User's Manual

FIELDEYE II

FC33E (Explosion-Proof)
FC33U (Outdoor)
Full HD IP type
Pan Tilt Zoom CCTV Camera

Safety Precautions

The precautions herein are intended to ensure the safe use of the product and prevention of possible injury and damage to the user.

The precautions are classified into "Warning" and "Caution," depending on the results assumed to arise if neglected, to clarify the degree and urgency of the injury or damage.

Both are important for safety. Thus be sure to observe them.

⚠ **WARNING** Denotes a possible hazard that could result in death or serious injury to personnel
Indique un danger potentiel pouvant entraîner la mort ou des blessures graves au personnel.

⚠ **CAUTION** Denotes a possible hazard that could result in human injury or physical damage.
Indique un danger potentiel pouvant entraîner des blessures ou des dommages physiques.

■Pictogram examples

Pictogram △ indicates a hazard, warning, or caution.

In the pictogram, a specific precaution is shown. (The pictogram on the left shows "shock hazard.")

Shock hazard

Pictogram ⊘ indicates a prohibited action.

In or near the pictogram, a specific precaution is shown. (The pictogram on the left shows "disassembling prohibited.")

Disassembling prohibited

WARNING

- This product has been certified as an explosion-proof type device. Severe restrictions are imposed on the structure, installation location, external wiring, maintenance, repair, etc. of this device. Be careful as dangerous conditions may occur if these restrictions are infringed. Prior to handling, be sure to read "Precautions on TIIS Explosion-Proof Type Devices" described at the end of this manual.

- In factories/facilities, this product should be handled only by persons who have completed appropriate training courses.

- When accessing a pressure-resistant and explosion-proof device and its peripheral equipment located in a hazardous area, prevent a spark to occur due to mechanical contact.

- *Ce produit a été certifié comme un appareil de type antidéflagrant. Des restrictions sévères sont imposées à la structure, au lieu d'installation, au câblage externe, à la maintenance, aux réparations, etc. De cet appareil. Faites attention car des conditions dangereuses peuvent survenir si ces restrictions ne sont pas respectées. Avant toute manipulation, veillez à lire les « Précautions relatives aux appareils de type antidéflagrant TIIS » décrites à la fin de ce manuel.*

- *Dans les usines/installations, ce produit doit être manipulé uniquement par des personnes ayant suivi des formations complètes et appropriées.*

- *Lorsque vous accédez à un appareil résistant à la pression et antidéflagrant ainsi qu'à son équipement périphérique situé dans une zone dangereuse, évitez qu'une étincelle ne se produise en raison d'un contact mécanique.*

Possible explosion or fire

Fire hazard

Use the explosion-proof CCTV camera (FC33E) in accordance with "Precautions on Explosion-Proof Type Devices" described at the end of this manual. Outdoor type CCTV camera FC33U is not explosion proof. Using it in a hazardous area with explosive gases present may result in an explosion or fire.

Utilisez la caméra CCTV antidéflagrante (FC33E) conformément aux « Précautions relatives aux appareils de type antidéflagrant » décrites à la fin de ce manuel. La caméra CCTV pour l'extérieur FC33U n'est pas antidéflagrante. Si vous l'utilisez dans une zone dangereuse avec des gaz explosifs, cela pourrait provoquer une explosion ou un incendie.

Disassembling prohibited

Do not disassemble or modify the product.

Ne pas démonter ni modifier le produit

Possible electrical shock]

Shock hazard

Do not touch a connector or wiring with wet hands.
Do not touch the inside of the product with a piece of metal.
Do not splash water on the product.

Ne touchez pas un connecteur ou un câblage avec les mains mouillées.
Ne touchez pas l'intérieur du produit avec un morceau de métal.
Ne projetez pas d'eau sur le produit.

Disassembling prohibited

Do not disassemble or modify the product.
Ne pas démonter ni modifier le produit.

Possible injury

There are protrusions and sharp edges inside and outside of the product. Exercise care to avoid bruises or cuts.
Il y a des saillies et des arêtes vives à l'intérieur et à l'extérieur du produit. Faites attention afin d'éviter les ecchymoses ou les coupures..

Sharp edges

There are moving parts inside and outside of the product. Exercise care to prevent your fingers from getting caught.
Il y a des pièces mobiles à l'intérieur et à l'extérieur du produit. Faites attention à ne pas vous coincer les doigts.

Moving parts

Possible turnover or falling off

Do not step onto the product. You may slip and could turn over or fall off the product.
Ne marchez pas sur le produit. Vous pourriez glisser et retourner ou faire tomber le produit..

Slip hazard

Do not step onto the product. The product may fall over or deform, and you may consequently turn over and fall off the product.
Ne marchez pas sur le produit. Le produit pourrait tomber ou se déformer et, par conséquent, vous pourriez retourner ou faire tomber le produit..

Turnover hazard

Possible electrical shock or fire
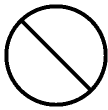
Do not operate the product with wet hands.
Do not use damaged cables and wiring accessories

N'utilisez pas le produit avec les mains mouillées.
N'utilisez pas de câbles ni d'accessoires de câblage endommagés..
..

Shock hazard

Do not use the product with a power supply voltage other than that specified.
Do not use damaged cables and wiring accessories.

N'utilisez pas le produit avec une tension d'alimentation autre que celle spécifiée.
N'utilisez pas de câbles ni d'accessoires de câblage endommagés.

Prohibited

Possible injury due to falling over or off the product

Do not place the product on an unstable base or un level place, or the like (Be sure to secure the product with bolts of the specified size.)
Ne placez pas le produit sur une base instable, sur une surface inégale ou similaire (assurez-vous de fixer le produit avec des boulons de la taillespécifiée).

Prohibited

Possible damage to devices (common)

Prohibited

Do not install the product on an unstable base or a table of insufficient rigidity. Doing so may damage the product due to resonance, falling off, or another cause.

N'installez pas le produit sur une base instable ou sur une table de rigidité insuffisante. Cela pourrait endommager le produit en raison d'une résonance, d'une chute ou d'une autre cause.

Avoid subjecting the product to mechanical shock. Do not put anything on the product. Do not step on the product. This product does is not of a waterproof design. Do not dip or submerge it in water. Do not test the product using a mega-ohmmeter. Such test may damage the product's semiconductor circuits.

Évitez de soumettre le produit à des chocs mécaniques. Ne posez rien sur le produit. Ne marchez pas sur le produit. Ce produit n'est pas étanche. Ne le plongez pas dans l'eau. Ne testez pas le produit avec un mégohmmètre. Le test peut endommager les circuits semi-conducteurs du produit.
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Revision History

February 2018	1st Edition: (Rev.00): Limited released
September 2018	2nd Edition: Published newly
October 2018	3rd Edition: Cable glands of main-body were changed
December 2018	4th Edition: Name plate change due to factory's change
October 2020	5th Edition: CSA Certification
June 2021	6th Edition: Cable Terminal Treatment
July 2021	7th Edition: 10RoHS directive compliance, and Software license terms
December 2021	8th Edition: Change the notation of ATEX certification
May 2022	9th Edition: Updated EMC and Safety standards
August 2022	10th Edition: Support for Microsoft Edge

Trademarks:

Every trade or company name used in this document is a trademark or registered trademark of the company.

⚠ **CAUTION**

Do not disassemble or modify the product.

Ne démontez pas et ne modifiez pas le produit.

FC33E (Explosion-proof type)
FC33U (Outdoor type)
Full HD IP type
Pan Tilt Zoom CCTV color Camera

Contents

1. Introduction

Thank you for purchasing Pan-Tilt Zoom Type Camera FIELDEYE FC33E/FC33U.

This User's Manual describes handling precautions and the installation, cabling, and operation instructions. Read this manual to take full advantage of the product's functions and use it properly.

If any modifications of the specification, construction, or a part or component used may be expected to negatively affect the functionality or performance, such modifications will not be incorporated into this manual in some cases.

We assume no responsibility if this equipment may be unable to achieve the predetermined function due to a repair that you made without our prior approval.

If the product fails, contact our service network, presenting the specific details and development of the failure together with the model name, specification code, and the instrument code displayed on the product's nameplate.

Notice:
➤ The whole or any part of this manual may not be reprinted or reproduced without our prior written permission
➤ The information contained in this manual is subject to change without notice
➤ All reasonable effort has been made to ensure the accuracy of the contents of this manual. However, if you have any questions or find any errors, omissions and so on, please inform our representative from whom you purchased the product or us sales department.
➤ Regardless of the above mentioned, we assume no responsibility for any consequences resulting from product operation that is based on this manual.
➤ The specifications covered by this manual are limited to those for the standard type under the specified model number break-down and do not cover custom-made instruments. When products whose suffix code or optional codes contain code "Z" and an exclusive document is attached, please read it along with this manual.

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2. Handling Precautions

This equipment is thoroughly inspected prior to shipping. Once you receive it, visually check the appearance of the equipment to ensure that it has not been damaged. In addition, check that the model name displayed on the equipment's nameplate is as ordered by referring to the "List of model names and codes" and "Specifications for options" tables included in Section 3.3.

The following table summarizes the components of this equipment:

Table 2-1 Standard attachment list

Name	Description
Pan-Tilt Type Camera Body	Check that the model name is that of the model being ordered.
Standard accessories (Supplied collectively in a single bag.)	• HEXAGON WRENCH (LARGE SIZE : 3mm) : 1 • HEXAGON WRENCH (SMALL SIZE :1.5mm) : 1. • Copper foil tape : 1 (length:3cm) • CABLE BUNDLED BAND : 4 • GUIDEAUNCE SHEET FOR NETWORK CONFIGURATION : 1 • List of accessories : 1
Software (CD-R)	FieldEye II ActiveX for client PC (K7500XN)
User's Manual (this document)	IM 85A7C03-16E

   * The User's Manual may not be attached, depending on the requirements at the ordering.

Since this chapter describes cautions required for handling, Read it carefully and thoroughly first of all.

For any information not found in this chapter, see the relevant sections.

2.1. Transportation Precautions

To protect the equipment from damage that may arise due to a transportation accident, it should be transported to the installation site in its original state of shipment as far as possible.

2.2. Storage Precautions

2.2.1. Select a storage location meeting the following conditions:
(1) There is no exposure to rain or water.
(2) There is minimal vibration or shock
(3) The temperature and humidity should be as close as possible to a normal temperature and humidity (approximately +25°C and 65% RH)
(4) Temperature: −40°C to +60°CHumidity: 5% to 95% RH (at +40°C)
(5) When storing this equipment, keep it in its original packing state as far as possible

2.3. Precautions for Installation Location

This camera is designed to withstand severe environmental conditions.
However, care should be taken for the followings to ensure long term stability of camera:

2.3.1. Ambient temperature

Avoid installing the camera in a location with severe temperature gradient or significant temperature fluctuation. If the camera is exposed to radiant heat, provide heat insulation or improve ventilation.

2.3.2. Atmospheric conditions

Avoid installing the camera in a corrosive atmosphere. If it is used in a corrosive atmosphere, ensure that it is well ventilated.

2.3.3. Shock and vibration

This camera is also designed to withstand shock and vibration. However, it should be installed in a location with minimal shock and vibration.

2.3.4. Natural disasters

Take measures for natural disasters including earthquakes, wind and flood damages, and lightning strikes. This camera contains a built-in arrester; however because it only constitutes the minimum configuration, it is recommended that an additional lightning protector such as an arrester be provided.

2.4. Precautions on pressure resistance and explosion prevention

The explosion-proof type FC33E has been produced so that it can be used in a hazardous atmosphere where explosive gases listed in the "Factory Electric Facility Explosion Prevention Guidance" occurs.

To retain safety, sufficient attention should be paid to installation, wiring, etc. with regard to a pressure-resistant and explosion-proof device. In addition, restrictions are imposed on maintenance and repair thereof for safety. Be sure to read "Attachment A: Precautions on Pressure-Resistant and Explosion-Proof Type Devices" described at the end of this manual.

3. Overview

FC33E (Explosion-Proof) / FC33U (Outdoor) Pan Tilt Zoom type Color Camera is small and lightweight, and allows for installation in a small space. A web camera server function for connecting to IP network is being installed inside. It has an intelligent panning-tilting movement and can store preset points. It is also available for wide-range applications, such as surveillance, monitoring and installation diagnosis and so on, with its excellent environmental resistance.

3.1 Main Features

Environmental resistance and downsizing

The product weight has been significantly reduced by (1) increasing the packaging density of the exterior and internal stainless structures of SUS316L that are superior, in strength and corrosion resistance, to the conventional models and thus decreasing the gross volume (ratio to the conventional company products: approximately 2/3), and (2) reducing the thickness through use of stainless casting for the exterior.

In addition, high corrosion resistance has been implemented by using electrolytic grinding for + surface treatment.

●High sensitivity and high magnification

The sensitivity of this camera is so high that it can shoot objects without its dedicated lighting even in a location where conventional models could not shoot them.

The zoom magnification has also been increased by a factor of 30 for optical zooming and 12 for electronic zooming, thereby shooting more remote, smaller objects clearly.

●Excellent environmental resistance

The operating temperature range of −40 to +60°C with waterproof (IP Grade: IP66) and dustproof features ensure that is available in severe environmental conditions in a process control plant or factory. In addition, both the camera case and body are made up of castings and have a robust construction.

3.2 Component Names and Functions

Model FC33 is capable of outputting image signals from the built-in camera block while performing actions such as panning, tilting, or zooming by using it in combination with various controllers. Figure 3.1 shows the FC33 component names.

Shade (option)

Main case

Wiper (option)

Main nameplate

Base box*

Tag plate (**TAGNO**) (option)

Hood (option)
Full HDIP type is different appearance

Camera housing

Composite Cable:
: Ethernet and Relay connection;
: Std. length 5 m, **/L10** (option) is available.

Power cable:
→Both types: Std. length 5 m, **/L10** (option) is available
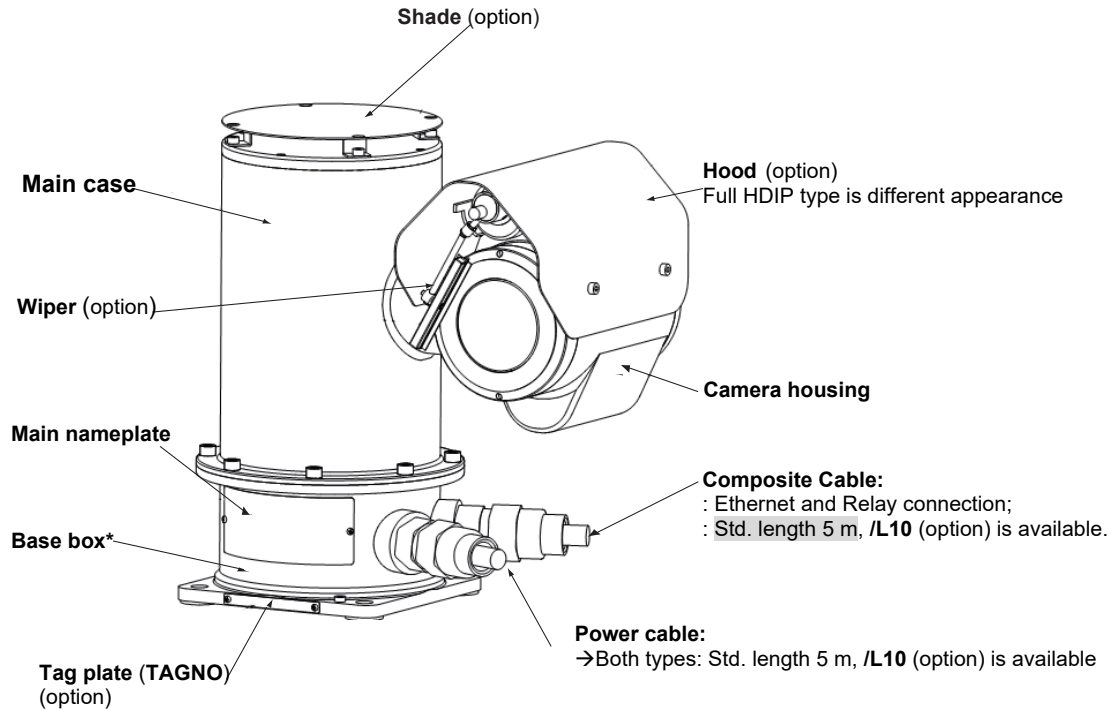
Figure 3.1   Components ame

