

PS415

Patient Simulator



Technical Data

The PS415 is a high-performance multiparameter patient simulator for testing full-function monitors. Compact and lightweight, the handheld PS415 provides the versatile features and convenience to meet the needs of mobile field service technicians.

The device features 12-lead ECG output, two invasive blood-pressure channels, a wide range of arrhythmia selections, and respiration and temperature simulation. With its broad capability, the PS415 provides one of the best cost-benefit ratios among simulators on the market today.

Technicians control the PS415 with manual commands or onboard autosequences. A convenient pullout card provides quick menu access for all the manual simulations, and the front panel features an easy-to-use soft-key interface.

Key Features

- Handheld
- 12-lead ECG simulations
- Wide range of arrhythmia selections
- Automatic or manual operation
- RS232 port for computer control
- Two invasive blood pressure channels
- Respiration simulation
- Temperature simulation
- Battery operated
- Pullout card for quick menu access

Technical Specifications

Normal Sinus Rhythms

Rates: 30, 40, 60, 70, 80, 90, 100, 120, 140, 150, 160, 180, 200, 210, 220, 240, 270, 300, and 350 BPM
Accuracy: $\pm 1\%$
Auto-Step Rate: 30, 60, 80, 120, 180, and 240 BPM at 30-second intervals
Amplitude Lead II: 0.5, 1, 1.5, and 2 mV
Amplitude Accuracy: $\pm 5\%$ 2-Hz square wave at 1 mV p-p (Lead II)
Limb-Lead Impedance Selections: 500 or 1000 Ω
V-Lead Impedance: 1000 Ω
Accuracy: $\pm 5\%$

ECG Performance

Manual Selections
Pulse: 4 seconds
Square Wave: 2 Hz
Triangle Wave: 2 Hz
Sine Waves: 0.5, 10, 40, 50, 60, and 100 Hz
Automated Sequence: Square wave; pulse; sine waves 10, 40, 50, 60, and 100 Hz; and triangle wave

ECG Arrhythmias

Atrial fibrillation
Second-degree A-V block, type 1
Right-bundle-branch block
Premature atrial contraction
Premature ventricular contraction, standard
Premature ventricular contraction, early
Premature ventricular contraction, R on T
Multifocal PVCs
Bigeminy
Run of 5 PVCs
Ventricular tachycardia
Ventricular fibrillation
Pacemaker
Fetal/Maternal

Blood Pressure Channels 1 and 2

Input/Output Impedance: 300 Ω
Exciter Input Voltage Range: 2 to 16 V
Exciter Input Frequency Range: DC to 4 kHz
Output Sensitivity Selections: 5 or 40 $\mu\text{V/V/mmHg}$
Output Range: 0 to +300 mmHg
Accuracy: $\pm 1\%$ of full range ± 1 mmHg
Dynamic Blood Pressure Waveforms: Specified only at 80 BPM normal sinus rhythm ECG
Rates: All dynamic pressures track all normal sinus rates and all arrhythmias.
Isolation: Electrically isolated from the rest of the instrument

About Fluke Biomedical

Fluke Biomedical is the world's leading manufacturer of quality biomedical test and simulation products. In addition, Fluke Biomedical provides the latest medical imaging and oncology quality-assurance solutions for regulatory compliance.

Today, biomedical personnel must meet the increasing regulatory pressures, higher quality standards, and rapid technological growth, while performing their work faster and more efficiently than ever. Fluke Biomedical provides a diverse range of software and hardware tools to meet today's challenges.

Fluke Biomedical Regulatory Commitment

As a medical device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 certified and our products are:

- FDA Compliant
- CE Certified, where required
- NIST Traceable and Calibrated
- UL, CSA, ETL Certified, where required

BP Channel-1 Waveforms (mmHg)

Manual Selections:
Arterial: 120/80
Left ventricle: 120/0
Central venous pressure: 15/10
Right ventricle: 25/0
Pulmonary artery: 25/10
Pulmonary artery wedge: 10/2
Atmosphere: 0
Static Pressures: 20, 40, 80, 100, 200, 250, and 300
Artifact BP1/BP2
Automated Sequence: Atmosphere: 0, 20, 40, 80, 100, 200, 250, and 300

BP Channel-2 Waveforms (mmHg)

Atmosphere: 0
Track BP1 Mode: BP 2 tracks BP1 setting to facilitate testing patient monitoring equipment with dual BP channels
Central Venous Pressure: 15/10
Swan-Ganz: Insert
Swan-Ganz: Inflate
Swan-Ganz: Deflate
Swan-Ganz: Remove
Automated Sequence: Atmosphere: 0, 20, 40, 80, 100, 200, 250, and 300

