
General
Specifications

CSU-X1
Confocal Scanner Unit

CSU-X1

GS 80C01C01-01E

■ General description

CSU-X1 was developed as an advanced model in succession to our conventional CSU10B/22 models which have been widely used as a standard tool for live cell imaging.

As enlisted below, CSU-X1 is significantly improved in its basic optical features. Moreover, various optional systems are available to allow flexible design of total imaging system as you need.



■ Feature

1. Newly developed lens system allows about twice highly efficient excitation power(*1)
2. Laser shutter to minimize laser damage/photo bleaching.
3. Doubled the maximum scanning speed from 1,000fps (CSU22) to 2000fps.(High-speed model)
4. Bright Field Switching port (CSUX1-A2, -B2, -M2) is a light path to bypass the disks in the CSU-X1, and allows you to use the same camera for both confocal and non-confocal (*2) imaging without light loss.
5. Second camera port (CSUX1-A3, -B3, -M3) is for either to install a second camera or direct view eyepiece unit. (*3)
By using an appropriate dichroic mirror, simultaneous two color imaging with two cameras is possible.
6. High-end models (CSUX1-A1, -A2, -A3, -B1, -B2, -B3) provide controllable dichroic mirror block for up to three dichroic mirrors.
7. Basic model provides a dichroic mirror block for one dichroic mirror.
8. High-end models (CSUX1-A1, -A2, -A3, -B1, -B2, -B3) provide function to control Yokogawa high -speed filter wheel
9. Direct C-mount adapter for 8X8 mm CCD camera such as EMCCD camera is available.

(*1) Actual light efficiency depends on the total system including the microscope optics.

(*2) Bright Field means non-confocal, wide-field images such as DIC, phase, epifluorescence and TIRF.

(*3) It is necessary to use appropriate emission filter for laser safety.

(*4) Please consult your local sales representative about installing the dichroic mirrors.

■ Specifications

1. CSU-X1 main unit

Item	Specification
Principle	Dual Nipkow disk spinning scan with a microlens array
Scanning speed	1. Basic model * Low-Speed model : 1,800rpm (w/o control unit) * Standard model: 1,500~5,000rpm (Max.1000fps, requires control unit) * High-speed model : 1,500~10,000rpm (Max.2000fps,requires control unit) 2.High-end model (with control unit) * Standard model: 1,500~5,000rpm (Max.1,000fps) * High-speed model: 1,500~10,000rpm (Max. 2,000fps)
Effective FOV	10mm × 7mm
Excitation Wavelength range	400nm ~ 700nm
Laser Inlet Port	for 405nm ~ 647nm laser FC optical fiber connector
Laser Induction Fiber	Specific standard fiber shown below or equivalent ● Coupler-FCP8 fiber Input power: less than 100mW (50mW for 405nm laser) ● APC-FCP8 fiber Input power: less than 100mW (50mW for 405nm laser) Fiber connector: Angled (8 degrees) FC Connector (Standard)
Input Power	less than 500mW to keep in Class 3B less than 100mW to guarantee optical performance If more than 100mW input, irreversible damage may occur to the internal optical elements.
Port Shutter	Response time: 30msec (Not including communication and overhead of the firmware) Life: on/off total count 60,000< Continuous open/shut frequency: 3Hz>
Emission Wavelength range	420nm ~ 700nm
EX (excitation) Filter	1. Standard: None 2. EX Filter Wheel (CSU-X1FW-06P-02) * Option: Please inquire (EX filter wheel is not directly attachable to the CSU-X1 body.) * EX filter line-up is shown in the EX filter list. 3. Manual change: * Option: 3 position slider is available, please inquire. * EX filter line-up is shown in the EX filter list.
DM (dichroic mirror)	1. Standard : None 2. Option : * Size:13mm×15mm×0.5mm -0.20/-0.020mm, t 0.500+/-0.02mm Synthetic quartz * DM line-up is shown in the DM list.
DM change	1. Basic model (with & w/o control unit) * Only CH1 in the DM block is valid. * DM block can be changed manually 2. High-end model (with control unit) * Three channels are available in a DM block * Please inquire your local sales representative for the DM block installing.
EM (emission) filter	Standard: None Option: EM line-up is shown in the EM filter list. (CAUTION) You must install optimal EM filter to match the laser and DM

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Item	Specification
Accessory	AC adapter, AC Power cord set* ¹ for the AC adapter Laser safety labels (Don't look into the Microscope when you switch the light pass.) attached to the microscope Explanation label for laser Class attached to either the Objective lens tarret or transmission illumination tube of the microscope Remote interlock key for CSU-X1 unit Hexagonal wrench set Dust cover (at laser path) 2nd camera port cover Camera port support for inverted microscope installation Support screws CSU key switch Standard fiber
Dimension* ²	CSUX1-M1 : 175(W)×328.5(H)×213.4(L)mm CSUX1-M2 : 259(W)×373(H)×213.4(L)mm CSUX1-M3 : 308.5(W)×328.5(H)×213.4(L)mm CSUX1-A1 : 175(W)×328.5(H)×304.5(L)mm CSUX1-A2 : 259(W)×373(H)×304.5(L)mm CSUX1-A3 : 308.5(W)×328.5(H)×304.5(L)mm CSUX1-B1 : 258(W)×329.8(H)×213.4(L)mm CSUX1-B2 : 259(W)×374.3(H)×248(L)mm CSUX1-B3 : 309.8(W)×329.8(H)×392(L)mm
Weight* ³	CSUX1-M1 : 7.5Kg CSUX1-M2 : 10.0Kg CSUX1-M3 : 10.0Kg CSUX1-A1 : 8.9Kg CSUX1-A2 : 11.7Kg CSUX1-A3 : 13.0Kg CSUX1-B1 : 7.8Kg CSUX1-B2 : 10.6Kg CSUX1-B3 : 12.2Kg

*¹ : AC power cord set (PSE) is attached in MS code J (Japanese), but no AC power cord set is attached in MS code E (English). In the case of E, certified AC power cord set satisfying following condition has to be prepared according to the plug of main electricity and the safety regulations in the region where the system will be installed.

Rated voltage of 100 to 240V (different form the region)

Minimum Current of 3A

With protective earth

Maximum length of 3m

*² : C-mount camera port model. Includes filter wheel, w/o protruding parts.

*³ : Includes filter wheel.

Item	Specification
External Control	Basic model: Low-Speed model: No control unit is necessary Standard model: Requires CSU-X1CU-F1/F2(control unit) and a PC High-speed model: Requires CSU-X1CU-F1/F2(control unit) and a PC High-end model: Requires CSU-X1CU-F1/F2(control unit) and a PC
Remote interlock key for CSU-X1 unit (Basic model)	Installed: Manual shutter switch becomes valid Uninstalled: Shutter closes, motor stops and manual shutter switch becomes invalid
Remote interlock key for control unit (High-end model)	Installed: : Manual shutter switch becomes valid. External shutter control from PC through control unit becomes possible. Uninstalled: Shutter closes, motor stops and manual shutter switch becomes invalid

