

# PulsePen® The Arterial Tonometer



**Pulse Wave Velocity**  
**Central Blood Pressure**  
**Pulse Wave Analysis**

**Wireless System**

PulsePen is available in two configurations:

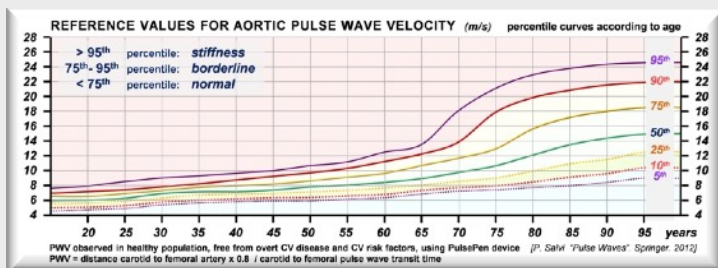
- WPP001-ETT: 2 Tonometers + ECG + USB wireless receiver
- WPP001-ET: 1 Tonometer + ECG + USB wireless receiver

PulsePen is a class IIa, medical device, CE marked (n. 119/MDR) and certified for all phases ranging from design to production, final inspection and testing. Designed and manufactured in Italy, for both clinical practice and applied research. The quality management system of DiaTecne is ISO 13485 certified (0857.2023).

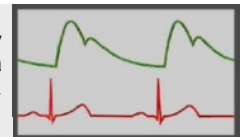
## Pulse Wave Velocity

WPP001-ETT and WPP001-ET:

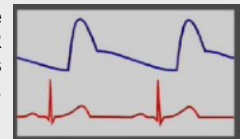
- Measurement of Pulse Wave Velocity using an arterial tonometer is the non-invasive gold standard method to assess arterial stiffness.
- PulsePen system records pulse waves employing only high-fidelity tonometers, without cuffs.



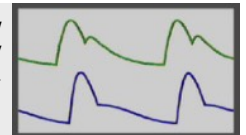
Pulse Wave Velocity is obtained by determining the pulse wave transit time in a certain arterial segment.



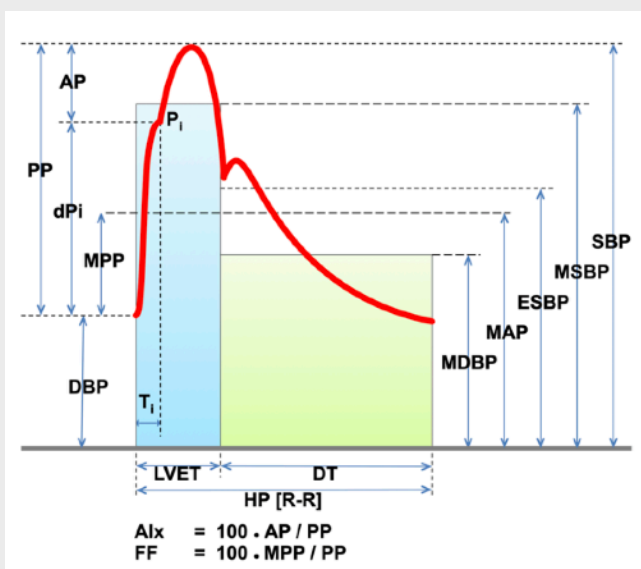
WPP001-ET and WPP001-ETT measure the Pulse Wave Velocity in two stages, using the R wave of the qRs complex of the ECG as reference.



The two tonometers of the WPP001-ETT allow measurement of the PWV by simultaneously recording pulse waves in two arterial sites.



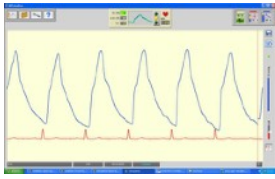
## Pulse Wave Analysis



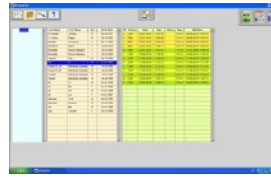
- Central Systolic Blood Pressure (cSBP)
- Central Pulse Pressure (cPP)
- Mean Arterial Pressure (MAP)
- Amplification Phenomenon
- Form Factor (FF)
- Augmentation Index (Aix)
- Global Reflection Coefficient (GRC)
- Pulse Wave Separation Analysis
- Early Systolic Pulse Wave Slope
- Pulse Pressure Variability
- Heart Rate Variability
- End Systolic Blood Pressure (ESBP)
- Mean Systolic Blood Pressure (MSBP)
- Mean Diastolic Blood Pressure (MDBP)
- Isometric Contraction Time (ICT)
- Pre-Ejection Period (PEP)
- Left Ventricular Ejection Time (LVET)
- Diastolic Time (DT)
- Real SubEndocardial Viability Ratio (SEVR)

