

# OptiCal

## Relative Humidity and Temperature Generator with built-in Chilled Mirror Reference



The OptiCal is a bench-top, fully self-contained humidity/temperature calibrator. The system comprises a humidity and temperature controlled chamber that can house up to five or more humidity sensors, depending on their physical dimensions. The humidity and temperature within the chamber are closed-loop controlled and continuously monitored by a precision chilled mirror reference hygrometer. The OptiCal works by time-proportioning the flows of dry and saturated air according to the pre-selected relative humidity value. The chamber temperature is controlled by a four-zone Peltier heat pump arrangement for maximum stability and minimum temperature gradient. The saturator assembly can be filled easily with the distilled water reservoir at the front of the unit and the easily accessible desiccator can be re-charged by heating when required. No other maintenance is necessary. The only external service required is a single phase power supply.

### Highlights

- Precision relative humidity and temperature calibrator
- Generate 10 to 90% RH over +10 to +50°C (+50 to +122°F) temperature
- Integral chilled mirror reference hygrometer
- UKAS Accredited Calibration, as standard
- Humidity and temperature profile generation for unattended verification of sensors
- Transportable to allow on-site calibrations

### Technical Specifications

#### Reference Hygrometer

Type Optidew chilled mirror dew-point transmitter

#### Humidity

Generator range 10–90% RH  
 Accuracy  $\leq \pm 1\%$  RH (10–70% RH)  
 Control element  $\leq \pm 1.5\%$  RH (70–90% RH)  
 Stability  $\pm 0.2\%$  RH (20–80% RH)

#### Temperature

Generator range +10 to +50°C (+50 to +122°F)  
 (lowest T set point = 10°C (18°F) below ambient)  
 Accuracy  $\pm 0.1^\circ\text{C}$  ( $\pm 0.2^\circ\text{F}$ )  
 Stability  $\pm 0.1^\circ\text{C}$  ( $\pm 0.2^\circ\text{F}$ )

#### Chamber

Ramp rate from  
 +20 to +40°C (+68 to +104°F) 1.5°C / minute (2.7°F / minute)  
 +40 to +20°C (+104 to +68°F) 0.7°C / minute (1.2°F / minute)

Control element Removable relative humidity sensor

#### General

Probe ports up to 5 – sensor body diameters 5–25mm (0.2 to 0.98") accommodated by port adapters

Chamber volume 2000 cm<sup>3</sup> (122.1in<sup>3</sup>)

Chamber dimensions 105 x 105 x 160mm (4.13 x 4.13 x 6.3") (wxhxd)

Instrument dimensions 520 x 290 x 420mm (20.5 x 11.4 x 16.5") (wxhxd)

Set point resolution 0.1 for humidity and temperature

Displays High definition 2 lines alpha numeric

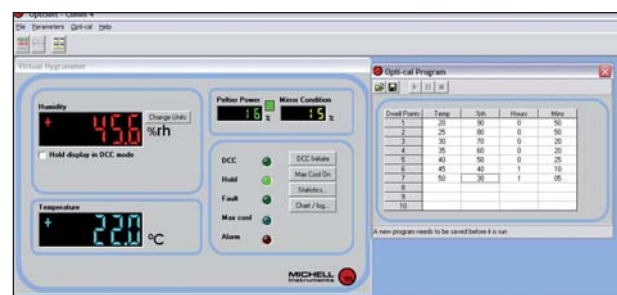
Measurement units °C, °Cd<sub>p</sub>, % RH  
 g/kg, g/m<sup>3</sup>, (t-t<sub>s</sub>), a<sub>w</sub>

#### Outputs

Analog Two channels 4–20 mA or 0–20 mA  
 Digital RS232 (RS485 optional)  
 Alarm Volt free contact, 2A @ 30 V DC

Supply 85–264 V AC, 47–63 Hz, 150 VA

Weight 20kg (44lb)