Item	Specification
DM installation	Please inquire for DM installation. If DM holder case were opened when CSU is working, remote interlock works to close shutter and stop disk rotation.
Rotation speed limit	Basic model (w/o control unit) Fixed at 1800rpm. Can synchronize with external pulse signal within 1500~1800rpm range Basic model and High-end model (with control unit) External rotation speed control from PC is possible Can synchronize with external pulse signal within the designated range
Shutter control	Manual shutter switch inside CSU Momentary switch External control PC control through CSUX1CU-F1/F2(control unit) Max. allowable switch on/off is 3 times/second Hardware control Shutter hardware control is possible with CMOS level signal input to the external input terminal of CSUX1CU-F1/F2(control unit) (Maximum repeated shutter ON/OFF count per second is recommended at 3 times/sec. More frequent ON/OFF could damage shutter.)
Shutter indicator	Red LED lights when open No light when close
Power	<AC adapter> See attached User's Manual 720921 AC Adapter Input: Rated supply voltage : 100 VAC to 240 VAC Frequency : 50 Hz / 60 Hz Input current : 1.3 A or less (at 100VAC / rated output) AC inlet 3P(IEC320 C6) Output: Rated output voltage : 24VDC Rated output current : 2.5A DC plug conversion cable connected Safety standard: UL 60950 / IEC 60950 / CSA 22.2 No.60950 / PSE(Japan) / CCC(China) / EAC(Russia) / NSW(Australia) / SAFETY(Singapore) / BSMI(Taiwan) / KC(Korea) / NOM(Mexico) <CSU Unit> Rated supply voltage :24VDC Rated input current : 1A or less

2. Specifications of Control Unit

Item	Specification
Rotation speed control	Standard model: 1,500~5,000rpm (Max.1,000fps) High-Speed model: 1,500~10,000rpm (Max.2,000fps) Possible for command control of rotation speed setting. Rotation speed setting/reading resolution: 1,500~5,000rpm: 1rpm 5,000~10,000rpm: 2rpm External sync is possible by pulse signal input via external signal input terminal. External output terminal can send 12 pulse per one rotation
DM change	Command control of changing up to 3 DM positions in the DM Block
Shutter control	Command control or external line control of shutter on/off
External I/O control	Digital I/O: TTL Input 4CH, Contact Input 4CH, Open Collector output 4CH, Contact output 4CH External shutter control, synchronization control of CSU rotation speed, synchronization signal output, etc. Analogue input: 8 ports, 0~5V, 8Bit (0~255) , Response 100ms. Analogue output: 4 ports, 0~5V, 8Bit (0~255) , Response 10ms
Filter Wheel control (CSU-X1CU-1/F2)	Command control of filter positions One control unit controls up to two filter wheels
Bright Field/ Camera	Command control of light path switching (confocal/non-confocal)

Item	Specification
port control (CSU-X1CU-B1)	Switch between the 1 st camera port and the 2 nd camera port
Remote interlock key	Installed : Manual shutter switch becomes valid. External shutter control from PC through control unit becomes possible. Uninstalled : Shutter closes, motor stops and manual shutter switch becomes invalid
Communication	Connection: 1.Connect control unit cable to the remote interlock connector of CSU-X1 head 2.Connect control unit and PC through RS232C serial cable 3.Possible to connect and control two control units through daisy chain. Conditions: Speed: 115,200 bps Data bit: 8 Parity check: None Stop bit : 1 Line-feed character: CR Separating character: colon or space Case sensitivity: Yes
Commands	Shown in the command list
Power consumption	Rated supply voltage : 100~240VAC Power voltage range : 90~264VAC Rated supply frequency : 50/60Hz Maximum electric power consumption : 200VA
Accessory	AC Power cord set*1 Ferrite core (only for CSUX1CU-B1) Bright Field1 connection cable (only for CSUX1CU-B1) Bright Field2 connection cable(only for CSUX1CU-B1) CSU connection cable RS232C cable (cross) Remote interlock key for control unit
Dimension	213(W)×132(H)×465(L) mm
Weight	5.2kg

*1 AC power cord set (PSE) is attached in MS code J (Japanese), but no AC power cord set is attached in MS code E (English). In the case of E, certified AC power cord set satisfying following condition has to be prepared according to the plug of main electricity and the safety regulations in the region where the system will be installed.


Rated voltage of 100 to 240V (different from the region)

Minimum Current of 3A

With protective earth

Maximum length of 3m

3. Specifications of Filter Wheel 6P

Item	Specification																								
Installable filters	* Size: $\phi 25\text{mm}$ > * Max. 6 filters * It is necessary to fill open positions with supplied dummy discs for weight balance																								
Moving speed	<table><tr><td>Operation Mode</td><td>High Speed</td><td>Middle Speed (Default)</td><td>Low Speed</td><td>Low Vibration</td></tr><tr><td>Adjacent Position</td><td>33ms</td><td>66ms</td><td>100ms</td><td>200ms</td></tr><tr><td>2 Away position</td><td>58ms</td><td>121ms</td><td>175ms</td><td>310ms</td></tr><tr><td>3 Away Position</td><td>75ms</td><td>176ms</td><td>250ms</td><td>420ms</td></tr></table> <div>CAUTION This table shows typical moving speed of the filter wheel. Actual image acquisition speed depends on your system configuration and communication speed of your computer. In case you find vibration due to the filter wheel operation, please select low-vibration mode.</div>					Operation Mode	High Speed	Middle Speed (Default)	Low Speed	Low Vibration	Adjacent Position	33ms	66ms	100ms	200ms	2 Away position	58ms	121ms	175ms	310ms	3 Away Position	75ms	176ms	250ms	420ms
Operation Mode	High Speed	Middle Speed (Default)	Low Speed	Low Vibration																					
Adjacent Position	33ms	66ms	100ms	200ms																					
2 Away position	58ms	121ms	175ms	310ms																					
3 Away Position	75ms	176ms	250ms	420ms																					
Accessories	* 6 Aluminum disks (dummy filter) to balance weight * Special tool to screw/unscrew filter fixing rings * Connection cable																								
Power supply	Rated supply voltage :24VDC(Motor drive in the control unit) Max. Rated input current : 3.7A(Motor drive in the control unit) Supplied from the control unit (CSUX1CU-F1)																								
Dimension	112(W)×100(H)×226(L) mm(w/o protruding parts.)																								
Weight	1.9kg																								

4. Specifications of Filter Wheel 12P

Item	Specification					
Installable filters	* Size: $\phi 25\text{mm}$ > * Max. 12 filters * It is necessary to fill open positions with supplied dummy discs for weight balance					
Moving speed	<div><div><div>!</div></div><div>CAUTION</div></div> <p>This table shows typical moving speed of the filter wheel. Actual image acquisition speed depends on your system configuration and communication speed of your computer. In case you find vibration due to the filter wheel operation, please select low-vibration mode.</p>	Operation Mode	High Speed	Middle Speed (Default)	Low Speed	Low Vibration
		Adjacent Position	39ms	72ms	98ms	200ms
		2 Away position	62ms	108ms	165ms	300ms
		3 Away Position	86ms	144ms	230ms	400ms
		6 Away Position	154ms	252ms	425ms	700ms
Accessories	Each 12 Stainless(SUS) disks (dummy filter) to balance weight Nuts to fix EM filters Special tool to screw/unscrew filter fixing rings Filter sucking syringe Connection cable					
Power supply	Rated supply voltage :24VDC(Motor drive in the control unit) Max. Rated input current : 3.7A(Motor drive in the control unit) Supplied from the control unit (CSUX1CU-F2)					
Dimension	154(W) \times 154(H) \times 98(L) mm(w/o protruding parts.)					
Weight	2.7kg(Includes stand)					

5. Environment

Item	Specification
Environment	1.Operation temperature and humidity range 15~40°C, 20~75%RH. No condensation. 2. Altitude: Lower than 2000m, Indoor use only 3. General environment -10~60°C 20~90%RH No condensation.

