![SHAW MOISTURE METERS logo]

SDHmini-Ex
Portable Hygrometer

Shaw Moisture Meters SDHmini-Ex, hand held hygrometer, certified intrinsically safe and incorporating data logging, USB and Bluetooth interfaces for communication and printing, setting new industry standards for dewpoint measurement.

An intrinsically safe, portable dewpoint meter offering quick and reliable spot-check measurements of dewpoint and trace moisture content for industrial applications. This robust and lightweight dewpoint instrument features an intuitive menu structure and advanced features which enable the user to perform measurements in the toughest of environments, quicker and easier than ever before. Perfect for industrial applications such as power utilities, natural gas exploration and production, air treatment plants, processing of chemical and pharmaceutical products, general engineering and more.

Certified intrinsically safe to ATEX, IECEx and UL standards, SDHmini-Ex is the perfect dewpoint meter for reliable measurements of trace moisture in hazardous areas.

Utilizing three features unique to Shaw Moisture Meters dewpoint instruments: AutoCal, the unique SHAW moisture sensor and the desiccant dry down chamber assembly. These features work together to ensure the sensor stays dry between tests and allows users to calibrate their hygrometer in situ without the need for any special equipment or training. The SDHmini-Ex is ideal for carrying out rapid spot checks.

The robust housing also incorporates the signal conditioning circuitry, memory management and a full colour graphics LCD. The on-board rechargeable lithium-ion battery provides over 150 hours of continuous operation.

The unit operates with the following ten language options: English, German, French, Spanish, Portuguese, Russian, Italian, Chinese, Japanese and Korean.
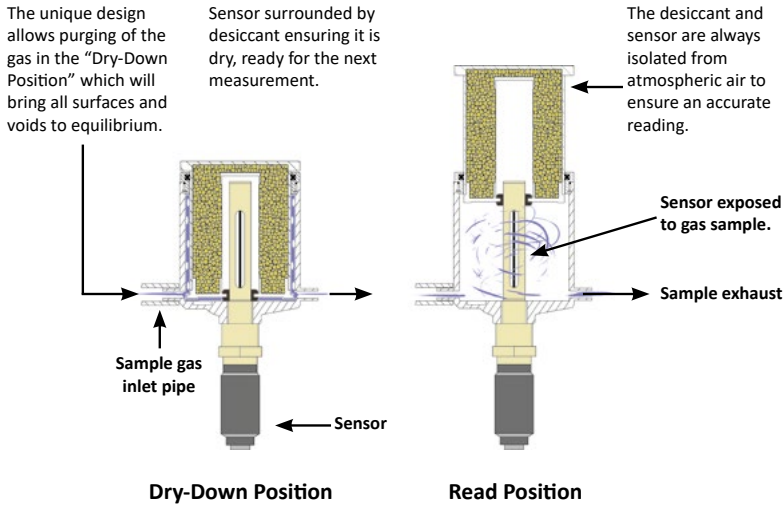
Powerful microelectronics provide automatic calibration with real time data logging graphical formats for the capture and display of up to 300,000 data points. Review logged data on the instrument or transfer via USB or Bluetooth interface for PC communication and printing.
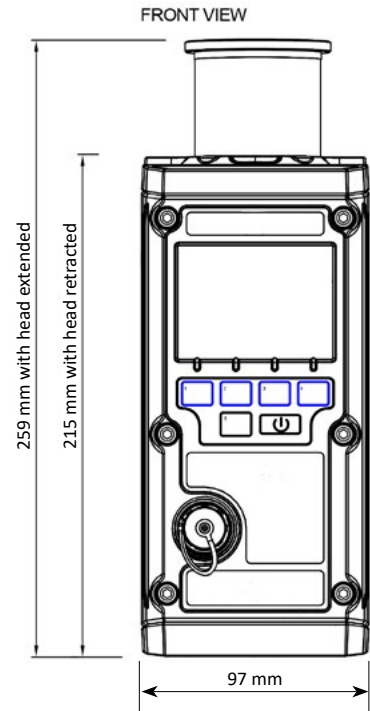
Features

