

OPERATING INSTRUCTIONS
for
AMPROBE



**Digital Clamp-On
Model DRS-1**



PRECAUTIONS FOR PERSONAL AND INSTRUMENT PROTECTION

- 1) Read these instructions thoroughly and follow them carefully.
- 2) In many instances you will be working with dangerous levels of voltage and/or current: therefore, it is important that you avoid direct contact with any uninsulated, current-carrying surfaces. Appropriate insulating gloves and clothing should be worn.
- 3) Before connecting or disconnecting the meter to or from the circuit to be tested, turn off all power to the circuit.
- 4) Before applying test leads to circuit under test, make certain that leads are plugged into proper jacks and switches are set to proper range and function.
- 5) Before using any electrical instruments or tester for actual testing, the unit should be checked on a low energy high impedance source. **Do not use power distribution lines or any other high energy sources.**
- 6) If the instrument should indicate that voltage is not present in circuit, do not touch circuit until you have checked to see that all instrument switches are in proper position and instrument has been checked on a known live line.
- 7) Make certain no voltage is present in circuit before connecting ohmmeter to circuit.
- 8) Do not use or store this instrument in a high temperature or high humidity environment and do not store the unit in direct sunlight.
- 9) Do not replace battery with power on condition.
- 10) If the unit is not going to be used for a long period of time, remove the battery.

IMPORTANT: Plug in only one accessory probe or set of test leads at any one time, except as directed.

IMPORTANT: Failure to follow these instructions and/or precautions may result in personal injury and/or damage to the instrument and/or accessories.

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LIMITED WARRANTY

Congratulations! You are now the owner of an AMPROBE instrument. It has been quality crafted according to quality standards and contains quality components and workmanship. This instrument has been inspected for proper operation of all its functions. It has been tested by qualified factory technicians according to the long-established standards of AMPROBE.

Your AMPROBE instrument has a limited warranty against defective materials and/or workmanship for one year from the date of purchase provided that, in the opinion of the factory, the instrument has not been tampered with or taken apart.

Should your instrument fail due to defective materials, and/or workmanship during the one-year warranty period, return it along with a copy of your dated bill of sale which must identify instrument by model number and manufacturing number.

For your protection, please use the instrument as soon as possible. If damaged, or should the need arise to return your instrument, it must be securely wrapped (to prevent damage in transit) and sent via Air Parcel Post insured or UPS where available to:

Service Division
AMPROBE®
630 Merrick Road (For U.P.S.)
P.O. Box 329 (For Parcel Post)
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe representative will assist you. Above limited warranty covers repair and replacement of instrument only and no other obligation is stated or implied.

UNPACKING AND INSPECTION OF CONTENTS

Included with the Clamp-On meter should be the following items:

- 1) Two test leads; one black, one red, Model: DTL-12
- 2) Instruction Booklet
- 3) Carrying Case

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REFERENCE DESIGNATION cont.

-  DOUBLE INSULATION - Protection Class II
-  CAUTION - Indicates where cautionary or other information is found in the manual.
-  CAUTION - Risk of electric shock.
-  BATTERY

DESCRIPTION

Model DRS-1 will directly measure AC current, AC & DC voltage and resistance. It is average sensing but calibrated to give an RMS readout of a sine wave. When the HOLD button is activated, the reading in the display is held indefinitely. The instrument is manual ranging with a 3 1/2" digit display.

FEATURES

- 3 1/2" digit large LCD display
- AC 600 Amps capability
- AC 600 Volts capability
- DC 600 Volts capability
- 200 Ohms resistance range
- Continuity beeper
- Display hold
- Circuit protection to 600 Volts
- Insulated input jacks
- Standard 9V battery
- Up to 32mm dia (750 MCM) conductor
- 4 feet drop proof
- Safety test leads
- Protective carrying case
- Hand guard design
- Meet IEC1010-1 / UL3111 Standard

CIRCUIT PROTECTION

The OHM/CONTINUITY function is protected to a maximum 550 volts by utilizing a positive temperature coefficient resistor (PTC). All resistance ranges are protected against misapplication of voltage for no longer than one minute.

REFERENCE DESIGNATION

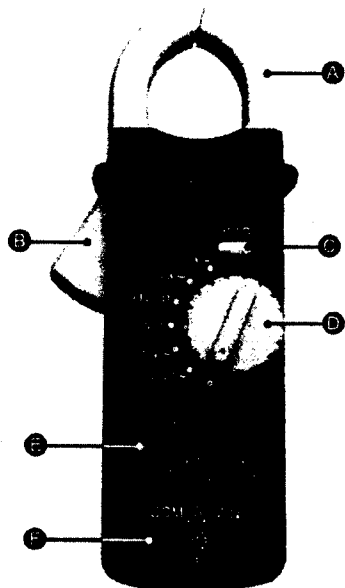


Fig. 1 - DRS-1

- A. **Transformer Jaws** - Designed to pick up the AC current flowing through the conductor.
- B. **Trigger** - Press the lever to open the transformer jaws. When the pressure on the lever is released, the jaws will close again.
- C. **Data Hold Switch** - Holds displayed reading for all functions and ranges.
- D. **Rotary Switch** - this switch is used to select 600A~, 200A~, 200Ω, 600V ~~, 600V~, 200V~, and Off.
- E. **Digital Display** - The digital display has a 3-1/2 digit LCD readout (maximum reading 1999) including decimal point, , and .
- F. **Input Terminals** - The black test lead is always connected to the "COM" input jack and the red test lead is always connected to the "V-Ω" input jack for measuring ACV and OHMS.

