reva®

REVA ® In-Vitro

REVA is a portable platform for non-intrusively detecting haemoglobin and other blood parameters using PPG and Vis-NIR spectroscopy. Its AI and deep learning provide real-time data for clinical, research, and field use, with the potential for customisation to detect other components. The REVA family also includes REVA® In-Vitro, a compact device for real-time liquid sample analysis (e.g., enzyme activity, urine, water, honey adulteration). It offers lab-grade accuracy via machine learning and photodetectors in a portable design with an intuitive interface and edge computing for scientific and industrial applications.

Technology Overview

The REVA platform represents a new generation of portable diagnostic technologies designed to deliver intelligent, real-time analysis in both clinical and industrial environments. It comprises two complementary solutions, REVA in-situ and REVA® In-Vitro each tailored to address specific diagnostic needs through the integration of advanced sensing technologies, AI, and edge computing.

REVA in-situ is a versatile platform that combines photoplethysmography (PPG) with a visible to near-infrared (Vis-NIR) spectral engine to enable non-intrusive detection of haemoglobin and a range of blood parameters. Its modular design allows the system to be customised for the detection of additional components through characterisation using reference samples. Powered by AI and deep learning, REVA in-situ delivers intelligent data outputs in real time, making it ideal for clinical monitoring, biomedical research, and field-based health assessments.

REVA® In-Vitro, on the other hand, is a compact device engineered for lab-grade analysis of liquid samples. It leverages machine learning, advanced photodetector technology, and edge computing to provide high-precision results on-site. Applications include enzyme activity monitoring, urine testing, water quality assessment, and honey adulteration detection. With an OLED display and an intuitive user interface, REVA® In-Vitro is well-suited for scientific research and industrial testing where portability, speed, and accuracy are essential.

Together, the REVA technologies offer a flexible and scalable platform for non-invasive, high-accuracy diagnostics powered by next-generation computational intelligence.

Technology Benefits

- **High Accuracy Across Use Cases**
  Both REVA in-situ and REVA® In-Vitro are powered by quantised machine learning algorithms and precision optics, ensuring highly accurate analysis—whether for non-intrusive haemoglobin monitoring or liquid sample diagnostics.

- **Real-Time Data Output**
  Integrated AI and edge computing enable instant processing and display of results, supporting timely decision-making in clinical, research, and industrial environments.

- **Portability and Versatility**
  Lightweight, compact, and battery-powered, both platforms are designed for flexibility—ideal for use in laboratories, clinics, remote field settings, or mobile diagnostic units.
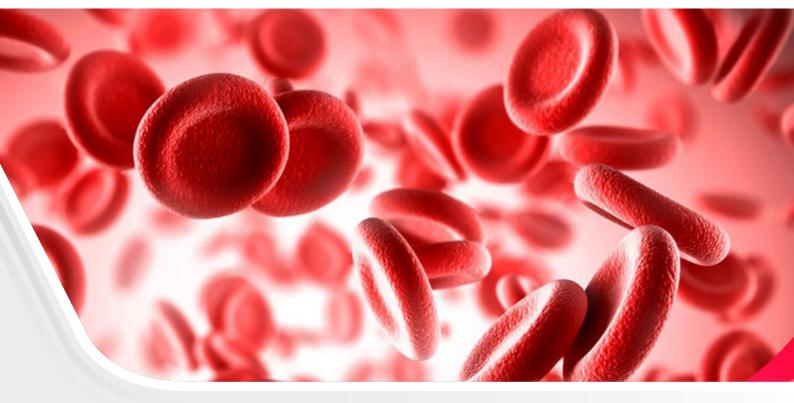
- **Robust and Reliable Design**
  Built to withstand frequent use across diverse conditions, REVA devices feature durable enclosures and reliable components, ensuring consistent performance in both stationary and mobile scenarios.

- **User-Centric Interface**
  An intuitive user interface and OLED display make the systems easy to operate, reducing training time and lowering the risk of user error.

- **Adaptable Detection Capabilities**
  REVA platforms can be tailored to detect a wide range of parameters. REVA in-situ focuses on haemoglobin and other blood-related parameters using PPG and Vis-NIR, while REVA® In-Vitro is optimised for enzyme activity, urine, water quality, and food sample analysis, with the ability to expand detection via reference sample characterisation.

Key Features

- **Non-Invasive Monitoring**
  Accurately measures haemoglobin levels without the need for needles or blood extraction, enhancing user comfort and safety.

- **Portable Design**
  Compact, lightweight, and easy to transport—ideal for use in clinics, laboratories, or field environments.

- **OLED Display**
  The display presents results in real time, enabling immediate interpretation and faster clinical decisions.

- **Advanced Quantized Machine Learning**
  Incorporates intelligent algorithms to ensure precise and consistent haemoglobin predictions.

- **Photodetector Array**
  Integrated sensor array provides lab-grade accuracy in a convenient handheld form factor.

- **Edge Computing**
  Enables rapid, on-device data processing without relying on external systems or internet connectivity.
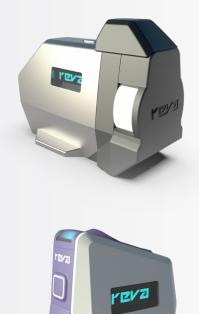
- **Rechargeable Battery**
  Equipped with a long-lasting, rechargeable battery to support extended use in mobile and remote settings.

- **Wi-Fi & IoT Connectivity**
  Supports Wi-Fi connection for cloud integration and IoT compatibility, enabling remote data access, storage, and device monitoring.

Applications

- Third-Party Interference
- Border Control
- Perimeter Fencing
- Structural Health Monitoring

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