



Technical data

## ProSim 8 / ProSim 8P Vital Signs and ECG Patient Simulator

**FLUKE®**

**Biomedical**



### Leading Edge Performance in Vital Signs Simulation

The industry-leading ProSim 8 / ProSim 8P patient simulator enables biomedical technicians to complete preventive maintenance testing with one device in less than five minutes. The ProSim 8 / ProSim 8P patient simulator is ideal for biomedical technicians testing patient monitors for certain known physiological output signals.

### Key features

- 8-in-1 multifunction patient simulator is a combination ECG simulator, fetal simulator, arrhythmia simulator, respiration simulator, temperature simulator, IBP simulator, cardiac output simulator, cardiac catheterization simulator, NIBP simulator
- SpO<sub>2</sub> simulator to test Rainbow multi-wavelength waveforms (with optional ProSim SpO<sub>2</sub> Test Module)
- Stay-connected ECG posts for easy/secure ECG snap and lead connections
- Static pressure linearity testing
- Improved manometer accuracy with the ProSim 8P
- Repeatable NIBP simulation for dynamic pressure repeatability testing
- Physiologically synchronized pulses across all parameters
- Barcode scanning and direct data capture and printing functionality
- Onboard, patient pre-sets and auto sequences for fast/easy testing
- Multi-language user interface offers choice of language selection
- The device includes an external, long-life battery that allows for more flexible charging options
- Optional OneQA Workflow Automation Software offers customizable procedures/checklists and automated data capture/storage

## Specifications

| General specifications              |                                                                                                                                                                                  |                                                                                                                                             |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions (L x W x H)              | 14.5 cm x 30.2 cm x 8.6 cm (5.7 in x 11.9 in x 3.4 in)                                                                                                                           |                                                                                                                                             |
| Display                             | LCD color display                                                                                                                                                                |                                                                                                                                             |
| Communication                       | USB device upstream port                                                                                                                                                         | Mini-B connector for control by a computer                                                                                                  |
|                                     | USB host controller port                                                                                                                                                         | Type A, 5 V output, 0.5 A max load. Connector for keyboard, barcode reader, and printer                                                     |
| Battery life                        | 9 hours (minimum), 100 NIBP cycles typical                                                                                                                                       |                                                                                                                                             |
| Weight                              | 1.81 kg (4 lb)                                                                                                                                                                   |                                                                                                                                             |
| Safety standards                    | IEC/EN 61010-1 3rd Edition; Pollution degree 2 CAT None                                                                                                                          |                                                                                                                                             |
| Certifications                      | CE, CSA, C-TICK N10140, RoHS                                                                                                                                                     |                                                                                                                                             |
| Electromagnetic compatibility (EMC) | IEC 61326-1:2006                                                                                                                                                                 |                                                                                                                                             |
| Detailed specifications             |                                                                                                                                                                                  |                                                                                                                                             |
| Normal-sinus-rhythm waveform        |                                                                                                                                                                                  |                                                                                                                                             |
| ECG reference                       | The ECG amplitudes specified are for Lead II (calibration), from the baseline to the peak of the R wave. All other leads are proportional                                        |                                                                                                                                             |
| Normal sinus rhythm                 | 12-lead configuration with independent outputs referenced to right leg (RL). Output to 10 universal ECG jacks, color-coded to AHA and IEC standards                              |                                                                                                                                             |
| High-level output                   | 0.5 V/mV ± 5 % of the ECG amplitude setting available on a BNC connector                                                                                                         |                                                                                                                                             |
| Amplitude                           | 0.05 mV to 0.5 mV (0.05 mV steps); 0.5 mV to 5.0 mV (0.25 mV steps)<br>Other leads are proportional to Lead II (reference lead) in percentage per:                               |                                                                                                                                             |
|                                     | Lead I: 70<br>Lead II: 100<br>Lead III: 30                                                                                                                                       | Lead V1: 24<br>Lead V2: 48<br>Lead V3: 100<br>Lead V4: 120<br>Lead V5: 112<br>Lead V6: 80                                                   |
| Amplitude accuracy                  | ProSim 8                                                                                                                                                                         | ± (2 % of setting + 0.05 mV)                                                                                                                |
|                                     | ProSim 8P                                                                                                                                                                        | ±2 % of setting (0.5 mV to 5.0 mV, Lead II)<br>±(2 % of setting + 0.05 mV) (0.05 mV to 0.5 mV, Lead II; 0.05 mV to 5.0 mV, all other leads) |
| ECG rate                            | 10 BPM to 360 BPM in 1 BPM steps                                                                                                                                                 |                                                                                                                                             |
| Rate accuracy                       | ± 1 % of setting                                                                                                                                                                 |                                                                                                                                             |
| ECG waveform selection              | Adult (80 ms) or pediatric (40 ms) QRS duration                                                                                                                                  |                                                                                                                                             |
| ST-segment elevation                | Adult mode only. -0.8 mV to +0.8 mV (0.1 mV steps).<br>Additional steps: + 0.05 mV and - 0.05 mV<br>Based on Lead II 1.0mV nominal waveform, proportional to selected amplitude. |                                                                                                                                             |
| Power-on default                    | 60 BPM, 1.0 mV, adult QRS and ST-segment elevation of 0 mV                                                                                                                       |                                                                                                                                             |



