

EASY TO USE

MS-Windows™, XP / Seven based software:

- User friendly, short learning curve
- Versatile for every application
- Detailed printed report and data export to text and MS-Excel files

Easy to handle hardware:

- Few connections or wireless
- Transportable or handheld
- No maintenance

COST EFFECTIVE

Economical day-to-day use:

- Disposables: 6 electrodes per patient only
- Low cost compared to invasive or other noninvasive technologies
- Saves valuable time for operators

An attractive business model:

- No indirect costs (catheter complications)
- May improve patient outcome
- Potential direct or indirect revenue generator

NONINVASIVE

Fewer constraints:

- Complete safety for the patient
- No risk of infection or injury
- Saves time for patient care

More flexibility:

- Extensive applications (measurements at rest and during exercise)
- Snapshots or continuous monitoring
- Can be used routinely by nurses and/or technicians



Windows™ is a trademark of Microsoft Corporation

RELIABLE

Validations:

- Unmatched reproducibility and sensitivity
- Good agreement with reference methods at rest (incl. in severely ill patients) and during exercise
- Proven clinical value even in difficult patients and challenging measurement conditions

High quality standards:

- Excellence in manufacturing and customer service
- ISO 9001/13485 standards
- Market approvals in the USA (FDA), Europe, Japan, among others

UNIQUE FEATURES

- Potentially more efficient than other invasive or noninvasive hemodynamic systems thanks to similar accuracy, but better reproducibility and sensitivity
- Offers a combination of parameters that enables accurate evaluation of any hemodynamic condition For instance: fluid status and optimization can be efficiently assessed and guided
- Features a display that enables a quick and efficient evaluation of the patient's hemodynamic equilibrium: the Hemodynamic Cross
- The analysis of signal abnormalities is potentially extremely useful for the early diagnosis of severe pathologies while they are still reversible

The combination of the low cost and ease of use, reduced limitations, zero risk and high performance make PhysioFlow® the technology of choice to finally establish noninvasive hemodynamic diagnosis and monitoring as a standard of care.

Certificates

Europe: CE 11826
USA: K140102, K103283
Japan: 13M0143
China: CFDA(I)20142213135
Taiwan: 衛部醫器輸字第027033號

PhysioFlow® Hemodynamics Redefined™

血流動力監視儀

Signal Morphology-based Impedance Cardiography (SM-ICG™)
A new era in noninvasive **Cardiac Output** monitoring

STOP guessing.....START MEASURING!



- The First** Exercise at all levels and demanding critical care applications
- The Only** Proven non inferior to Thermodilution and superior to standard ICG (US-FDA)
- The Best** Measures the heart directly and does not use an arterial line or a finger pulse

PhysioFlow® Parameters

Stroke Volume/Index/Stroke Volume Variation
Heart Rate/Resp. Rate (New!)
Cardiac Output/Cardiac Index
Contractility Index
Early Diastolic Filling Ratio (Preload Index)
Systemic Vascular Resistance/Index (Afterload)
Left Cardiac Work Index (surrogate for MVO2)
Ventricular Ejection Time
Ejection Fraction (est.)
End Diastolic Volume (est.)
NEW! Aortic (Vascular) Stiffness and Distensibility

For Multiple Applications

Critical Care/Anaesthesia/Fluid Management
Emergency Medicine
Cardiology/Heart Failure/6MWT/Pacing
Cardiopulmonary Rehabilitation
COPD/6MWT/Pulmonary Hypertension
Internal Medicine/Hypertension
Hemodialysis
Obstetrics
Research and Clinical Studies
Physiology/Sports Medicine
Training Optimization/Reconditioning

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Technology

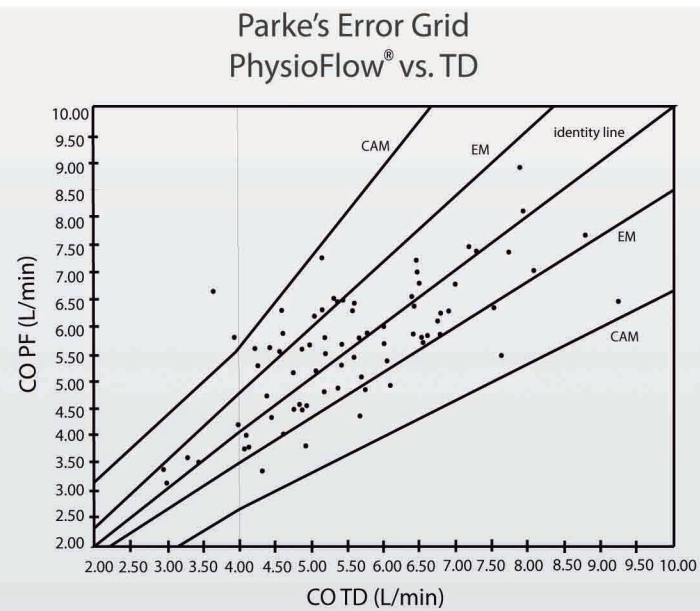
- Analysis of beat by beat heart impedance waveforms obtained noninvasively (6 chest surface electrodes)
- Elimination of the problematic impedance baseline (Z0) in the calculation of stroke volume
- HD-Z™ high performance signal stabilization filter for optimal noise cancellation

