



By Appointment to H.M. The Queen
Building Material Manufacturers
Sovereign Chemicals Ltd
Harrow in Furness

SOVEREIGN QUANTUM (SURVEY METER)



A new state of the art meter capable of measuring the moisture content of various substrates using both pad and pin sensors.

In addition associated data such as air temperature, relative humidity and spot surface temperature are all available at the touch of a button. This allows the surveyor to diagnose and specifically identify any individual areas within the property at dew point, or close enough to pose a condensation problem.

A bright traffic light series of LEDs display instant visual information and below this a numerical readout is available for recording specific readings.

Contained within the security case the unit sensor probe is permanently attached to the meter and there are no other costly auxiliary attachments required that can be mislaid or lost.

The unit is contained inside a high visibility **Peli** security case.



Say...  **SOVEREIGN**
For your Remedial Needs



Select Pad
 Range A for fibrous materials
 Range B for solid materials

Select Pins
 Range A for fibrous materials.
 Range B for solids materials

Provides relative humidity readings % rh.

Compares surface temperature readings to Dew Point °C.

Displays air temperature °C.

Displays surface temperature readings °C from hand sensor.

Displays remaining % power.

ON/OFF and auto off. (see Technical Specification)
 Low battery warning "BA"t"

The Pad Sensor

Using advanced capacitive power-loss techniques the moisture content can then be assessed for various substrates. This is displayed using green, red and yellow LEDs, and also numerically as a % moisture content. An audio signal can be activated in the amber and red zones.

Advantages.

- Non-destructive.
- Large areas can be covered quickly.
- Minimal affect from dissolved salts.
- Variations in electrical properties will be largely averaged out over the field generated by the pad.

The Pin Sensor.

The pins are pushed into the substrate and measures DC resistance between the pins.

- Can be used in confined spaces.
- Not affected by uneven surfaces.

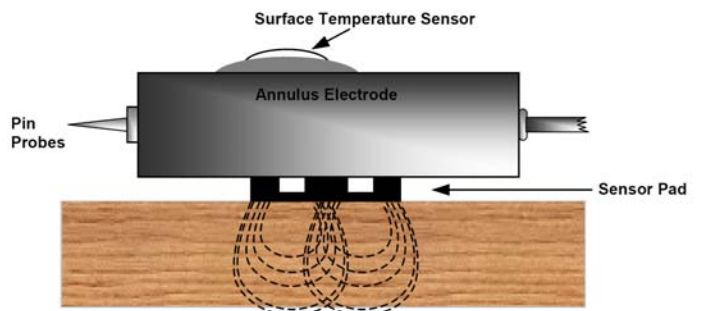
There may be slight variations in readings because the pad will give an average reading over a large area, whereas pins will give the highest reading in contact with the pins.

User Calibration Check.

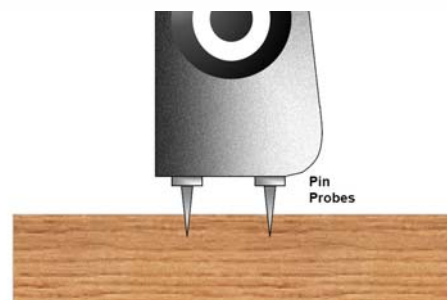
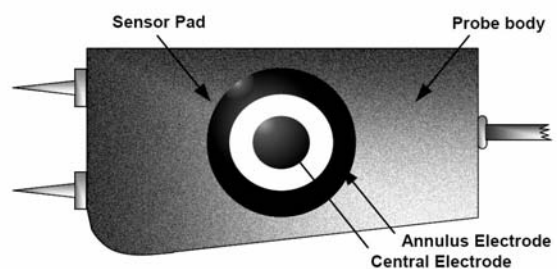
Ensure the lid is in the upright position and there is nothing behind the Calibration Check Unit – including fingers!

Pad Sensor. Select **Pad A** and place the pad sensor against Calibration Check annulus ring. Reading should be 17.5 to 18.5 for latest software.(April 2007).

Pin Sensor. Select **Pins A** and place the pins onto the gold coloured pads. Reading should be 23/24.



The substrate is penetrated by the electric field emanating from an electrode coupled to a stable low frequency oscillator.



