GE Healthcare

Overview of the EK-Pro arrhythmia algorithm versions and new features

The purpose of this document is to provide an overview of the EK-Pro arrhythmia algorithm and to illustrate the different device scenarios where the algorithm's analysis occurs. It also highlights which algorithm version takes precedence if two versions are present, as well as what enhancements each version of the algorithm provides.

Regardless of module or device, 12SL ECG analysis always takes place in the bedside monitor.
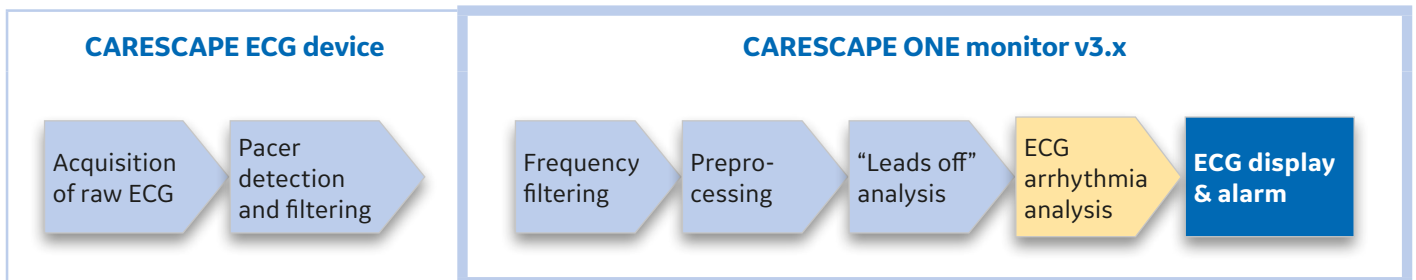
What is the EK-Pro algorithm?

The EK-Pro algorithm utilizes four simultaneous leads for analysis, detecting and alarming for cardiac events that might otherwise go unnoticed. The algorithm helps distinguish noise and artifacts from true beats, significantly reducing false alarms, and also provides redundancy, enabling continued function of the monitor in the event of single electrode failure.
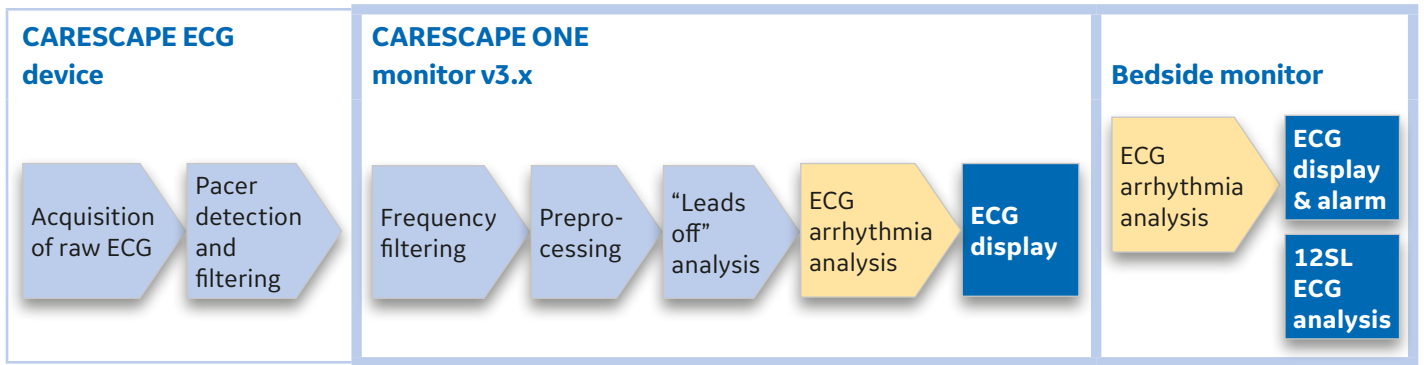
Always refer to the user manual of the device for full details on the alarms and use of the monitor.
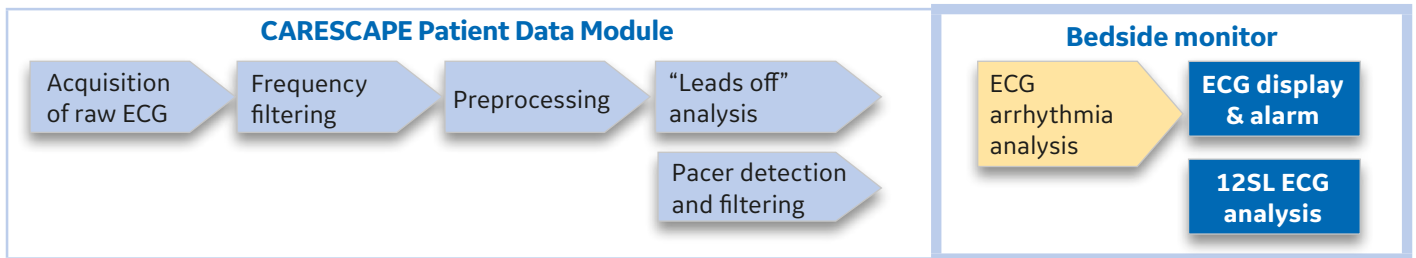
Analysis location by device

