Manual Supplement

Manual Title:	ESA620 Users	Supplement Issue:	**9**
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This supplement contains information necessary to ensure the accuracy of the above manual. This manual is distributed as an electronic manual on the following CD-ROM:

CD Title:	ESA620
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Change #1, 45952, 46409, 46295, 44832, 48672, 51155, 51721, 54114, 54896, 57132, 62069

Replace the entire ***Specification*** section, pages 56 through 59, with the following:

Specifications

Temperature

Operating	10 °C to 40 °C (50 °F to 104 °F)
Storage	-20 °C to 60 °C (-4 °F to 140 °F)
Humidity	10 % to 90 % non-condensing
Altitude	To 5,000 meters @ 115 V ac mains and ≤150 V measurements
	To 2,000 meters @ 230 V ac mains and ≤300 V measurements
Display	LCD display
Communications	USB device port for computer control
Modes of Operation	Manual and remote

Power

120 Volt power outlet	90 to 132 V ac rms, 47 to 63 Hz, 20 A maximum
230 Volt power outlet	180 to 264 V ac rms, 47 to 63 Hz, 16 A maximum
Size (L x W x H)	32 cm x 23.6 cm x 12.7 cm (12.6 in x 9.3 in x 5 in)
Weight	4.7 kg (10.25 lb)

Safety Standards

CE	IEC/EN61010-1 3rd Edition; Pollution degree 2
CSA	CAN/CSA-C22.2 No 61010-1; UL61010-1

Electromagnetic Compatibility Standards (EMC)

European EMC EN61326-1

Detailed Specifications

Voltage

Mains voltage

Ranges ..... 0.0 to 300 V ac rms

Accuracy ..... ±(2 % of reading + 1.0 V ac)

Accessible Voltage and Point to Point Voltage

Range ..... 0.0 to 300 V ac rms

Accuracy ..... ±(2 % of reading + 2 LSD)

Earth Resistance

Modes ..... Two terminal and four terminal

Test Current ..... >200 mA ac into 500 mΩ with open circuit voltage ≤ 24 V
25 A short circuit ±10 % (with open circuit voltage 6 Vac at nominal mains)

Range ..... 0.0 to 2.0 Ω

Accuracy

Two Terminal Mode

Test current >200 mA ac into 500 mΩ ..... ±(2 % of reading + 0.015 Ω) for 0.0 to 2.0 Ω

Test current 1-16 A ac ..... ±(2 % of reading + 0.015 Ω) for 0.0 to 0.2 Ω
±(5 % of reading + 0.015 Ω) for 0.2 to 2.0 Ω

Four Terminal Mode

Test current >200 mA ac into 500 mΩ ±(2 % of reading + 0.005 Ω) for 0.0 to 2.0 Ω

Test current 1-16 A ac ..... ±(2 % of reading + 0.005 Ω) for 0.0 to 0.2 Ω
±(5 % of reading + 0.005 Ω) for 0.2 to 2.0 Ω

Additional error caused by series inductance

Resistance	Series Inductance			
	0 µH	100 µH	200 µH	400 µH
0.000 Ω	0.000 Ω	0.030 Ω	0.040 Ω	0.050 Ω
0.020 Ω	0.000 Ω	0.025 Ω	0.030 Ω	0.040 Ω
0.040 Ω	0.000 Ω	0.020 Ω	0.025 Ω	0.030 Ω
0.060 Ω	0.000 Ω	0.015 Ω	0.020 Ω	0.025 Ω
0.080 Ω	0.000 Ω	0.010 Ω	0.015 Ω	0.020 Ω
0.100 Ω	0.000 Ω	0.010 Ω	0.010 Ω	0.015 Ω
>0.100 Ω	0.000 Ω	0.010 Ω	0.010 Ω	0.010 Ω

Equipment Current

Range ..... 0 – 20 A ac rms

Accuracy ..... 5 % of reading ± (2 counts or 0.2A, whichever is greater)

Duty cycle……..15 A to 20 A, 5 min. on/5 min. off
10 A to 15 A, 7 min. on/3 min. off
0 A to 10 A continuous

