Specifications

Model	CQ3000
Optics	Microlens enhanced dual wide Nipkow disk confocal
Fluorescence	Laser: Up to 4 colors Standard: 488 nm, 561 nm Option: 405 nm, 640 nm High power lasers option: 488 nm, 561 nm EM filter: Max. 10 filters (Including 1 filter for transillumination) Observation method: Confocal image, Wide-field image*1
Transmitted illumination	Bright-field LED
Camera	Up to 2 units, simultaneous excitation of 2 wavelengths Number of effective pixels: sCMOS 2000 x 2000 pixels Field of view size: 13.0 x 13.0 mm
Objective lens	Up to 6 lenses (Water immersion lens: Up to 2 lenses) Dry: 2x, 4x, 10x, 20x, 40x , 60x Long working distance: 20x, 40x Water immersion: 20x, 40x, 60x
Water supply function for immersion lens	Automatic supply
Flat-top beam shaper (Option)	Uniformizer
Sample vessel	Microplate (6, 12, 24, 48, 96, 384, 1536 wells), glass slides*2, cover glass chamber*2, 35 mm dish*2
Stage incubator	Temperature control range 35 - 39 °C Settable temperature resolution: 0.1 °C Time stability : ±0.2 °C*3 Spatial stability :±1 °C*3 Humidity holding Automatic water supply function for incubator
Autofocus	Laser autofocus, Image-based autofocus
Other features	High-speed time-lapse two-wavelength simultaneous excitation imaging, Self-diagnosis function, CQ Analysis with 3D Viewer
Analysis software (CellPathfinder)	Granule analysis, Neurite analysis, Nuclear morphology analysis, Nuclear translocation analysis, Membrane translocation analysis, Machine learning, Label-free analysis, 3D analysis, Texture analysis, Deep Learning, etc.
Size Weight	Main unit: W1031 mm x D401 mm x H600 m 84 kg (with Uniformizer or 2nd camera) W1177 mm x D401 mm x H600 mm 102 kg Utility box: W275 mm x D432 mm x H298 mm 17.6 kg Gas mixer: W275 mm x D432 mm x H298 mm 9.3 kg Workstation: W176.5 mm x D452.1 mm x H417.9 mm 21.7 kg
Power consumption	Main unit and Utility box : 100 – 240 VAC, 400 VAmax Gas Mixer : 100 – 240 VAC, 60 VAmax 2nd camera : 100 – 240 VAC, 120 VAmax Workstation : 100 – 240 VAC, 1350 WMax
Operating environment	15 to 30°C, 30 to 70% RH, no condensation

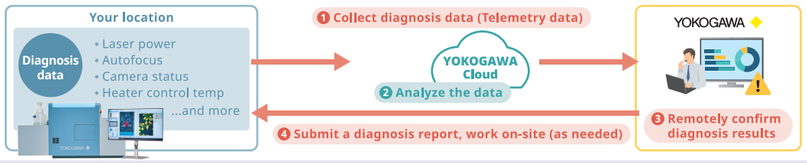
*1 Required Uniformizer *2 Required sample holder (sold separately) *3 Ambient temperature of 21~25 °C

Reliable after-service / Powerful technical support

We offer the best after-service program to meet your requirement and budget.
Our HCA experts will support you to obtain the best results easily.

Remote Diagnosis Service

Remotely diagnose the equipment status. Regular diagnosis can predict and detect problems early, reducing equipment downtime.



CLASS 1 LASER PRODUCT
クラス1レーザ製品
1类激光产品
PRODUIT LASER DE CLASSE 1.
(EN 60825-1:2014+A11:2021)
(IEC 60825-1:2014)
(JIS C 6802:2014) (GB/T 7247.1-2024)

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No.56, dated May 8, 2019.
Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo, 180-8750 Japan Manufactured KZ

Safety Precautions
- Read user's manual carefully in order to use the instrument correctly and safely.
- This product falls under the category of class 1 laser products.

Information is distributed on a regular basis. Please follow for the latest information. »

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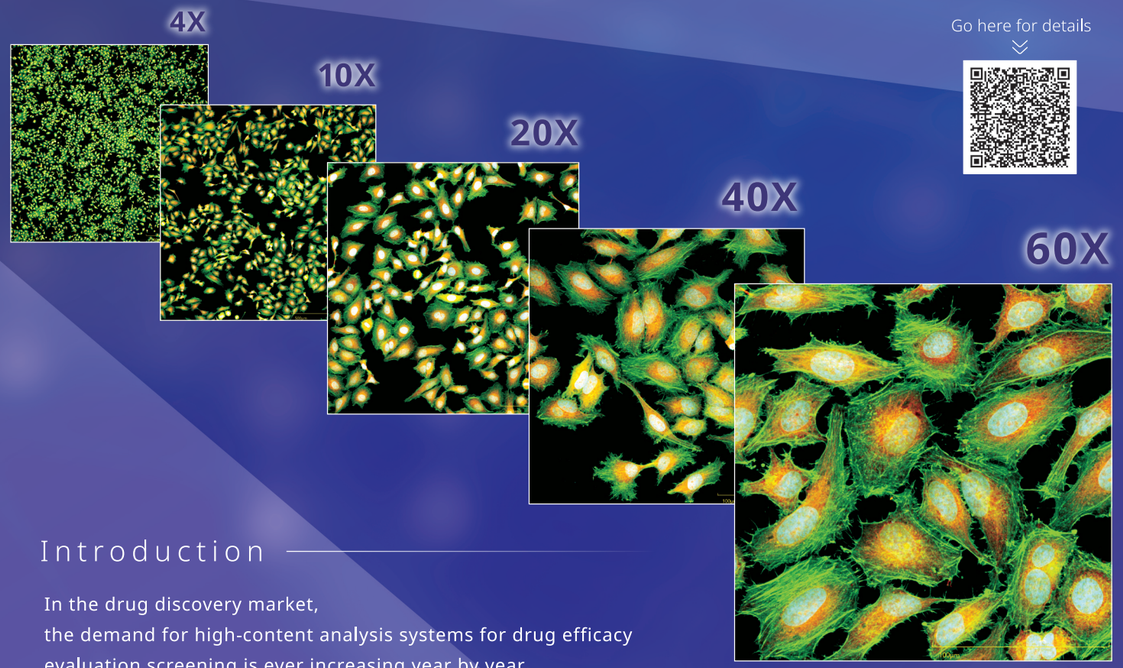
YOKOGAWA Co-innovating tomorrow™

High-Content Analysis System
CQ3000

Bulletin 80M01A01-01EN

Make way for high-performance HCA optimized for laboratories!



Go here for details

Introduction

In the drug discovery market,
the demand for high-content analysis systems for drug efficacy
evaluation screening is ever increasing year by year.
Evaluations have been on the rise not only in 2D, but also in 3D and live-cell.
In addition, the construction of more complex evaluation systems are sought after,
including experimental systems in environments closer
to the human body such as organoids that reproduce parts of various organs or
organs-on-chips, as well as Cell Painting,
which morphologically profiles cellular components and organelles by
multicolor imaging using multiple fluorescent dyes.

The CellVoyager High Content Analysis System CQ3000 is a benchtop HCA system
capable of acquiring high resolution images at high speed.
Yokogawa's proprietary technology, the Confocal Scanner Unit “CSU”, and a high-precision incubator
enable stable live cell observation and high-speed imaging with low photobleaching and phototoxicity.
By combining options according to your application, we can provide the best system for you.
Water immersion objective lens with high NA for easy observation of deep areas,
uniform illumination effective for tile imaging such as tissue sections,
and Target Search for automatic imaging of samples matching the conditions,
all contribute greatly not only to improving the quality of experiments but also to speeding up and automating them.
In combination with the YOKOGAWA's advanced analysis software CellPathfinder,
which supports Deep Learning,
the system can support complex analysis and display results in graph form.

Flat illumination

High-NA water immersion lens

CellVoyager

High-Content Analysis System

CQ3000

Simple operability and benchtop

High throughput

- Fast 3D imaging with the YOKOGAWA scanning method
- Simultaneous dual-wavelength imaging with a second camera
- Fast 100-fps option for high-speed applications such as myocardial and calcium firing

High definition images

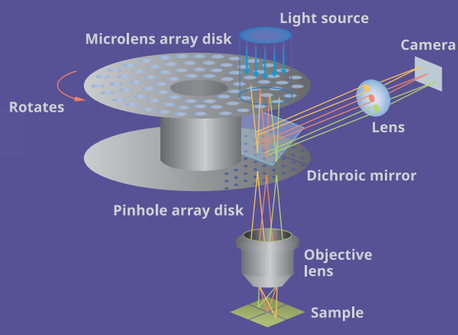
- High NA water immersion lens for bright, deep imaging
- High quantum efficiency sCMOS camera
- The “Uniformizer”, for uniform illumination across all corners of the image

Live-cell imaging

- Top-class incubator performance achieves stable live cell imaging
- Incubation time of up to 7 days
- CSU for imaging with low photobleaching and phototoxicity

Automation

- Scans and automatically captures samples that match the conditions
- Support for various interfaces (APIs) for external collaboration
- Output of data types for easy integration, such as OME-TIFF and Omero



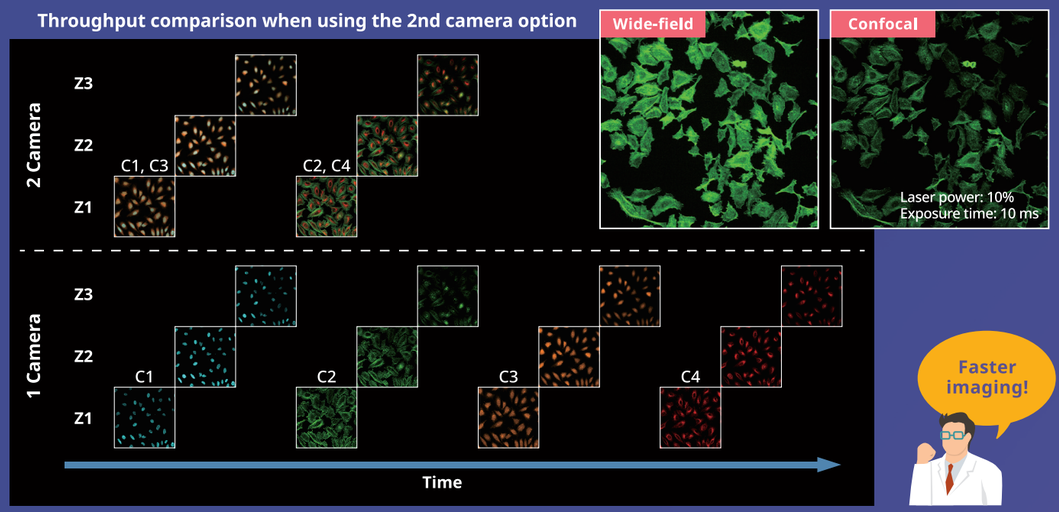
Dual Spinning Disk Confocal Technology

Capture cells as they are in stunning detail

High throughput imaging via simple operation

Quickly acquire 4D images with simple operations such as sample setting and protocol selection.
Use with options (2nd camera, wide-field imaging) depending on the application for even faster imaging.

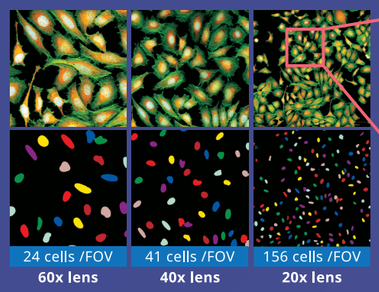
Throughput comparison when using the 2nd camera option

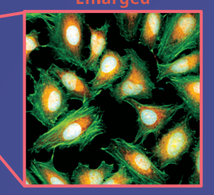


- Detects two colors at the same time, so acquisition time is reduced. In addition, if confocal performance is unnecessary such as during low magnification imaging, widefield imaging can further shorten the exposure time.

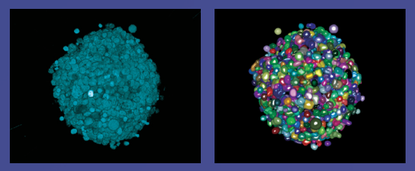
High-resolution images that hold tons of information

Specially-designed water immersion lens captures clear images with a high SNR.
In addition to fine observation via high magnification, it can accurately analyze images even with FOVs smaller than before due to the high-NA lens.



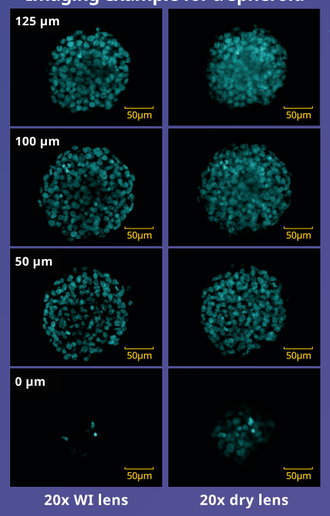


- Our high-NA 20x water immersion lens developed in-house allows for image resolutions higher than a 20x dry lens. You can use 40x and 60x for efficient image analysis.



- 3D Viewer reconstructs acquired images in 3D, enabling you to quickly grasp complex biological structures.

Imaging example for a spheroid

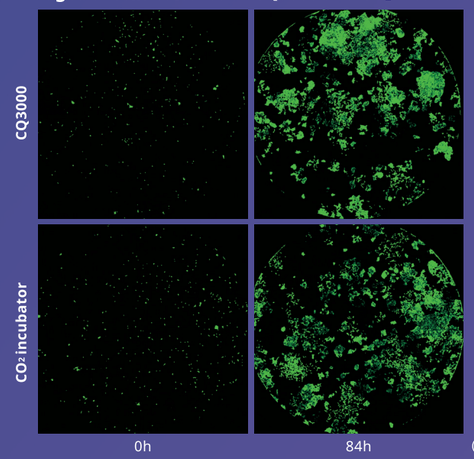


- 20x WI lens allows for deeper imaging with high SNR.

Live-cell imaging that could only come from YOKOGAWA

Low phototoxicity from the Confocal Scanner Unit and highly accurate temperature and position control enable time-lapse imaging in a cell-friendly, stable culture environment.
Automatic water supply mechanism is also supported for longer periods of live-cell imaging.

Images of cells cultured in CQ3000 and CO_2 incubator

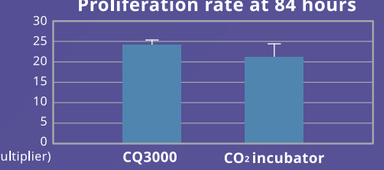


Cell proliferation rate distribution during CQ3000 culture (at 84 hours)

	1	2	3	4	5	6	7	8	9	10	11	12
A	22	23	24	24	21	24	23	23	24	24	24	26
B	24	25	22	25	24	24	23	26	24	24	23	22
C	26	24	23	24	23	24	23	24	26	26	24	23
D	24	23	24	25	23	22	25	25	22	23	24	25
E	25	26	23	23	24	24	24	24	23	25	26	23
F	25	26	23	26	25	24	25	26	25	24	25	23
G	26	26	25	25	27	25	25	24	26	25	27	24
H	24	25	25	22	25	23	24	23	23	25	23	23

(multiplier)

Proliferation rate at 84 hours

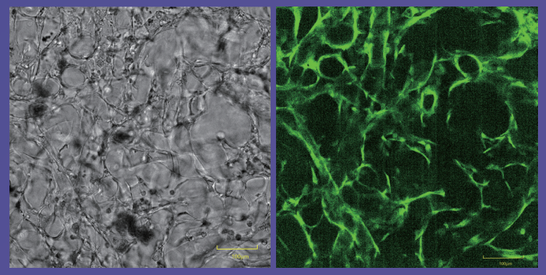


- CQ3000 achieves culturing and imaging while maintaining the same environment as a conventional CO_2 incubator. It's not only environmentally friendly, but it also minimizes the impact on cells.

