

Future Mobile Cardiac Telemetry

: Have a Smarter, Healthier Future

KFDA CE 2265



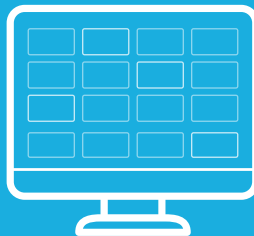
HiCardi® System

Mobile Cardiac Telemetry
For Medical Professionals



Hicardi®

Mobile Cardiac Telemetry



MEZOO - HiCardi

Dedicated to Make Your Heart Monitored and Cared

Who we are

Mezoo was established in 2007 in Wonju, Korea. We originally started as an R&D firm that developed wearable Holter, invasive blood glucose algorithm, 3/5/12 lead ECGs, IoMT Platform, and the HiCardi system.

The area of biomedical engineering that we focus on is the development and manufacturing of wearable SmartPatches, mobile, and web-based software.

For that, we are committed to developing new Mobile Cardiac Technologies, such as the world's smallest biosensors, reliable and precise bio-signal measurements. We believe that our innovative remote/real-time/cableless HiCardi system supports medical professionals monitoring and managing patients who suffering from cardiac disorders.

Mobile Cardiac Telemetry For Medical Professionals



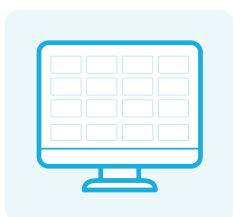
SmartPatch™

The SmartPatch is a rechargeable battery-operated biosensor with an integrated microprocessor and a BLE wireless transmitter. It is designed for early detection of cardiac disorders by measuring ECG including Arrhythmias, respiration, skin temperature, activity, body posture continuously in real-time.



SmartView™

The SmartView is a mobile application to provide displaying physiological data of a patient, check the status of measurements, and transfer data wirelessly to a server, which is called the LiveStudio.



LiveStudio™

The LiveStudio is an Internet web browser that displays and records ECG, respiration, skin temperature, heart rate, activity for multiple patients(up to 256) simultaneously and continuously in real-time. Visual and Audio alarm assists clinician to take immediate intervention against any critical condition of patients.

HiCardi® - SmartPatch™

Product name	HiCardi+® - SmartPatch™
Type	Reusable SmartPatch
HR range	0, 15~300 beats per min
HR accuracy	±2bpm or ±2%, whichever is greater
Skin Temperature	15.0 to 45.0°C(±0.3°C)
Respiration	0, 5~60 or 120 (±2bpm or ±2%)
Battery Duration	up to 72 hours (by charging for 1~1.5 hours)
Water protection	IP67
Weight	Less than 18g (0.6 oz)



The list of Arrhythmias (17 classification)

- (NSR) Normal Sinus Rhythm
- (ASYS) Asystole, EMD
- (VFIB) Ventricular Flutter/Fibrillation
- (PVC) Premature Ventricular Contraction
- (VTAC) Ventricular Tachycardia
- (BGM/TGM) Ventricular Bigeminy/Trigeminy
- (CPT) Couplet / (TPT) Triplet
- (SBRD) Sinus Bradycardia
- (ATAC) Atrial Tachycardia
- (STAC) Sinus Tachycardia
- (SVT) Supra-Ventricular Tachycardia
- (PACED) Paced Rhythm
- (PAC) Premature Atrial Contraction
- (AF) Atrial Fibrillation/(AFT) Atrial Flutter

Arrhythmia detection accuracy (based on the database, Minnesota code, AHA, MIT-BIH, ESC, NST, CU, Ohio ECG/Diabetes database, D1NANO, etc.

Beat by Beat Accuracy

Ventricular ectopic beat sensitivity (AHA DB): 91.21%

Ventricular ectopic beat positive predictivity (AHA DB): 90.37%

Run by Run Accuracy

Ventricular couplet sensitivity (AHA DB): 92.28%

Ventricular couplet positive predictivity (AHA DB): 83.40%

Best-in-class real-time SmartPatch

The SmartPatch is essential to the HiCardi system. It measures the continuous physiological data of patients, such as ECG, respiration, temperature, activity, body posture, and analyzes 17 Arrhythmias classification in real-time. Simultaneously, it transfers data wirelessly to a gateway, which is called the SmartView.

High performance without compromise

Balanced between high performance and long battery life. HiCardi system allows patients to wear it for a long enough time.

