

# CO<sub>2</sub> microscope stage incubator

The ultimate solution for time-lapse experiments

- The CO<sub>2</sub> Microscope Stage Incubator is designed to maintain all the required environmental conditions for cell cultures right on the microscope stage, thus allowing prolonged observations of cell events
- Temperature is controlled by circulating water from a thermostatic bath into the incubating chamber. A dedicated software reads the temperature in a reference well and updates the set point temperature of the water bath, ensuring a temperature stability of  $\pm 0.1^{\circ}\text{C}$ . Thermal cycle software available upon request
- CO<sub>2</sub> is mixed with air in the control unit and is continuously fed into the incubating chamber to control medium pH
- A humidifying and a pre-heating module prevent medium evaporation and avoid water condensation on glass and plastic surfaces
- Models for any type of inverted optical and confocal microscope are available



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# Live cell environment for live cell imaging

## Models

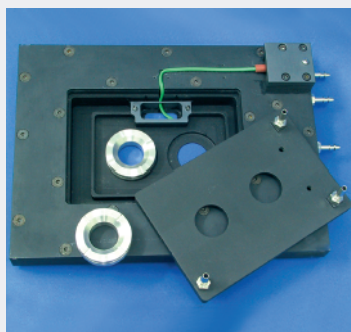
### 4-WELL MODEL

This model is designed to host four 35mm Petri-dishes or chamber slides and it can be used both with Long Working Distance and oil-immersion objectives. The main advantage of this version is that you can analyze up to four different samples in the same experiment, all under the same conditions of temperature, humidity and CO<sub>2</sub>, hence strongly improving experimental efficiency. Typical applications are time-lapse observations of more than one field of view. Best if mounted on a microscope equipped with motorized focus and motorized XY stage. Dimensions: 207x155x27 mm.



### 2-WELL MODEL

This model is especially designed to be used with high Numerical Aperture Objectives, such as 63x and 100x. Indeed, thanks to its slim profile it can be used with high Numerical Aperture Condensers. It can host two 35mm Petri dish or one chamber slide. The temperature probe can be inserted in a second 35mm Petri dish or in the dedicated lodging. Typical applications are time-lapse observations of a single field of view. Usually mounted on manual XY stages. Dimensions: 159x133x37 mm.



### MULTIWELL MODEL

It is designed to host 6-12-24-48-96 Multiwell plates. Interchangeable adapters allow to use any of the aforementioned plates. Typical applications are time-lapse studies in pharmacology, toxicology and microbiology. Best if mounted on a microscope equipped with motorized focus and motorized XY stage. Dimensions: 159x142x39 mm.



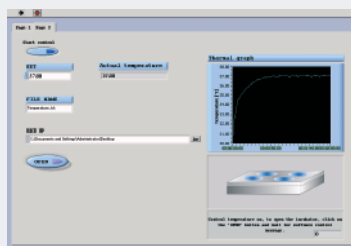
## Control unit

Two flowmeters allow to mix air and CO<sub>2</sub> at any desired proportion. An extra flowmeter can be added, to modify oxygen partial pressure. The temperature read by the probe is displayed on the control unit. Data is acquired by the Control Temperature Software and stored in computer memory.



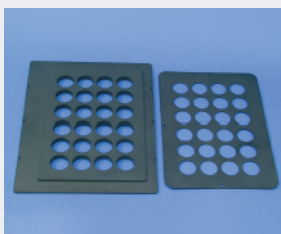
## Control temperature software 2.0

It allows to define the desired set point temperature and guarantees a stability within  $\pm 0.1^\circ\text{C}$ . Control software compensates for changes in room temperature and avoids temperature overshoots. Temperature vs time is plotted in real time and data are stored in computer memory. Temperature cycles and ramp modules available upon request.



## Accessories

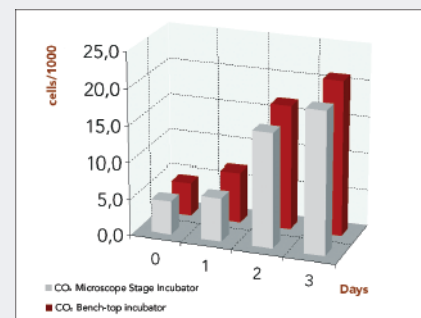
Interchangeable adapters for 6, 12, 24, 48 and 96 multiwell plates are available. By simply changing the adapter you can use any of the aforementioned multiwell plates.



Adapters for round 0.170 mm cover glass. Very simple to use, these adapters (35 mm) are a very cost effective solution, when oil immersion objectives are required. They can be autoclaved and covered with any 35mm Petri dish cover.

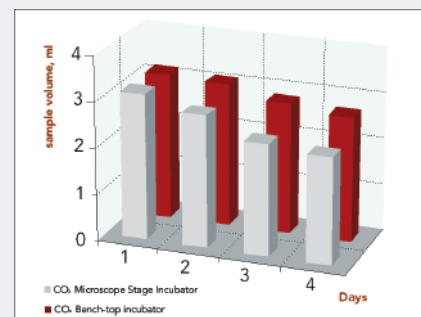


## Assessing System Performance



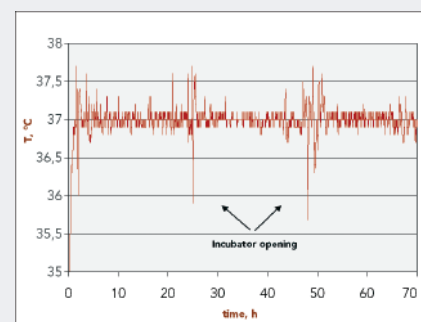
### CELL PROLIFERATION

- Overall system performance can be assessed by measuring cell proliferation in time
- Data of cell proliferation in the CO<sub>2</sub> Microscope Stage Incubator and in a CO<sub>2</sub> bench-top incubator are compared for a period of three days. Cell line: Panc-1
- As shown in the graph, cells proliferate as well as in the CO<sub>2</sub> bench-top incubator



### REDUCED EVAPORATION

- A combined action of the humidifying module and of the water reservoirs in the incubating chamber allows to minimize medium evaporation
- System design guarantees similar evaporation in all the wells
- Low evaporation rate allows to perform long lasting experiments



### TEMPERATURE STABILITY WITHIN $\pm 0.1^\circ\text{C}$

- Water-jacket design of the incubating chamber and PID software allow to reach a thermal stability and a thermal uniformity within  $\pm 0.1^\circ\text{C}$
- Thermal stability is very important to reduce focus drift, while thermal uniformity in the chamber is essential to prevent water condensation