Table 3-1 Components function

Name	Function
Base box	Equipped with a DC power supply and noise filter.
Main case	Made up of castings so that this is available in severe environmental conditions, including the waterproof and dustproof features. Houses main components such as the pulse motor, warm gear, and signal processing circuit. The case is rotated by panning.
Shade (option)	Installed on the top of the main case, and protects the top from direct sunlight.
Camera housing	Housing of camera block.
Hood (option)	Installed on the top of the camera housing, and protects the camera from wind, rain, and snow.
Wiper (selected in basic specification)	Cleans the window glass surface. Remotely operable.
Power cable	Cable through which power is supplied to FC33U (see Section 5, "Warning").
Composite cable	A collection of Ethernet and Relay contact signal

3.3 Standard Specifications

● **Video**

Image Sensor	1/2.8" CMOS
Effective Pixels	Up to 1920x 1080 pixels (2.13 Megapixels)
Video S/N	> 50 dB
White Balance	ATW (auto tracing white balance)
Zoom Magnification	(30x optical) x (12x digital)
Lens	f: 4.3 mm – 129 mm, F1.6 - 4.7 (with auto focus)
Angle of View	63.7° (wide-angle) to 2.3° (telephoto)

Minimum illumination

Normal Sensitivity	ICR-Off mode	0.1lux (1/30 sec, 50%)
		0.013 lux (1/4 sec, 1/3 sec, 50%)
	CR-On mode	0.006 lux (1/30 sec, 50%)
High Sensitivity	ICR-Off mode	0.01 lux (1/30 sec, 50%)
		0.0013 lux (1/4 sec, 1/3 sec, 50%)
	ICR-On mode	0.0015 lux (1/30 sec, 50%)
		0.0008 lux (1/4 sec, 1/3 sec, 30%)

● **I/O**

Interface	10BASE-T/100BASE-TX, IEEE 802.3i/u
Access control	Administrator / User (when network login via PC)
Communication	ONVIF® (Profile S),
	Fieldeye command (Web application for Full HDIP type)
Supported Protocols:	IPv4, TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, NTP, SNMP
Delivery System	Unicast/ Multicast
Priority Stream	Up to 2 client IP address (TCP/IP stream)

● **Video encoding function**

No.	Item	Description	Note
1	Video encode system	JPEG / H.264	
2	Image size	Refer to table 4.1 Image Size	
3	Frame rate	1 fps ～60 fps	
4	Bit rate	196kbps～20Mbps	CBR/VBR
5	Profile	Base Line/ Main / High	

● **Main body**

Housing Material　　　Die Casted SS316L (Stainless steel) no welding parts
Finish　Electrolytic Polishing
Weight　20kg (except cable(s))
Cable Entry (2-port)
- For Composite-cable input (LAN-cable and Relay-connection lines). (Std. length: 5m)
- For Power-cable input (Std. length: 5m)

● **Mechanical**

Pan Operation	360° continuous
Tilt Operation	180° (0±90°)
Rotation Speed	Up to Pan-tilt 40°/sec
Installation style	Upright/Inverted

● **Electrical**

|	
Power Supply (rated value):	100VAC to 240VAC, 50Hz or 60Hz
Power Consumption	30W (heater on) / 24W (heater off), 60VA (0.6A)
Relay driving circuit	Single (1) dry contact, Max: DC 48 V, 100mA

●Environment

Operation Temperature/Humidity	−40°C to +60°C (-40°F to +140°F) / 20 to 95 %RH (non-condensation)
Storage Temperature/Humidity	−40°C to +60°C / 5% to 95% RH (at 40°C)
Installation altitude	2000 m (max)

●Others

Preset points	128 point, Preset Accuracy: ±0.25° (PAN/ TILT)
Defroster	Standard equipment

●Cable Gland

Type CGW-16 manufactured by Japan Safety Systems Inc. of 2 are being attached into the Base box, as shown below:
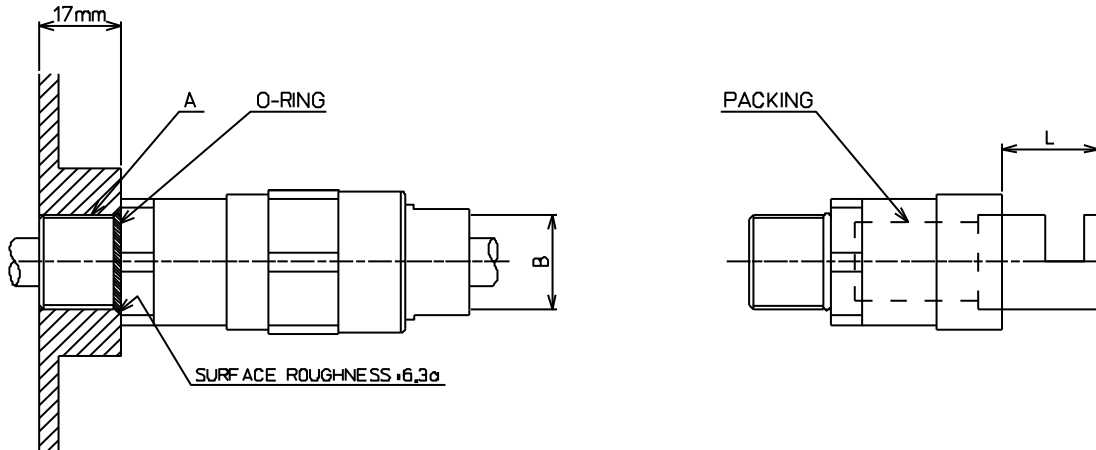
Specification: A, B and L of the **CGW-16** above:

A	B	Packing Internal Diameter [mm]	Range of Cable Outer diameter [mm]	Cable Outer diameter to be used [mm]	L **(Note)	Material
➤Nominal designation of screw thread: M20 ➤Pitch of thread: 1.5 mm ➤Quality of FIT: 6H6g	**ATEX/IECEx (FC33E-D*E)** ➤Nominal designation of screw thread: M20 ➤Pitch of thread: 1.5 mm ➤Threads engaged:11.8 mm +1.8,-0 ➤Depth of engagement:7.9 +1,-0	φ10	φ9 to φ10	φ9.4	16.56 mm	➤Body: SUS316L ➤Packing: SILICONE ➤O-ring: SILICONE
	JAPAN ➤Nominal designation of screw thread: G1/2 ➤Pitch of thread: 1.814 mm ➤Threads engaged:11.8 mm +1.8,-0 ➤Depth of engagement:6.5 +1,-0	φ12	φ11 to φ12	φ11.6	16.37 mm	

(Note) : *PACKING TIGHTENING LENGTH*

Figure 3.2   Cable Glands on the Base box

●Certifications (FC33E)

ATEX Certificated:	CML 14 ATEX 1097X

Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
Equipment **FC33E*** Pan & Tilt CCTV Cameras**
EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-31:2014
Type of Protection and Marking code:

      Ex db IIC T5 Gb
      Ex tb IIIC T100°C Db
      FC33E-***1*/*: Ambient Temperature: -40°C to +60°C
      FC33E-***1*/*: Rating: 100VAC to 240VAC ~0.6A 50/60Hz

IECEx Certificate of Conformity	IECEx CML 16.0096X

Equipment: FC33E*** Pan & Tilt CCTV Cameras
Type of Protection: Flameproof "db", Dust Ingition "tb"
Marking

      Ex db IIC T5 Gb
      Ex tb IIIC T100°C Db
      Ta = -40°C to +60°C
Standards:
IEC 60079-0:2017 Edition 7.0, IEC 60079-1:2014 Edition 7.0, IEC 60079-31:2013 Edition 2

CSA Explosion-proof approval:	Certificate 80009215

Type Designation   FC33E - * a b c * /*
PRODUCTS   FC33E - ***2*/*:
                                   (*Where, 2 above:* CSA CERTIFICATION)
CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations
      Ex db IIC T5 Gb
      Rated 100 Vac to 240 Vac, 50/60 Hz, ambient range: -40°C to 60°C
      Pan Tilt Zoom Type CCTV Cameras Models FC33E***

APPLICABLE REQUIREMENTS:
CAN/CSA-C22.2 No. 60079-0:19, CAN/CSA-C22.2 No. 60079-1:16,
CAN/CSA-C22.2 No. 61010-1-12,
CSA C22.2 No. 94.2-15

CONDITIONS OF ACCEPTABILITY:
1. The above models are permanently connected,
                        Equipment Class I, Pollution Degree 2, Overvoltage Category II
2. Mode of operation: Continuous
3. Environmental Conditions: -40 to 60°C, 2000 m max., 20 to 95% RH
4. This equipment employs flamepath joints that have not been tested at the maximum joint dimensions and minimum flamepath lengths permitted by the standard.
When the equipment is to be repaired, maintained or inspected, contact the manufacturer for information on dimensions.
5. Installation must comply with Canadian Electrical Code wiring method for Zone 1.

NOTES:
1. For Canadian Installations, housing of the Base box must be bonded to ground according to Section 18 of the CEC, Part 1
*

●**Other Certifications (FC33E/U)**

Degree of Protection of enclosure: IP66
LVD*   EN61010-1(2010) +A1:2019 (Indoor/Outdoor use)
                                   Pollution degree II, Overvoltage Category I
RoHS*   EN IEC 63000:2018

* Only for FC33U Cable Entries code is 0 or 1, or when FC33E Cable Entries code is 1.

CSA Certificate: 80012590:
Product CLASS 2252 06 – PROCESS CONTROL EQUIPMENT
Pan Tilt Zoom Type CCTV Camera,
Model nos. FC33U and FC33E series, rated 100-240 V ac, 50/60 Hz, 0.6 A maximum, Type 4X
Notes:
1. The above models are permanently connected, Equipment Class I, Pollution Degree 2 Overvoltage Category II
2. Mode of operation: Continuous
3. Environmental Conditions: -40 to 60°C, 2000 m max., 20 to 95% RH

●**EMC Conformity Standards(FC33E/U):**

CE[*1]   EN 55032:2015+A11: 2020 Class A
                                   EN 50130-4:2011+A1 :2014
                                   EN 61000-3-2: 2014
                                   EN IEC 61000-3-2: 2019
                                   EN 61000-3-3: 2013
                                   EN 61000-3-3:2013+A1:2019

RCM[*1]   EN 61326-1:2013 Class A Table 2
                                   EN 55011:2016+A1:2017 Class A Croup 1

FCC[*2]   FCC Part15.107(2016.10) Class A
                                   FCC Part15.109(2016.10) Class A

ICES[*2]   ICES-003 Issue 6(2016.01) Clause 6.1 Table 1 Class A
                                   ICES-003 Issue 6(2016.01) Clause 6.2.1 Table 4 Class A
                                   ICES-003 Issue 6(2016.01) Clause 6.2.2 Table 6 Class A

*1 Only for FC33U Cable Entries code is 0 or 1, or when FC33E Cable Entries code is 1.
*2 Only when Cable Entries code 2.

●**WEEE**
> *This product is designed only for use in large-scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply.*
> *This product should be disposed in accordance with local and national legislation/regulations. The WEEE Directive is only valid in the EU.*

● **Full HDIP type. Figure 3.3**

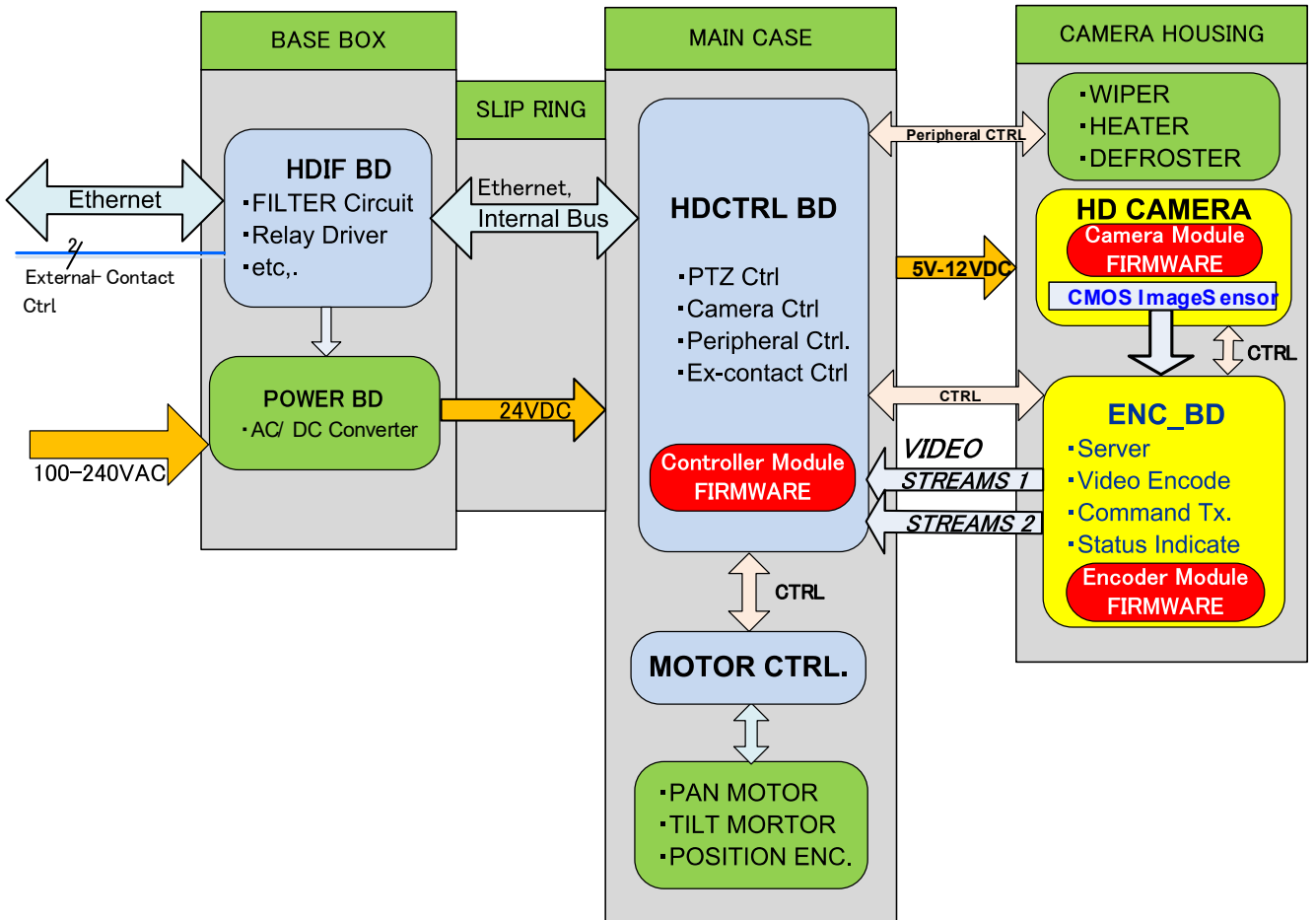● **Figure 3.3 contains internal block diagrams (overview and detailed diagrams)**

<Configuration diagram, overview>

Figure 3.3   Block Diagram of FC33

●List of model names and codes

Table 3-2 Model codes

Model	Suffix Code				Description
FC33E					Explosion-proof pan-tilt zoom color camera
FC33U					Weather-proof pan-tilt zoom color camera
Camera type	-D				HDIP High-sensitivity 1/2.8" CMOS, 1920x1080 pixels ,30x optical zoom
Wiper		W			With wiper
		N			Without wiper
Control type			E		10BASE-T/100BASE-TX (at an "output-terminal-end" of internal Encoder Board)
Cable Entries (Explosion-proof Certification) *1				0	G1/2 female thread, Cable glands (Explosion Protection in Japan only) *2
				1	M20 female thread, at each Cable gland on the Base Box (ATEX/IECEx Certification)
				2	M20 female thread, at each Cable gland on the Base Box (CSA Explosionproof) *2
Installation					S Upright
					U Inverted

*1 For the cable entry code of FC33U (Outdoor), specify 0 for Japan and 1 or 2 for overseas.
*2 FC33E with cable connection port code 0 and cable connection port code 2 are not subject to CE marking.