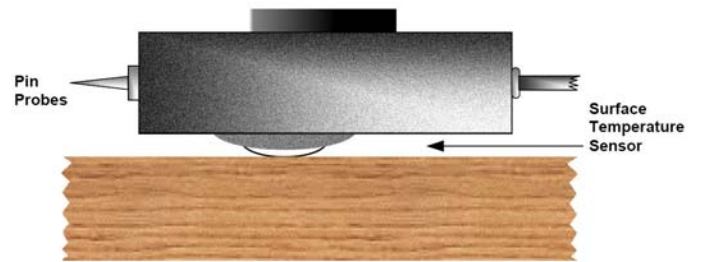
The surface temperature thermistor

Select **Surface Temp** and on the rear of the sensor a flexible metal strip thermistor can be used to take surface temperature readings.

Assessing possible condensation

However, when **Dew Point** has been selected then the meter will automatically compare the air temperature and relative humidity against the surface temperature reading. The digital readout displays in degrees °C *how far away the surface temperature is away from dew point and potential condensation.*

The LED traffic light display will indicate green for acceptable conditions through to red where the surface temperature is at, or below dew point .



NB Dew point definition.

The temperature point when moisture vapour condenses into liquid water on the measured surface.

TYPICAL APPLICATIONS

Technical Advice Sheet TAS001, provides further advice on house surveys using electronic moisture meters.

Masonry (Brick/Stone/Plaster) using Range B.

For assessing potential **rising damp** preferably use the Pad Sensor on **Range B** as a method of establishing a moisture profile (see back page). Moisture content of less than 5% w/w at the **base** of a wall is considered acceptable. Readings above this level require further investigation to eliminate other causes such as condensation, bridging or penetrating damp.

On **Range B** above 9% the LED display will read **SAt** indicating full-scale deflection and the readings are going towards saturation. Diagrams of various moisture profiles are illustrated overleaf.

Where the moisture profile (see 1. back page) is “**indicative**” of rising damp, then it can be reported as such. Where there is contention as to the cause, a Calcium Carbide (Speedy) meter test can be carried out locally on site giving **total** moisture content, but this will not differentiate between free and hygroscopic moisture. Therefore, when a definitive answer is required the readings should be confirmed by quantitative analysis. Arrangements can be made with the technical department at Sovereign Chemicals to forward samples for gravimetric analysis and technical reports of both free moisture content and hygroscopic moisture content.

Floor Screeds using Range B.

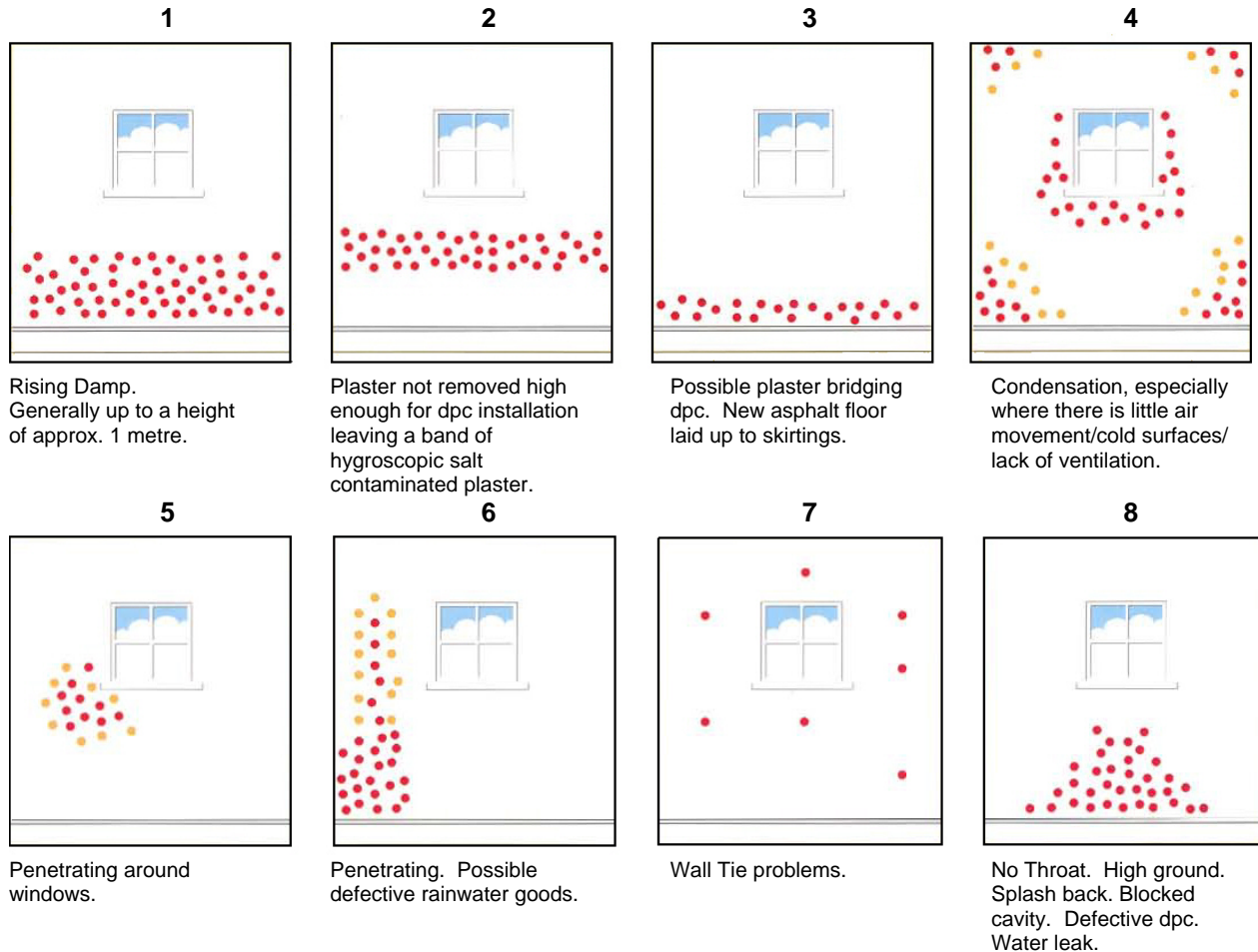
Use the pad sensor on **Range B** to establish the moisture content in floor screeds. The results require careful interpretation, as they are only representative of the site conditions *at the time of survey*. The test procedure in BS 8203:1996 Annex A should be used to confirm a relative humidity of 75% or less before installation of resilient floor coverings. Advice is available from the technical department for concrete bases and sand:cement screeds lacking effective damp proof membranes.

