



Finapres *non-invasive hemodynamics*



Finapres Medical Systems B.V. is the world's pioneer in developing, manufacturing, marketing and sales of non-invasive hemodynamic monitoring systems.

www.finapres.com



Company

Our first non-invasive beat-to-beat blood pressure monitor was introduced in the late 1970s. This technological breakthrough was immediately adopted by leading researchers and clinicians in major medical institutions and space agencies around the world. Finapres has already successfully introduced its third generation of non-invasive beat-to-beat hemodynamic monitors, which are capable of monitoring up to 15 different cardiac parameters, and its products are being used in over 45 countries. Improvement of these non-invasive techniques and methods is a continuous process at Finapres. The head office of Finapres Medical Systems B.V. is located in Amsterdam, The Netherlands.

Finapres was established in 2002 as the spin off of the TPD Biomedical Instrumentation R&D activities of TNO. TNO was engaged in research and development of methods and instruments for medicine and bio-sciences, among others in the properties and dynamics of the cardiovascular system. This resulted in the development of the Finapres® technology, a method for the most accurate and robust continuous non-invasive measurement of finger blood pressure, and Modelflow®, a model based computation of cardiac output, as implemented by Finapres.

More than 30 years ... Finapres builds on more than 30 years experience in non-invasive beat-to-beat continuous blood pressure monitoring. The original equipment has evolved from the Ohmeda Model 2300 to the current Finometer® and Portapres® models. The models are positioned for optimal accuracy, optimal trending and optimal portability. Many top research institutes as well as prominent clinics like NASA Johnson Space Center, John Hopkins Hospital and Mayo Clinic are using Finapres Medical Systems B.V. equipment.

Technology

Proven technology only available in Finapres equipment

Finapres Medical Systems B.V. offers equipment with proven and advanced patented technology. Finapres systems are built on combinations of four technologies.

- 1. The volume clamp with physical technology** is the core technology providing accurate finger pressure measurements.
- 2. The patented brachial arterial reconstruction technology** translates the finger pressure into the commonly used brachial arterial blood pressure.
- 3. The patented Return To Flow (RTF) technology** is a technique to calibrate the brachial pressure derived from the finger pressure.
- 4. The Modelflow® technology** is also patented and used to derive hemodynamic parameters from pressure data, waveforms and patient data.

The accuracy with respect to blood pressure measurements has been found in comparative studies with intra-arterial blood pressure as the reference^{1,2}). Recently the Finometer® Pro passed the AAMI/SP10 and BHS³) standards with stethoscope measurements as reference. The Modelflow® cardiac output has been validated against thermodilution cardiac output in patients undergoing coronary artery bypass surgery.⁴)

1) Finometer, finger pressure measurements with the possibility to reconstruct brachial pressure. Blood Pressure Monitoring (2003) 8, 1, 27-30.

2) Continuous finger arterial pressure: Utility in the cardiovascular laboratory Clinical Autonomic Research (1991) 1,1 43-53.

3) Validation of the Finometer device for measurement of blood pressure in black women. Journal of Human Hypertension (2004) 18, 79-84.

4) A comparison of cardiac output derived from the arterial pressure wave against thermodilution in cardiac surgery patients. British Journal of Anaesthesia (2001) 87, 212-222.



Products



Portapres®

Optimal portability

The Portapres® is the ambulatory Finapres technology solution. The Portapres® offers on top of standard ambulatory blood pressure monitoring (ABPM) insight into hemodynamic parameters such as stroke volume and cardiac output. For almost 20 years the technology has proven itself in clinical settings, high altitude research on mountain heights and in space by top scientific institutes like NASA. Data can be stored and retrieved using the BeatScope® software.



Finometer® MIDI

Optimal trending

The Finometer® MIDI offers an optimal solution for hemodynamic trending in protocols when blood pressure changes are more important than absolute values. The device display provides current numerical parameters only. The BeatScope® software installed on either a PC or laptop provides detailed insight and graphs. The Finometer® MIDI is used in a wide range of applications in hospitals, clinics, and research institutes. An optional ECG module is available for the Finometer® MIDI.



Finometer® PRO

Optimal accuracy The Finometer® PRO is a stand-alone solution for accurate non-invasive beat-to-beat blood pressure monitoring. The Finometer® PRO incorporates the patented Modelflow® technology providing hemodynamic parameters such as stroke volume, total peripheral resistance and cardiac output as well as pulse rate (variability) and baroreflex sensitivity analysis. The Finometer® PRO is widely used in clinical settings and advanced scientific research. The absolute accuracy of the Finometer® PRO can be calibrated with an upper arm cuff measurement using the patented Return To Flow (RTF) technology. Recently the Finometer® passed the AAMI/SP10 and BHS protocols³). Optional software offers online monitoring, storage, analysis and review of acquired data. The Finometer® PRO can be used in combination with the optional ECG module.



Applications

Cardiology

Cardiologists around the world are using Finapres Medical Systems B.V. devices. Our equipment offers fast, easy to use and safe non-invasive cardiovascular evaluation. Powerful, clinically validated algorithms and advanced patented technology are used to improve patient wellbeing and to perform cost effective clinical research.

Neurology

For over 30 years Finapres systems have been used by neurologists and researchers to better understand autonomic failure, syncope and baroreflex sensitivity (BRS). Many studies using Finapres systems have been performed to show subjects' neurological reactions to changing conditions, such as autonomic failure. The Finometer® and Portapres® systems are proven tools for diagnosing syncope in patients and for documenting progress due to treatment.

Physiology

Neurophysiologists, cardiovascular physiologists, sports physiologists, psychophysiologists as well as physiologists in other fields have a special interest in hemodynamics in relation to their expertise. Finapres devices are used in many research settings because of their accuracy, optimal trending possibilities and portability. Our Portapres® is used by NASA in space to evaluate the changes in the cardiovascular system during the microgravity conditions of spaceflight and aboard the ISS (International Space Station). On a daily basis our equipment is used in a range of services such as neurological, sports and occupational rehabilitation.



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