

# 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 calibrator enables 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> (122.1 in<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

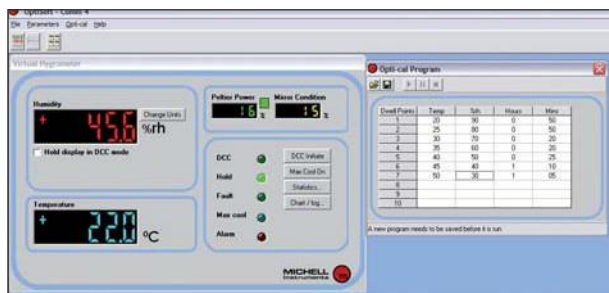
**Measurement units** °C, °Cdp, % RH  
 q/ka, q/m<sup>3</sup>, (t-t<sub>d</sub>), a<sub>w</sub>

#### 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)

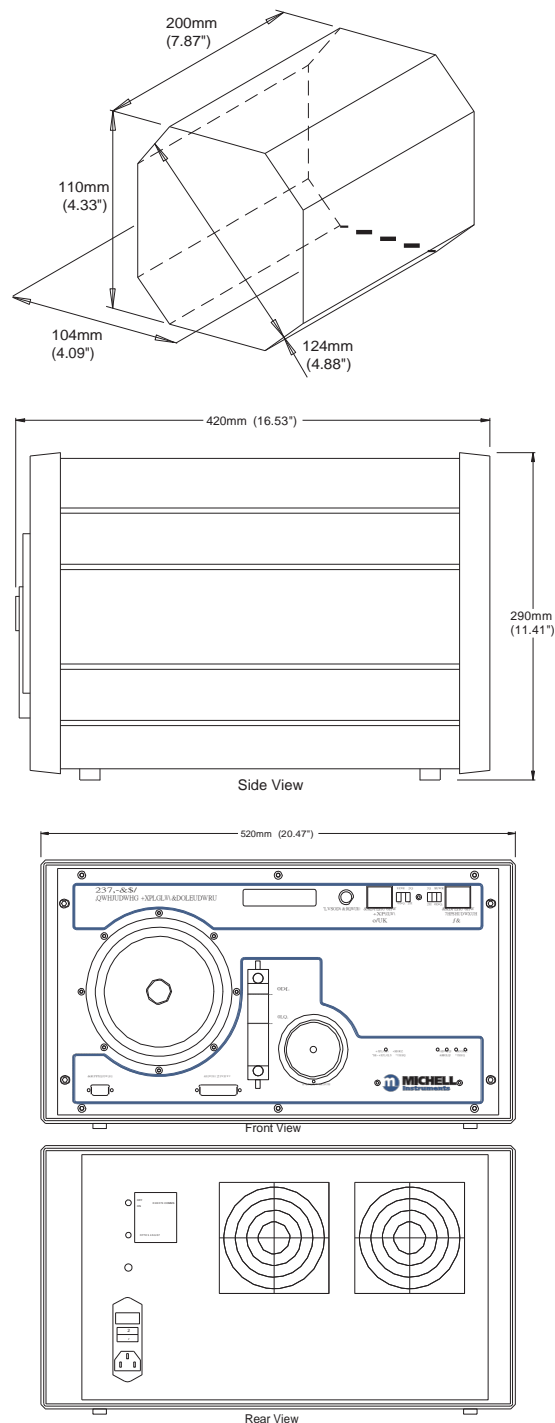


Logging and profiling software

## Accessories and Spare Parts

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

## Dimensions



## Order Codes

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