Timber using Range A.

Use either the Pad Sensor or the Pin Sensor on **Range A** to establish the moisture content of the timber and note the temperature and relative humidity. However, the Pad Sensor will provide a better *average* reading, especially at the lower and higher ends of the coverage. Fungal attack cannot occur in timber with moisture content below 20% w/w, therefore where the moisture is above acceptable levels measures should be taken to promote drying out. If drying out is expected to take more than 8 weeks, precautionary chemical treatment may be considered.

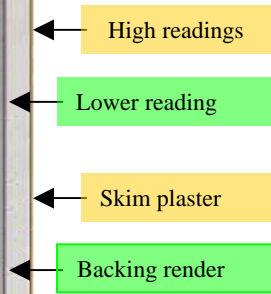
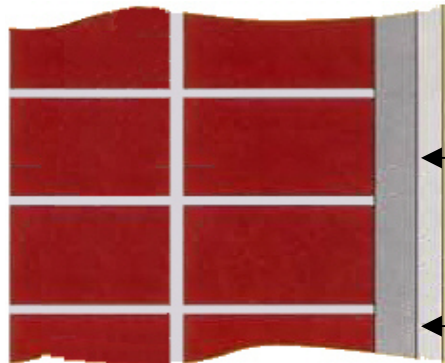
On **Range A** above 30% the LED display will read **SAt** indicating full scale deflection and the readings are going towards saturation.

Moisture Profiles



Solid wall construction

Example of condensation



With surface condensation the moisture content will reduce as testing moves towards the fabric of the building (unless there is another source of dampness). The surface temperature can be checked in potential cold spots and automatically compared against dew point.

Condensation problems can be drastically reduced or completely resolved by installing a Sovereign ConCure 20/20 unit in the loft space.

Technical specification.

Range A (Pins and Pad): Timber: From 1% to 30% (beyond is to fibre saturation - **SAt**).

Range B (Pins and Pad): Concrete, brick, plaster: From 1-8% (beyond is towards saturation - **SAt**).

Surface and air temperature: -10 to +85°C. **Humidity:** 5 – 95%. **Dew Point:** Displays °C from actual dew point. Assessments should be made at temperatures above +5° C. Spurious readings may occur below 4° C as moisture becomes denser. Use the **Dew Point** display to check the potential for surface condensation.

Display: LED Traffic light –green, amber, red and digital readout. **Size and weight** 235 x 115 x 190mm, 1.2 Kg.

Batteries Use 4 AA 1.5V. Operating temperature range: -10 to +45°C.

Auto OFF: 1. Both **Pins** and **Pad** after 5 minutes. 2. Other functions if readings are constant after 30 minutes.

Calibration: For calibration checks see second page. Calibration point is dependant upon Software used.

: Contact Tech Dept for previous calibration figures.

: Contact the technical department if units are outside these readings.

Dated Apl 2007: Technical specification may change without notice as new developments are incorporated.