General Specifications

Confocal Quantitative Image Cytometer

CellVoyager CQ1

GS 80J01A01-01E

YOKOGAWA

Yokogawa Electric Corporation

GS 80J01A01-01E

16th Edition

■Overview

CQ1 is designed to quantitatively measure biological information from image data of each cell at high reproducibility. It enables acquisition of such information as cell functions, signal transduction, cell mobility (such as invasion) or morphological information from quantified image data after image processing, which is rather difficult to obtain by conventional flow cytometetric analysis. Different from flow cytometetric analysis in which cells are washed away, CQ1 measures the cells in their culture vessels such as microplate, thus it is possible to analyze the same cells repeatedly or follow their temporal changes.

■Features

1. High precision quantification of morphological information without detaching off the cells

It is possible to precisely quantify biological function or characteristics of each cell in a natural situation without breaking cell mass or detaching cell layers from culture dish. In addition to two-dimensional information, such as the area, various three-dimensional information, such as volume, surface area, cell number and location, granule location within each cell, fluorescent intensity, can be well visualized and displayed as graphs.

2. Live cell observation

Our proprietary confocal scanner unit, CSU series, is a confocal scanner which can be attached on an optical microscope to enable confocal observation. The best features of the CSU are the capabilities of high-speed confocal imaging with a minimal level of cellular photo-damage and photo-bleaching. Equipped with the CSU, the CQ1 enables three-dimensional and multi-color live cell observation. CQ1 is suitable for quality control, inspection and experiments of the studies in cell engineering field, since you don’t have to spoil the cells after observation.

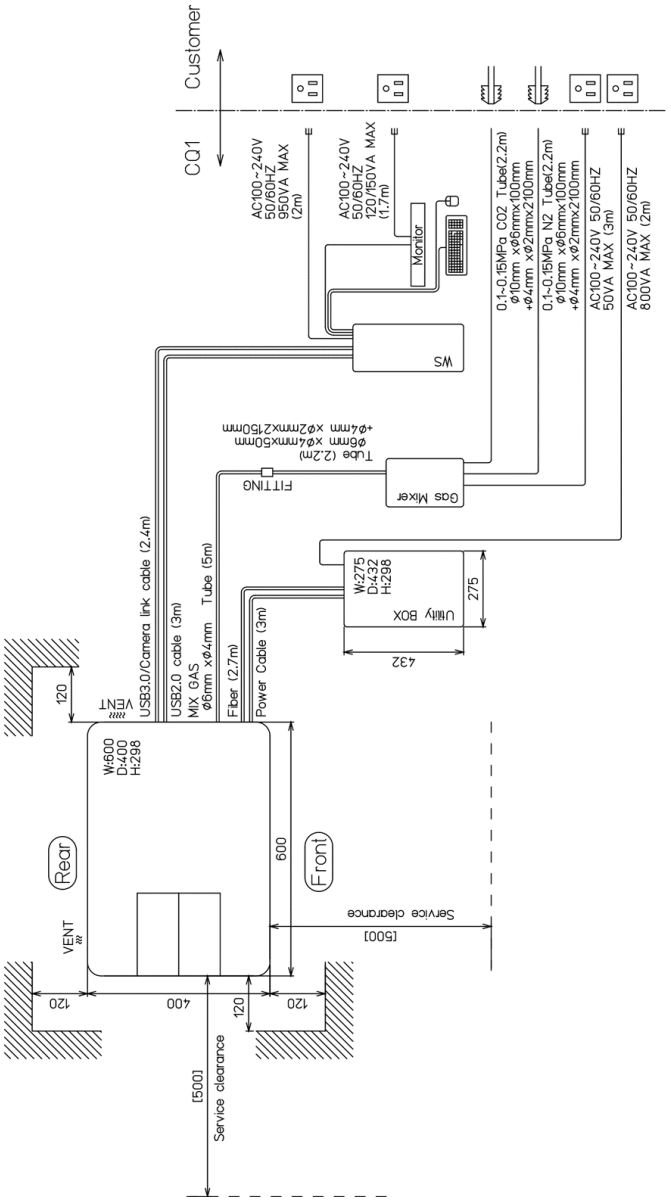
3. High reproducibility of data

Highly reproducible data can be acquired by stabilizing excitation laser power with the power monitor function, and also by periodical calibration to eliminate effects of any other variations.

■Installation Conditions

Install this equipment in a location meeting the specifications below.

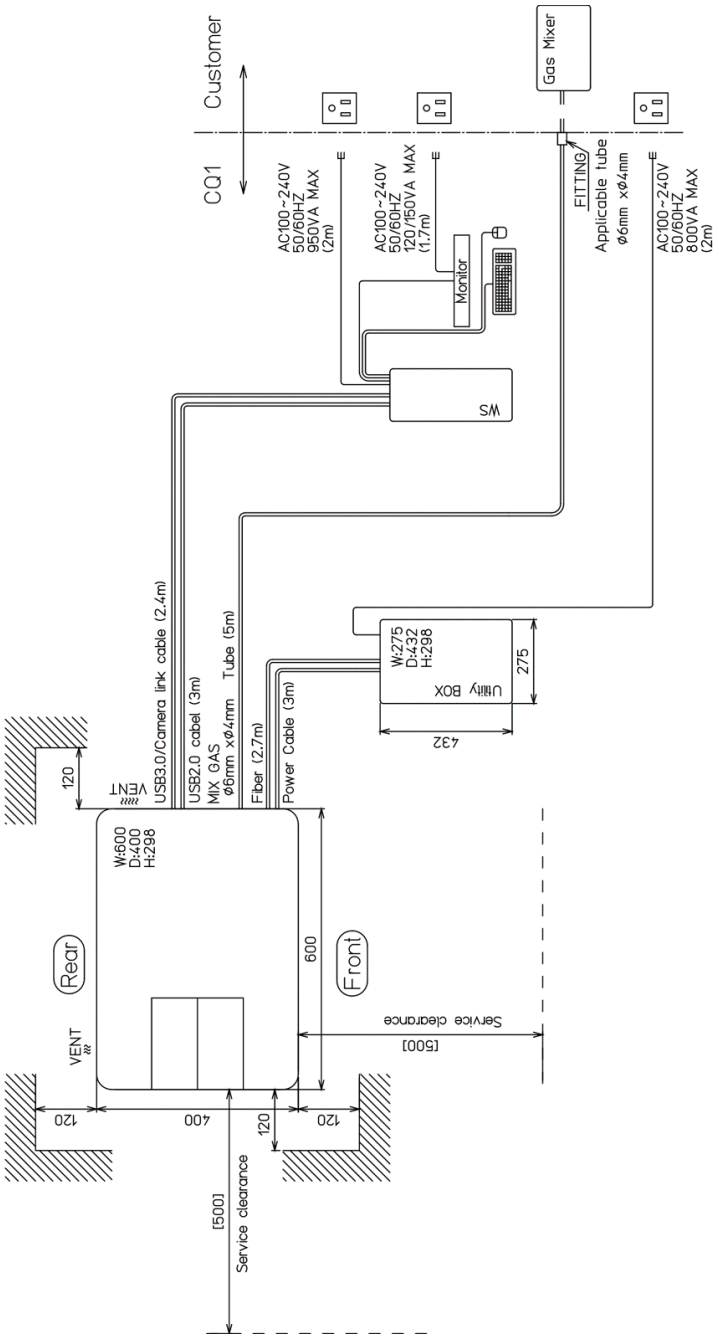
Installation example 1)
In case of using CQ1 standard gas mixer.

