ECG-Simulator **ES-300**

Testing System for function tests of ECG devices

- ☑ ECG impulse output
- ☑ periodic signals
- ☑ arrhythmia output
- ☑ pacemaker outputs
- ☑ simulation of respiration
- ☑ signal output according to IEC 60601
- ☑ user specific language setting

Test and measurement technic
for medicine and industry

TÜVRheinland ZERTIFIZIERT Management System ISO 9001:2015

S.P.L. Elektronik

Technical Data

Line voltage:	83 – 264 V ac, 50 / 60 Hz or internal accumulator operation
Nominal power:	max. 25 VA – internalpowersupply
Protection class:	Internal power supply
Environmental temperature:	+ 5 - + 40 °C
Storage temperature:	-10 - + 50 °C
ECG impulse amplitude:	1 – 5 mV ± 1% in 1 mV steps
ECG signal duration:	1 – 200 ms ± 1%
1 – 200 ms ± 1%	
	in 1 ms steps
ECG impulse form:	sinus, sinus square, triangle, rectangle, trapeze, ISO, ventricular fibrillation, ventricular tachycardia, mains frequency, QRS
ECG impulse frequency:	10 - 300 bpm ± 2 % in 1 bpm steps
Signal frequency variable:	1 - 100 Hz ± 2 % in 1 Hz steps
Signal frequency sine:	0,3 Hz ± 2 %
Respiration:	basic value ± 1 Ohm
Interface:	1 x RS-232 for PC-connection
Testing device connection:	10 sockets 4 mm for ECG
Digital display:	4 x 16 char display
Keyboard:	6 key foil keyboard
Accessories:	1 x RS-232 interface cable charger
Mechanical data:	light weight metal case IP20
Dimensions:	140 x 220 x 30 mm (W x H x D)
Weight:	approx. 0,5 kg
Selectable languages:	german, englisch, french, polish spanish, Italian, portuguese, turkish

The ES-300 serves as a test-signal generator for ECG impulses. These ECG impulses can be used for the functional testing of the signal-representation and signal-evaluation of ECG monitors. Furthermore, the extended ECG functionality can be tested over a respiration-function with apnoea-alarm-control.

The execution of a signal-output can be done with the PC-Software. The results of the signal-representation can be determined, assessed and stored.

PC-Software can be used for a flexible output of the offered waveforms. Consequently, integration into complex test instructions and into automatic test-sequences is possible. For that reason, a high-quality documentation of the signal-representation and signal-evaluation of an ECG appliance is possible.

Because of the, as far as possible, freely configurable and variable ECG signal forms, a large variety of signal sequences can be brought to the output. The simulation of arrhythmic signal forms offers the possibility to test more complex devices in accordance with a standard.

The generation of the calibration impulse CAL and ANE after IEC 60601-2-51:2003 enables practical operating function-controls for manufacturers and examiners.

-	Voltage
Abl. I (L - R)	+ 1,00 mV
Abl. II (F - R)	+ 1,56 mV
Abl. III (F - L)	- 0,56 mV
N – R	+ 0,59 mV
N – L	+ 1,59 mV
N – F	+ 2,15 mV
N – C1	+ 0,59 mV
N – C2	+ 1,18 mV
N – C3	+ 1,75 mV
N – C4	+ 2,03 mV
N – C5	+ 2,83 mV
N – C6	+ 3,35 mV

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