



You need precision, you want morphology



OCCHIO Flow-Cell FC200M

The best solution for measuring particles in suspensions



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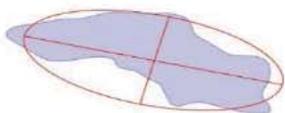
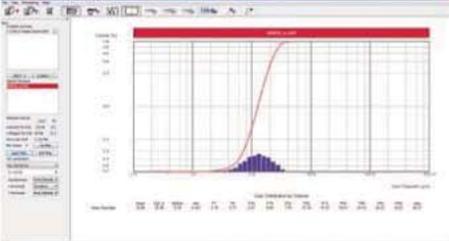
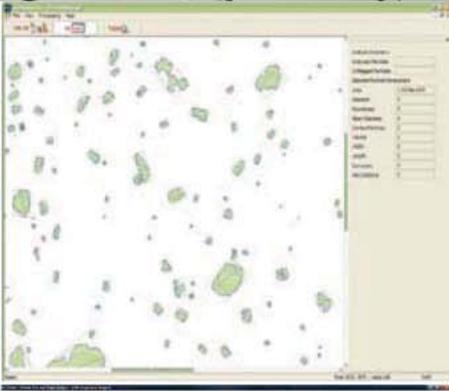
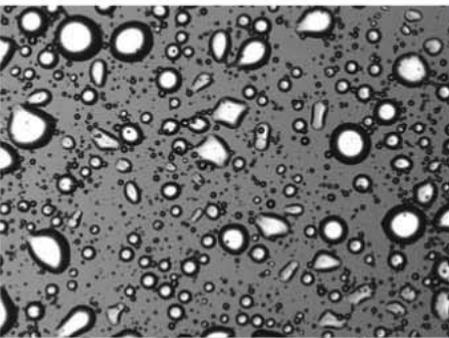
Imaging solutions in particle analysis

U.S. SALES & TECHNICAL SUPPORT QAQC LAB WHITE STONE VA 22578 TEL(804) 318-3686 www.qclabequipment.com



OCCHIO Flow-Cell FC200M

Size , shape & counting for particles in suspensions



Through the efforts of an international and multidisciplinary team of engineers, **OCCHIO** offers you a complete range of solutions, starting from 200 nanometers and ranging up to centimeters.

Whether it is for laboratory instrumentation, «at line» or even «on line» solutions, **OCCHIO** is prepared to be your partner in high-level powder characterization. **OCCHIO** and **OCCHIO Flow-Cell** bring you accuracy, profit and innovation.

_ Accuracy

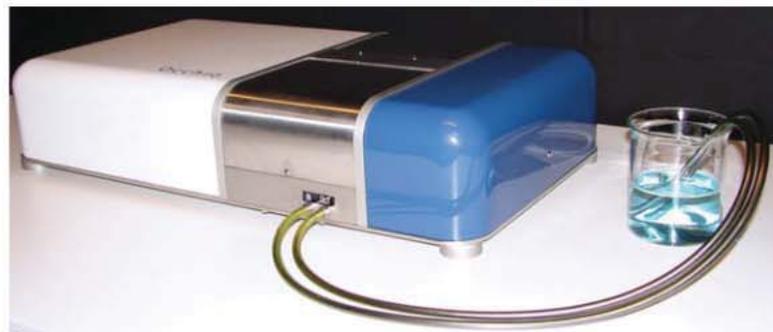
With its proprietary Light and high quality lens, **OCCHIO Flow-Cell** will change your own perception of image analysis, measuring suspensions or emulsions which are invisible under normal microscopy.

_ Profit

OCCHIO FC200 M is an automatic device dedicated to suspensions quality characterization. Based on image analysis technique associated with a specific pump to avoid breakage of particles, FC200M provides size, shape and counting measurements.