■ Conformity

CE Marking

CSUX1 together with CSUX1CU and CSUX1FW as the compositional unit has declaration of conformity for CE marking. CE Mark is labeled on CSUX, but not on CSUX1CU and CSUX1FW.

■ EMC Directive

- EN61326-1 Class A, Table2

Electrical equipment for measurement, control and laboratory use – EMC requirements-
Part 1: General requirements

- EN61000-3-2

Electromagnetic compatibility (EMC) — Part 3-2: Limits-Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

- EN61000-3-3

Electromagnetic compatibility (EMC) — Part 3-2: 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 subject to conditional connection

■ Low Voltage Directive

- EN61010-1

Safety requirements for electrical equipment for measurement, control, and laboratory use,
Part 1: General requirements

- EN60825-1

Safety of Laser Products, Part 1: Equipment classification and requirements

■ RoHS Directive

- EN50581

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

KC Marking except for CSUX1FW-12P

■ EMC 한국 전자파적합성기준

A급 기기 (업무용 방송통신기자재)

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FDA Laser Safety Regulation

China RoHS 電器電子製品有害物質使用制限管理弁法

Administrative Measure on the Control of Pollution Caused by Electronic Information
Products This is valid only in China.
产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
金属零件	×	○	○	○	○	○
线路板组装	×	○	○	○	○	○
光学零件	×	○	×	○	○	○
螺丝	×	○	○	○	○	○
内置电源	×	○	○	○	○	○
传感器	×	○	○	○	○	○
电动机	×	○	○	○	○	○
○：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下 ×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求						

环保使用期限：



该标识适用于SJ/T 11364 中所述，在中华人民共和国销售的电子电气产品的环保使用期限。只要您遵守该产品相关的安全及使用注意事项，在自制造日起算的年限内，则不会因产品中有害物质泄漏或突发变异，而造成对环境的污染或对人体及财产产生恶劣影响。

注）该年数为“环保使用期限”，并非产品的质量保质期。零件更换的推荐周期，请参照使用说明书。

■ Global Environmental Action

Lead free solder is used.

Lead free glass is used.

No use of Cr+6 for chromium plating

WEEE Directive marking requirement

■ Model and Suffix Code (MS Code)

1. CSU-X1 Basic Specification Codes

Model		Specification
CSUX1		Confocal scanner unit model CSU-X1
Main unit	-A1	High-end Model (Filter wheel 6P)
	-A2	High-end Model (Filter wheel 6P, BrightField)
	-A3	High-end Model (Filter wheel 6P, Second camera)
	-B1	High-end Model (Filter wheel 12P)
	-B2	High-end Model (Filter wheel 12P, BrightField)
	-B3	High-end Model (Filter wheel 12P, Second camera)
	-M1	Basic Model
	-M2	Basic Model(BrightField)
	-M3	Basic Model(Second camera)
Rotation speed	H	High-Speed (10000rpm)
	N	Standard (5000rpm)
	L	Low-Speed (1800rpm)
Language/AC power cord set	-J	Japanese (with AC power cord set)
	-E	English (without AC power cord set)

(*) 1800 rpm is for CSUX1-M1, -M2 and -M3 ONLY

2. DM, EM and fiber selection

Suffix Code		Laser line	Examples of dyes
Dichroic Mirror	/D*000	488nm	EGFP, FITC
	/D*001	532nm	Rhodamine(TRITC), PI
	/D*002	568nm	DsRed, mRFP
	/D*100	445/488	ECFP, EGFP, FITC
	/D*101	442/505/635nm	ECFP, EYFP, Cy5
	/D*102	405/488/561-568/635-647nm	DAPI, EGFP, mRFP, Cy5
	/D*103	400-457/513-515/635-647nm	DAPI, EGFP, EYFP, Cy5
	/D*104	405/488/561nm	DAPI, EGFP, mRFP
EM filter (EM)	/B#100	460/80nm	DAPI
	/B#101	482/35nm	ECFP
	/B#102	520/35nm (for single-line solid lasers)	EGFP, FITC
	/B#104	R514nm(528-650)	EYFP
	/B#105	562/40nm	Rhodamine(TRITC)
	/B#106	617/73nm	mRFP
	/B#107	685/40nm	Cy5
	/B#109	525/50nm	EGFP
	/B#110	488/568nm(503-546,583-700)	EGFP, mRFP
	/B#111	600/37nm	mRFP
Fiber	/FB0	no fiber	
	/FB1	405-650nm	With collimate lens
	/FB2	405-650nm	AFC/APC

*: means DM position

#: means EM position

3. Camera port and microscope adapter selection

Suffix Code		Specification
Camera port	/C101	C mount camera port
	/C102	ENG mount camera port
	/C103	C mount EM camera port
	/C104	C mount 2x EM camera port
	/C201	C mount camera port for second camera
	/C202	ENG mount camera port for second camera
	/C203	C mount EM camera port for second camera
	/C204	C mount 2x EM camera port for second camera
	/C301	C mount camera port (Filter Wheel 12P)
	/C303	C mount EM camera port (Filter Wheel 12P)
	/C304	C mount 2x EM camera port (Filter Wheel 12P)
	/C401	C mount camera port for second camera (Filter Wheel 12P)
	/C403	C mount EM camera port for second camera (Filter Wheel 12P)
	/C404	C mount 2x EM camera port for second camera (Filter Wheel 12P)
Microscope adaptor	/BF01	Olympus (Upright, Inverted)
	/BF02	Nikon Inverted Eclipse TE2000
	/BF03	Nikon Upright Eclipse Ni, FN1 trinocular C-TF or C-TT with Y-TV
	/BF04	Zeiss(Upright, Inverted)
	/BF05	Leica(Upright, Inverted)
	/BF06	Nikon Inverted Eclipse Ti

Your choice of a camera adapter, and a microscope adapter if you add the Bright Field option, will be included in the CSUX1 system, provided you specify with the order code in the list when you place your order.

4. Basic selection of Control Unit

Model	Basic code	
CSUX1CU		
Main unit	-F1	Filter wheel 6P control
	-F2	Filter wheel 12P control
	-B1	Bright field control
Language/AC power cord set	-J	Japanese (with AC power cord set)
	-E	English (without AC power cord set)

5. Basic Specification of Filter Wheel

Model	Basic code	
CSUX1FW		
Filter position	-06P	6 positions
	-12P	12 positions
Channel No.	-01	1 st camera port
	-02	2 nd camera port

Established filters are selectable only for CSUX1FW-06P as a filter wheel set.