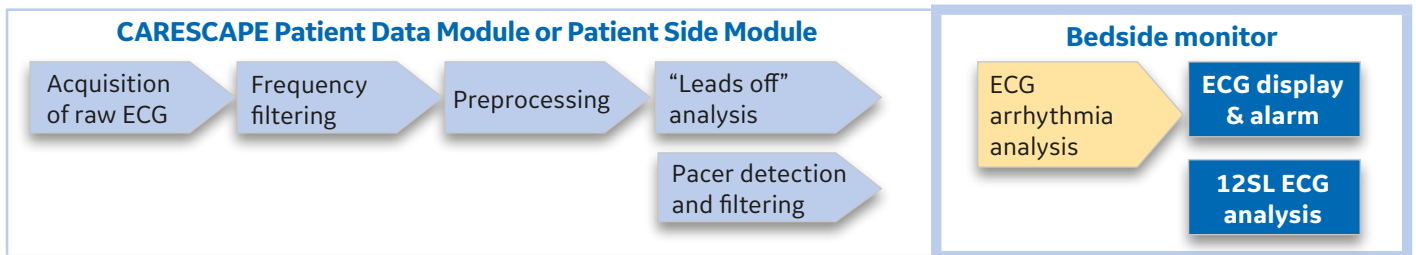*CARESCAPE™ ONE monitor as a stand alone monitor*

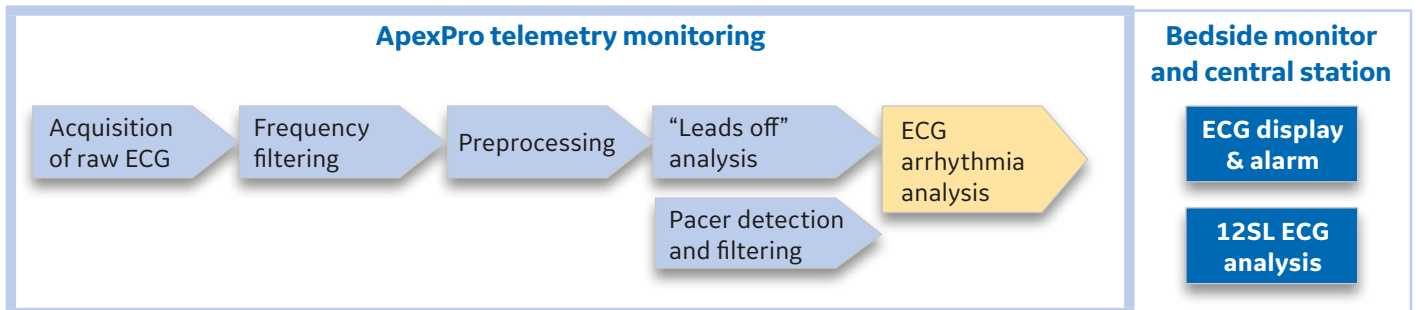## CARESCAPE B850 monitor (v3 sw) and CARESCAPE ONE monitor

CARESCAPE ECG device

Acquisition of raw ECG → Pacer detection and filtering

CARESCAPE ONE monitor v3.x

Frequency filtering → Prepro-cessing → "Leads off" analysis → ECG arrhythmia analysis → **ECG display**