Easy to Apply

Simply attach the SmartPatch to the Patient's chest and easily connect to the SmartView.

Smallest & Lightest

Lightweight, slim, and compact design makes wearing the SmartPatch without recognizing that is attached to the chest.

Fewer Artifact, more precise

The HiCardi system adapted advanced anti-motion filtering technology. It produces fewer artifacts and more accurate diagnoses.

Water-resistant

With IP67 water-resistance of the HiCardi®+, patients have the freedom to live in their normal daily activities.

HiCardi® - SmartView™

USER-FRIENDLY INTERFACE

Dedicated to Make Your Heart Monitored and Cared



ELECTROCARDIOGRAM

ECG waveform with 500Hz sampling rate and accurate HR



ARRHYTHMIAS

17 Arrhythmias classification in real-time basis



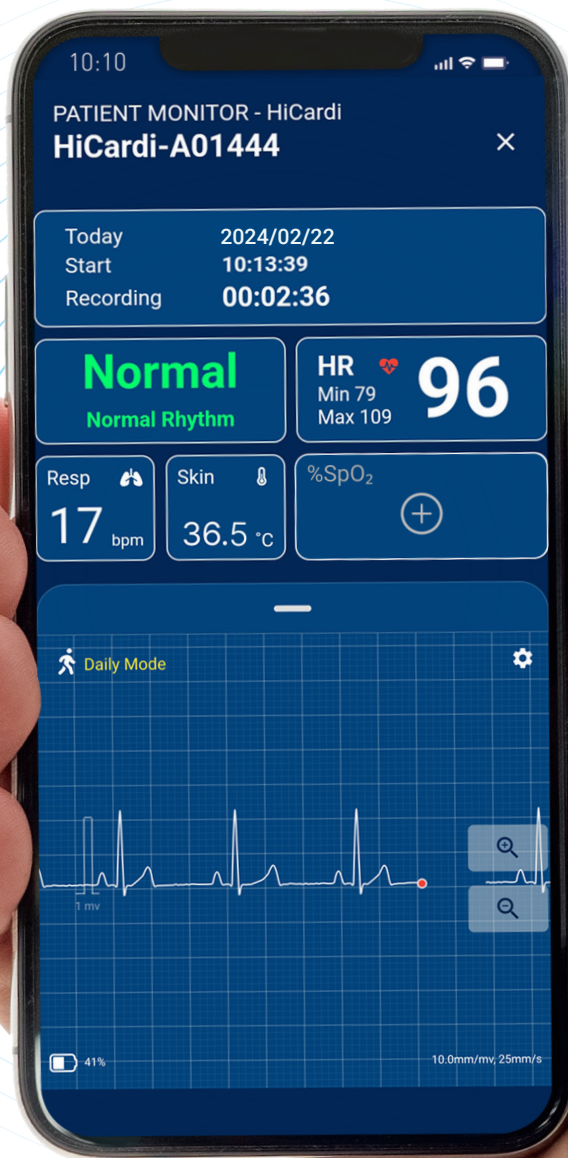
RESPIRATION

More reliable respiration with Mezoo's anti-motion technology



Body Posture & Activity

Body Posture & Activity to maximize patient care



Download on the
App Store



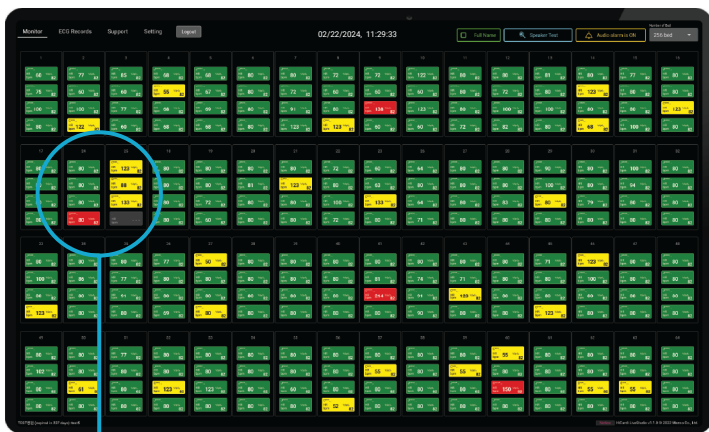
ANDROID APP ON
Google play

HiCardi® - LiveStudio™

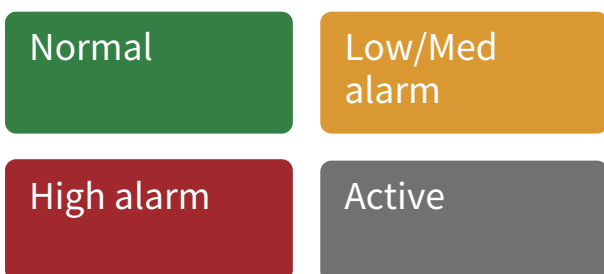
IDEAL CENTRAL MONITORING SOLUTION

Dedicated to Multiple Patients Monitoring in Real Time

Remote Patient Monitoring - 4 beds



Remote Patient Monitoring - 256 beds



LiveStudio® - Ideal Central Monitoring Solution

The LiveStudio displays and records ECG, respiration, temperature, heart rate, activity for multiple patients in real-time.

Real-time patient monitoring

Real-time Visual and Audio alarm assists clinician to take immediate intervention against any critical condition of patients.

Web-based Software

Since it is an Internet web browser, no installation is required. The medical professionals can simply access the LiveStudio anytime, anywhere.

Manage Multiple Patients

The LiveStudio enables medical professionals to remotely and simultaneously monitor multiple patients (up to 256) in real-time from anytime and anywhere.

Cloud Service

It is a secured web-based cloud with HIPAA Compliance.

HiCardi® - Applications

Where the HiCardi® system can go?



General ward

In the ward, the nurse ought to check the patient's condition periodically. The use of the HiCardi system reduces not only the workload but also enables rapid intervention by visual and audio alarm against any critical condition of patients. In addition, the patient's quality of life can be greatly improved due to its wireless/wearable capabilities.

Outpatient Setting

If non-critical patients can be continuously monitored in real-time at home, it will be ideal for health providers and patients. So, the necessity of the application of remote monitoring in the outpatient setting is getting enlarged. The HiCardi system is designed to allow remote continuous monitoring in real-time for the outpatient setting.



