COPAS Infinity

System Specifications

INTRODUCTION

The COPAS Infinity™ instrument is a large particle flow cytometer designed to analyze, sort and dispense biological materials and other objects ranging in size from 2 to 1500 microns in diameter. The system is designed to handle objects that are too large or too fragile for traditional flow cytometers, including multicellular organisms, delicate large cells, cell clusters, small seeds, and micro-carrier beads.

CONFIGURATIONS

The COPAS Infinity system is available in two optical configurations and four large-bore, fluidic size ranges designed to support the requirements for sorting and analyzing many different applications. Optical and fluidic size configurations are factory installed and are fixed at time of purchase.

All configurations support:

- Up to three, co-linear excitation lasers
- User-configurable fluorescence filter sets
- Identical fluidic and sorting architecture
- Configurable sorting into multiwell plates and tubes

	COPAS Ininity-250	**COPAS Infinity-500**	**COPAS Infinity-1000**	**COPAS Infinity-2000**
Flow cell details (inner bore)	Quartz flow cell with 250 micron square cross-section	Quartz flow cell with 500 micron square cross-section	Quartz flow cell with 1000 micron square cross-section	Quartz flow cell with 2000 micron square cross-section
Recommended Object Size Range (diameter)	~10-150 microns	~40-300 microns	~200-700 microns	~500-1500 microns
Analysis & Counting Rate when sorting	Maximum 50 objects per second	Maximum 50 objects per second	Maximum 10 objects per second	Maximum 5 objects per second
Dispensing Fill Time for 96-well plate (1 / well)	Minimum 1.5 – 2 minutes per plate			
Dispensing Fill Time for 96-well plate	Minimum 2 – 3 minutes per plate (20 / well)	Minimum 2 – 3 minutes per plate (10 / well)	Minimum 2 – 3 minutes per plate (5 / well)	Minimum 2 – 3 minutes per plate (2 / well)
Automated Dispensing Accuracy (1 / well)	Greater than 98% of wells filled have one or more objects. Of the filled wells, less than 5% may have 2 or more objects.	Greater than 98% of wells filled have one or more objects. Of the filled wells, less than 5% may have 2 or more objects.	Greater than 98% of wells filled have one or more objects. Of the filled wells, less than 5% may have 2 or more objects.	Greater than 95% of wells filled have one or more objects. Of the filled wells, less than 5% may have 2 or more objects.
Collection types	Stationary Bulk Receptacle 24, 48, 96, 384 well plates	Stationary Bulk Receptacle 24, 48, 96, 384 well plates	Stationary Bulk Receptacle 24, 48, 96, 384 well plates	Stationary Bulk Receptacle 24, 48, 96 well plates
Minimum Drop Size	0.4 µl	2 µl	4 µl	30 µl
# Drops per well (96 well standard SBS plate)	up to 570 / well	up to 400 / well	up to 40 / well	up to 10 / well

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OPTICAL CONFIGURATIONS

	4-Channel Configuration	6-Channel Configuration
Extinction (EXT) Detector	1 PIN photodiode	1 PIN photodiode
Forward Scatter (FSC) Detector	Not included	1 PIN photodiode
Fluorescent (FLU) Detectors	3 PMTs	4 PMTs
Max Sort Parameters	Up to 21	Up to 31
Lasers Supported	Up to 3 Lasers	Up to 3 Lasers

LASER EXCITATION SOURCES

COPAS Infinity systems support up to three solid-state excitation lasers with colinear beam geometry. Laser wavelengths are selected based on fluorescence requirements.

Standard Laser	488 nm Solid State -- can be used to measure the axial length and optical density of objects and can also be used to excite fluorescence.
Optional 2nd & 3rd Laser	375, 405, 445, 561, 640 & 660 nm -- Inquire about other wavelengths.

DETECTOR TYPES

Extinction (EXT)	PIN photodiode measuring blocked laser light and TOF
Forward Scatter (FSC)	PIN photodiode measuring shallow-angle scatter (6-channel only)
PMT Channels	High-sensitivity PMTs for fluorescence and side scatter

PARAMETERS MEASURED

The system analyzes objects using either 4 or 6 optical detectors depending on configuration. Objects pass axially through co-linear laser beams where optical signals are recorded by extinction, scatter, and fluorescence detectors.