Validations

- 45+ peer-reviewed validations and application studies, showing Sensitivity, Reproducibility and Accuracy
- US-FDA approved technology, predicate device is thermodilution
- Proven superiority compared to other ICG devices
- 350+ users in 45+ countries for the most demanding applications at rest and during exercise

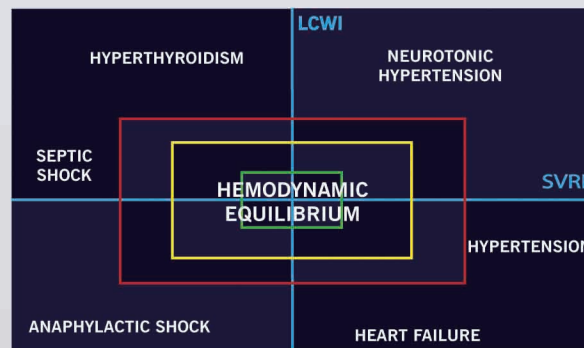
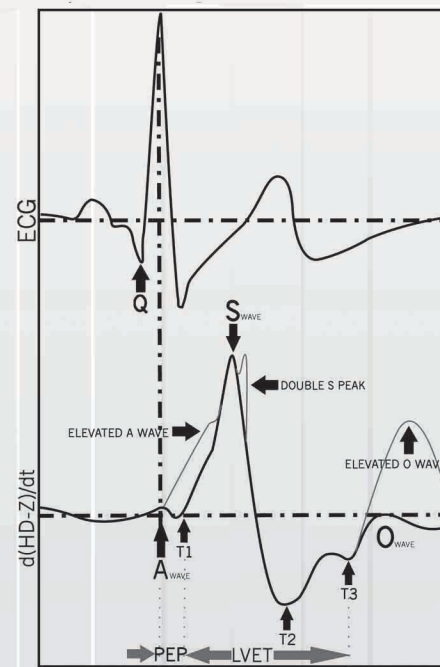
Applications

- 13+ useful hemodynamic parameters including preload, contractility and afterload
- Provides efficient fluid status assessment and management
- Early diagnosis thanks to the evaluation of signal abnormalities
- Powerful software for data display, trending, analysis and reports
- Critical care, cardiology, internal medicine, pulmonology, physiology and sports medicine



PhysioFlow vs. TD N=80 bias=0.08 L/min SD=0.96 L/min
 TD=Thermal Dilution Method
 EM=TD Error Margin (20%)
 CAM=Clinical Acceptance Margin (30%)

Impedance Signals + Abnormalities



A Breakthrough Concept: the Hemodynamic Cross

A graphic representation of the Vascular Resistance/Cardiac Work equilibrium, for more accurate and faster diagnosis and assessment of the hemodynamic impact of a treatment

The first and only system fully validated for demanding critical care applications and during exercise

The well established PhysioFlow® Signal Morphology-based Impedance Cardiography (SM-ICG™) technology has been fully validated in the last ten years, resulting in more than 40 international peer-reviewed publications and a market presence in over 45 countries.

Its accuracy is comparable to invasive techniques and its clinical reproducibility and sensitivity are unsurpassed. PhysioFlow® pushes the limits of noninvasive cardiac output monitoring in general and thoracic electrical bioimpedance in particular by opening more arenas where continuous noninvasive Cardiac Output measurements are made possible: exercise at all levels, obesity, thoracic fluid overload, COPD, low cardiac outputs etc.

PhysioFlow® Enduro™ : A new era in Cardiac Output testing From the lab to the field



PhysioFlow® has been further developed to include the latest advances in electronic and signal processing technologies. The result is PhysioFlow® Enduro™, the first holster-size wireless cardiac output monitor for real time recordings or use as data logger. A new filter technology for high performance noise cancellation (HD-Z™) is available as well. The combination of advanced hardware and embedded DSP software enables new applications in the field for trainers and exercise physiologists and more sensitive measurements for cardiac patients tested on treadmills.

PhysioFlow® Q-Link™ : The missing link in your diagnosis

PhysioFlow® Q-Link™ is connected to a computer via a USB port that provides communication and power. Its small size, easy set-up and user-friendly features make this a new, cutting edge technology in the world of hemodynamically guided diagnosis and therapy. Based on the high-tech wireless Enduro™, PhysioFlow® has been further developed to reduce costs and enhance user friendliness. The result is PhysioFlow® Q-Link™: all the performance of PhysioFlow® Enduro™ without the batteries and with a computer connection via a simple USB port.



References

- **Cardiology** Bour, Jean & John G. Kellett. (2005, October). "Impedance Cardiography - a Rapid and Cost-effective Screening Tool for Cardiac Disease." *European Journal of Heart Failure*, 7 (6).
- **Physiology** Charloux, A., Lonsdorfer-Wolf, E., Richard, R., Lampert, E., Oswald-Mammosser, M., Mettauer, B., ...Buchheit, M. (2001, July). "Non-invasive Cardiac Output Evaluation during a Maximal Progressive Exercise Test, Using a New Impedance Cardiograph Device." *European Journal of Applied Physiology*. 85 (3/4), 202-207.
- **Intensive Care** Shoemaker, William. (2007, Spring). "Non - invasive Haemodynamic Monitoring to Predict Outcome and Guide Therapy in Acute Critical Illness." *International Journal of Intensive Care*.

For more information please check www.physioflow.com for References.

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