Data Sheet

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Agilent xCELLigence RTCA DP System

For label-free, real-time cellular analysis

Introduction

The Agilent xCELLigence real-time cell analysis (RTCA) dual purpose (DP) system provides a unique and powerful means to monitor cells in real time without the potential artifacts generated by using labels. This noninvasive measurement allows detection of changes in adherence, morphology, and viability without needing to overexpress reporter and target proteins. This provides highly physiologically relevant data throughout the experiment.

The Agilent xCELLigence E-Plate features an innovative biosensor configuration that covers 80% of each well bottom surface area. The real-time measurement of impedance across the biosensors provides sensitive immediate detection of the cellular condition and response. This enables a wide array of potential applications including (but not limited to):

- Cell proliferation
- Cell quality
- Compound-mediated cytotoxicity
- Cell-mediated cytotoxicity
- Cell adhesion and spreading
- Functional monitoring of receptor tyrosine kinase and GPCR signaling
- Cell-mediated cytolysis
- Barrier function
- Viral quantification

The Agilent xCELLigence CIM-Plate is a modified Boyden chamber design comprised of a disposable top and bottom chamber featuring the same innovative microelectrode configuration on the bottom of a microporous polyethylene terephthalate (PET) membrane. The median pore size of this membrane is 8 µm. The design and real-time measurement allow for precise, quantitative, and dynamic information for applications in cell invasion and migration.

E-Plate 16	
Dimensions	4.0 cm × 8.7 cm × 1.96 cm (W × D × H, with cover)
Well spacing	9 mm center-to-center as per ANSI/SBS 4-2004 standard
Well volume	270 ±10 µL
Well bottom diameter	5.0 ±0.075 mm
Electrical interface	Compatible with RTCA DP analyzer
Sensor impedance	17 ±5 Ω at 10 kHz, when measured with a 1x PBS solution
Materials	Polystyrene well plate, glass sensor substrate, UV irradiated
Environment	Temperature: +15 to +40 °C, relative humidity: 98% maximum without condensation

E-Plate VIEW 16	
All E-Plate 16 specifications apply	
Viewing window	Four center electrodes removed to aid in microscopy (~400 µm width)

CIM-Plate 16	
Dimensions	4.0 cm × 8.7 cm × 2.6 cm (W × D × H, assembled, with cover)
Well spacing	9 mm center-to-center as per ANSI/SBS 4-2004 standard
Upper well volume	180 ±5 µL
Lower well volume	162 ±3 µL
Membrane	PET membrane with 8 µm pore size
Well bottom diameter	5.0 ±0.075 mm
Electrical interface	Compatible with RTCA DP analyzer
Sensor impedance	24 ±8 Ω at 10 kHz, when measured with a 1x PBS solution
Materials	PET well plate, PET membrane sensor substrate UV irradiated
Environment	Temperature: +15 to +40 °C, relative humidity: 98% maximum without condensation

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RTCA DP Analyzer	
Electrical input	+5 VDC, 1 W max.
Electronic switch resistance	2 to 5 Ω
Electronic interface	Handling three E-Plate 16 devices or three CIM-Plate devices
Communication	USB 2.0
Environment	Temperature: +20 to +40 °C, relative humidity: 98% max noncondensing
Output test signal	22 mV rms ±(2% +5 mVrms) at 10, 25, and 50 kHz
Impedance measure accuracy	±(1% + 1.5 Ω)
Impedance measurement repeatability	0.8%
Impedance dynamic range	10 to 5,000 Ω
Status indicators	Analyzer status

RTCA DP Control Unit
Computer with pre-installed RTCA software
User-friendly graphical user interface (GUI)
≥500 GB hard disk drive
≥4 GB RAM
≥256 MB graphics device

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