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BIOTRONIK SE & Co. KG  
Woermannkehre 1  
12359 Berlin, Germany  
Tel +49 (0) 30 68905-1414  
Fax +49 (0) 30 68905-961414  
www.biotronik.com

## DX Technology

BIOTRONIK [DX technology](#) challenges the status quo by offering complete atrial diagnostics in a single-chamber implantable cardioverter defibrillator (ICD), and in cardiac resynchronization devices (CRT-Ds). This encompasses the benefits of single- and dual-chamber devices, while using one lead rather than two. Similarly, BIOTRONIK devices with CRT-DX use two leads rather than the usual three—a left ventricular lead and a right ventricular lead with atrial sensing capability.

### What type of patients benefit from DX?

The DX system serves a previously unmet need for both single-chamber ICD candidates and heart failure patients indicated for CRT. Standard single-chamber ICDs are designed to sense ventricular (lower heart chamber) rhythm changes but are unable to offer the full atrial (upper heart chamber) diagnostics that can detect abnormal rhythms like atrial fibrillation, a serious condition that increases the risk of both inappropriate shock and stroke.

### Why use a DX system?

ICDs with DX technology are the only single-chamber ICDs that provide complete atrial and ventricular electrograms. Physicians are able to record three-channel intracardiac electrograms with high-resolution atrial, ventricular and far-field signals. This helps the physician to precisely locate the origin of fast heart rhythms (tachycardia), improving treatment efficiency. When combined with [BIOTRONIK Home Monitoring®](#), DX technology can help detect atrial arrhythmias earlier. DX technology in CRT systems provides the potential to reduce hardware, as well as an opportunity to reduce risk in CRT patients, who are at the highest risk among all CIED patients.

To reduce inappropriate shocks caused by atrial arrhythmias, standard single-chamber ICDs use SVT discrimination algorithms based on ventricular information to make therapy decisions. By including the SMART dual-chamber algorithm, DX technology also uses atrial information for discrimination decisions. This can help to significantly reduce the risk of inappropriate therapies.<sup>1</sup>

### Advantages of reduced hardware

With a single lead, DX systems have less hardware than either dual-chamber ICDs or standard three-lead CRT-Ds. This benefits patients and physicians by easing the implantation process and reducing complication risks that may come with an additional lead. The single lead DX system still provides dual-chamber diagnostics.

### References:

<sup>1</sup> Kurt M et al. *J Cardiovasc Electrophysiol*. 2018;1-8.