

Filling the gaps for cardiac gating

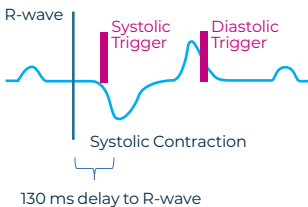
smart-sync is a CE and FDA cleared gating device for 1,5T and 3T MR-Systems



How does it work?

- The heartbeat is measured with Doppler Ultrasound (DUS). It does not rely on the electrical activation of the heart
- The true motion of the myocard is used for cardiac gating. A systolic or diastolic trigger can be selected
- Wires integrated into the MR System

Doppler Ultrasound Signal



Benefits

Fast Application

- No shaving and cleaning of the skin
- No electrodes need to be positioned

Reliable Gating

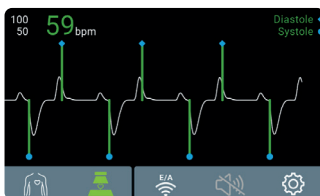
- No interference with the MRI (especially 3T)
- In cases of low ECG voltage (i.e. high BMI)
- In cases of post-surgery scars
- Patients with Pacemakers
- Cases of arrhythmia (i.e. bigeminy)

Image Quality

- In retrospective CINE for patients with arrhythmia or irregular heart-beats.
- In prospective gating to acquire the MR data during the diastasis using a dedicated trigger in diastole

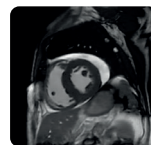
Example: Arrhythmia Patients with Amyloidosis Disease

In this case ultrasound, as direct measurement of the cardiac motion, enabled a very good image quality. Especially in arrhythmia it is important to provide a gating signal based on the motion state of the myocardium and not on the R-wave which reflect only the electrical activation.



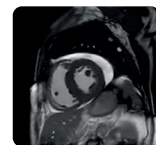
Display of smart-sync shows the Doppler Ultrasound signal (white) and generated trigger signals (green).

▼ DUS Trigger



Motion is always at the same cardiac phase as it is measured

▼ DUS Trigger



If the heart is at the same position again a trigger signal is generated.