Suffix code		Laser line	Example of Dyes
Emission filter (EM)	/B#100	460/80nm	DAPI
	/B#101	482/35nm	ECFP
	/B#102	520/35nm (for single-line solid lasers)	EGFP, FITC
	/B#104	R514nm(528-650)	EYFP
	/B#105	562/40nm	Rhodamine(TRITC)
	/B#106	617/73nm	mRFP
	/B#107	685/40nm	Cy5
	/B#109	525/50nm	EGFP
	/B#110	488/568nm(503-546,583-700)	EGFP, mRFP
	/B#111	600/37nm	mRFP

#: means EM position, 1 to 6

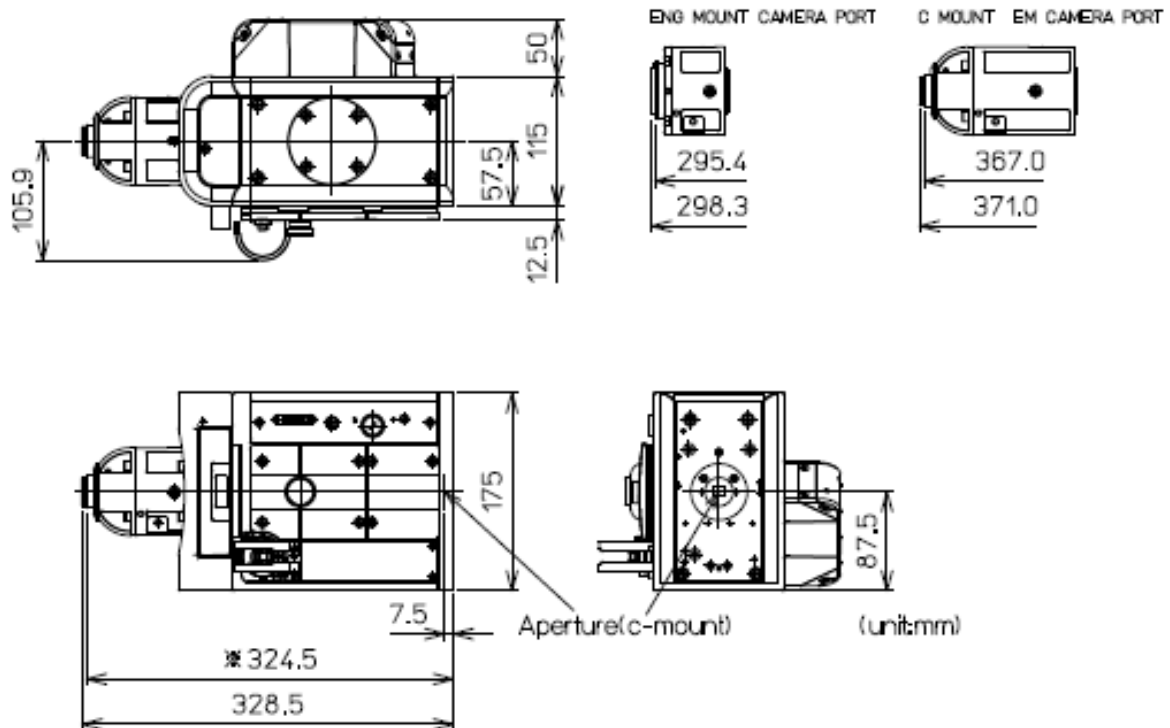
Example :

When a 405nm filter is set at position 1, 488nm (solid laser) at position 2, and 561nm at position 3, the MS code is: CSUX1FW-06P-01/B1100/B2102/B3106

Established filters are also available individually for CSUX1FW-12P.

■ Dimension

1. CSUX1-M1



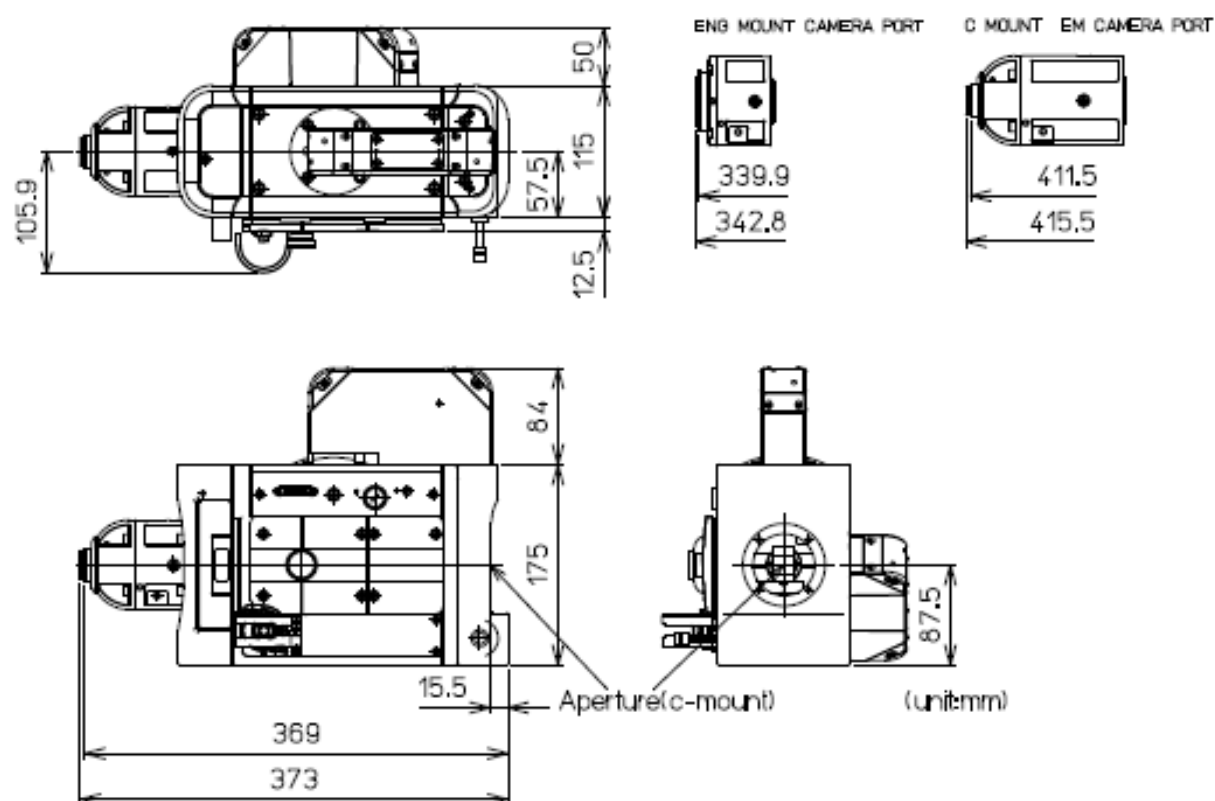
The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	328.5mm
C-mount ENG camera port:	299.4mm
C-mount EM camera port (8X8)	371.0mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