●Specifications for options

Table 3-3 Option codes for the main body only

for FC33E/U	Option Code	Description
Cable extension	/L10	Cable length 10m
Installation of tag plate	/T	Installation of stainless-steel tag plate, Up to 15 letters (alpha-numeral combination codes) can be specified
With hood (upright)	/SHD	Hood (Upright) for Full HDIP type
With hood(inverted)	/UHD	Hood (Inverted) for Full HDIP type
With shade	/SD	Shade (for the main body)
Replacement adapter base	/ADP	Replacement adapter base

3.4 External dimension

● **Body of model FC33-DWE1S**

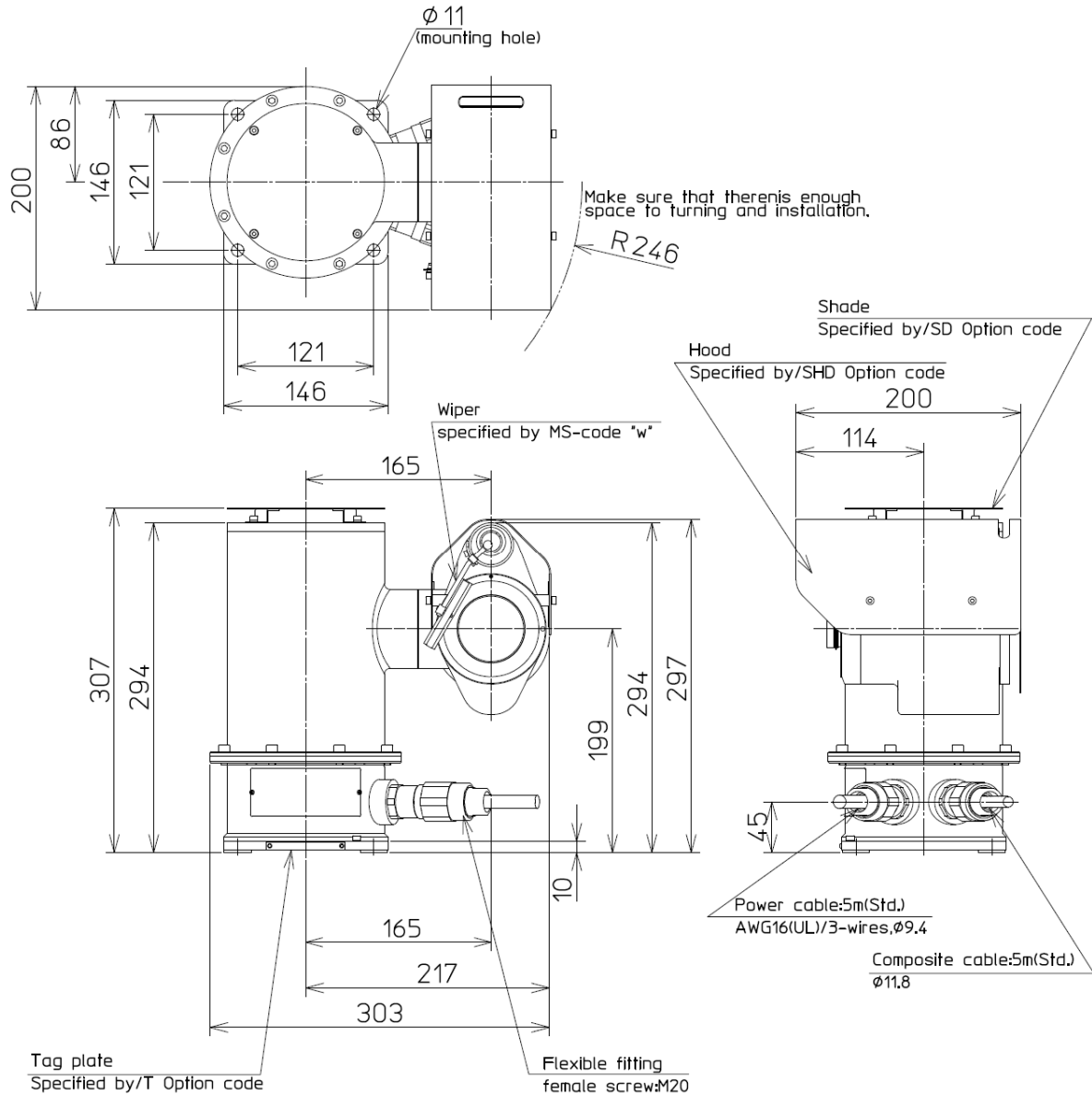**Upright type**

Unit: mm

Figure 3.4   Upright type of FC33-DWE1S

● **Body of model FC33-DWE1 U**

Inverted type

Unit: mm

Note1: **Effective depth** 4 x M**10**-bolts within tapped-(threaded)-material**: 6** or more
Note2: **Fix certainly** 2 cables form the main-body to the ceiling.

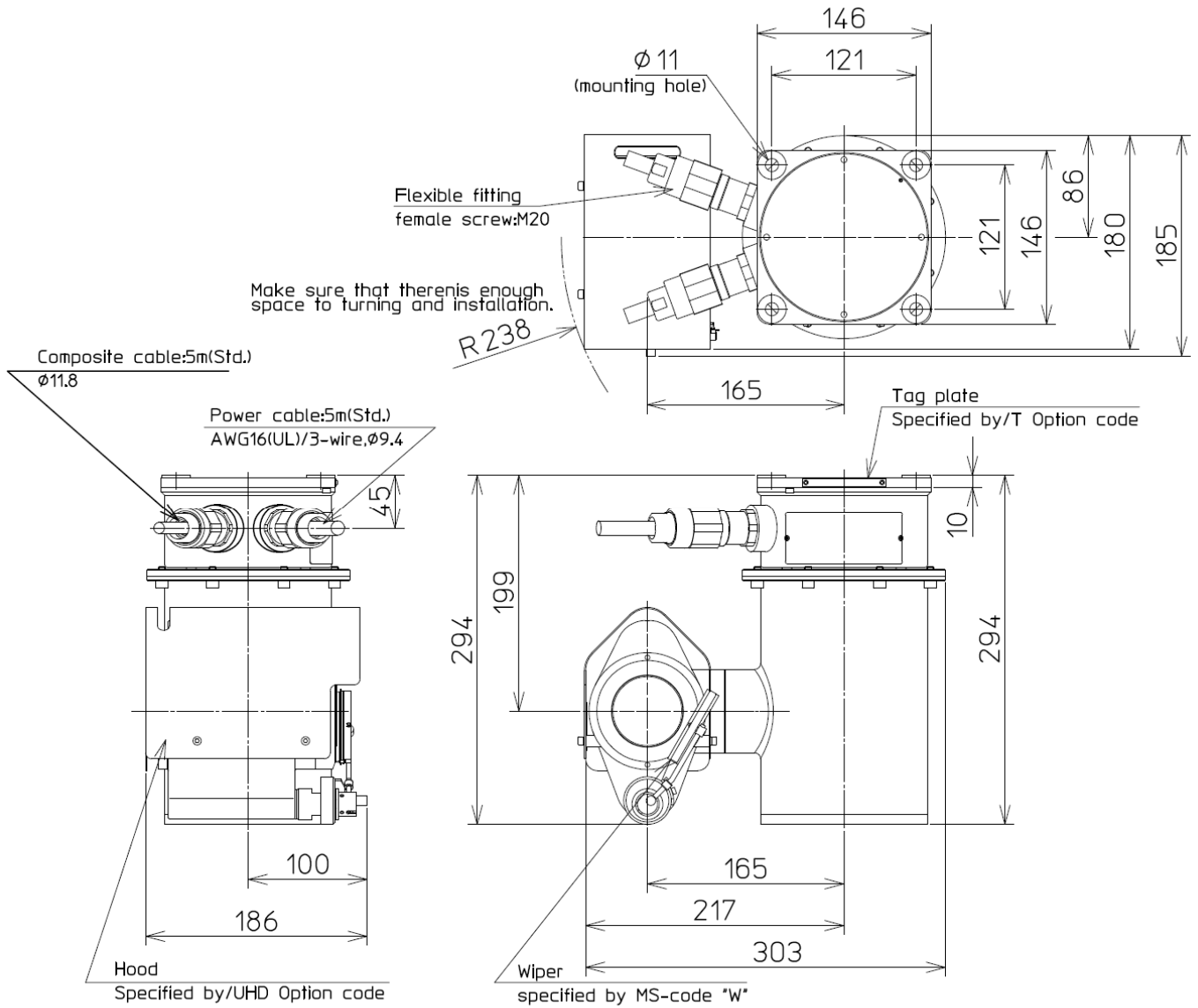**Figure 3.5   Inverted type of FC33-DWE1U**
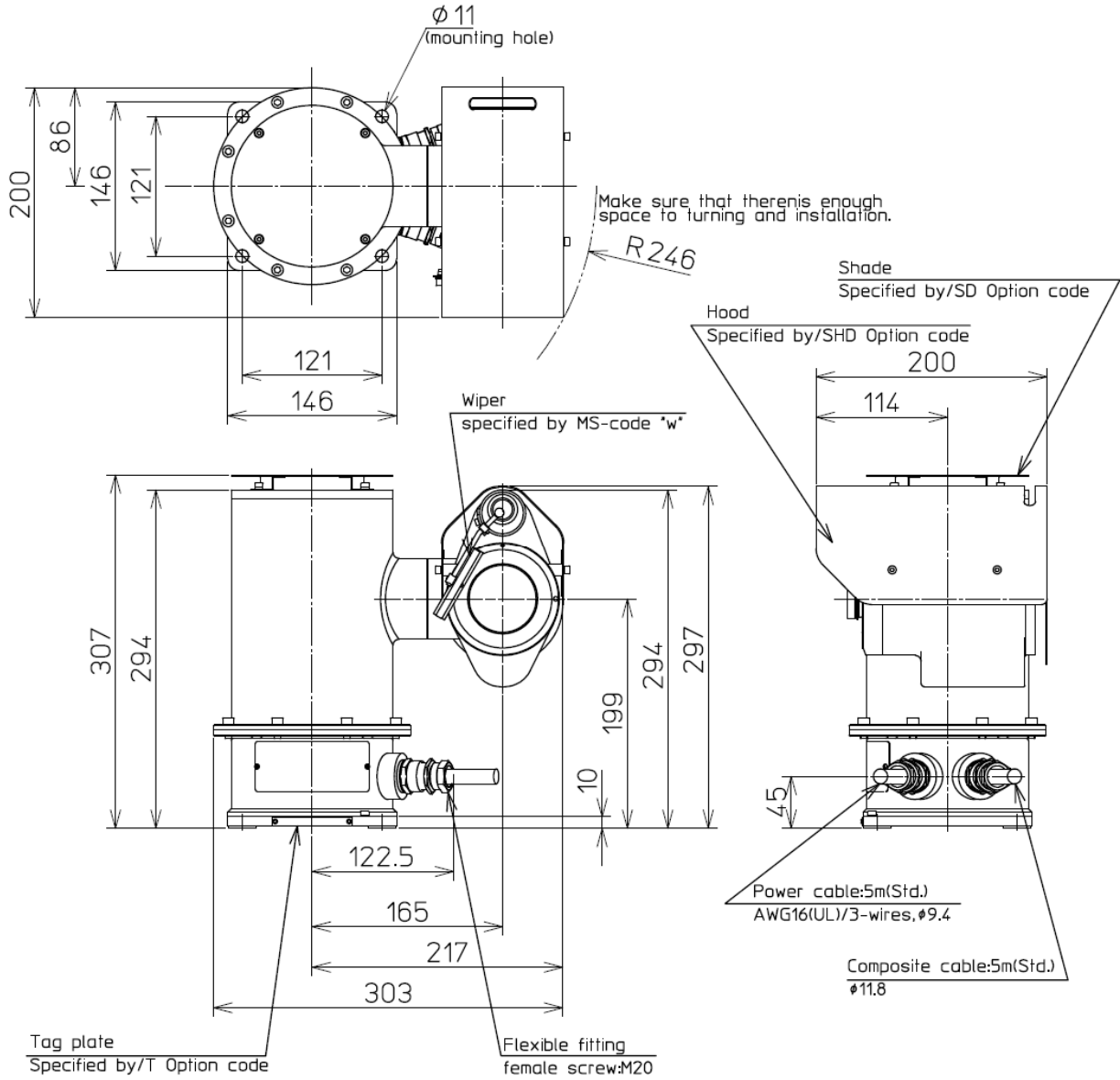
● **Body of model FC33-DWE2S**

Upright type

Unit: mm

Figure 3.6   Upright type of FC33-DWE2S

● **Body of model FC33-DWE2U**

Inverted type

Unit: mm
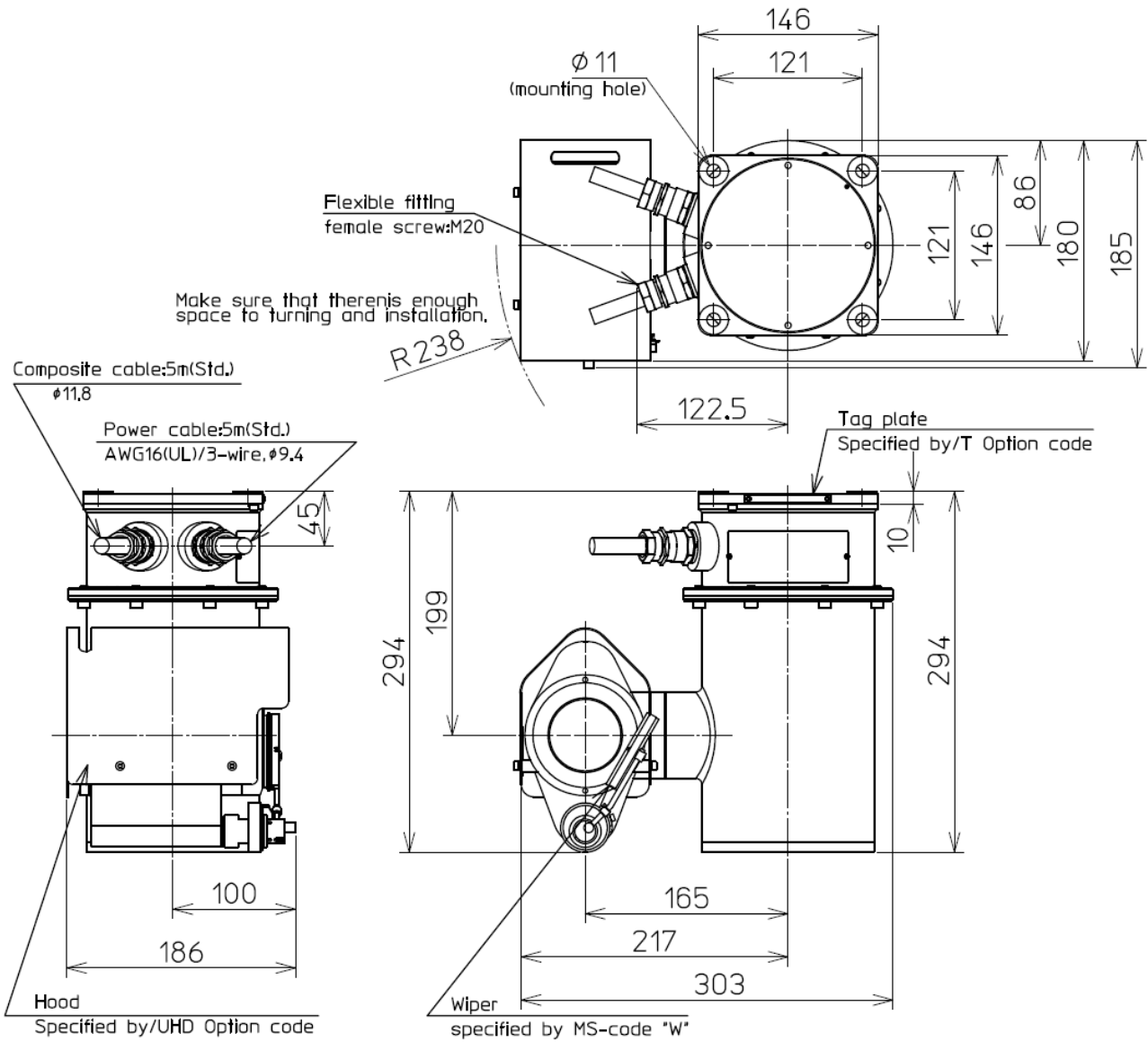
Figure 3.7   Inverted type of FC33-DWE2U

● **Junction Box**
· **SUS 316L with electrolytic polished finish, excellent strength and corrosion resistance.**
· **FC33 Full HD IP dedicated option to be terminated the Composite cable (end cutoff).**
· **1 of normal-open Relay connection for powering external / peripheral equipment. For more detail please refer to the instruction manual of JB(IM85A7C03-09E).**

■ **DRAWING (EXTERNAL DIMENSIONS) with accessories**
JB having options (Bracket/**BR**, Shade/**SD** and Side cover /**SH**)

Unit [mm]

