

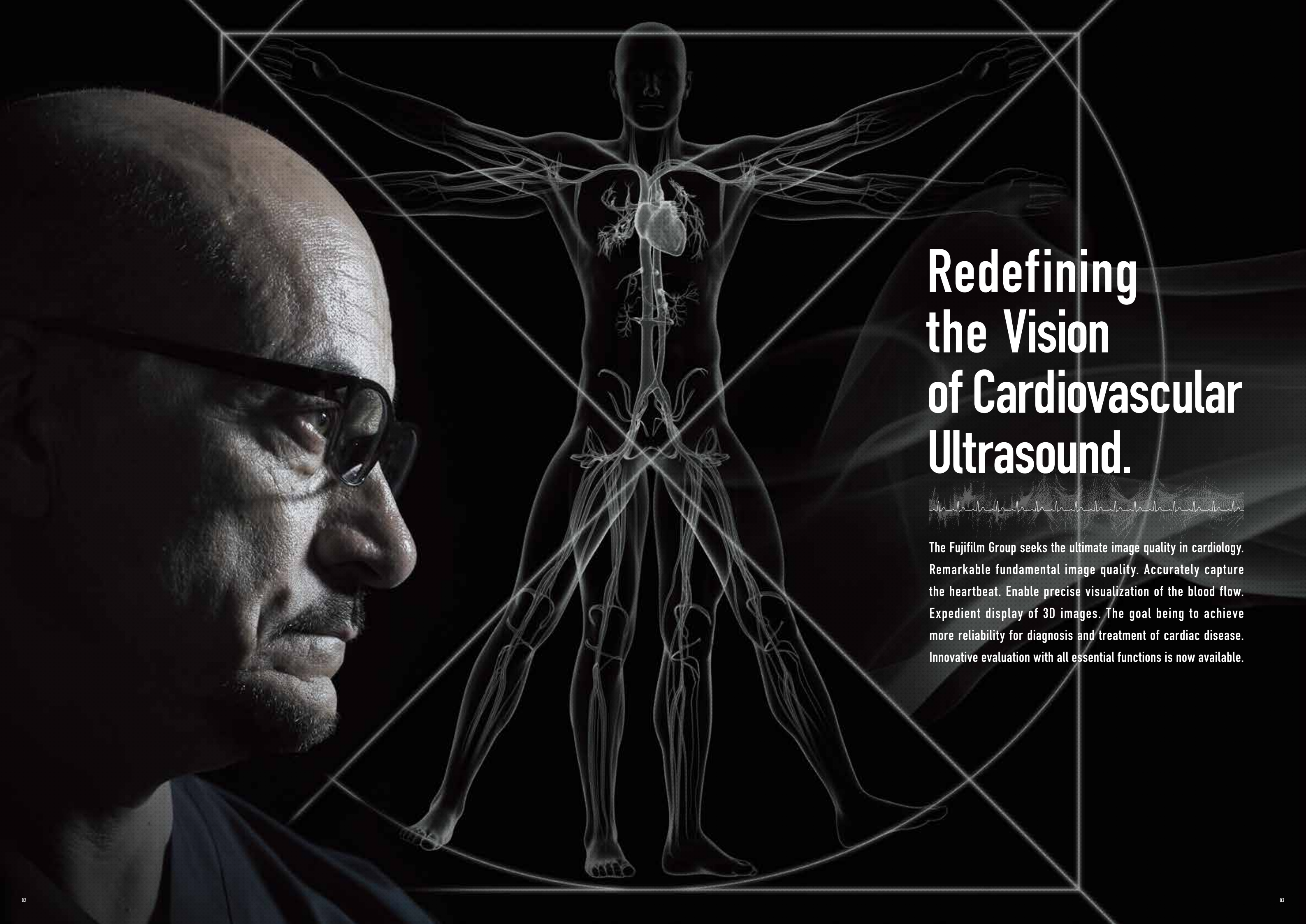
# LISENDO 880 LE

PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

# LISENDO 880 LE

PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY





# Redefining the Vision of Cardiovascular Ultrasound.

The Fujifilm Group seeks the ultimate image quality in cardiology. Remarkable fundamental image quality. Accurately capture the heartbeat. Enable precise visualization of the blood flow. Expedient display of 3D images. The goal being to achieve more reliability for diagnosis and treatment of cardiac disease. Innovative evaluation with all essential functions is now available.





