



## KODEX-EPD cardiac imaging and mapping system

# Imaging beyond the catheter

Despite advances in imaging and mapping technologies for Electrophysiology (EP), physicians are still encountering difficult challenges when performing interventions like cryo and RF ablations. The new KODEX-EPD system is an open platform that works with any validated EP catheter and uses dielectric imaging to give physicians new insights to guide their interventions. It has been developed to address key unmet needs in EP procedures today. It is a completely new approach to cardiac imaging that shows real-time HD imaging delivering true anatomy and creates voltage and activation maps.

Dielectric imaging uses electric fields to locate validated catheters and provide structural information of anatomy. This technology overcomes many limitations of the current technologies and offers new benefits for both cryo and RF ablation procedures. Dielectric imaging creates high-definition 3D images of a patient's cardiac structures in real time, without using ionizing radiation, contrast media or touching the endocardium. This technology has the potential to provide new insights into complex cardiac structures to greatly simplify navigation and therapy delivery. Discover how the KODEX-EPD system can enhance your procedural efficiency and patient care.



See **true anatomy** without contact or radiation



**Personalize therapy** based on intraprocedural insights



Simplify your workflow for **more efficient procedures**



Optimize your **quality of care**



## See **true anatomy** without contact or radiation

The KODEX-EPD system provides real-time, high-definition imaging that visualizes true anatomy during EP procedures. No ionizing radiation, contrast medium or contact with the endocardium is required with this technique. These images show variations in cardiac anatomy including accessory veins that might otherwise be missed using conventional mapping systems.

The unique PANO view shows all relevant structures in one overview to enhance understanding of 3D anatomy and enable catheter navigation in an intuitive way. It may also assist in distinguishing anatomical nuances like left atrial appendage and ridge morphologies. The system does not need a field generator frame or reference points, and is free from limitations of existing magnetic or impedance-based technologies like map shift or distortions from metal objects in the field.



Figure 1: Left atrial anatomy posterior 3D image next to an anterior intracardiac panoramic PANO view.

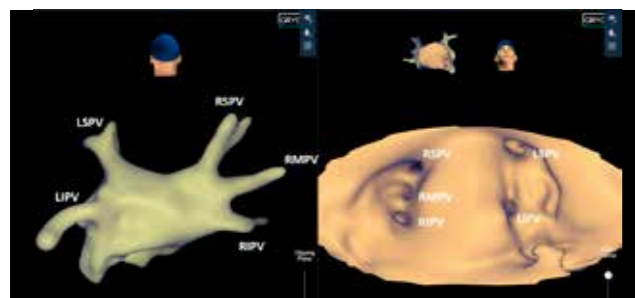


Figure 2: Left atrium showing an accessory right middle pulmonary vein (RMPV) in 3D posterior view adjacent to an anterior PANO view.



## Personalize therapy based on intraprocedural insights

KODEX-EPD visualizes patient-specific anatomical details with excellent clarity, such as the fossa ovalis, pulmonary veins, left atrial appendage and eustachian ridge to allow personalized therapy planning and delivery. It may also assist clinicians in identifying PFOs during cardiac imaging in EP procedures.

The system provides accurate navigation using any standard validated catheter. In parallel, it creates continuously updated voltage and activation maps to support efficient collection of additional insights and confirm therapy impact.



Figure 3: Right atrium caudal view showing ablation points near tricuspid valve during atrial flutter adjacent to superior PANO view showing patient's cavotricuspid isthmus (CTI) and inferior vena cava (IVC).

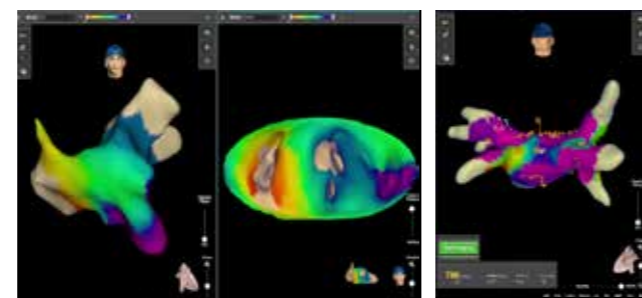


Figure 4: KODEX-EPD system offers common mapping functionalities including continuous LAT mapping and voltage mapping as shown above.



## Simplify your workflow for **more efficient procedures**

The KODEX-EPD system promotes predictable and streamlined ablation procedures supported by an efficient imaging and mapping workflow. Dielectric imaging visualizes the pulmonary veins to determine size, shape, trajectory, and helps in identifying the location of the ostium using any validated ablation or mapping catheter, including the Medtronic Achieve™ Mapping Catheter.

Every aspect of this system is designed to save you time during EP procedures. You get detailed 3D anatomy in as little as 3 minutes. The system is easy to set up for fast EP lab turnover and the user interface is very intuitive. KODEX-EPD offers a streamlined workflow with very little need to correct for physiological distortions or patient movement, compared to magnetic or impedance-based systems. The panoramic PANO view reduces the need for image maneuvering.

