WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of 10 years from date of purchase. OM EGA Warranty adds an additional one (1) month grace period to the normal (10) year period of coverage. OM EGA cannot be held responsible for damage caused by handling and shipping. This ensures that our products are not damaged during handling and shipping. This warranty, however, does not extend to any defects or damage caused by the customer or the battery for evaluation. Our Customer Service Department will issue an Authorized Return Authorization Number immediately upon receipt of the unit. Upon examination by OM EGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this warranty is VOID if the unit shows evidence of having been tampered with or shows evidence of being returned as a result of warranty claims to another party. OM EGA shall not be responsible for loss or damage to data, memories or other operating conditions outside of OM EGA’s control. Components which were or which are damaged by abuse are not warranted. This includes contact points, lenses, and lenses.

We are pleased to offer suggestions on the use of our various products. Nevertheless, OM EGA only warrants 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, EXPRESSED 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 buyer and third parties are limited to the total liability of OM EGA with respect to this order, whether based on contract, warranty, negligence, or other tortious conduct. The presence of a component upon which liability is based. In no event shall OM EGA’s liability exceed the purchase price of the component upon which liability is based. In no event shall OM EGA be liable for consequential, incidental or special damages.

Every precaution for accuracy has been taken in the preparation of this manual; however, OM EGA ENGINEERING, INC. disclaims all responsibility for any omissions or errors that may appear or assume liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITION: Should this equipment be used in or with any nuclear installation or activity, buyer will indemnify OM EGA and hold OM EGA harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and return requests and issues to the OM EGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada 1-800-823-2378 FAX 203-895-1611.

BEFORE RETURNING ANY PRODUCTS TO OM EGA, YOU MUST OBTAIN AN AUTHORIZED RETURN AND REPAIR FORM FROM CUSTOMER SERVICE DEPARTMENT IN ORDER TO AVOID REPROCESSING FEES. The assigned A number should then be marked on the outside of the package and the return is accompanied.

FOR W ARRANTY RETURNS, please refer to the information available BEFORE contacting OM EGA;

1. P.O. 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 you are having with the product.

OMEGA’s policy is to make every attempt to replace defective parts, not replace the unit, whenever an improvement is possible. This reflects our commitment to the latest in technology and engineering.

OMEGA ENGINEERING, INC.

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SAFETY INFORMATION

The following safety information must be observed to insure maximum personal safety during the operation at this meter:

Always inspect your meter, test leads and accessories for any sign of damage or abnormality before every use. If any abnormal conditions exist (eg-broken test leads, cracked cases, display not reading, etc.), do not attempt to take any measurements. Do not expose the instrument to direct sun light, extreme temperature or moisture.

Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.

To avoid electric shock use CAUTION when working with voltages above 40Vdc or 20Vac. Such voltages pose a shock hazard. Never exceed the maximum allowable input value of any function when taking a measurement. Refer to the specifications for maximum inputs. Never touch exposed wiring, connections or any live circuit when attempting to take measurements.

When using the probes, keep your fingers behind the finger guards on the probes.

Measuring voltage which exceeds the limits of the multimeter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.
SPECIFICATIONS

Display: 3½ digit liquid crystal display (LCD) with a maximum reading of 1999.

Polarity: Automatic, positive implied, negative polarity indication.

Overrange: (1) or (-1) is displayed.

Zero: Automatic.

Low battery indication: The “□□” is displayed when the battery voltage drops below the operating level.

Measurement rate: 2.5 times per second, nominal.

Operating environment: 0°C to 50°C at < 70% relative humidity.

Storage temperature: -20°C to 60°C, 0 to 80% R.H. with battery removed from meter.

Temperature coefficient: 0.1 × (specified accuracy) / per °C (0°C to 18°C, 25°C to 50°C).

Altitude: 6561.7 Feet (2000M).


Battery life: 300 hours typical with carbon-zinc.

Dimensions (H)×(W)×(D): 143mm×68mm×47mm (5.63×2.68×1.85 inches).

Weight: Approx. 206g(7.27oz) including battery.

Accessories: One pair test leads, 9V battery (installed) and Operating Instructions.
DC VOLTS
Ranges: 2V, 20V, 200V, 600V
Resolution: 1mV
Accuracy: ±(2.0% rdg + 1 dgt)
Input impedance: 10MΩ
Overload protection: 600VDC or AC rms

AC VOLTS (50Hz - 500Hz)
Ranges: 200V, 600V
Resolution: 100mV
Accuracy: ±(2.5% rdg + 4 dgt)
Input impedance: 4.5MΩ
Overload protection: 600VDC or AC rms

DC CURRENT
Ranges: 200μA, 2mA, 20mA, 200mA, 10A
Resolution: 0.1μA
Accuracy:
±(2.5% rdg + 2 dgt) on 200μA to 20mA range
±(3.5% rdg + 4 dgt) on 10A range
Input protection:
0.5A/250V fast blow fuse
10A/600V fast blow ceramic fuse

RESISTANCE
Ranges: 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ
Resolution: 100mΩ
Accuracy:
±(2.0% rdg + 3 dgt) on 200Ω range
±(2.0% rdg + 1 dgt) on 2kΩ to 200kΩ range
±(3.5% rdg + 4 dgt) on 2MΩ range
Open circuit volts: 0.3Vdc (3.0Vdc on 200Ω)
Overload protection: 500VDC or AC rms
DIODE TEST

