



# xCELLigence® RTCA CardioECR System

A Comprehensive Solution  
for *in vitro* Cardiac Safety Assessment



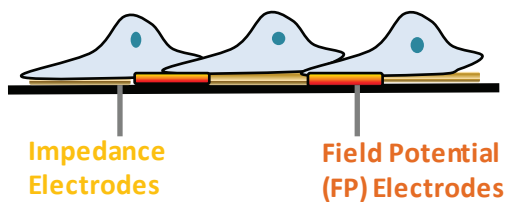
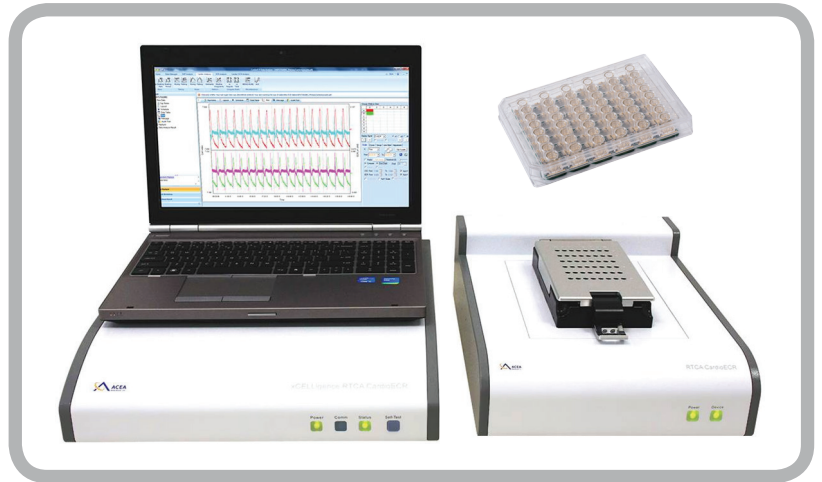
# The xCELLigence® RTCA CardioECR System

## KEY FEATURES

- Assessment of ion channel (Na<sup>+</sup>, Ca<sup>2+</sup>, and K<sup>+</sup>) activities
- Detection of arrhythmic events
- Measurement of contractility
- User defined pacing of cardiomyocytes
- Assessment of cardiomyocyte viability

The xCELLigence RTCA CardioECR System is the first ever platform to combine impedance and field potential recording for simultaneous and non-invasive measurement of integrated ion channel activity and contractility

of cardiomyocytes in a 48 well microtiter plate format. The system allows for comprehensive evaluation of processes involved in cardiomyocyte excitation-contraction coupling. The included software package is specifically designed to identify and measure adverse compound action on integrated ion channel activity, contractility and longer term viability and thus provides a highly predictive assay system for cardiac risk assessment.

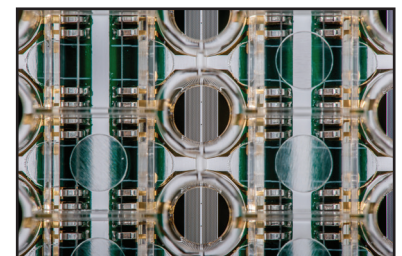


## TECHNOLOGY

The principle of detection for the xCELLigence RTCA CardioECR System is based on impedance and field potential measurements. The interdigitated gold impedance electrodes are interspersed with two field potential electrodes. These electrodes are specially designed for simultaneous measurement of field potential and contractility within each well of the microtiter plate.

