controlled, 6 mm Swagelok	
Profiles	20 user profiles selectable	
Optional functions	AutoCal (automatic adjustment of one temperature and 10 humidity points for HC2 probes) Temperature (-5...60 °C) and Humidity (2...99 % RH) range extensions	
Mechanical & electrical		
Chamber dimensions	2 liters, effective work volume 1.5 l, Ø 110 mm, 145 mm deep	
Power supply	110...240 VAC 50/60 Hz, 3 A	
Housing / Dimensions	Powder coated aluminum / 450 x 406 x 205 mm	
Weight	13 kg	
CE / EMC compatibility	EMC Directive 2004/108/EC	

Order code	Description
HG2-S	Consisting of: - HygroGen with touch screen interface - 1x desiccant cartridge - 1x water fill syringe with tube - Integrated software HW4-P - Reference probe HG2-SG Chamber door must be ordered separately (page 76)
HG2-AutoCal-Code	HG2 auto calibration function, activation code
HG2-TempExt-Code	HG2 extended temperature range -5...60 °C, activation code
HG2-HumiExt-Code	HG2 extended humidity range 2...99 %RH, activation code
HG2-AutoC/RangeE-C	HG2 auto calibration function and extended T/RH range, activation code

HG2-D-88888 door with plugs
and probe sleeves

Door cross section

HygroGen bag

HC2-SG

HygroGen2 accessories	
Consumables	
HG2-DC	Additional desiccant cartridge, filled
HG2-FILL	Water fill syringe with tube
Chamber doors, plugs and probe sleeves	
HG2-D-11111	HG2 door with 5 x 15 mm Ø inputs including plugs (use special B1 sleeves for smaller diameters)
HG2-D-111111	HG2 door with 6 x 15 mm Ø inputs including plugs (use special B1 sleeves for smaller diameters)
HG2-B1-xx	Special B1 probe sleeve, outside Ø 15 mm, inside Ø xx mm
HG2-D-88888	HG2 door with 5 x 30 mm Ø inputs including plugs (use special B8 sleeves for smaller diameters)
HG2-D-888888	HG2 door with 6 x 30 mm Ø inputs including plugs (use special B1 sleeves for smaller diameters)
HG2-B8-xx	Special B8 probe sleeve, outside Ø 30 mm, inside Ø xx mm
HG2-DP-00000	HG2 acrylic door, transparent (without probe inputs) for instruments with display
HG2-D-xxxxx	Customer-specific HG2 chamber door for >30 mm
HG2-B-xx	Customer-specific plug
Accessories	
HG2-TB	HygroGen bag, lightweight
AC3015	Mini USB cable, adapter cable 30 cm long with 90° connector for transmitters with fixed probe
HG2-AC3001-L/050	HC2 converter cable for HG2-S, with USB connector, 50 cm, USB
HG2-AC3001-L/050(5)	HC2 converter cable for HG2-S, with USB connector, 50 cm, USB (set consisting of 5x HG2-AC3001-L/050)
Certified probes (replacement)	
HC2-SG	Control or reference probe for HG2 with SCS certificate (Swiss Calibration Service) SCS-3T-4H (calibrated at: temperature 23/5/50 °C, humidity 10/35/65/95 %RH)

HUMIDITY STANDARDS (single-point calibration)

Applications

On-site calibration and adjustment of ROTRONIC probes (third-party probes also possible). With the humidity standards, a calibration device and the HW4 software running on a PC, this is easy to do. It is also possible to calibrate and adjust probes with the handheld instrument HP23-A (HW4 software then not necessary).

Features

- Traceable to national standards
- Ampoules contain unsaturated salt solutions
- Inexpensive calibration on site
- Simple and safe use
- Unlimited lifetime
- Practical packs of 5 ampoules of the same humidity value (approx. 0.8 ml per ampoule)

Order code	Humidity value	Measurement uncertainty at 23 ºC
EA00-SCS	0.5 %RH	±0.3 %RH
EA10-SCS	10 %RH	
EA11-SCS	11 %RH	
EA20-SCS	20 %RH	
EA35-SCS	35 %RH	±0.4 %RH
EA50-SCS	50 %RH	±0.6 %RH
EA60-SCS	60 %RH	
EA65-SCS	65 %RH	
EA75-SCS	75 %RH	±0.7 %RH
EA80-SCS	80 %RH	
EA95-SCS	95 %RH	±0.8 %RH

COMPATIBLE

- With all calibration devices (see next page)

INCLUDED

- SCS certificate
- Textile pads
- Calibration instructions

TYPICAL ACCESSORIES

- Textile pads in tubes (50 pc.)   EA-PADS

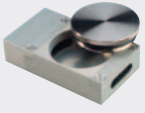# Calibration devices

Applications

ROTRONIC calibration devices are small, airtight chambers that precisely fit RO-TRONIC probes. The lower part of the device consists of a screw-on lid into which the humidity standard is poured on to an absorbent textile pad. The specified humidity is generated in the calibration device after a stabilization period. Stabilization takes longer for high humidity values. The probe can then be calibrated or adjusted by comparison with the reference value of the humidity standard.

Order code	Use		Order code	Use	
Push-on calibration devices. Gasket with O-ring and thumb screw					
ER-15	For 1 probe Ø 14…15 mm Brass, nickel-plated		ERV-15	For 1 probe Ø 14…15 mm Vertical calibration position Brass, nickel-plated	
EDM 15/15	For 2 probes Ø 14…15 mm Brass, nickel-plated		ER-05	For 1 probe Ø 4…5 mm Brass, nickel-plated	
ER-20K	For 1 probe Ø 20 mm Brass, nickel-plated		ER-12K	For 1 probe Ø 12 mm Brass, nickel-plated	
Screw-on calibration devices. Gasket with seal face on probe. Cannot be used for HC2-S probes					
EM-25	For 1 probe Ø 25 mm (PG11) Brass, nickel-plated		EMV-25	For 1 probe Ø 25 mm (PG11) Vertical calibration position Aluminum, Ematal-coated	
EM-G	For probe types E, HP…IE… Screw-on probes (½"G / ½"NPT)				
Calibration devices for special probes					
EGS	For all sword probes Aluminum, Ematal-coated		WP-14-S	For bell probes: HC2-AW, HC2-AW-USB, AW-DIO	
EIx-25	For flush mount probes Ø 25 mm Brass, nickel-plated		HL-20-CAL	For HL-20	