Figure 3.8   Junction Box having full options

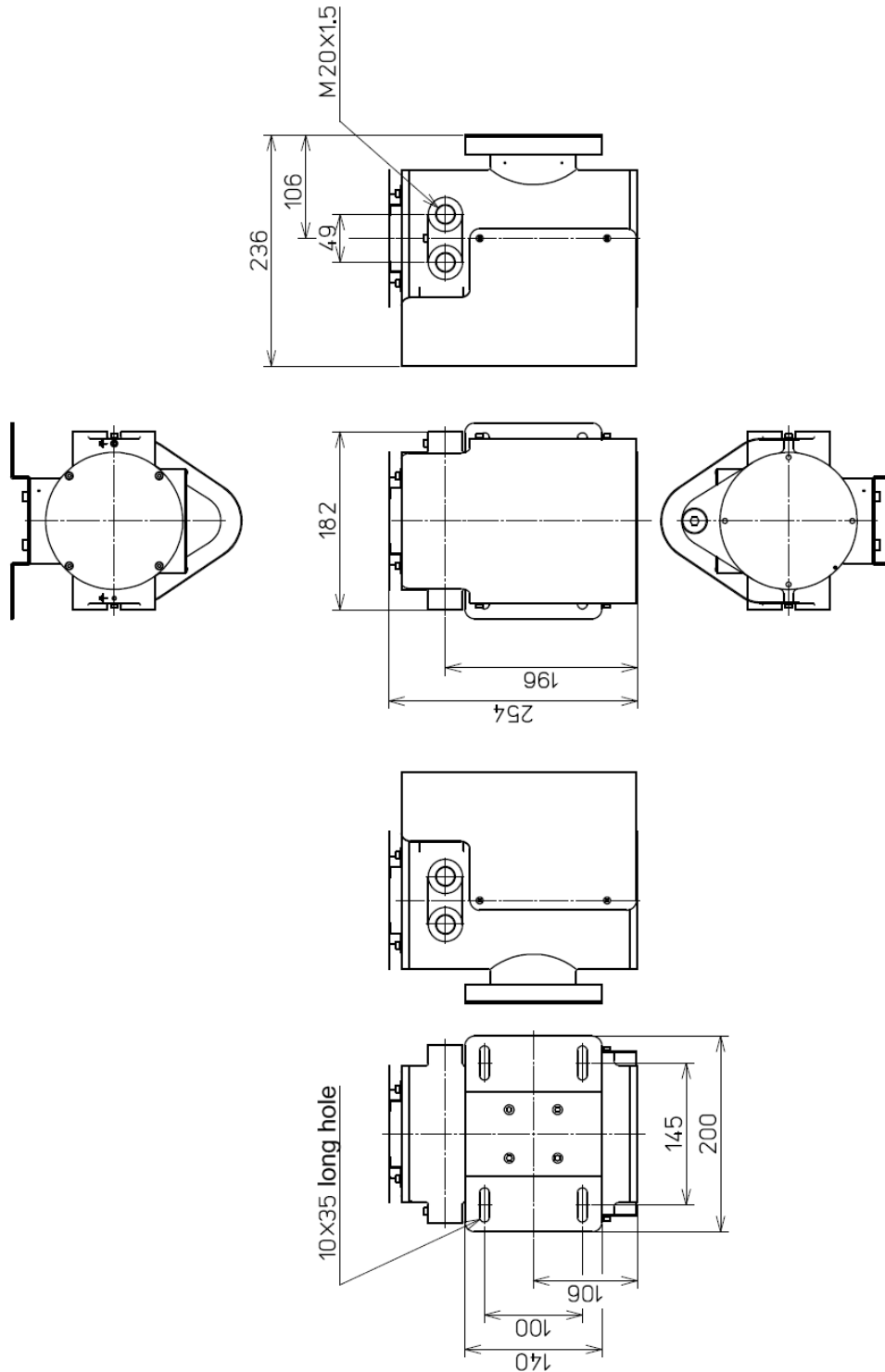# 4. Installation

4.1. Determining the Installation Location

First briefly determine the photographing area, and determine the installation location based on the photographing area shown in Figure 4.1 and the dimensions of the object and the distance between the camera and the object shown in Figure 4.2. The final determination of the location can be reliably achieved by photographing the location with actual use of the camera on a monitor screen. The brightness should also be checked at this time.

● **Zoom lens specifications**

	Focal length (f)	Angle of horizontal view (θ)	Iris	Focus
WIDE end	4.3 mm	Approx. 63.7°	Manual or auto	Manual or auto
TELE end	129 mm	Approx. 2.3°		

● **Precautions for installation**

•Use this camera at a temperature from −40 to +60°C.
•Install the camera so that direct sunlight or strong illumination light does not come into contact with the camera face.
•Take measures to protect the glass face of the camera from water drops or splashes as much as possible.
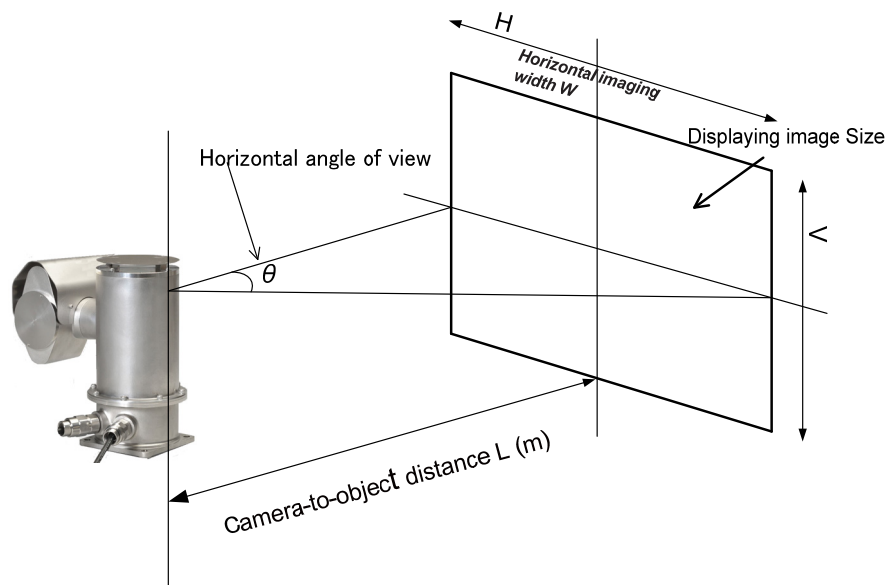
Figure 4.1   Imaging area

Table 4.1 Screen resolution

No	Resolution setting of the Stream 1 or 2	Description
1	1920 x 1080	Full-HD
2	1280 x 960	Quad VGA （*Note*)
3	1280 x 720	HD
4	1024 x 768	XGA （*Note*)
5	960 x 540	QFHD
6	640 x 480	VGA （*Note*)
7	640 x 360	QHD
8	480 x 270	QQFHD
9	320 x 240	Quarter VGA （*Note*)
10	320 x 180	QQHD

Note: **Aspect Ratio H: V = 4: 3**

4.2. Dimensions of and Distance to the Object

The optical zoom of FC33 has a magnifying power of up to 30. Since the electronic zoom has a magnifying power of 12, the zoom capability is a magnifying power of 360 in total.

The table shown below (object dimensions table) provides guidelines regarding the dimensions of objects and the camera-to-object distances based on the optical zoom. If the camera is installed within the range of wide end and telephoto end distances on the basis of the object's horizontal width dimensions, the object can be fully displayed across the screen.

	Focal length (f)	Angle of horizontal view (θ)	Iris	Focus
WIDE end	4.3 mm	Approx. 63.7°	Manual or auto	Manual or auto
TELE end	129 mm	Approx. 2.3°		

Horizontal imaging range (formula)	W/2= L tan (1/2) θ

Table 4-2 Guidelines for object dimensions and camera-to-object distances

Object's horizontal width dimension W[m]	WIDE end Horizontal angle of view≒ 63.7°	TELE end Horizontal angle of view≒ 2.3°
	f = 4.3 mm	f = 129 mm
	Full HDIP type: L [m]	
0.05	0.04	1.25
0.1	0.08	2.49
0.2	0.16	4.98
0.3	0.24	7.47
0.5	0.40	12.45
0.8	0.64	19.93
1	0.80	24.91
1.5	1.21	37.36
2	1.61	49.82
3	2.42	74.72
4	3.22	99.63
5	4.02	124.54
6	4.83	149.45
7	5.63	174.36
8	6.44	199.26
9	7.24	224.17
10	8.05	249.08
15	12.08	373.62
20	16.10	498.16
30	24.15	747.24
40	32.19	996.31
50	40.24	1245.39

Guidelines for object dimensions and camera-to-object distances

Figure 4.2   Object Dimensions and Camera-to-Object Distances

4.3. Installation

（1）**FC33 E/U**

For the details of installing this camera, see Section 2.3, "Precautions for Installation Location." For ambient conditions of the installation location, see Section 3.3, "Standard Specifications." To install the camera, prepare four mounting bolts and use the four mounting holes in reference to Section 3.4, "External Dimensions."

The oscillation angle of the camera housing is based on the turning range shown in Section 3.4, "External Dimensions," and has no restrictions regarding both the counterclockwise and clockwise panning direction. The tilting angle is up to approximately 90° both upward and downward. Make sure that the turning range contains no obstacles, before starting the installation. Before using the replacement adapter base (Figure 4.3), install it to the FC33 type camera. Then install the base to the already installed camera installation base.
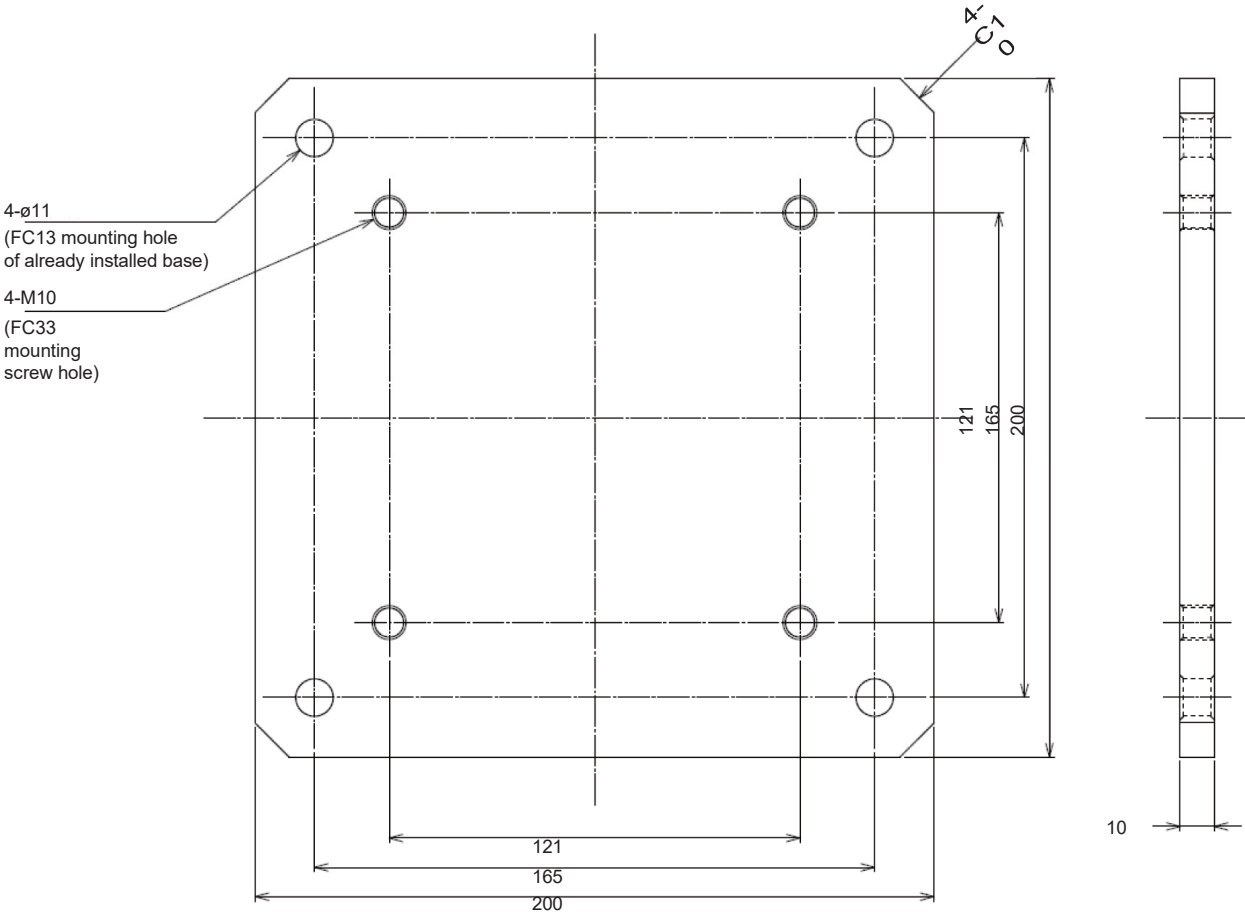

4-ø11
(FC13 mounting hole of already installed base)

4-M10
(FC33 mounting screw hole)

4-C7

121
165
200

121
165
200

10

Figure 4.3 Replacement adapter base

⑵ **JB**

For mounting or installation of the JB, select an appropriate position that is smooth, having enough thickness and strength, for example wall of stainless steel.

If the JB has no accessories, refer to the drawings of the Fig. 3.5. And please prepare 4-M6 screws having suitable length.

⚠ CAUTION

Be CAREFUL to mounting and installing because of heaviness and clinging 4 cables.

Faites ATTENTION au montage et à l'installation en raison de la lourdeur et de l'adhérence de 4 câbles

If the JB having a bracket as accessory by optional-code /BR Please refer to below:

Preparation: **Set** 4-M8 bolts at the installation surface, referring to the drawing of the Fig 3.6. An installation direction makes Upper-lid of the JB matched to upwards.

First Step: **Connect** the Bracket with JB's enclosure by 4-M6 screws (M6x10 hexagon socket head) which are attachment of the Bracket, so as to make an integration-body. ,

Second Step: **Hook** such integration-body (JB's enclosure with Bracket plate) on 4-M8 bolts at the installation wall. These M-8 bolts and also nuts are not attachment of the products.

Finally: **Fasten** each 4-M8 nut completely.
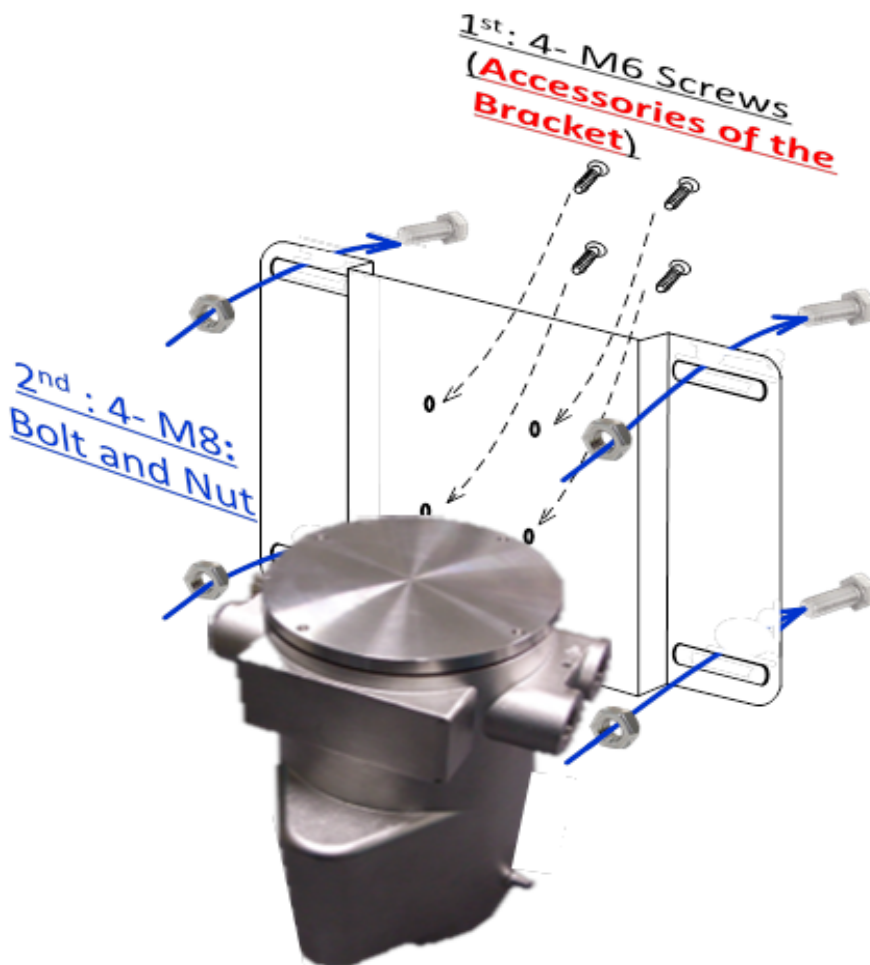

Figure 4.4 Installing JB with bracket

5. Cabling and Installing
5.1. Cables form FC33's main body

The FC33 camera body has 2- cable connections for external interface.