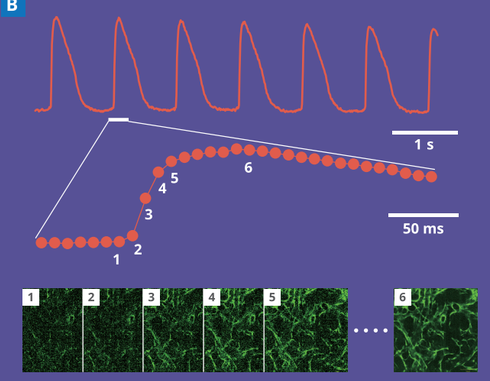
Fast Time Lapse Function

High-speed image acquisition of up to 100 images per second (100 fps) with two colors simultaneously.
This enables the capture of high-speed phenomena that were previously difficult to capture.

A



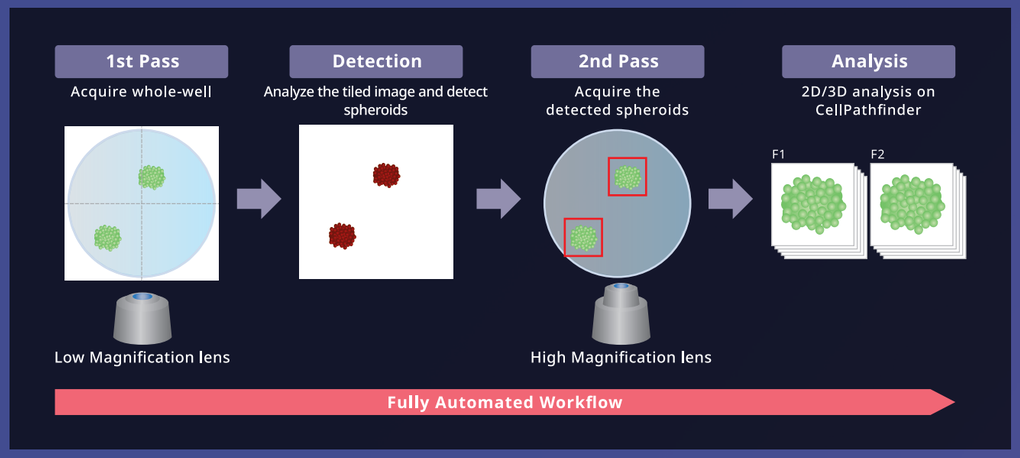
B



A: iPSC-derived cardiomyocytes in culture on a gelatin fiber substrate for cell culture (Genocell® Myocardial Evaluation Plate, THE JAPAN WOOL TEXTILE CO., LTD.)
Bright field image (left), stained with calcium-sensitive fluorescent dye (right).
B: Calcium signal waveform fluctuating periodically in response to myocardial pulsation (upper panel). High-speed imaging at 100 frames per second allows the fast-rising portions of the waveform to be captured at a sufficient sampling frequency. High-speed imaging at 100 frames per second allows the fast-rising portions of the waveform to be captured at a sufficient sampling frequency.