# PulsePen® The Arterial Tonometer

## Complete Software Suite



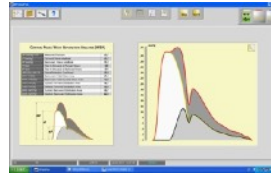
- Recording of 10 cardiac cycles (default)
- Long recordings (up to 24 hours with LP software included)
- Real time display of the signal quality index



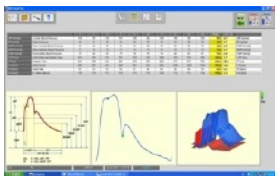
- Patient database management
- Import / Export of exams
- Raw data export of curves as text file
- Automatic export of all parameters to spreadsheet



- Pulse Wave Velocity
- Pulse Wave Analysis
- Central Blood Pressure
- Vascular Age
- Automatic Report generation



- Central Forward / Backward Pulse Wave Separation Analysis



- Cycle by cycle verification of the parameters
- 3D representation
- Integrated Help and Tutorial



- Advanced SEVR estimation (O<sub>2</sub> supply / demand ratio at subendocardial level)
- SEVR x CaO<sub>2</sub> assessment
- SEVR x CaO<sub>2</sub> projection
- Ejection Fraction estimation

## Technical Specifications

Capture: 16 bit  
Sampling rate: 1000 S/sec  
Wireless: ISM @ 2.4 GHz  
Batteries: AAA - Alkaline 1.5V - IEC LR03 (≥ 50 hours / ≥ 600 exams)  
Ambient Temperature: +5°C — +40°C  
Transport and storage Temperature: -25°C — +70°C  
Relative Humidity: 30% — 80% non cond.  
Atmospheric Pressure: 860 — 1060 hPA

### Tonometric Unit

Resolution: 0.004 mmHg  
Differential Range: ≥ 220 mmHg  
Max Shock: ≤ 150 g  
Max Vibration: ≤ 20 g @ 10 Hz — 2 KHz sinusoidal  
Dimensions [mm]: 114 (L) x 25 (W) x 20 (H)  
Weight: 25 g (without battery)

### ECG Unit

Resolution: 0.15 µV  
Range: ≥ ± 5 mV  
Max Vibration: ≤ 20 g @ 10 Hz — 2 KHz sinusoidal  
Dimensions [mm]: 49 (L) x 75 (W) x 21 (H)  
Weight: 36 g (without battery)

### USB Wireless Signal Receiver

Dimensions [mm]: 67 (L) x 25 (W) x 11 (H)  
Weight: 12 g

### PC (provided by the user)

Clock Frequency ≥ 2GHz  
Ram Memory ≥ 2 GB  
Free Hard Disk space ≥ 4.5 GB SW + DataBase  
Graphic Resolution ≥ 1280 x 800, 24 bit color  
Operating System: Windows® XP SP2/3, Vista, 7, 8, 10 - 32/64 bit  
USB port: USB 1.0 / 2.0 - type A  
Browser: HTML5 compatible

## Why choose PulsePen:

- In the assessment of PWV and pulse waveform analysis, PulsePen employs only pressure sensors (tonometers), without cuffs, based on the international recommendations for arterial stiffness estimation.
- Easy recording of the aortic PWV with average running time less than 3 minutes.
- Validated assessment of central hemodynamic parameters directly based on carotid (central) recording of the pressure waves, without using any “transfer function”.
- The PulsePen captures the pressure and electrocardiographic signals at high definition (16 bit) and high sampling rate (1000 Hz).
- Starting from the first model of 2004, PulsePen has been used in numerous clinical and epidemiological studies involving more than 30 thousand patients all over the world.
- More than 180 scientific publications on prestigious international journals (indexed by Scopus and Web of Science) refer to studies in which PulsePen was used.
- The reference values of aortic PWV in the pediatric age have been defined using the PulsePen system.
- PulsePen allows the estimation of the real balance between subendocardial oxygen supply and demand (SEVR), taking into account parameters ignored by other systems (such as isovolumic contraction, isovolumic relaxation and diastolic ventricular pressure).
- The original wireless system allows maximum freedom of movement for the operator.
- Best performance in terms of signal quality and stability with the lowest variability among similar devices.
- Designed and certified for use in the daily clinical practice (speed of execution, qualitative evaluation of the signal, automatic reporting) and in the clinical applied research (advanced morphologic analysis of pressure wave, export of parameters to spreadsheet and much more...).
- Pocket size dimensions. Total system weight less than 100 g.
- No fees for consumables or periodic updates. Free software upgrades.
- Competitive price compared with other tonometer instruments on the market.
- PC where to install the PulsePen software, sphygmomanometer for calibration, disposable ECG electrodes and batteries must be provided by the user.



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