

TEMPERATURE AND HUMIDITY CHAMBER COMPLETE

with 1x Control Temp / RH Sensor

1x Chilled Mirror Dew Reference Meter

Chamber Specification

Specifications	Volume	: 150 Litres				
	Temperature Range	: -40°C ~ 150°C				
	Temperature Consistency	: ±0.2°C				
	Temperature Uniformity	: ±0.5°C				
	Indication Resolution, T	: 0.01°C				
	RH Range	: 10% ~ 98%				
	RH Consistency	: ±2.5°C				
	RH Uniformity	: ±4.0°C				
	Indication Resolution, RH	: 0.01%RH				
	Ramp Up Time, 20°C - HT	: 40 mins to 150°C				
	Ramp Down Time, 20°C - LT	: 50 mins to -40°C				
System	Chamber Temperature Sensor	: Pt100 Ohms 4 Wire				
	Chamber RH Sensor	: Wet / Dry Bulb - 4 Wire				
	Circulation	: Sirocco Fan				
	Heating	: SS High Density Heater				
	Humidifying	: Surface Evaporating System				
	Cooling	: Compressor + Cooling Condensor				
	De-Humidifying	: Critical DewPoint				
	Controller	: Colour Touch Panel With PID Automatic Calculation				
Others	Viewing Port	: Vaccum Glass Viewing Window On External Door				
	Access	: Inner Glass Door With 2x Silicon Plate Access Ports				
	Shelves	: 2x Adjustable / Removable Shelves				
	Lighting	: Chamber Lamp				
	DUT Cable Access	: 1x Cable Port, Ø60mm				
	Exterior	: SS430, Powder Coated				
	Interior	: SS304 Plate				
	Operating Supply	: 220 VAC / 60 Hz / 1P				

Reference Meter - Chilled Mirror Dew Point Meter

Specifications	Measurement Accuracy	: ±0.2°Cdp / ±0.36°Fdp			
	Temperature Range	: -40°C + 130°C			
	Indication Resolution, Temp	: 0.1°C / 0.1°F			
	RH Range	: 0.5% to 100% RH			
	Indication Resolution, RH	: 0.1% RH			
	Indication Resolution, Abs Humidity	: 0.01 g/m3 & g/kg			
	Dew-Point Range	: -40°Cdp / + 130°Cdp			
	Min Measure Dew Point	: -40°C / -40°F			
	Response Speed	: 1°C / Sec			
	Measurement Units	Dew Point	: °Cdp, °Fdp		
RH		: %RH			
Temp		: °C, °F			
Abs RH		: g/m3, g/kg, aw, ∂(t-t dew point)			
System	Mirror Material	: Gold Plated Copper			
	Sample Flow	: Max 4 SCFH			
	Temperature Sensor	: 4 Wire, PT100 Ohms, 1/3 DIN, High Temp - 130°C			
	Sensor Cables	: 2 Metres - High Temp, PTFE Insualtion - 250°C			
	Output, Analog	: 0/4 ~ 20mA			
	Output, Digital	: RS232			
	Working Pressure	: 2 MPA, IP66			
	Power Supply	: 90~264 VAC, 60 Hz With 4A Quick Blow Fuse			
	Enclosure	: Standing Case With Handle			
Others	Calibration Certificate	: 4 Point Traceable In-House Calibration			