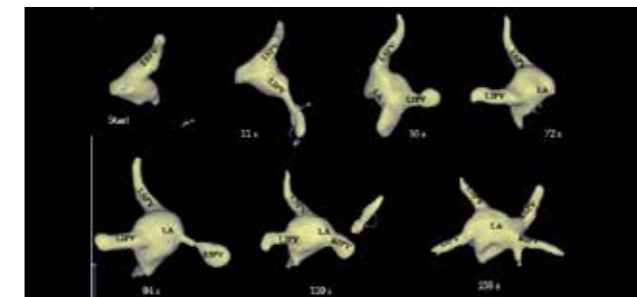


Figure 5: Example showing how KODEX-EPD builds up a detailed 3D image of the left atrium in as little as 3 minutes.

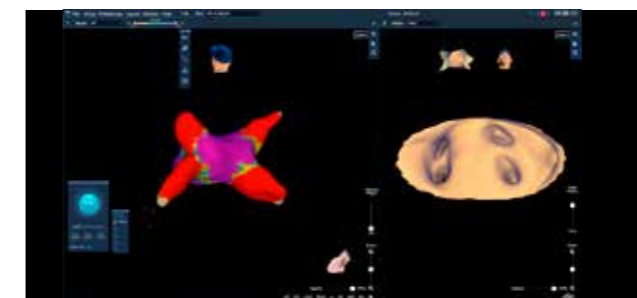


Figure 6: Posterior view of left atrium, showing 3D voltage map post-cryoballoon ablation adjacent to an anterior anatomical image in PANO view.



## Optimize your **quality of care**

This new imaging modality offers many ways to support you in optimizing the quality of care for your patients. The system is an open platform so you can choose your preferred ablation method and use any validated EP catheter to provide the optimal treatment for each individual patient.

Dielectric imaging does not use ionizing radiation and contributes to reducing the overall X-ray exposure to patients and staff. This technique is patient friendly as it uses no contrast medium and reduces the need for pre-procedural CT/MRI images.

During Medtronic cryoballoon ablation procedures, the KODEX-EPD system with Occlusion feature provides an indication of pulmonary vein occlusion without X-ray or contrast, by detecting changes in blood flow with the Medtronic Achieve™ Mapping Catheter.<sup>1</sup>



Figure 7: Left atrial anatomy obtained with Medtronic Achieve™ Mapping Catheter during a cryoballoon ablation procedure.

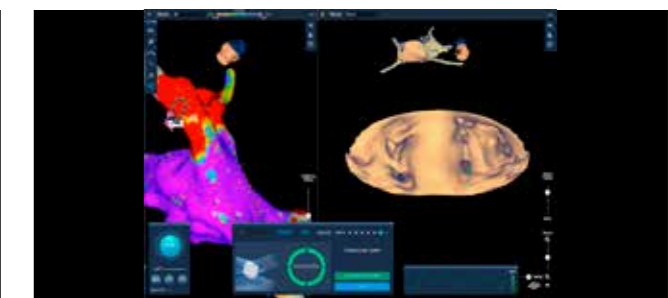


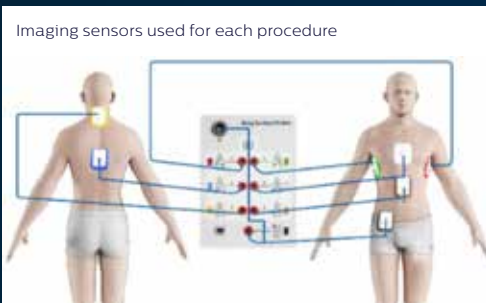
Figure 8: Balloon Occlusion feature provides indication of PV occlusion without X-ray and contrast.

<sup>1</sup> While using KODEX-EPD occlusion functionality, always refer to the applicable cryoballoon technical manual, published literature, and exercise your physician discretion to guide confirmation of pulmonary vein occlusion.



### Specifications

KODEX-EPD processing unit	Dimensions (HxWxD)	47 cm x 45 cm x 24 cm (18.5" x 17.7" x 9.4")
	Weight	16 kg (35.3 lb)
	Power inputs	2A @ 90 VAC 1A @ 240 VAC 50–60 Hz
KODEX-EPD workstation: Dell Precision 5820	Dimensions (HxWxD)	42 cm x 18 cm x 52 cm (16.5" x 7.1" x 20.5")
	Weight	15.4 kg (34 lb)
	Power inputs	950 W 100–240 VAC, 50–60 Hz



**KODEX-EPD system components:**  
 KODEX-EPD processing unit  
 KODEX-EPD workstation  
 Connection accessories

For more information about the procedure, indications, contraindications, warnings and cautions, refer to the KODEX-EPD user manual or contact EPD Solutions, a Philips company.

#### Clinical image courtesies

Figure 1, 4, 5 and 7: Prof. K-H Kuck and Dr. T. Maurer, Asklepios Klinik St. Georg, Hamburg – Germany  
 Figure 2: Dr. Rillig and Dr. Metzner, University Medical Center Hamburg-Eppendorf (UKE) – Hamburg, Germany  
 Figure 3: Dr. Bianchi, S. et al., San Giovanni Calibita Fatebenefratelli Hospital – Rome, Italy  
 Figure 6: Prof. Ng, A., Glenfield Hospital, Leicester – UK  
 Figure 8: Dr. Rillig and Dr. Metzner, University Medical Center Hamburg-Eppendorf (UKE) – Hamburg, Germany

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