medTester 5000C Instrument Specifications

Line Voltage and Measurements

- Hot to Neutral.
- Neutral to Ground.
- Hot to Ground.
- Range: 200.0 V RMS.
- Accuracy: ±5% of range.

Leakage Current

Leakage current is measured through a 1 kΩ AAMI load RMS or DC measured and displayed in microamperes. These tests can be thought of as measuring the voltage, in millivolts across the same load.
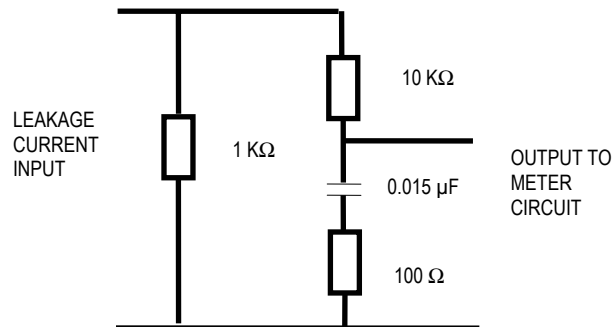
Leakage Current Measurements

- Case external.
- Case internal.
- External.
- ECG—Leads are RL, RA, LA, LL, and V1-V6 tied together:
    1. To ground, all leads or individual leads.
    2. Lead to lead, individual leads to all other leads together.
    3. Lead isolation (RMS only), all leads or individual leads. This test is with line voltage applied from the lead(s) to ground, current limited by 120 kΩ.

Note

If you receive abnormally high leakage current measurements with V1-V6 leads tied together, you can inspect individual V leads by removing the other leads. This procedure allows you to isolate the lead with a high leakage current reading.

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:

- Frequency Response: ANSI/AAMI ES1-1993
- Test Load Impedance: 1000 ohms +/- 1% @ DC (ANSI/AAMI ES1-1993)
- Ranges—2000 μA and 200 μA.
- Range—20.00 A RMS.
- Accuracy—± 1.0% of reading DC and from 48 Hz to 1kHz
      ± 2.5% of reading 1 kHz to 100 kHz
      ± 5.0% of reading 100 kHz to 1 MHz

Equipment Current

Equipment current measures the current used by the EUT plugged into the test receptacle:

- Range—20.00 A RMS.
- Accuracy—±5% of range.

Resistance

Resistance tests measure resistance with the four-terminal test method:

- Measurements—Power cord and external.
- Range—2 Ω.
- Accuracy—±1% of range.
- Test Current—100 mA

Isolated Power

This feature allows the use of the Fluke Biomedical Model 202A Isolation Test Module to make current measurements on an isolated power system. For more information, see Chapter 4, *Manual Tests*.

Toolbox

Toolbox allows for the use of external measurement adapters for:

- Tachometer—with a range of 100 to 20,000 RPM.
- Temperature—with a range of 0 to 200°F or 0 to 100°C.
- Humidity—ranging from 15% to 90% relative.

For more information about Toolbox, see Chapter 4, *Manual Tests*.

Test Receptacle

The medTester 5000C has a test receptacle on the top panel into which the equipment under test (EUT) is plugged. The test receptacle supplies power to the EUT. The EUT must be powered through the test receptacle whenever you measure the following:

- Leakage current—All case and ECG lead measurements.
- Equipment current.
- Power cord resistance.

Test receptacle power is normal except during case and ECG leakage tests (not including isolation tests). For these tests you can set the power to the following conditions, each of which is indicated by annunciator LEDs on the top panel:

- Ground—closed or open.
- Polarity—normal or reversed.
- Neutral—closed or open.

Note

During case internal leakage, ground is always open.

Current is supplied at a maximum instantaneous level of 20 amps.

CSA Label

On the back of the medTester 5000C, you can see a label which specifies the conditions under which the test receptacle can operate:

- 1840 VA, 16 A continuous operation.
- Up to 19 A for no longer than two (2) minutes. Then powered off for eight (8) minutes (20 percent of duty cycle).