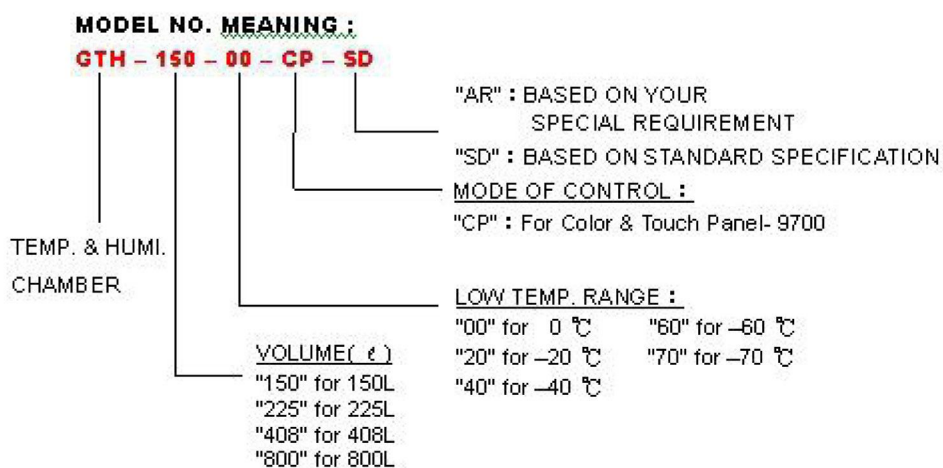
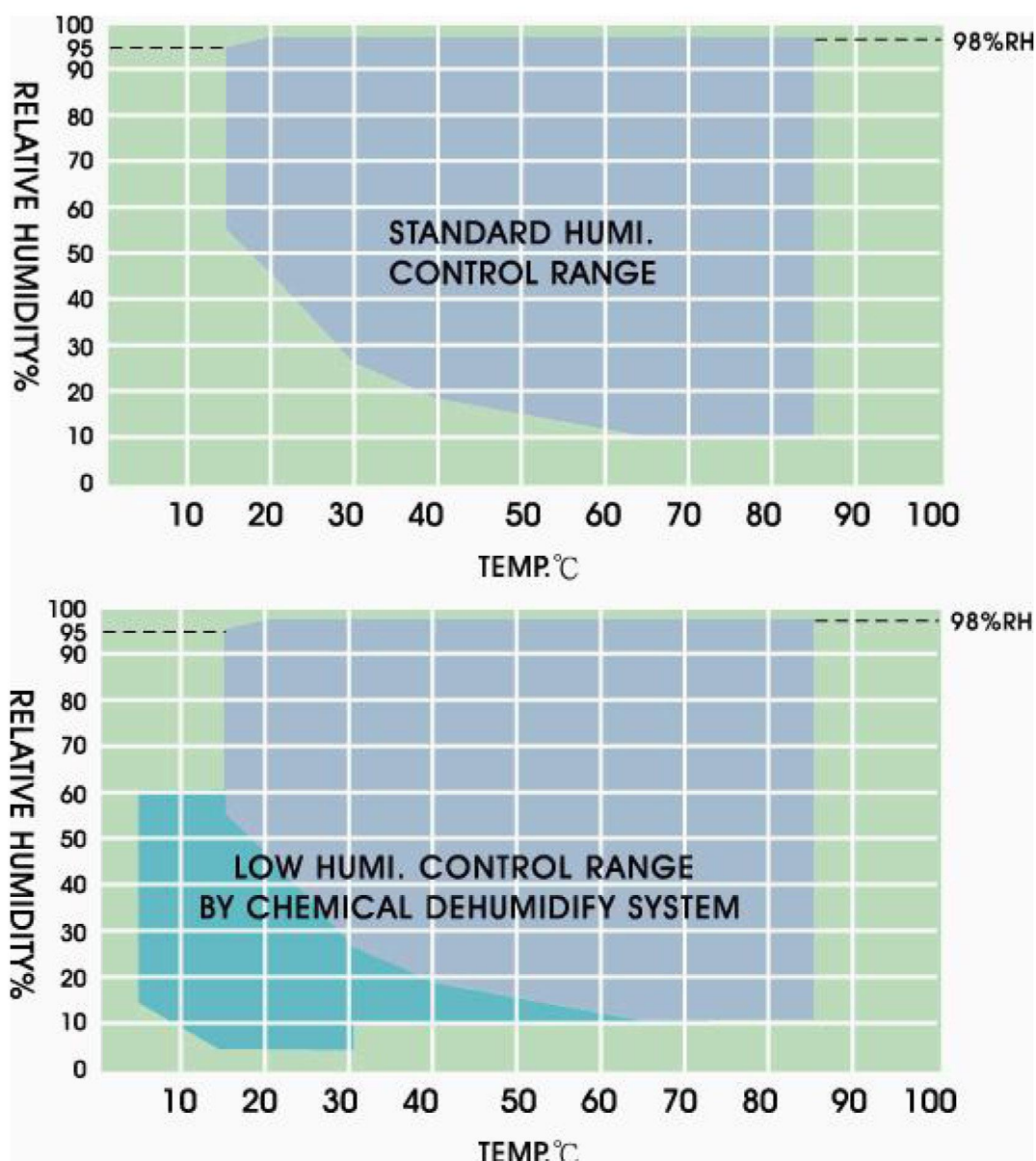
Programmable Temperature and Humidity Chamber

