

Particle Imaging and Classification

Overview:

Our Continuous Particle Imaging and Classification System (CPICS) has produced unprecedented results in the *in situ* aquatic microscopy of seawater, freshwater and laboratory samples. Using darkfield illumination, the CPICS-100 captures high-resolution color images, showing features as small as 1 μ m. Research has shown that color information is key to high-accuracy classification while also providing important physiological information such as pigmentation due to grazing on phytoplankton. Because of its open-flow approach to water sampling, the delicate structures of plankton and particles remain completely intact as do predator-prey interactions.

Applications:

The CPICS-100 is the ideal choice for the automatic classification of particles and plankton. Combined with other sensors in our OceanCube stationary multi-instrument platform and our ROI-CLASS analysis software, the CPICS-100 particle imaging system can provide scientists greater insight into the aquatic environment such as the distribution of plankton species as a function of time, temperature or other observation data. Whether for scientific research, aquatic farming or municipal drinking water health and safety, the CP-100 is the tool that can help get your work done quickly and accurately.

Specifications:

Illumination

Source:	High output LED ring array
Exposure:	10 μ s

Pressure Rating

Model CPICS-100:	100m
Model CPICS-600:	600m
Model CPICS-6000:	6000m

Camera system

Color resolution:	12-bits
Image resolution:	6 Megapixels (2750 x 2000)
Maximum frame rate:	10 fps

Target acquisition and storage (software included)

Camera control:	Exposure and frame rate
Target extraction:	Focus and size thresholds
Hardware:	COMP-10 computer (included)

Image analysis (requires ROI-CLASS software)

Classification:	Taxon level (e.g. copepod)
Hardware:	Runs on COMP-10 computer

Data communication

Medium:	Copper Gigabit Ethernet
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Power

DC input:	24 volts
Current:	4 watts
Cable:	3m long (included)
Connector on housing:	SubConn DBH13M

Dimensions

Length x Diameter:	45cm x 10cm
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Weight

In air:	2.5 kg
In water:	2.2 kg



Lens Selection Guide

Magnification	NA	WD	Image Height (mm)	Image Width (mm)	Depth of Field (mm)	Liquid Sample			
						Volume (μ L)	Rate (fps)	Hourly Volume (L)	Daily Volume (L)
.16x	0.008	180	40	44	19.7	34672	10	1248.192	29956.6
.5x	0.041	173	17.3	19	2.1	690.27	10	24.8497	596.393
.9x	0.045	175	11	15	2	330	10	11.88	285.120
2.0x	0.164	75	3.2	4	0.13	1.664	10	0.059904	1.43770
5.0x	0.130	61	1.3	1.5	0.016	0.0312	10	0.0011232	0.0269568
10x	0.210	51	0.6	0.8	0.006	0.00288	10	0.00010368	0.00248832