MDM300 & MDM300 I.S.

Advanced Dew-Point Hygrometer

A high-speed portable dew-point hygrometer, offering rapid spot-check measurements of dew point or moisture content in many applications, including compressed air, natural gas and high-voltage switchgear quench gas. This lightweight, ATEX, IECEx, FM, CSA, GOST and INMETRO certified product allows more measurements per working hour than any other comparable product. A hard-wearing but ergonomic case and an easy-to-use interface allows comfortable and practical operation in the toughest industrial environments.

Highlights

- Repeatedly fast measurements at low pressure from less than 15 minutes for T95 to -60°C
- Higher pressure measurements possible up to 350 barg
- Long battery life: up to 48 hours of typical use between charges
- Intuitive application kits allow quick and straightforward connection to your sample point
- Durable, yet easy to handle and operate: designed for use in industrial environments
- 4-20 mA external device input for transmitter calibration and validation
- Lightweight: less than 1.5kg
- 13 point traceable calibration certificate

Applications

- Dew point in natural gas processing and pipelines
- Monitoring of desiccant dryers for compressed air or plastic moulding equipment
- Moisture measurement in high-voltage switchgear quench gas
- Moisture measurement in petrochemical refineries
- Industrial gas production and transportation
- Medical gas quality
- Dew-point measurement in metallurgical applications
- And many more...

MDM300 & MDM300 I.S.

Ideal for spot checks of dew point or moisture content, the MDM300 & MDM300 I.S. include all the features needed for efficient work. An extremely fast response and accurate, stable measurement are complemented by an instrument which is easy to use, has data-logging and built in sampling components as standard. The instrument can be supplied with a range of accessories including sampling systems and a professional carry case. For use in hazardous areas, the MDM300 I.S. has ATEX certification to Ex II 1 G Ex ia IIC T4 Tamb -20°C to +60°C; FM, CSA, IECEx, GOST-R, GOST-K and INMETRO standards. The MDM300 and MDM300 I.S. are both IP66/NEMA 4 rated, and therefore suitable for demanding outdoor applications.

Features

The MDM300 series can provide measurement to -60°Cdp in gases at atmospheric pressure in less than 15 minutes (30 minutes to -60°Cdp for MDM300 I.S.). This, combined with no required waiting time between measurements, allows the user to take many readings per day, increasing efficiency and reducing costs when compared to other instruments on the market.

Simple to use

The rugged but ergonomic design of the MDM300 series combines industrial durability with comfortable one or two-handed operation. The intuitive menu system and large, easy-to-press buttons enable the user to easily configure the instrument to display the parameters they require, even with gloved hands.

Best accuracy

Best-in-class accuracy of 1°Cdp (from -60 to +20°Cdp) gives the user improved measurements. Every instrument undergoes a 13 point calibration over a period of 10 days and all calibration certificates are traceable to national standards via the NPL (UK) and NIST (USA).

External sensor connection via 4-20 mA loop-powered input

External sensors for the measurement of dew point, pressure or temperature can easily be connected to the MDM300 series, and their readings displayed on the screen. These inputs can also be used to augment the measurement, such as by providing live pressure compensation.

In addition, the MDM300 series can be used to check and recalibrate Michell Easidew dew-point transmitters, affording the user the benefit of a verification without the associated downtime.

Michell can supply a Remote Sensor Interface with the MDM300 I.S., allowing connection to the Easidew TX I.S. or Easidew PRO I.S. dew-point transmitters.

Versatile sampling

The MDM300 series offers versatile sampling arrangements ranging from simple fixed orifices for low pressure measurement to configurable high-pressure sampling systems up to 350 barg. A number of application kits are available providing out of the box sampling systems specifically for the most popular applications. Please contact Michell Instruments for further details.