| Pacemaker waveform            |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                    |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pacer pulse                   | Amplitude                                                                                                                                                                                                                                                                                   | 0 (off), ± 2, ± 4, ± 6, ± 8, ± 10, ± 12, ± 14, ± 16, ± 18, ± 20, ± 50, ± 100, ± 200, ± 500, and ± 700 mV for lead II (reference lead)                                                              |
|                               | Accuracy                                                                                                                                                                                                                                                                                    | Reference lead II: ± (5 % setting + 0.2 mV)                                                                                                                                                        |
|                               |                                                                                                                                                                                                                                                                                             | All other leads: ± (10 % setting + 0.4 mV)                                                                                                                                                         |
| Pacer pulse width             | 0.1 ms, 0.2 ms, 0.5 ms, 1 ms, and 2 ms ± 5 %                                                                                                                                                                                                                                                |                                                                                                                                                                                                    |
| Paced arrhythmias             | Atrial 80 BPM<br>Asynchronous 75 BPM<br>Demand with frequent sinus beats<br>Demand with occasional sinus beats<br>Atrio-ventricular sequential<br>Noncapture (one time)<br>Nonfunction                                                                                                      |                                                                                                                                                                                                    |
| Power-on default              | Amplitude 5 mV, width 1 ms, atrial waveform                                                                                                                                                                                                                                                 |                                                                                                                                                                                                    |
| Arrhythmia                    |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                    |
| Baseline NSR                  | 80 BPM                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                    |
| PVC focus                     | Left focus, standard timing (except where specified)                                                                                                                                                                                                                                        |                                                                                                                                                                                                    |
| Supraventricular arrhythmia   | Atrial fibrillation (coarse or fine); atrial flutter; sinus arrhythmia; missed beat (one time); atrial tachycardia; paroxysmal atrial tachcardia; nodal rhythm; and supraventricular tachycardia                                                                                            |                                                                                                                                                                                                    |
| Premature arrhythmia          | Premature atrial contraction (PAC); premature nodal contraction (PNC); PVC1 left ventricular; PVC1 left ventricular, early; PVC1 left ventricular, R on T; PVC2 right ventricular; PVC2 right ventricular, early; PVC2 right ventricular, R on T; and multifocal PVCs                       |                                                                                                                                                                                                    |
| Ventricular arrhythmia        | PVCs 6, 12, or 24 per minute; frequent multifocal PVCs; bigeminy; trigeminy; multiple PVCs (one-time run of 2, 5, or 11 PVCs); monoventricular tachycardia (120 to 300 BPM in 5 BPM steps); poly-ventricular tachycardia (5 types); ventricular fibrillation (coarse or fine); and asystole |                                                                                                                                                                                                    |
| Conduction defect             | First-, second-, or third-degree heart block; and right- or left-bundle branch block                                                                                                                                                                                                        |                                                                                                                                                                                                    |
| Advanced cardiac life support | Shockable pulseless arrest rhythms                                                                                                                                                                                                                                                          | Ventricular fibrillation (coarse), ventricular fibrillation (fine), unstable polymorphic ventricular tachycardia                                                                                   |
|                               | Non-shockable pulseless arrest rhythms                                                                                                                                                                                                                                                      | Asystole                                                                                                                                                                                           |
|                               | Symptomatic bradycardia                                                                                                                                                                                                                                                                     | Sinus bradycardia (< 60 BPM)<br>2nd degree AV block, mobitz type I<br>2nd degree AV block, mobitz type II<br>Complete/3rd degree AV block<br>Right bundle branch block<br>Left bundle branch block |
|                               |                                                                                                                                                                                                                                                                                             | Sinus tachycardia > 150 BPM                                                                                                                                                                        |
|                               |                                                                                                                                                                                                                                                                                             | Supraventricular Tachycardia                                                                                                                                                                       |
|                               | Symptomatic tachycardia: regular narrow-complex tachycardia (QRS < 0.12 seconds)                                                                                                                                                                                                            | Sinus tachycardia > 150 BPM                                                                                                                                                                        |
|                               |                                                                                                                                                                                                                                                                                             | Supraventricular Tachycardia                                                                                                                                                                       |
|                               | Symptomatic tachycardia: regular wide-complex tachycardias (QRS ≥ 0.12 seconds)                                                                                                                                                                                                             | Sinus tachycardia > 150 BPM                                                                                                                                                                        |
|                               | Supraventricular tachycardia SVT with aberrancy                                                                                                                                                                                                                                             |                                                                                                                                                                                                    |
| Irregular tachycardia         | Atrial fibrillation (coarse and fine), atrial flutter, unstable monomorphic ventricular tachycardia (120 BPM to 300 BPM), torsade de pointes/polymorphic ventricular tachycardia (long QT interval)                                                                                         |                                                                                                                                                                                                    |

