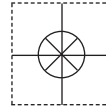


1 YEAR
WARRANTY



Ω OMEGA® User's Guide



***Shop online at
omega.com®***

***e-mail: info@omega.com
For latest product manuals:
omegamanual.info***

ISO 9001
CERTIFIED
CORPORATE QUALITY

STAMFORD, CT

ISO 9001
CERTIFIED
CORPORATE QUALITY

MANCHESTER, UK

MADE IN TAIWAN

HSM50 Soil Moisture Meter



OMEGAnet® Online Service
omega.com

Internet e-mail
info@omega.com

Servicing North America:

U.S.A.:
ISO 9001 Certified

Omega Engineering, Inc., One Omega Drive, P.O. Box 4047
Stamford, CT 06907-0047 USA
Toll Free: 1-800-826-6342
FAX: (203) 359-7700
TEL: (203) 359-1660
e-mail: info@omega.com

Canada:

976 Bergar
Laval (Quebec), H7L 5A1 Canada
Toll-Free: 1-800-826-6342
FAX: (514) 856-6886
TEL: (514) 856-6928
e-mail: info@omega.ca

For immediate technical or application assistance:

U.S.A. and Canada: Sales Service: 1-800-826-6342/1-800-TC-OMEGA®
Customer Service: 1-800-622-2378/1-800-622-BEST®
Engineering Service: 1-800-872-9436/1-800-USA-WHEN®

**Mexico/
Latin America**

En Español: 001 (203) 359-7803
info@omega.com.mx
FAX: 001 (203) 359-7807
e-mail: espanol@omega.com

Servicing Europe:

Benelux:

Managed by the United Kingdom Office
Toll-Free: 0800 099 3344
FAX: +31 20 643 46 43
TEL: +31 20 347 21 21
e-mail: sales@omegaeng.nl

Czech Republic:

Frystatska 184
733 01 Karviná, Czech Republic
Toll-Free: 0800-1-66342
FAX: +420-59-6311114
TEL: +420-59-6311899
e-mail: info@omegashop.cz

France:

Managed by the United Kingdom Office
Toll-Free: 0800 466 342
FAX: +33 (0) 130 57 54 27
TEL: +33 (0) 161 37 29 00
e-mail: sales@omega.fr

Germany/Austria:

Daimlerstrasse 26
D-75392 Deckenpfronn, Germany
Toll-Free: 0800 6397678
FAX: +49 (0) 7056 9398-29
TEL: +49 (0) 7056 9398-0
e-mail: info@omega.de

United Kingdom:
ISO 9001 Certified

OMEGA Engineering Ltd.
One Omega Drive, River Bend Technology Centre, Northbank
Irlam, Manchester M44 5BD United Kingdom
Toll-Free: 0800-488-488
FAX: +44 (0) 161 777-6622
TEL: +44 (0) 161 777-6611
e-mail: sales@omega.co.uk

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

TABLE OF CONTENTS

1. FEATURES	1
2. SPECIFICATIONS	1
3. FRONT PANEL DESCRIPTION	3
3-1 Soil moisture Probe	3
3-2 Moisture Sensing Head	3
3-3 Power Button	3
3-4 Hold Button	3
3-5 REC Button	3
3-6 LCD Display	3
3-7 Battery Compartment/Cover	3
4. MEASURING PROCEDURE	4
4-1 Measurement by selecting the different material	4
4-2 Data Hold	5
4-3 Data Record	5
5. BATTERY REPLACEMENT	6

1. FEATURES

- * Designed to check the moisture level of soil or other similar materials.
- * Measurement range : 0 % to 50 % moisture content of soil sample with 0.1 % resolution.
- * All in one digital soil meter, easy to make operation.
- * Data hold function to freeze the desired value on display.
- * Microprocessor circuit ensures high accuracy and provides special functions and features.
- * Operates from DC 1.5V (MN1500-4)
- * Built-in low battery indicator.
- * Durable, long-lasting components, enclosed in strong, compact ABS-plastic housing.

2. SPECIFICATIONS

Applications	Designed to check the moisture level of soil or other similar materials.
Measuring Principal	Used the 2 pins electrode to measure the conductive ability of the species, then converter to the reading of % " Moisture content " of soil sample.
Display	LCD size : 28 mm x 19 mm.

Measurement Range	0 % to 50 % moisture content on soil.
Resolution	0.1 %.
Accuracy	$\pm (5 \% + 5 d)$ F.S. <i>@ 23\pm 5$^{\circ}$C, F.S. : full scale.</i>
Circuit	Custom one-chip of microprocessor LSI circuit.
Probe	2 pins moisture electrode.
Data Hold	Freeze the display reading.
Sampling Time	Approx. 0.8 second.
Operating Temperature	0 to 50 $^{\circ}$ C.
Operating Humidity	Less than 80% R.H.
Power Supply	DC 1.5 V battery (MN1500-4),
Power Current	Approx. DC 12 mA
Weight	267 g/ 0.58 LB. <i>@ Battery is included.</i>
Dimension	<i>Meter body :</i> 6.8" x 1.6" x 1.6" (172 x 40 x 40 mm).
	<i>Probe body :</i> 8.7" x Dia. 0.4" 220 mm x Dia. 10 mm.
	<i>Total length (meter + probe) :</i> 15.4 "(392 mm).
Accessories Included	Instruction manual..... 1 PC.