_ Innovation

Morphology measurement is more than shape description. To improve, you need robust and significant measurement. Based on decades of university research, the **OCCHIO Flow-Cell** provides your R&D and Production departments with dedicated parameters, specially engineered



_ Size measurements (from 400 nm up to 1000 µm)

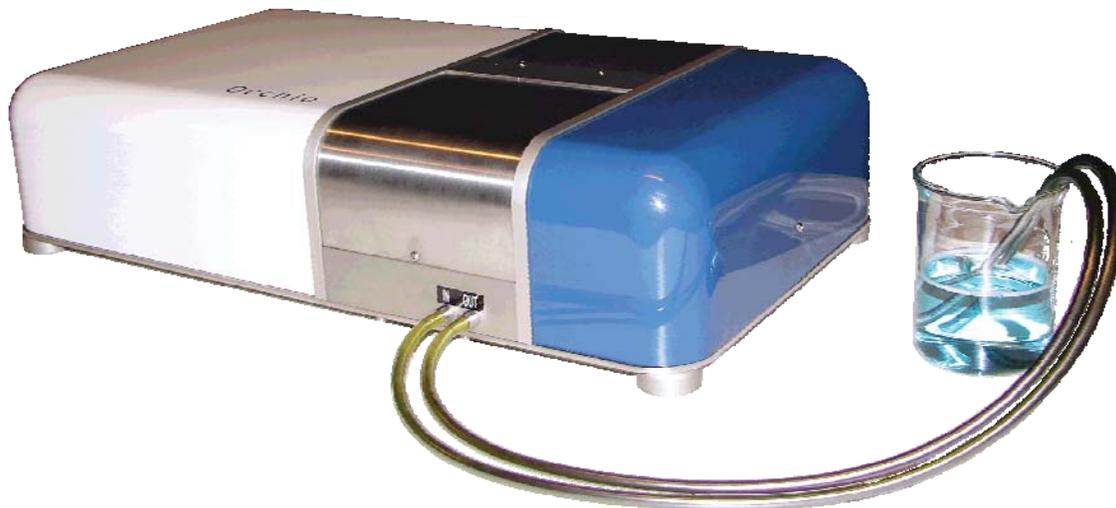
Area diameter - Mean diameter - Length - Width - Maximum distance

_ Shape parameters

Elongation - Circularity - Convexity - Shape factor - Luminance & Special parameters.....

Counting and kinetics

Reference code: OCC242-02 Occhio Flowcell FC200 M-HR



Particle size range (0.8 microns – 1000 microns)

Technical specifications

Working conditions

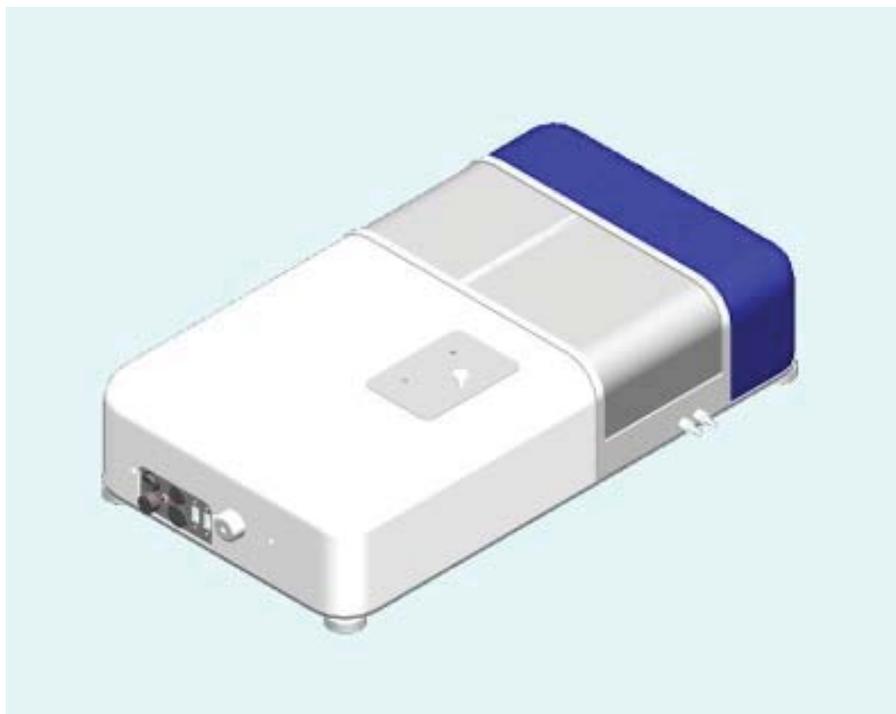
	Description
Working temperature	5-40 °C non condensing
Power Supply	100-220 Vac 50-60Hz

Computer (if supplied by Occhio, minimum specifications)

	Description
Processor	Intel Core i5-650 @3.2GHz, 4MB cache
Ram	4 GB @ 1156MHz
Hard Disk	500MB
Display	LCD, FullHD, 21.5"
Mouse, keyboard	USB (English)
Operating system	Windows Seven compatible with XP, Vista

Optics and imaging device

	Description
Standard camera type	C-mos progressive scan
Camera resolution	10 Millions pixels (3840 x 2748 pixels)
Pixel size	1.67 µm side
Lens type	Telecentric variable magnification zoom
Lens resolution	From 0.19 to 1.11 µm/pixel
Field of view	730 x 522 µm @0.19 µm/pixel 4262 x 3050 µm @1.11 µm/pixel
Light source	Collimated monochromatic light
Light wavelength	440 nm
Light output diameter	15 mm



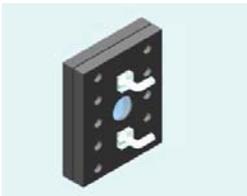
Dimensions and weight

	Description
Length	630 mm –24.8 in
Width	350 mm –13.8 in
Height	160 mm –6.3 in
Weight	17.5 Kg – 40.8 lbs
Connection	2 USB II at 480Mbps, 1 DIN5Pin 180°, 1 DIN3pin

Integrated membrane pump

	Description
Power supply 0-12Volt DC	The pump is powered by internal power supply. Voltage variables 0 to 12 Vdc via a potentiometer located on the left side of the instrument
Valves and membrane	Polypropylene and PTFE
Pumping flow	0 to 2000ml/min

Starting kit parts (these parts are included in the packing box at the delivery)

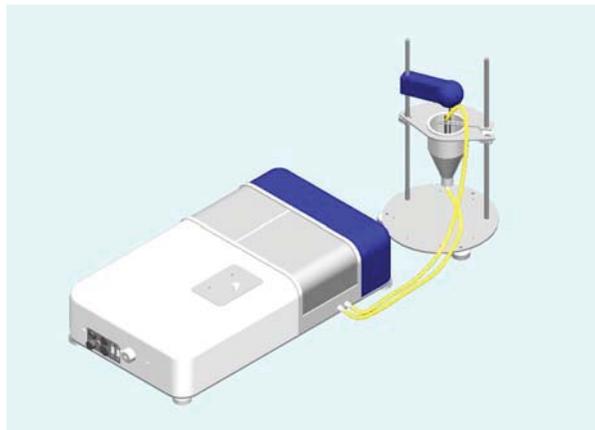
Part number	Description	Quantity
OCC011SW 	CALLISTO EXPERT	1
242-508-R1 	Flow cell glass windows for FC200M – S – S+ - HR	2
242-509-R1 	Glass windows O-ring for FC200M-S-S+-HR	2
242-567-R1	Pipe flow in/out, AISI 316; 4x6mm length 80mm	2
999-0001-R1	USB 2, m/m 1.5m, instrument connection cables	2
242-565-R1	Tube Tygon Solva 4.8x8mm; 2m	1
242-050-R1-16000x250µm	Paper spacer channel width 16000µm thickness 250µm	2
242-050-R1-16000x400µm	Paper spacer channel width 16000µm thickness 400µm	2
242-050-R1-16000x500µm	Paper spacer channel width 16000µm thickness 500µm	2
242-050-R1-16000x800µm	Paper spacer channel width 16000µm thickness 800µm	2
242-050-R1-16000x1000µm	Paper spacer channel width 16000µm thickness 1000µm	2
242-566-R1	Power supply module; 5-12-24VDC for FC200M	2
242-901-R1	Set: 10 screws for flowcell core	1
242-902-R1* 	Set: complete mounted flowcell core for FC200M 2x 242-508-R1 2x 242-509-R1 1x 242-040-R1 1x 242-041-R1 1x 242-050-R1-16000x400µm 1x 242-901-R1 2x 242-532-R1	1
999-0003-R1	Power supply cable North America	3
999-0004-R1	Power supply cable Europe	3
999-0013-R1	Desk top computer + LCD, FullHD, 21.5" + Mouse + Keyboard US	1
999-0010-R1	Keyboard USB (FR) instead of Keyboard US according with customer country	1
999-1004-R1	Borosilicate glass beads 20µm	1 bottle