- Certified intrinsically safe to ATEX, IECEx and UL standards for use in hazardous areas
- AutoCal (automatic calibration)
- Desiccant dry down assembly for high-speed measurements
- User selectable engineering units - °C, °F, ppm(V), ppm(w), g/m³, lb/MMSCF
- Accuracy of ±2 °C (±3.6 °F)
- Various measurement ranges available from -100 °C to +20 °C (-148 °F to +68 °F) dewpoint
- Full colour graphics LCD display with secondary display

- 10 language options
- Rechargeable battery - over 150 hours of continuous operation on full charge
- Advanced data logging and download to PC
- USB charging and connection to PC interface
- Bluetooth connection and printing
- Robust and durable enclosure
- Truly portable and lightweight: less than 1.75 kg (3.8 lbs)
- Certificate of Calibration traceable to National & International Humidity Standards at NPL

The unique design allows purging of the gas in the "Dry-Down Position" which will bring all surfaces and voids to equilibrium.

Sensor surrounded by desiccant ensuring it is dry, ready for the next measurement.

The desiccant and sensor are always isolated from atmospheric air to ensure an accurate reading.

Sensor exposed to gas sample.

Sample exhaust

Sample gas inlet pipe

Sensor

Dry-Down Position

Read Position

Keeping the sensor dry between tests ensures that the SDHmini-Ex is ready to carry out rapid spot checks. The unique design of the desiccant head achieves this by surrounding the sensor with desiccant, keeping the sensor dry. The head is then lifted for sampling, exposing the sensor to the sample gas.

Between tests, the sensor is not allowed to come into contact with ambient air. The chamber is designed so that the void space and chamber wall surfaces are purged with sample gas before exposure of the sensor, giving faster, more accurate and reliable results.

AutoCal (Automatic Calibration)

The most important and unique feature of the SHAW system is the **AutoCal** (automatic calibration) facility. Each SHAW sensor is precisely manufactured to saturate with water vapour at its design maximum. Hence, when the sensor is exposed to moisture above its maximum operating range, it will rapidly come into equilibrium and cease to respond to any further increase in moisture. This forms the basis of automatic calibration.

The SHAW sensor can be checked by simply exposing it to any atmosphere which is wetter than the operating range of the sensor (usually room air is sufficient) by raising the desiccant chamber and performing the automatic calibration feature on the instrument. The sensor is now set up with the instrument and ready for use.

Automatic calibration can be carried out in-situ and without the need for any special equipment or skilled personnel. The net result is reduced downtime, minimal calibration costs and immediate verification of the system.

FRONT VIEW

259 mm with head extended

215 mm with head retracted

97 mm

SIDE VIEW

147 mm
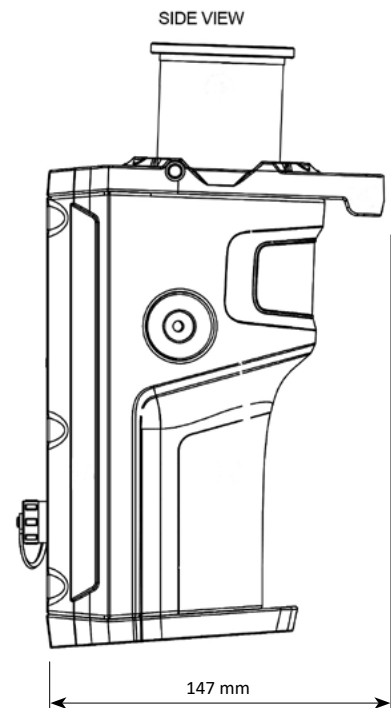
Specifications

DEWPOINT SENSOR

- **Sensing Element:** SHAW Ultra High Capacitance Aluminium Oxide Sensor

- **Ranges**
  Dewpoint = 0.1 °C/0.1 °F resolution

P (Purple):	-100 °C to 0 °C dewpoint	0 - 6,000 ppm(V)
S (Silver):	-100 °C to -20 °C dewpoint	0 - 1,000 ppm(V)
G (Grey):	-80 °C to 0 °C dewpoint	0 - 6,000 ppm(V)
R (Red):	-80 °C to -20 °C dewpoint	0 - 1,000 ppm(V)
B (Blue):	-80 °C to +20 °C dewpoint	0 - 23,000 ppm(V)

- **Intrinsic Safety Certification**

  ATEX and IECEx:

  II 1 G Ex ia IIC T4 Ga
  II 2 D Ex ia IIIB T60°C T$_{50}$80°C Db
  (-20°C ≤ Ta ≤ +50°C)

  UL:

  Class I Div 1 Groups A, B, C and D T4

- **Approvals: CE and UKCA**

  CE 0598   UKCA 1180

- **AutoCal:** Field calibration/electronic span check facility. Performed by user following simple menu driven instructions.