LISENDO 880LE  
Premium  
Ultrasound Scanner  
For Cardiology

Pure Image / Seamless Workflow / Your Application

## Your Application

### [ HDAnalytics (HemoDynamic Analytics) for Heart Failure Diagnosis ]

An understanding of the hemodynamics of the heart is a prerequisite for the assessment of cardiovascular performance. This has been our focus, redefining cardiovascular ultrasound with a ground-breaking collection of analytical tools. The HDAnalytics package provided by LISENDO 880LE offers a unique and accurate analysis of cardiac hemodynamics for use in your daily practice.

#### HDAnalytics Package for Heart Failure Diagnosis

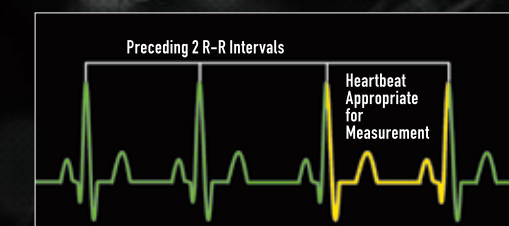


### Virtual Contrast (LV *e*FLOW)

A non-invasive, high definition blood flow imaging mode that drastically improves sensitivity for the visualization of the endocardial border in the left ventricle, and for technically difficult patients, LV *e*Flow can significantly shorten the examination time compared to the LV opacification technique and shows equivalent results with the LVEF.

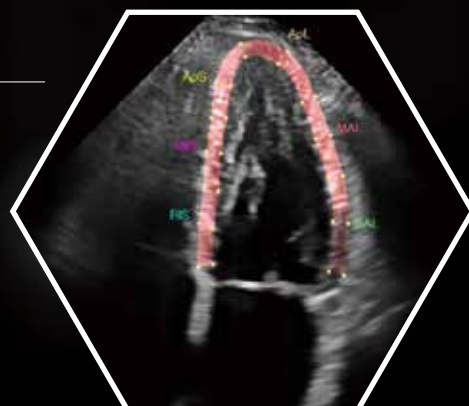
### Dual Gate Doppler with R-R Navigation

Dual Gate Doppler (DGD) can place two sample gates to detect waveforms of the same heartbeat, and the combination of PW and TDI is available. It is possible to perform diastolic performance evaluations such as E/e' measurement and TE-e' measurement accurately and stably even in arrhythmia cases by using DGD in combination with R-R Navigation, which automatically detects the appropriate heartbeat for measurement.



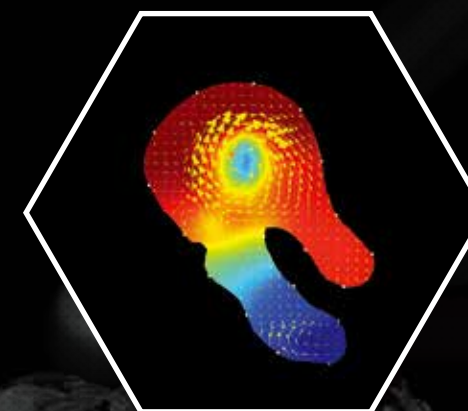
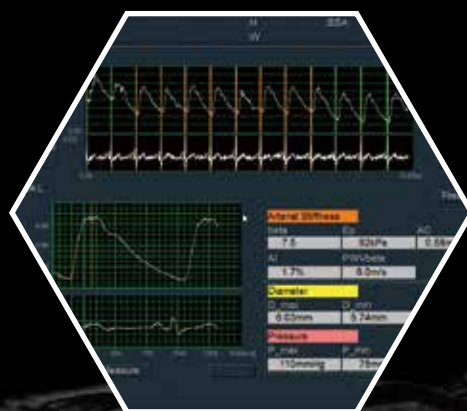
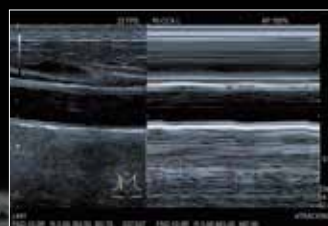
### GLS (Global Longitudinal Strain)

GLS, an index to evaluate the left ventricular systolic performance in the long axis, is widely used as a method to detect slight changes in left ventricular function. Considering GLS use in routine examinations, simultaneous calculation of GLS values is supported in a normal Simpson measurement of the left ventricle as well as a use in speckle tracking method.