### ECG performance testing

|                       |                                                                                                                                                                                                                                                                                                 |                                                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Amplitude             | 0.05 mV to 0.5 mV (0.05 mV steps); 0.5 mV to 5.0 mV (0.25 mV steps)<br>Other leads are proportional to Lead II (reference lead) in percentage per:<br>Lead I: 70                                      Lead III: 30<br>Lead II: 100                                      Lead V1 through V6: 100 |                                                                                                                                             |
| Pulse wave            | 30 BPM, 60 BPM, with 60 ms pulse width                                                                                                                                                                                                                                                          |                                                                                                                                             |
| Square wave           | 0.125 Hz, 2 Hz, 2.5 Hz                                                                                                                                                                                                                                                                          |                                                                                                                                             |
| Triangle wave         | 0.125 Hz, 2 Hz, 2.5 Hz                                                                                                                                                                                                                                                                          |                                                                                                                                             |
| Sine wave             | 0.05 Hz, 0.5 Hz, 1, 2 Hz, 5 Hz, 10 Hz, 25 Hz, 30 Hz, 40 Hz, 50 Hz, 60 Hz, 100 Hz, and 150 Hz                                                                                                                                                                                                    |                                                                                                                                             |
| R-wave detection      | Waveform                                                                                                                                                                                                                                                                                        | Triangular pulse                                                                                                                            |
|                       | Rate                                                                                                                                                                                                                                                                                            | 30 BPM, 60 BPM, 80 BPM, 120 BPM, 200 BPM, and 250 BPM                                                                                       |
|                       | Width                                                                                                                                                                                                                                                                                           | 8 ms to 20 ms in 2 ms steps, and 20 ms to 200 ms in 10 ms steps                                                                             |
|                       | Width accuracy                                                                                                                                                                                                                                                                                  | ± (1 % of setting + 1 ms)                                                                                                                   |
| QRS detection         | Widths                                                                                                                                                                                                                                                                                          | 8 ms to 20 ms in 2 ms steps, and 20 ms to 200 ms in 10 ms steps                                                                             |
|                       | Width accuracy                                                                                                                                                                                                                                                                                  | ± (1 % of setting + 1 ms)                                                                                                                   |
|                       | Rate                                                                                                                                                                                                                                                                                            | 30 BPM, 60 BPM, 80 BPM, 120 BPM, 200 BPM, and 250 BPM                                                                                       |
|                       | R-Wave up slope                                                                                                                                                                                                                                                                                 | 0.875 amplitude, 0.4375 x width                                                                                                             |
|                       | R-Wave down slope                                                                                                                                                                                                                                                                               | Full amplitude, 0.5 x width                                                                                                                 |
|                       | S-Wave up slope                                                                                                                                                                                                                                                                                 | 0.125 amplitude, 0.0625 x width                                                                                                             |
| Tall T-wave rejection | Waveform                                                                                                                                                                                                                                                                                        | QT Interval 350 ms<br>T-Wave width 180 ms<br>T-Wave shape ½ sinewave                                                                        |
|                       | Amplitude                                                                                                                                                                                                                                                                                       | 0 % to 150 % reference lead amplitude in 10 % steps                                                                                         |
|                       | Rate                                                                                                                                                                                                                                                                                            | 80 BPM                                                                                                                                      |
| Rate accuracy         | ± 1 % of setting                                                                                                                                                                                                                                                                                |                                                                                                                                             |
| Amplitude accuracy    | ProSim 8                                                                                                                                                                                                                                                                                        | ± (2 % of setting + 0.05 mV)                                                                                                                |
|                       | ProSim 8P                                                                                                                                                                                                                                                                                       | ±2 % of setting (0.5 mV to 5.0 mV, Lead II)<br>±(2 % of setting + 0.05 mV) (0.05 mV to 0.5 mV, Lead II; 0.05 mV to 5.0 mV, all other leads) |

### ECG artifact

|             |                                                            |
|-------------|------------------------------------------------------------|
| Type        | 50 Hz, 60 Hz, muscular, baseline wander, respiration       |
| Size        | 25 %, 50 %, 100 % of the normal sinus R-Wave for each lead |
| Lead select | All, RA, LL, LA, V1, V2, V3, V4, V5, V6                    |

### Fetal/Maternal ECG

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| Fetal heart rate (fixed)        | 60 BPM to 240 BPM in 1 BPM steps                                                  |
| Fetal heart rate (IUP)          | 140 BPM at beginning, then varies with pressure                                   |
| Intrauterine-pressure waveforms | Early deceleration, late deceleration, and acceleration                           |
| Wave duration                   | 90 seconds, bell-shaped pressure curve, from 0 mmHg to 90 mmHg and returning to 0 |
| IUP period                      | 2 min, 3 min, or 5 minutes; and manual                                            |
| Default settings                | FHR 140 BPM, early deceleration wave, manual                                      |