- **Accuracy:** ± 2 °C (± 3.6 °F) dewpoint, NPL traceable -90 °C to +20 °C (-130 °F to +68 °F)

- **Sensor Calibration:** Supplied with Certificate of Calibration traceable to National and International Humidity Standards at NPL.

- **Repeatability:** Better than ±0.3 °C dewpoint

- **Pressure Correction:** Integral calculator to display pressure dewpoints. Gauge pressure can be entered in kPa, kg/cm², bar or psi.

- **Temperature Coefficient:** Temperature compensated for operating range.

- **Sample Flow Rate:** Flow independent but ideally 2-5 litres per minute. Max: 10 litres per minute

- **Response Times**
  Wet to dry: -10 °C to -60 °C (+14 °F to -76 °F) - less than 120 seconds
  Dry to wet: -100 °C to -20 °C (-148 °F to -4 °F) - less than 20 seconds

- **Calibration Warranty:** 12 months from date of dispatch

MECHANICAL

- **Dimensions and Weight:** Overall dimensions: 97 mm (w) x 147 mm (d) x 211 mm (h (259 mm with head extended)) (3¹³⁄₁₆ x 5²⁵⁄₃₂ x 8⁵⁄₁₆ (10¹³⁄₆₄) inches) 1.75 kg (3.8 lbs)

- **Operating Pressure:** Maximum 0.3 bar (4 psi)

- **Operating Humidity (External):** Maximum - 95% RH non-condensing

- **Operating Temperature:** -20 °C to +50 °C (-4 °F to +122 °F)

- **Storage Temperature:** -30 °C to +70 °C (-22 °F to +158 °F)

- **Sensor Protection:** 316 sintered stainless steel filter - 50 micron

- **Weatherproof Classification:** IP66 NEMA 4X

- **Mechanical Warranty:** 24 months in case of faulty workmanship and defective parts
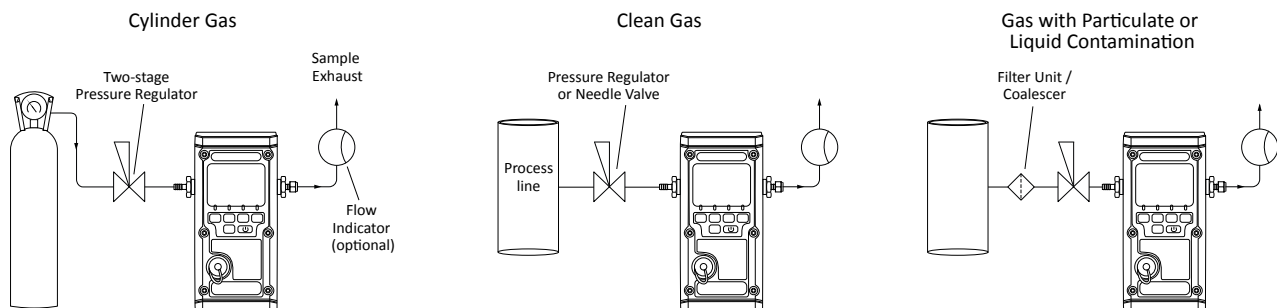
ELECTRICAL

- **Electromagnetic Compatibility (EMC):** EMC Directive 2014/30/EU BS EN 61326-1

- **Display:** Full colour graphics LCD, 320 x 240 (24 bits) resolution

- **Power Supply:** Rechargeable Li-ion battery. Battery charger included.

- **Battery Life:** In excess of 150 hours of use between charges

- **Time to Full Charge:** 12 hours

- **Resolution:** 0.1 °C, 0.1 °F dewpoint or 0.1 ppm(V)

- **Repeatability:** Better than ±0.2 °C dewpoint

SHAW SDHmini USER TOOL SOFTWARE

- **Data Logging:** 300,000 readings. Date and time stamped data, stored in chosen units of measurement, for download to PC.