Test current: 1.0mA ±0.6mA
Accuracy: ±(3.0% rdg + 1 dgt)
Open circuit volts: 3.0Vdc typical
Overload protection: 500VDC or AC rms

BATTERY TEST

Ranges: 1.5V, 9V
Resolution: 1mV, 10mV
Accuracy: ±(3.5% rdg + 2 dgt)
Loaded current:

- 150mA typical for 1.5V range
- 6mV typical for 9V range
OPERATION

Before taking any measurements, read the Safety Information Section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

Voltage Measurements
1. Connect the red test lead to the “VΩ” jack and the black test lead to the “COM” jack.
2. Set the Function/Range switch to the desired Voltage type (AC or DC) and range. If magnitude of voltage is not known, set switch to the highest range and reduce until a satisfactory reading is obtained.
3. Connect the test leads to the device or circuit being measured.
4. For dc, a (−) sign is displayed for negative polarity; positive polarity is implied.

Current Measurements
1. Set the Function/Range switch to the desired current range.
2. For current measurements less than 200mA, connect the red test lead to the μA/mA jack and the black test lead to the COM jack.
3. For current measurements of greater 200mA, connect the red test lead to the 10A jack and the black test lead to the COM jack.
4. Remove power from the circuit under test and open the normal circuit path where the measurement is to be taken. Connect the meter in series with the circuit.
5. Apply power and read the value of the display.
Resistance Measurements
1. Set the Function/Range switch to the desired resistance range.
2. Remove power from the equipment under test.
3. Connect the red test lead to the "\(\Omega\)" jack and the black test lead to the "\(\text{COM}\)" jack.
4. Connect the test leads to the points of measurements and read the value from the display.

Diode Tests
1. Connect the red test lead to the "\(\Omega\)" jack and the black test lead to the "\(\text{COM}\)" jack.
2. Set the Function/Range switch to the "\(+\)" position.
3. Turn off power to the circuit under test. External voltage across the components causes invalid readings.
4. Touch probes to the diode. A forward-voltage drop is about 0.6V (typical for a silicon diode).
5. Reverse probes. If the diode is good, "1" is displayed. If the diode is shorted, "0" or another number is displayed.
6. If the diode is open, "1" is displayed in both directions.

Battery Test
1. Connect the red test lead to the "\(\mu\text{A/mA}\)" jack and the black test lead to "\(\text{COM}\)" jack.
2. Set the Function/Range switch to the desired 1.5V or 9V battery test range.
3. Connect the test leads to the 1.5Vdc battery under test. Normally, a good 1.5Vdc battery will read above 1.25Vdc. Consult the battery manufacturer for complete battery specifications to determine actual battery life remaining and condition of battery.
MAINTENANCE

Maintenance consists of periodic cleaning and battery replacement. The exterior of the instrument can be cleaned with a dry clean cloth to remove any oil, grease or grime. Never use liquid solvents or detergents.

Repairs or servicing not covered in this manual should only be performed by qualified personnel.

Battery Replacement

**WARNING**

TO AVOID ELECTRICAL SHOCK, DISCONNECT THE TEST LEADS AND ANY INPUT SIGNALS BEFORE REPLACING THE BATTERY. REPLACE ONLY WITH SAME TYPE OF BATTERY.

This meter is powered by a NEDA type 1604 or equivalent 9-volt battery. When the meter displays the "EE" the battery must be replaced to maintain proper operation. To replace the battery, remove the three screws from the back of the meter and open the bottom case, remove the battery from battery room.

Fuse Replacement

If no current measurements are possible, check for a blown overload protection fuse. There are two fuses; F1 for the μA/mA jack and F2 for the 10A jack. For access to fuses, remove the three screws from the back of the meter and open the bottom case. Replace F1 only with the original type 0.5A/250V, fast acting fuse. Replace F2 only with the original type 10A/600V, fast acting ceramic fuse.
NOTE
The instrument complies with class II, overvoltage CAT. III of the IEC1010-1 (EN61010-1) standard. Pollution degree 2 in accordance with IEC-664 indoor use. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

⚠️ CAUTION When servicing, use only specified replacement parts or equivalent.

The symbols used on this instrument are:

⚠️ Caution, risk of electric shock
⚠️ Caution, refer to accompanying documents
☉ Equipment protected throughout by Double insulation (Class II)
≈ Alternating current
∟ Direct current
↓ Ground

CE
This product complies with the requirements of the following European Community Directives: 89/336/EEC (Electromagnetic Compatibility) and 73/23/EEC (Low Voltage) as amended by 93/68/EEC (CE Marking).

However, electrical noise or intense electromagnetic fields in the vicinity of the equipment may disturb the measurement circuit. Measuring instruments will also respond to unwanted signals that may be present within the measurement circuit. Users should exercise care and take appropriate precautions to avoid misleading results when making measurements in the presence of electromagnetic interference.
OMEGA... Your Source for Process Measurement and Control

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

PRESSURE/STRAIN FORCE
- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL
- Flowmeters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Turbine/Level Systems
- Transmitters & Switch Controllers

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

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

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

ENVIRONMENTAL MONITORING AND CONTROL
- Measuring & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

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P/N: 7000-1545