| Invasive blood pressure        |                                                                                                                                               |                                                                             |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Channels                       | 2, each independently settable with identical parameters and are individually electrically isolated from all other signals                    |                                                                             |
| Input/output impedance         | 300 Ω ± 10 %                                                                                                                                  |                                                                             |
| Exciter input range            | 2 to 16 V peak                                                                                                                                |                                                                             |
| Exciter-input frequency range  | DC to 5000 Hz                                                                                                                                 |                                                                             |
| Transducer sensitivity         | 5 (default) or 40 μV/V/mmHg                                                                                                                   |                                                                             |
| Pressure accuracy              | ± (1 % of setting + 1 mmHg) accuracy guaranteed for dc excitation only                                                                        |                                                                             |
| Static pressure                | - 10 to + 300 mmHg in 1 mmHg steps                                                                                                            |                                                                             |
| Pressure units                 | mmHg or Kpa                                                                                                                                   |                                                                             |
| Dynamic waveforms              | Types (default pressures                                                                                                                      | Arterial (120/80)                                                           |
|                                |                                                                                                                                               | Radial artery (120/80)                                                      |
|                                |                                                                                                                                               | Left ventricle (120/00)                                                     |
|                                |                                                                                                                                               | Right ventricle (25/00)                                                     |
|                                |                                                                                                                                               | Pulmonary artery (25/10)                                                    |
|                                |                                                                                                                                               | Pulmonary-artery wedge (10/2)                                               |
|                                |                                                                                                                                               | Right atrium (central venous or CVP) (15/10)                                |
|                                | Pressure variability                                                                                                                          | Systolic and diastolic pressures are independently variable in 1 mmHg steps |
| Swan-Ganz sequence             | Right atrium, right ventricle (RV), pulmonary artery (PA), pulmonary artery wedge (PAW)                                                       |                                                                             |
| Cardiac catheterization        | Chambers                                                                                                                                      | Aortic, pulmonary valve, and mitral valve                                   |
| Respiration artifact           | Arterial, radial artery, and left ventricle                                                                                                   | 5 % to 10 % multiplication                                                  |
| BP output                      | Circular DIN 5-Pin                                                                                                                            |                                                                             |
| Power-on default               | 0 mmHg                                                                                                                                        |                                                                             |
| Respiration                    |                                                                                                                                               |                                                                             |
| Rate                           | 0 (OFF), 10 BrPM to 150 BrPM in 1 BrPM steps                                                                                                  |                                                                             |
| Waves                          | Normal or ventilated                                                                                                                          |                                                                             |
| Ratio (inspiration:expiration) | Normal                                                                                                                                        | 1:1, 1:2, 1:3, 1:4, 1:5                                                     |
|                                | Ventilated                                                                                                                                    | 1:1                                                                         |
| Impedance variations (Δ Ω)     | 0.00 Ω to 1.00 Ω in 0.05 Ω steps and 1 Ω to 5 Ω in 0.25 Ω steps                                                                               |                                                                             |
| Accuracy delta                 | ± (5 % of setting + 0.1 Ω)                                                                                                                    |                                                                             |
| Baseline                       | 500 Ω, 1000 Ω (default), 1500 Ω, 2000 Ω, Leads I, II, III                                                                                     |                                                                             |
| Accuracy baseline              | ± 5 %                                                                                                                                         |                                                                             |
| Respiration lead               | LA or LL (default)                                                                                                                            |                                                                             |
| Apnea selection                | 12 sec, 22 sec, or 32 seconds (one-time events), or continuous (Apnea ON = respiration OFF)                                                   |                                                                             |
| Power-on default               | 20 BrPM, delta 1.0 Ω                                                                                                                          |                                                                             |
| Temperature                    |                                                                                                                                               |                                                                             |
| Temperature                    | 30.0 °C to 42.0 °C in 0.5 °C steps for standard temperature. 0 °C, 24 °C, 25 °C, 37 °C, and 40 °C for high accuracy temperature. <sup>1</sup> |                                                                             |
| Accuracy                       | ±0.4 °C for standard temperature. ±0.1 C for high accuracy temperature <sup>1</sup>                                                           |                                                                             |
| Compatibility                  | Yellow Springs, Inc. (YSI) Series 400 and 700                                                                                                 |                                                                             |
| Output                         | Circular DIN 4-Pin                                                                                                                            |                                                                             |

1. Units made before 2025 may not have the High Accuracy mode. Check the product to determine if it does.

### Cardiac output

|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| Catheter type             | Baxter Edwards, 93a-131-7f                                   |
| Calibration coefficient   | 0.542 (0 °C injectate), 0.595 (24 °C injectate)              |
| Blood temperature         | 36 °C (98.6 °F) to 38 °C (100.4 °F) ± 0.2 °C in 1 °C steps   |
| Injectate volume          | 10 cc                                                        |
| Injectate temperature     | 0 °C or 24 °C                                                |
| Cardiac output            | 2.5, 5, 10 liters per minute ± 7.5 %                         |
| Faulty-injectate curve    | Waveform for simulation available                            |
| Left-to-right-shunt curve | Waveform for simulation available                            |
| Calibrated pulse          | 1.5 ° for 1 second                                           |
| Connector                 | Circular DIN 7 pin                                           |
| Power-on default          | 5 liters per minute, 0 °C injectate, 37 °C blood temperature |

