

# PS420

## SIMULADOR DE PACIENTE



### Descripción

El PS420 es un simulador portátil de paciente de altas prestaciones para la verificación total de las funciones de los monitores.

Tan pequeño que cabe en un bolsillo, el PS420 dispone de una amplia capacidad de simulación, incluyendo un rango completo de ECG, respiración, presión, temperatura y condiciones de gasto cardíaco. Incluye 12 derivaciones de ECG, dos canales de simulación de presión, 35 selecciones de arritmia, simulación de marcapasos así como ritmos sinusales normales de paciente adulto y pediátrico.

Para un fácil uso, dispone de teclas de función que guían a los usuarios en la mayor parte de las selecciones habituales.

### Características principales

- Compacto, ligero y de tamaño de mano
- Teclas de función para las selecciones habituales
- Simulación de 12 derivaciones de ECG
- Selección de respiración y temperatura
- Simulación de dos canales de presión
- Salida de gasto cardíaco (opcional)
- Ritmos sinusal normal adulto y pediátrico
- 35 selecciones de arritmia
- Formas de onda de verificación de características
- Niveles de segmento ST
- Artefactos de ECG
- Simulación de marcapasos
- Puerto serie RS232 para control de PC
- Funcionamiento a pila

Tel: 935 862 747  
 Fax: 935 862 749  
 E-mail: [info@stelectromedicina.es](mailto:info@stelectromedicina.es)  
 Web: [www.stelectromedicina.es](http://www.stelectromedicina.es)

**ST - Electromedicina, s.a.**  
 c/ Atenas, nº 23-25, Nave 2  
 Pol. Ind. Cova Solera  
 08191 - RUBI  
 (Barcelona) - SPAIN

## Technical Specifications

### ECG

Normal Rate: 80 BPM  
Selectable Rates: 30, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, and 300 BPM  
Accuracy:  $\pm 1\%$   
Output Impedance: 500, 1000, 1500, and 2000  $\Omega$  for Leads I, II, and III  
ECG Amplitudes: 0.5, 1, 1.5, and 2 mV  
Amplitude Accuracy:  $\pm 2\%$  Lead II  
High-Level Output: 1000x Lead II

### Adult or Pediatric ECG Waveform

Performance Waveform  
Lead II Square Wave: 2 Hz, 0.125 Hz  
Pulse: 30, 60, and 120 BPM, 60 ms pulse width  
Sine Wave: 0.5, 4, 10, 40, 50, and 60 Hz (1 mV amplitude, Lead II)  
Triangle Wave: 2 Hz

### ST Segment Analysis

Elevated or Depressed: - 0.8 mV to + 0.8 mV in 0.1 mV steps

### Pacemaker

Pacer Spike Amplitude: 2, 4, 8, and 10 mV in Lead II  
Accuracy:  $\pm 5\%$ , Lead II  
Pacer Spike Duration: 0.1, 0.5, 1, 1.5, and 2 ms  
Accuracy:  $\pm 5\%$   
Asynchronous Pacemaker  
Pacer Non-Function  
Pacer Non-Capture  
Demand Occasional Sinus  
Demand Frequent Sinus  
AV Sequential

### Blood Pressure

Input/Output Impedance: 350  $\Omega$   
Exciter Input Limit:  $\pm 10$  V  
Exciter Input Frequency Range: DC to 4000 Hz  
Transducer Sensitivity: 5 or 40  $\mu\text{V}/\text{V}/\text{mmHg}$   
Level Accuracy:  $\pm 1\%$ ,  $\pm 1$  mmHg  
Static Levels BP1: - 10, 0, 50, 100, 150, 200, and 250 mmHg  
Static Levels BP2: - 10, 0, 80, 160, 240, 320, and 400 mmHg  
Channel Selections:  
Arterial 120/80, Channel 1 and 2  
Radial Artery 120/80, Channel 1 and 2  
Left Ventricle 120/00, Channel 1 and 2  
Right Ventricle 25/00, Channel 1 and 2  
Central Venous 15/10, Channel 2  
Pulmonary Artery 25/10, Channel 2  
Pulmonary Wedge 10/2, Channel 2  
Left Atrium 14/4; Automatic Swan/Ganz (every 20 sec)  
Manual Swan/Ganz (changes when entry is selected), Channel 2  
Synchronized with all normal sinus rates.  
Physiologically track all arrhythmia selection

### Cardiac Output

(must have optional Cardiac Output Adapter Box p/n 2462200)  
Catheter Type: Baxter Edwards, 10 cc  
Blood Temperature: 98.6  $^{\circ}\text{F}$  (37  $^{\circ}\text{C}$ )  
CO for 35.6  $^{\circ}\text{F}$  (2  $^{\circ}\text{C}$ ): 3, 5, 7 l/min  
CO for 68  $^{\circ}\text{F}$  (20  $^{\circ}\text{C}$ ): 3, 5, 7 l/min  
Cal Pulse: Of 1  $^{\circ}\text{C}$  for 1 sec; of Delta 402  $\Omega$  for 4 sec.