### *e*TRACKING with Wave Intensity

*e*TRACKING provides assessment of multiple parameters including arterial stiffness for early-stage detection of atherosclerosis. The Wave Intensity (WI) function allows observation of the pulse wave of the vessel, with analysis of the relationship between the systolic function of the heart in the early systolic phase to the diastolic function at the end of the systolic phase. This will reflect the stiffness and stenosis of peripheral vessels.



### Vector Flow Mapping

A validated application that demonstrates blood flow patterns in the heart in a completely new way. From one cine loop, flow direction without angle dependency, vorticity, energy loss, wall shear stress and relative pressure can all be appraised. Wall Shear Stress (WSS) can be applied to blood vessels as well.





# Cardiovascular diagnosis supported by three innovations.

What do optimum image quality, applications, and operability mean to the cardiologist? These are the definitive challenges The Fujifilm Group has been continuously addressing since they released the world's first diagnostic ultrasound system. From the complete redesign of platform components and functions, to arrive finally at the 3 core innovations of LISENDO 880LE: "Pure Image", "Your Application", "Seamless Workflow", meeting your requirements and aspirations for cutting edge solutions for cardiovascular diagnosis.

## Pure Image

Attaining the next level of image quality

Technologies fostered by The Fujifilm Group to hone the high quality "sound" have evolved further giving life to Pure Symphonic Architecture. The combination of transducer/ frontend, variable beamformer, active backend, and OLED monitor: all technologies working together to realize the highest level of premium class performance.

## Your Application

Attaining the next level of diagnostic confidence

LISENDO 880LE performs an extensive variety of advanced applications that offer support across a broad clinical range. With efficient support for rapid/accurate diagnosis, treatment guidance, and research opportunities, LISENDO 880LE creates new clinical value.

## Seamless Workflow

Attaining the next level in operability

The ergonomic design of the LISENDO 880LE minimizes operator fatigue. Supporting seamless workflow, the many easy-to-use functions shorten examination time and provide a more comfortable examination environment. As a result, the patient experience is also improved.



**LISENDO 880 LE**  
PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY





LISENDO 880LE  
Premium  
Ultrasound Scanner  
For Cardiology

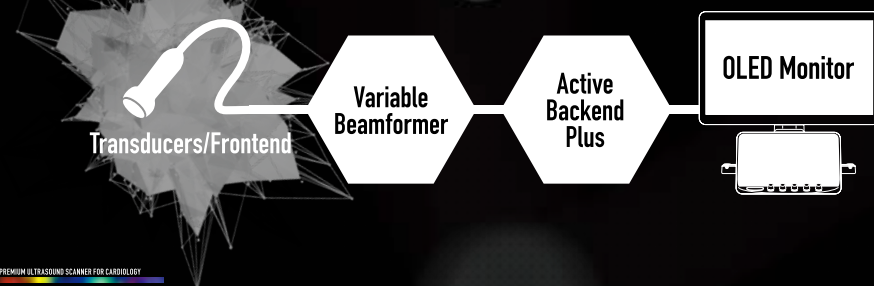
Pure Image / Seamless Workflow / Your Application

## Pure Image

### [ Attaining the next level of image quality ]

A wide range of essential image adjustment parameters dedicated to optimizing cardiac image quality; a variety of technologies to reduce confounding factors that inhibit signal fidelity such as patient dependent variability; transducers, image processing algorithms, monitor display: PURE SYMPHONIC ARCHITECTURE providing premium level image clarity for cardiac diagnosis.

## PURE SYMPHONIC ARCHITECTURE



## Transducer / Frontend

### [ 2DTTE Transducer ]

The phased array transducer has been designed to realize the high spatial, temporal and contrast resolution especially required for cardiology. With an improved shape that is comfortable to hold and fits easily in intercostal spaces, it can reduce variable factors such as user skill- and patient disease-dependencies that can inhibit image clarity.



