HYGROGEN2-S/XL

Advantages

- Generates stable humidity and temperature conditions (<±0.1 %rh, <±0.01 °C)
- Calibration solution for the laboratory and on-site
- Humidity equilibrium typically in only 5 minutes for HG2-S, 15 minutes for HG2-XL
- Calibrates multiple probes simultaneously
- «AutoCal» automatic calibration (optional)
- «Remote API» logging and control with third-party software (optional)
- Integrated FDA 21 CFR part 11 compliant Rotronic HW5 software

Applications

On-site calibration solution for all users of humidity and temperature measuring equipment.

General Information

The HygroGen2 satisfies the stringent demands of quality and compliance regulations with its ability to calibrate instruments over their full working range, and is embraced throughout the pharmaceutical industry as the leading instrument in its class and is favored in ISO 17025 humidity calibration laboratories across the world.

Being portable and robust, it can be set up at the installation location allowing for complete system qualification. The rock-solid stability, minimal thermal gradients and quick set-point changes of HygroGen2-S are now replicated in a new family member: HygroGen2-XL, which boasts a much larger chamber.

HygroGen2-S

- Chamber volume: 2 litres
- Working volume 1.5 litres
- Humidity changes (5…95 %rh, 0.1 %rh stability): <5 minutes
- Temperature changes (23…50 °C, 0.01 °C stability): < 5 minutes

HygroGen2-XL

- Chamber volume: 20 litres
- Working volume 17 litres
- Humidity changes (5…95 %rh, 0.1 %rh stability): <15 minutes
- Temperature changes (23…50 °C, 0.01 °C stability): < 15 minutes

rotronic
MEASUREMENT SOLUTIONS
A PST BRAND

Standard Features

- Both HygroGen2 models have a standard temperature control range of 0…60 °C and humidity range of 5…95 %rh. Optional range extensions are available.
- Humidity generation is by a piezoelectric element with digital PID control allowing optimized response across the temperature range. At equilibrium RH control is better than ±0.1 %rh.
- Touch screen interface
- Integrated USB ports for the connection of peripheral devices such as a mouse and keyboard. Rotronic HygroClip2 probes with USB cables can also be connected.
- User programmable set-points allow automatic changes of temperature and humidity set-points with pre-defined dwell times. Once set, this ramp/soak function enables instruments to be calibrated at multiple points without further user intervention.
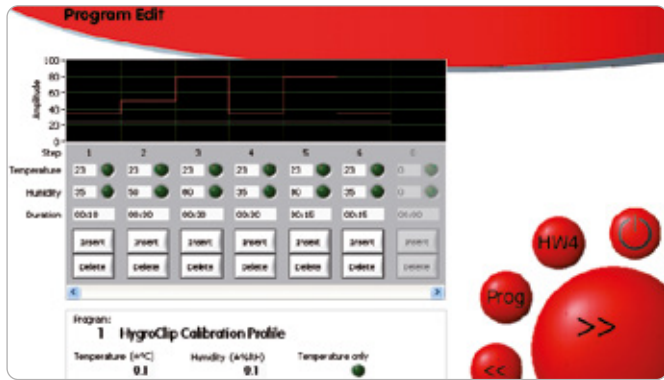
- External heated sample points for connection of a chilled mirror reference hygrometer allow the user to precisely verify the calibration of the HygroClip control probe at any time, or to reduce overall calibration uncertainty. Sample ports can also be used to provide stable humidity conditions for external applications.
- Remote Support - By connecting the HygroGen2 to an internet connected network, remote support and training is available (previously only available with Remote Enhanced Feature).
- Integrated FDA 21 CFR part 11 compliant Rotronic HW5-P data acquisition and calibration software provides automatic collection of measured values and digital adjustment of compatible probes. Now includes logging of control HygroClip2.
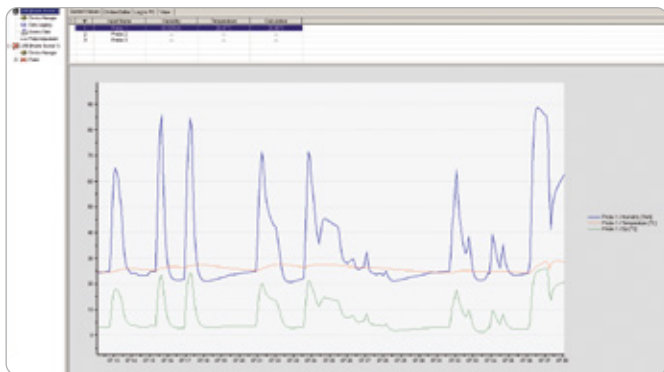
- An integrated UV sterilisation system within the water reservoir eliminates any issues caused by waterborne contaminants.
- Dry air is supplied from an internal desiccant cell that has integrated condition monitoring so the user can identify when the desiccant needs to be regenerated or replaced.

