



HECG100 Handheld 12-lead ECG Simulator

Seamless raw data playback, ultra-fast test launches, and EMC-ready design for accelerated design verification

- **Raw Data Playback** - store custom raw data in a detachable micro SD card for playback
- **Automated Quick Testing** - customize test sequences for automated testing while reducing the effort of repetitive setups — no coding required ⁽¹⁾
- **Advanced ECG and Add-on Signals** - unlock a database of 32 arrhythmias and a full suite of DC offset, noise, pacing, and respiration simulation without overspending ⁽²⁾
- **Quick Test Launch** - from boot to custom test sequences in seconds ⁽¹⁾
- **EMI, EMS & ESD Compatible** - ability to undergo compliance testing in EMC environments ⁽³⁾
- **Long Battery Life** - deliver 8 hours of operation and up to 12 hours of uninterrupted testing in power-saving mode
- **Impact Resistant** - pass the free fall test as per IEC 60068-2-31
- **Bus-powered** - perform tests while charging via computer connection

Note: (1) This feature will be available in a future firmware update. Release details and final specifications may vary.

(2) The DC offset, noise, pacing, and respiration simulated signals can only be superimposed on waveforms configured through the ECG function.

(3) EMI compliance: Class A, Class B; EMS compliance: Class A, Class B; ESD compliance: 8kV (contact), 15kV (air).

Additionally, the HECG100 includes the CAL20110 waveform as required by IEC 60601-2-25 for electromagnetic compatibility testing.

Specifications

• Technical Specifications

Parameters	Specifications
Heart rate accuracy	±1%
Amplitude accuracy	±2%
Frequency / pulse repetition rate accuracy	±1%
Pulse duration accuracy (excluding pacing)	±0.5ms
ECG duration accuracy	±0.5ms
Pacing pulse width accuracy	±5μs
Pacing pulse amplitude accuracy, range	±2mV pulse: ±0.3% >2mV pulse: ±10%
Pacing pulse characteristics	Rise/fall time 5μs Overshoot <1% Settling time <1%
Capacitor tolerance	±5%
Sample rate	10kHz ± 0.05%
RCA output amplitude range	ECG electrode output x1000, max 10V
RCA output amplitude accuracy	±1% for amplitudes of 0.5Vpp or higher
Lead output ratio	Reference lead (lead II) in a certain ratio (calculated in percentage). Lead I: 70 (if RA=100, LA=170) Lead II: 100 (LL=200) Lead III: 30 (CT=(100+170+200)/3=156.7) Lead V1: 24 (V1=24+156.7=180.7) Lead V2: 48 (V2=204.7) Lead V3: 100 (V3=256.7) Lead V4: 120 (V4=276.7) Lead V5: 112 (V5=268.7) Lead V6: 80 (V6=236.7)
Total harmonic distortion	5%
Signal noise ratio	≥60dB
DC offset	Setting ±1% (fixed, may include up to 50μVpp noise)
Respiration Simulation Accuracy	
Impedance baseline	±5%
Impedance variations (Δ Ω)	±(5% of setting) + 0.05Ω

• Signal Type

Parameters	Specifications
ECG waveform	Heart rate: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300BPM Amplitude: 0.1, 0.5, 1, 2, 3, 4, 5mVpp ST deviation: -0.6 - 0.6mV
Sine	Frequency: 0.1, 0.5, 0.67, 1, 2, 5, 10, 20, 40, 50, 60, 100, 150, 200Hz Amplitude: 0.1, 0.5, 1, 2, 3, 4, 5mVpp
Triangle	Frequency: 1, 2Hz Amplitude: 0.5, 1, 2mVpp
Square	Frequency: 0.125, 1, 2Hz Amplitude: 0.1, 0.5, 1, 2, 3, 4, 5mVpp
Rectangle pulse	Frequency: 30, 60, 120BPM Pulse width: 40, 60, 100, 200ms Amplitude: 0.1, 0.5, 1, 2, 3, 4, 5mV
Triangle pulse	Frequency: 30, 60, 120BPM Pulse width: 40, 60, 100, 200ms Amplitude: 0.1, 0.5, 1, 2, 3, 4, 5mV