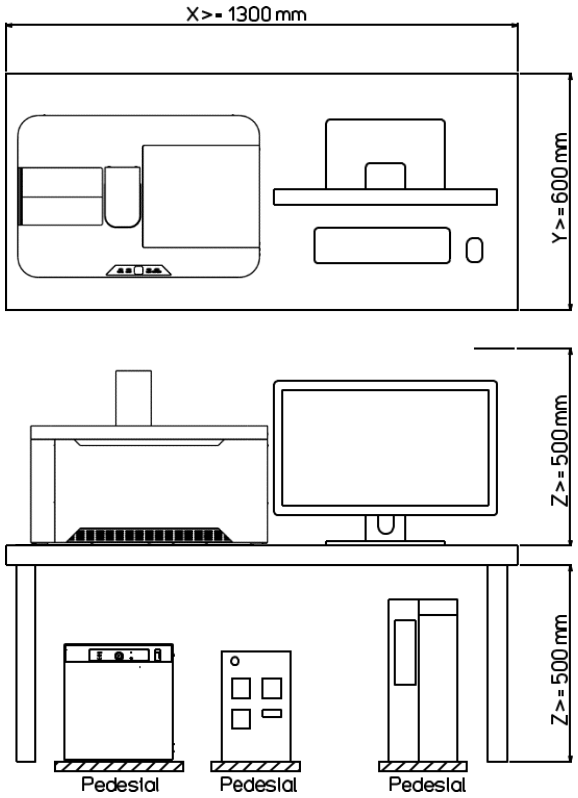


Note:
It is necessary to prepare following gas cylinder and regulator

Gas cylinder	Gas: N_2 100 %, CO_2 100 %
Regulator	Outlet pressure: Settable in 0.1 – 0.15 MPa Piping: Silicone tube (inside diameter 6 mm, outside diameter 10 mm) is connectable

Installation example 2)
In case of using gas mixer that user prepares.





※CQ1 does not include the pedestal and desk.

- Location where enough space is available
  If the ventilation openings are blocked, the equipment may become hot and eventually damaged. Provide enough space around CQ1 Main Unit and Utility Box.
  ・CQ1 Main Unit
    Minimum Clearance
    Front: 120 mm, Back: 120 mm, Above: 200 mm, Side: 120 mm
    Recommended Table Size: W 700 mm x D 500 mm x H 700 mm or larger
    Withstand load: 100 kg or larger
  ・Utility Box
    Minimum Clearance
    Back: 50 mm, Above: 50 mm, Side: 50 mm (Avoid placing on floor directly)
  ・Gas Mixer
    Minimum Clearance
    Back: Provide enough space not to buckle tubes and cables
    Side: 50 mm (Avoid placing on floor directly)
- Location of minimal soot, steam, dust, corrosive gases and so on.
- Avoid installing at highly humid and / or hot place such as close to heaters or under direct sunshine, or frequent temperature changes※1.
- Location of minimal mechanical vibration
  Never set any vibrating devices, such as centrifuge or mixer, on the same table with CQ1. Doing so may disrupt optical performance.
- Level location
  When installing this equipment, make sure the equipment does not tilt.
- Location where electric power supply system of more than AC100V, 19A (1,900W) is available.

※1 Subjecting the equipment to a sudden temperature change may cause condensation.

■ Specifications

1. Hardware Specifications

1.1 Imaging Optics: Confocal System

Confocal images are acquired by spinning scan with simultaneously rotating two disks; a pinhole array disk in which many pinholes are arranged in a spiral, and a microlens array disk, which collect excitation laser to each pinhole.

Confocal scan system	Spinning scan system using wide Nipkow disk with microlens
Pinhole diameter of Nipkow disk	50 µm
Dichroic mirror	405/488/561/640 dichroic mirror Please refer to the section of "■Optical Property of Filters (Typical Data)" for wavelength property

1.2 Imaging Optics: Multi-color Imaging Unit

Up to 10 sets※1 of emission filters are electrically switchable.

Filter sets	Max. 10 filters※1 For adding or changing filters, changes in the software setting are required Please inquire dealer
Spectral property	Standard emission filter to match excitation laser Please refer to the section of "■Optical Property of Filters (Typical Data)" for wavelength property

※1 Max. 10 filters can be mounted on filter wheel but one of them is normally taken off in order to make through path for transmission illumination imaging. For mounting 10 emission filters, please inquire dealer.

1.3 Excitation Laser

As the excitation light source, up to 4 laser beams are combined by the beamcombiner unit, and being incident through an optical fiber into the confocal unit. Sequential laser emission is possible. Please select from 405, 488, 561, and 640 nm.

Installable lasers	Max. 4 wavelengths
Installable wavelengths	405 nm, 488 nm, 561 nm, 640 nm
Intensity control	10 – 100 % Adjustable by 1 % step

1.4 Transmission Illumination

Illumination method	Bright field/ Phase contrast switchable type (manual)
LED Wavelength	600 nm
Intensity control	0 – 100 % Adjustable by 1 % step

1.5 Autofocus

AF Method	Confocal
Focus search light source	Laser diode

1.6 Objective Lens

By electrically switching up to 6 objective lenses, it is possible to select most suitable lens for the imaging objects.

Installable lens number	Max. 6
Installable lens	

Magnification	Type	NA
2x		0.08
4x		0.16
10x		0.4
20x		0.8
40x		0.95
20x	For thick bottom vessel	0.7
20x	Long working distance	0.45
40x	Long working distance	0.6
10x	Phase contrast	0.3
20x	Phase contrast	0.45

Addition or change of objective lens requires changing of software setting. Please inquire dealer.

Lens switching	Mortorized

1.7 Camera

Camera type	Effective pixel	Pixel size	Field of view	Cooling temperature
sCMOS	2000 x 2000※1	6.5 µm x 6.5 µm※1	13.0 mm x 13.0 mm※1	Air cooling, -10°C※1※2

※1 Specificatin of the camera is different by the shipping time. For detail, please contact to distributors.

※2 Cooling temperature depends on room temperature. For detail, please contact to distributors.

1.8 XY Stage

Move the samples in XY direction to observe. High accuracy and high repeatability of positioning make it possible to perform map image acquisition and multi-point acquisition.

Settable resolution	0.1 µm

1.9 Z Motion

Move the objective lens in the Z direction (up – down direction) to focus and adjust 3D position for imaging.

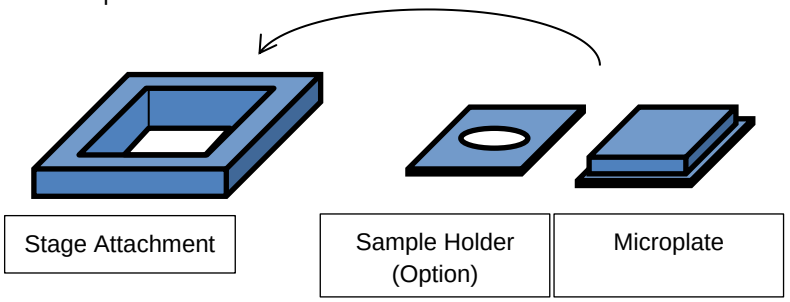
Settable resolution	0.1 µm

1.10 Stage Attachment and Sample Holder

For detail about supported sample vessels in CQ1, please refer to Technical Information TI 80J01A01-01E (Supported Sample Vessels).

1.11 Stage Attachment and Sample Holder

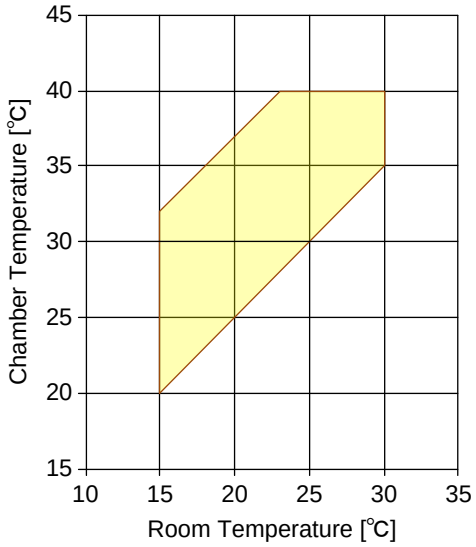
A stage attachment and a sample holder matching with each sample vessel are installed on XY stage. Sample holders are option.
As for the temperature distribution in chamber, please refer to TI80J01A09-01.

<table>
<tr><td colspan="2">Configuration</td><td colspan="3">Setting part of sample vessels is configurated by following two modules
- Stage Attachment
- Sample Holder (Option)
Microplate is set on Stage Attachment directly
Dish, slide glass and cover glass attachment are set on Stage Attachment with Sample Holder
 
</td></tr>
<tr><td rowspan="3">Stage Attachment</td><td rowspan="2">Purpose</td><td>All Wells Imaging Type</td><td colspan="2">Capable of imaging all wells of microplate※1</td></tr>
<tr><td>Chambered Type</td><td colspan="2">Capable of keeping the temperature, CO_2, O_2 concentration and humidity
※The space that sample are set of this Stage Attachment is called ”chamber”</td></tr>
<tr><td>Supported sample vessel</td><td colspan="2">Microplate (6, 12, 24, 48, 96, 384, 1536 wells)</td><td>1 plate</td></tr>
<tr><td rowspan="5">Sample Holder (Option)</td><td rowspan="4">Supported sample vessel</td><td colspan="2">35 mm dish</td><td>3 dishes</td></tr>
<tr><td colspan="2">60 mm dish</td><td>1 dish</td></tr>
<tr><td colspan="2">Slide glass
length: 76.0mm +0 mm / -1 mm
width: 26.0 mm +0 mm / -1 mm
(ISO 8037/1)</td><td>4 slides</td></tr>
<tr><td colspan="2">Cover glass chamber</td><td>1 chamber</td></tr>
<tr><td>Sterilization</td><td colspan="3">Autoclave is possible
115 – 118 ℃ 30 min.
121 – 124 ℃ 15 min.
126 – 129 ℃ 10 min.</td></tr>
</table>

※1 Depending on the type of objective lens and the combination of the observation container, it may not be possible to take an all-around image. Please contact us for more information

1.12 Stage Heater (Option)

To use this function, it is necessary to use Chambered Type Stage Attachment. We don't guarantee thermal stability of sample if All Wells Imaging Type Stage Attachment is used. By controlling temperature of chamber, thermal stability of sample can be kept. Also, it is able to humidify chamber.

Controllable temperature range	Room temperature +5 – +17 ℃, Max. 40 ℃ Controllable temperature range is as following 
Settable temperature resolution	0.1 ℃
Temperature stability	< ±1 ℃ (Setting: 37 ℃, room temperature: 23 ℃ ± 2 ℃, measured point: center and 4 corners of 96 wells microplate)
Humidity	Humidifier with a water bath unit Manual water supply (No automatic water supply)
Normal temperature observation	Normal temperature observation can be performed by shutting off Stage Heater In this case, temperature※1 around sample is as following - Temperature: < room temperature +2 ℃ - Temperature stability: < ± 1 ℃ Example) When room temperature is 18 ℃, temperature around sample is 20 ℃ ± 1 ℃ (Temperature stablity around sample depents on room temperature stability)

※1 Regardless of Stage Attachment type.

1.13 Gas Mixer (Option)

Mix air, N_2 gas and CO_2 gas, and supply mixture gas that O_2 and CO_2 concentration is controlled into chamber. This option can't be sold to Republic of Korea.

<Specification of CQ1 standard gas mixer>

Input gas	100% N_2, 100% CO_2	
Input gas pressure	0.1 – 0.15 MPa	
Piping	N_2, O_2 gas input port	Silicone tube (inside diameter 6 mm, outside diameter 10 mm)

<Recommended specification of gas mixer that user prepares>

Flow rate of output mixture gas	1 – 200 ml/min	
CO_2 concentration of output mixture gas	atmospheric concentration – 10 %	
O_2 concentration in output mixture gas	0 % – atmospheric concentration	
Piping	Mixture gas output port	Polyurethane silicone tube (inside diameter 4 mm, outside diameter 6 mm)

<Environment in chamber>

CO_2 concentration in chamber※1	Range	atmospheric concentration – 7 %
	Stability	< ±1 %
O_2 concentration in chamber※1	Range	3 % – atmospheric concentration
	Stability	< ±1 %

※1 CO_2, O_2 concentration in chamber is not guaranteed value but measured value in YOKOGAWA. Settable concentration is different by the shipping time. For detail, please refer to Technical Information TI 80J01A05-01E (Setting of Gas Mixer).

1.14 Workstation

The Workstation controls CQ1 operation and sets various imaging and measurement conditions by the CQ1 Software.

Product ID※1	DELL™ Precision T5820 (as of September, 2022)
CPU Clock	Intel ® Xeon® Processor W-2123 (4 core, 3.6GHz,8.25MB)
Memory	32GByte
HDD	2TB × 1 4TB × 1
OS	Windows 10 IoT Enterprise
Display port (Output)	Mini Display Port × 3 Mini Display Port⇔HDMI cable × 3

※1 Specificatin of the workstation is different by the shipping time.
For detail, please contact to distributors.

1.15 Monitor (Recommended)

Type	24 in. wide monitor x1 (Supplied only in Japan)
Pixels	1920 x 1200

1.16 External Dimensions

Main Unit	Standard model	W 600 mm x D 400 mm x H 437 mm
Utility Box (Power source and beam combiner)		W 275 mm x D 432 mm x H 298 mm
Gas Mixer※1		W160mm×D260mm×H187mm (as of September, 2022)
Workstation for measurement※1		W 176.5 mm x D 518.3 mm x H 417.9 mm (as of September, 2022)
Monitor (Recommended example)		W531mm × D166 mm × H370.8～500.8 mm

※1 Specificatin of the workstation is different by the shipping time.
For detail, please contact to distributors.

1.17 Weight

Main Unit	Standard model	41.1kg
	With Stage heater option	44.4 kg
Utility Box (Power source and beam combiner)		18 kg
Gas Mixer※1		5.2 kg (as of September, 2022)
Workstation for measurement※1		15.9 kg (as of September, 2022)
Monitor (Recommended example)		5.6 kg

※1 Specificatin of the workstation is different by the shipping time.
For detail, please contact to distributors.

1.18 Power Consumption

Total Power Consumption		100 – 240 VAC / 50 or 60 Hz, 1,900 VAmax
Breakdown	Main unit&Utility box	100 – 240 VAC / 50 or 60 Hz, 800 VAmax
	Gas Mixer	100 – 240 VAC / 50 or 60 Hz, 50 VAmax
	Workstation	100 – 240 VAC / 50 or 60 Hz, 950 VAmax
	Monitor (Recommended example)	100 – 240 VAC / 50 or 60 Hz, 120/150 VAmax

1.19 Operational Environment Conditions

Temperature	CQ1	15 – 35 ℃
	Gas Mixer	20 – 30 ℃
Humidity	CQ1	20 – 70 % RH No condensing
	Gas Mixer	10 – 85 % RH No condensing
Installation Environment	No direct sun light. No spilling of water, oil or solvents. Never use or keep this equipment under inflammable or corrosive gas, or in places dirty with sand or dust, or such area as infllamable, watery or bibrating.	
Installation	Level installation	

1.20 Storage Environment

Temperature	-10 – 50 ℃
Humidity	5 – 95 % RH No condensing

1.21 Applicable Standards

◆CE Marking

●EMC Directives:

This product belongs to Class A which is designed to be used under industrial environment. If used under household environment, risk of radio interference could arise, and the user may have to take appropriate measures.

This product satisfies the requisite minimal immunity level. If being used under other environment than controlled area, this product may suffer external influence, and the user may have to take appropriate measures

EN/IEC 61326-1 Class A, Table 1 (Basic immunity requirements)
Electrical equipment for measurement, control and laboratory use
- EMC requirements - Part 1: General requirements

Performance Criteria

	Performance Criteria※
ESD IEC 61000-4-2	B
Radiated electromagnetic field IEC 61000-4-3	A
EFT/Burst IEC 61000-4-4	B
Surge IEC 61000-4-5	B
Conducted disturbance IEC 61000-4-6	A
Power freq. magnetic field IEC 61000-4-8	A
Voltage dips IEC 61000-4-11	B (0.5,1cycle 0%) C (25 cycles 70%)
Short interruptions IEC 61000-4-11	C

※Performance Criteria
A: The equipment continues to operate to specification.
B: When the noise is applied, the equipment will go to be fluctuated. However, if the noise is removed, it continues to operate to specification.
C: When the noise is applied, temporary degradation or less of function is observed and to recover the normal condition, an operator intervention or system reset is required.

EN/IEC 55011 Group 1, Class A
Industrial, scientific and medical equipment.
Radio-frequency disturbance characteristics. Limits and methods of measurement

EN/IEC 61000-3-2 Class A
Electromagnetic compatibility (EMC)
- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)

EN/IEC 61000-3-3
Electromagnetic compatibility (EMC)
- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection

◆CE Marking (Continue from previous page)

●Machinery Directive:
ISO12100
Safety of machinery
-- General principles for design
-- Risk assessment and risk reduction

EN/IEC 13849-1
Safety of machinery
-- Safety-related parts of control systems
-- Part 1: General principles for design

EN/IEC 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use
- Part 1: General requirements

EN/IEC 60825-1
Safety of laser products
- Part 1: Equipment classification and requirements

●RoHS Directive:
EN 63000

◆Laser Safety Standard

EN/IEC 60825-1
Safety of laser products
- Part 1: Equipment classification and requirements

FDA Laser Safety Regulation

◆KC Marking Electromagnetic Compatibility Standard※

※ CQ1 whose Suffix Code of "Workstation, Others" is "-W0" only compliants to this standard. Please refer to page 21 for Suffix Code.

2. Software Specifications

CQ1 Software installed in the workstation has following functions.

2.1 Basic functions

(1) Acquire 3D images of cells cultured in sample vessels such as microplate, dish or slide glass, as they are, without removing cells from vessels.
(2) Mount image processing engine to measure feature data such as number, area and volume of cells.
(3) Run image analysis simultaneously with image capture, and display heat map of feature data in real time.
(4) Save acquired image and feature data in storage such as HDD.
(5) Select existing measurement data to review images and feature data, and re-analyze them with modified analysis parameters.

2.2 Measurement condition setting

(1) Set image acquisition conditions such as camera parameters, laser power, EM filter, imaging wells, fields and Z.
(2) Preview to confirm appropriateness of measurement conditions before staring measurement.

2.3 Image data display

(1) Display images which are acquired by 3D imaging.
(2) Display either single or merged fluorescence images.
(3) Display multiple field images as a map image.
(4) Transfer 3D image data to ImageJ and display as 3D image.

2.4 Chart display

(1) Display charts of feature acquired by image analysis.
(2) Display feature charts of different wells side-by-side.
(3) Capable for linking images and plots on a chart, originated from the same cell.

2.5 Map image acquisition

(1) Preview function to acquire map image before starting measurement.

2.6 Quantitative data processing

(1) Provide filtering function to display charts after applying narrowed conditions on indexes such as well, field and time point.
(2) Display quantified data of each cell.

2.7 Report function

(1) Save screenshots of image and chart as image files such as PNG.
(2) Export quantified data file obtained by analysis.
(3) Export movie data acquired by time-lapse imaging.

2.8 Correction functions

(1) Provide magnification correction of objective lens. (Correction is worked out when CQ1 is shipped or objective lens is added to CQ1.)
(2) Laser calibration by the user is possible.
(3) Provide shading correction function.
(4) Provide chromatic aberration correction function by affine transformation and Z offset.

2.9 Open Platform

(1) Store image files in OME-TIFF format to enable loading to a third party image analysis software.
(2) Can select feature storage in FCS, CSV or ICE format to enable loading to a third party data analysis software used by flow cytometer or else.

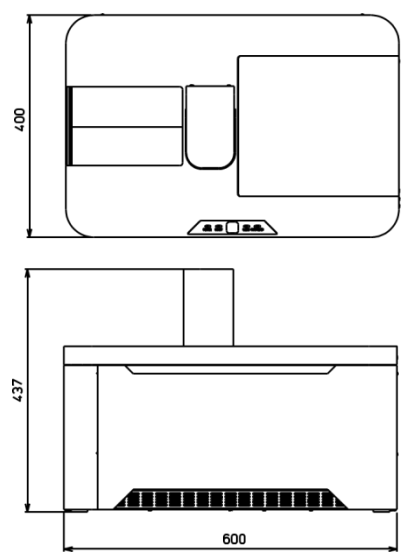
2.10 Fast Time Lapse (Option)

(1) Possible to capture fast phenominan such as calcium oscillation of myocardial pulsation.
(2) Available to select either Max 20fps or Max 100fps.

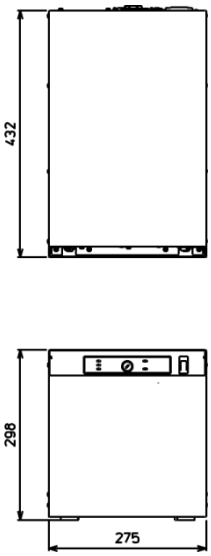
■ Laser Product Handling Precautions

This product belongs to Class 1 laser product. However, it houses a Class 3B laser, which is protected by the enclosure and the interlocks.

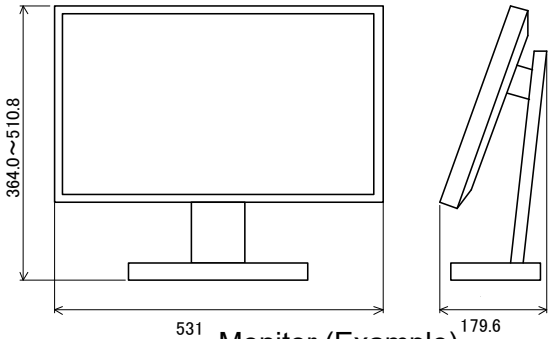
■ External Dimensions (Unit: mm)



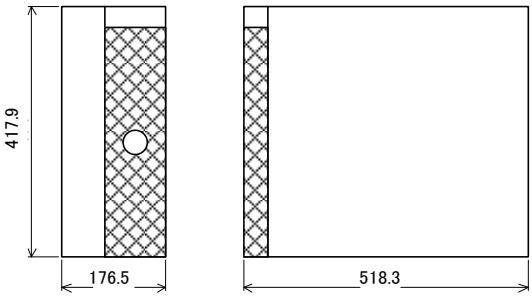
CQ1 Main Unit



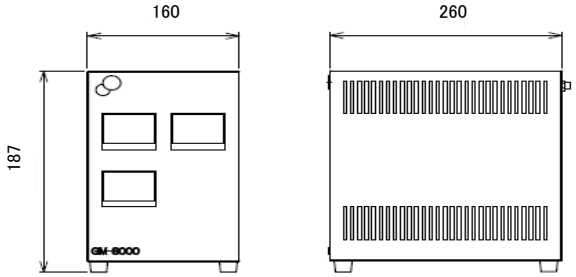
Utility Box



Monitor (Example)



Workstation



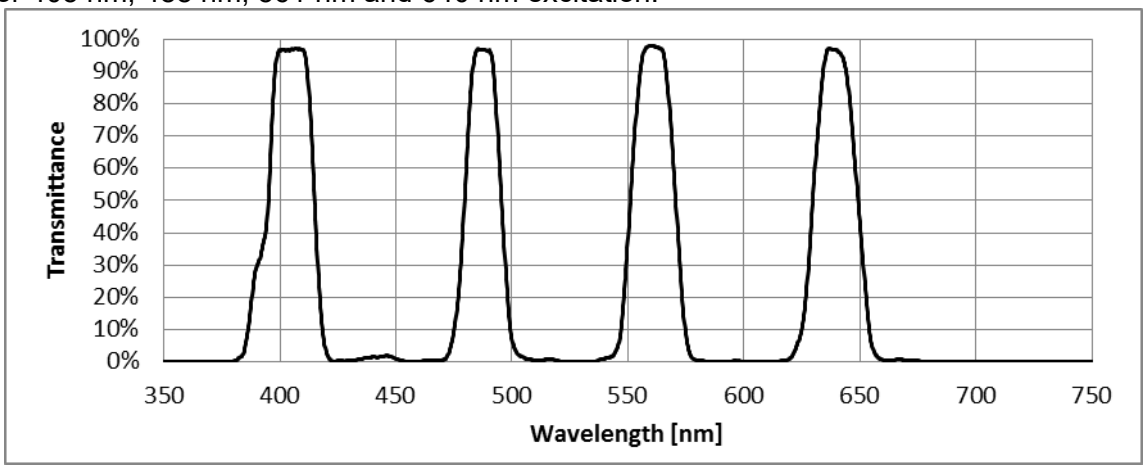
Gas Mixer

■Optical Property of Filters (Typical Data)