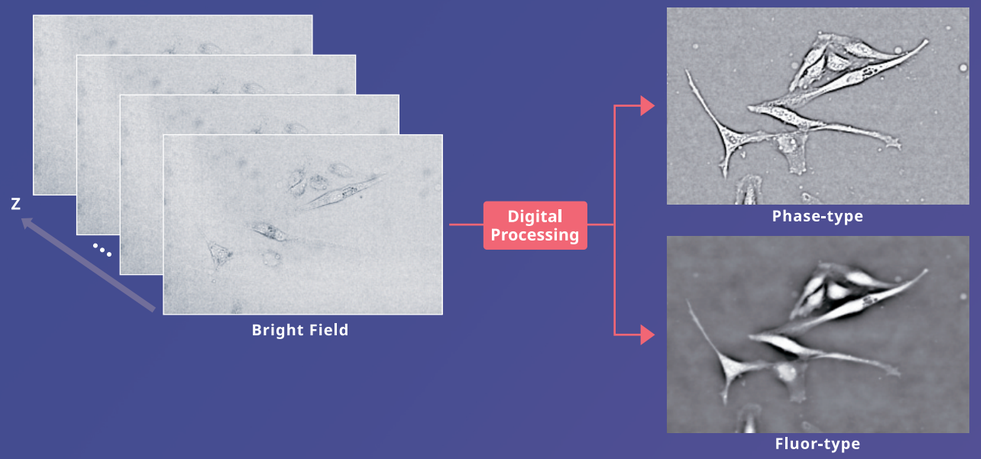
Target Search

It can scan the entire well at low magnification, detect the position of the object based on the analysis results, and acquire images at high magnification. This makes it possible to image samples where it is not possible to know where the object is located in the well, or to image and analyze only the cells that match the conditions from among a large number of cells.



Contrast-Enhanced Bright Field

By using Yokogawa's "CE Bright Field" proprietary image creation technology, two types of images can be output from bright field images.
This is a powerful pre-processing function for analysis of Bright Field images.

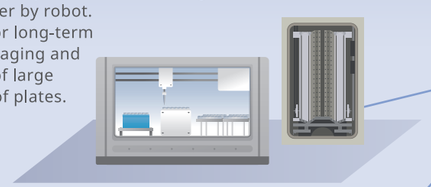


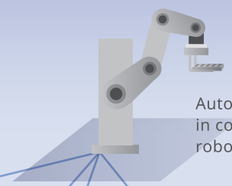
- **Phase-type**:Images such as those taken by phasecontrast microscopy. It is useful for high-precision recognition of cell contours and analysis of cell phenotypes.
- **Fluor-type**:Fluorescence-like images. It is useful for nuclear recognition, etc.

Offering Total Solutions, from Culturing and Storage to Analysis

1 Culturing and Storage

Store multiple plates while culturing, and transfer by robot.
Suitable for long-term live cell imaging and handling of large numbers of plates.



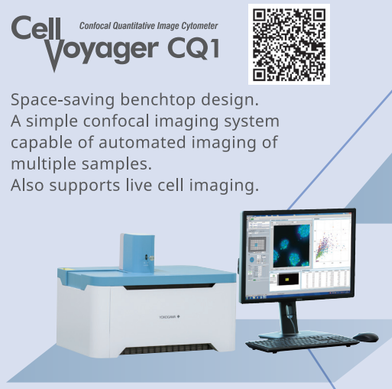


Automated plate transfer in cooperation with a trusted robot vender.

2 Acquisition

CellVoyager Confocal Quantitative Image Cytometer CQ1

Space-saving benchtop design.
A simple confocal imaging system capable of automated imaging of multiple samples.
Also supports live cell imaging.



CellVoyager
High-Content Analysis System
CQ3000

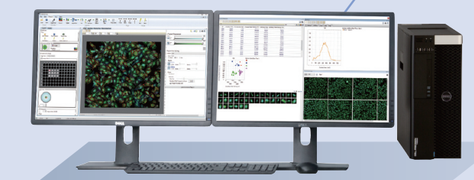
CellVoyager High-throughput Cytological Discovery System CV8000

A high-end HCA system enabling high quality and high-speed screening by use of water immersion lenses and multiple cameras.
Can also perform kinetic measurement using a dispenser.

3 Data Storage

Save, access, and directly analyze large amounts of image data via the network.
Archive data for safe, long-term storage.

4 Analysis



CellVoyager High Content Analysis Software CellPathfinder

Analyze image data from CellVoyager CV8000, CQ3000 and CQ1 tocreate graphs and output various types of data.
Label-free analysis is also possible through CE Bright Field, Machine Learning, and Deep Learning functions.
Easy even for beginners through a wide variety of preset analysis templates.