Features:

- **System Capacity :** It could sign in 150 programs × 1500 partitions, partitions can be optionally divided and programs can link up to each other.
- **Loop configuration :** 9999 × 999 looping time, can be divided into 5 independent sub-loops.
- **Output :** Intelligent PID+SSR/SCR two-way synchronous output, built-in advanced slope control logic.
- **Data :** Touch panel dialogue box display, easy operation, built-in management system of data content.
- **Curves drawing :** When temperature, humidity and times are set up, the data can be immediately transferred into curves, actual operating curves can be attained during operations.
- **Time signal :** 3 time series control output interfaces work with 10 time control modes to execute start/halt time series planning of external components.
- **End temperature :** At the completion of testing, you can choose to return to the normal atmospheric temperature for removing the test objects.
- **Safety Check :** The full- functional detection system consists of 15 check items to ensure the safety of the machine. Auto-display of items, error times, and trouble-shooting instructions.
- **Error Tracing :** Historical fault reports can be displayed, such as the reasons and occurring time record.
- **External Protection :** Electronic over-temperature protection device is separated from the master control panel for setting the upper temperature limit of the tested object.
- **Communications Interface :** Standard RS-232 and RS-485 interfaces can link to multi-PC for network administration and control.
- **SD Device :** Optional SD Device can be used to replace the conventional expensive paper-feeder recorder. With the self-diagnosis function, internal recording can be optionally selected.
- **Optional Accessories :**
 - SD Device.
 - Low Humi. Dehumidifier.
 - Inner Door With Operating Ports.
 - Temp. / Humi. Recorder
 - Reverse Osmosis Water Purifier
 - RS-485 interface can link to multi-PC for network administrator and control.(MAX:30 set)
 - Software for record data.
 - LN2/LCO2 fast-cooling System.

Specifications:

Model		GTH-150	GTH-225	GTH-408	GTH-800
Internal Dim. W x H x D (cm)		50x60x50	50x75x60	60x85x80	100x100x80
External Dim. W x H x D (cm)		95x150x105	95x165x115	105x175x135	145x190x135
* Temp. & Humi. Range		0 ℃ ; -20 ℃ ; -40 ℃ ; -60 ℃ ; -70 ℃ ~100 ℃ (+150 ℃) 10% ~ 98% RH			
Features	Temp. & Humi. Constancy	+(-)0.2℃ ; +(-)2.5%RH			
	Indication Resolution	0.01℃ ; 0.01%RH			
Material	Exterior	Stainless Steel Plate + Powder coated			
	Interior	SUS#304 Stainless Steel Plate			
	Insulation	PU & Fiberglass Wool			
Micro Controller		CLCD 9700			
Power Source [K.W.]		AC 1 ϕ 220V; 3 ϕ 220/380V 60/50Hz			



Optidew

Chilled Mirror Hygrometer

The Optidew is a fast-responding chilled mirror hygrometer, equally at home in both industrial humidity control and precision laboratory applications. It is available in bench top and wall mount configurations, and features an intuitive touch screen interface for easy local operation. Using the latest developments in chilled mirror technology, it has a response speed comparable to polymer relative humidity sensors, combined with the reliability of drift-free measurements common to all chilled mirror instruments.



Highlights

- New chilled mirror hybrid sensor gives fast dynamic response to changes in humidity
- Accurate to $\pm 0.15^{\circ}\text{C}$ dew point, $\pm 0.1^{\circ}\text{C}$ temperature
- Wide measurement range from -40 to $+120^{\circ}\text{C}$ dew point
- Choice of communication methods, including Modbus TCP over Ethernet communication for easy networking
- Optional pressure transmitter for accurate calculation of ppm_v & g/kg

Applications

- Reference humidity instrument for climatic and environmental chambers
- Inlet air measurement for engine testing
- HVAC testing
- Environmental monitoring in clean rooms
- Coating process monitoring – for confectionary and pharmaceuticals
- Control of humidity for metallurgical processes