- **Data Location:** 20 separate Location IDs can be entered (alpha-numerical) by user for data collection at preprogrammed locations.

- **Sampling Rates:** User selectable (in intervals of five seconds) from once every five seconds to once a day.

- **Data Display:** Numerical and graphical

- **Real Time Recording:** Device can be programmed to monitor, record and graphically present data in real time directly to PC.

Guide to Installation

Cylinder Gas

Two-stage Pressure Regulator

Sample Exhaust

Flow Indicator (optional)

Clean Gas

Pressure Regulator or Needle Valve

Process line

Gas with Particulate or Liquid Contamination

Filter Unit / Coalescer

Ordering Information

SDHmini-Ex - (X) - (X) - (X)

Choose required range in dewpoint = X

P (Purple): -100 to 0 °C (-148 to +32 °F) 0 - 6,000 ppm(v)
S (Silver): -100 to -20 °C (-148 to +4 °F) 0 - 1,000 ppm(v)
G (Grey): -80 to 0 °C (-112 to +32 °F) 0 - 6,000 ppm(v)
R (Red): -80 to -20 °C (-112 to +4 °F) 0 - 1,000 ppm(v)
B (Blue): -80 to +20 °C (-112 to +68 °F) 0 - 23,000 ppm(v)

SAMPLE CONNECTION = X

SDHmini-Ex dewpoint meter supplied with 1 x Fir Tree connection for outlet. Please specify inlet connection.

4: 0.25" (¼") Swagelok SS Compression Type
6: 6 mm Swagelok SS Compression Type
8: 0.125" (⅛") Swagelok SS Compression Type
F: Fir Tree connection to suit 6 mm PTFE sample tube

PLEASE NOTE:
If not specified at time of order, 1 x ¼" and 1 x Fir Tree will be supplied.
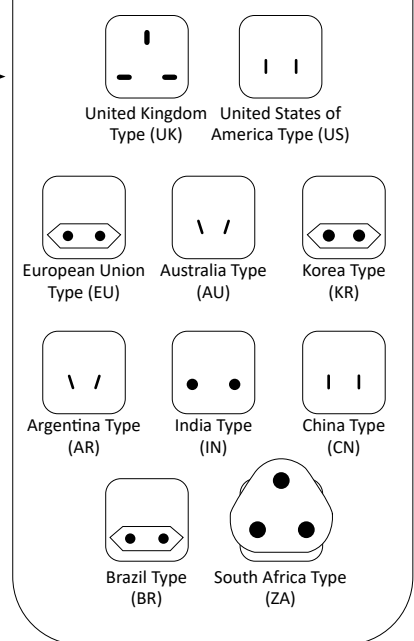
EXAMPLE:

To order a device with the range -80 °C to 0 °C dewpoint with 6 mm pipe connection, for use in UK, order as:

Model SDHmini-Ex - G - 6 - UK

MAINS PLUG TYPE -
For Battery Charger = X

UK, US, EU, AU, KR, AR, IN, CN, BR, ZA (please see diagrams below)

United Kingdom Type (UK)

United States of America Type (US)

European Union Type (EU)

Australia Type (AU)

Korea Type (KR)

Argentina Type (AR)

India Type (IN)

China Type (CN)

Brazil Type (BR)

South Africa Type (ZA)

Related Products

SDHmini Service Kit includes:
- Desiccant
- Head seal kit
- Grommet
- Silicone grease

Bluetooth Mobile Printer
- Long-lasting battery life
- High printing speed
- Lightweight
- Quick charging

Includes as Standard

- SDHmini-Ex dewpoint meter
- Anti-static carry case
- USB charging cable
- Fir Tree fitting plus 1 x fitting as ordered
- AC/DC adaptor
- Certificate of Calibration
- Two metres of PTFE sampling hose
- Pressure calculator
- SDHmini User Tool software instruction manual
- SDHmini-Ex dewpoint meter instruction manual
- USB flash drive: User Tool Software, instruction manuals, Certificate of Calibration

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