



GOSSEN METRAWATT

Safety through Competence

SECULIFE | DF⁺
DEFIBRILLATOR | ANALYZER

WE'RE CONCERNED WITH THE
SAFETY OF YOUR MEDICAL DEVICES



DEFIBRILLATOR ANALYZER

THE SECULIFE DF+ IS A MICROPROCESSOR-BASED INSTRUMENT THAT IS USED IN THE TESTING OF DEFIBRILLATORS. IT MEASURES THE ENERGY OUTPUT AND PROVIDES INFORMATION ABOUT THE PULSE. IT IS USED ON MANUAL, SEMI-AUTOMATIC AND AUTOMATIC DEFIBRILLATORS WITH MONOPHASIC OR BIPHASIC OUTPUTS.

Seculife DF+ additionally provides a Transcutaneous Pacemaker analysis function. It measures and displays pacer pulse information as well as performing Refractory Period, Sensitivity and Immunity testing.

It has a built-in 50 ohm human body simulation load as well as 12 lead ECG with arrhythmias and performance waveforms. Additionally, they have a centronics printer port, a serial port, oscilloscope output, high level ECG output, as well as provision for a battery eliminator.

The Seculife DF+ makes viewing and selecting the desired waveforms and test data quick and intuitive, with all operational information being available on the 240 by 64 pixel graphic display that enables the user to perform an easy setting of all parameters and to scroll through the available options.



FEATURES

- Biphasic Energy Measurement
- Simple to Operate
- Fully AED Compatible
- On-Screen viewing of Defibrillator Waveform
- Drop down choice screens list all options for parameters
- Monophasic & Biphasic compatible
- 5000 V, 1000 Joule Capacity
- Cardioversion delay measurement
- Charge time measurement
- Waveform storage & playback
- 10 Universal patient lead connectors
- 25 PIN Connector for Centronics Printer
- 9 Volt Battery Power
- Low Battery Indicator
- Display Backlight
- Full Remote Operation via RS-232
- Flash Programmable for Upgrades
- 26 Selectable Internal Loads
- Full Pulse Analysis
- Demand Sensitivity Test
- Refractory Period Tests
- 50/60 Hz Interference Test Signals
- Pacer Input Defib Protection

ENERGY OUTPUT MEASUREMENT GENERAL

> Method	Biphasic
> Load resistance	50 Ohms +/- 1 % Non-inductive (<1 µH)
> Display resolution	0.1 Joules
> Measurement time window	100 ms
> Absolute max peak voltage	6000 Volts
> Pulse width	100 ms

LOW RANGE

> Voltage	<1000 Volts
> Max current	24 Amps
> Max energy	50 Joules
> Accuracy	+/- 2 % of reading for >20 Joules +/- 0.4 Joules for <20 Joules
> Trigger level	20 Volts
> Playback amplitude	1 mV / 1000 V Lead 1
> Test pulse	5 Joules +/- 20 %

CARDIOVERSION

> Delay	0 to 6000 ms
> Resolution	0.1 ms
> Accuracy	+/- 2 ms

ECG NSR

> Rate Accuracy	30 to 300 BPM +/- 1 %
> Amplitude Accuracy	0.5, 1.0, 1.5, 2.0 mV [Lead II] +/- 2 % @ Lead II
> High level Accuracy	200 times Amplitude +/- 5 %
> QRS duration	80 ms

ECG ARRHYTHMIA SELECTIONS

- > Ventricular Fibrillation
- > Atrial Fibrillation
- > Second Degree A-V Block
- > Premature Atrial Contraction
- > PVC Early
- > PVC Standard
- > PVC R on T
- > Multifocal PVC
- > Bigeminy
- > Run of 5 PVCs
- > Ventricular Tachycardia

ECG SIGNALS [SHOCK ADVISORY ALGORITHM TEST]

- > Asystole
- > Coarse Ventricular Fibrillation
- > Fine Ventricular Fibrillation
- > Multifocal Ventricular Tachycardia @ 140 BPM
- > Multifocal Ventricular Tachycardia @ 160 BPM
- > Polyfocal Ventricular Tachycardia @ 140 BPM
- > Polyfocal Ventricular Tachycardia @ 160 BPM
- > Supra Ventricular Tachycardia @ 90 BPM

TRANSCUTANEOUS PACEMAKER ANALYZER

TEST LOAD

> Range	50, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2300 Ohm
> Accuracy	50 to 1300 Ohm +/- 1 % 1400 to 2300 Ohm +/- 1,5%