• Signal Add-on

Parameters	Specifications
DC offset	±300, ±500, ±1000mV
Pacing	Amplitude: 1, 2, 5, 10, 20, 50, 100mV Duration: 0.1, 0.5, 1.0, 1.5, 2.0, 3ms Pacing rate: Synchronization
Drift test	Triangle wave (0.1Hz, 4mVpp)
Noise	Main noise: 50Hz, 60Hz, White noise Amplitude: 1, 2, 5, 10mVpp Frequency: 15, 20, 30, 40BrPM
Respiration	Baseline: 500Ω, 1000Ω, 1500Ω Ratio (inspiration:expiration): 1:1 Variation: 1Ω, 2Ω, 5Ω Apnea: 12s, 22s, 32s, continuous, off
Play raw data	Sample rate: Maximum: 10kHz (able to play repeatedly)

• General Specifications

Items	Specifications
Temperature	Operating: 10°C - 40°C (50°F - 104°F) Storage: 0°C - 50°C (32°F - 122°F)
Humidity	10% - 90% non-condensing
Altitude	Up to 2000m
Communications	USB Type-C connector
Power	5V DC
Battery charger	5V, 1A
Battery life	12 hours (continuous testing in power-saving mode)
Mechanical	Housing: ABS Plastic Size (L x W x H): 18.0 x 12.8 x 5.5cm Weight: 950g
Data capacity	32GB micro SD card

• Compliance Specifications

Items	Specifications
FCC	EMC P15B
CE	- EMC EN61326-1 - ESD 8kV (contact), 15kV(air) - EMI Class A, Class B - Safety IEC/EN61010-1:2010 + A1:2016; Pollution degree 2 61010-2-030:201

Ordering Information

• HECG100 Test System

Part No.	Description	Quantity
100-EC00007	Model No.: HECG100 Model Name: Handheld 12-lead ECG Simulator	1

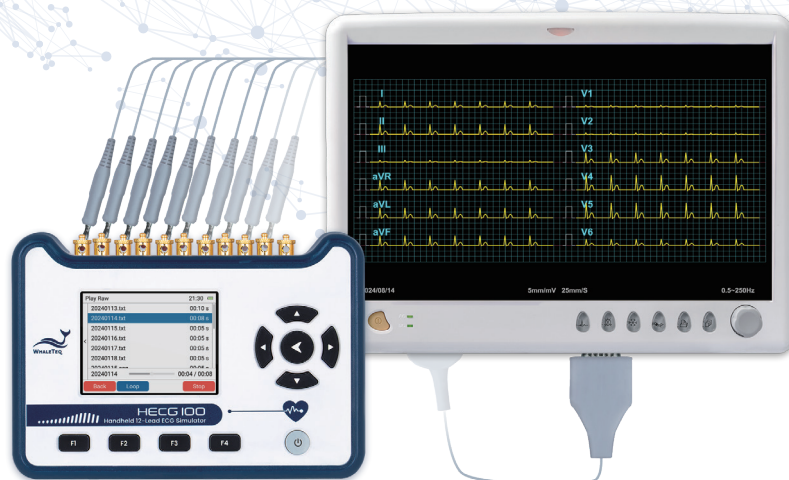
• Optional Accessories

Part No.	Description	Quantity
K21-0738302	RCA male to BNC cable (74cm) (black)	1
K27-0600301	USB Type-C to Type-C cable (male to male) (60cm) (black)	1
S71-0201011	32GB micro SDHC card	1

• Optional Calibration Service and Warranty Extension

Part No.	Description
YY0007	Model No.: C3 Provides (3) years of calibration service coverage. WhaleTeq equipment can be calibrated to original performance on the basis of (1) year interval.
YY0008	Model No.: R3 Extends the limited warranty from (1) year to (3) years.

Diagram



HECG100
Scan for
more information

www.whaleteq.com

service@whaleteq.com

8F., No. 125 Songjiang Rd., Zhongshan Dist., Taipei City 104474, Taiwan

+886-2-2517-6255

+886-2-2596-0702