

TRAMEX[®]
Concrete Encounter
CME 4
User's Guide



Concrete Encounter CME 4 User Guide

CME4/1005

TRAMEX MOISTURE/HUMIDITY INSTRUMENTS

SURVEY ENCOUNTER: The intelligent moisture meter.

“State of the art” non-destructive moisture meter for measurement and data logging of moisture in building materials.

MOISTURE ENCOUNTER PLUS

General purpose non-destructive moisture meter employing advanced analog and digital technology.

CONCRETE ENCOUNTER CME 4

Non-destructive moisture meter for concrete floors.

CRH FLOORING

Non-destructive testing and data logging of moisture content and relative humidity measurements in concrete (to *ASTM F 2170-02*, *ASTM F 2420-05* and *BS 5325:2001* & *8203:2001*), gypsum screeds and sub-floors.

RHR FLOORING HYGROMETER KIT

Complete kit for relative humidity testing of flooring by either the in situ probe method (to *ASTM F 2170-02* and *BS 5325:2001* & *8203:2001*) or the RH hood method (*ASTM F 2420-05*).

FLOOR INSPECTION KIT

Complete kit for moisture testing concrete, hardwood flooring, sub-flooring and environmental monitoring.

MRH

Digital Moisture and Humidity Meter with 4 scales for wood, roofing, masonry and drywall. Humidity probe also available. Suitable for humidity testing of flooring by either the in situ probe method (to *ASTM F 2170-02* and *BS 5325:2001* & *8203:2001*) or the RH hood method (*ASTM F 2420-05*).

PROFESSIONAL MOISTURE METER

Digital resistance meter with probes, tests deep into wood.

COMPACT MOISTURE METER

Economical pin-type resistance meter for wood.

SKIPPER PLUS

Checks wooden boats for decay and finds osmosis in GRP.

LEAK SEEKER

Leak tracing in flat and built-up roofing.

DEC SCANNER

Mobile non-destructive surveying of flat roofs.

WET WALL DETECTOR

Non-destructive moisture evaluation and tracing in EIFS.

RWS ROOF AND WALL SCANNER.

For moisture scanning and leak tracing on roofing, EIFS and the building envelope.

MOISTURE & HUMIDITY INSPECTION KITS ARE AVAILABLE FOR THE FOLLOWING INDUSTRIES:

Floor inspection / EIFS wall inspection / Roof inspection / Indoor Air Quality / Water damage restoration.

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Introduction

Congratulations on your selection of a new *Concrete Encounter CME 4* instrument from Tramex.

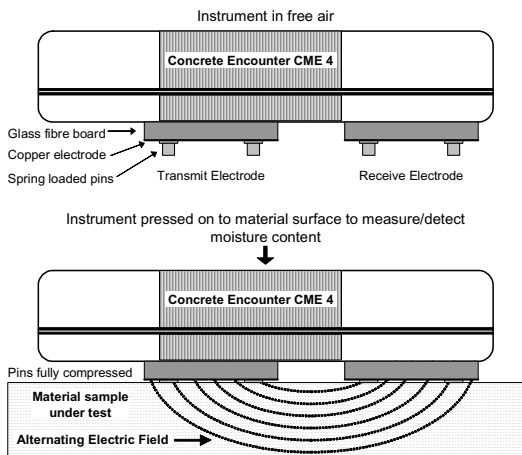
The *Concrete Encounter* utilises “state of the art” electronic technology to provide the flooring industry with an accurate and simple to use non-invasive handheld instrument for non-destructive testing (NDT) of Moisture Content (MC) in concrete and comparative moisture readings in, gypsum and other floor screeds.

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How it works

The instrument operates on the principle that the electrical impedance of a material varies in proportion to its moisture content. The electrical impedance is measured by creating a low frequency alternating electric field between the electrodes as illustrated in the diagram below.



This field penetrates the material under test. The very small alternating current flowing through the field is inversely proportional to the impedance of the material. The instrument detects this current, determines its amplitude and thus derives the moisture value.

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Instrument Features

Your *Concrete Encounter CME 4* employs advanced analog and digital technology to enable the incorporation of many new features which greatly extend the capability of the instrument.