LCD ANNUNCIATORS

OHMS / Continuity Mode

"1 ." will appear when the rotary switch is in Ω 200 Ω and measured resistance is $>199.9\Omega$ (Fig. 2).

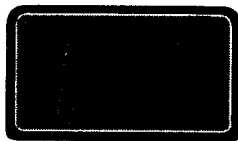


Fig. 2- OHMS / Continuity Mode Overrange Indication
(Note: This is the Overrange for the 200.0 Volt & 200.0 Amp range as well)

Data Hold Push Button

An  will appear when the yellow Data Hold Push Button is depressed (Fig. 3).

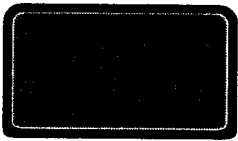


Fig. 3 - Data Hold Push Button

Low Battery Indication

Replace the battery when the low battery indication appears in the lower left hand side of the display as soon as possible (Fig. 4).

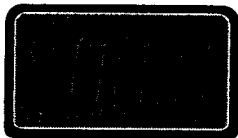


Fig. 4 - Low Battery Indication

Note: The DRS-1 may give erroneous readings with a low battery. Use a MN1604 9V Alkaline battery.

BATTERY INSTALLATION OR REPLACEMENT

The meter is Powered by a single 9V battery. It is recommended that an Alkaline battery be used for longer performance.

1. Disconnect the test leads from the front terminals and turn the meter off.
2. Remove the case bottom (Item K) from the instrument by removing the two screws (Item G) and then lifting the case top.
3. Lift the battery from the case bottom, and carefully disconnect the battery connector leads (Item J).
4. Snap the battery connector leads to the terminals of a new battery (Item I) and reinsert the battery into the case bottom. Make sure that the battery leads do not become pinched between the case bottom and case top (Item H).
5. Replace the case bottom and reinstall both of the screws.

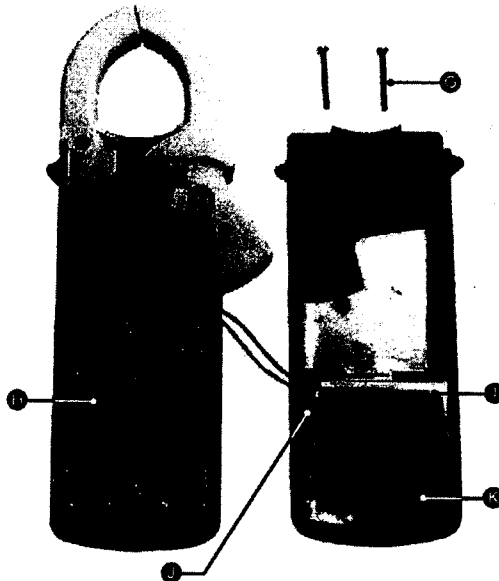


Fig. 5 - DRS-1 with back cover removed

- G. Screws - remove these to replace the battery
- H. Case Top - contains all electrical components
- I. Battery - 9V Alkaline Battery
- J. Battery Connector Leads - connect to battery
- K. Case Bottom - holds the 9V Alkaline Battery

IMPORTANT
Read "PRECAUTIONS FOR PERSONAL & INSTRUMENT
PROTECTION" before using instrument.

HOW TO MEASURE AC & DC VOLTAGE

1. Connect voltage test leads to instrument (Red to V and Black to COM).
2. Turn instrument on and turn function select switch to required voltage range.
3. Be sure that the "HOLD" switch is not depressed.
4. Apply test probes to points of circuit to be measured.

HOW TO MEASURE AC CURRENT

1. Disconnect voltage test leads if connected to the instrument.
2. Turn instrument on by turning function select switch to "200 A~" position.
3. Be sure that the "HOLD" switch button is not depressed.
4. Encircle single conductor with jaws of instrument.
5. Release finger pressure on trigger and allow jaws to close around conductor.
6. If current to be measured is greater than 200 Amps, turn range selector switch to a higher range.

HOW TO MEASURE RESISTANCE

Note: Remove power from equipment before making resistance measurements.

- 1) Connect test leads to instrument (Red to V and Black to COM).
- 2) Turn instrument on by turning the rotary switch to "200Ω" position.
- 3) Be sure that the "HOLD" switch button is not depressed.
- 4) For continuity check, the buzzer will sound for resistance <50Ω, when test probes are connected to resistance to be checked.
- 5) For measurements of Ohms; read the display directly when the test probes are connected to resistance to be checked.