### Non-invasive blood pressure

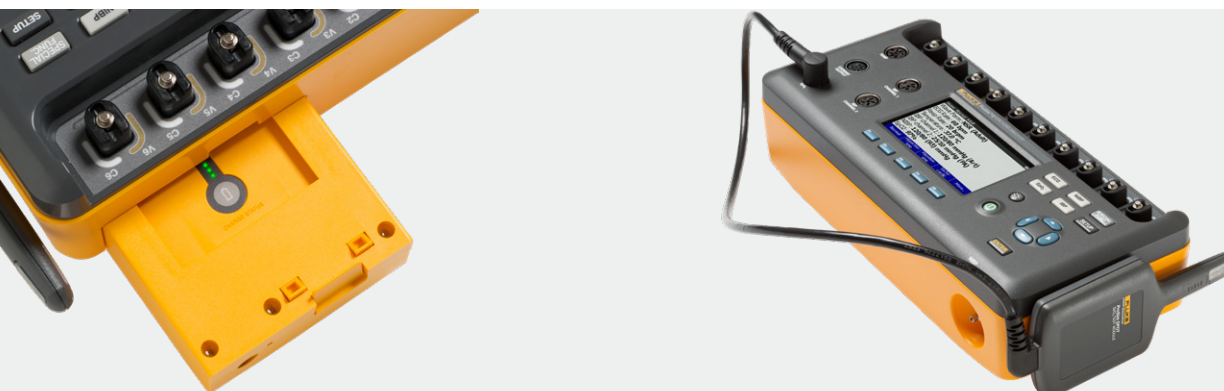
|                               |                                                                    |                                                                                                                                                                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pressure units                | mmHg or kPa                                                        |                                                                                                                                                                                                                                                                                                        |
| Manometer<br>(pressure meter) | ProSim 8 Range                                                     | 10 mmHg to 400 mmHg                                                                                                                                                                                                                                                                                    |
|                               | ProSim 8 Accuracy                                                  | ±(0.5 % reading + 0.5 mmHg)                                                                                                                                                                                                                                                                            |
|                               | ProSim 8P Range                                                    | 0 mmHg to 400 mmHg                                                                                                                                                                                                                                                                                     |
|                               | ProSim 8P Accuracy                                                 | 0 mmHg to 300 mmHg (±0.75 mmHg) <sup>1</sup><br>300 mmHg to 400 mmHg<br>±(0.5 % reading + 0.5 mmHg)                                                                                                                                                                                                    |
|                               | Resolution (ProSim 8 and 8P)                                       | 0.1 mmHg                                                                                                                                                                                                                                                                                               |
| Pressure source               | Target pressure range                                              | 15 mmHg to 400 mmHg                                                                                                                                                                                                                                                                                    |
|                               | Resolution                                                         | 1 mmHg                                                                                                                                                                                                                                                                                                 |
| NIBP simulations              | Pulse                                                              | 2 mmHg max into 500 ml NIBP system                                                                                                                                                                                                                                                                     |
|                               | Volume of air moved                                                | 1.25 ml max                                                                                                                                                                                                                                                                                            |
|                               | Simulations<br>(systolic/diastolic [MAP])                          | Adult: 60/30 (40), 80/50 (60); 100/65 (77);<br>120/80 (93); 150/100 (117); and 200/150 (167)<br>and 255/195 (215)<br><br>Neonatal: 35/15 (22); 60/30 (40); 80/50 (60);<br>100/65 (77); 120/80 (93) and 150/100<br><br>Pressure variability: systolic and diastolic pressures<br>are variable by 1 mmHg |
|                               | Repeatability                                                      | Within ± 2 mmHg (at maximum pulse size<br>independent of device under test)                                                                                                                                                                                                                            |
|                               | Synchronization: normal<br>Sinus heart rates:<br>30 BPM to 240 BPM | Maximum rate at 1 ml: 240 BPM<br>achievable with pulses up to 1 ml<br><br>Maximum rate at 1.25 ml: 180 BPM                                                                                                                                                                                             |
|                               | Synchronization: arrhythmias                                       | Premature atrial contraction (PAC), premature<br>ventricular contraction (PVC), atrial fibrillation, and<br>missed beat                                                                                                                                                                                |
|                               |                                                                    |                                                                                                                                                                                                                                                                                                        |
| Leak test                     | Target pressure                                                    | 15 mmHg to 400 mmHg                                                                                                                                                                                                                                                                                    |
|                               | Elapse time                                                        | 0:30 min to 5:00 minutes:<br>seconds in 30 second steps                                                                                                                                                                                                                                                |
|                               | Leakage rate                                                       | 0 mmHg/minute to 200 mmHg/minute<br><2 mmHG/min into 500 ml rigid volume                                                                                                                                                                                                                               |
| Pressure relief test range    | 100 to 400 mmHg                                                    |                                                                                                                                                                                                                                                                                                        |

1. To achieve this accuracy, the product must be operating between 10 °C and 30 °C (50 °F and 86 °F) and the user must zero the manometer manually before each test.

