

# The xCELLigence Real-Time Cell Analyzer (RTCA) Instruments

*Discover what you've been missing*

The xCELLigence System series includes two different Real-Time Cell Analyzer (RTCA) instruments, each composed of **four main components**:

- RTCA Analyzer
- RTCA Station
- RTCA Control Unit
- E-Plate 96

## xCELLigence RTCA SP Instrument

The RTCA SP (single-plate) Instrument consists of a RTCA Analyzer, a RTCA SP Station, and a RTCA Control Unit, and is designed for the use of one E-Plate 96 (a specialized 96-well plate used with the RTCA Instrument). The RTCA SP Station (Figure 1) together with the E-Plate 96 is placed into a standard cell culture incubator, creating a temperature-, humidity-, and CO<sub>2</sub>-controlled environment throughout the experiment. The RTCA Control Unit receives the data measured by the RTCA Analyzer and uses the RTCA Software 2.0 for setup, real-time display, and analysis of each experiment.

## xCELLigence RTCA MP Instrument

The RTCA MP (multiple-plate) Instrument (Figure 2) also consists of a RTCA Analyzer and a RTCA Control Unit, but includes a RTCA MP Station designed for the flexible use of up to six E-Plates 96 in parallel, and includes the 2.0 version of the RTCA Software, which allows each of the six E-Plates 96 to be used, controlled, and analyzed independently.

### Instrument Description

- **Rapid measurement:** Gather single-well data in approximately 150 milliseconds for each well. Average measurement rate is approximately 15 seconds for a 96-well plate.
- **Compact design:** Fit conveniently in standard cell culture incubator.
- **User-friendly:** Set up and customize assay protocols quickly and easily.

- **Robust data management:** Benefit from integrated data analysis capability.
- **Higher assay throughput:** Work with up to six E-Plates simultaneously.
- **Increased flexibility:** Independently operate six E-Plates 96 with up to six different users.
- **Clear data presentation:** See individual Cell Index curves for all 96 wells with the 96-well graph display.

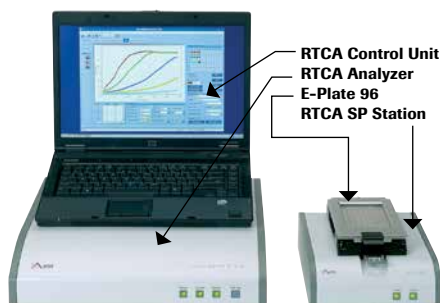


Figure 1: xCELLigence RTCA SP Instrument\*

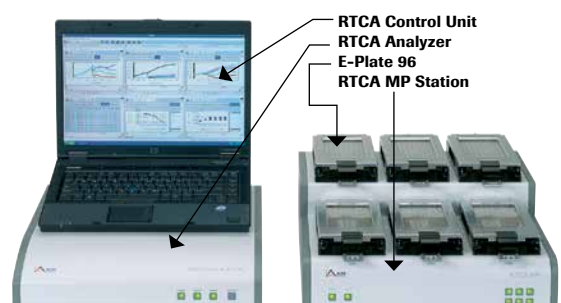


Figure 2: xCELLigence RTCA MP Instrument\*

\* See page 18 for full system specifications.

# The xCELLigence System Components

## *Precision components, versatile options*

The individual components that make up each RTCA Instrument function in precise harmony to provide you with more physiologically relevant cellular analysis data than traditional cell analysis techniques.

### RTCA Station

#### RTCA SP Station

The RTCA SP Station is located inside a standard cell culture incubator and serves to transmit signals from an E-Plate 96 to the RTCA Analyzer. Using the software of the RTCA Control Unit, the RTCA Analyzer can automatically select wells for measurement and continuously transfer measured impedance data to the computer. Cell Index values, derived from the measured impedances, are continuously displayed on the Software user interface.

#### RTCA MP Station

The RTCA MP Station is located inside a regular cell culture incubator and is capable of switching any one of the wells on any of six E-Plates to the RTCA Analyzer for impedance measurement. Each of the six E-Plate 96 holders can be used independently under the RTCA Software. The RTCA Analyzer can automatically select wells for measurement and continuously transfer measured impedance data to the computer. Cell Index values, derived from the measured impedances, are continuously displayed on the Software user interface.

### RTCA Analyzer

The RTCA Analyzer is an electronic analyzer that can measure, under the control of RTCA Software, electronic impedance of sensor electrodes at various signal frequencies. The RTCA Analyzer is capable of computer-controlled signal generation, processing and analysis, automatic frequency scanning and

rapid measurement. The average measurement rate is approximately 15 seconds for a 96-well plate, or approximately 150 milliseconds for each well.

### RTCA Control Unit

The RTCA Control Unit consists of a laptop computer with a mobile port replicator. The operating system and all software tools (including the RTCA Software Package) necessary to run the RTCA SP or MP Instrument are already preinstalled.

### RTCA Software Package 2.0

The RTCA SP and MP Instruments are driven by powerful, dedicated software. The RTCA Software Package 2.0 provides a user-friendly interface for instrument control and operation, flexible experiment setups, and data acquisition, display, output, and analysis.

- User-friendly GUI (Graphical User Interface)
  - Easy-to-use drop-down and selection menus
  - Intuitive layout and design
- Flexible set-up of experimental protocols
  - Rapidly configurable experimental design
  - Supports multistage experiments
- Real-time data acquisition
  - Hands-free data acquisition throughout the entire time course of the experiment
- Real-time numerical and graphical data display
  - Informed experimental decisions based on real-time data
- Multiple output formats
  - Real-time  $IC_{50}$  or  $EC_{50}$  via Cell Index
  - Easy transfer of raw data for external analysis
  - Simple copy and paste function for presentations and communications