Bedside monitor

ECG arrhythmia analysis → **ECG display & alarm** / **12SL ECG analysis**

CARESCAPE Bx50 Monitor (v3 sw) with CARESCAPE Patient Data Module

CARESCAPE Patient Data Module

Acquisition of raw ECG → Frequency filtering → Preprocessing → "Leads off" analysis / Pacer detection and filtering

Bedside monitor

ECG arrhythmia analysis → **ECG display & alarm** / **12SL ECG analysis**

CARESCAPE Bx50 Monitor (v2 sw) with CARESCAPE Patient Data Module or Patient Side Module

CARESCAPE Patient Data Module or Patient Side Module

Acquisition of raw ECG → Frequency filtering → Preprocessing → "Leads off" analysis / Pacer detection and filtering

Bedside monitor

ECG arrhythmia analysis → **ECG display & alarm** / **12SL ECG analysis**

CARESCAPE modular monitor or CARESCAPE Central Station with ApexPro™ telemetry

ApexPro telemetry monitoring

Acquisition of raw ECG → Frequency filtering → Preprocessing → "Leads off" analysis / Pacer detection and filtering → ECG arrhythmia analysis

Bedside monitor and central station

ECG display & alarm / **12SL ECG analysis**

BX0 and B1X5 patient monitors

Acquisition of raw ECG → Pacer detection and filtering → Frequency filtering → Prepro-cessing → "Leads off" analysis → ECG arrhythmia analysis → **ECG display & alarm**
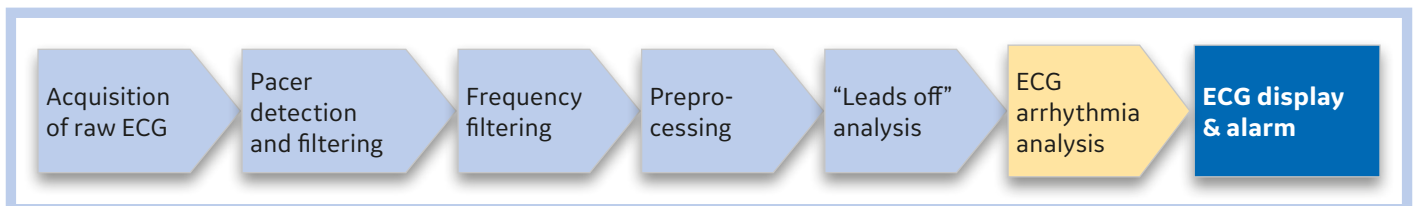
EK-Pro cardiac algorithm versions and enhancements

Revision	Enhancements
V11	• Improved pacemaker artifact rejection • Support for optional 4- or 8-beat averaging (depending on user interface of host device) • Support for adjust PAUSE criteria (depending on user interface of host device)
V12	New arrhythmia categories for: • Missing beat • Multifocal PVC • Rapid VT (available in EkPro v12 only) New method for pacemaker handling New HR calculation method based on 12-second median Improvements for Vtach, Vfib and asystole detection sensitivity
V13	Improved detection sensitivity of narrow QRS ventricular tachycardia Improved Afib detection sensitivity New arrhythmia categories for: • SV Tachy with SV Tachy alarm • SV Count with Frequent SVCs alarm
V14	Improved management of multi-lead signals Improved arrhythmia detection performance during a noisy ECG signal

EK-Pro algorithm versions by GE device

Device	Algorithm version			
	V11	V12	V13	V14
Monitors				
CARESCAPE ONE monitor				X
CARESCAPE B850 monitor, v3 (unless telemetry is used)				With CARESCAPE ONE and CARESCAPE Patient Data Module
CARESCAPE B850/B650/B450, v2 (unless telemetry is used)	With CARESCAPE Monitor B850 and Tram™ v12		With CARESCAPE Patient Data Module and Patient Side Module	
BX0, B1X0 monitors		X		
Dash™ 3000/4000/5000 v5/v6	X			
Transport Pro display	With CARESCAPE Patient Data Module or Tram v12			
Telemetry				
ApexPro v3, v4	X			

Imagination at work