### [ Mini Multi TEE Transducer ]

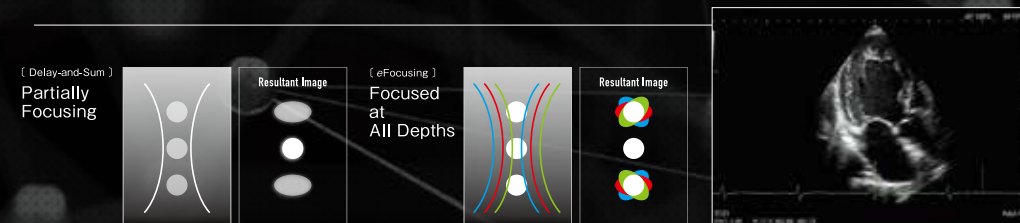
It is suitable for preoperative examinations, intraoperative monitoring and postoperative examinations in pediatrics due to its small tip diameter and thin insertion tube. Even in adults, it can be used for purposes such as a thrombus evaluation for a patient with a narrow esophagus.



## Variable Beamformer

### [ eFocusing ]

The newly developed transmission/reception technology for LISENDO 880LE realizes significant S/N improvement and reduces focal dependency whilst providing excellent penetration at higher frequencies. eFocusing offers a real-time display not modified by image processing, selected by a one-touch operation.



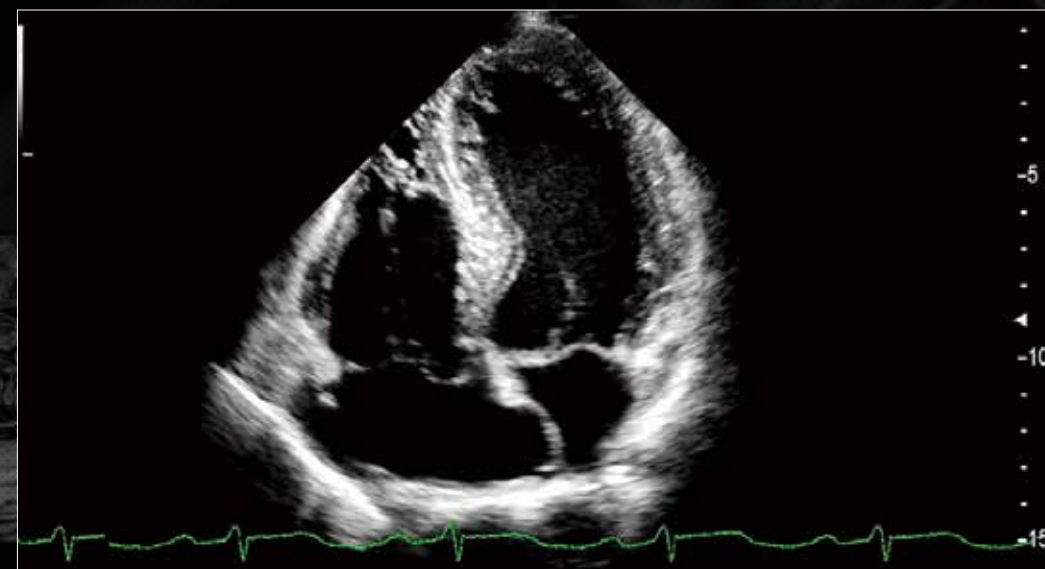
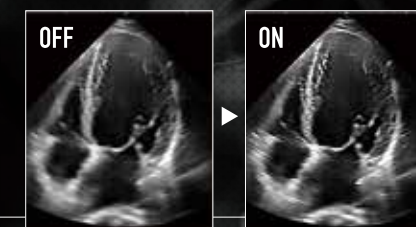
## Active Backend Plus

The Fijifilm Group's unique image processing technologies evolved from former models are further refined for LISENDO 880LE. Combined with the newly developed transducers and eFocusing technology, they deliver imaging with outstanding definition which can be optimized for each user's preference.

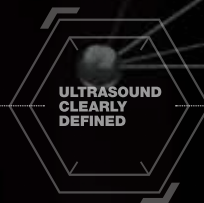
### [ Carving Imaging ]

The advanced imaging technology "Carving Imaging" provides the images with "Clearer Visibility" with less noise. It provides high visibility of structures and is effective for the purpose such as observation of congenital heart diseases.

