The QED 6 Series provides a scalable solution to accurately test defibrillators and external, noninvasive pacemakers. Lightweight and portable, the QED 6M and QED 6H measure a wide range of defibrillator energy output parameters and conduct ECG elective cardioversion synchronization tests.

Both models in the QED 6 series have 28 automatic sequences to test defibrillator performance to the user’s protocol and can test the automatic external defibrillators’ ability to recognize critical arrhythmias. An RS232 serial port supports remote computer control and online test documentation via a compatible printer.

The QED 6H also analyzes energy and timing of noninvasive, external pacemakers, making it a convenient, dual-purpose testing tool.

**Key Features**

**QED 6M Defibrillator Analyzer**
- Monophasic and biphasic DC energy measurement
- Energy and cardioversion measurement
- Peak voltage, peak current, and overshoot measurement
- 5-lead ECG simulation
- Charge time measurement
- ECG normal, performance, and arrhythmia simulation
- 2-line x 24-character display
- Bidirectional RS232 port for computer control
- 28 user-programmable autosequences
- Storage and playback of output waveform so results can be viewed in greater detail

**QED 6H Defibrillator and Pacemaker Analyzer**

The QED 6H Defibrillator and Pacemaker Analyzer has all the features of the QED 6M Defibrillator Analyzer plus the following testing features for noninvasive, external pacemakers

- Amplitude (mA and V), rate, and pulse width measurement
- Sensed and paced refractory period tests
- Peak voltage and current measurement
- Built-in pacemaker test load of 50 Ω
- External pacemaker test loads of 50 Ω to 1,500 Ω with plug-in load adapter (PLA)
Technical Specifications

Output Energy Test
Load: 50 Ω ± 1 %, with inductance < 70 µh
Resolution: High-range: 1 J; low-range: 0.1 J
Low-Range: 0 J to 100 J
High-Range: 0 J to 1000 J
Pulse Width: 1 ms to 50 ms
Maximum Current: Low: 35 A; high: 110 A
Maximum Voltage: Low: 1750 V; high: 5500 V
Minimum Voltage: Low: 20 V, high: 66 V
Accuracy: 1000 J Range: ± 2 % of reading;
100 J to 1000 J: ± 2 % of reading, ± 0.1 J
Waveform Storage: Discharge viewable via ECG
output, paddles, and scope output
Time Expansion Lead II Amplitude: High = 3000
V / mV; low = 900 V / mV

Peak/Overshoot
Voltage Accuracy: 1000 J Range: ± 10 V; 100 J
Range: ± 25 V
Current Accuracy: ± 1 A

Cardioversion Synchronization Test
Measurement from peak or base of simulated R-
wave: 0 ms to 199.9 ms
Accuracy: 1 % of full scale or ± 2 ms, whichever
is greater

External Noninvasive Pacer Measurements (QED 6,)
Load: 50 Ω ± 1 %
R-Wave Amplitude: 1.1 mV ± 10 % (Apex-
Sternum); 1 mV ± 2 % lead II (RA-LL)
Pulse Width: 1 ms to 50 ms
Peak Voltage: 0 V to 12.5 V
Peak Current: 4 mA to 250 mA < 4 mA = 0 mA
Rate: 25 PPM to 400 PPM < 25 PPM = 0 PPM
Refractory period: 110 ms to 500 ms < 110 ms =
110 ms, sensed; 70 ms to 500 ms < 70 ms =
70 ms, pulsed
Accuracy: ± 2 % of full-scale for pulse width,
peak voltage, current; ± 1 % of full scale for rate
and refractory period measurements

ECG Waveforms
Normal Sinus Rhythm (NSR)
Rates: 30, 60, 120, 180 and 240 BPM
Rate Accuracy: ± 1 % of setting
Amplitude: Fixed at 1 mV lead II (RA-LL); fixed at
1.1 mV (Apex-Sternum)
Amplitude accuracy: ± 2 % (RA-LL); ± 10 %
(Apex-Sternum)

Performance Waveforms
Pulse: 30 BPM, 60 BPM, 60 ms pulse width
Sine Wave: 10, 40, 50, 60 and 100 Hz
Square Wave: 0.125 Hz, 2 Hz (50 % duty cycle)
Triangle: 2 Hz (4 V)
Time Base Accuracy: ± 1 % of setting
Amplitude: Fixed at 1 mV lead II (RA-LL); triangle
wave 2 mV lead II (RA-LL); fixed at 1.1 mV (Apex-
Sternum); amplitude accuracy: ± 2 % (RA-LL); ± 10 %
(Apex-Sternum)

