



cardiofax S

## Easy operation and clear presentation of all information

The Nihon Kohden Cardiofax electrocardiogram series stands for easy operation and efficient workflows. The Cardiofax S supports caregivers in their daily routine with accurate and reliable ECG information for improved efficiency. Its 7.0" backlit color display allows for all relevant data and the 12-lead ECG waveform view to be seen on one screen.

The on-screen guide function allows for an optimal positioning of the electrodes thus supporting the efficient workflow of the caregiver. Other efficiency tools like a bar code reader or magnetic card reader for patient ID entry are available, too. Cardiofax S supports paper based and paperless workflows – waveform and analysis results can be transferred to a PC for review.

The advanced interpretation program, the ECAPS 12C analysis program makes for diagnostic confidence and supports a quick and reliable diagnosis for the patients. It provides simultaneous 12-lead ECG acquisition and analysis with approximately 200 findings with active noise suppression.



# cardiofax S

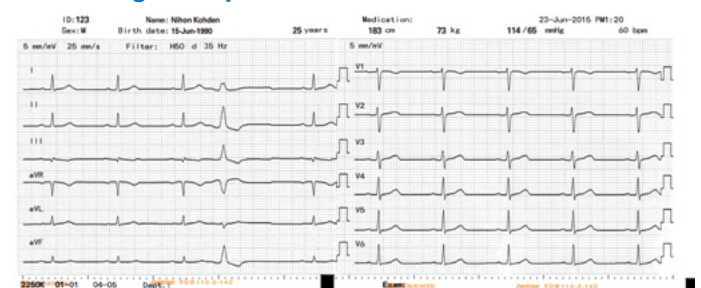
## Easy operation

- **Easy-to-view color LCD:** The 7" color backlit LCD allows for viewing 12-lead ECG waveform and data more easily. Enhanced user experience with on-screen guide function as lead detached message helps avoid re-testing, while the help function shows which electrode is detached.
- **Simple data entry:** Equipped with alphanumeric keys for identifying and easily entering patient information. The barcode reader and magnetic card reader make it possible to enter the patient information quickly without any human errors.
- **Easy handling:** With its lightweight design and integrated carrying handle, the Cardiofax S stands for easy portability – it weighs 2.3 kg without the battery.
- **Electronic recording:** Preview function allows for checking waveforms and analysis results before recording (6-channels). Via the paperless mode, waveform and analysis results can be transferred to a PC for review.
- **Easy data transfer:** Up to 400 ECG files can be stored in the internal memory. Approximately 3,000 ECG files can be stored on an SD memory card. Cardiofax S also features the capability to transfer the ECG data to a PC using LAN or W-LAN.

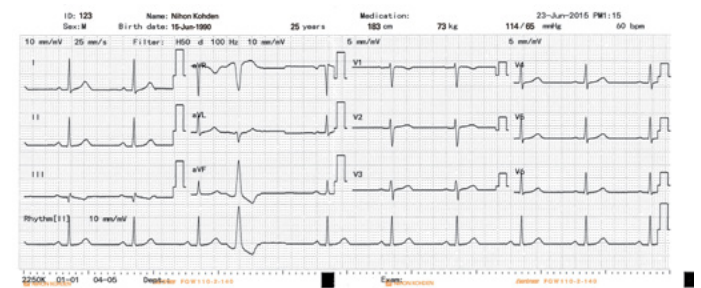
## Advanced analysis

- **High level 12-lead ECG analysis:** Cardiofax S includes Nihon Kohden's latest interpretation program, the ECAPS 12C analysis program. It provides simultaneous 12-lead ECG acquisition for up to 24 seconds and analysis with approximately 200 findings and 5 judgment categories. ECAPS 12C can also find typical waveforms of Brugada-type electrocardiograms.
- **High-performance compliance with IEC60601-2-25:2011:** Cardiofax S complies with IEC standard IEC60601-2-25:2011, which approves high accuracy of signal processing (AC filtering), ECG measurement, and ECG analysis. It helps you with accurate ECG diagnoses.