"Clearer Visibility" due to noise reduction and improved completeness and continuity of tissue boundaries







LISENDO 880LE  
Premium  
Ultrasound Scanner  
For Cardiology

Pure Image / Seamless Workflow / Your Application

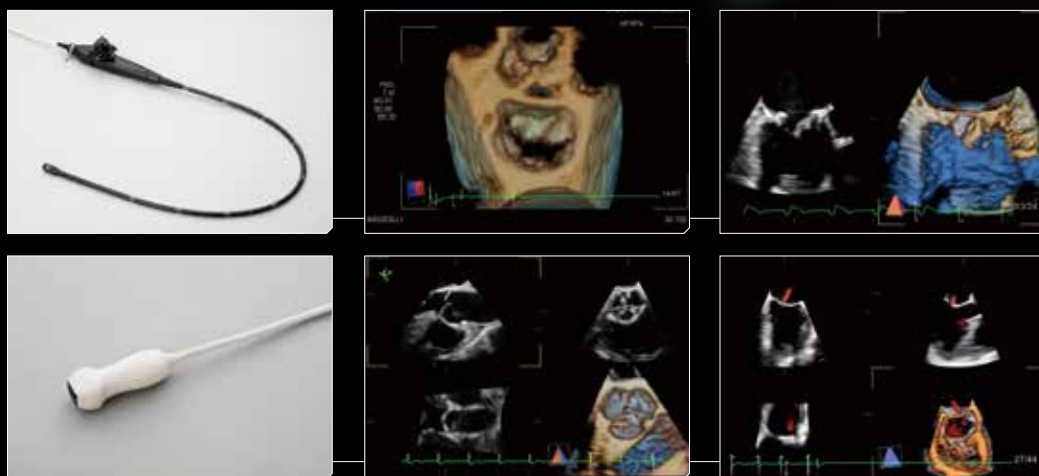
## Your Application [ Cardiac ]

[ Equipped for the next era in diagnosis ]

LISENDO 880LE supports multiple, advanced, easy-to-use application tools that enhance diagnostic accuracy and offer new clinical value. In specific clinical settings where precision and rapid diagnosis are the premium requirements, a few simple steps will result in performance at the highest level with effective diagnostic information.

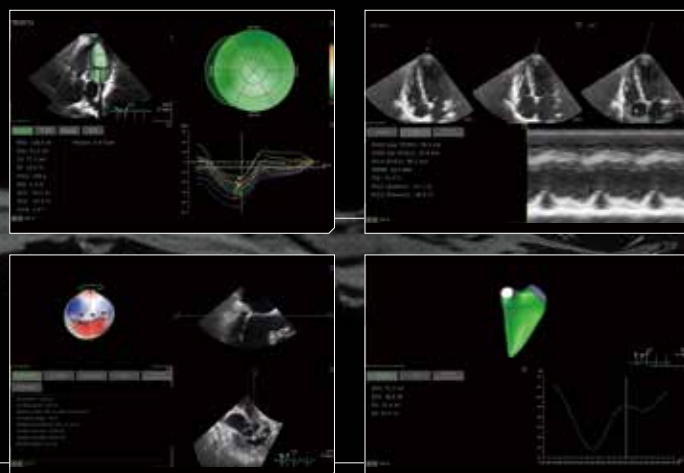
### Cardiac 3D

Cardiac 3D is becoming an indispensable part of the cardiac examination. Diagnostic information is attained at the next level for diagnosis and treatment in cardiac disease. Quality unique to 'made-in-Japan' products is achieved in all aspects of image quality, operability, and functionality.



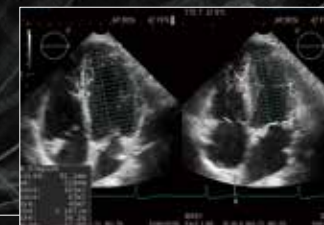
### Analysis of Cardiac 3D

The acquired 3D data can be used for different analysis packages, including valve diameter measurement, 3D morphological observation, volume calculation, and tracking.



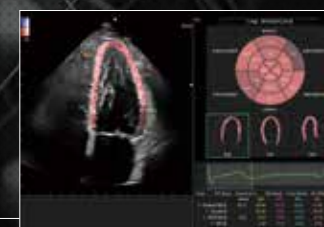
### iEF

Automatic calculation of Ejection Fraction from 3D volume data. The BiPlane images (4ch and 2ch) are displayed with ED/ES frames selected automatically.