2. CSUX1-M2



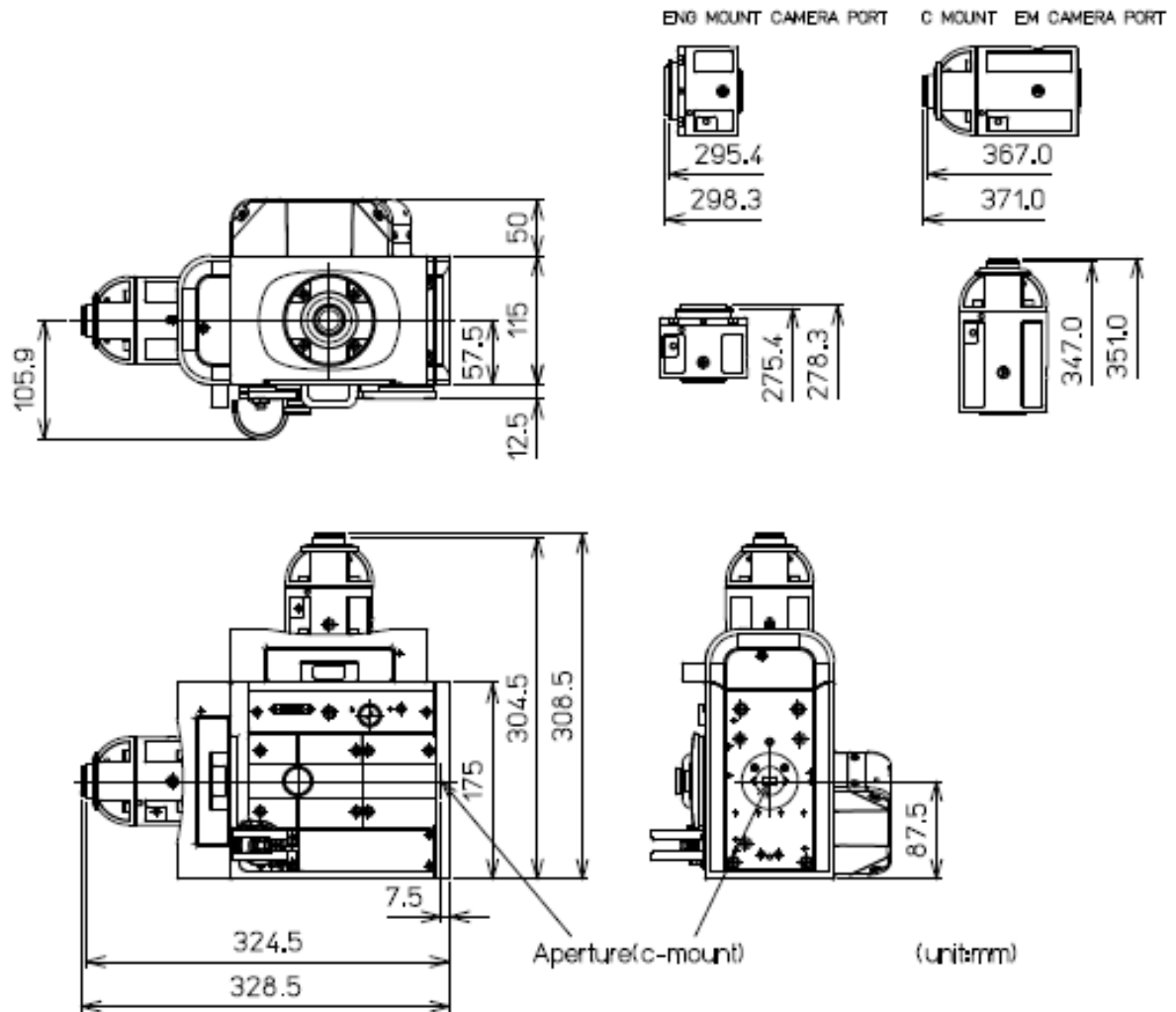
The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	373.0mm
C-mount ENG camera port:	343.9mm
C-mount EM camera port (8X8)	415.5mm

It is necessary to use CSUX1 specific microscope adapter to attach the CSUX1-B2 head to a microscope

3. CSUX1-M3



The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	328.5mm
C-mount ENG camera port:	299.4mm
C-mount EM camera port (8X8)	371.0mm

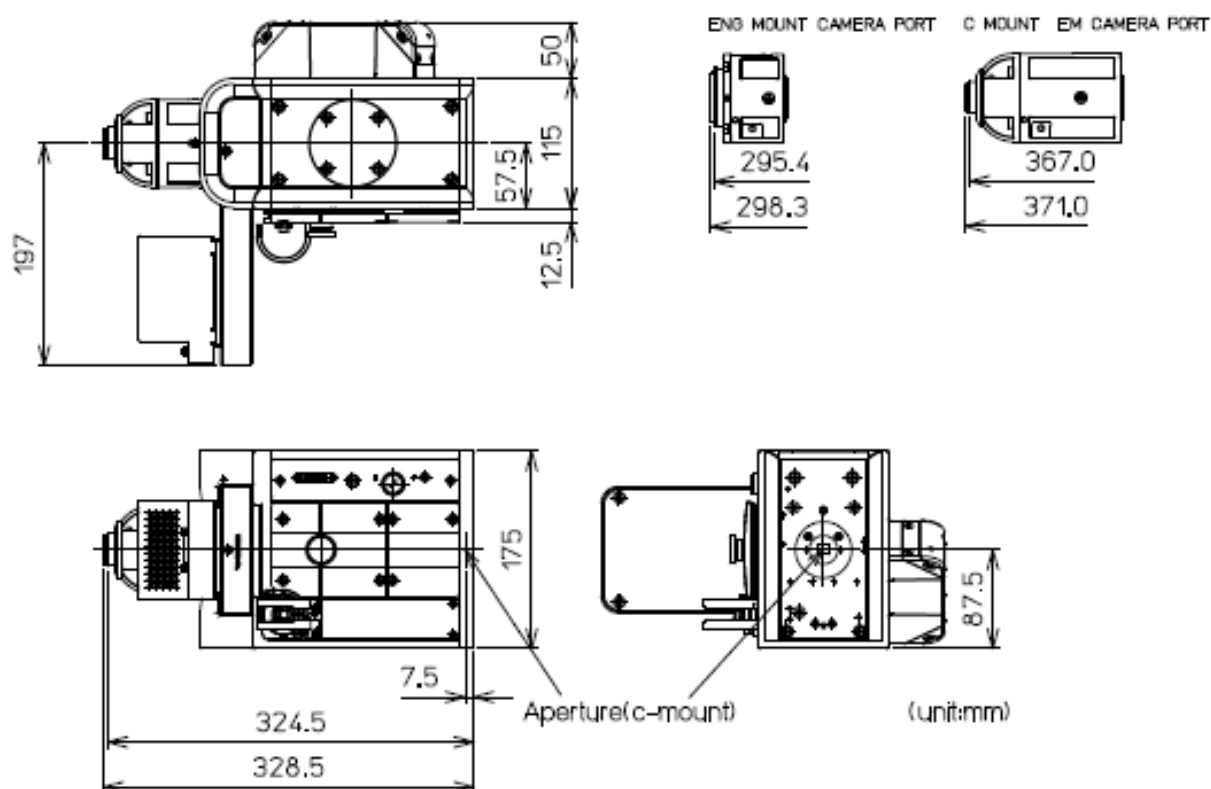
The length of the screw to fix the C-mount camera adapter for the 2nd camera port will be added to the total height of the CSUX1 head.

Actual total heights with each camera adapter are shown below.

C-mount camera port:	308.5mm
C-mount ENG camera port:	279.4mm
C-mount EM camera port (8X8)	351.0mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

