



GE Protimeter *Moisture Measurement System*



Protimeter MMS. For moisture, humidity and temperature measurement in buildings.

Protimeter MMS - three meters in one

The Moisture Measurement System from GE Protimeter merges moisture meter and hygrometer functionality into one product to give a highly versatile moisture measuring instrument and a powerful dampness diagnosis tool. Three primary modes of operation are available:



- *Moisture meter modes, for rapid moisture level measurement of woodwork, walls and floors*
- *Hygrometer mode, for measuring relative humidity and temperature of environments*
- *Condensator mode, for condensation risk assessment and confirmation*

Moisture Meter Modes

The MMS may be used as a moisture meter in two operational modes to suit a wide range of measurement applications and requirements.

- *Search mode uses radio frequency technology to give a relative measurement of moisture beneath surfaces*
- *Measure mode uses pin-type electrodes to give precise wood moisture equivalent (WME) measurements in wood and masonry*



The Search mode gives instant relative moisture condition measurements within walls and floors. This capability is useful for identifying areas of concern that may then require a more detailed investigation. It is also ideal for monitoring the

moisture level of large areas and for routine surveying where it may be impractical or undesirable to mark the surface with pin electrodes.

The Measure mode gives actual moisture content values in wood and wood moisture equivalent (WME) values in other non-conductive materials. WME values may be used to assess the moisture condition of the materials, as the critical moisture level thresholds for wood are



known. The measurement is precise and specific to the contact area of the pin electrodes or deep wall probes.

When the Search and Measure modes are used together surface moisture can be distinguished from sub-surface moisture. This capability gives surveyors and other users a better understanding of drying profiles in material and aids dampness diagnosis.

Hygrometer Mode

In Hygrometer mode the MMS measures

- *Relative humidity*
- *Ambient temperature*
- *Dew point*
- *Mixing ratio/absolute humidity (MMS-Plus only)*

The MMS uses the interchangeable and replaceable Hygrostick(tm) sensor to measure

humidity and temperature. The Hygrostick may be connected directly into the MMS instrument for measuring conditions in rooms and other environments or via an extension lead. This facility makes the MMS an ideal instrument to measure the

Equilibrium Relative Humidity (ERH) of walls and floors using Hygrosticks that have been placed into pre-drilled clearance holes.

Condensator Mode

The Condensator mode is used for confirming the presence of condensation and/or risk assessment by comparing surface temperatures with the dew point of the environment under investigation. When used with the surface temperature sensor the MMS can make the following measurements.

- *Relative humidity*
- *Ambient temperature*
- *Dew point*
- *Surface temperature*
- *Difference between surface temperature and dew point*



Moisture Measurement in Buildings

The versatility of the Protimeter MMS makes it suitable for a wide range of measurement applications within buildings ranging from moisture level monitoring to complex dampness diagnosis. The MMS is widely used across the globe by professionals working in the following areas:

- *Dampness diagnosis consultants*
- *Insurance/loss adjustment*
- *Disaster restoration service providers*
- *Contract flooring installation*
- *Environmental health/indoor air quality*

Dampness Diagnosis



Surveyors involved with identifying the causes of dampness in buildings need to know the humidity and temperature levels in the building and the moisture levels in the walls and floors. By using all

operational modes of the MMS they can identify the scale and extent of a moisture problem and establish if it is due to condensation, rising dampness or lateral ingress. The ability to measure moisture in various ways gives surveyors different perspectives that help them to test and check their thoughts. In turn, this leads to more thorough and reliable diagnosis.

Contract Flooring

Wood, textile and resilient floor coverings are prone to premature failure if they are laid onto damp floors, so building/flooring contractors should pay great attention to measuring the moisture content of the sub-floor prior to laying floor coverings. The MMS is an ideal tool for this role because it enables the contractor to make rapid moisture condition assessments and to take precise ERH readings. By using the MMS in Search mode the contractor can quickly assess the moisture condition of slabs and screeds. WME mode can be used to measure surface conditions and to measure the



moisture content of wooden flooring delivered to site for conditioning. In Hygrometer mode the MMS may be used to measure the ERH of the slab or screed with a humidity box (in accordance with British Standard test procedures) or with Protimeter humidity sleeves that are inserted into pre-drilled clearance holes.