Neonates intensive care unit (NICU)

Thanks to its lightweight and compact size, it enables monitoring and diagnosis of newborn babies. Wireless connection increases the signal quality. The HiCardi system is the best option to monitor newborn babies.

Emergency

From the ambulance, the HiCardi system can transmit essential data to ER staff before hospital arrival. It enables ER staff to timely intervention in case of life-threatening cardiac disorders. Early detection of critical Arrhythmias has been shown that it supports ER staff to maximize efficiency and improve the patient's outcome.



HiCardi® - Applications

Where the HiCardi® system can go?

Public use

Due to bad eating habits, smoking, and aging, the number of people with chronic heart disease is getting increased. At home, if a family member is at high risk of cardiac disorder or an elderly member who has suffered from arrhythmia or cardiac arrest in the past, the HiCardi system can be a lifeguard to provide early detection of any physiological conditions, lead to timely alert for seeking medical intervention.



COVID-19 Patients

To prevent the spread of COVID-19, flu, and other infectious diseases, the awareness of remote monitoring is increasing worldwide. The HiCardi system enables monitoring of COVID-19 patients on an isolation ward from a long distance. It can minimize the risk of infection for the health providers.

Chronic disease

The HiCardi system enables physicians and nurses to monitor their patient's physiological conditions anytime, anywhere. If necessary, physicians and nurses can make appropriate interventions. In addition, it can give patients a sense of safety that they are always protected.



Sleep Study

Sleep-disordered breathing (SDB) causes apnea or low respiratory ventilation disorders due to partial or complete closure of the upper respiratory tract during sleep. Sleep breathing disorder is known to be about 2% to 4% of the total population. Repeated sleep apnea during sleep causes repetitive hypoxemia, poor digestion, sudden changes in thoracic pressure, and awakening of the central nervous system. Therefore, neglecting sleep respiratory disorders increases the incidence of hypertension, heart failure, myocardial infarction, Arrhythmia, stroke, etc.

Sleep-disordered breathing: Deep-learning based automatic detection of sleep apnea/ hypopnea events and identification of severity using ECG, respiration acceleration signal.

Sleep stage: Automatic classification of sleep stage (awake, light, and deep sleep) from an ECG signal using a deep structured gate-recurrent unit (GRU).

Periodic limb movement: Prediction of periodic limb movements (PLMs) based on convolutional neural network (CNN).

Cardiovascular disease: A prediction of cardiovascular disease based on artificial intelligence in patients with sleep-disordered breathing.