Optidew Chilled Mirror Hygrometer

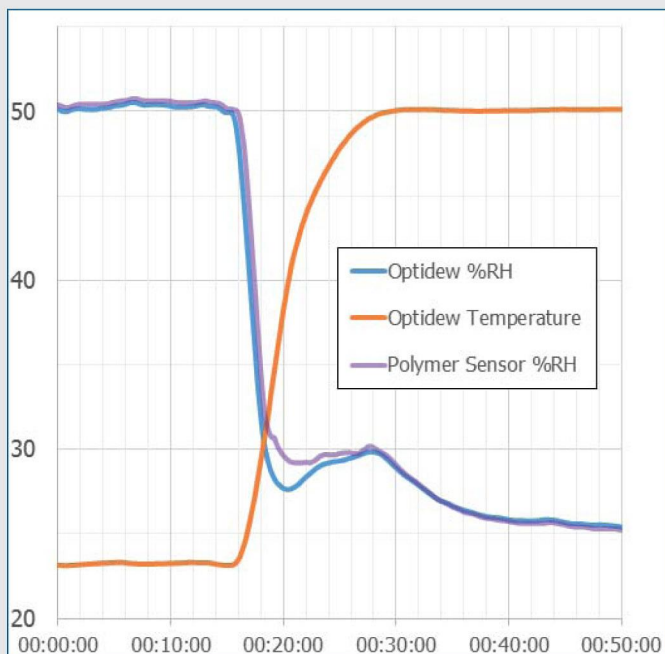
The Optidew series is both robust and adaptable, designed for dependable performance, whether it's in a harsh industrial environment or in a laboratory.

New design of chilled mirror sensor: fast response speed with drift-free reliability

The Optidew uses a new design of cooled mirror sensor which gives a fast response speed coupled with the accuracy and reliability of the fundamental chilled mirror technique (see opposite page).

Measuring in climatic chambers, the Optidew is able to directly track changes in temperature and humidity without experiencing time-consuming loss of control like traditional chilled mirrors.

This chart shows a transition from a starting condition of 50%RH at 23°C to 25%RH at 50°C. The transition time shown is purely that of the climatic chamber: no time is wasted waiting for the Optidew to stabilise.



Choice of sensors to suit different applications

The dual-stage harsh environment sensor is designed for tough industrial conditions and allows high temperature measurements up to 120°C, for applications in metallurgy and fuel cell testing.

The standard sensor is available with single- or dual-stage cooling and is a reliable and cost-effective option for many environmental control applications.

The optional pressure sensor gives additional detail about the measurement. You can now clearly see whether changes in dew point are related to moisture content or pressure. If moisture content needs to be displayed in ppm_v or g/kg, any live pressure changes will be compensated for.

Touch-screen HMI for easy operation

Both the wall mounted and bench top models are available with a 5.7" colour touch screen display to make local operation and interrogation quick and simple to carry out.

Three housing configurations

Optidew 401:

A bench top instrument, the Optidew 401 has a simple, intuitive touch-screen HMI which for easy configuration and operation. This version includes a USB port and SD card slot for easy data logging.



Ideal for use as an easily transportable reference hygrometer. Either as a transfer standard to make field calibrations of climatic chambers, or in combination with a Michell HygroCal100 for validation of RH probes.

The optional transport case allows use of the instrument without even unpacking it – great for field service work.

Optidew 501 – with display

The wall mounted Optidew 501 is designed for continuous measurements of humidity in industrial environments. Modbus over RS485 is provided as standard, with the option of Modbus TCP over Ethernet for simple networking of multiple instruments.



A 316 Stainless steel sensor block is available to connect the sensor to a flowing sample. It features an additional port so that a pressure transmitter can be installed directly at the point of measurement.

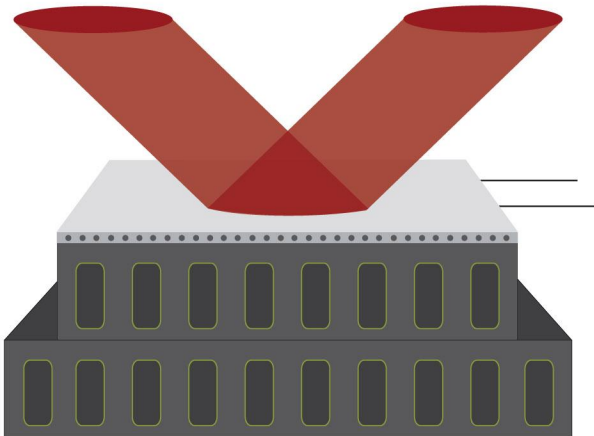
The Optidew 501 has the same touch screen interface as the bench mount version. Operators can easily interrogate and configure the instrument locally or remotely via the application software.

