FPG
DEW POINT CALIBRATOR

Moisture Analysers · Dew Point Sensors
Chilled Mirrors · Dew Point Hygrometer

The world's first self-contained portable dew-frost point calibrator

Primary saturator humidity generator – fundamental precision
Transportable – suitable for use in the laboratory or on-site
Self-contained – no need for external services
0…-100 °C dew point – covers the working range of most DP instruments
Three configurable probe ports – compatible with all types of dew point probe
Programmable presets – quick and easy running of common processes
Transfer standard sample loop – connection of a reference instrument
Moisture Analyser connection – enables calibration of all types of hygrometer

Based on control and measurement of temperature and pressure, the FPG enables precise test and calibration of dew point sensors, moisture analysers and most types of hygrometer. Compact and transportable. The FPG is suitable for use in the laboratory and on-site.

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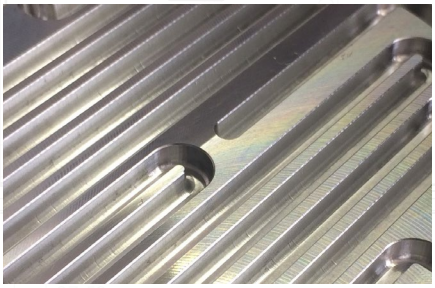
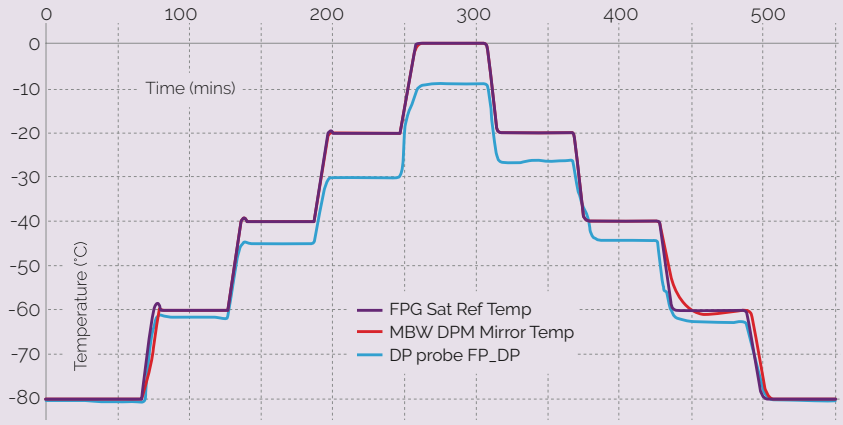
Fundamental Precision

The heart of the FPG is a temperature-controlled saturator that generates a stable water vapour pressure (dew point) within a closed loop. An integrated sample pump maintains a continuous flow through the saturator, probes under test and the external sample connection. At equilibrium, the saturator temperature and system pressure provide a dew point or moisture reference value to which probes or analysers can be compared and calibrated.



Fast automated calibration

From start up the FPG can stabilise dew point values in minutes. The recommended calibration process is to start with the lowest dew point, then to step up in fixed increments to the final value.



Uncertainty Defined

Accredited calibration is always based on an uncertainty budget that can be audited by an assessor. In collaboration with the NPL in London, an uncertainty framework has been developed, so that users can quickly calculate and document the calibration uncertainty with or without the use of a transfer standard.

Universal Compatibility

The FPG has been developed to be compatible with all types of humidity-moisture instruments. The front panel probe ports can be easily configured to suit any type of dew point sensor. External sample loop connections with Swagelok® fittings are included as standard. These enable transfer standards or instruments under test to be connected to the FPG controlled dew point sample loop.

Embedded PC – External Monitor – USB Hub

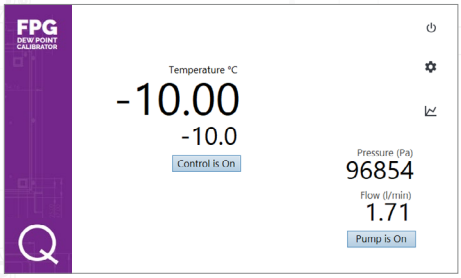
System control is based on an embedded PC with SSD and a touchscreen interface. An external display can be connected using an HDMI cable, and USB peripherals, such as keyboard and mouse, can be connected through the integrated USB hub. Third-party software additions, such as probe calibration software, are available on request.