- Standard configuration doors (HG2-S: 6 x 30 mm, HG2-XL: 8 x 30 mm ports) as well as custom designs are available (e.g. HG2-XL: 19 x 30 mm). A series of probe sleeves to fit every manufacturers' probes are available. Perspex clear door available for HG2-S.
- With the HG2-XL, probes and loggers can be mounted on modular shelves as well as through the door.

Optional Enhanced Features

A number of optional Enhanced Features are available for all HygroGen2 models. These are applied using a machine-specific software unlock code – available from your Rotronic dealer - and can be purchased and applied on units at any time.

- Remote API
- AutoCal – automated calibration, adjustment and certificate generation for HC2-S probes
- External chilled mirror reference integration
- Temperature and humidity range extensions (-5…60 °C, 2…99 %rh)
- Remote screen sharing

"Remote API" *

Remote API is a new feature to allow granular command line control and logging of the HygroGen2 via a series of commands over TCP/IP. This allows users to integrate the HygroGen2 into their own or third party systems, e.g. Beamix and/or write software scripts to automate the calibration process.


Commands	
Temp?	HC2Serial?
TempRef?	DesiccantHC2Serial?
TempControl?	Version?
TempControl=x [1,0]	ControllerSerial?
TempSP?	Name?
TempSP=x	Reference?
TempStable?	Reference=x
TempPower?	ExtRefCorrections?
RH?	ExtRefSerial?
RHRef?	ExtRefTemp?
RHControl?	ExtRefTempCorr?
RHControl=x [1,0]	ExtRefDP?
RHSP?	ExtRefDPCorr?
RHSP=x	ExtRefFP?
RHStable?	ExtRefFPCorr?
RHPower?	ExtRefRH?
Time?	ExtRefControl?
Desiccant1DP?	ExtRefStable?
Desiccant2DP?	Warning?
WaterLevel?	ProgramRun?

"AutoCal"

With AutoCal, users are able to pre-program a series of desired set-points, and leave the instrument to automatically calibrate and adjust the whole range of Rotronic HygroClip2 RH probes, generating a customisable PDF certificate detailing all the calibration data.

rotronic

Automated calibration of multiple HC2 probes connected via AC3001 USB adaptor:
- 20 user programs (up to 200 set-points per program)
- Option to automatically adjust 1 temperature and 10 humidity points
- Select probes individually for adjustment
- Creates a PDF calibration certificate for each probe under test
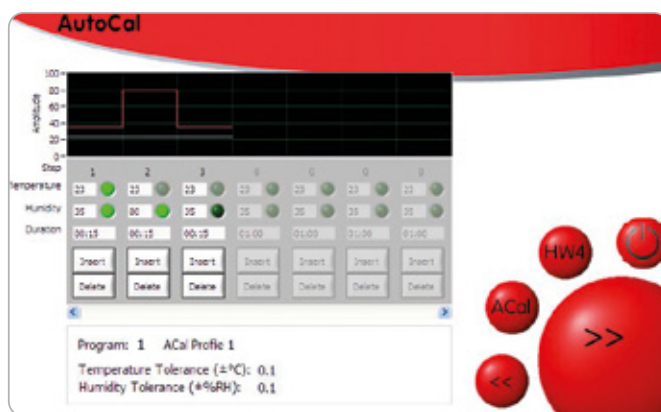
Order codes	
HG2-AutoCal-Code	Feature (licence code only): Auto calibration function
HG2-ExtRef-Code	Feature (formerly Autocal+, requires AutoCal or RemoteAPI, licence code only): chilled mirror External Reference Integration - enables chilled mirror as external reference
HG2-TempExt-Code	Feature (licence code only): Temperature Extension -5...60 °C
HG2-HumiExt-Code	Feature (licence code only): Humidity Extension 2...99 %rh
HG2-Screenshare-Code	Feature (formerly Remote, licence code only)
HG2-API-Code	Feature (licence code only): remote control application programming interface
HG2-EF-Bundle1	Feature bundle 1 (licence code only): [TempExt / HumiExt / AutoCal]
HG2-EF-Bundle2	Feature bundle 2 (licence code only): [AutoCal / ExtRef / Screenshare]
HG2-EF-Bundle3	Feature bundle 3 (licence code only): [TempExt / HumiExt / AutoCal / ExtRef / Screenshare]
HG2-EF-Bundle4	Feature bundle 4 (licence code only): [RemoteAPI / ExtRef / Screenshare]
HG2-EF-Bundle5	Feature bundle 5 (licence code only): [TempExt / HumiExt]