Computational Constant: For 35.6  $^{\circ}\text{F}$  (2  $^{\circ}\text{C}$ ) is 0.561; for 68  $^{\circ}\text{F}$  (20  $^{\circ}\text{C}$ ) is 0.608  
Left to Right Shunt: 35.6 and 68  $^{\circ}\text{F}$  (2 and 20  $^{\circ}\text{C}$ )  
Faulty Injectate: 35.6 and 68  $^{\circ}\text{F}$  (2 and 20  $^{\circ}\text{C}$ )  
Accuracy:  $\pm 5\%$   
Calibrated or uncalibrated cardiac output waves for 4 different CO values

### Respiration

Baseline Impedance: 500, 1000, 1500, and 2000  $\Omega$ , Leads I, II, and III  
Lead Selections: LL or LA  
Impedance Variations: 3, 1, 0.5, and 0.2  $\Omega$   
Accuracy:  $\pm 5\%$   
Rates: 15, 20, 30, 40, 60, 80, 100, 120, and 0 BPM for Apnea  
Accuracy:  $\pm 2\%$   
Apnea: 12 seconds, 22 seconds, 32 seconds, and continuous

### Temperature

Compatibility: YSI 400/700 Series  
Temperature: 86, 95, 98.6, 104, and 107.6  $^{\circ}\text{F}$  (30, 35, 37, 40 and 42  $^{\circ}\text{C}$ )  
Temperature Simulation Accuracy:  $\pm 0.25$   $^{\circ}\text{C}$

### Arrhythmias

Base Rate of 80 BPM  
Sinus Arrhythmia  
Atrial (PAC)\*  
Missed Beat\*  
Atrial Tachycardia  
Atrial Flutter  
Nodal (PNC)\*  
Nodal Rhythm  
Supraventricular Tachycardia  
PVC1 Left Ventricular Focus\*  
PVC 1 Early, LV Focus \*  
PVC1 R on T, LV Focus\*  
PVC2 Right Ventricular Focus\*  
PVC2 Early, RV Focus\*  
PVC2 R on T, RV Focus\*  
Multifocal PVCs\*  
Atrial Fibrillation Coarse/Fine  
PVCs 6/minute  
PVCs 12/minute  
PVCs 24/minute  
Frequent Multifocal PVCs  
Bigeminy  
Trigeminy  
Pair PVCs\*  
Run 5 PVCs \*  
Run 11 PVCs\*  
Ventricular Tachycardia  
Ventricular Fibrillation Coarse/Fine  
Asystole  
Conduction Defects  
First Degree  
Second Degree  
Third Degree  
Right Bundle Branch Block  
Left Bundle Branch Block

\*Will go to NSR ECG @ 80 BPM after completion

### Artifacts

50/60 Hz  
Muscle  
Baseline  
Respiration

### Controls

Display: 2-line by 16-character LCD with keypad  
RS232: Bidirectional interface, 9600 Baud

### General Information

Power: 9 V battery/battery eliminator  
Housing: ABS plastic case  
Dimensions: 6.1 in L x 3.7 in W x 1.3 in H ( 15.6 cm L x 9.4 cm W x 3.4 cm H)  
Weight: 0.9 lb (0.4 kg)  
Temperature Requirements  
Operating: 59  $^{\circ}\text{F}$  to 95  $^{\circ}\text{F}$  (15 $^{\circ}\text{C}$  to 35  $^{\circ}\text{C}$ )  
Storage: 32  $^{\circ}\text{F}$  to 122  $^{\circ}\text{F}$  (0  $^{\circ}\text{C}$  to 50  $^{\circ}\text{C}$ )

### Ordering Information

**Model**

**2631290:** PS420 Patient Simulator

**Standard Accessories**

**2631808:** PS420 printed-version user manual

**2631721:** PS420 electronic-version user manual (CD)

**2647372:** Battery eliminator 100 VAC to 240 VAC

**N/A:** 9 V battery

**Optional Accessories**

**2462072:** Universal banana adapter (17024)

**2462189:** Carrying case, single pocket

**2462177:** Carrying case, double pocket

**2651740:** Cardiac output adapter box PS420 (17290)

**2462295:** BP cable, unterminated PS420

**2462312:** Temp.cable, unterminated PS420

**2670242:** PS420 service & calibration manual

**2462217:** RS232 cable

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**Fluke Biomedical**

PO Box 9090, Everett, WA 98206-9090 USA

**Fluke Biomedical Europe AS**

Vegamot 8, N-7048 Trondheim, Norway

**For more information, contact us:**

In the U.S.A. (800) 648-7952 or

Fax (425) 446-5629

In Europe/M-East/Africa +47 73954700 or

Fax +47 73954701

From other countries +1 (425) 347-6100 or

Fax +1 (425) 446-5629

Email: [sales@flukebiomedical.com](mailto:sales@flukebiomedical.com)

Web access: <http://www.flukebiomedical.com>

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