- Time of Flight (TOF) - object axial length
- Forward Scatter (FSC) - shallow angle scatter (6-channel configuration only)
- Fluorescence (FLU) - wavelength-selected emission
- Extinction (EXT) - optical density / opacity
- Side Scatter (SSC) - PMT channel when configured

SORTING CAPABILITIES

Sorting and dispensing decisions are based on user-selectable values for up to 31 fundamental parameters (21 parameters when using the 4-channel configuration). Additional calculated and derived parameters can also be entered through our FlowPilot-Pro™ software. Up to 32 different regions of data can be monitored and used for setting sorting criteria. Objects can be dispensed into multi-well plates, tubes or bulk receptacles. Using our patented air diverter sorting mechanism, the COPAS Infinity instrument is gentle enough to sort and dispense fragile cells and live organisms without affecting viability.

Enclosed Sort Chamber

The sorting chamber is enclosed providing aerosol containment and UV sterilization to enhance biosafety and sterility. Those objects not meeting the sort criteria are diverted by a puff of air to a sample recovery container where they may be recaptured, unharmed and viable.

FLUIDIC SPECIFICATIONS

Sample Introduction

The standard sample introduction uses a 50 ml conical tube with suspended stir bar (40 ml working volume). Our large particle auto-sampler, the LP Sampler™, can be used to introduce samples from multiwell plates. The OSIS, an oscillating sample introduction system for extremely delicate samples, can be used with disposable syringes ranging from 3 to 30 ml, and our 750 ml and 1.5 liter sample cups with suspended stir bars can be added for introducing larger sample volumes. These gentle, low-pressure sample introduction systems are designed to operate at sample pressures of 0.2 - 6 psi [0.01 - 0.4 bar] depending upon the sample and flow cell size.

Sample Collection Cups

Sorted sample can be collected in multiple types of collection tubes: 50 ml, 15 ml, and microcentrifuge tubes. Additionally, sample can be sorted into multi-well plates or bulk dishes. Non-sorted sample is collected in a sample recovery container and can be re-run on the instrument or used again in another application.

Fluid Regulation

Sample Fluid – the sample flow is controlled to +/- 0.5% accuracy with automatic feedback pressure regulation.

Sheath Fluid – a high precision metering pump is used to deliver precise and repeatable sheath flow rates.

All other fluids are controlled by the instrument's software and electronics producing repeatability and flow stability of all fluids.

Fluid Bottle Capacity

10 Liters – Sheath, Waste

TECHNICAL SPECIFICATIONS

	Specification
Data Resolution	16-bit A/D, 32-bit computation
Data Acquisition Rate	Up to 10 MHz
Stage	Motorized X-Y dispensing stage
Software	FlowPilot™ or FlowPilot-Pro™

INSTALLATION

Instrument Size: 22 x 26 x 18 in (56 x 66 x 44 cm) depth x width x height

Workspace: Recommend a permanent, open, level, vibration-free work space with the dimensions:

24 x 48 x 30 in (61 x 120 x 76 cm) depth x width x height

System Weight: 120 lbs. (55 kg) not including computer

Power: 350 Watts. Place the COPAS Infinity instrument within 6 feet (2 meters) of the power outlets.

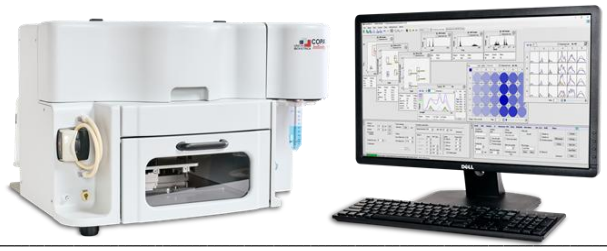
For 110-120v Countries: One single phase, 120VAC, 20-amp, 50/60 HZ, separate dedicated line with protective earth ground, using the detachable cords supplied. *If the optional Air Compressor is used, it is recommended that a second separate dedicated line (100-120VAC, 15-amp, 50/60 HZ, single phase with protective earth ground) is provided. Always ensure that local electrical codes are followed.

For 220-240v Countries: One single phase, 220/240VAC, 16 amp, 50/60 HZ, separate dedicated line with protective earth ground using the detachable power cords provided or CE7/VII approved equivalent detachable cords. *If the optional Air Compressor is used, it is recommended that a second separate dedicated line (220/240VAC, 10 amp, 50/60 HZ, with protective earth ground) is provided. Always ensure that local electrical codes are followed.

Pressurized Air: 40-100 psi (3-7 bar) at 1 CFM, of filtered, water and oil-free air can be supplied by house-air or optional compressor. Actual sample pressure during sorting is typically less than 6 psi depending on flow cell size and sample type.

Temperature: 60°F (15°C) to 85°F (30°C) environmental temperature limits. Temperature should not vary more than +/- 1 degree C from the time of experimental setup through completion. The system generates approximately 3800 BTU/Hr.

Humidity: 0 to 85% non-condensing environmental relative humidity limits.



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