## Recording examples



12-lead ECG 6 traces



12-lead ECG 3 traces, 1 channel-rhythm recording



3-channel rhythm recording

# Specifications

## ECG-2250

### Display

Display size	7"
Display type	Color TFT LCD
Resolution	800 x 480 dots
Displayed data	12 lead ECG waveform, patient information, recording settings, operation mode, heart rate, QRS sync mark, error message, electrode detachment, noise

### ECG input

Input impedance	$\geq 50 \text{ M}\Omega$ at 10 Hz
Polarization-proof voltage	$\pm 550 \text{ mV}$
Input protection function	There is a defibrillation-proof function
Common mode rejection ratio	$> 105 \text{ dB}$
Input circuit current	$< 0.05 \mu\text{A}$
Standard sensitivity	$10 \text{ mm/mV} \pm 2\%$
Internal noise	$\leq 20 \mu\text{Vp-p}$
Interference between channels	$\leq -40 \text{ dB}$
Frequency characteristics	With 10 Hz as benchmark, 0.05 to 150 Hz (+0.4 dB /-3.0 dB)
Sample rate	8,000 samples/s

### Waveform data processing

Number of leads	12 leads
Input channel	1 channel
Sample rate	500 samples/s, $1.25 \mu\text{V/LSB}$
Response to minimum signal	$\leq 20 \mu\text{Vp-p}$
High-cut filter	75, 100, 150 Hz (-3 dB)
AC line filter	50 / 60 Hz
EMG filter	25 / 35 Hz

### Data transfer

Method	SD card, wired LAN, wireless LAN (adapter)
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### Recording

Number of recording channels	3, 3+Rhythm, 6
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### Recorder

Recording mode	Thermal line
Printing density	200 dpi
Scanning line density	1 ms
Recording speed	5, 10, 12.5, 25, 50 mm/s
Recording speed accuracy	$\leq \pm 5\%$
Recording paper	110 mm width, 30 m long Z fold.
Recording data	ECG waveform, heart rate, lead name, version, date and time, paper speed, sensitivity, filter setting, patient information, measured information, marks
Extended recording	Available

### ECG analysis

Program name	ECAPS 12C
Analysis patient age	3 years to adult
Finding items	approx. 200
Judging items	5

### Power requirements

Voltage	AC (100 to 240 V) $\pm 10\%$
Frequency	50 /60 Hz
Power input	$\leq 80 \text{ VA}$
Battery pack	12 V, 1950 mAh
Battery operation time	60 minutes (with fully charged new battery at 20 °C ambient temperature, input 1 mV 10 Hz sine wave, paper speed 25mm/s)
Battery charging time	8 hours

### Interfaces

USB A type USB1.1	Yes, 2
SD slot	Yes, 1
LAN port	Yes, 1

## Environment

### Transport and storage environment

*Main Unit:*  
Surrounding temperature: -20 to +65°C  
Relative humidity: 10 to 95%  
Atmospheric pressure: 700 to 1,060 hPa  
*Battery:*  
Storage temperature range  
30 days or less: -20 to +55 °C  
One year or less: -20 to +35 °C  
Storage humidity range  
60 days or less: 20 to 85%  
One year or less: 45 to 85%  
*Recording paper:*  
Storage temperature range: -20 to +50 °C  
Storage humidity range: 10 to 90%

### Operating environment

*Main unit:*  
Surrounding temperature: 5 to 40 °C  
Relative humidity: 25 to 95%  
(noncondensing)  
Atmospheric pressure: 700 to 1,060 hPa  
*Battery:*  
Operating humidity range: 20 to 85%  
*Recording paper:*  
Operating humidity range: 25 to 80%

## Performance standard

IEC60601-2-25:2011 Medical electrical equipment - Part 2-25:  
Particular requirements for the basic safety and essential performance of electrocardiograph

## Electromagnetic compatibility

IEC 60601-1-2 3<sup>rd</sup> edition: 2007 Medical electrical equipment – part 1-2: General requirements for basic safety and essential performance collateral standard: Electromagnetic compatibility requirements and tests

## Safety

### Safety standard

IEC 60601-1 3<sup>rd</sup> edition:  
2012 Medical electrical equipment – part 1: General requirements for basic safety and essential performance  
IEC 60601-2-25: 2011:  
Medical electrical equipment - Part 2-25: Particular requirements for the basic safety and essential performance of electrocardiograph

### Type of protection against electric shock

AC power: CLASS I  
Battery pack power: Internally powered equipment

### Degree of protection against electric shock

Defibrillator proof type CF applied parts (when patient cable BJ-961D, BF-962D, BA-901D, BA-903D, BJ-901D, BJ-902D or BJ-903D is used)

### Degree of protection against harmful ingress of water

IPX0 (non-protected)

### Safety grade of use in the environment

Not suitable for use in the presence of flammable anesthetic mixture with air, oxygen or nitrous oxide

### Mode of operation

Continuous operation

## Dimensions and weight

### Dimensions

285 (W) x 102 (H) x 298 (L) mm

### Weight

2.3 kg ±10% (excluding battery pack and recording paper)

  
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