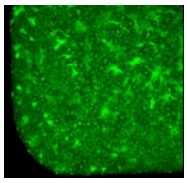
FDSS7000EX

FDSS/μCELL

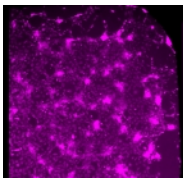
High Speed Data Acquisition Option for FDSS series

Fast acquisition with stable sampling interval allows us to do more. Hamamatsu presents the new "High Speed Data Acquisition Option" for FDSS series; It enables to acquire data at very short sampling time intervals (approx. 10 ms, 96 well plate, 4x4 binning) to capture the fast Ca^{2+} oscillation and membrane potential of cardiomyocytes, which is suitable for pre-toxicity study in vitro. Not only for cardiomyocyte but for conventional Aequorin Ca^{2+} assay, high speed gives us different results.

Primary Rat Cardiomyocyte

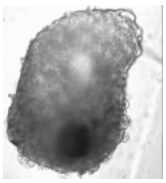


Fluo-8

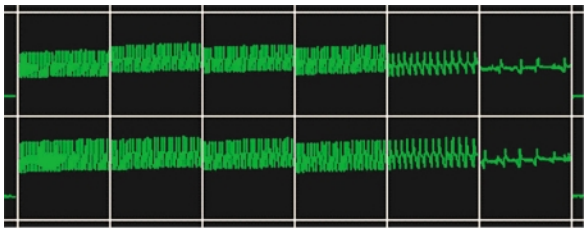


SQMP

Cardiomyocyte clump



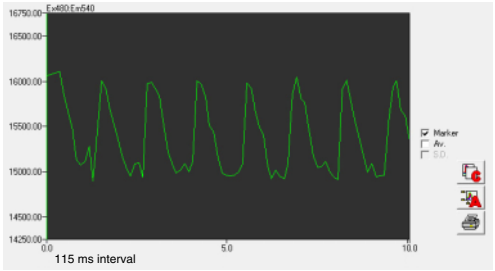
ES/iPS Cell-derived cardiomyocytes Ca^{2+} oscillation and membrane potential assay



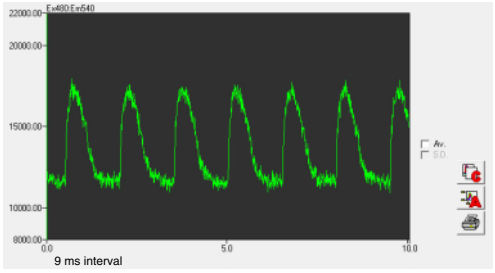
Buffer 30 nM 300 nM 3 μM 30 μM 300 μM

Dose response in beating of human iPSC-derived cardiomyocytes Ca^{2+}. Measured few minutes after d-Sotalol addition

When measuring calcium ion or membrane potential oscillation in a cardiomyocyte, such like ES or iPSC-derived derived ones, the acquisition speed give us more relevant information. Below is the comparison between when the interval is 115 ms, which is a conventional speed of acquiring data in fluorescence plate imager, and when the interval is 9 ms, which our new function can achieve.



Upper waveform is measured with 115 ms interval, lower waveform is measured in 9 ms interval using the new high speed data acquisition option. Zoomed into the first 10 s measurement.



Waveform becomes different when measured in very short interval time.

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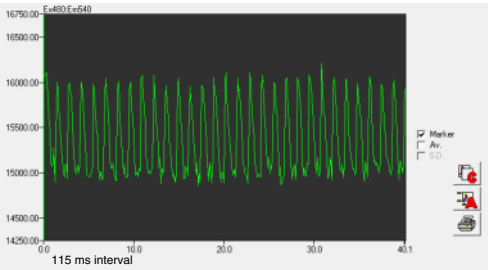
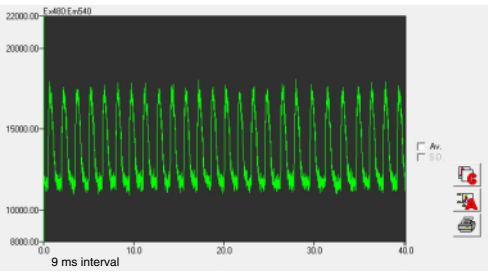


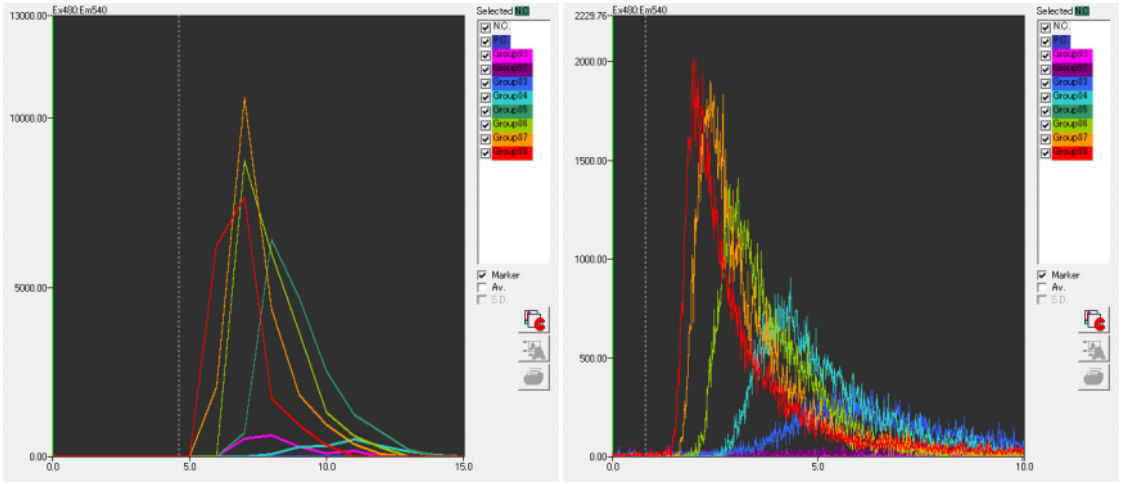
Same as the former page, upper waveform is measured with 115 ms interval, lower waveform is measured in 9 msec interval using the new high speed data acquisition option. Zoomed into the first 40 seconds measurement.



Waveform becomes more uniform when measured in very short interval time.

Aequorin Calcium ion Luminescence Assay

We have tested our high speed data aqcuisition option in flash luminescence such as aequorin, and found that the there is a difference in the peak timing. Measuring flash luminescence with high speed could give us more information.



On the left is the graph measured with 1 s interval, the right is the graph measured with 16 ms interval. Fast acquisition allow us to detect the flash luminsecence peak accurately.

**Note: Exposure time on the left (1 s interval) were intentionally reduced for the experimental comparison between above two.

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