## RTCA E-Plate® CardioECR 48

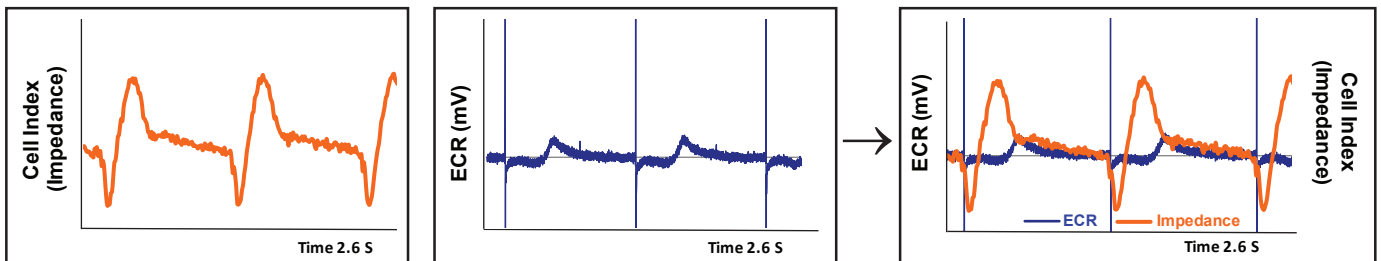
The E-Plate® CardioECR 48 features two types of recording electrodes in each well. An innovative interdigitated microelectrode configuration enables real-time measurement of impedance, providing sensitive and real-time detection of cell viability and contractile activities. The additional point electrodes allow for extracellular field potential measurements, which can be performed in tandem with impedance recording. The footprint of the E-Plate complies with ANSI/SBS 1-2004 requirements, and the spacing of the wells in column is 9 mm center-to-center as per the ANSI/SBS 4-2004 standard for 96-well microplates.



# APPLICATIONS

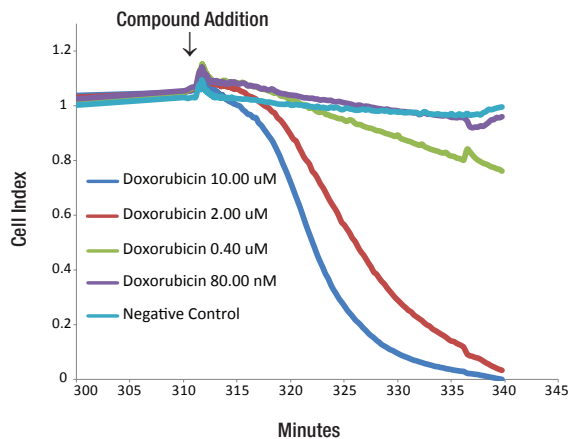
## Functional Multiplexing of Cardiomyocyte Excitation-Contraction Coupling with Viability

### Simultaneous Measurement of Cardiomyocyte Contractility and Integrated Ion Channel Activity



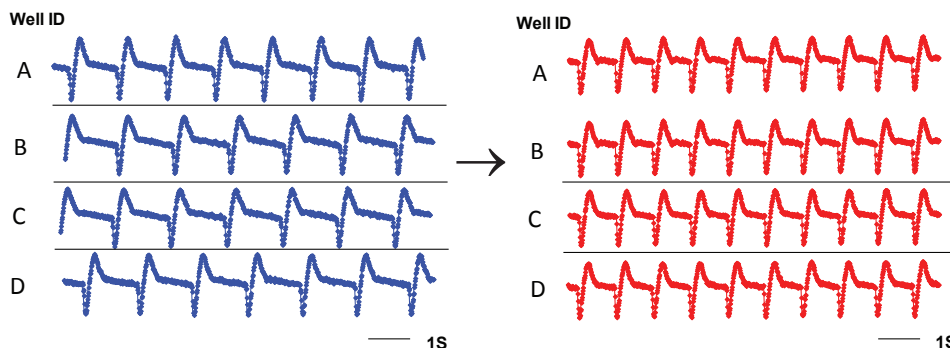
The xCELLigence CardioECR System simultaneously measures cardiomyocyte contraction and integrated ion channel activity at millisecond time resolution. The online software can display and overlay the data in real-time.

### Noninvasive Impedance/FP Measurement Allows for Long-term Viability Assessment



A number of compounds such as Anthracyclins have been shown to display long term structural cardiotoxicity. The xCELLigence CardioECR system can monitor cells both for short term and long term duration, allowing for assesment of structural cardiotoxicity. The millisecond recording of integrated ion channel activity and contractility can be multiplexed with longer term assessment of cardiomyocyte viability within the same well.