Ground Fault Circuit Interrupter

The test receptacle is protected by a ground fault circuit interrupter. In the event of a fault in the EUT (when the test receptacle is powered on) which causes a current imbalance in the hot and neutral lines of greater than 5 mA, the interrupter triggers. Under this condition, the interrupter turns off the test receptacle and all test connections, and the medTester prompts you to correct the fault and continue.

Performance Waveforms

The medTester 5000C generates ECG waves and arrhythmias to test the performance of patient monitors in those medTesters that have the Waveform/Extended Testing Module installed. You can find information about conducting waveform tests in Chapter 7, *Performance Waves*. Specifications for waveforms and arrhythmias are:

ECG Performance Test Waves (Lead I, Vp-p)

- Square Wave—2 Hz, 1 mV
- DC Pulse—4 Seconds, 1 mV
- Sine Wave—0.5, 10, 40, 60, and 100 Hz, 1 mV
- Square Wave—1 kHz, 1 mV
- Triangle—2 Hz, 1 mV
- CMRR—60-Hz sine wave with 1–kΩ imbalance in LA
- Normal Sinus—30, 60, 120, 240 BPM.

Arrhythmias

- Atrial fibrillation
- Second degree A-V Block, Type 1
- Premature atrial contractions
- Missed beat at 80 and 120 BPM
- PVC 1 left
- PVC 2 right
- Multifocal PVCs
- PVC 1, R on T
- A pair of PVCs
- Run of 5 PVCs
- Run of 11 PVCs, MF
- Right bundle branch block
- Ventricular tachycardia
- Ventricular fibrillation
- Asystole

General Specifications

Parameter	Specification
Power Requirement:	115 V ±10%, 60 Hz only
Temperature Ranges:	Operating: 15° to 35°C (59° to 95°F)
	Storage: 0° to 50°C (32° to 122°F)
Display:	80-character (40 x 2 lines) backlit Liquid Crystal Display
Weight:	5 kg (11 lb)
Dimensions:	25.4 cm L x 35.0 cm W x 10.2 cm H (10 in L x 13.8 in W x 4 in H)

ECG Connections

Waveforms generated for performance testing can be output through the binding posts on the medTester 5000C's top panel or the ECG High-Level Output located on the medTester 5000C's back panel.

ECG Binding Posts

- 10 posts, American Hospital Association color–coded,
- RL, RA, LA, LL, V1-V6,
- Compatible with both 3.2–mm and 4.0–mm pins and disposable snap electrodes.

High-Level ECG Output

- ¼" phone jack,
- 1–volt nominal.

Data Input and Output

- Top panel keyboard (QWERTY-type)—48 characters.
- Bar code reader (optional).
- RS-232C serial ports (2) for computer interface or auxiliary test instrument control, expansion to an additional eight (8) ports with the Wedge Adapter.
- Parallel printer port (1).

RS-232C Serial Interface Parameters

- Baud—300, 600, 1200, 2400, 4800, 9600, 19200.
- Stop Bits—1.
- Parity—Off.
- Data Length—8 bits.

Real Time Clock

Real time clock is kept internal to the instrument.