Defib Waveform Playback
Time Base Expansion: 100:1 @ 25 mm/s paper
speed, each division equals 40 ms
Amplitude Scaling: Lead II (RA-LL); 1000 J
Range: 1 mV = 3000 V; 100 J Range:
1 mV = 900 V

ECG Output: 1000 J Range: 0.5 V = 3000 V;
100 J Range: 0.5 V = 900 V

Arrhythmias
Asystole, atrial fibrillation; atrial flutter;
atrial tachycardia; idioventricular; PVC;
R on T; RUN PVC; ventricular fibrillation;
ventricular tachycardia, 125 BPM
monomorphic; ventricular tachycardia, 340
BPM monomorphic; ventricular tachycardia,
300 BPM polymorphic
Rate Accuracy: ± 1 %
Amplitude: Fixed at 1 mV lead II (RA-LL);
fixed at 1.1 mV (Apex-Sternum)
Amplitude Accuracy: ± 2 (RA-LL); ± 10 %
(Apex-Sternum)

Scope Outputs
ECG hi-level: fixed at 1 V
Accuracy: ± 2 %
Defib Output: Real time
Pacer Range: 1 V = 3.11 V; 1000 J Range: 1
V = 1450 V; 100 J Range: 1 V = 440 V
Amplitude Accuracy: ± 2 % of scale
Waveform Output: 5 ECG lead adapters,
front-panel paddles, and high-level scope
output

Calibration Screen
Load: 50 Ω ± 1 % (Apex-Sternum)
Amplitude Scaling: Apex (+) to sternum (-)
Pacer Range: 318 counts/V; 1000 J range:
0.683 counts/V; 100 J range: 2.252 counts/V
Accuracy: ± 15 counts
Zero Voltage Input: 0 ± 2 counts

RS232 Output / Computer Control
Note: Computer control allows the user to
operate the QED 6 remotely via a serial
RS232 interface. It requires an RS232 cable
and a bidirectional D-9 connector

Selectable Communications parameters
Baud Rate: 300, 600, 1200, 2400,
and 9600
Parity: None, even, odd
Stop Bits: 1 or 2
Data Bits: 7 or 8

Environmental Requirements
Storage Temperature: -25 °C to 50 °C
Operating Temperature: 0 °C to 40 °C
Maximum Humidity: 90 % relative humidity

General Information
Display: 2-line x 24-character super twist LCD
Power: One 9 V Alkaline battery or 9 V battery
eliminator; 12 hours continuous operation; low-
battery indication; 120/240 V battery eliminator
input
Dimensions: 10.5 in L x 9.5 in W x 4.0 in H
(26.67 cm L x 24.13 cm W x 10.16 cm H)
Weight: 4.54 lb (2.06 kg)
Ordering Information

Model
2251478: QED 6, Defibrillator Analyzer
2251469: QED 6, Defibrillator & Transcutaneous Pacemaker Analyzer

Standard Accessories
2204510: User/service manual
2204198: Internal paddle discharge contact adapters [two each]

QED 6, only
2393250: Pacer load adapter 50 Ω to 1500 Ω

Optional Accessories
2204282: Soft-sided vinyl carrying case
2527552: Battery eliminator 9 VAC adapter

Interface cables and accessories
2248899: Printer, Seiko DPU-414-30B 120 V power supply
2399531: Printer, Seiko DPU-414-30B 220 V power supply
2235375: Printer, 120 V power supply
2235382: Printer, 220 V power supply
2248737: Printer paper (7 rolls min. priced per individual roll)
2204472: Serial cable D9F-D9F
2391907: Printer cable DPU 411
2204485: Serial printer cable DPU 414, DB9F to DB9F
2393250: Pacer load adapter 50 Ω to 1000 Ω

Defibrillator & transcutaneous pacemaker electrode adapters
Note: Refer to your sales representative or directly to Fluke Biomedical for most current listing of available adapters.
2200125: Agilent/HP: Codemaster XL + series (inline round connector included [Defib and Pace])
2200687: Agilent/Philips: HEARTSTREAM FR2, XL and XTL series (inline rectangular connector [Defib and Pace])
2392362: GE-Marquette: Responder series (snap connector included; two adapters required [Defib & Pace])

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