Note that the cable types vary with the specifications you designate at order time (see Figure 5.1). Perform the terminal treatment and cabling according to this chapter.

⚠ CAUTION

For the power cables, the brown or light blue one is LINE (brown = L:Live, light blue = N:Neutral), and the green/yellow one is the grounding line.

Pour les câbles d'alimentation, le marron ou bleu clair est LIGNE (marron = L:Live, bleu clair = N:Neutre) et le vert / jaune est la ligne de mise à la terre.

5.2. Cabling Precautions

For cabling, observe the following precautions:

(1) When it is raining, do not connect cables outdoors to ensure insulation within the connecting Junction Box.

(2) By performing the terminal treatment on the AC power cables with round solderless terminals, make sure that they are connected.

(3) Conduit wiring is recommended for cabling. For conduit wiring, use Thick-Walled Steel Pipe 16 (JIS C8305) or Flexible Conduit 15 (JIS C8309).
If CSA explosionproof type, please refer to **5.9** of page 5-28.

(4) Make sure that clamping glands in the wiring ports are fully tighten.
It is effective if non-hard enable sealant is applied to the threads to provide waterproof treatment.
If CSA explosionproof type, please refer to **5.9** of page 5-28.

5.3. Cable Terminal Treatment

The body is delivered to you with approximately 5 m cables connected to it. You should perform the terminal treatment at your convenience.

For making connection to the terminal box (or block), see the cable terminal treatment summarized in the following table. For more detail please refer to 5.4 after.

(1) Power Cable(3 core, 1.25mm²)

Power Cable	・In case of an extension the AC power line over 10 m from FC33E/U, please use cable equivalent of Φ10.0(JIS C3312) or Φ7.8(JIS C3306). ・If the total length between the camera body and the AC power supply exceeds 10 m, be sure to check the grounding of the FG terminal on the body.. FC33E/U———Power Cable———◎-◎——(equivalent cable)—~ **10 m** (Relay terminal) AC power

(2) Composite Cable : LAN cable (Ethernet), External relay contact driving signal (1 circuit)

LAN cable(Ethernet)	・Shield type adaptor of RJ45 modular plug (which is attached at the tip by the terminate treatment. Non-accessories) shall be used, at the LAN connection interface terminal. More detail please refer to 5.6.1.
	 ・Connection within 10m from the camera bogy by a Network equipment (JUNCTION BOX(JB), Media converter commercially available, and so on) which is driven by external power source is required.
	
	 Network equipment
	 FC33E/U————JB ======= Optical Fiber ========
	    within 10 m
	
	 ・In case using JB-TX (No internal media-converter type), the distance from FC33E/U to the Network Equipment or Repeater driven by external power shall be within 50 m due to wiring losses of FC33E/U inside(figure below).
	
	 Port(1) / Port(4) Repeater===== Copper Cable=====
	 FC33E/U————JB-TX————————Network Equipment===== Optical Fiber ===
	   10 m + **within 40 m**

External relay contact driving signal	・Terminate with the dedicated optional explosion-proof junction box (JB-FX or JB-TX). Terminating other than JB (sold separately) is not recommended.

5.4. Junction Box

By placing on a boundary of the user's LAN interface and FC33, Junction Box (after JB) provides a function of transmission-media Converter at the physical-layer. Also, JB provides a relay contact circuit to control an external device which works by AC-Power.

5.4.1. Housing Specifications

External dimensions	180 (W) x 240 (H) x 185 (D) mm
Weight	8kg or less than (w/o. cable glands and/or sealing plugs)
	10kg or less than (with Bracket, Shade and Cover)
Operating temperature/Humidity	-40°C to +60°C **/** 20 to 95 %RH (non-consideration)
Altitude	Up to 2000 m
Housing Material	Die Casted SS316L Stainless steel
	(Finish: Electrolytic Polishing)
IP Rating	IP66 (ingress protection)

5.4.2. Explosion Proof

ATEX/IECEx Certificated CML 18ATEX1025X
Explosion-proof **Ex db IIC T5**
Marking:

II 2G
Ex db IIC T5 Gb
Ta= -40°C to +60°C
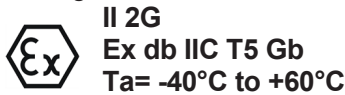
CML 18ATEX1025X	IECEx CML 18.0019X

* Cable Entries code 1 only

5.4.3. Interface Specification

(1) Composite cable interface
Interface port for main body of FC33E/U
RJ-45 Modular Jack (internal port)
RJ-45 shielded modular plug is needed to make a connection to the FC33E/U main body.

(2) AC Power Output (by 1-a relay contact)
(3) AC Power Input

(4) User Interface port

Table 5-1 Specification of Optical fiber interface

Supporting Standards:	IEEE802.3u 100BASE-FX
Line speed	10Mbps / 100Mbps
Center wavelength	1310 nm
Optical fiber	single-mode (9/125µm)
Connecter	SC connecter, 2-core type
Transmitting level (maximum)	-8dBm
Transmitting level (minimum)	-15dBm
Receiving level (maximum)	0dBm
Receiving level (maximum)	-34dBm
Allowed loss	19dB

■ LAYOUT OF TERMINAL PORT
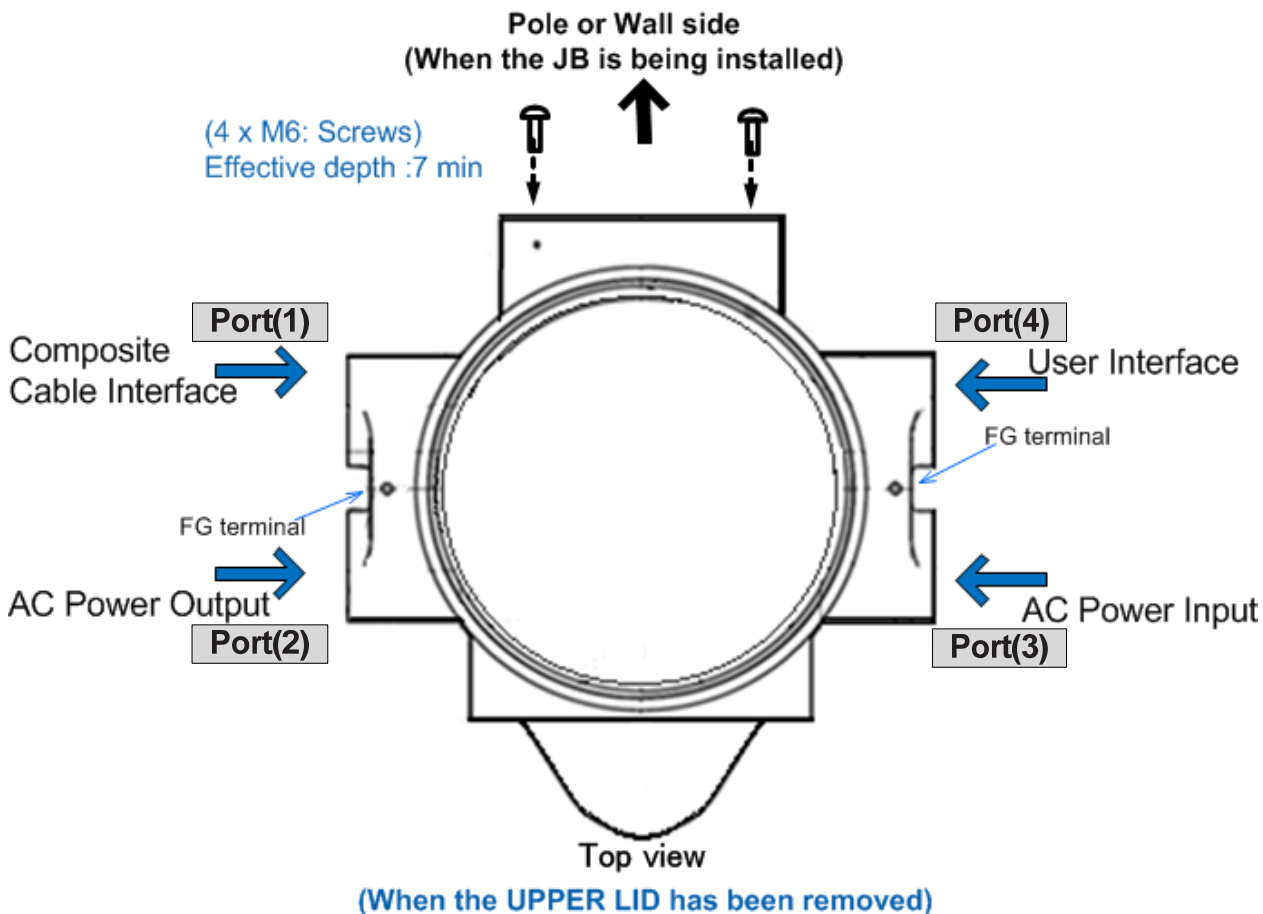
Figure 5.1   Ports of JB

■ ATTACHMENT LIST of JB

Table 5-2 optional attachment list

No.	PARTs NAME	PARTs No.	Description	QTY
1-1	CABLE GLAND(M20)	K7501JQ	Cables Terminal Treatment Parts	See below:
1-2	GASKET	K7501JM		
2	Sealing Plug (for installing only)	K7501JR	Put this (those) on Unused port(s).	

MS-CODE being coupled (when ordered the JB)	Combination of parts
ME4	Set of(M20 type)Cable Gland(ATEX/IECEx)of 4 and Sealing plug: 0
ME3	Set of(M20 type)Cable Gland(ATEX/IECEx)of 3 and Sealing plug: 1
ME2	Set of(M20 type)Cable Gland(ATEX/IECEx)of 2 and Sealing plug: 2

For more detail, please refer to an instruction manual ("FIELDEYE II JANCTION BOX" IM85A7C03-09E) of the JB.

5.5. Wiring Cables into Junction Box
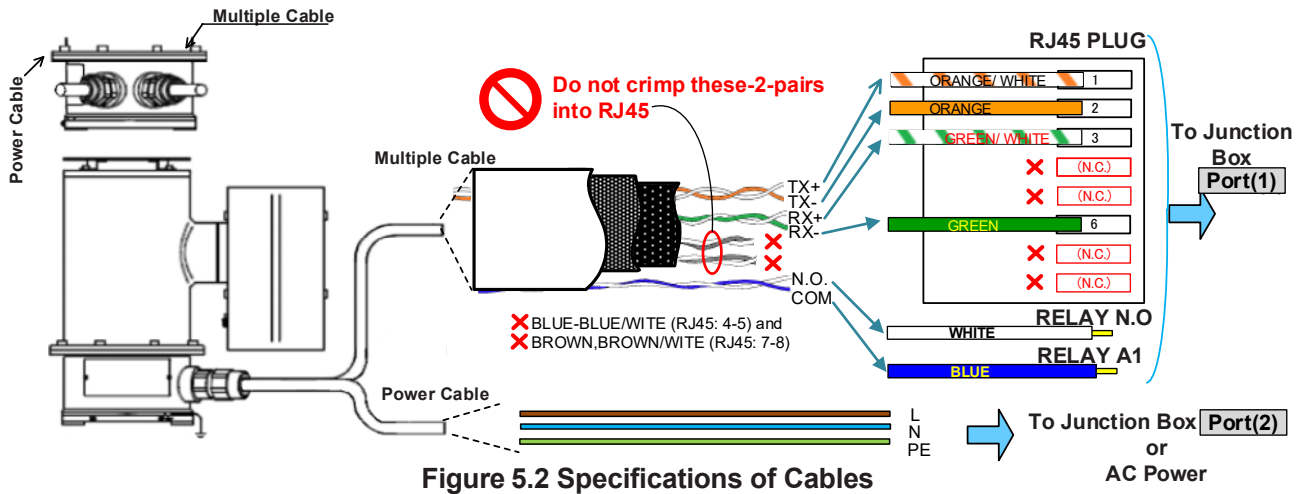
5.5.1. Standard Cable Specification

Figure 5.2 Specifications of Cables

Table 5-3 Internal destinations at Port(1) and Port(2) /orAC-power

Function		Film Color (being covered)		Symbol / Type	Connected to
Power Cable		Brown		L	AC100~240V Power line
		Blue		N	
		Green yellow		PE	(AC GND)
Composite Cable	Ethernet comm.	Orange/White	twisted pair cable	TX+	(RJ45-1)
		Orange		TX−	(RJ45-2)
		Green /White	twisted pair cable	RX+	(RJ45-3)
		Green		RX−	(RJ45-6)
		(annealed copper wire)	drain line	(Shield)	(RJ45-frame)
	Relay contact	White	twisted pair cable	N.O	(N.O. terminal)
		Blue		COM.	(A-1 terminal)

⚠ **WARNING**

Make sure there is no miss-wiring. It can cause serious accidents including explosion, fire, or an electrical shock. At un-used cabling-port(s), use sealing-plug(s) (being attached).

Assurez-vous qu'il n'y a pas de mauvais câblage. Cela peut provoquer des accidents graves, notamment une explosion, un incendie ou un choc électrique. Sur les ports de câblage non utilisés, utilisez des bouchons d'étanchéité (attachés).

⚠ **CAUTION**

For maintenance and safety, it is recommend installing a power switch close to FC33U or FC33E and clearly indicating the OFF position of the switch.

5.5.2. Remove the Upper-lid

(1) First, remove red plastic plugs (for transport only) from each port of JB
(2) Next, using a Hexagon-wrench (FC33's attachment), **loosen** a Set-screw at an upper-right rim Reaching to surface of the Upper-lid at the Set-screw's head is enough. Never remove it from the Upper-lid.
(3) Using a pin spanner (/CT option), move the upper-lid slowly to counterclockwise direction.
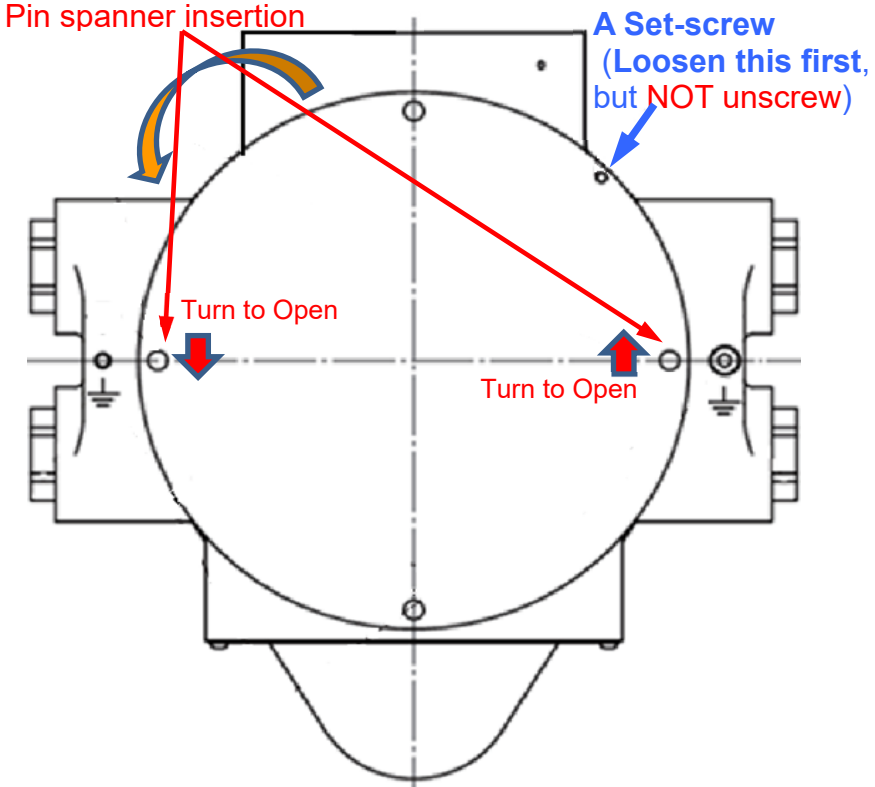
Pin spanner insertion

A Set-screw
 (**Loosen this first**, but NOT unscrew)

Turn to Open

Turn to Open

Figure 5.3   Upper-lid removing

Guiding plate

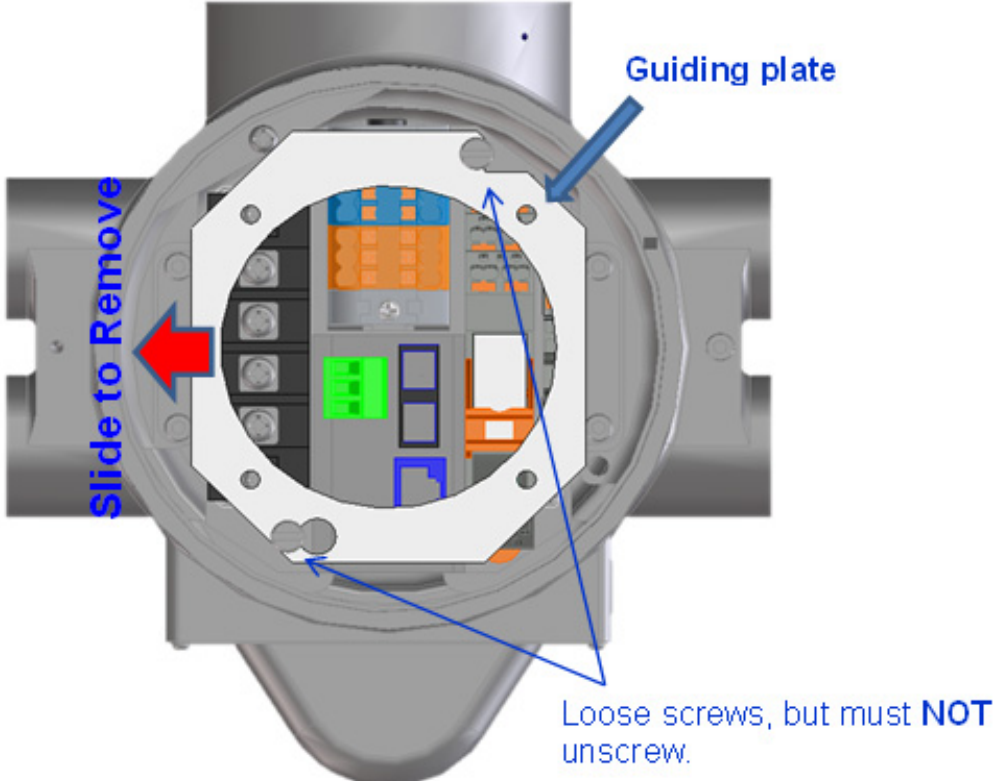Slide to Remove

Loose screws, but must **NOT** unscrew.