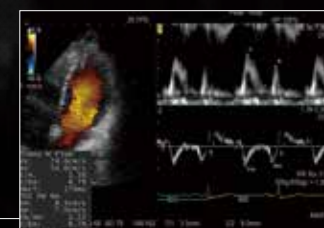
### i2DTT

The fully automatic speckle tracking function of LISENDO 880LE provides precise quantification of strain and strain rate for the left and right ventricles and left atrium for visualization and analysis of regional and global myocardial mechanics. The SAX radial strain and ejection fraction measurements in the apical view are available in addition to GLS.



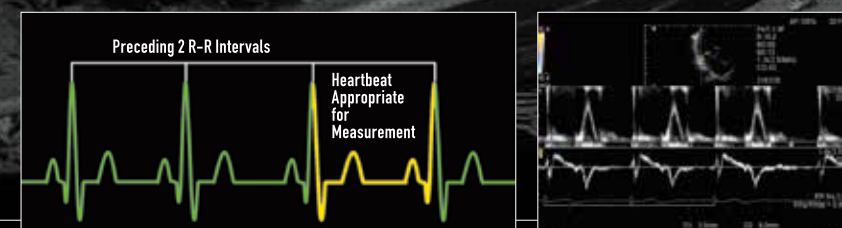
### iDGD

Automatic measurement of E/e' ratio is possible in only 5 seconds (83% time saving based on the engineering study). Using technology based on Artificial Intelligence, the automatic placement of two sample volumes are provided and simultaneous Doppler waveforms in real time from the same cardiac cycle can be detected. In addition, the auto selection of a stable R-R interval finds appropriate heartbeats for measurement in patients with arrhythmia.

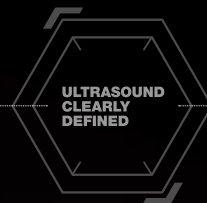


### R-R Navigation

By detecting the most accurate and optimum time phases automatically for examination of arrhythmia, atrial fibrillation, and in other situations, it overcomes former difficulties in choosing an appropriate waveform, to significantly enhance workflow.







LISENDO 880LE  
Premium  
Ultrasound Scanner  
For Cardiology

Pure Image / Seamless Workflow / Your Application

## Your Application [ Vascular ]

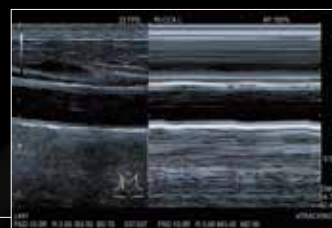
[ Attaining the next level of diagnostic confidence ]

Blood pumped from the heart is circulated throughout the body by the blood vessels. Various applications provided by LISENDO 880LE evaluate and display different functional changes of the vessels and blood flow with time, giving a more detailed understanding of the morphology, kinetics, and physiology of the vasculature throughout the body.

PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

### eTRACKING

A gate automatically tracks the time-dependent distension of the vessel, calculating diameter change in real time with high precision. One of the parameters calculated automatically, Stiffness Parameter  $\beta$ , provides a key indication of the "stiffness" of the arterial wall with less dependence on the change in blood pressure.



PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

### Auto IMT

Automatically detects the Intima-Media Thickness (IMT) following the placement of an ROI on the long axis view of the carotid artery, measuring max and mean IMT according to diagnostic guidelines. By calculating the maximum, minimum, mean, and Standard Deviation (SD) from all points in the ROI, Auto IMT is expected to improve quantification accuracy.



PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

### Linear CW

Continuous Wave Doppler mode is available with linear transducers, allowing a fast, accurate evaluation of stenotic blood flow without changing transducers.



PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

## Wave Intensity (WI)

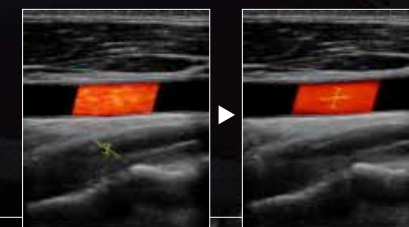
The Wave Intensity (WI) function allows observation of the pulse wave of the vessel, with analysis of the relationship between the systolic function of heart in the early systolic phase to the diastolic function at the end of the systolic phase. This will reflect the stiffness and stenosis of peripheral vessels.



PREMIUM ULTRASOUND SCANNER FOR CARDIOLOGY

## iVascular

Automatically adjusts the ROI position and the settings of sample gate (e.g. position, size, angle, etc.) by single press of a switch in Color and Doppler modes of vessel examinations. It is expected to shorten examination time by reducing the number of operations.