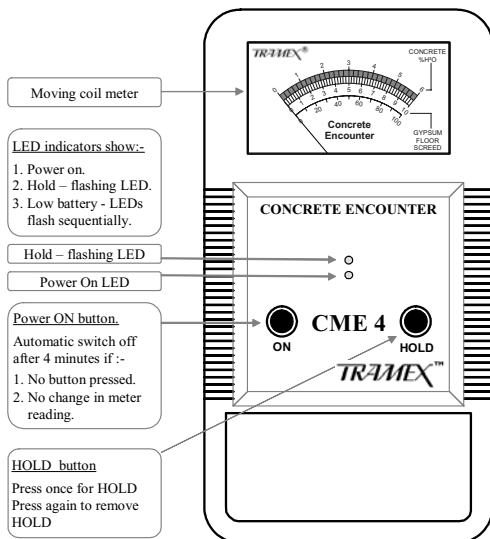
- Two simple push button controls, ON and HOLD.
- Concrete moisture readings, 0% to 6%, are displayed on a clear easy to read moving coil meter with linear scale.
- Comparative or qualitative readings for gypsum and other floor screeds are shown on a 0 to 10 scale.
- A reference scale of 0 to 100 is also provided.
- To conserve battery life, the instrument automatically powers OFF after 4 minutes of inactivity.
- Power remains on if a change in meter reading is detected or any button is pressed.
- An audio alert (bleep) will sound 10 seconds prior to the meter automatically powering OFF.
- Two LED (light emitting diode) indicators.
 - ◆ The lower LED illuminates when the ON button is pressed and remains on until the *CME 4* automatically powers off.
 - ◆ The upper LED flashes when HOLD is selected.
 - ◆ If the battery is nearing the end of its useful life, both LEDs flash sequentially for 3 seconds at each power ON to indicate that the battery should be replaced.
- HOLD button freezes needle on moving coil meter, to facilitate ease of recording readings.
- If HOLD was selected prior to the *CME 4* automatically powering off, the frozen meter reading is digitally memorized and restored next time ON is selected.

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Operating Instructions

A diagram of the instrument face with brief notes on the push button controls and LED indicators is shown below.



1. Press the ON button to power up. The lower LED will light. [Note – If the battery voltage is getting low, the two LEDs will flash sequentially for a short period. The instrument will continue to operate for some time but it is recommended that the PP3 (9 volt) battery be replaced as soon as convenient.]
2. Press your **Concrete Encounter CME 4** directly onto the surface of the material being tested ensuring that all of the electrode spring loaded pins are fully compressed.
3. For concrete, read the moisture content from the top, 0% to 6%, scale of the meter dial. Readings on a concrete

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floor slab obtained on this scale indicate moisture content measurement and should not be confused with lbs emission or any other unit of measurement obtained by other moisture testing methods or meters. It should also be noted that there seems to be no linear correlation between moisture content measurements and lbs emission measurements as obtained using calcium chloride testing methods.

4. For gypsum and other floor screeds, comparative or qualitative readings should be taken from the middle, 0 to 10, scale of the meter dial.
5. Alternatively, the lower, 0 to 100, reference scale can be used for comparative readings. This scale is not to be interpreted as a measurement of percentage moisture content, or relative humidity. It is not a relative humidity reading and it does not have any linear correlation with Relative Humidity measurements. This scale should be regarded as a comparative or qualitative scale only. This scale is included to facilitate comparative testing of different areas where direct contact with the bare concrete surfaces may not be possible due to some form of thin coating or covering on the concrete, or additive in the concrete that could influence the readings. Readings from the reference or relative scale are comparative only and of help in identifying areas with moisture problems.
6. The **CME 4** will automatically power-off after four minutes if no button is pressed or if no change in meter reading is detected. If a button is pressed or the meter reading changes, the power-off will be extended for an additional four minutes.
7. To freeze readings press the **HOLD** button once. While on HOLD, the upper LED will flash slowly. If the unit powers OFF while on HOLD, the frozen meter reading is digitally memorized and restored next time ON is selected. To remove freeze, press **HOLD** button again.

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Working with your Concrete Encounter CME 4

Drying time for concrete floors and screeds

Concrete floors and screeds must be allowed to dry to an adequate level before the installation of sheet material, tile, wood or coating. Manufacturers of such systems generally require moisture testing to be performed before installation on a floor slab. Moisture content measurement is one such method. Excessive moisture in or permeating from a floor slab after the installation of a floor covering or coating can cause failures such as condensation, blistering, delaminating, movement and general deterioration of the finished flooring/coating. There is also a risk of promoting microbial growth.