Figure 5.4   Guiding plate removing

5.5.3.Power input/output connections at JB

Subject to the case of using the Junction Box having no relay contact connection, this section describes steps of cable connections.

(1) Treatment of AC power cable at FC33

Pass through a cable gland (accessories of JB) into the ending of AC power cable from FC33 in advance, **but not fasten yet.** Next, carry out treatments each terminal at cables, as shown below. Recommended outside diameter of each wire is AWG16. For a solderless terminal, "**4.3mm-fork-gap**" type is recommended. Finally, insert 3 wires to port (2) of JB as "AC-power output".
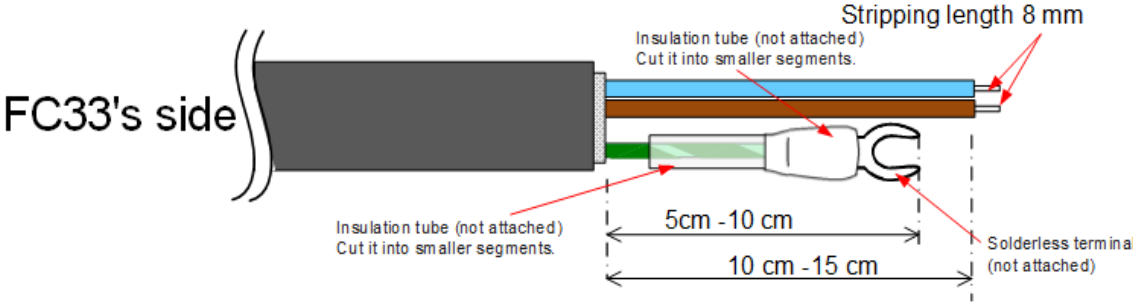

Figure 5.5   Power Cable from FC33

(2) Treatment of AC power cable at user side

Opposite side port of the JB (AC-power input) also, do same treatment as above. Next, insert 3 wires to port (3) of JB as "AC-power input".
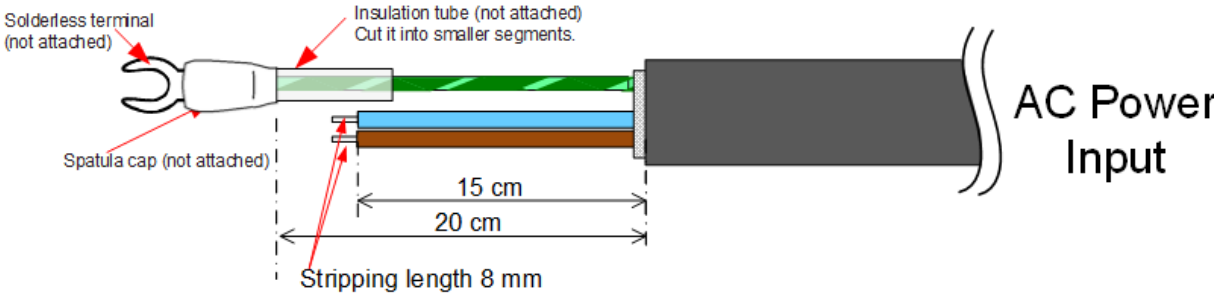

Figure 5.6   User side Power Cable

(3) Connection at JB without Relay control

If no external (peripheral) equipment is connected to AC-output of JB, AC-power configuration will become shown below:
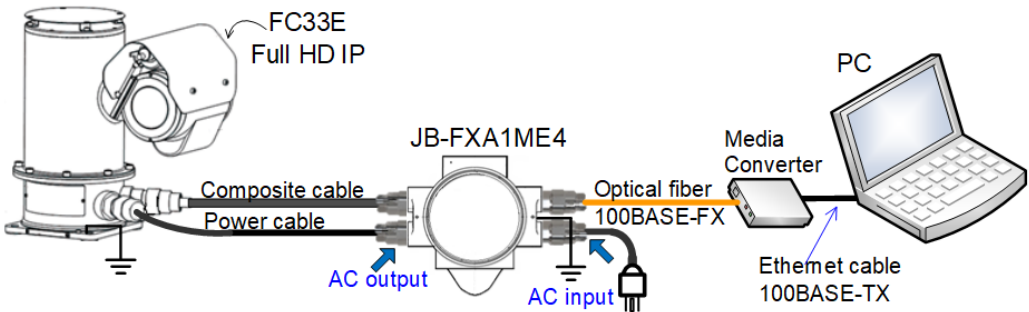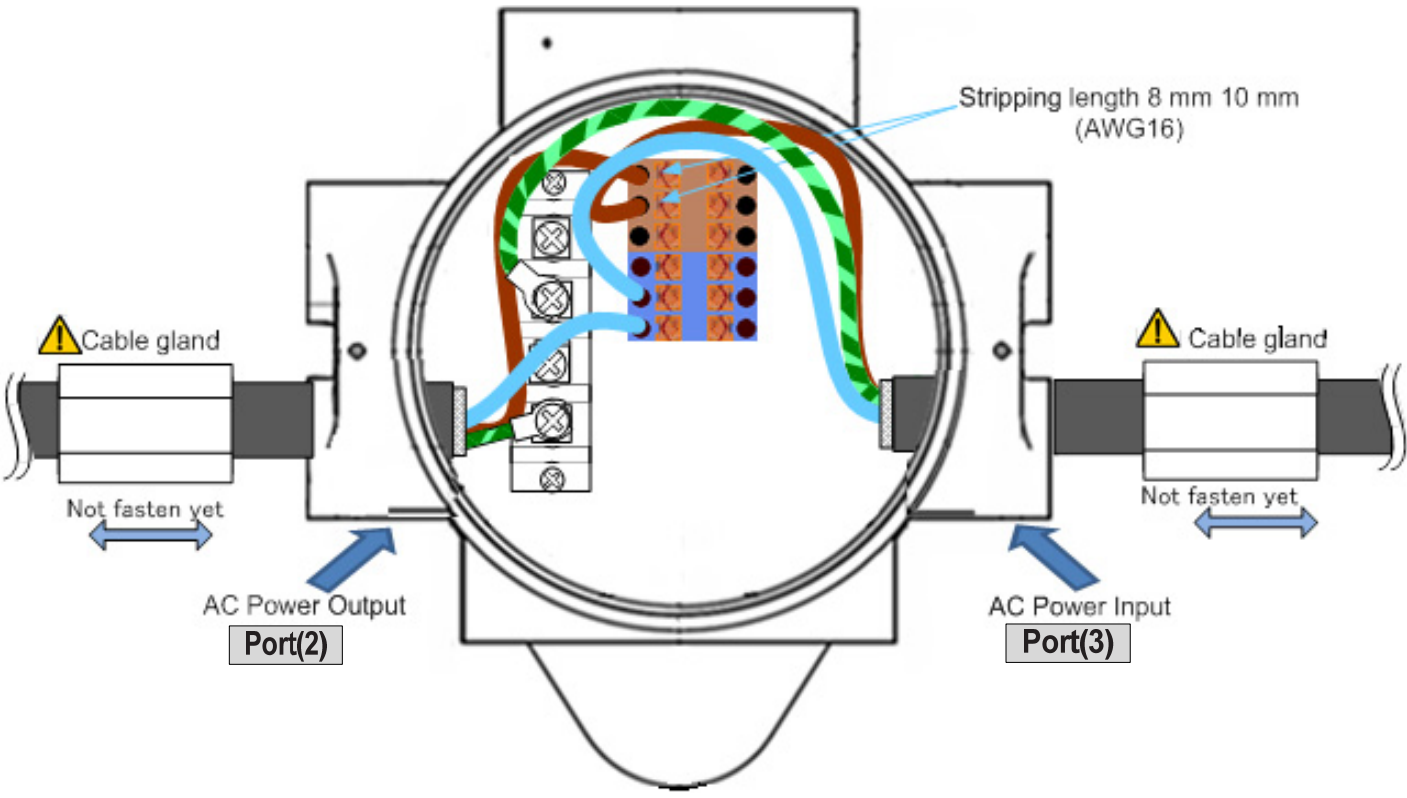

Figure 5.7   A connection example of JB relaying AC-Power without relay contact

Push in contact for blue-wire to blue-terminal, and brown-wire to brown terminal.
Connect each green-yellow-wire to one of 4-Block Terminal, using solderless terminal as shown below. Each "Push in contact" can remove by pushing side (unlock) button

Figurer 5.8 Std. connections having AC power relay without relay contact

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⚠ **CAUTION**
A Cable gland at this port of the JB must use the M20 x1.5 type

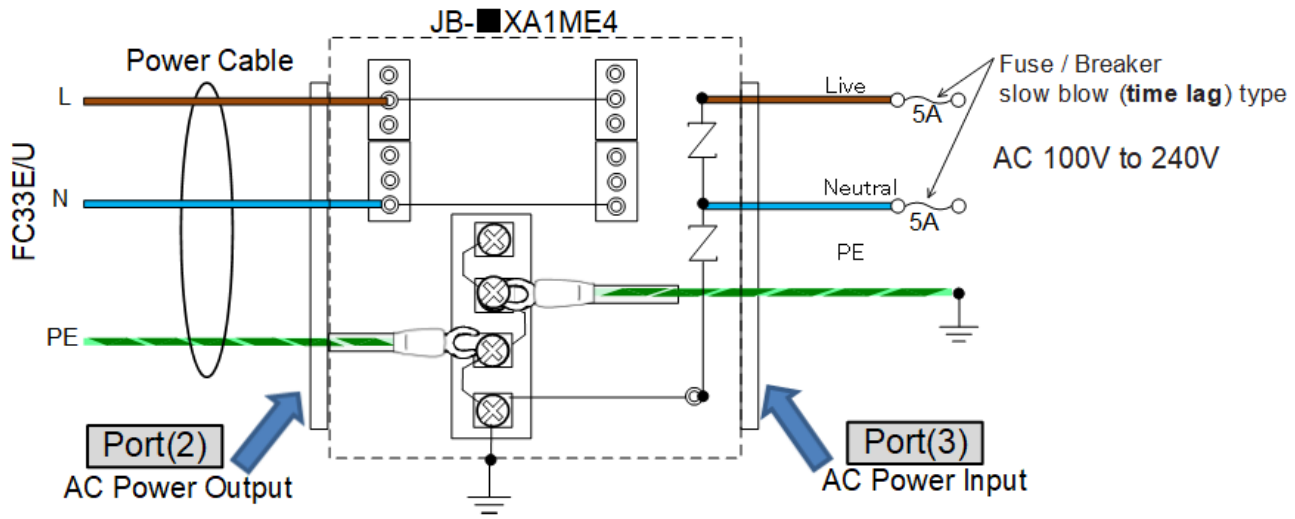*Un bouchon d'étanchéité à ce port du JB doit utiliser le type M20 x1.5.*

Figure 5.9   An equivalent circuit relaying AC power without relay contact

(4) Connection at JB without Relay control
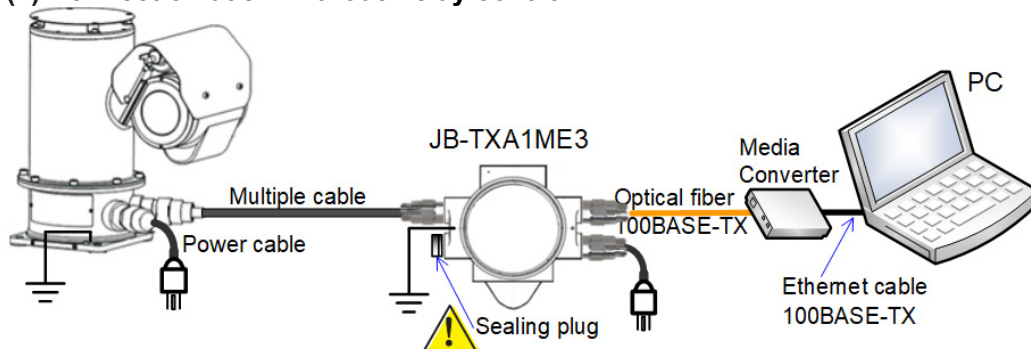
Figure 5.10   A Connection example of JB neither Relay-Control nor AC-Power output.

> ⚠️ **CAUTION**
> **A Sealing plug at this port of the JB must use the M20 x1.5 type**
> *Un bouchon d'étanchéité à ce port du JB doit utiliser le type M20 x1.5.*
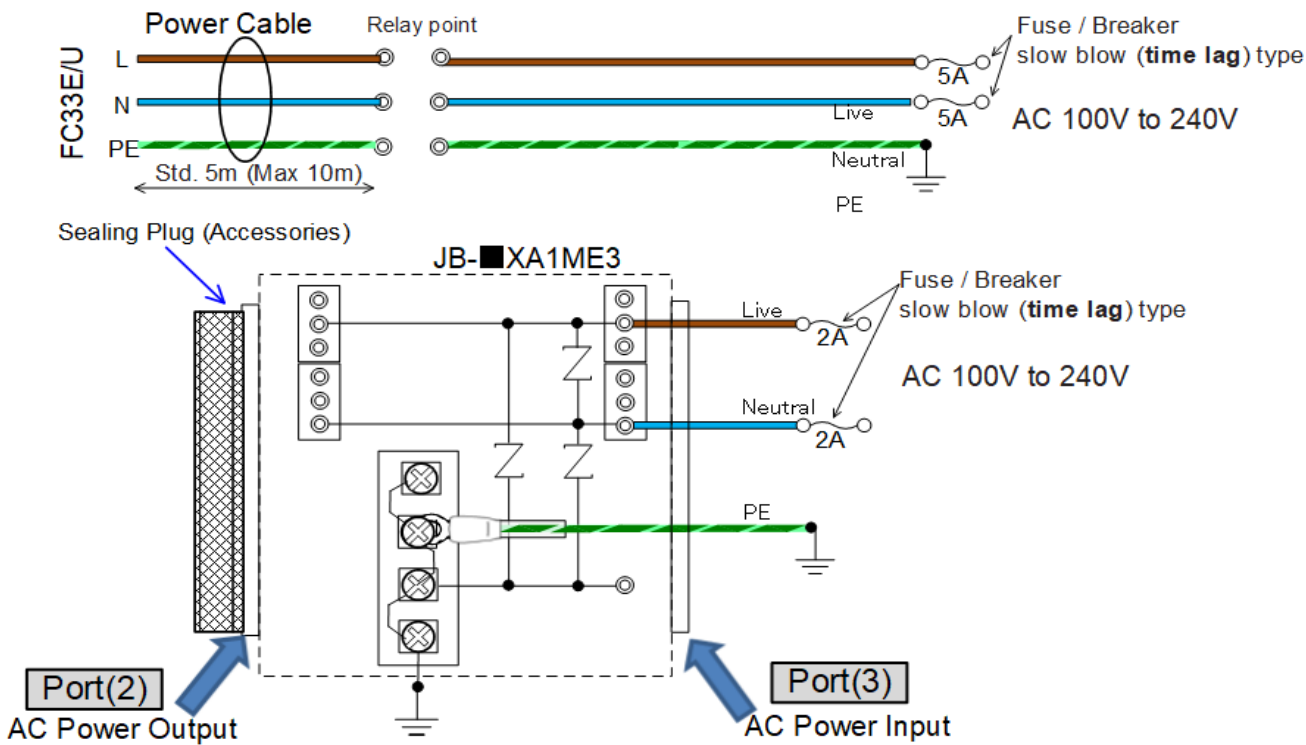
Figure 5.11 Equivalent circuit of JB neither controlling Relay-contact nor outputting AC-Power.