Respiration

Output Configurations: Lead I, II, and RL to LL
Baseline Impedances: 500 and 1000 Ω
Accuracy: $\pm 5\%$
Delta Impedances: 0.1, 0.2, 0.5, 1, and 3 Ω
Accuracy $\pm 10\%$ of setting
Normal Physiological Rates: 0, 15, 20, 30, 40, 60, 80, 100, and 120 BPM
Accuracy: $\pm 5\%$ of setting
Apneas: 12 and 32 seconds

Temperature

Selections: 86 $^{\circ}\text{F}$ (30 $^{\circ}\text{C}$), 98.6 $^{\circ}\text{F}$ (37 $^{\circ}\text{C}$), and 104 $^{\circ}\text{F}$ (40 $^{\circ}\text{C}$)
Accuracy: ± 0.7 $^{\circ}\text{F}$ (0.4 $^{\circ}\text{C}$)
Probe Compatibility: YSI 400 series and YSI 700 series
Isolation: Electrically isolated from the rest of the instrument; connector shell is to common ground

Lead Test

If the resistance is less than 1 k Ω , the display flashes at the rate of 4 Hz.

Display

2-digit LCD

Data Interface

RS232 compatible, bidirectional port

5-pin DIN female connector

Baud Rate: 2400

Power

9 V battery for 50-hour life or line-operated via battery eliminator

Output

7.7 VAC, 100 mA, unregulated

Connector

2.5 mm, center (+)

Dimensions

6.3 in L x 4 in W x 1.5 in H
(16 cm L x 10.4 cm W x 3.8 cm H)

Weight

0.8 lb (0.3 kg)

Temperature

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 131 $^{\circ}\text{F}$ (0 $^{\circ}\text{C}$ to 55 $^{\circ}\text{C}$)

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Ordering Information

Model

2558944: PS415 Patient Simulator

Standard Accessories

2572338: Operating manual
2183983: Battery eliminator
2392729: Lead-test adapter
2248505: Soft-sided carrying case

Optional Blood Pressure Cables

2392031: Burdick - Blood pressure cable (10 socket)
2226947: Corometrics - Blood pressure cable (3 pin/3 socket)
2226986: Corometrics - Blood pressure cable (12 pin)
2226856: Criticare - Blood pressure cable (6 pin)
2226856: Critikon - Blood pressure cable (6 pin)
2226842: Datascope - Blood pressure cable (6 socket)
2392031: Datex - Blood pressure cable (10 socket)
2226874: Hewlett Packard/Merlin - Blood pressure cable (12 pin)
2226856: Invivo Research - Blood pressure cable (6 pin)
2226856: Ivy Biomed - Blood pressure cable (6 pin)
2226842: Kontron/Roche - Blood pressure cable (6 socket)
2392022: Marquette 7000 - Blood pressure cable (8 pin)
2392297: GE Medical/Marquette Eagle - Blood pressure cable (11 pin)
2226856: Medical Data Electronics (MDE) - Blood pressure cable (6 pin)
2226863: Mennen Medical - Blood pressure cable (6 pin)
2226895: Nihon Khoden - Blood pressure cable (5 pin)
2226856: North American Drager - Blood pressure cable (6 pin)
2226947: Novamatrix - Blood pressure cable (3 pin/3 socket)
2226856: Ohmeda - Blood pressure cable (6 pin)
2226856: Physio-Control - Blood pressure cable (6 pin)
2226856: Protocol - Blood pressure cable (6 pin)
2392031: Puritan Bennett - Blood pressure cable (10 socket)
2226901: Siemens - (Use w/Siemens Med. Transducer Adapter 3368-383-E530U) to run a single invasive BP channel on Siemens Med. SC6000 & SC9000 ser. monitors.) - Blood pressure cable (10 pin)
2226842: SMEC - Blood pressure cable (6 socket)
2226856: SpaceLabs (Use with SpaceLabs adapters 700-0028-00 & 0120-0551-00 when testing UltraView Command Module.) - Blood pressure cable (6 pin)
2226912: SpaceLabs/Squibb - Blood pressure cable (5 pin)
2226856: SpaceLabs (Use w/SpaceLabs adptrs 700-0028-00 & 0120-0551-00 when testing UltraView Command Mod.) - Tektronix/Squibb - Blood press. Cble (6 pin)
2392010: FG Universal BP adapter - (pigtail/unterminated)
2226912: Vitastat - Blood pressure cable (5 pin)
2226856: Vitatek/Squibb - Blood pressure cable (6 pin)

Optional Temperature Cables

2199257: HPT-2 Temperature adapter (Hewlett Packard) (2 pin)
2391976: Temperature cable 400 series, 1/4" phone plug
2391983: Temperature cable 700 series, 1/4" phone plug

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Fluke Biomedical

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