

UniPulse 400

An easy to use defibrillator analyzer with pacer.



The new **UniPulse 400** is designed to comprehensively test all defibrillators accurately and efficiently. The large vibrant colour screen will display both test results and waveforms in amazing detail. The dedicated fast keys and simple to use operating system enables test engineers to select the relevant test function in seconds.

The all new **UniPulse 400** is capable of analyzing all monophasic, biphasic, standard and pulsating waveforms. This unrivalled functionality and our new comprehensive pacer function makes the **UniPulse 400** the ultimate defibrillator analyzer on the market.

The large internal memory and on-board results storage will reduce test time and help work towards a modern paperless system. Download results to "Med-eBase" asset management software via our simple USB function or use the on-screen data recall to review results – it's never been so simple.

The ergonomic enclosure of the **UniPulse 400** makes the unit compact, rugged and lightweight so you can easily move location with this portable product. Our handy Rigel carry case can fit the unit alongside any additional accessories you may require allowing easy transportation to different sites.

These are just a few of the reasons we believe you'll want to invest in our **UniPulse 400**. To see for yourself, request a live online demonstration today!

To see the new **UniPulse 400** for yourself, request your live online demonstration today at rigelmedical.com/unipulse

T: +44 (0) 191 587 8741 E: sales@rigelmedical.com

TESTED, TRUSTED... WORLDWIDE.

Why buy the UniPulse 400 ?

- > **The complete defibrillator analyzer solution** – including pacer functionality.
- > **Clear and vibrant LCD colour display with simple navigation** – including dedicated fast keys. Less button pushing, more testing!
- > **Rugged, compact and easy to hold** – take it anywhere, anytime... easily with battery operation.
- > **Compatible with all defibrillators** – accurately measure and display waveforms from monophasic to biphasic, all in a tester that fits in your hand.

 **RIGEL**
From **SEAWARD**

UniPulse 400

An easy to use defibrillator analyzer with pacer.



Key Features:

- > Pacer functionality.
- > Compatible with monophasic, biphasic and pulsed waveforms.
- > Colour LCD display.
- > Easy and intuitive navigation with dedicated fast test and simulation keys.
- > Rechargeable battery allowing operation without the need for mains power.
- > Data download via USB to PC.
- > Reliable and non-inductive test load of 50Ω .
- > Patient simulator with ECG hi output.
- > Multi-lingual firmware to meet requirements across the globe.
- > Portable, compact and rugged.
- > Robust carry case to protect your analyzer.

Simulation Functions:

- > Defibrillator Energy Discharge.
- > Charge Time.
- > Cardiac Synchronisation.
- > Over 40 selectable Arrhythmias.
- > Performance waveforms.
- > 5 pacer modes.

T: +44 (0) 191 587 8741

E: info@rigelmedical.com



To see the new **UniPulse 400** for yourself, request your live **online demonstration** today at rigelmedical.com/unipulse

RIGEL
From **SEAWARD**

T: +44 (0) 191 587 8741 **E:** sales@rigelmedical.com

TESTED, TRUSTED... WORLDWIDE.

UniPulse 400

An easy to use defibrillator analyzer with pacer.



Technical Specifications

Defib - Energy Measurement

Load Resistance	50Ω ± 1% non-inductive
Range	0 - 199.9 Joules
Accuracy	± 1% of reading ± 0.1 Joule
Range (High)	200 - 600 Joules
Accuracy	± 1% of reading ± 1 Joule
Resolution	0.1 Joules
Voltage	0 - 5000 Volts
Current	0 - 100 Amps
Sampling Rate	250 kHz sampling frequency
Maximum pulse width	5us - 120ms

AED Pulse Mode Waveforms

Normal Sinus Rhythm (NSR)	20 - 300 BPM, Amplitude 1.00mV(±2%)
Asystole (ASYS)	
Ventricular Fibrillation - Coarse (VFBC)	240 BPM, Amplitude 1.00mV(±2%)
Ventricular Fibrillation - Fine (VFBF)	240 BPM, Amplitude 1.00mV(±2%)
Monomorphic Ventricular Tachycardia (MVT)	210 BPM, Amplitude 1.00mV(±2%)
Atrial Fibrillation (AFB)	20 - 300 BPM, Amplitude 1.00mV(±2%)

ECG Simulator

ECG simulation with hi-level output.

ECG Waveforms - Sinus

Normal Sinus Rhythm (NSR)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
ST Elevation (STE)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
ST Depression (STD)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Myocardial Infarction (MI)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Tall T (TT)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Asystole (ASYS)	

ECG Waveforms - Ventricular Arrhythmias

Premature Ventricular Contraction - Intermittent (PVC)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Bigeminy (BIG)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Trigeminy (TRIG)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Ventricular Flutter (VFLT)	240 BPM, Amplitude 0.50 - 5.00mV(±2%)
Ventricular Fibrillation - Coarse (VFBC)	240 BPM, Amplitude 0.50 - 5.00mV(±2%)
Ventricular Fibrillation - Fine (VFBF)	240 BPM, Amplitude 0.50 - 5.00mV(±2%)
Monomorphic Ventricular Tachycardia (MVT)	210 BPM, Amplitude 0.50 - 5.00mV(±2%)
Right-focal Premature Ventricular Contraction (RFPVC)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)

ECG Waveforms - Atrial Conduction Arrhythmias

First Degree AV Block (FAVB)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Second Degree AV Block - Mobitz I (SAVB_MI)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Second Degree AV Block - Mobitz II (SAVB_MII)	80 BPM, Amplitude 0.50 - 5.00mV(±2%)
Third Degree AV Block (TAVB)	50 BPM, Amplitude 0.50 - 5.00mV(±2%)

To see the new **UniPulse 400** for yourself, request your live online demonstration today at rigelmedical.com/unipulse



T: +44 (0) 191 587 8741 E: sales@rigelmedical.com

TESTED, TRUSTED... WORLDWIDE.