* This part is installed on the instrument at the delivery (standard configuration)

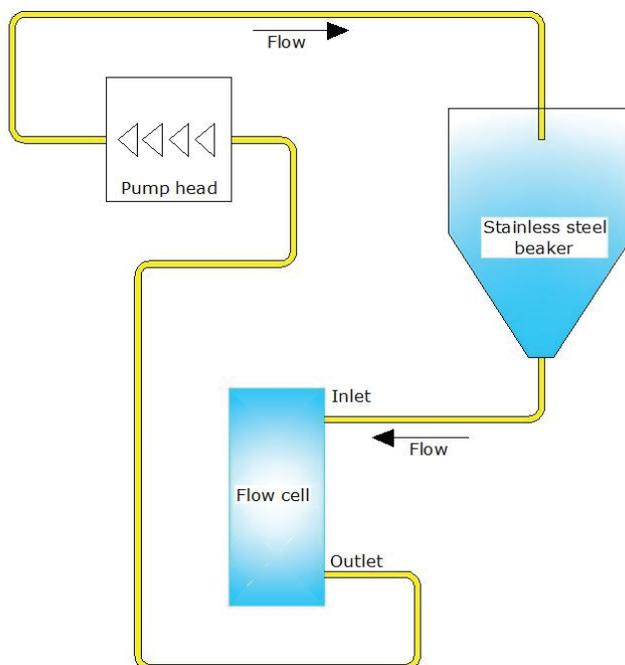


Occhio FC200M-HR TECHNICAL DATASHEET

Option (Ref: 242111): stainless steel conical beaker



	Description
Support module	Stainless steel 4mm thickness base includes two sides supports columns.
Overhead stirrer	Max volume 2liters Consumption 8w Speed 0-2000 rpm power cables delivered with the stirrer, speed and power supply are independent of the instrument
Stainless steel beaker	Stainless steel conical beaker 300ml
Stainless steel inlet outlet tube	One tube 6x4mm diameter and 80mm length, compatible with '242-565-R1' Tygon Solva 4.8x8mm
Tube support	One tube support with blocking screw