Measurement in hazardous areas

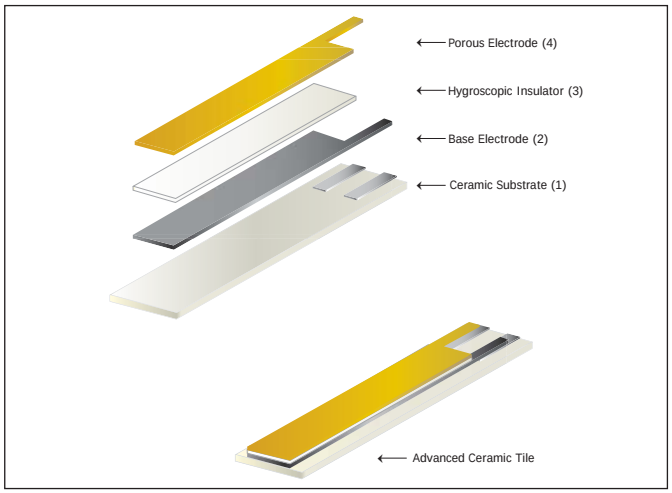
The MDM300 I.S. has been certified by ATEX & IECEx, FM, CSA and GOST for use in hazardous areas. This is the perfect portable instrument for use in natural gas plants, petrochemical refineries, offshore platforms and a range of other hazardous areas.

Sensor Technology

Ceramic Impedance Sensor

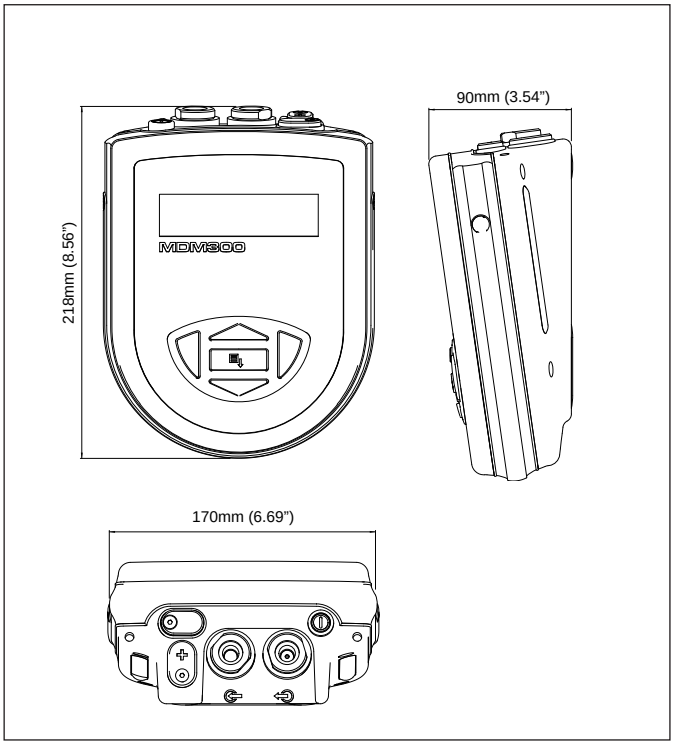
The MDM300 uses Michell's highly developed ceramic impedance sensor, which is constructed using state-of-the art thin and thick film techniques. Operation of the sensor depends upon the adsorption of water vapour into a porous non-conducting 'sandwich' between two conductive layers built on top of a base ceramic substrate. The active sensor layer is very thin – less than one micron and the porous upper layer that allows transmission of water vapour into the sensor is less than one nano-metre.

The resulting sensor responds rapidly to changes in moisture – both in measuring humidity and also when being dried. It is very rugged and gives 1°C dew-point accuracy coupled with excellent long-term reliability and stability.