1. Dichroic Mirror

DM 405/488/561/640

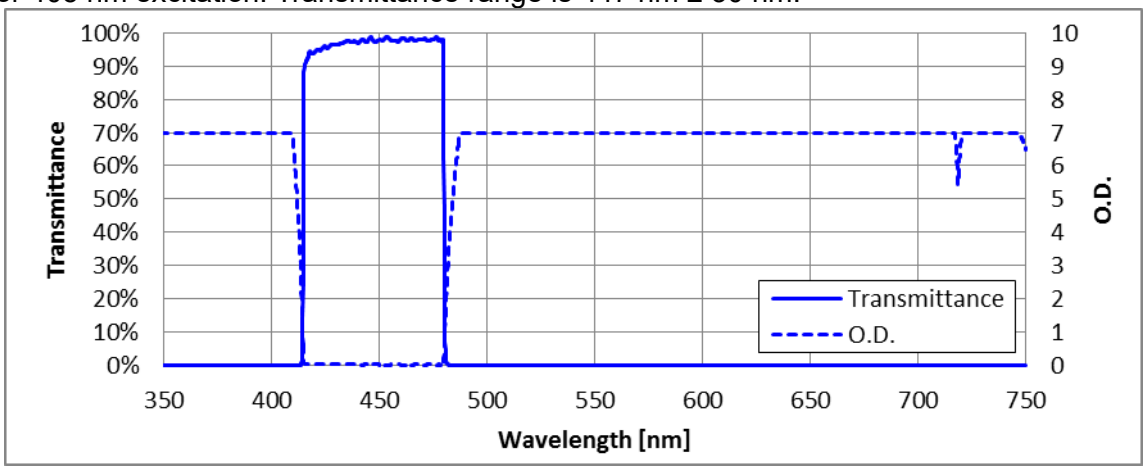
For 405 nm, 488 nm, 561 nm and 640 nm excitation.



2. Emission filter

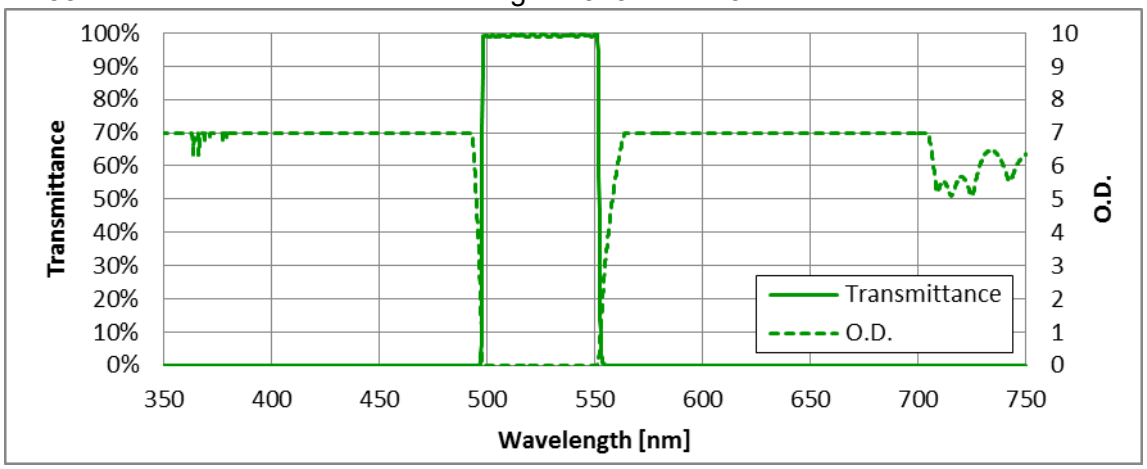
EM 447/60

For 405 nm excitation. Transmittance range is 447 nm ± 30 nm.



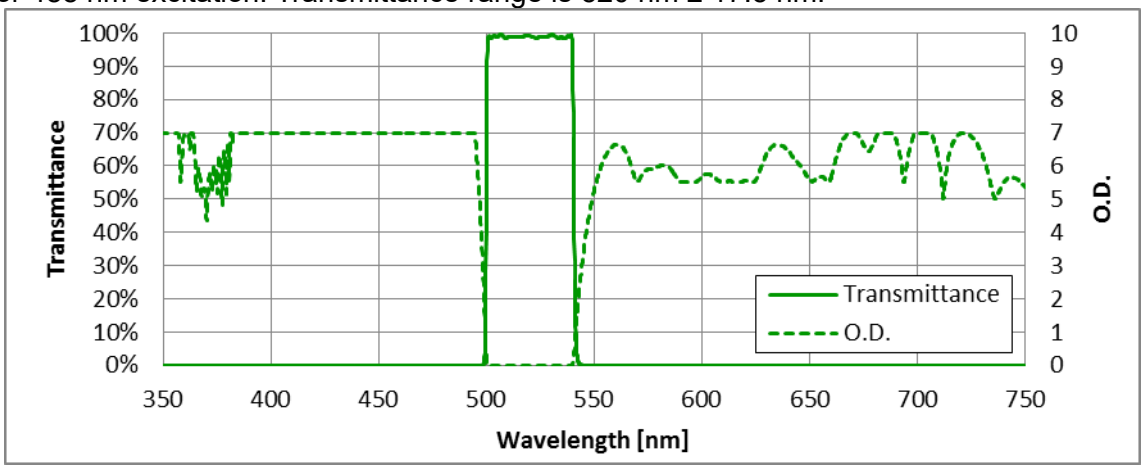
EM 525/50

For 488 nm excitation. Transmittance range is 525 nm ± 25 nm.



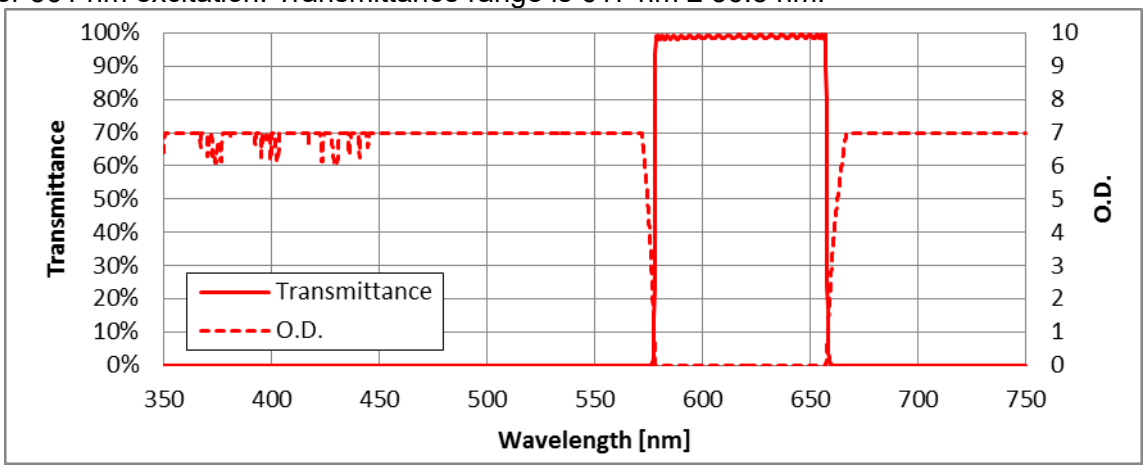
EM 520/35

For 488 nm excitation. Transmittance range is 520 nm ± 17.5 nm.