OSCILLOSCOPE OUTPUT

> 0 - 150 V	10, 24:1 amplitude attenuation
> 15 - 60 V	41:1 amplitude attenuation
> > 60 V	164:1 amplitude attenuation
> max Output	200 V

DEMAND SENSITIVITY

Waveforms	
> Selection	Square, Triangle, Haversine
> Width	10, 25, 40, 100, 200 ms

ECG Output	
> Amplitude out	0 to 4 mV
> Resolution out	40 µV
> Accuracy out	+/- 2 %

Pacer Input [50 to 400 Ohms]	
> Amplitude out	0 to 4 mV
> Resolution out	40 µV
> Accuracy out	+/- 2 %
> Rate in	30 to 120 PPM

Pacer Input [500 to 2300 Ohms & open]	
> Amplitude out	0 to 100 mV
> Resolution out	1 mV
> Accuracy out	+/- 2 %
> Rate in	30 to 120 PPM

Defibrillator Plates	
> Amplitude out	0 bis 10 mV
> Resolution out	0,1 mV
> Accuracy out	+/- 2 %
> Rate in	30 bis 120 PPM

HIGH RANGE

> Voltage	<5000 Volts
> Max current	120 Amps
> Max energy	1000 Joules
> Accuracy	+/- 2 % of reading for >100 Joules +/- 2 Joules for <100 Joules
> Trigger level	100 Volts
> Playback amplitude	1 mV / 1000 V Lead 1
> Test pulse	125 Joules +/- 20 %

Other

Oscilloscope output	
> high measuring range	1000:1 amplitude-attenuated
> low measuring range	200:1 amplitude-attenuated
Waveform playback	
> output	Lead I & Plates
> screen	200:1 Time Base Expansion
Sync time measurements	
> timing window	Starts 40 ms before each R-wave peak
> test waveforms	All waveform simulations available
> delay time accuracy	+/- 1 ms
Charge time measurement	from 0.1 to 99.9 sec

ECG PERFORMANCE

> Sine wave	0.1 to 100 Hz
> Square wave	0.125, 2.000 Hz
> Triangle wave	2.000, 2.500 Hz
> Pulse wave	30, 60, 120 BPM; 60 ms width
> Amplitude	0.5, 1.0, 1.5, 2.0 mV [Lead II]
> Rate accuracy	+/- 1 %
> Amplitude accuracy	+/- 2 % @ Lead II

ECG GENERAL

> Lead to Lead Impedance [RL, LL, RA, LA]	1000 Ohm
> Lead to Lead Impedance [V1-V6]	1000 Ohm

DATA INPUTS

> Parallel Printer Port
> RS232C [for computer control]

PHYSICAL/ ELECTRICAL

> Display	LCD Graphical 256 x 64 Pixels, Backlight 3.4 x 9.8 x 10.7 Inches [86.4 x 249 x 271.8 mm] ABS Plastic
> Weight	< 5 Lbs [< 2.3 Kg]
> Face Plate	Lexan, Back printed
> Operating range	15 to 40 C
> Storage range	-20 to 65 C
> Power	Battery, 9 VDC [2 required] (NE 1604) Alkaline
> Battery eliminator [optional]	BE2006PU [120 VAC] – US BE2006PE [220 VAC] – Euro 10V, 300 mA DC

PULSE MEASUREMENTS

> Amplitude Accuracy	4 to 300 mA (100 Ohm Load) +/- 5% or +/- 0.5 mA
> Rate Accuracy	30 to 800 PPM +/- 1% or 2 PPM
> Pulse width Accuracy	0,6 to 80 ms +/- 1% or 2 +/- 0,3 ms
> max Voltage	200 V [Variable Load Input Jacks] 15V [Fixed Load Input Jacks]

50/60 HZ INTERFERENCE TEST SIGNAL

> ECG -Output	0; 0,4; 0,8; 1,2; 1,6; 2,0; 2,4; 2,8; 3,2; 3,6; 4,0 mV
> Pacer Input > 500 Ohm	0, 10, 20, 30, 40, 50, 60, 70, 80, 90,100 mV
> Defibrillator Plates	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 mV

REFRACTORY PERIOD

> Pacing	20 to 500 ms
> Sensing	20 to 500 ms
> Accuracy	+/- 2 ms



Detail with Defibrillator-Plates



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