Optidew 501 – transmitter

The most cost effective option is the wall mounted Optidew 501 blind transmitter. All the features of the other models are available when connected to a PC and operated via Michell's universal software. The multi-color LED indicator also displays the instrument's status.



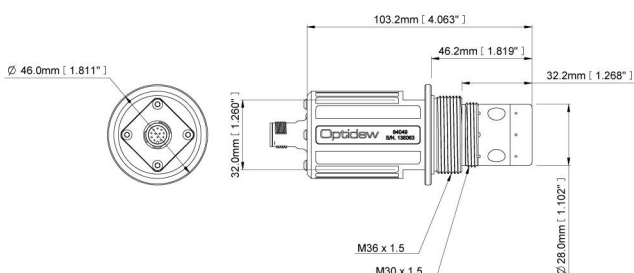
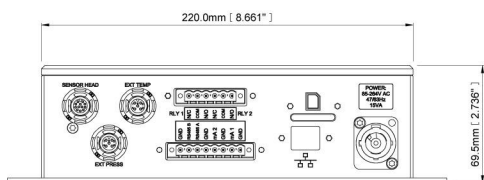
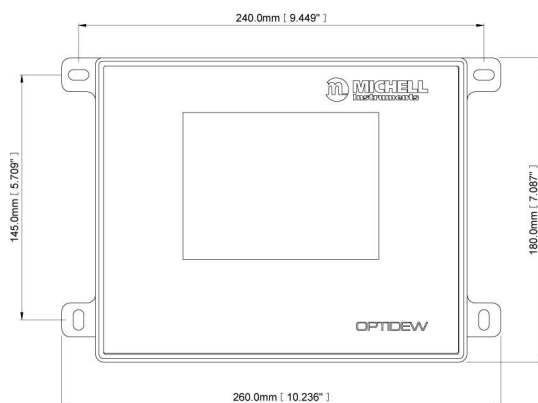
Fast responding chilled mirror technology



All chilled mirror sensors measure the actual temperature that moisture condenses to provide a reading of dew point. This fundamental technique gives unparalleled accuracy and reliability. Chilled mirror hygrometers are commonly used as secondary or transfer calibration standards for humidity.

The new design uses a thin, fast responding hybrid mirror that is highly resistant to corrosion from acids and other gas contaminants, outlasting any traditional cooled mirror sensor design.

Dimensions



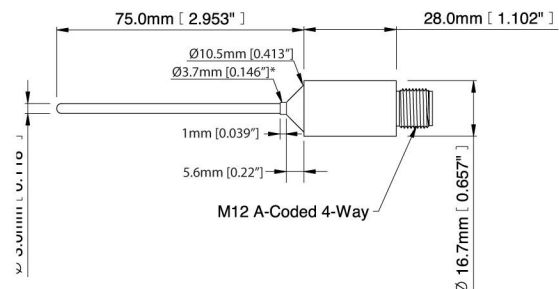
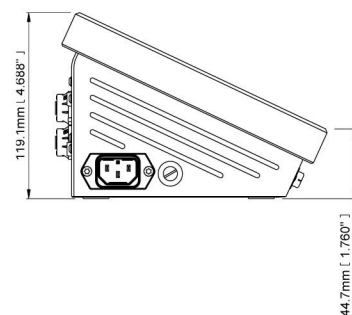
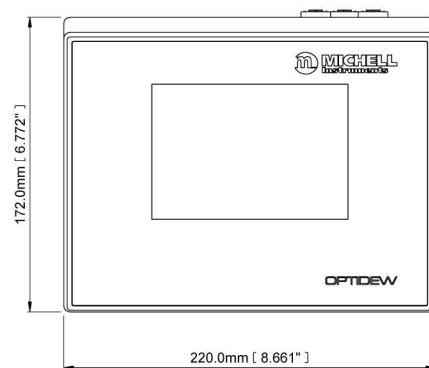
Dynamic Contamination Control (DCC) Plus

DCC Plus is an improved version of our Dynamic Contamination Control. This feature is designed to manage the contamination on the mirror surface, extending operation in harsh or dirty environments without the need to stop the process to manually clean the mirror.