External Chilled Mirror Reference Integration
(formerly "AutoCal+") External chilled mirror Reference Integration further extends the utility of the generator, with the ability to integrate chilled mirror hygrometers as the AutoCal calibration reference or within the Remote API.
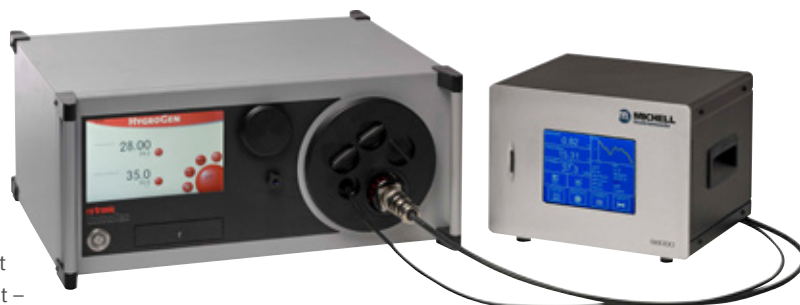
Chilled mirror Instruments are widely acknowledged as the definitive humidity calibration reference, and are used as the default transfer standard all the way up to the highest level of measurement – National Metrology Institutes, including NPL, NIST, PTB, NML. With the ability to add an external reference with stated accuracy of 0.1 °C dew point, though in reality considerably better, measurement uncertainty of less than 0.7 %rh at ambient conditions are archivable. (Requires chilled mirror reference integration)

"Range Extensions"
Range extensions are available as follows:
- Low Temperature Range Extension -5...60 °C (Standard 0...60 °C)
- Humidity Range Extension 2...99 %rh (Standard 5...95 %rh)

"Remote Screen Sharing"
(formerly "Remote Control") Remote Screen Share further enhances the user experience with the ability to connect the HygroGen2 to your network LAN and operate it from remote locations, including – with appropriate WIFI networking - using mobile devices. Using the open source standard VNC protocol, the HygroGen2 can be controlled and monitored from a single PC. The remote control of HygroGen2 is possible on multiple desktop and mobile platforms.
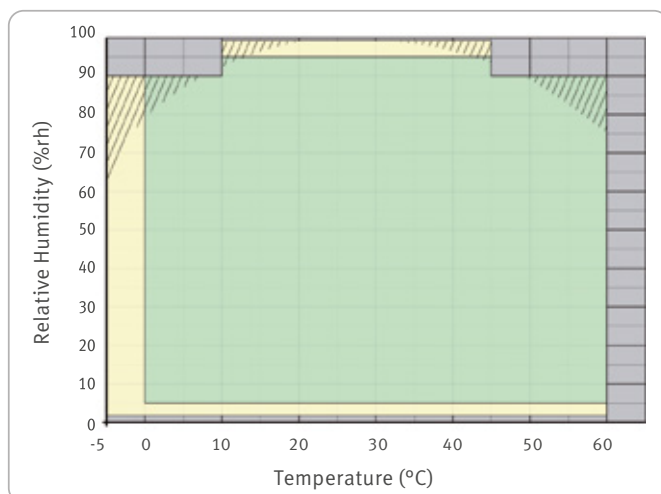
Standard operation range
Optional upgraded operating range
Condensation possible in chamber (dependent on ambient)