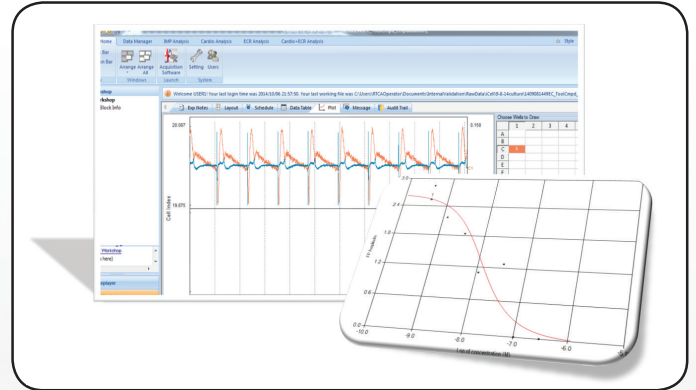
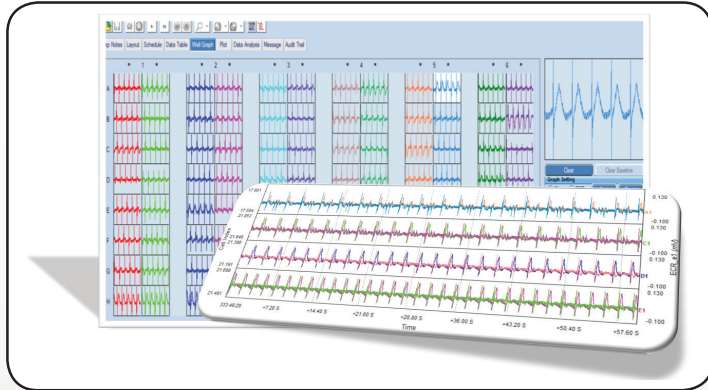
### Pacing Function Allows for Controlling the Rate of Contractility



The user defined electrical pacing parameters allows for precise temporal control of cardiomyocyte beating activity.

**Pulse Amplitude:** 400 mV  
**Length of Pulse:** 0.04 ms  
**Stimulation Frequency:** 1 Hz

# RTCA CardioECR Software 1.0



Powerful on-line acquisition software allows simultaneous measurement of impedance and field potential signals, with or without customized pacing stimuli. The Well Graph Tab provides an easy overview of the FP signal quality from the entire plate. The Cell Index and FP data overlay provides mechanistic insight into compound-induced cardiac toxicity.

An accompanying off-line software provides comprehensive data analysis tools for impedance (RTCA mode and Cardio mode), FP and integrated Cardio & FP signals, allowing quantitative assessment of cardiomyocyte ion channel activity, contractility, arrhythmic events and viability.

## SPECIFICATIONS

<b>Recording</b>	Impedance Measurement Speed	Up to 24 wells – 1msec; All 48 wells – 2msec
	Field Potential Sampling Rate	10 kHz
	Sampling Capability	Simultaneous recording of all impedance and field potential electrodes in all 48 wells
<b>Stimulation</b>	Stimulation Voltage Range	-2.0 V to +2.0 V
	Simultaneous Stimulation	Up to 48 wells (across the entire plate)
<b>Environment (CardioECR Station)</b>	Temperature	+15°C to +40°C
	Relative Humidity	98% maximum without condensation

## ORDERING INFORMATION

Product	Pack Size	Catalog Number
<b>xCELLigence RTCA CardioECR Bundle</b>	<b>1 Bundled Package</b>	<b>00 380 601 210</b>
E-Plate CardioECR 48	6 Plates	00 300 600 940
E-Plate CardioECR 48	6 x 6 Plates	00 300 600 950

**For life science research only.  
Not for use in diagnostic procedures.**

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6779 Mesa Ridge Road Ste. 100  
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U.S.A.

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