Michell ceramic sensor tile layers

Dimensions



Ordering Information

Order code	Description
MDM300-STD	MDM300 Advanced Dew-Point Hygrometer Standard version
MDM300-IS	MDM300 I.S. ATEX certified for use in hazardous areas

Accessories available
Carry bag
Gas fittings in various sizes
External dew-point sensor
Cable for external dew-point sensor – various lengths available
External temperature sensor – various cable lengths available
External pressure sensor – various cable lengths available
Bluetooth dongle
Hard carry case

Application kits available	
MDM300-EFS	Basic sampling kit with flow meter and needle valves
MDM300-Atmos	Connection kit with sample pump
MDM300-COM	Compressed air application kit
MDM300-MED-KIT	Medical gas sampling kit
MDM300-SF6-D8	SF_6 sampling kit with DN8 input
MDM300-SF6-D20	SF_6 sampling kit with DN20 input
MDM-300-BAG	Capture bag for SF_6

Please contact Michell Instruments for a full list of accessories and spares with order codes.

Technical Specifications

Product	MDM300	MDM300 I.S.
Performance		
Measurement technology	Michell ceramic sensor	
Accuracy	±1°C from -60 to +20°C dew point ±2°C from -100 to -60°C dew point ±0.2°C temperature	
Calibrated range Spot checks: Online analysis:	 -70 to +20°C dew point -100 to -70°C dew point	
Uncalibrated readings from	+20 to +30°C dew point	
Measurement units	°C, °F, K dew point & gas temperature ppm_V, ppm_W for air, N_2, H_2, CO_2, SF_6 % RH, g/m^3, g/kg Option: active pressure (bara/g, psig, MPa, KPa)	°C, °F, K dew point & gas temperature ppm_W & g/kg for air, N_2, H_2, CO_2, SF_6 ppm_V, lb/mmscf & g/m^3 for natural gas ppm_V, g/m^3 & % RH
Resolution (display)	0.1 for all dew-point derived units and autoranging where appropriate	
Resolution (measurement)	Better than 0.1°C dew point	
Typical response speed	T95 in ≤15 minutes to -60°C dew point	T95 in ≤30 minutes to -60°C dew point
Electrical Input/Output		
Auxiliary inputs	4-20 mA loop-powered external input selectable as either dew point, temperature or pressure	Connection to Michell Easidew TX I.S. or Easidew PRO I.S. via Remote Sensor Interface
Battery type	NiMH 4.8V	
Battery operating Life	Up to 48 hours of typical usage between charges	Up to 24 hours of typical usage between charges
Battery charger	Intelligent charger (supplied)	Intelligent charger (charger not certified for hazardous area use)
Operating Conditions		
Operating pressure	350 barg max	
Operating environment	Outdoors 0 to +100% RH condensing	
Operating temperature	-20 to +50°C	
Storage/transport temperature	-40 to +70°C	
Mechanical Specifications		
Display	Blue LCD graphical display	
Enclosure type	Steel fibre-loaded high-impact polyamide 6	
IP/NEMA rating	IP66/NEMA 4	
Gas connections	1/8" NPT female (other options available)	
Flow across sensor	0.2 to 1.2 Nl/min	0.2 to 0.5 Nl/min
Filters	50 micron stainless steel sinter in the inlet port	
Gas wetted materials	AISI 316L stainless steel	AISI 316L stainless steel, PTFE Seal, Borosilicate glass, ceramic
Outline dimensions	218mm x 170mm x 90mm (d x w x h)	
Weight	1.35kg	1.5kg
General		
Data logging	8 megabytes; Log interval: 5 to 60 sec; Logs per log file: Up to 10,000	
Communications	(Wireless) Bluetooth™ range up to 5m (version 2.0)	
User interface languages	English, French, German, Italian, Portuguese, Spanish	
Certification Codes		
	CE	ATEX: II 1G Ex ia IIC T4 Ga (-20°C to +50°C) IECEx: Ex ia IIC T4 Ga (-20°C to +50°C) INMETRO: Ex ia IIC T4 Ga (-20°C to +50°C) TC TR Ex: 0Ex ia IIC T4 Ga FM: Class I, Division 1, Groups A B C D, T4 CSA: Class I, Division 1, Groups A B C D, T4

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Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.
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