(5) Connection at JB with Relay control
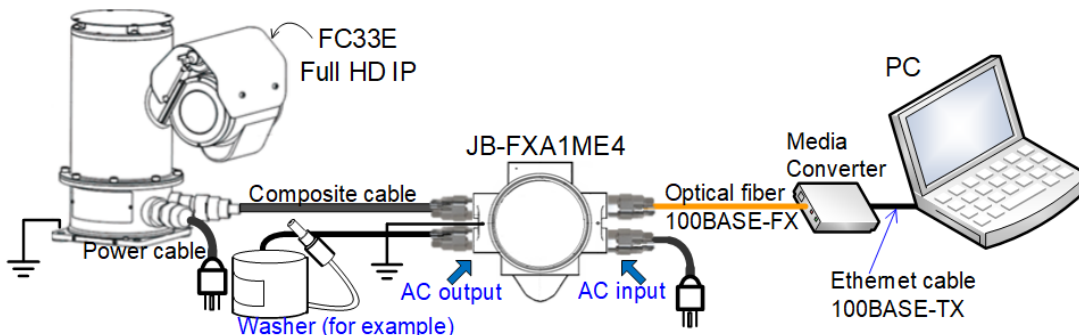
Figure 5.12 Connection example of JB having AC-Power-Output under the control of the inner Relay
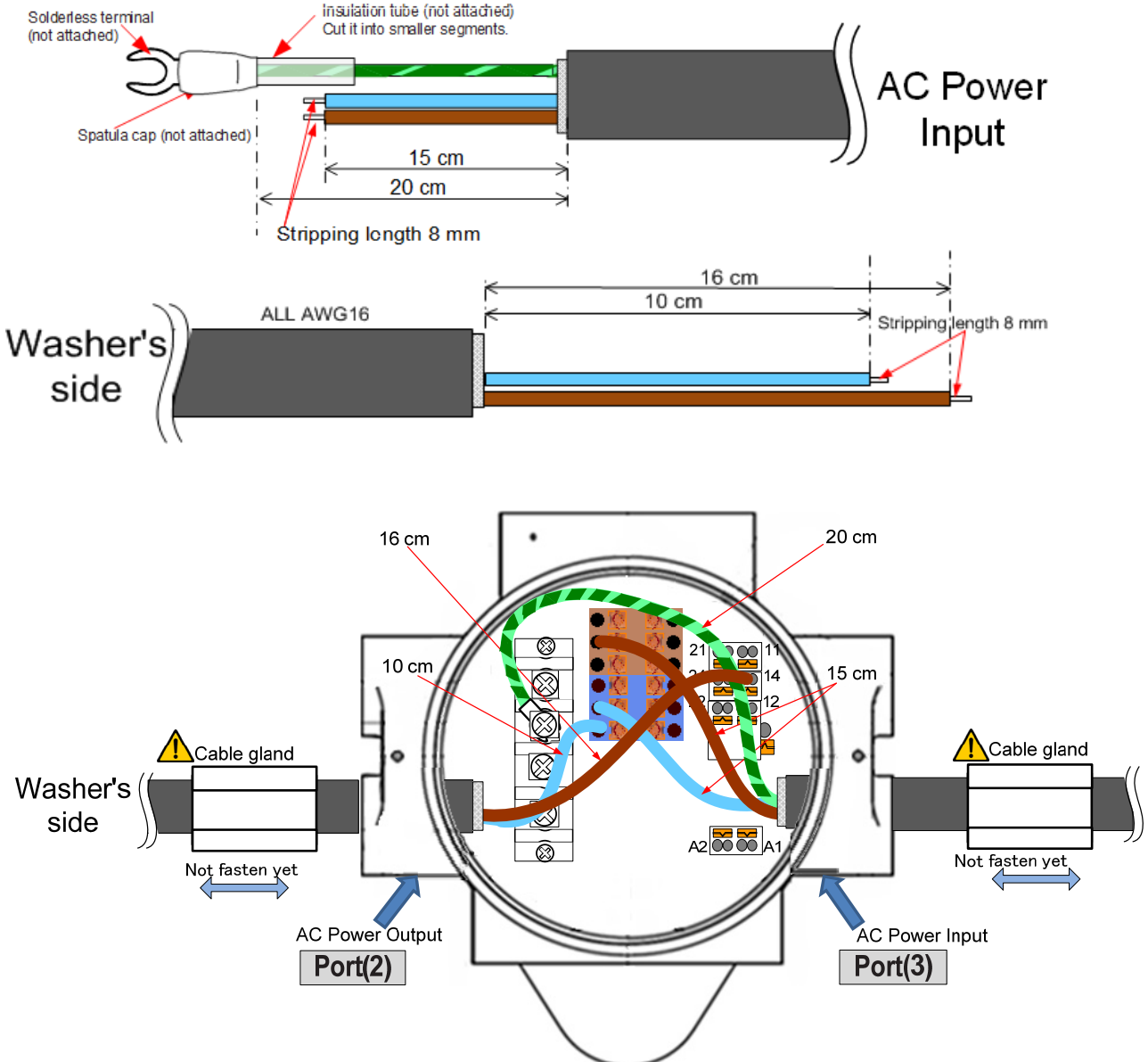
Figure 5.13   Standard connections of JB using the internal Relay contact

> ⚠️ **CAUTION**
> **A Cable gland at this port of the JB must use the M20 x1.5 type**
>
> *Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.*

Figure 5.14   JB having AC-Power-Output under the control of the internal Relay.

(6) Fasten each cable gland

Fasten both side cable glands tightly to finish. For more detail information, please refer to section 5.7.

5.5.4.Composite Cable connections at JB

(1) Treatment of Composite cable for JB
Insert the Composite-cable (passing through a cable gland) as shown below to port (1) of JB (FC33 Interface).

⚠️ **CAUTION**

**The LAN cable must pass through Cable gland of Port (1) in advance.
Otherwise, a terminated LAN cable having RJ45 modular plug can't pass through its inside.**

*Le câble LAN doit passer par le presse-étoupe du port (1) au préalable.
Sinon, un câble LAN à terminaison doté d'une fiche modulaire RJ45 ne peut pas passer à l'intérieur.*
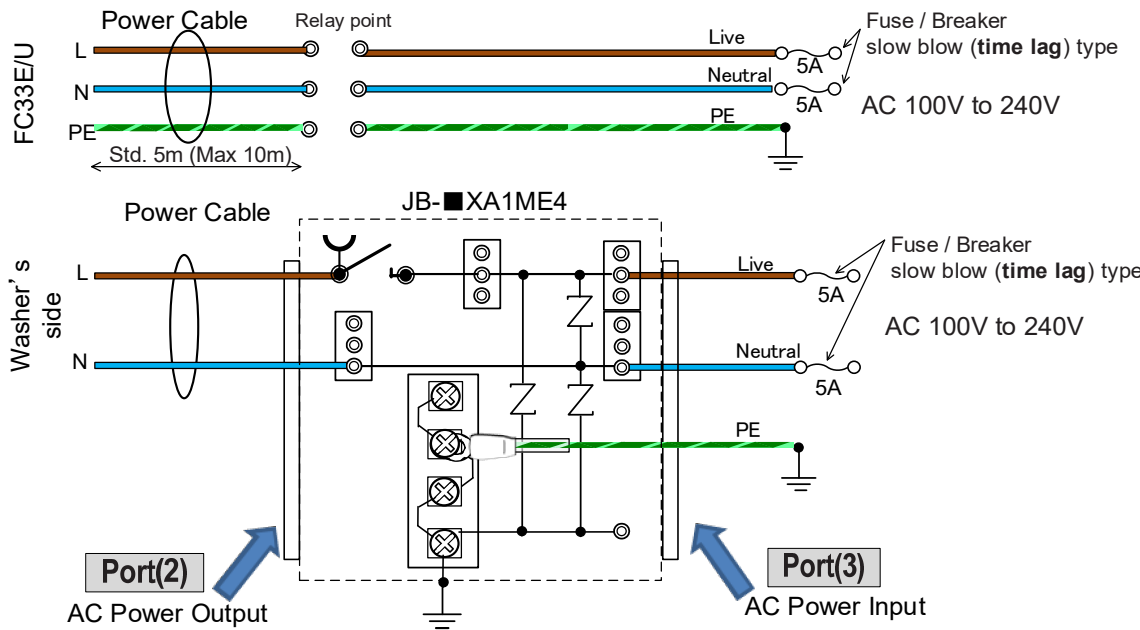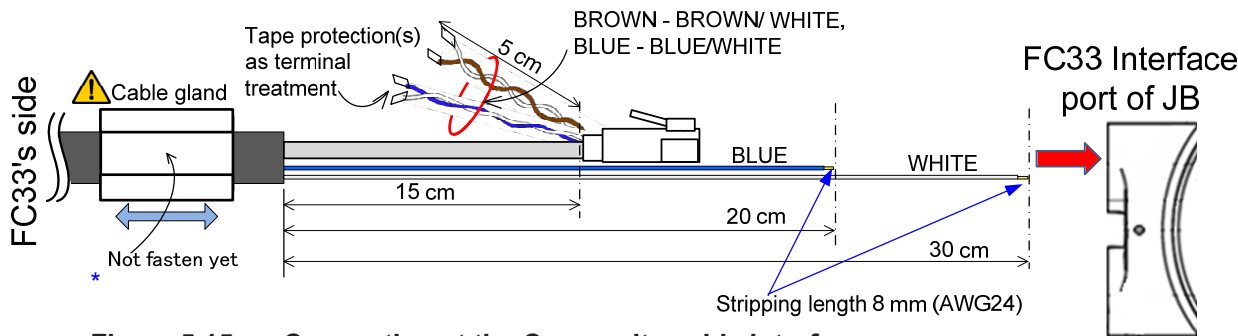

Figure 5.15   Connection at the Composite cable interface

⚠️ **CAUTION**
A Cable gland at this port of the JB must use the M20 x1.5 type

Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.

(2) Connections at JB
Push in contact for BLUE-wire to RELAY A1 and WHITE-wire to RELAY N.O.
Connect a Modular-Plug to RJ45 Socket as shown below. Each "Push in contact" can remove by pushing side (unlock) button. Treatment at end of the Composite cable, please see section 5.6.3 because of having more detail.

Figure 5.16   Composite cable interface at the JB

(3) Fasten a cable gland
Fasten the cable glands tightly to finish. For more detail information, please refer to section 5.7.

5.5.5.Optical fiber connection at JB

⚠️ **CAUTION**

Assembling of SC connector housing should start after passing through the cable gland and JB's **Port (4)**

L'assemblage du boîtier du connecteur SC doit commencer après avoir traversé le presse-étoupe et le port (4) du JB.

(1) Treatment of User Interface port of JB

Guiding plate: Outer sheath should pass through this hole.

Strength member   Outer sheath

10 cm

Inner jacket
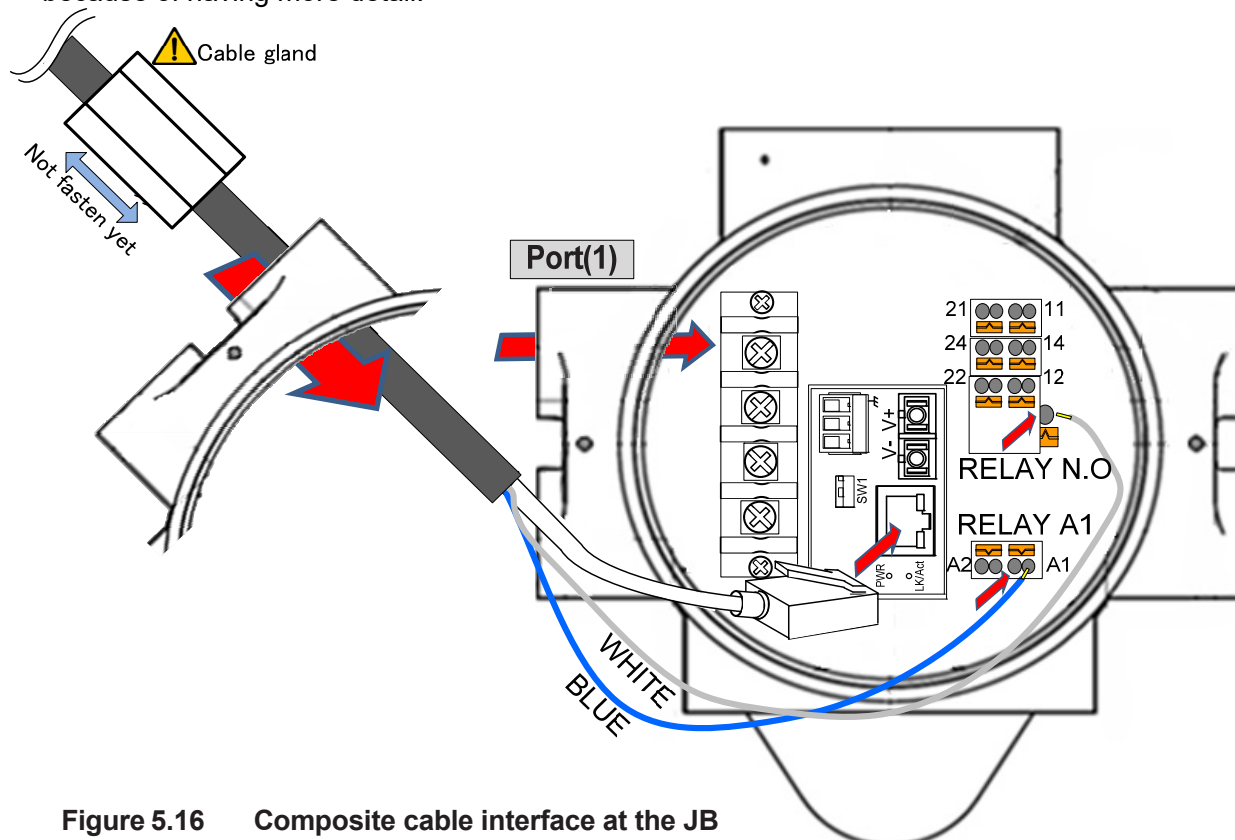
25 cm
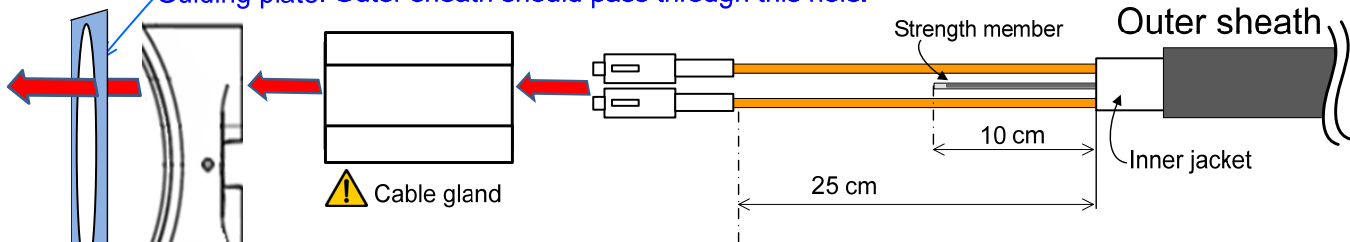
⚠️ Cable gland

Figure 5.17   Connections at the User Interface Port

⚠️ **CAUTION**

A Cable gland at this port of the JB must use the M20 x1.5 type

Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.

SC connector housings do not attach to the JB. Joining and treatment of fibers, refer to the instruction manual of that connector's maker

⚠️ **CAUTION**

The fiber cables must pass through Cable gland in advance. Otherwise, a terminated fiber cable having SC connector(s) can't pass through its inside.

Les câbles en fibre doivent passer à travers le presse-étoupe au préalable.
Sinon, un câble en fibre à terminaison doté de connecteur(s) SC ne peut pas passer à intérieur.

