Kinetic™
ECG Algorithm

Powerful
Accurate
Versatile
The Monebo Kinetic™ ECG Algorithm provides signal processing and interpretation of the ECG waveform, thereby aiding healthcare professionals in assessing cardiac parameters. It provides highly accurate QRS detection and feature extraction, beat classification, interval measurement, and rhythm interpretation for up to sixteen leads of captured ECG data.

Kinetic™ is so versatile, it enables real-time or historical analysis in platforms ranging from in-hospital or call center PC or Server-based devices to small, patient-worn ambulatory devices that employ microcontrollers or DSP's.

**A Unique Approach**

The design goal of Kinetic™ was to build an extremely accurate algorithm, but make it capable to be utilized in fixed as well as ambulatory devices and for use in real-time or post processing environments – without compromising quality. To do so, a new approach was needed. Although ECG analysis algorithms have been around for many years, they are similar in design, thereby constrained by many of the same limitations.

Kinetic™ is based on a novel method for detection of the QRS complex. At the core of the Kinetic™ ECG Algorithm is a unique waveform filter. This filter identifies the QRS by its intrinsic properties, which remain the same regardless of the wave's changing morphology and rhythm patterns. Kinetic™ is able to process ECGs in real time, with no warm-up period, template matching routines, or manual intervention. Just automatic, precise analysis – from the first beat.

The Monebo approach has resulted in an algorithm that can be used in a variety of devices and applications. From auto-trigger algorithms in fixed or ambulatory devices, to decision support software in call centers, to precise interval measurements in ECGs for pharmaceutical clinical trials, the Kinetic ECG Algorithm delivers.

![Diagram of Fiducial Points and Measurements](image)

**Targeted Solutions**

ECG analysis is utilized in a variety of applications, and Monebo is committed to providing solutions to meet the needs of a broad range of customers. Each application is unique, but the core processing engine of the Kinetic™ ECG Algorithm consistently provides the detailed information critical to drive performance.

**The Kinetic™ ECG Algorithm Family**

- **Kinetic™ Intervals** – Interval measurements between any two fiducial points
- **Kinetic™ Rhythms** – Interpretation of up to 16 distinct core rhythms
- **Kinetic™ AF** – Detection of Atrial Fibrillation/Flutter
- **Kinetic™ ST** – Measurement of ST deviation
- **Kinetic™ QRS** – R peak identification and HRV evaluation

The application and processor used will determine the optimal configuration of the Kinetic™ ECG Algorithm. Monebo will work with you to determine the best combination of features and system design based on your individual needs. Kinetic has US FDA 510K Clearance and can be embedded into your device. You would obtain Clearance for your final device based on its indication for use and application.

Algorithm performance is affected by equipment design, system noise, transmission method, environment, different rules or definitions of measurements and arrhythmias, and many other factors. Monebo has identified 54 configuration variables that can affect performance, and has developed an Algorithm Optimization System to determine the optimal set of 54 parameters for specific acquisition devices and targeted arrhythmias. The system utilizes a genetic algorithm to optimize the variables automatically, providing a comprehensive and thorough optimization, resulting in the best overall performance in your particular design.