Occhio 'FC200M-HR' short instrument overview

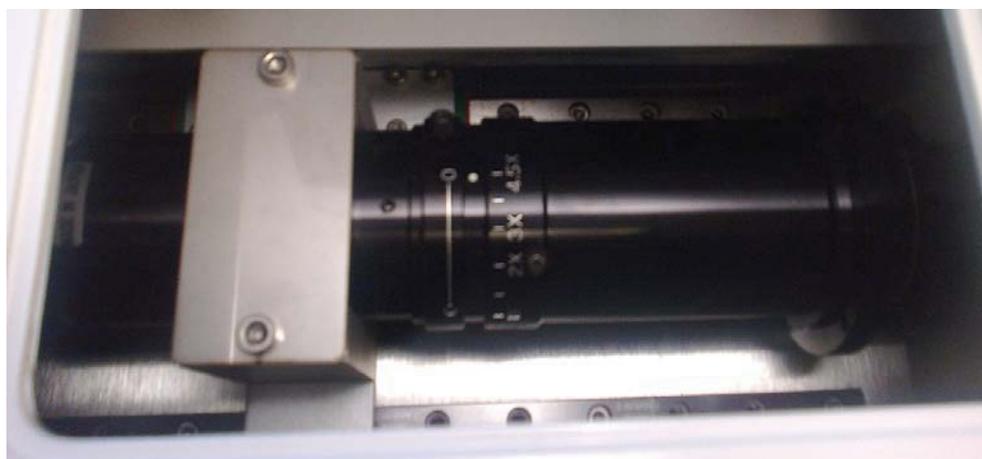
Instrument calibration

A first calibration is imposed using the magnification table according with the camera and lens specifications.

FC200M-HR

Zoom magnification	Front lens magnification	Global magnification	Instrument calibration $\mu\text{m}/\text{pixel}$	Image size (μm) Standard camera 2748x3840 pixels
0.75x	2x	1.5x	1.11	3050x4262
1x	2x	2x	0.835	2295x3206
2x	2x	4x	0.417	1147x1603
3x	2x	6x	0.278	765x1069
4.5x	2x	9x	0.19	522x730

A second calibration, according with customer specifications, is done using standard latex beads from 1 μm up to hundreds microns. A calibration table is implemented in the software allows computed distribution values through an automatic size correction.



Sample analysis

Model	Occhio Flowcell FC200M-HR
Sample dispersion	Water, alcohols, oil (viscosity depending)
Sample particles size range	From 800nm to 1mm (FC200M)
Sample concentration	According with sample property and flowcell thickness (Typical dilution 5% in volume)
Sample analysis	Size distribution cumulate and proportional curve Number distribution or volume weighted distribution Particles counting distribution (size expressed in particles/ml for each size bins)
Standard Operating Procedure includes	Analysis volume(priming, analysis, rinsing) Volume sampling Light intensity calibration Background calibration

	Particles counting Creation of a particle database Image storage Filtering procedure Automatic reporting generation
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Software mains features

Model	Callisto Software for Flowcell FC200M
Size parameters (Iso 9276-6; 7; 8) All the size parameters are displayable or not according with the customer setting preference	ISO Area diameter ISO Inner diameter Mean diameter Perimeter diameter Crofton diameter Half Crofton diameter Width Length Ellipse Width Ellipse Length ISO Max Distance ISO Geodesic Length
Shape parameters (Iso 9276-6; 7; 8) All the shape parameters are displayable or not according with the customer setting preference	Occhio Bluntness Occhio Roughness Elongation ISO Aspect Ratio Ellipsoid Elongation Ellipsoid Roundness Ellipse Ratio ISO Eccentricity ISO Straightness ISO Roundness ISO Compactness ISO Extent ISO Solidity Convexity ISO Circularity Luminance mean Luminance var. Porosity
Advanced shape parameters	Developed in function of customer specifications
Image format	Bitmap
Data storage	'.oph' binary Occhio files format contains: Full size distribution values Shape and size percentiles Outline and greyscale levels of each particle
Data comparisons	Open and compare more analysis on the same plots include 'trends graphic'
Plots and figure (By number or volume)	Acquisition info (short overview of the used SOP) Size distribution

weighted values)	Size percentiles Shape percentiles Shape distribution Mean shape by size 2D scatter-plot (fully selectable particles map) 3D scatter-plot (include animation) Percentiles sample images Sample images (BMP exportable format) Id card for each particle (BMP exportable format)
Statistics tools	Morphological and size filtering procedure
Reporting and data export	Raw data export (text format) Table distribution export (text format) Table distribution and percentile export (Excel format) Automatic or custom reporting Full image export (bmp format) Single particle image export (bmp format) Figure and graph export (bmp format)
Microscope mode pane	Manual pumping fast speed, low speed. Valve switching, rinsing procedure. Current live image analysis.

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