No exact period can be specified for the drying of such floors as this is affected by temperature and humidity within the building as well as concrete curing times and other factors. Typically a period of 3 to 4 weeks per 25mm (1inch) depth of concrete or sand/cement screed needs to be allowed. Longer periods may be required in areas of high humidity or low temperature. During the drying period and prior to applying the floor covering, the floor should be regularly checked to monitor moisture content.

Testing for moisture content in a floor slab

Pre-test conditioning and preparation

For best and most accurate results, tests should be carried out after the internal conditions of the building in which the slab is located have been at normal service temperature and humidity for at least 48 hours.

All artificial heating or drying equipment should be turned off at least 96 hours before final readings are attempted, otherwise results may not accurately reflect the amount of moisture present or moisture movement in the slab during normal operating conditions.

Prior to testing, the actual test area should be clean and free of any foreign substances.

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Where covered floor slabs are being tested, all covering materials, adhesive residue, curing compound, sealers, paints etc., shall be removed to expose a test area of clean bare concrete. For removal of any existing flooring or adhesives, strictly observe all the appropriate safety and health practices relevant to cleaning and removal of these types of materials. Removal of covering materials and cleaning if required shall take place a minimum of 48 hours prior to testing.

Use of water based cleaning methods that could lead to elevated surface and/or sub-surface moisture levels in the floor slab are not recommended, and testing after such treatment could result in elevated readings.

No visible water in liquid form should be present on the concrete at the time of testing with the *CME 4*.

Avoid testing in locations subject to direct sunlight or sources of heat.

Use of artificial aids for accelerated drying of concrete is not recommended. If they are being used it is recommended they should be turned off at least four days before taking final readings.

Testing procedures

1. Remove any dust or foreign matter from the *Concrete Encounter CME 4* electrodes before commencing tests. Make sure that the floor slab being tested is clean and bare and free from dust, dirt or standing water.
2. Push the ON button and press the instrument directly onto the surface of the material being tested ensuring that all of the electrode spring loaded pins are fully compressed. Read the moisture measurement from the appropriate scale of the moving coil meter dial.
3. On a rough surface, take a number of readings in close proximity to one another. **If the readings vary, always use the one with the highest value.**

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4. On a normal smooth surface it is also recommended that a number of tests in close proximity to each other be carried out, as the distribution of moisture tends to become erratic as concrete dries out. Use only the highest reading.
5. **Always refer to the adhesive and/or floor covering manufacturer's recommendations for the acceptable moisture content levels of concrete or floor screeds.**

Calibration

For regular on-site assessment of your *Concrete Encounter CME 4*, a calibration check-plate is available from Tramex. Should it be found that readings are outside the set tolerances, it is recommended that the *Concrete Encounter CME 4* be returned for re-calibration.

Calibration adjustments should not be carried out by anyone other than Tramex or their authorised service provider who will issue a calibration certificate on completion.

Limitations

The *Concrete Encounter CME 4* will not detect or measure moisture through any electrically conductive materials including metal sheeting or cladding, black EPDM rubber or wet surfaces.

The *Concrete Encounter CME 4* is not suited for taking **comparative readings** in the concrete substrate through thick floor coverings such as wood. The Tramex *Moisture Encounter Plus (ME Plus)* or MRH are more suited to this purpose. Moisture readings tests taken with the *CME 4* indicate the conditions at the time of testing.

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Warranty

Tramex warrants that this instrument will be free from defects and faulty workmanship for a period of one year from date of first purchase.

If a fault develops during the warranty period, Tramex, at its option, will, at its absolute discretion, either repair the defective product without charge for the parts and labour, or will provide a replacement in exchange for the defective product returned to Tramex Ltd.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care.

In no event shall Tramex, its agents or distributors be liable to the customer or any other person, company or organisation for any special, indirect, or consequential loss or damage of any type whatsoever (including, without limitation, loss of business, revenue, profits, data, savings or goodwill), whether occasioned by the act, breach, omission, default, or negligence of Tramex Ltd., whether or not foreseeable, arising howsoever out of or in connection with the sale of this product including arising out of breach of contract, tort, misrepresentation or arising from statute or indemnity.

Without prejudice to the above, all other warranties, representations and conditions whether made orally or implied by circumstances, custom, contract, equity, statute or common law are hereby excluded, including all terms implied by Section 13, 14 and 15 of the Sale of Goods Act 1893.

Warranty claims

A defective product should be returned shipping pre paid, with full description of defect to your supplier or Tramex at address shown below.

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Product development

It is the policy of Tramex to continually improve and update all its products.

We therefore reserve the right to alter the specification or design of this instrument without prior notice.

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