Transfer Standard

The fundamental physics at the heart of the FPG means it can be used for traceable calibration without the need for a transfer standard hygrometer. However, as is the case in temperature calibration, a reference measurement is often used to improve confidence and reduce uncertainty. For this reason the FPG includes external sample loop fittings so the user can validate performance at any time by connecting a reference instrument, such as a dew point mirror.

Pressure measurement

Dew point is pressure dependent, so the measurement of pressure is fundamental to the operation of the FPG, and to the precision of the reference dew-frost point value. Precise pressure measurement is included within the sampling system and the value is displayed on the front panel along with the dew-frost point.



API included as standard

The FPG comes standard with an API which is a text based remote command interface connected through the FPG ethernet port. The FPG's data can be captured and set points defined using custom scripts or third party software such as MBW Gecko R2.

Temperature measurement

The FPG saturator includes two positions for Pt100Ω temperature sensors. One PRT is used for measurement and control with the embedded control system. The second PRT can be connected to an external bridge for independent verification of the saturator temperature. Both PRTs can be removed for calibration if required.

Flow measurement and control

The sample loop includes a mass flow sensor and variable speed sample pump so the user can set the flow rate for the test or calibration. The flow variation can also be used to accelerate stabilisation times.

SPECIFICATIONS:

MODEL	RANGE	PRECISION
FPG-60 **FPG-80** **FPG-100**	**-60…5 °C** **-80…5 °C** **-100…5 °C** maximum generated dew point is dependent on the atmospheric dew point	**±0.1…0.05 °C** **±0.2…0.05 °C** **±0.5…0.05 °C**
Sample Flow rate **System Pressure**	**0.5…1.5 LPM** **800…1200 mbar**	

Generator type	Dew-frost point, condensation saturator, closed loop
Stabilisation time	20 minutes, 20 °C set point change
Dry down time	45 minutes, ambient to -80 °C
DP Probe adapter	316 Stainless steel, Nitrile O rings, 3 x FPG-PA1 included
DP Probe thread	G ½" standard, other options as below
Sample loop connections	FPG-60 Swagelok® 6 mm FPG-80/100 Swagelok® VCR
User interface	7" Touchscreen LED
Monitor interface	HDMI
Instrument interface	USB
Power	100…250 VAC 50/60 Hz
Case material	Aluminium, powder coated

	Dimensions	Weight
FPG-60/80/100	W450 x D300 x H180 mm	22kg
In box (with soft bag)	W580 x D580 x H530 mm	24 kg

ORDERING INFORMATION

Order code:	FPG Models:	
Q-FPG-60	**FPG Transportable dew-frost point calibrator, -60…5 °C**	
Q-FPG-80	**FPG Transportable dew-frost point calibrator, -80…5 °C**	
Q-FPG-100	**FPG Transportable dew-frost point calibrator, -100…5 °C**	
	Dew point probe adapters (others available on request)	**Recommended probe length range (including thread)**
FPG-PA0	**Probe port cap**	**n/a**
FPG-PA1	**G 1/2" thread (standard)**	**Up to 50mm**
FPG-PA2	**5/8" UNF thread**	**Up to 50mm**
FPG-PA3	**3/4" UNF thread**	**50mm to 70mm**
FPG-PA4	**NPT 1/2" thread**	**Up to 50mm**
FPG-PA5	**M14 x 1.25mm pitch thread**	**50mm to 80mm**
FPG-PA6	**G 1/2" thread (long)**	**50mm to 70mm**
	Options and Accessories	
Q-FPG-TB	**Soft padded transport bag**	
Q-FPG-TC	**Transit case, suitable for air freight**	
Q-FPG-PRT2	**Saturator second PRT, incl Lemo and ISO17025 calibration**	
Q-FPG-FS-TCAL	**Factory service and recalibration, 5 points** (includes 12 month warranty extension)	