**Oximeter SpO<sub>2</sub> optical emitter and detector (optional)**

|                                                                                              |                                                                                                                                                                  |                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| % O <sub>2</sub>                                                                             | Range                                                                                                                                                            | 30 % to 100 %                                                                                                                                                             |
|                                                                                              | Resolution                                                                                                                                                       | 1 %                                                                                                                                                                       |
| % O <sub>2</sub> accuracy                                                                    | With oximeter manufacturer's R-curve                                                                                                                             | Saturation within UUT specific range:<br>± (1 count + specified accuracy of the UUT)<br><br>Saturation outside UUT specific range:<br>monotonic with unspecified accuracy |
|                                                                                              | With Fluke Biomedical R-curves                                                                                                                                   | 91 % to 100 % ± (3 counts + specified accuracy of the UUT)                                                                                                                |
|                                                                                              |                                                                                                                                                                  | 81 % to 90 % ± (5 counts + specified accuracy of the UUT)                                                                                                                 |
|                                                                                              |                                                                                                                                                                  | 71 % to 80 % ± (7 counts + specified accuracy of the UUT)                                                                                                                 |
|                                                                                              |                                                                                                                                                                  | Below 71 % monotonic with unspecified accuracy                                                                                                                            |
| % O <sub>2</sub> repeatability (ProSim 8P) <sup>2</sup>                                      | ≤1% (Calculated as 1 standard deviation of repeated measurements, independent of device under test)                                                              |                                                                                                                                                                           |
| Heart rate                                                                                   | 30 BPM to 300 BPM in 1 BPM steps. Oximeter SpO <sub>2</sub> optical emitter and detector is synchronized with ECG rate delayed by 150 ms.                        |                                                                                                                                                                           |
| Transmission: ratio of detector current to LED current, expressed in parts per million (ppm) | Range                                                                                                                                                            | 0 ppm to 300.00 ppm                                                                                                                                                       |
|                                                                                              | Resolution                                                                                                                                                       | 0.01 ppm                                                                                                                                                                  |
|                                                                                              | Accuracy                                                                                                                                                         | + 50 %/- 30 % for compatible monitors, unspecified for others. Selected by finger size and color: dark, thick finger, medium finger, light, thin finger, neonatal foot.   |
| Pulse amplitude                                                                              | Range                                                                                                                                                            | 0 % to 20.00 %                                                                                                                                                            |
|                                                                                              | Resolution                                                                                                                                                       | 0.01 %                                                                                                                                                                    |
| Artifact                                                                                     | Respiration                                                                                                                                                      | Range: 0 % to 5 % of transmission                                                                                                                                         |
|                                                                                              |                                                                                                                                                                  | Resolution: 1 %                                                                                                                                                           |
|                                                                                              |                                                                                                                                                                  | Rate: all ProSim respiration simulation settings                                                                                                                          |
|                                                                                              | Ambient light                                                                                                                                                    | Range: 0 to 5X transmitted light                                                                                                                                          |
|                                                                                              |                                                                                                                                                                  | Resolution: 1X<br><br>Frequency: DC, 50 Hz, 60 Hz, and 1 kHz to 10 kHz in 1 kHz steps                                                                                     |
| Masimo Rainbow technology                                                                    | Masimo Rainbow technology with an optional adapter cable supplied by Masimo that allows the ProSim two wavelength to test the Rainbow multiple wavelength system |                                                                                                                                                                           |
| Compatible manufacturer products                                                             | With manufacturer R-curve                                                                                                                                        | Nellcor, Masimo, Nonin, and Nihon Kohden                                                                                                                                  |
|                                                                                              | With Fluke R-curve                                                                                                                                               | Mindray, GE-Ohmeda, Philips/HP, and BCI                                                                                                                                   |

2. This specification only applies to the ProSim 8P





### Pre-Defined Simulations

Normal  
Hypertensive  
Hypotensive  
Tachycardic  
Bradycardic  
Ventricular fibrillation  
Asystole

### Autosequences (default)

Monitor testing sequence  
ECG testing  
Oximeter testing sequence  
Cardiac failure sequence  
Arrhythmia sequence  
Exercise sequence  
Respiration sequence  
Performance wave test  
IBP testing sequence  
Temperature sequence