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SPECIFICATIONS

Type of Display: 3-1/2 digits LCD, 1999 count
Size of Digits: 0.6"
Over-range Indication: "1 ." or "-1"
Low Battery Indication: In display, 
Functions: AC Amps, AC & DC Volts, Ohms, Continuity, Hold
Function Select: Rotary Switch (7 Positions)
Ranging: Manual

AC Conversion Type: Average sensing RMS indicating for a sinewave.

AC Volts: 200V, 600V (50-400Hz)
Resolution: 0.1V for 200V, 1V for 600V range
Overload Protection: 600 Vrms
Input Impedance: 2 Mega ohms // 2n F approx.
Accuracy: ± (1.2% of rdg. +3 LSD)

DC Volts: 600V
Resolution: 1V for 600V range
Overload Protection: 600 Vrms
Input Impedance: 2 Mega ohms // 2n F approx.
Accuracy: ± (0.9% of rdg. +2 LSD)

AC Current: 200A, 600A (50-60Hz)
Resolution: 0.1A for 200A, 1A for 600A range
Overload Protection: 630 Amps rms
Accuracy: 200A ± (1.9% of rdg. +8 LSD)
600A ± (1.5% of rdg. +5 LSD) for 0-400A
± (2.5% of rdg. +5 LSD) for 400-600A

Ohms: 200Ω; Resolution 0.1Ω
Accuracy: ± (1.5% of rdg. + 2 LSD)

Ohms/Continuity: Circuit Protection 600Vrms for one minute by PTC.
Continuity with Buzzer: 0-50Ω (approximate)

Hold Function: Separate button on front panel. No decay in reading.
Power Supply: 9V battery (NEDA 1604, IEC 6F22)
Measurement Rate: 4 times per second
Maximum Jaw Opening: 1.50" (38mm)
Maximum Conductor Size: 1.26" (32mm)
Response Time: Not more than 5 seconds with no more than 3 LSD fluctuations.

Temperature Coefficient: 0.2 x (spec. acc'y)/ °C, <18°C or >28°C
Drop Proof: 4 feet

Maximum Altitude: 6561 ft. (2000m)
Operating Temp/Humidity: 32°F to 113°F (0°C to 45°C) /80%
Max relative humidity for temperatures up to 87.8°F (31°C) decreasing linearly to 50% RH at 104°F (40°C).

Storage Temp: -4°F to 140°F (-20°C to 60°C)
Weight: 13.40 oz. (380 g.)

Size: 3.35" (W) x 7.95" (L) x 1.69" (H) (85mm x 202mm x 43mm)

Battery Life: Alkaline - 400 Hrs.

Safety Standards:

UL3111-1, CAN/CSA-C22.2 No. 1010.1-92, (indoor use).

Insulation Coordination: Installation IEC 1010 Category III 600V,
Pollution Degree 2

Surge Protection: 6KV peak per IEC1010-1, 1990-09.
600V Category III per UL-3111-1, CAS/CAN
C22.2 No. 1010.1-92, EN61010 part 1:1993

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HELPFUL HINTS FOR GETTING TOP PERFORMANCE FROM YOUR DIGITAL CLAMP-ON

1. When measuring Amps, be sure to center the jaws of the Clamp-On around the conductor whose current is being measured.
2. Be sure the jaws are completely closed before taking a current reading.
3. When measuring current of widely varying values, start with the conductor in which you expect to find the lowest current, then the next highest, etc. To reduce the possibility of retained magnetism in the jaw, open and close the jaw a few times between measurements.

CLEANING AND STORAGE INSTRUCTIONS

Instrument should be cleaned with a damp cloth. Do not use abrasives or solvents. Open the clamp jaws and wipe the laminations with a lightly oiled cloth. If instrument will not be used for a long period of time, remove battery. Store it separately.

ACCESSORIES & REPLACEMENT PARTS

Below is a listing of Amprobe accessories & replacement parts for use with the DRS-1:

- A-47L - Energizer (Line-splitter)
- A50 -1 - Decatran (± 10 , 1200 Amp max.)
- 904751 - Instruction book
- SV-16 - Carrying case
- DTL-12 - Standard Test Leads
(Set of two - Red & Black)
- MN-1604 - 9 Volt Alkaline Battery

SERVICE

Manufacturing number is located on the back label of the instrument. For factory service, package instrument and packing slip with sufficient cushioning material in a shipping carton; make certain your name and address also appear on box as well as packing slip; ship prepaid via U.P.S. (where available) or Air Parcel Post to:

Service Division
AMPROBE®
630 Merrick Road (Use for U.P.S.)
P.O. Box 329 (Use for Parcel Post)
Lynbrook, NY 11563-0329

Outside the U.S.A. the local Amprobe Representative will assist you.