4. CSUX1-A1



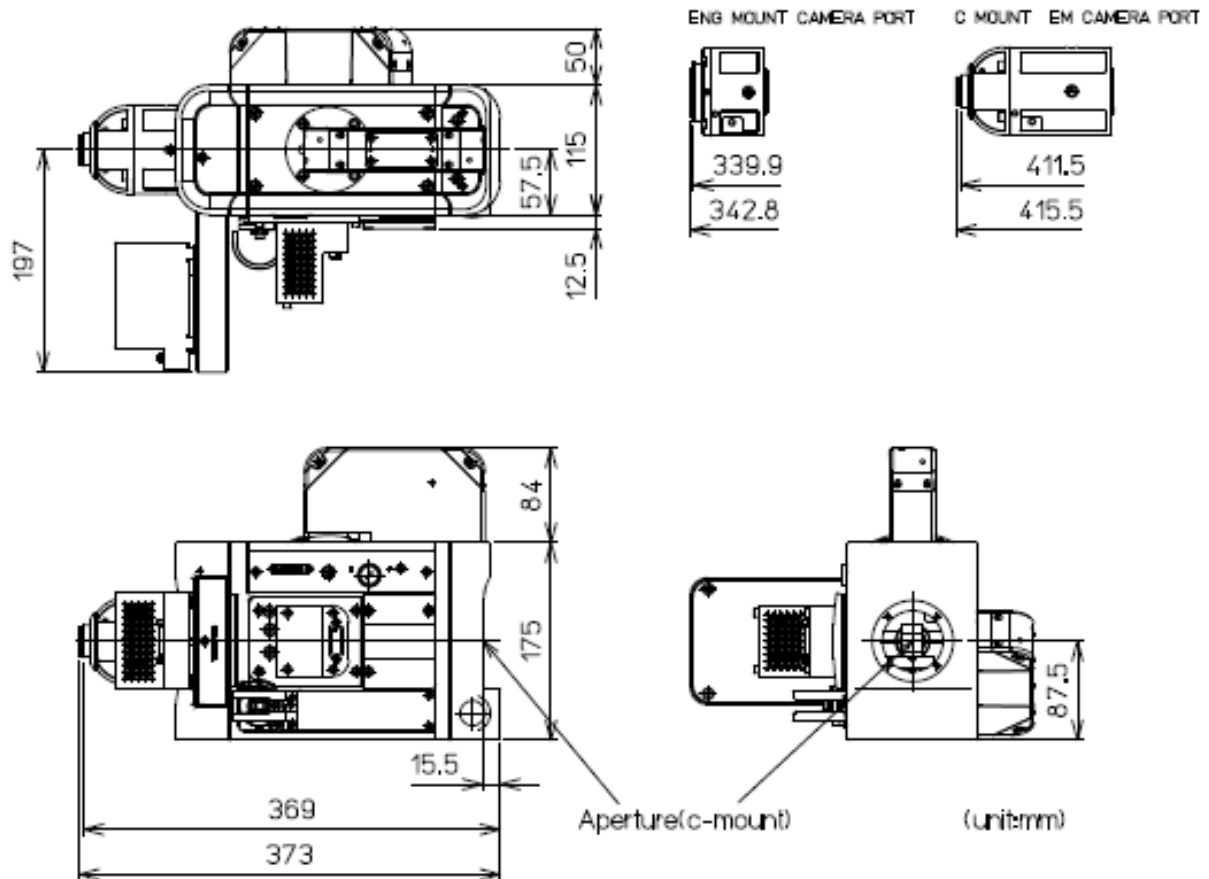
The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	328.5mm
C-mount ENG camera port:	299.4mm
C-mount EM camera port (8X8)	371.0mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

5. CSUX1-A2



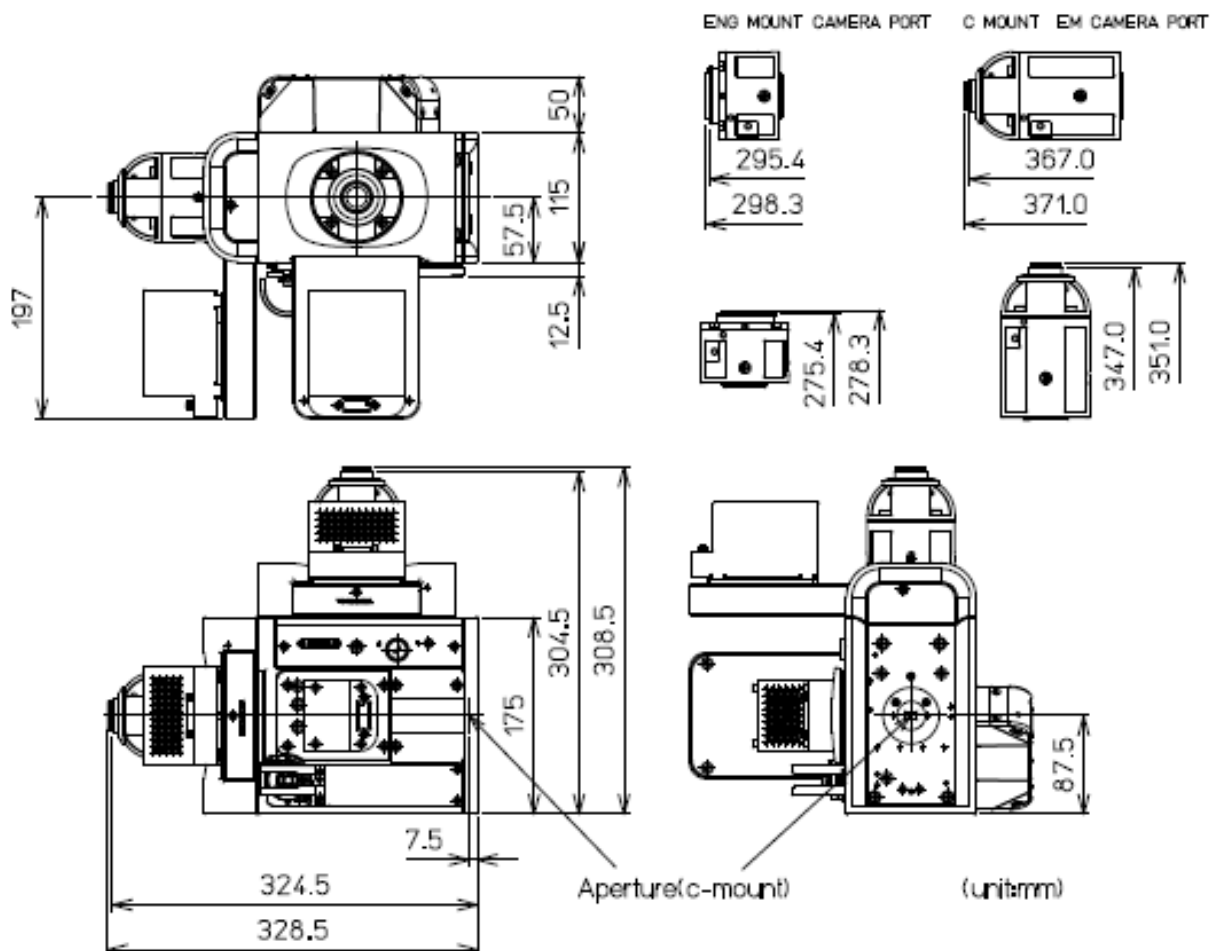
The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	373.0mm
C-mount ENG camera port:	343.9mm
C-mount EM camera port (8X8)	415.5mm

It is necessary to use CSUX1 specific microscope adapter to attach the CSUX1-A2 head to a microscope

6. CSUX1-A3



The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	328.5mm
C-mount ENG camera port:	299.4mm
C-mount EM camera port (8X8)	371.0mm