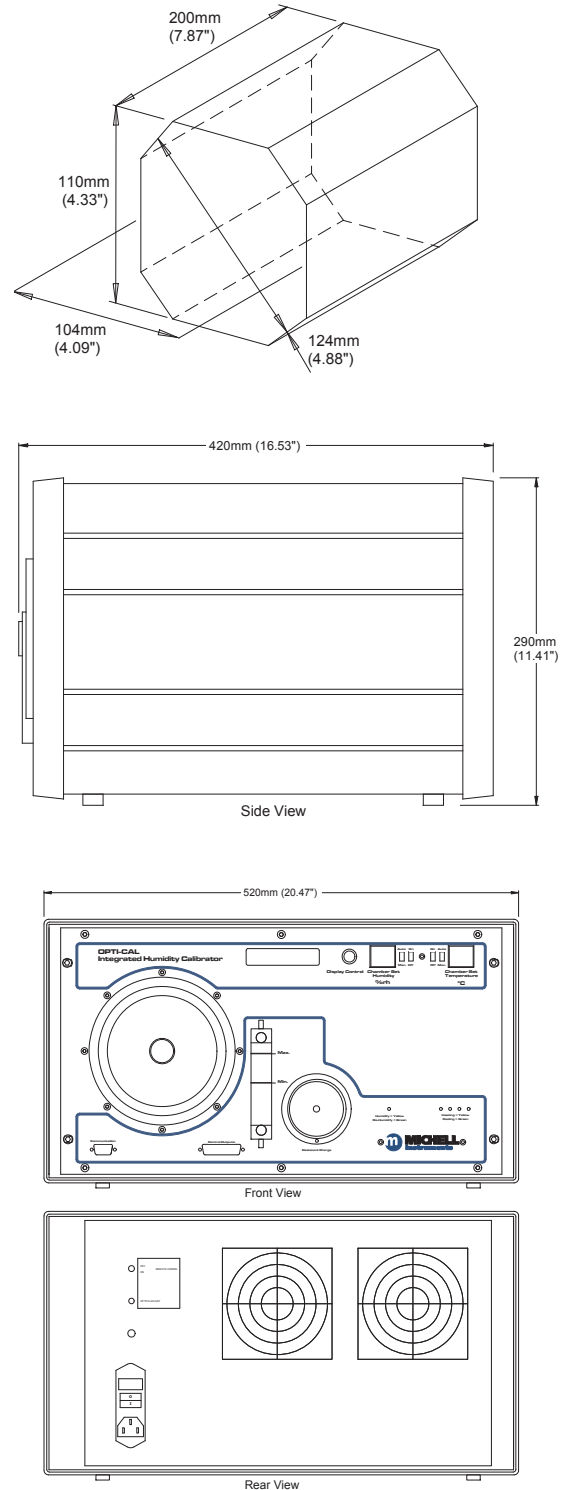


Logging and profiling software

Accessories and Spare Parts

0.25kg (0.55lbs) desiccant (orange)	A000171
ø18.5mm (0.73") Blind stop	A000200
Drying module	A000240
Water bottle	A000242
PRT sensor	A000243
Door kit with 5 ports. 5 adapters to be specified	A000263
Door kit with 5 ports and 25 adapters (5 x ø19mm (0.75"), 4 x ø12mm (0.47"), ø13.5mm (0.53"), ø15mm (0.59"), ø18.5mm (0.73"), ø24mm (0.94") - and blind stops. Adapter tool included)	A000264
Tool for changing the port adapters	A000265
Door with clear window - no ports	A000266
Door without ports	A000268
Door kit for use with MI Optidew. (Optidew dew-point sensor port adapter, PRT port adapter and 4 x ø19mm (0.75") adapters. Adapter tool included)	A000269
Polymer port adpt ø18.5mm (0.73") to ø3mm (0.19") (for Optidew probe)	A000273
M30x1 Molded polymer port adpt & blind stop (to be modified by customer)	A000290
Polymer port adpt ø client specific & blind stop	A000290X
Polymer port adpt for ø12mm (0.47") probe, blind stop (M30x1)	A000291
Polymer port adpt for ø13.5mm (0.53") probe, blind stop (M30x1)	A000292
Polymer port adpt for ø14mm (0.55") probe, blind stop (M30x1)	A000293
Polymer port adpt for ø15mm (0.59") probe, blind stop (M30x1)	A000294
Polymer port adpt for ø18.5mm (0.73") probe, blind stop (M30x1)	A000295
Polymer port adpt for ø19mm (0.75") probe, blind stop (M30x1)	A000296
Polymer port adpt for ø24mm (0.95") probe, blind stop (M30x1)	A000297
Polymer port adpt for ø25mm (0.98") probe, blind stop (M30x1)	A000298
Control sensor	HT961T00
Transport Case for OptiCal and S904	OCAL-TC

Dimensions



Order Codes

OPTICAL - Precision humidity calibration system with temperature control. Includes 5 port door and integrated chilled mirror reference hygrometer with 3 point UKAS RH calibration		
Feature	Item	Description
Base Model	OPTICAL	Base unit