## Ordering information

| Part number | Description                                    |
|-------------|------------------------------------------------|
| 3985658     | ProSim SpO <sub>2</sub> Test Module            |
| 4034609     | ProSim Rainbow Test Cable                      |
| 3979409     | ProSim 8 Vital Signs Simulator                 |
| 3985195     | ProSim 8 Vital Signs Simulator, AUSTRALIA      |
| 3985206     | ProSim 8 Vital Signs Simulator, BRAZIL         |
| 3985188     | ProSim 8 Vital Signs Simulator, JAPAN          |
| 3985163     | ProSim 8 Vital Signs Simulator, SCHUKO         |
| 3985174     | ProSim 8 Vital Signs Simulator, UK             |
| 5255933     | ProSim 8 Vital Signs Simulator, AUS + SPOT     |
| 5255940     | ProSim 8 Vital Signs Simulator, BRAZ + SPOT    |
| 5262232     | ProSim 8 Vital Signs Simulator, JAPAN + SPOT   |
| 5255916     | ProSim 8 Vital Signs Simulator, SCHUKO + SPOT  |
| 5255925     | ProSim 8 Vital Signs Simulator, UK + SPOT      |
| 6021706     | ProSim 8P Vital Signs Simulator                |
| 4322373     | ProSim 8P Vital Signs Simulator, AUSTRALIA     |
| 6021982     | ProSim 8P Vital Signs Simulator, BRAZIL        |
| 6021995     | ProSim 8P Vital Signs Simulator, JAPAN         |
| 4322364     | ProSim 8P Vital Signs Simulator, SCHUKO        |
| 6022079     | ProSim 8P Vital Signs Simulator, UK            |
| 6024669     | ProSim 8P Vital Signs Simulator + SPOT         |
| 6022257     | ProSim 8P Vital Signs Simulator, AUS + SPOT    |
| 6022274     | ProSim 8P Vital Signs Simulator, BRAZ + SPOT   |
| 6022288     | ProSim 8P Vital Signs Simulator, JAPAN + SPOT  |
| 6022290     | ProSim 8P Vital Signs Simulator, SCHUKO + SPOT |
| 6022300     | ProSim 8P Vital Signs Simulator, UK + SPOT     |



## Standard Accessories

| Part number | Description                                         |
|-------------|-----------------------------------------------------|
| 3980671     | ProSim 8 / 8P Users Manual                          |
| 3980667     | ProSim 8 / 8P Getting start manual                  |
| 4021085     | ProSim 8 / 8P Battery Pack                          |
| 4034393     | USB Cable                                           |
| 2392173     | IBP Cable, unterminated                             |
| 4034597     | ProSim 8 / 8P Carrying Case                         |
| 4308086     | ProSim NIBP Mandrel Set                             |
| 2391882     | Set of NIBP Cuff Adapters                           |
| 2184298     | AC/DC Power Supply<br>Power cord (country-specific) |



## Optional Accessories

| Part number | Description                          |
|-------------|--------------------------------------|
| 2392199     | CI-3 Cardiac Output Box              |
| 3408564     | Mini-DIN to DIN IBP Adapter          |
| 4034611     | NIBP Rigid Test Chamber 500ML        |
| 4034627     | Ansur Test Software ProSim 8 Plug-In |

## Cable kits

| Part number | Model                                   | Includes                                                                                                                                                                                                                                                          |
|-------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3984910     | ProSim 8 Accessory Kit                  | DIN to minDin adapter, HP/Philips Intellivue IBP cable, GE Marquette Eagle/Dash/Solar IBP cable, Welch Allyn Propaq/SpaceLabs Ultraview IBP cable, YSI400 series temperature cable, YSI700 series temperature cable, CI-3 Cardiac Output Box, spare battery pack) |
| 3984922     | HP/Phillips intellivue Cable Set        | HP-3 BP Cable (2198902) two, HPT-2 Tamp/C.O. Injct Cable Assembly (2199257), COA-1 Cable Assembly (2199240), UT-4, Low profile 1/4 inch phone plug, YSI 400 Series Compatible 2 conductor (2523334)                                                               |
| 3984968     | GE Marquette Eagle/Dash/Solar Cable Set | MQ-3 BP Cable (2199627) two, UT-4 Low profile 1/4 inch phone plug, YSI 400 series Compatible 2 conductor (2523334), UT-2 Tamp Cable 700 series YSI (2199019), PROSIM8- 4402GECO, Din cardiac Output Marq Eagle (4022300)                                          |
| 3984946     | ProSim 8 SpaceLabs Ultraview Cable Set  | TK-1 BP Cable (2198879) two, UT-4 Low profile 1/4 inch phone plug, YSI 400 series compatible 2 conductor (2523334), UT-2 Tamp Cable 700 Series YSI (2199019)                                                                                                      |
| 3984979     | Welch Allyn/Propaq Cable Set            | TK-1 BP Cable (2198879) two, UT-4 Low profile 1/4 inch phone plug, YSI 400 Series Compatible 2 conductor (252334), UT-2 Tamp cable 700 series YSI (2199019)                                                                                                       |
| 3984993     | Drager Infinity Cable Set               | SM-1 BP Cable (2198925) two, UT-4, Low profile 1/4 inch phone plug, YSI 400 series compatible 2 conductor (2523334)                                                                                                                                               |
| 3985009     | ProSim 8 Nihon Kohden Cable Set         | Nihon Kohden-NK-1, BP Cable (5M) (2462263) two, DIN to mindin adapter (3408564), UT-4, Low profile 1/4 inch phone plug, YSI 400 Series Compatible 2 conductor (2523334)                                                                                           |

The ProSim 8 does not provide simulation for all types of fetal heart rate tracings and contraction patterns, including the following:

- variable decelerations
- variations in FHR variability
- sinusoidal pattern
- tachysystole
- reactive tracing

## Blood pressure cables

| Part number | Description                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2198879     | BCI International TK-1 (6M)                                                                                                                                                                                               |
| 2198879     | Criticare Systems Inc. (1100) TK-1 (6M)                                                                                                                                                                                   |
| 2198879     | Critikon (Dinamap Plus) TK-1 (6M)                                                                                                                                                                                         |
| 2198887     | Datascope DS-1 (6F)                                                                                                                                                                                                       |
| 2200955     | Datex (AS/3, CS/3, Compact, Cardio Cap II, Critical Care, Light) DX-1 (10F)                                                                                                                                               |
| 2199387     | Fakuda Denshi (DS3300 series) FD-2 (12M)                                                                                                                                                                                  |
| 2199682     | GE Marquette Medical Corometrics (115, 116, 142, 145, 556) CM-3 (Nicolet round – 12M)                                                                                                                                     |
| 2198893     | GE Marquette Medical (PPG/E for M DR) EM-1 (6F)                                                                                                                                                                           |
| 2198978     | GE Marquette Medical (7000 and TRAMAR series only) MQ-2 (8M round)                                                                                                                                                        |
| 2199627     | GE Marquette Medical (Dash, Eagle, Solar, Tram, and MacLab) MQ-3 (rectangular – 11M)                                                                                                                                      |
| 2198902     | Hewlett Packard/Philips (78-300, 78- 500, 78-800, Merlin/Viridia/ Omnicare (HP/Philips M1006B iBP module has a sensitivity of 5 uV/V/ mmHg only. The HP-3 cable should be selected for this application.) HP-3 (12M 5 µV) |
| 2198916     | Hewlett Packard/Philips (78-300, 78- 500, 78-800, Merlin/Viridia/Omnicare) HP-4 (12M 40 µV)                                                                                                                               |
| 2198879     | Invivo Research TK-1 (6M)                                                                                                                                                                                                 |
| 2198879     | Ivy Biomedical (400 and 700 series) TK-1 (6M)                                                                                                                                                                             |
| 2198940     | Medical Data Electronics (Escort series) PC-1 (6M)                                                                                                                                                                        |
| 2198879     | North American Drager (Vitalert 2000) TK-1 (6M)                                                                                                                                                                           |
| 2198940     | Physio Control (VSM series) PC-1(6M)                                                                                                                                                                                      |
| 2198879     | Protocol System (Propaq series) TK-1 (6M)                                                                                                                                                                                 |
| 2190955     | Puritan Bennett PB 240 DX-1 (10F)                                                                                                                                                                                         |
| 2198925     | Siemens (SIRECUST series) [SM- 1 and Siemens Medical Transducer Adapter (3368-383-E530U) used to run a single invasive BP channel on the Siemens Medical SC6000 and SC9000 series monitors] SM-1 (10M)                    |
| 2198879     | SpaceLabs (1050, 1700, PCMS series) (SpaceLabs adapters 700-0028-00 and 0120-0551-00 with TK-1 used when testing the new UltraView Command Module) TK-1 (6M)                                                              |
| 2392173     | Universal unterminated UU-1 (5-Pin DIN one end only)                                                                                                                                                                      |
| 2198893     | Witt Biomedical EM-1 (6F)                                                                                                                                                                                                 |
| 5226108     | PS8IUP-8001, Corometrics IUP Simulation Cable                                                                                                                                                                             |
| 5226113     | PS8IUP-8000,HP/AG/PH, 50 & 8040 SER, IUP SIMU CABLE                                                                                                                                                                       |

## Temperature cables

| Part number | Description                                                                         |
|-------------|-------------------------------------------------------------------------------------|
| 2199019     | UT-2 standard 1/4 in phone plug (compatible with YSI 700 series – 3 conductor)      |
| 2523334     | UT-4 Low profile, 1/4 in phone plug, YSI 400 series compatible, two conductor       |
| 2199257     | HPT-2 temperature adapter (Hewlett Packard) (2 pin, used with UT-1 for HP monitors) |

## Cardiac output bath/injectate adapters

| Part number | Description                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 2392199     | CI-3 cable assembly                                                                                                                      |
| 2392158     | General purpose connector                                                                                                                |
| 2199240     | COA-1 Cardiac output adapter (Hewlett Packard) (HPT-2 also required for cardiac output simulation on HP patient-monitoring systems)      |
| 2199257     | HPT-2 Temperature adapter (Hewlett Packard) (2 pin) (COA-1 also required for cardiac output simulation on HP patient-monitoring systems) |
| 4022300     | DIN Cardiac Output MARQ EAGLE                                                                                                            |

## 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. Highly credentialed and equipped with a NVLAP Lab Code 200566-0 accredited laboratory, Fluke Biomedical also offers the best in quality and customer service for all your equipment calibration needs.

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 test device manufacturer, we recognize and follow certain quality standards and certifications when developing our products. We are ISO 9001 and ISO 13485 medical device certified and our products are:

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

## Fluke Biomedical

*We empower our everyday heroes  
to focus only on protecting lives.*

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6/2025 3983506m-en

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