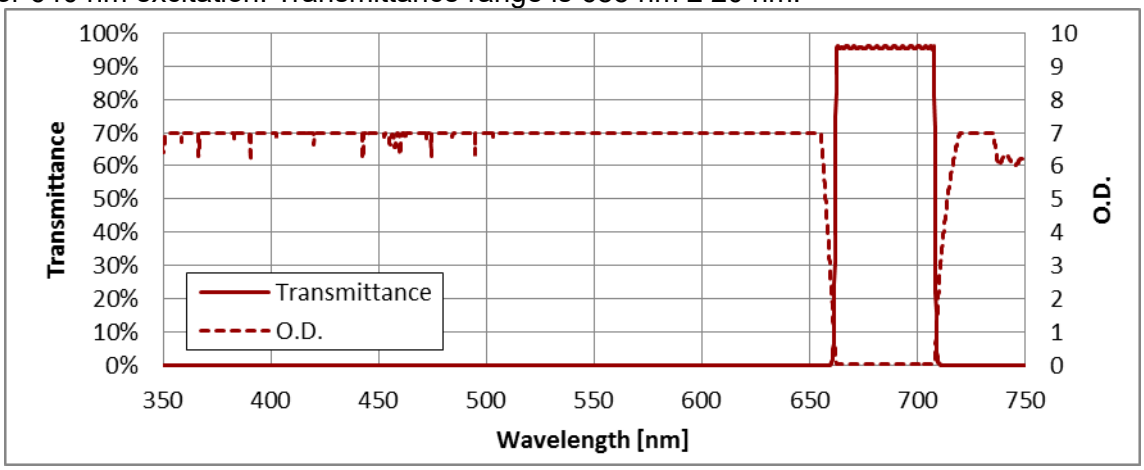
EM 617/73

For 561 nm excitation. Transmittance range is 617 nm ± 36.5 nm.



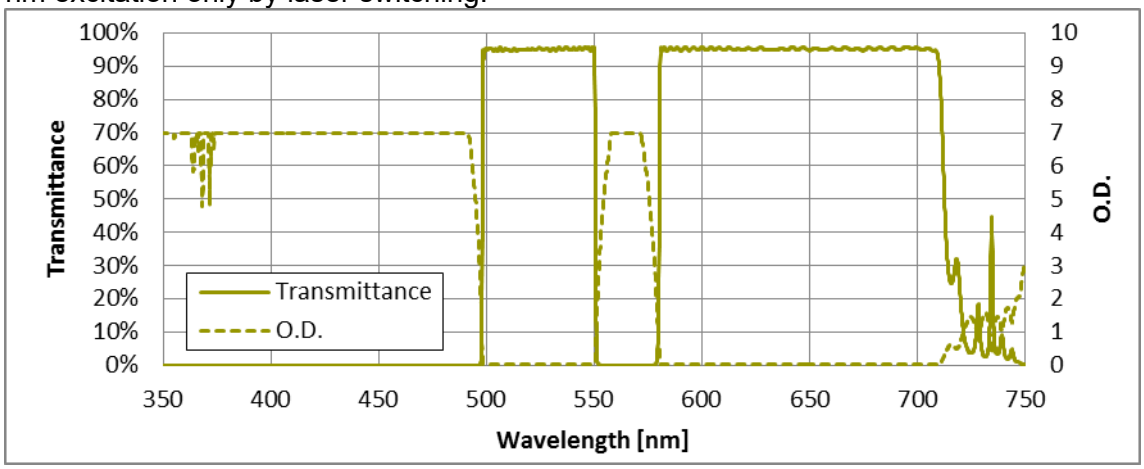
EM 685/40

For 640 nm excitation. Transmittance range is 685 nm ± 20 nm.

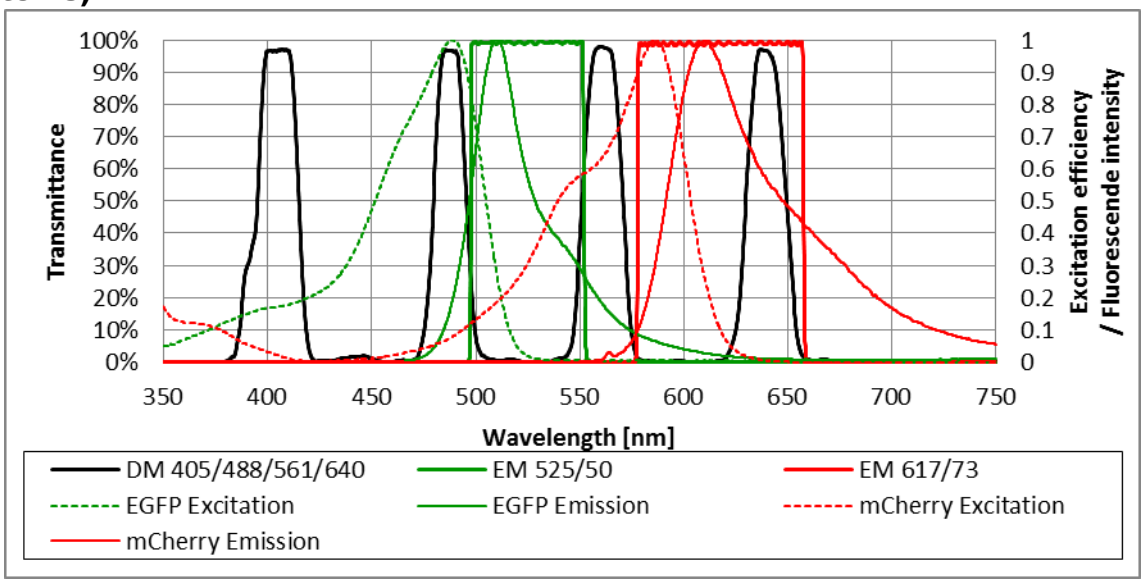


EM 488/568

For 488 nm/ 561 nm dual excitation. Enables switching between 488 nm excitation and 561 nm excitation only by laser switching.