rotronic

Technical Information

General specifications			HG2-S	HG2-XL
Chamber volume			2 litres	20 litres
Working volume			1.5 litres	17 litres
Humidity changes (<±0.1 %rh stability)	5...95 %rh		<5 minutes	<15 minutes
Temperature changes (<±0.01 °C stability)	23...50 °C		<5 minutes	<15 minutes
	23...0 °C		<25 mins	<35 minutes
Thermal gradients	15...50 °C		<±0.05 °C	<±0.05°C
	5...60 °C		<±0.1 °C	<±0.1 °C
	0...5 °C		<±0.15 °C	<±0.15 °C
Probe mounts			Up to 6 probes through door ports	Up to 19 probes through door, plus internal shelf racks
Weight & Dimensions			13 kg, 45 x 41x 21 cm	37 kg, 80 x 62 x 41 cm
Generation method	Mixed flow with desiccant drier cell and piezoelectric humidifier; Peltier thermoelectric element with radial chamber mixing fan			
Control probe specification	±1.3 %rh (0...10 °C and 30...50 °C) and ±1.8 %rh (50...60 °C)			
Typical calibration uncertainty	±1.5 %rh (k=2) at 23 °C, ±0.15 °C (k=2) 15...50 °C			
Sensor	HygroClip2, capacitive RH sensor, Pt100 temperature sensor			
Control type	Embedded multiple PID controller, touch screen graphical user interface			
Programmer function	20 user program memory, up to 200 set-point changes per program			
External sample loop for chilled mirror reference	Temperature controlled outlet and inlet, 6 mm fittings			
USB ports	7 front, 2 rear			
Integrated software	Rotronic HW5 (FDA 21 CFR part 11 compliant)			
Water level	Low and high alarm, bar graph status indication			
Water quality	UV sterilisation, auto time cycling			
Desiccant condition	Condition monitored during control operation			
Optional Enhanced Features	Temperature / Humidity Range Extensions, AutoCal, External chilled mirrorr reference integration, Remote Screen Sharing, Remote API *			
Power	110...240 VAC 50/60 Hz, 3 A (240 VAC) 6A (110 VAC)			
Enclosure	Powder coated aluminium and steel, IP20			
Operating Conditions	10-35 °C, <2000 m altitude or less			
CE UKCA	Safety	EN 61010-1:2001		
	EMC	EN 61326-1:2006		
		EN 61000-6-1:2007		

Order codes	
HG2-S	HygroGen2 with touch screen, calibrated control/reference probe, set-point control & programmer function, heated sample loop, desiccant cell, fill syringe, embedded HW5-P. Order chamber door separately.
HG2-XL	HygroGen2-XL with touch screen, calibrated control/reference probe, set-point control & programmer function, heated sample loop, 2 x desiccant cell, fill syringe, embedded HW5-P. Chamber door included.
Chamber doors / probe sleeves / bungs	
HG2-D-888888	HG2-S door 6 x 30 mm ports with 6 bungs, order specific B8 sleeves to suit smaller probe diameters
HG2-DP-00000	HG2-S clear acrylic door (no ports) for instruments with displays
HG2-B8	30 mm bung for HG2-D-888888
HG2-B8-xx	B8 probe sleeves for HG2-D-888888 (30 mm external, internal probe diameter see xx diameter codes)
HG2-D-xxxxx	HG2-S custom door for > 30 mm ports, ask your Rotronic dealer for the available doors
HG2-Bxx	Custom bung
HG2-Bxx-xx	Custom probe adaptor sleeves
HG2-D-888888-Map	HG2-D888888 door with detachable mapping rig
Accessories	
HG2-TB	HG2-S transit bag, lightweight
HG2-TC	HG2-S heavy duty transit case
HG2-AC3001-L/050	HygroClip2 calibration cable, 50 cm, USB
HG2-AC3001-L/050 (5)	HygroClip2 calibration cable, 50 cm, USB. Bundle of 5 pieces HG2-AC3001-L/050
HG2-PRT-ring	PRT mounting ring for permanent monitoring of HG2-S using external temperature reference
Service & Consumables	
HG2-DES-3	Molecular sieve desiccant (3 kg)
HG2-CAM	High resolution camera built into HG2-B8 bung

rotronic