Data Sheet

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Agilent xCELLigence RTCA CardioECR System

Simultaneously measure cardiomyocyte contractile and electrical activities to predict cardiotoxicity with confidence

The Agilent xCELLigence real-time cell analysis (RTCA) systems provide a unique and powerful means to monitor cells in real time without the potential artifacts generated by using labels. The noninvasive measurement of cellular impedance enables detection of changes in cell adherence, morphology, and viability without the need for overexpression of reporter and target proteins. This provides physiologically relevant data throughout the entire time course of the experiment.

The xCELLigence RTCA CardioECR is the second-generation cardio-specific system from Agilent. The CardioECR system combines impedance and multi-electrode array (MEA) technology, along with a pacing function, to simultaneously assess cardiomyocyte contractility, viability, and electrophysiology. Similar to all xCELLigence product lines, the CardioECR system is designed to be placed in a standard tissue culture incubator with physiological temperature, CO_2 levels, and humidity controls, allowing better regulated assays with short-term and long-term measurements in real time. This technology provides a quantitative and predictive assay system for early detection of the cardiac liability of drug candidates in a 48-well format.

Obtain physiologically relevant data:

- Simultaneously measure cardiomyocyte contractile and electrical activities in a 48-well plate format.
- Use stem cell-derived induced pluripotent stem (iPS) cell-derived or primary cardiomyocytes.
- Noninvasively monitor short-term (ms) and long-term (days and weeks) cell responses.
- Obtain beat rate and amplitude with rapid data acquisition (1 to 2 ms rate/plate).
- Capture electrical activity (field potential reading) at a high sampling rate (10 kHz).
- Achieve optimal cell culture conditions by placing the Agilent RTCA CardioECR station and Agilent E-Plate into a standard CO_2 incubator.

RTCA CardioECR Station	
Dimensions	30.0 cm × 37.5 cm × 14.0 cm (W × D × H)
Weight	<10 kg
Electrical input	+6 VDC, 1.5 W max
FP band-pass filter	1 Hz to 4.5 kHz
Stimulation voltage range	–2.5 to +2.5 V
Stimulation time resolution	10 µs
Electrical interface	Handling one E-Plate CardioECR 48
Environment	Temperature: +15 to +40 °C, relative humidity: 98% maximum without condensation
Status indicators	Power and devices status

E-Plate Cardio 48	
Footprint	Compliance with ANSI/SBS 1-2004 requirements
Dimensions	12.77 cm × 8.55 cm × 1.77 cm (W × D × H) (with plate cover)
Spacing	9 mm center-to-center, as per the ANSI/SBS 4-2004 standard for 96-well microplates. Spacing of the wells between columns is 18 mm center-to-center.
Volume	243 ±10 µL
Bottom diameter	5.0 ±0.075 mm
Electronic interface	Interface with the RTCA CardioECR station
Sensor impedance	49 ±12 Ω at 10 kHz, when measured with a 1x PBS solution
Material	Biocompatible surfaces, UV irradiated
Environment	Temperature: +15 to +40 °C, relative humidity: 98% maximum without condensation

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