DCS – Dew-Point Calibration Systems

DCS60, DCS80, DCS100

Air Source | Dryer | Generator | Reference

The DCS system is a complete rack-mounted calibration station capable of producing a flow of air (or nitrogen) at a pre-specified range of dew-point temperatures from a minimum of -100 °C (-148 °F) to a maximum of +20 °C (+68 °F).

When ordering this system, simply specify the required operating range, and Michell Instruments will determine the most economical way to construct your calibration system.

Each DCS comprises the following components:

Air Compressor

An oil-free laboratory mini compressor, used to generate clean compressed air to feed the air dryer system. The compressor can be housed within the calibration rack system (< 72 dbA noise level) or in a separate room, with an air feed to the DCS system.

Pressure Swing Dryer

The dryer provides a source of dry or super dry air required by the generator. The PSD2 Dryer is used with the DCS80 calibration systems, and provides a supply of dry air with a dew point of -80 °C (-112 °F) or less in continuous operation. The PSD4 supplied with the DCS100 system provides dry air of -100 °Cdp (-148 °Fdp) dew point or less. An appropriate dryer will be selected for the calibration system, based on the dew-point range requirements specified.

Generator

The dew-point generator produces, and allows adjustment of, the flow of humidity controlled calibration gas. A DCS60/80 system can be supplied with either a DG2 or ADG400 generator.

The DG2 dew-point generator allows full manual, analog control of the generated dew point by means of metering valves on the front panel.

The ADG400 dew-point generator features a touchscreen HMI, which allows the user to set the desired dew point, or create and run an automated calibration profile. The generator can also be operated remotely and integrated into customer software via the USB interface.

The DCS100 is supplied with a Vapor Delivery System (VDS) generator, which can be controlled directly or programmed to cycle through a range of outputs by means of dedicated control software.

Reference Hygrometer

The Reference Hygrometer serves to provide a dependable measurement of the calibration gas produced by the dew-point generator, to allow comparison against instruments under test.

A Chilled Mirror hygrometer directly measures the temperature at which condensation forms, and provides inherently repeatable, reliable results every time. Meaning is best suited for use as a reference instrument.

To ensure traceability to higher standards, the reference will be supplied with either a national standards traceable, or a UKAS accredited calibration.

Highlights

- Complete dew-point calibration solution with optional compressor, dryer, dew-point generator, reference instrument and optional manifold
- Generated output responds quickly to a change of set point
- Stable humidity generation
- Simple operation through manual flow mixing or push-button switching of set points
- Remote control via RS232/USB comms (dependant on model)

Issue No: DCS_97162_V4_EN_0123

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DCS60

The DCS60 is supplied with an S8000 Integrale, which is air cooled and has the capability to measure to dew points of -60 °C (-76 °F).

DCS80

The DCS80 is supplied with an S8000 RS, which features an automatically controlled auxiliary cooling system, and has the capability to measure to dew points of -90 °C (-130 °F).

DCS100

The DCS100 is supplied with an S8000 -100, which utilizes an automatically controlled auxiliary cooling system, and has the capability to measure to dew points of -100 °C (-148 °F).

Calibration Manifold

Michell Instruments' dedicated systems engineering team can design and build for you a calibration manifold to suit any type of dew-point sensor, or a combination of sensors from different manufacturers. Just tell us the sensor type and we'll do the rest.

Housing

The whole system is conveniently mounted in a 19" rack unit for ease of use. If using a high purity air or nitrogen supply, this may be chosen as a feed to the system instead of the integral compressor/ dryer system. A Michell Instruments' technical sales representative can give advice on how to accommodate this variation.

Technical Specifications

	DCS60	DCS80	DCS100
Range	-60...+20 °Cdp (-76...+68 °Fdp)	-80...+20 °Cdp (-112...+68 °Fdp)	-100...+20 °Cdp (-148...+68 °Fdp)
Air Dryer	PSD2 Dryer	PSD2 Dryer	PSD4 Super Dryer
Generator Method	DG2 with manual flow metering ADG400 with mass flow controllers	DG2 with manual flow metering ADG400 with mass flow controllers	VDS system with mass flow controllers
Reference Hygrometer	S8000 Chilled Mirror Hygrometer	S8000 RS Chilled Mirror Hygrometer	S8000 -100 Chilled Mirror Hygrometer
Calibration Flow Rate	2...5 Nl/min (4.2...10.6 scfh)	2...5 Nl/min (4.2...10.6 scfh)	10 Nl/min (21.2 scfh)
Best System Uncertainty	±0.2 °C (±0.36 °F) dew point (k = 2) @ +20 °Cdp (+68 °Fdp)		
Set Point Precision	±0.5 °C (±0.9 °F) dew point		
Carrier Gas	Oil-free compressed air (compressor supplied)		
Operating Temperature	+15...+30 °C (+59...+86 °F)		
Traceability	Directly to NPL and NIST through Reference Hygrometer		
Power	220...240 V AC or 100...130 V DC, 50/60 Hz		
Housing	Wheeled 19" rack system, 1.9 m (74.8") high		
Weight	98 kg (216 lbs) (approx)	125 kg (231 lbs) (approx)	Varies

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