Multi-parameter ICG Module

Non-invasive cardiac output monitoring using impedance cardiography (ICG)

Product Overview

The ICG Module provides a non-invasive method to assess cardiac function and hemodynamic changes using impedance cardiography technology.

Compared to traditional invasive cardiac output methods, it offers a safer, more convenient, and cost-effective solution, making it widely used in modern clinical environments.

Key Highlights

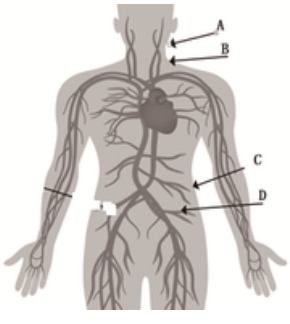
- Non-invasive cardiac output monitoring
- Real-time hemodynamic assessment
- Cost-effective alternative to invasive methods
- Compact and modular design
- Stable and reliable signal acquisition
- Designed for continuous patient monitoring

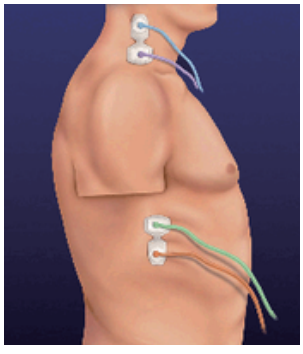
Measuring Principle

The ICG module works by applying a high-frequency electrical current through the chest, where the body acts as a conductor. Changes in blood flow, velocity, and volume during cardiac cycles cause variations in electrical impedance. These impedance changes are measured and converted into an impedance cardiogram, allowing accurate calculation of cardiac parameters.

Electrode Configuration

- Uses a four-electrode method for stable signal detection
- A & D electrodes → excitation signal input
- B & C electrodes → impedance measurement
- Distance between electrodes (~3 cm) ensures accurate readings
- Chest distance (L) used for parameter calculations





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Key Hemodynamic Parameters

- CO (Cardiac Output): Total blood pumped per minute
- SV (Stroke Volume): Blood volume per heartbeat
- CI (Cardiac Index): CO adjusted to body surface area
- SI (Stroke Index): SV adjusted to body surface area
- HR (Heart Rate): Beats per minute
- PEP: Pre-ejection period
- LVET: Left ventricular ejection time
- STR: Systolic time ratio
- EF: Ejection fraction
- TFC: Thoracic fluid content

(Up to 22 parameters available)

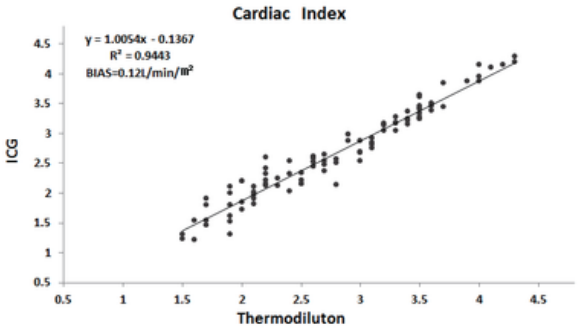
ICG Waveform Monitoring

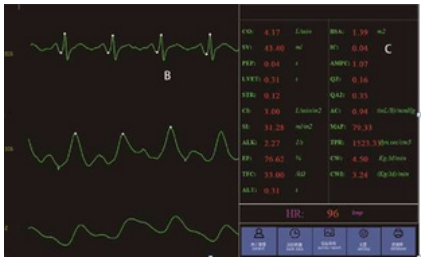
ICG monitoring includes:

- ECG waveform
- Cardiac impedance waveform
- Differential impedance waveform

These combined signals provide a comprehensive view of cardiac performance and circulation dynamics.

Model Snapshot





Clinical Applications:

- Routine cardiac function evaluation
- Drug effect monitoring and treatment guidance
- Real-time monitoring during surgery and recovery
- Early detection of life-threatening hemodynamic conditions

Applicable Departments:

- ICU / CCU
- Operating Room / Anesthesiology
- Emergency Room
- Cardiology Department

Physical Specifications:

- Dimensions: 175 × 75 × 100 mm
- Compact, plug-in module design
- Easy integration with patient monitors

Performance & Accuracy:

Clinical studies show strong correlation between ICG and thermodilution methods:

- High accuracy in cardiac output measurement
- Reliable alternative to invasive monitoring
- Correlation coefficient: r ≈ 0.94

Key Advantages:

- Non-invasive and patient-safe
- Continuous real-time monitoring
- Reduces clinical risk and cost
- Enhances decision-making in critical care
- Seamless integration with monitoring systems