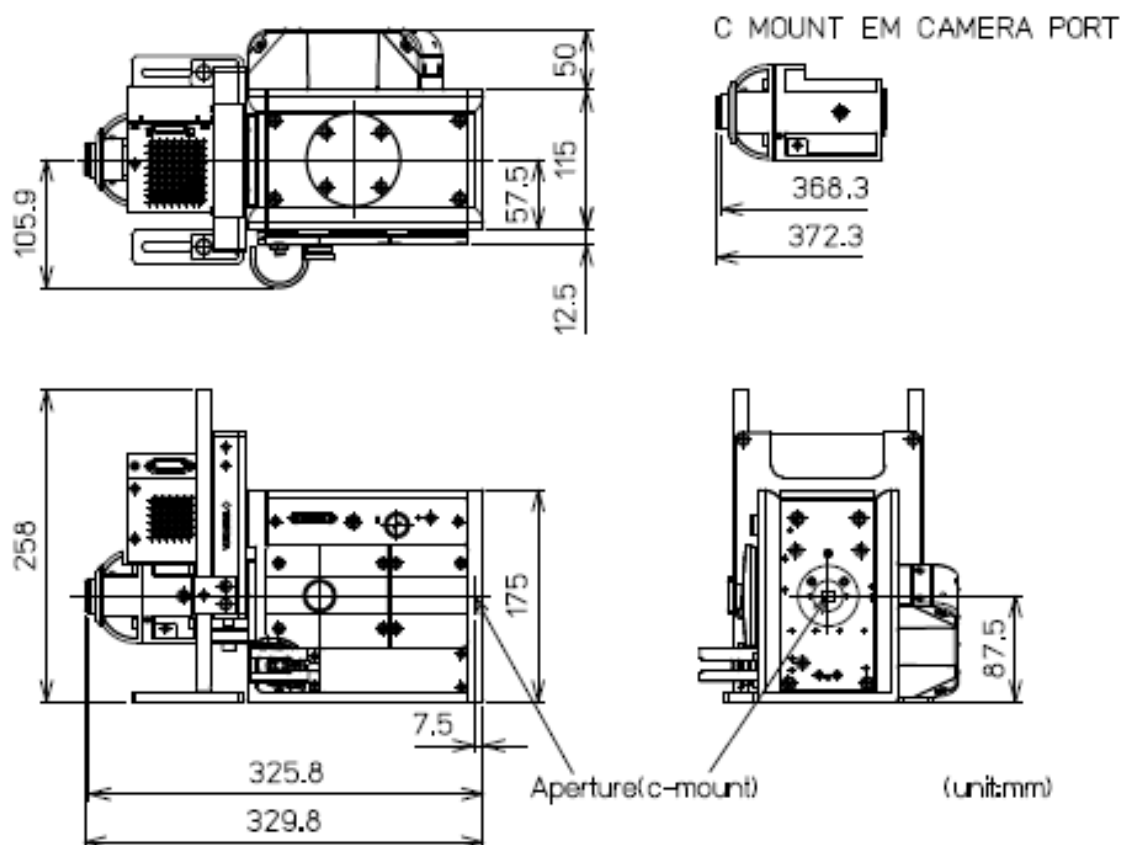
The length of the screw to fix the C-mount camera adapter for the 2nd camera port will be added to the total height of the CSUX1 head.

Actual total heights with each camera adapter are shown below.

C-mount camera port:	308.5mm
C-mount ENG camera port:	279.4mm
C-mount EM camera port (8X8)	351.0mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

7. CSUX1-B1



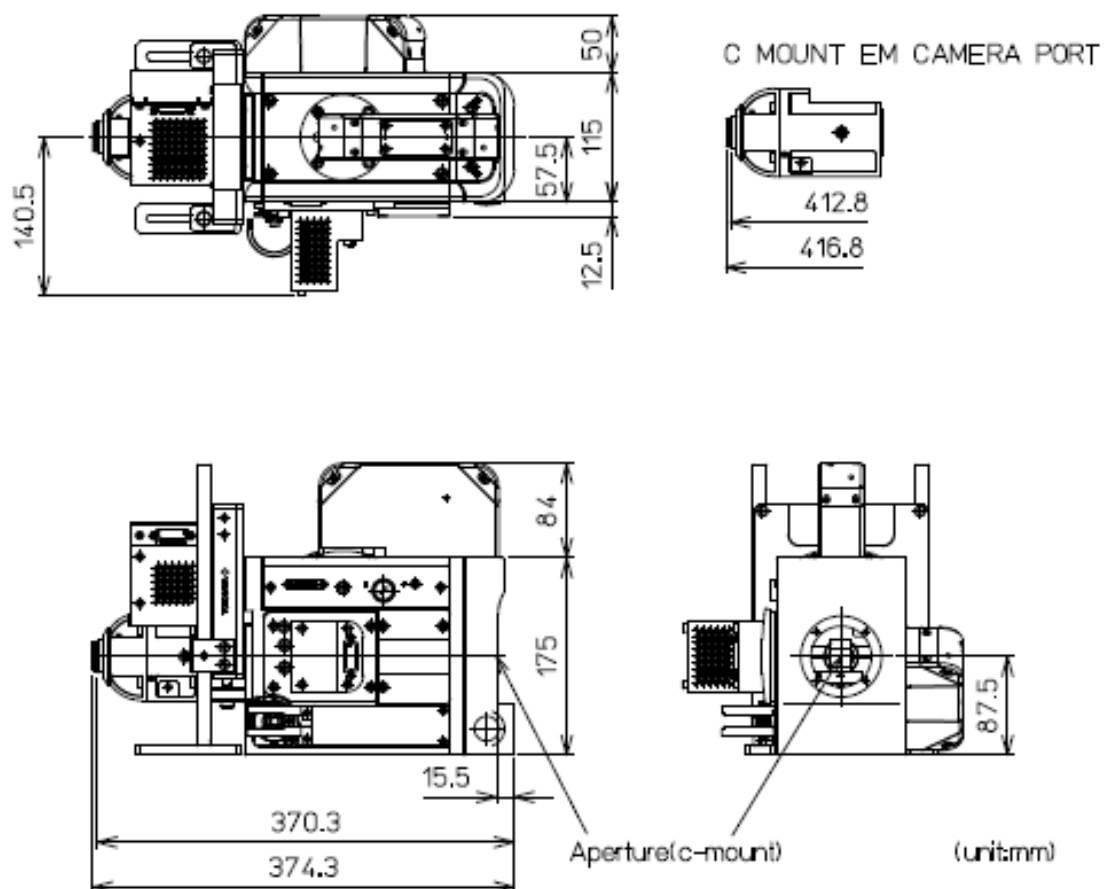
The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	329.8mm
C-mount EM camera port (8X8)	372.3mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