Example of filter set (for observation of dual labeling with fluorescent proteins)



■ Model and MS codes

1. Main Unit

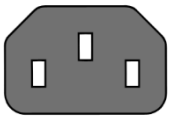
Model Code	Suffix Code	Option	Description
CQ1			Confocal Quantitative Image Cytometer
Laser	-L11		Wavelength：488 nm
	-L21		Wavelength：488, 561 nm
	-L22		Wavelength：405, 488 nm
	-L23		Wavelength：488, 640 nm
	-L31		Wavelength：405, 488, 561 nm
	-L32		Wavelength：405, 488, 640 nm
	-L33		Wavelength：488, 561, 640 nm
	-L41		Wavelength：405, 488, 561, 640 nm
Dichroic mirror	-M1		DM ：405, 488, 561, 640 nm
Transmission Illumination	-T		Bright Field/ Phase Contrast
Stage Heater	-H		With Stage Heater
	-N		Without Stage Heater
Stage Attachment	-A1		All Wells Imaging Type
	-A2		Chambered Type
Workstation, Others ※1	-W1		Standard Workstation
	-W0		Without Workstation
Language, Shipping Form, AC Cord	-J		Japanese, with Monitor, with AC Cord
	-N		Japanese, without Monitor, with AC Cord
	-E		English, without Monitor, without AC Cord ※2
Dummy Code	-N		Dummy Code
Sub Code	-10		H model
Software Option		/FTL	Fast Time-lapse(20fps)
		/UTL	Fast Time-lapse(100fps)
Custom Order		/Z	Custom Order

※1 In case of sales for Republic of Korea, please select "-W0 (Without Workstation)" and select workstation by parts code (Please refer to page 22).

※2 In case of sales other than Japan, AC cords are not attached by YOKOGAWA. AC cords are supplied by distributor. Following is recommended specification.

		Rated Voltage[V]	Rated Current[A]	Socket		Core	Insulation	Max Length [m]
				Type [IEC60320]	Angle			
100 V Region	Utility Box	125	10	C13※3	Straight	3	Double	2.9
	Workstation	125	10※4	C13※3	Straight	3	Double	2.9
200 V region	Utility Box	250	10	C13※3	Straight	3	Double	2.9
	Workstation	250	10※4	C13※3	Straight	3	Double	2.9

※3 Figure of socket



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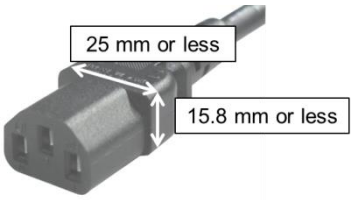
※4 Because there is safety guard around AC inlet of Workstation, size of socket grip is limited as below.



2. Objective Lens

Model Code	Suffix Code	Option	Description
CQ1TBL			CQ1 Objective Lens
Holder Position	-P0		With Objective Lens Holder
	-NN		No Objective Lens Holder
Objective Lens	-L002N		2x Dry (NA=0.08)
	-L104N		4x Dry (NA=0.16)
	-L110N		10x Dry (NA=0.4)
	-L120N		20x Dry (NA=0.8)
	-L140N		40x Dry (NA=0.95)
	-L020M		20x for thick bottom vessel (NA=0.7)
	-L020L		20x Long Working Distance (NA=0.45)
	-L040L		40x Long Working Distance (NA=0.6)
	-L010P		10x Phase Contrast (NA=0.3)
	-L020P		20x Phase Contrast (NA=0.45)
	-N0000		Holder (Without Objective Lens)
Custom Order		/Z	Custom Order

3. Emission Filter

Model Code	Suffix Code	Option	Description
CQ1FLT			
	-D		Dummy code
Additional specification code EM (emission filter) △: Position 1 – 9 Selling separately 0		/△01	EM B525/50 for 488 nm Excitation
		/△02	EM B617/73 for 561 nm Excitation
		/△03	EM B447/60 for 405 nm Excitation
		/△06	EM B685/40 for 640 nm Excitation
		/△07	EM B528/38 for 488 nm Excitation
		/△08	EM B520/35 for 488 nm Excitation
		/△09	EM BR488/568 for 488 / 561 nm Excitation
Custom Order		/Z	Custom Order

4. Workstation

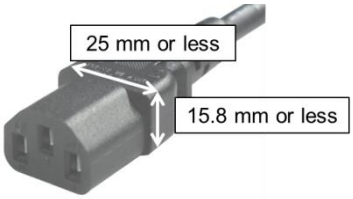
Model Code	Suffix Code	Option	Description
CQ1WS			
Language	-K		Standard Workstation for Korea ※1※2
Dummy	-0000		

※1 In case of sales for Republic of Korea, please select with "CQ1 without Workstation" (Please refer to page 21).

※2 AC cord are not attached by YOKOGAWA. AC cord are supplied by dealer.
Following is recommended specification.

	Rated Voltage[V]	Rated Current[A]	Socket		Core	Insulation	Max Length [m]
			Type [IEC60320]	Angle			
Workstation	250	10※6	C13※3	Straight	3	Double	2.9

※3 Because there is safety guard around AC inlet of Workstation, size of socket grip is limited as below.



5. Options

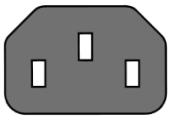
Model Code	Suffix Code	Option	Description
CQ1PRT			
Language	-J		Japanese
	-E		English
Gas Mixer※1※2		/MX2-D	Gas Mixer
Stage Attachment		/SAT1	All Wells Imaging Type
		/SAT2	Chambered Type
		/SAT3	Sealing Block for Clamp
		/SAT4	Sealing Block for Microplate
		/SAT5	Bottom-Corner
		/SAT6	Lower-Frame-Assy
		/SAT7	Lower-Frame-Assy2
Sample Holder		/HDA01	For Triple 35 mm Dishes
		/HDA02	For Single 60 mm Dish
		/HDA03	For Slide Glass (ISO 8037/1)
		/HDA04	For Cover Glass Chamber
Sealing Parts for Sample Holder		/CB601	60 mm Dish Ring
		/CB602	Rubber for 60 mm Dish
		/CBT01	Holding Plate for CGC
		/CBT02	Rubber for CGC (IWAKI)
		/CBT03	Rubber for CGC (NUNC Lab-Tek I)
		/CBT04	Rubber for CGC (NUNC Lab-Tek II)
		/CBT05	Rubber for CGC (MATSUNAMI)

※1 Gas Mixer can't be sold to Republic of Korea.

※2 In case of sales other than Japan, AC cord are not attached by YOKOGAWA. AC cord are supplied by distributor. Following is recommended specification.

		Rated Voltage[V]	Rated Current[A]	Socket		Core	Insulation	Max Length [m]
				Type [IEC60320]	Angle			
100 V Region	Gas Mixer	125	10	C13※3	Straight	3	Double	2.9
200 V region	Gas Mixer	250	10	C13※3	Straight	3	Double	2.9

※3 Figure of socket



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