Accessories

Standard   Part

- 20/15–amp Adapter   2195732

- Two Kelvin Cable   2392617

- Two Ground Pin Adapters   2242165

- Operator Manual   2243153

- Accessory Pouch   2392871

Optional   Part

• Interface Cable, medTester to PC	RS-232; Female DB25 to Female DB25	2392186
• Interface Cable, medTester 5000C to Patient Simulator	RS232; Right Angle DIN to Female DB25	2200808
• Interface Cable, AT-Style PC Adapter Cable	RS232; DB9 to DB25, for use w/2392186	2199233
• Interface Cable, medTester to Impulse 3000	RS232, Straight DIN to Female DB25	2199346
• Interface Cable, medTester to Impulse 4000	RS232; Female DB25 to Female DB25	2200252
• Interface Cable, medTester to Oxitest Plus/Plus7	RS232; Female DB25 to mini DIN	2237730
• Interface Cable; medTester to Infutest 2000 Series D	RS232; Female DB25 to Female DB25	2237604
• Interface Cable; medTester Wedge to IDA 4 Plus	RS232; Female DB9 to Female DB25	**2201042**
• Interface Cable; medTester to RF303RS. Requires adapter 2391789.	RS232; Male DB9 to Female DB9	**2238659**
• Adapter; for medTester to RF303RS with 2238659	Adapter; Male DB9 to Female DB25	**2391789**
• Interface Cable, medTester to PC/454A/CuffLink; Impulse 4000 to PC	RS232; Female DB25 to Female DB25	**2392186**
• Interface Cable, medTester to SigmaPace™ 1000/402A/PC/ IPT-MC/Index 2XL/IDA 4 Plus (IDA 4 Plus to Wedge use **2201042**); Impulse 4000 to PC	RS232; Female DB25 to Female DB9	2200102
• Interface Cable, medTester to IPT-1	RS232; Female DB25 to Male DB25	2392251
• Interface Cable, medTester to IPT-MC	RS232; Female DB25 to Female DB9*	2201042
• Printer Cable, medTester to TLP-1 & TLP-2 Test Label Printer	Serial Cable;	2200717

Optional (continued)   Part

• Printer Cable, medTester to standard PC printer	Serial Cable; Male DB25 to Centronics	2200577
• TLS Test Tag Printer Kit	Printer, white and yellow vinyl labels, black vinyl printer ribbon, serial cable, adapter and US power source	2245515
• TLP-1/2 Printer Paper, Yellow		2220045
• TLP-1/2 Printer Paper, Blue		2220038
• TLP-1/2 Printer Paper, White		2220023
• TLS Label Roll Vinyl White		2243893
• TLS Label Roll Vinyl Yellow		2243902
• TLS Label Roll Vinyl Orange		2243916
• TLS Label Roll Vinyl Red		2243925
• TLS Label Roll Vinyl Blue		2243933
• TLS Label Roll Vinyl Green		2243940
• TLS Printer Ribbon Vinyl Black		2243957
• Adapter DB-9 M to DB-25 F		2391789
• Service Manual		2243166
• Wedge Adapter		2245264
• PC Wedge Laser Barcode Gun		2245092
• Mini PC-style Keyboard		2245061
• Multi-purpose Hard-Sided Carrying Case (contains "Pick & Pluck" foam)	Fits medTester with Wedge (29" L x 18" W x 10½" H)	2248606
• Multi-purpose Hard-Sided Carrying Case (contains "Pick & Pluck" foam)	Fits medTester without Wedge (19" L x 14" W x 7¾" H)	2248587

* Part #2200102 will interface with the IPT-MC directly for the medTester ONLY.
  Part #2201042 will interface with the IPT-MC directly to medTester OR through the Wedge accessory.

medTester 5000C Module Upgrades   Part
Factory Installed

●	Module 2, Service, RS-232/Printer	2246094
●	Module 3, Service, 100 Records	2246100
●	Module 4, Service, Expanded Memory	2246117
●	Module 5, Service, Waves/Extended Test	2246121
●	Module 6, Service, Data Transfer	2246139
●	Module 7, Service, medCheck	2246142
●	Module 8, Service, Defibrillator	2246156
●	Module 9, Service, IV Pump, IPT	2246163
●	Module 10, CMMS Interface	2246174
●	Module 11, Service, ESU	2246188
●	Module 12, Service, SPO2	2246195
●	Module 13, Service, Pacer	2246206
●	Module 14, Service, NIBP	2246214

Field Installed

●	Module 2, Field, RS232/Printer	2246238
●	Module 3, Field, 100 Records	2246245
●	Module 4, Field, Expanded Memory	2246250
●	Module 5, Field, Waves/Extended Test	2246261
●	Module 6, Field, Data Transfer	2246277
●	Module 7, Field, medCheck	2246289
●	Module 8, Field, Defibrillator	2246292
●	Module 9, Field, IV Pump, IPT	2246303
●	Module 10, Field, CMMS Interface	2246315
●	Module 11, Field, ESU	2246326
●	Module 12, Field, SPO2	2246332
●	Module 13, Field, Pacer	2246344
●	Module 14, Field, NIBP	2246359