**LISENDO 880LE**  
Premium  
Ultrasound Scanner  
For Cardiology

Pure Image / Seamless Workflow / Your Application

ULTRASOUND  
CLEARLY  
DEFINED

# Seamless Workflow

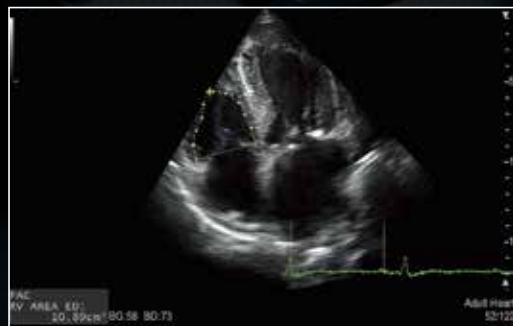
[ Adding the next level in operability,  
using HemoDynamic Structural Intelligence (HDSI) ]

LISENDO 880LE is equipped with a sophisticated automated cardiac function measurement package provided by the analysis based on our HDSI (HemoDynamic Structural Intelligence). High-precision automatic measurement can be achieved from adults to pediatrics.

The measurement package provides automated tools for complex cardiac function analysis, and it is expected to improve measurement accuracy. The resultant ease-of-use and exam consistency achieved by HDSI offers benefits to both operators and patients.

- Beat Mode : automated detection of End Diastolic & End systolic frames
- Smart Cardiac Measurement
  - Auto LV, LA and RA Volume and FAC
  - Auto LA/AO (M-Mode)
  - Teichholz EF (2D and M-Mode)
  - Trans M Flow, TDI PW
- Doppler Cursor Assist : MV flow and Annulus cursor placement automatically

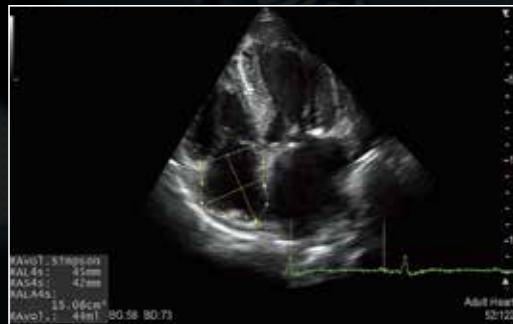
**FAC**



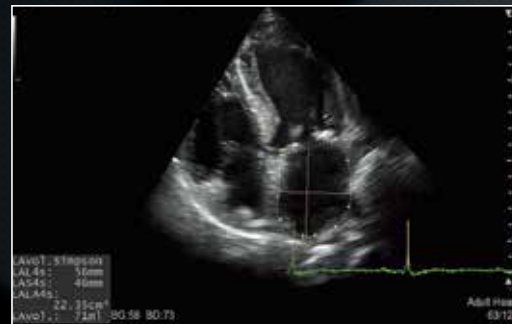
**LV Volume (EF)**



**RA Volume**

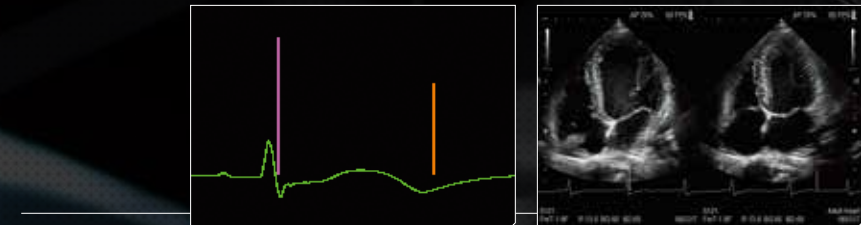


**LA Volume**



## Automated ED-ES Detection

When this function is selected, ED and ES frames are automatically detected and displayed instantly. The combination of automated ED-ES detection and automatic measurement packages offers seamless workflow.



## Intuitive Operating Console

The freeze button is located close to the trackball thereby bringing basic console operations together. Additionally, the core 5-switch arrangement around the trackball streamlines the workflow for intuitive performance of more advanced functions such as Cardiac 3D and cardiac function analysis.

[ Beat Mode ]

[ Zoom ]



## Streamlined Measurement Operation

The measurement menu tree display allows for measurement operations on the display monitor without looking down at the touch panel. The groupings and orders of measurement protocols can be changed flexibly, which delivers streamlined workflow.