3. FRONT PANEL DESCRIPTION

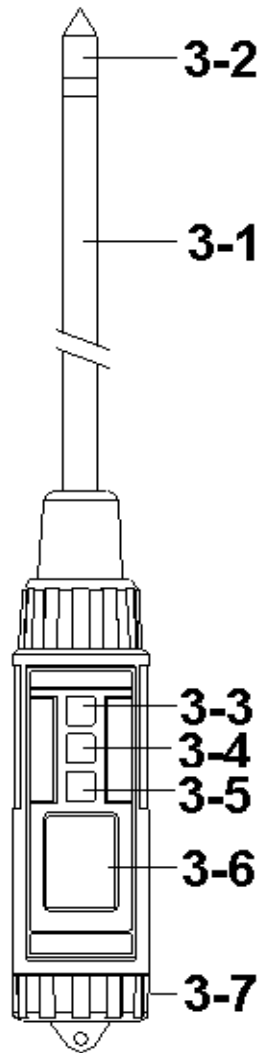


Fig. 1

- 3-1 Soil moisture Probe
- 3-2 Moisture Sensing Head
- 3-3 Power Button
- 3-4 Hold Button
- 3-5 REC Button
- 3-6 LCD Display
- 3-7 Battery Compartment/Cover

4. MEASURING PROCEDURE

4-1 Soil measurement

- 1) Turn on the meter by pressing the " Power Button " (3-3, Fig. 1) momentarily.

** Press the " Power Button " (3-3, Fig. 1) momentarily again will turn off the meter.*

- 2) Insert the " Moisture sensing head " (3-2, Fig. 1) into the measured soil.

It is recommended that probe head should be inserted into the soil at least 10 cm (4 inches) when making the measurement.

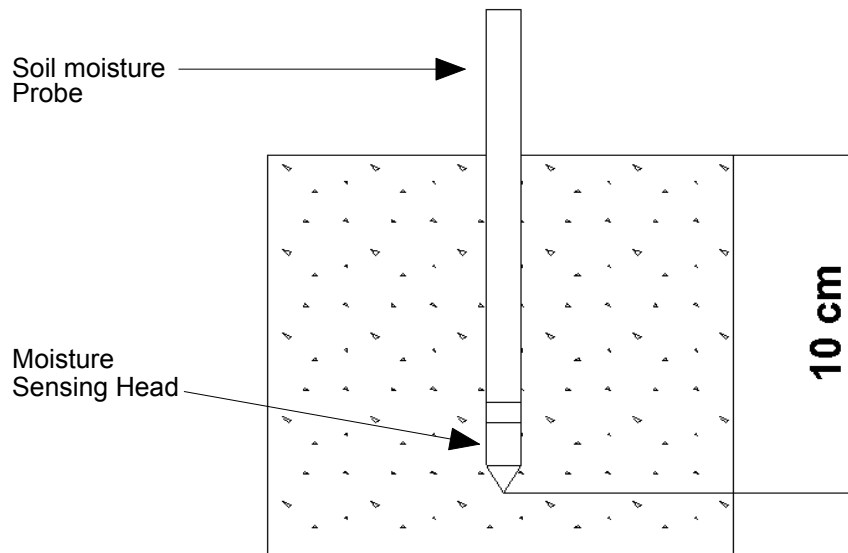


Fig. 2

Consideration :

If the sample soil under testing has a high moisture content it may take a few minutes to obtain a stable reading.

4-2 Data Hold

- * During the measurement, press the " Hold Button " (3-4, Fig. 1) momentarily to hold the measured value. The LCD will show a " HOLD " symbol.
- * Press the " Hold Button " once again to release the data hold function.


4-3 Data Record (Max., Min. reading)

- 1) The data record function records the maximum and minimum readings. Press the " REC Button " (3-5, Fig. 1) momentarily to start the Data Record function, shows " REC " on the display.
- 2) With the " REC " symbol on the display.
 - a) Press the " REC Button " (3-5, Fig. 1) momentarily, the " REC MAX " symbol along with the maximum value will appear on the display.
 - b) Press the " REC Button " (3-5, Fig. 1) momentarily again, the " REC MIN " symbol along with the minimum value will appear on the display.

** When display shows " REC MAX " or " REC MIN ", press the " Hold Button " (3-4, Fig. 1) momentarily will delete the max. (min.) value, the display will show the " REC. " only and execute the memory function continuously.*

- c) To exit the memory record function, press the " REC " button for 2 seconds at least. The display will revert to the current reading, and not show " REC "

5. BATTERY REPLACEMENT

- * Replace the batteries when the left corner of the LCD displays the low battery icon , using 4 fresh 1.5 V (AAA) batteries.
- * To change the batteries, open (rotate clockwise direction) the " Battery Cover " (3-7, Fig. 1).
- * Make sure the " Battery cover " (3-7, Fig 1) is secured after changing the batteries.



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2012 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

Where Do I Find Everything I Need for Process Measurement and Control? **OMEGA...Of Course!** *Shop online at omega.comsm*

TEMPERATURE

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION

- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Data Logging Systems
- Recorders, Printers & Plotters

HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments