CompuFlow 1000 Physiological Flow Pump System

Product Description

The CompuFlow 1000 flow pump system is designed to generate realistic, accurate and repeatable physiological volume flow waveforms, including pre-programmed; carotid, femoral, sice, square and constant flow waveforms. The system includes an embedded industrial grade motherboard and proprietary SimuFlow III Waveform Editing Software for creating user-defined physiological flow waveforms. Users have the option of inputting their own waveform data points, reshaping the supplied pre-programmed waveforms (click and drag) or downloading waveforms onto the system.

The CompuFlow 1000 is accurate to with ±3.0% over a flow range of 0.1 to 35 ml/s. Each system is calibrated and accompanied with a certificate of calibration specifying the calibration results at relevant flow rates, as well as being provided with a calibration constant to verify the pump systems accuracy.

The CompuFlow 1000 is two-unit design, a Control Unit and a Pump Unit with an internal reservoir.

Combine the CompuFlow 1000 with an appropriate vascular phantom and blood mimicking fluid, and the resulting closed flow loop ensures easy, accurate and reliable evaluation and validation of diagnostic imaging systems and techniques. The system is ideal for flow quantification in Doppler ultrasound, CTA, optical coherence tomography (OCT) and endovascular simulation applications.

Applications

Research and new technology developments requiring accurate and repeatable pulsatile and constant flow waveforms (i.e. flow quantification, Doppler ultrasound, CTA, optical coherence tomography (OCT) and endovascular techniques.

Ability to control waveform shape.

Gated flow studies.

Calibration of clinical imaging systems.

Product Features

REALISTIC PHYSIOLOGICAL FLOW WAVEFORMS
PULSATILE AND CONSTANTS FLOW WAVEFORMS
ACCURATE VOLUME FLOW WAVEFORMS
REPRODUCIBLE WAVEFORMS
PROGRAMMABLE USER DEFINED WAVEFORMS
CALIBRATION CERTIFICATE
MULTIMODALITY IDEAL FOR COMPARING IMAGING MODALITIES

Accurate and reproducible physiological flow waveforms including those with reverse flow components such as the femoral waveform. Accurate (±3.0%) physiological waveforms.

SimuFlow III waveform editing software allows for the development of user-defined pulsatile and constant flow waveforms. Users can control the shape of the waveform.

Pre-programmed waveforms include; carotid, femoral, sice, rectangular and constant flow waveforms.

Control with user supplied keyboard, mouse and monitor to communicate with the embedded computer.

Calibration certificate is provided with each system verifying the systems accuracy. The system can be calibrated and certified traceably to a national standard for regulatory requirements. A re-calibration service is available.
**Fluid Flow Specifications**

Volume range 0.1 – 35 ml/s  
Accuracy of ± 3.0%  
Sine waves up to 12 Hz  
Physiological flow waveforms including reverse flow components

**Mechanical Specifications**

High-torque micro-stepping motor  
450 ml pump cylinder  
Adjustable over-pressure shut-off (7 to 50 psi)  
Self-sealing 1/4 inch inner diameter plastic connectors

**Computer Control**

On-board dedicated motor controller  
Easily upgraded high level control software  
Windows 7, 32 Bit Embedded Operating System

**Interface Options**

User supplied monitor, keyboard and mouse

**Physical**

Control Unit dimensions: 14.0” (L) x 11.0” (W) x 9.0” (H)  
Control Unit Weight: 15.0 lbs. (6.8 kg)  
Pump Unit dimensions: 19.6” (L) x 10.0” (W) x 9.25” (H)  
Pump Unit Weight: 38 lbs. (17.2 kg)  
Reservoir capacity: 1.5 litres  
Circulating Fluid Volume: 2 litres

**File Format**

Waveform data is stored on embedded harddrive.  
Files can contain up to 1,000 flow-rate values describing a waveform  
User specified time-base ranging from 2 to 50 ms per point  
Waveforms can be looped continuously  
Variable frequency waveforms can be generated

**Electrical**

110/220 VAC 50/60 Hz, 4.0 amps @ 120V  
EMI shielding  
1 RS-232 serial communication port  
1 remote controller port  
1 ECG TTL trigger output (BNC)  
Monitor port  
Keyboard port  
Mouse port  
Two cables to connect the Control & Pump Units

**Calibration Options**

Standard calibration  
Traceable calibration to a National Standard

**Accessory Products**

U-245 Doppler Tissue Flow Phantom  
Carotid Bifurcation Models for Doppler Applications  
Custom Doppler Tissue Flow Phantoms  
Blood mimicking fluids, BMF-US  
Multi+ Variable Waveform Software Option to mimic arrhythmia

**References:**