UniPulse 400

An easy to use defibrillator analyzer with pacer.



ECG Waveforms - Atrial Arrhythmias

Sinus Arrhythmia (SAR)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Missing Beat (MB)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Atrial Flutter (AFLT)	300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Atrial Fibrillation (AFB)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)
Paroxysmal Atrial Tachycardia (PAT)	180 BPM, Amplitude 0.50 - 5.00mV(±2%)
Premature Junctional Contraction (PJC)	20 - 300 BPM, Amplitude 0.50 - 5.00mV(±2%)

ECG Pacer Waveforms

Synchronous Atrial (AAI)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV, Pulse width 0.1 - 2.0ms
Asynchronous Atrial (AOO)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV, Pulse width 0.1 - 2.0ms
Pacer (PCR)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV, Pulse width 0.1 - 2.0ms
Ventricular Pacer (VVI)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV, Pulse width 0.1 - 2.0ms
Atrial & Ventricular Pacer (DDD)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV, Pulse width 0.1 - 2.0ms
R-Wave Detection (RWD)	20 - 300 BPM, Pulse amplitude 0.50 - 5.00mV

ECG Performance Waveforms

Sine (SINE)	0.1 - 300Hz, 1.00 - 10.00mV
Square (SQ)	0.1 - 300Hz, 1.00 - 10.00mV
Triangle (TRI)	0.1 - 300Hz, 1.00 - 10.00mV
Sawtooth (SAW)	0.1 - 300Hz, 1.00 - 10.00mV
Inverse Sawtooth (INSAW)	0.1 - 300Hz, 1.00 - 10.00mV
Pulse (PULSE)	0.1 - 300Hz, 0.50 - 5.00mV

ECG Noise Selection

Amplitude	0 - 10.00mV
Frequency	50 - 60Hz

ECG Waveform Output

Low Level	5-lead ECG and on Paddles
Hi Level	Output Jack

ECG Accuracy

Rate	± 1%
Amplitude	± 2% (LA-LL), ± 10% (Paddles) Lead II : 1 - 10 mV (in steps of 0.5 mV). Other leads are proportional to Lead II by the following percentages: Lead I : 60 % Lead II : 100 % Lead III : 40 % V1 : 63 % [Reference LA] V2 : 71 % [Reference LA] V3 : 68 % [Reference LA] V4 : 80 % [Reference LA] V5 : 55 % [Reference LA] V6 : 49 % [Reference LA]

To see the new **UniPulse 400** for yourself, request your live online demonstration today at rigelmedical.com/unipulse



T: +44 (0) 191 587 8741 E: sales@rigelmedical.com

TESTED, TRUSTED... WORLDWIDE.

UniPulse 400

An easy to use defibrillator analyzer with pacer.



Pacer Input

Fix Load	50Ω
Accuracy	1 %, non-inductive
Over voltage protection	5000V
Variable Load	50 to 1600Ω in 50Ω steps
Accuracy	1 %, non-inductive
Pulse Rate	5.0 to 800 ppm
Accuracy	+/- (0.5% rdg + 0.1ppm)
Heart rate selection	20 - 300 bpm
Under & overdrive	85% (20 bpm min) and 115% (300 bpm max)
Wave form selection	NSR, VFibC, VFibF, MVT, AFib, Missing Beat, R-Wave detection
Pulse Current Amplitude	5.00 - 200mA
Accuracy	+/- (1% rdg +0.02mA)
Current Measurements	Average (RMS), Leading edge, Trailing edge, Peak (the highest during the pulse)
Pulse Width	1.00 - 100ms
Accuracy	+/- (0.5% rdg + 0.01 ms)
Pulse Energy	1μJ - 2.00J
Accuracy	+/- 4% + 10μJ

Pacer Manufacturer Algorithms

CU Medical, GE, HP, Laerdal, Mindray, Philips, PhysioControl, Schiller, WelchAllyn, Zoll

Pacer Refractory Periods

Refractory Period test	15 - 500ms (Paced and sensed)
Accuracy	+/- 1ms

Pacer Sensitivity Test

Wave form, R Wave	Polarity Normal and Reversed, selectable
Dynamic Sensitivity	0.05mV to 5.00mV in 50μV steps

Pacer Interference Test (Immunity)

Heart rate	20-300 bpm
Frequency	50 or 60 Hz
Noise level in mV	0-15.0mV

General Specifications

Dimensions	220mm x 150mm x 90mm (L x W x H)
Weight	1.5kg
Operation	9.6V/2400mAh Nickel Metal Hydride battery pack
Battery charge time	2.5 hours
Battery capacity (fully charged)	12 hours
Mains supply	110/230V AC; 48 to 66Hz, 35VA power supply
Storage environment	-15°C to +60°C
Operating conditions	0°C to +40°C
Environmental protection	IP 40
Communication	USB
Display	LCD colour graphic display ¼" VGA
Memory	100 test results including graphs
Impact rating	5J

To see the new **UniPulse 400** for yourself, request your live online demonstration today at rigelmedical.com/unipulse



T: +44 (0) 191 587 8741 E: sales@rigelmedical.com

Rev 1.4

TESTED, TRUSTED... WORLDWIDE.