Disaster Restoration

Disaster restoration professionals need to monitor the drying rate of flooded buildings and may also need to monitor the performance of their dryers. The MMS-Plus has additional functionality that satisfies this need. When used in Hygrometer mode it can display the mixing ratio (absolute humidity) of the air in either g/kg or grains/lb in addition to the relative humidity, air temperature and dew point. An optional low humidity range probe can also be used with the MMS-Plus. This is required if measuring the humidity of the output air from desiccant dryers.

Protimeter MMS Features and Options

The MMS is available in two versions, the standard configuration and the MMS-Plus configuration. The standard MMS meets the requirements of most user groups with the following features:

- *Moisture meter modes*
- *Hygrometer mode*
- *Condensator mode*


In addition to the standard MMS functionality the MMS-Plus has the following additional features and benefits that are especially useful to the disaster restoration industry:

- *Measures mixing ratio/absolute humidity*
- *May be used with an optional low range humidity probe that measures from 0-40% relative humidity.*

Both versions of the MMS have a memory in which the user can store measurements for downloading (with optional software) to a PC at a later time. Humidity sleeves and boxes are available to facilitate taking ERH measurements in floor slabs and walls for both monitoring and dampness diagnosis applications.



Technical Specification

Model	Protimeter MMS	Protimeter MMS - Plus
Measurement functions	<ul style="list-style-type: none"> Moisture meter modes: <ol style="list-style-type: none"> Measure mode: conductivity type Search mode: capacitance type Hygrometer mode: <ol style="list-style-type: none"> relative humidity air temperature dew point temperature Condensator mode: <ol style="list-style-type: none"> relative humidity air temperature dew point temperature surface temperature surface-dew point temperature difference 	<ul style="list-style-type: none"> Moisture meter modes: <ol style="list-style-type: none"> Measure mode: conductivity type Search mode: capacitance type Hygrometer mode: <ol style="list-style-type: none"> relative humidity air temperature dew point temperature mixing ratio/absolute humidity Condensator mode: <ol style="list-style-type: none"> relative humidity air temperature dew point temperature surface temperature surface-dew point temperature difference
Scope of supply 	Moisture Measurement System instrument, Hygrostick, Hygrostick extension lead, surface temperature sensor, moisture probe, deep wall probes, carry case, user instructions.	Moisture Measurement System instrument (Low Humidity version), Hygrostick, Hygrostick extension lead, surface temperature sensor, moisture probe, deep wall probes, carry case, user instructions.
Gross weight & gross dimensions	1 kg 240 x 90 x 210 mm	1 kg 240 x 90 x 210 mm
Measure mode WME range	7.8 - 99.9. Nominal uncertainty in wood to fibre saturation (typically 30%) is ± 2 . Values from fibre saturation to 99.9 are relative.	7.8 - 99.9. Nominal uncertainty in wood to fibre saturation (typically 30%) is ± 2 . Values from fibre saturation to 99.9 are relative.
Search mode range	0 - 1000. Relative scale reading.	0 - 1000. Relative scale reading.
Hygrostick range	30 - 100 %rh. $\pm 2.5\%$ rh in the 30 - 40%rh range, $\pm 1.8\%$ rh in the 40-98% rh range	30 - 100 %rh. $\pm 2.5\%$ rh in the 30 - 40%rh range, $\pm 1.8\%$ rh in the 40-98% rh range
Low Humidity probe range*	Not applicable	0 - 40%rh. $\pm 2.5\%$ rh * Optional extra, not supplied as standard
Temperature range	- 10 to 50 °C, ± 0.3 °C	- 10 to 50 °C, ± 0.3 °C

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GE Protimeter plc

+ 44 (0) 1625 533444

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WWW.SURVSYS.CO.UK