

## Specifications

### Meter

- Measurements displayed on a 3½-digit LED display.
- Overrange indicated by a flashing 1999.
- The appropriate range selected automatically with the units of measure shown on the mode switch.
- During resistance measurements, a separate LED illuminates when the current source has been activated.

### Current

Refer to the *AAMI Load* section later in this chapter for measurement accuracies.

### Equipment Current

- One range: 0.1 to 15.0 amps.
- Accuracy: 5% of range.

### Resistance

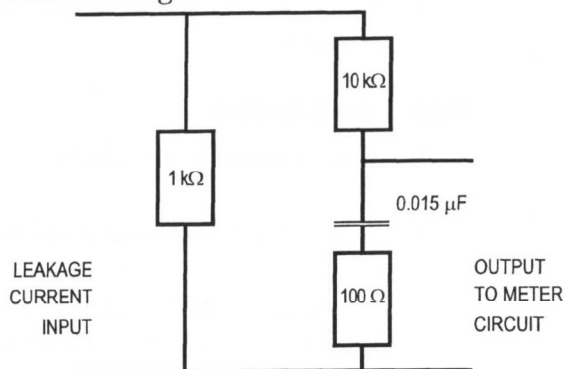
Refer to the *AAMI Load* section later in this chapter for measurement accuracies.

### Voltage

- Three voltage ranges:
  - 0.0 to 199.9 mV
  - 0 to 1999 mV
  - 0.0 to 199.9 V
- AAMI Load used for these measurements.
- Millivolt (mV) ranges autoranging.
- Voltage (V) ranges used for line voltage measurements of the test receptacle powering the analyzer.
- Millivolt (mV) ranges usable for external meter jack measurements.

### AAMI Load

- Simulated patient load recommended by the Association for the Advancement of Medical Instrumentation (AAMI), Safe Current Limits Standard (ANSI/AAMI ES1-1993) (revision of the earlier ANSI/AAMI ES1-1985 and SCL-12/78).
- AAMI Load drawing:



Full Scale Ranges (TRMS): Low: 0.1 to 199.9  $\mu\text{A}/\text{mV}$   
 High: 200 to 1999  $\mu\text{A}/\text{mV}$

Frequency Response: ANSI/AAMI ES1-1993

Accuracy:  $\pm$  (5% or reading +1  $\mu\text{A}$ ) @ DC  
 and from 48 Hz to 100 kHz.

Test Load Impedance: 1000 ohms  $\pm$  0.5% @ DC  
 (ANSI/AAMI ES1-1993)

### Test Receptacle

- Supplies power to the equipment under test
- 120 VAC at 15 amps maximum
- Push-button switches on front panel select
  - NEUTRAL — OPEN and CLOSED
  - GROUND — OPEN and CLOSED
  - POLARITY — NORMAL, REVERSE, and OFF/RESET

**Ground Fault Interrupter**

- Detects a TEST RECEPTACLE ground fault of  $>10 \text{ mA} \pm 10\%$ .
- Disconnects the hot and neutral lines to the TEST RECEPTACLE when a fault is detected.
- Resets by setting the POLARITY switch to the OFF/RESET (center) position.

**Test Lead Jacks**

- Four standard banana jacks.
- Two for the METER input and two for the CURRENT SOURCE.
- Arranged to allow a set of Kelvin cables to be connected to the four terminals and left in for all tests without damaging the analyzer.
- The CURRENT SOURCE connected only internally for resistance measurements, so that it will not interfere with leakage measurements even though the cables are connected to the CURRENT SOURCE jacks.
- All protected against accidental application of line voltage.

**ECG Leads Binding Posts**

- Ten universal binding posts.
- Accept 3.2-mm or 4-mm pins or disposable snap electrocardiograph electrodes.

**Power Requirements**

- 117 VAC at 15 amps 50 to 60 Hz
- Detachable hospital-grade power cord (supplied)
- Uses very little power by itself ( $<100 \text{ mA}$ )
- 15-amp rating for equipment under test plugged into the test receptacle

**Physical Characteristics**

**Size** 22.9-cm L × 22.9-cm W × 10.2-cm H  
(9-in L × 9-in W × 4-in H)

**Weight** 2.07 kg (4.5 lb)

**Temperature Range**

**Operating** 15° to 35°C (59° to 95°F)

**Storage** 0° to 50°C (32° to 122°F)

**Accessories****Standard****DNI Part #**

- |                               |           |
|-------------------------------|-----------|
| • Soft vinyl carrying case    | 9530-0044 |
| • Power cord*                 | 3010-0012 |
| • Kelvin cable test leads (2) | 9501-0032 |
| • Ground pin adapter (2)      | 9503-0004 |
| • 231D/232D Operating Manual  | 9508-0173 |

**\*Note**

The supplied power cord is 14-gauge wire rated at 15 amps.  
***Do not use a smaller size.***

**Optional**

- |                            |           |
|----------------------------|-----------|
| • 231D/232D Service Manual | 9508-0271 |
|----------------------------|-----------|