Leakage Current

Modes*..... AC+DC (True-rms)
AC only
DC only
* Modes: AC+DC, AC only, and DC only available for all leakages with exception of MAP that are available in True RMS (shown as AC+DC)

Patient Load Selection	AAMI ES1-1993 Fig. 1 IEC 60601: Fig 15 IEC 61010: Fig A-1
Crest factor	≤3
Ranges	0.0 to 199.9 μA 200 to 1999 μA 2.00 to 10.00 mA
Accuracy**	
DC to 1 kHz	±(1 % of reading + (1 μA or 1 LSD, whichever is greater)
1 to 100 kHz	±(2 % of reading + (1 μA or 1 LSD, whichever is greater)
100 kHz to 1 MHz	±(5 % of reading + (1 μA or 1 LSD, whichever is greater)
	** Map Voltage: Additional residual leakage up to 4 μA @120 V ac, 8 μA @240 V ac
Mains on applied part test voltage	110 % ±5 % of Mains, current limited to 7.5 mA ±25 % @ 230V for IEC 60601 100 % ±5 % of Mains for AAMI, current limited to 1 mA ±25 % @ 115V per AAMI 100 % ±5 % of Mains for 62353 current limited to 3.5 mA ±25 % @ 230V per 62353

Note

For Alternative and Direct applied parts leakage tests, the leakage values are compensated for nominal mains as per 62353. Therefore, the accuracy specified for other leakages is not applicable. The actual leakage readings given during these tests will be higher.

Differential leakage

Ranges	50 to 199 μA 200 to 2000 μA 2.00 to 20.00 mA
Accuracy	± 10 % of reading ± (2 counts or 20 μA, whichever is greater)

Insulation resistance

Ranges	0.5 to 20 MΩ 20 to 100 MΩ
Accuracy	
20 MΩ Range	±(2 % of reading + 2 counts)
100 MΩ Range	±(7.5 % of reading + 2 counts)
Source test voltage	500 V dc (+20 %, -0 %) 1.5 mA short-circuit current or 250 V dc selectable
Maximum load capacitance	1 µF

ECG Performance Waveforms

Accuracy	±2 % ±5 % for amplitude of 2 Hz square wave only, fixed @ 1 mV Lead II configuration
Waveforms	
ECG Complex	30, 60, 120, 180, and 240 BPM
Ventricular Fibrillation	
Square wave (50 % duty cycle)	0.125 and 2
Sine wave	10, 40, 50, 60, and 100 Hz
Triangle wave	2 Hz
Pulse (63 ms pulse width	30 and 60

Change #2

On page 4, add the following after Alligator clip set,

- Null post adapter
- Data transfer cable

On page 6, replace Item 2, with the following:

Nulling Jack	Connection for zeroing test lead resistance. Use the probe attached to the test lead to insert into the null jack. Use the Null Post Adapter when using the alligator clip attached to the test lead.

On page 18, replace step 4 with the following and add the note:

4. Connect the other end of the test lead to the nulling jack in the middle of the top panel of the Analyzer.

Note

Use the supplied Null Post Adapter when nulling the test lead with an alligator clip.

On page 54, Table 6, add the following:

Null Post Adapter	3326842

Change #3

On page 18, following step 8, change the following:

From: For testing with a 25 A test current:

To: For testing with a >10 A test current:

Change #4

At the front of the manual, under ***Warranty and Product Support***, replace the first paragraph with the following:

Fluke Biomedical warrants this instrument against defects in materials and workmanship for one year from the date of original purchase OR two years if at the end of your first year you send the instrument to a Fluke Biomedical service center for calibration. You will be charged our customary fee for such calibration. During the warranty period, we will repair or at our option replace, at no charge, a product that proves to be defective, provided you return the product, shipping prepaid, to Fluke Biomedical. This warranty covers the original purchaser only and is not transferable. The warranty does not apply if the product has been damaged by accident or misuse or has been serviced or modified by anyone other than an authorized Fluke Biomedical service facility. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.