8. CSUX1-B2



The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

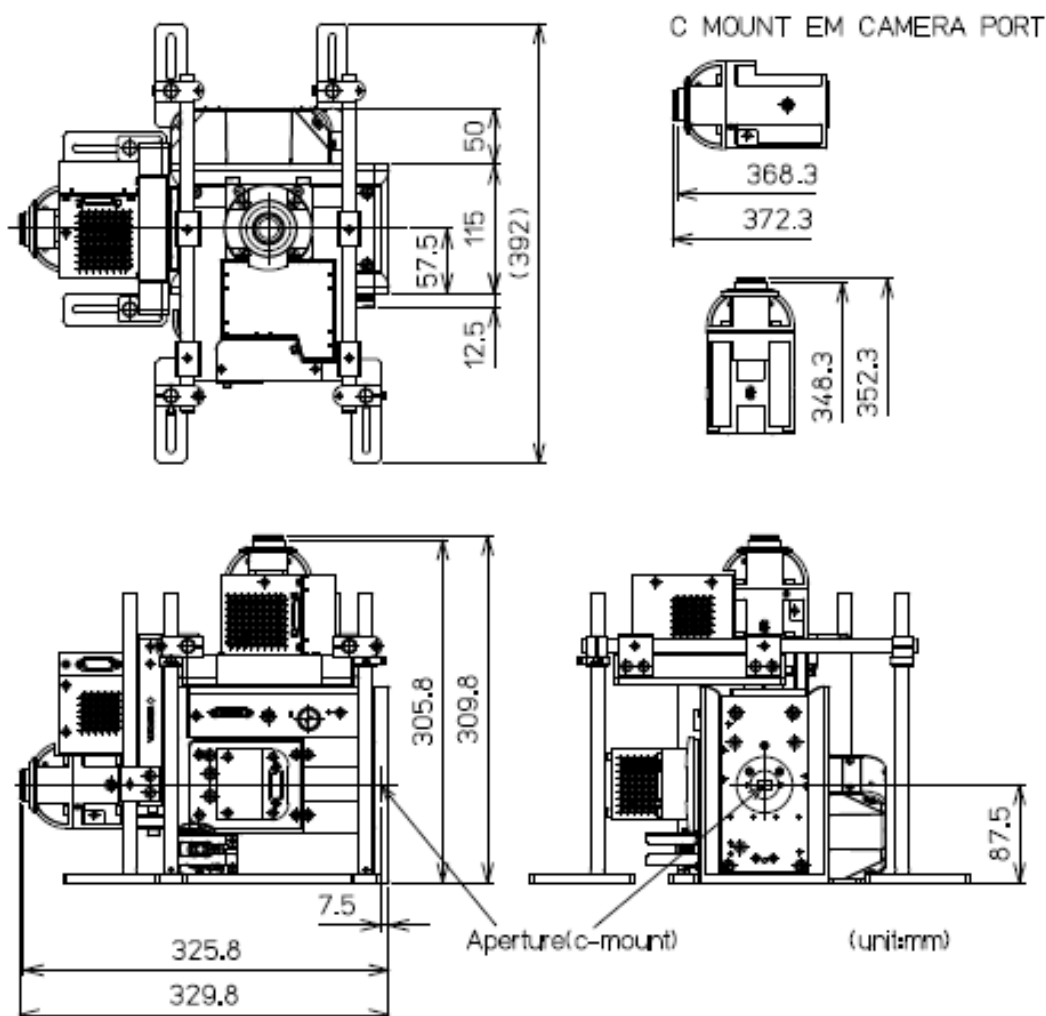
Actual total lengths with each camera adapter are shown below.

C-mount camera port:	374.3mm
C-mount EM camera port (8X8)	416.8mm

CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

It is necessary to use CSUX1 specific microscope adapter to attach the CSUX1-B2 head to a microscope

9. CSUX1-B3



The length of the screw to fix the C-mount camera adapter for the 1st camera port will be added to the total length of the CSUX1 head.

Actual total lengths with each camera adapter are shown below.

C-mount camera port:	329.8mm
C-mount EM camera port (8X8)	372.3mm

The length of the screw to fix the C-mount camera adapter for the 2nd camera port will be added to the total height of the CSUX1 head.

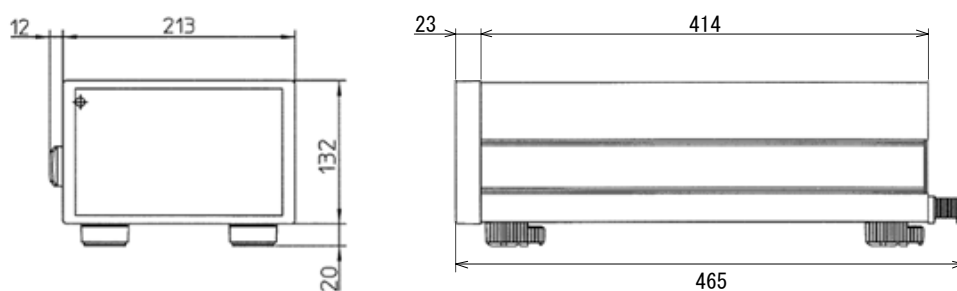
Actual total heights with each camera adapter are shown below.

C-mount camera port:	309.8mm
C-mount EM camera port (8X8)	352.3mm

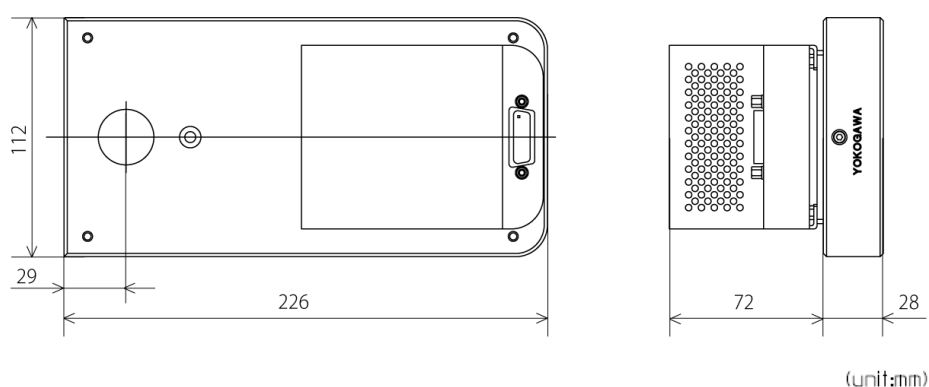
CSUX1 head will be attached to a microscope with the microscope specific direct C-mount adapter supplied with your microscope.

10. CSUX1CU

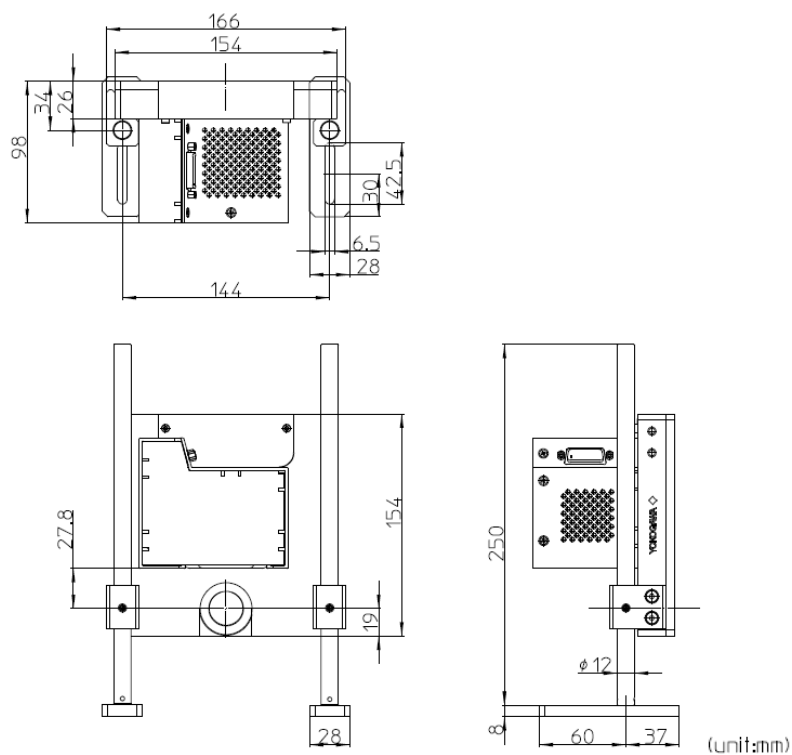
Same dimension for all model



11. CSUX1FW-06P



12. CSUX1FW-12P



■ Laser Safety Precautions

This instrument is classified as a laser hazard CLASS 3B instrument.

■ Trade Mark

CSU is the registered trade mark or trade mark of Yokogawa Electric Corporation.

■ Contact Information

Please contact the dealer for inquiries about this product.

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