Improved frost assurance

Increased reliability at low dew points

It is possible for water to exist in liquid phase below 0°C as super cooled water. When using a chilled mirror instrument, liquid water may exist at temperatures down to -30°C in certain conditions. The difference in vapor pressure between condensed water and ice formed on a chilled mirror can introduce dew-point errors of up to 10% of reading. The new adaptive FAST system gives certainty about the state of the mirror condensate, detecting when supercooled water could form during measurement, and cooling the mirror sufficiently to freeze it, without the need for a DCC.



Weld burr may extend 1mm from collar to towards tip of probe

Technical Specifications

Performance			
Dew Point Measurement Accuracy	±0.15°C		
Reproducibility	±0.05°C		
Sensitivity	±0.01°C		
Response	Stable measurement at +10°C dp within 1 minute		
Dew-Point Sensor			
Sensor	Single Stage	Dual Stage	Harsh Environment
Dew Point Range (°C)	-25 to +90°C	-40 to +90°C	-40 to +120°C
Temperature Range (°C)	-40 to +90°C	-40 to +90°C	-40 to +120°C
% RH Range @ 23°C	1.35 to 100% RH	0.45 to 100% RH	0.45 to 100% RH
Mirror Temperature Measurement	Pt1000, Class A		
Corrosion & Saturation Protection	ACIS (Active Component Isolation System)		
Recommended Sample Flow	Ambient (environmental measurements) to 2NI/min (flowing sample)		
Pressure	2500 kPa max		
Sensor Cable	Standard: 90°C max. High temperature: 125°C max.		
Cable Length	0.3, 3, 5, 10 and 20m lengths available		
Process Connection	M36x1.5		
Remote PRT			
Temperature Measurement Accuracy	±0.1°C		
Cable Length	0.3, 3, 5, 10 and 20m lengths available		
Temperature Measurement	PT100, Class A		
Remote Pressure Sensor (Optional)			
Pressure Measurement Accuracy	±0.25% FS		
Pressure Measurement Range	0-160 kPa OR 0-2500 kPa		
Process Connection	1/8" NPT-M		
Output	4-20mA		
Control Unit			
Resolution	1 or 2 decimal places selectable		
Measurement Units	°Cdp or °Fdp, Relative humidity - %, Absolute humidity - g/m³, ppm _v , Mixing Ratio - g/kg, Wet Bulb Temperature (Twb) - °C, °F, Water Vapor Pressure (wvp) - Pa, Ambient Temperature - °C, °F, Pressure converted DP - °C, °F, Pressure - kPa, Bara, Barg, Psia, Psig		
Enclosure	Wall Mount - Optidew 501	Bench Top - Optidew 401	
Material	ABS	ABS	
Analog Outputs	Two 0/4-20mA outputs (maximum load 500Ω)	Two 0/4-20mA outputs (maximum load 500Ω)	
Digital Communications	Modbus RTU over RS485 (standard) Modbus TCP over Ethernet (optional)	Modbus RTU over: USB (standard) RS485 (standard) Modbus TCP over Ethernet (optional)	
Alarms	1x Process Relay, 1x Alarm Relay, Both Form C, 1A, 30Vdc.	1x Process Relay, 1x Alarm Relay, Both Form C, 1A, 30Vdc	
Inputs	4-20mA for pressure sensor	4-20mA for pressure sensor	
Data Logging	SD card slot (optional)	SD card slot (standard)	
Ingress Protection	IP54 (standard), IP65 (optional)	IP54	
Dimensions	220x175x75mm	220x175x118mm	
Weight	Control unit: 1.5kg, Sensor: 200g	Control unit: 1.5kg, Sensor: 200g	
Display	5.7" colour touch screen (optional)	5.7" colour touch screen	
Environmental Conditions	-20 to +50°C, up to 100%RH non-condensing (optional) 100% RH condensing with IP65 connector version		
Supply Voltage	100 to 240VAC, 50 to 60Hz		
Power Consumption	30VA max		