⚠️ **CAUTION**

Invisible laser light might be outputted from fibers or connectors of the optical user interface. Do not look directly or indirectly into such beams or a specular reflection of the beams without protective tool.
Do not aim an opening part of the optical fiber tip at the eye.

Une lumière laser invisible peut être émise par des fibres ou des connecteurs de l'interface utilisateur optique. Ne regardez pas directement ou indirectement de tels faisceaux ou réflexions spéculaires sans outil de protection.Ne dirigez pas une partie ouverte de la pointe de la fibre optique vers l'œil.

(2) Wind fiber cables along with round of the Guiding plate.
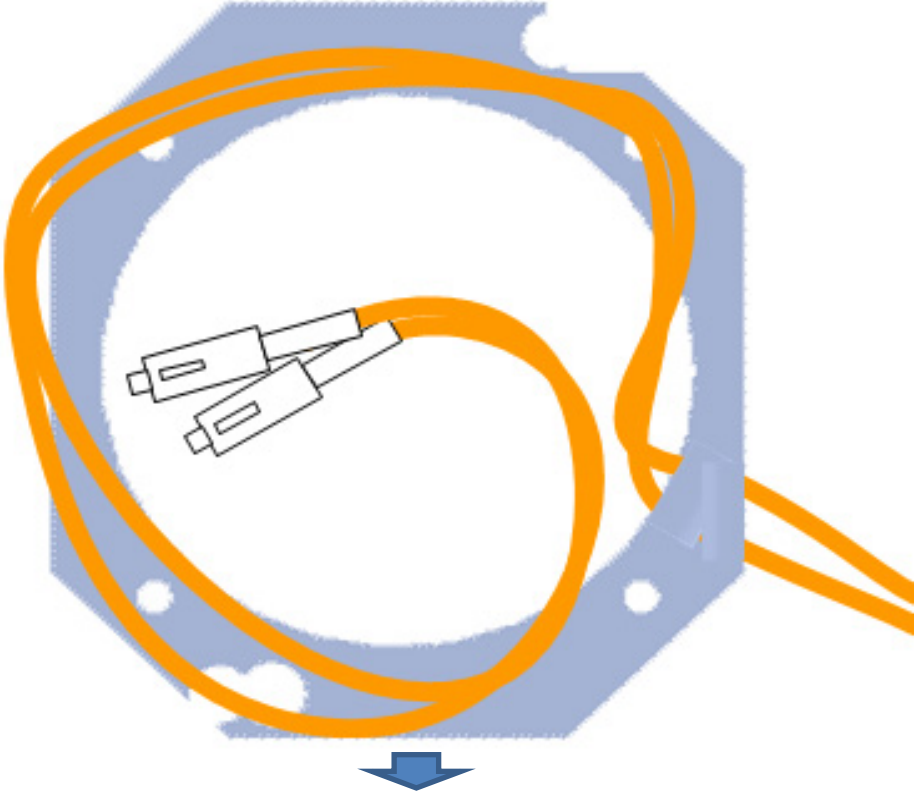
(3) Set Cable-ties at each "corner-hole" or "frame" against the Guiding plate with the fiber cables
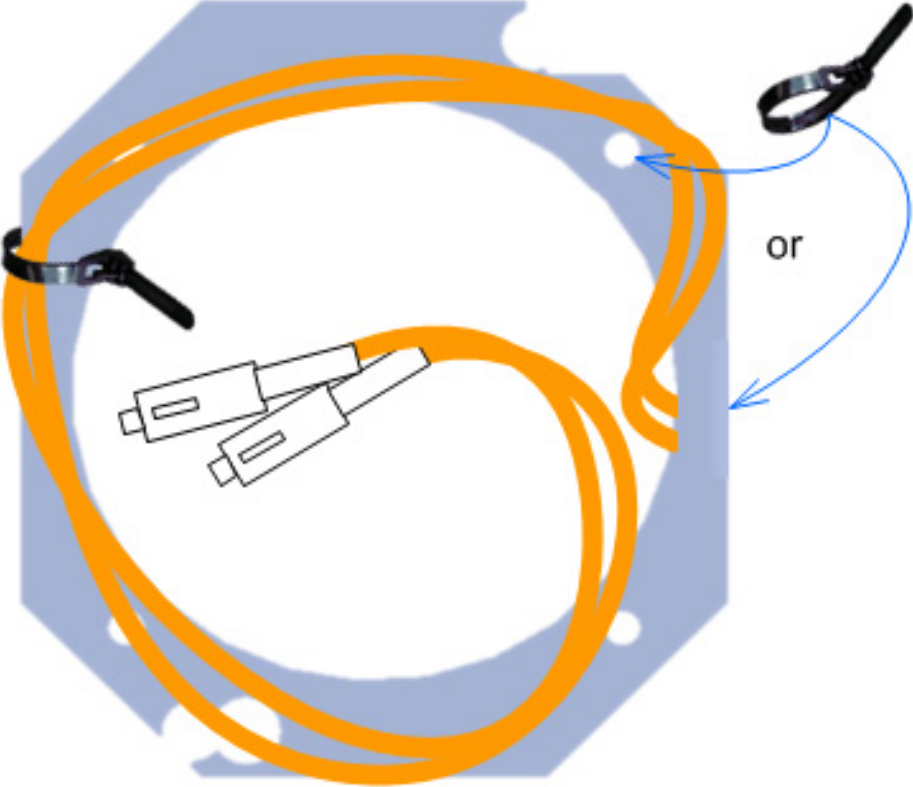
Figure 5.18   Guiding plate with the fiber cables

(4) Hook and infix a strength member to a terminal of the JB by M4 screw (being attached). If the strength member has metal, connect directly to the Chassis of JB and that-metal-part by the M4 screw at the terminal.
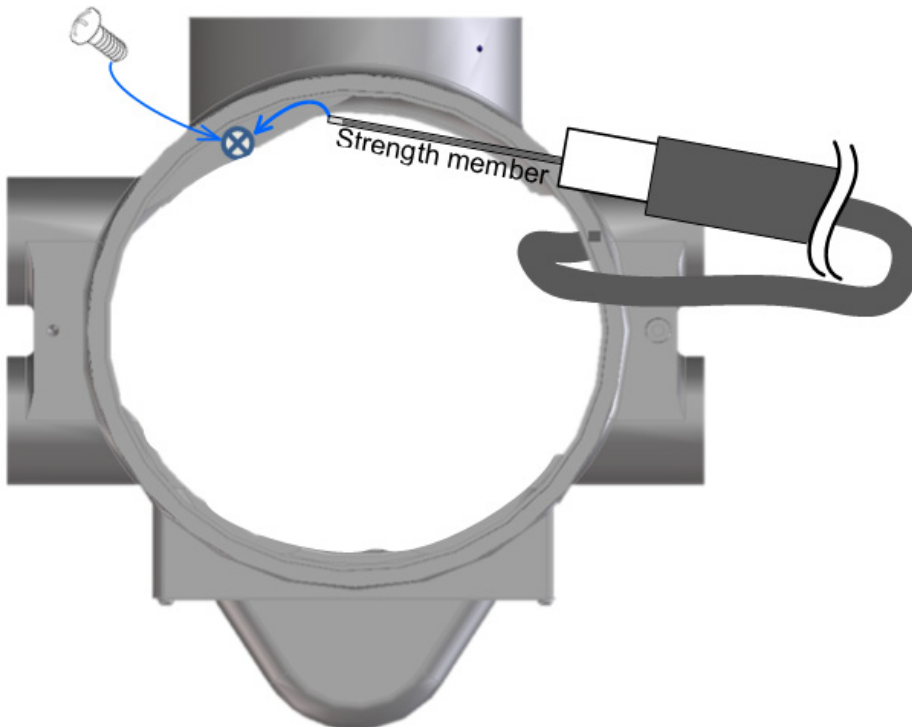
Figure 5.19 Infix a strength member

(5) Land on the JB and infix the Guiding-plate having the winding-fiber-cables on

Port(4)   Cable gland

Not fasten yet
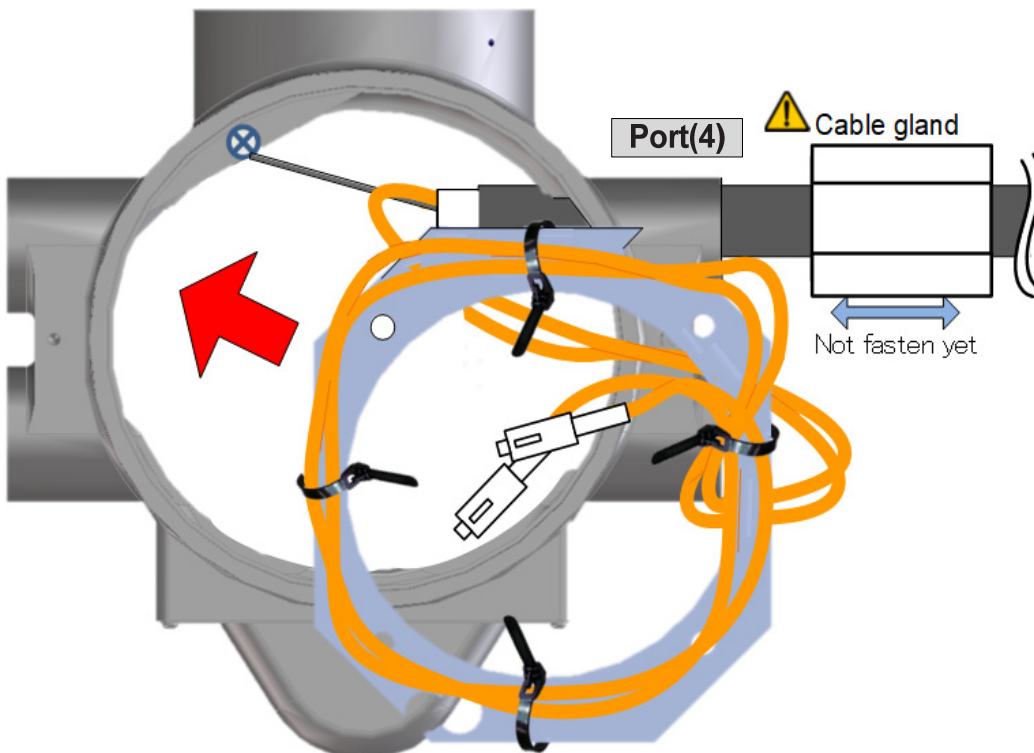
Figure 5.19 Infix a strength member

CAUTION

A Cable gland at this port of the JB must use the M20 x1.5 type

Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.
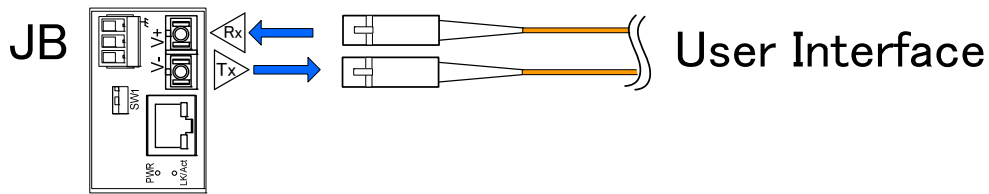
Figure 5.20 Internal User Interface port

⚠ NOTE

Operation check at **Port (4)** has been done using only the Optical Media Converter which is same Model-name. As for such Model name and its vender's name, please contact the customer support as inquiry.

La vérification du fonctionnement au port (4) a été effectuée en utilisant uniquement le convertisseur multimédia optique qui porte le même nom de modèle. Pour connaître le nom de ce modèle et le nom de son fournisseur, veuillez contacter le service clientèle.

(6) Fasten a cable gland
Fasten the cable gland tightly to finish. For more detail information, please refer to section 5.7.

5.5.6.LAN connection of JB-TX

(1) Treatment of Composite cable for JB-TX
Insert the Composite-cable (passing through a cable gland) as shown below to port (1) of JB/TX
(FC33 Interface)

> ⚠️ **CAUTION**
> Assembling of a RJ45 modular plug should start after passing through the Cable Gland
> and JB's **Port (1)**
> *L'assemblage d'une fiche modulaire RJ45 doit commencer après avoir traversé le presse-*
> *étoupe et le port (1) du JB*
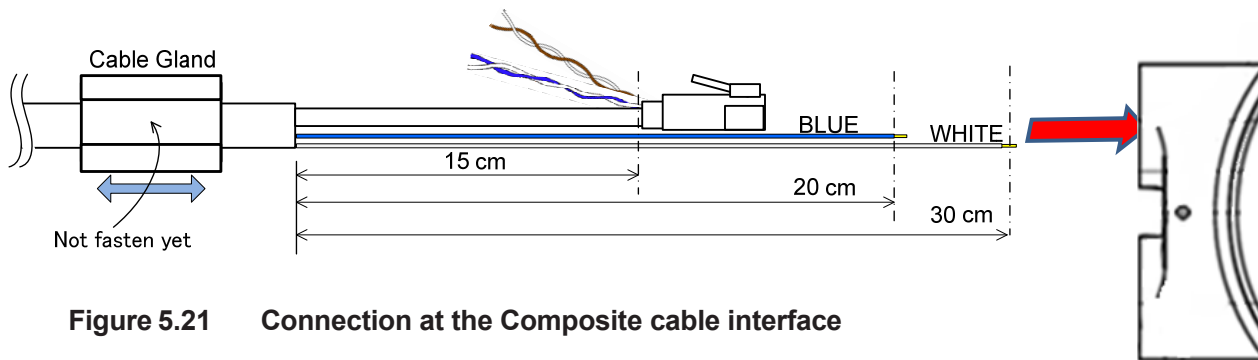
Figure 5.21   Connection at the Composite cable interface

> ⚠️ **CAUTION**
> **A Cable gland at this port of the JB must use the M20 x1.5 type**
>
> *Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.*

(2) Making a Connection of Relay Ctrl.

Push in contact for BLUE-wire to RELAY A1 and WHITE-wire to RELAY N.O.
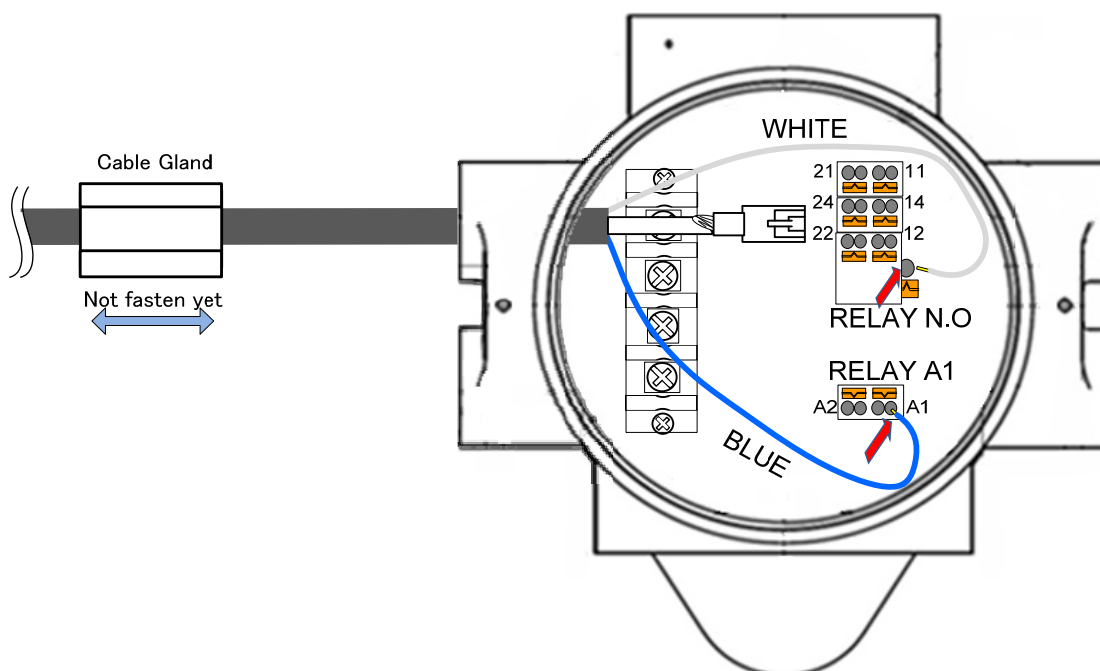
Figure 5.22 Connections for relay control

(3) Treatment of User Interface port of JB-TX

⚠️ **CAUTION**

Assembling of a RJ45 modular plug should start after passing through the Cable Gland and JB's **Port (4)**

L'assemblage d'une fiche modulaire RJ45 doit commencer après avoir traversé le presse-étoupe et le port (4) du JB.
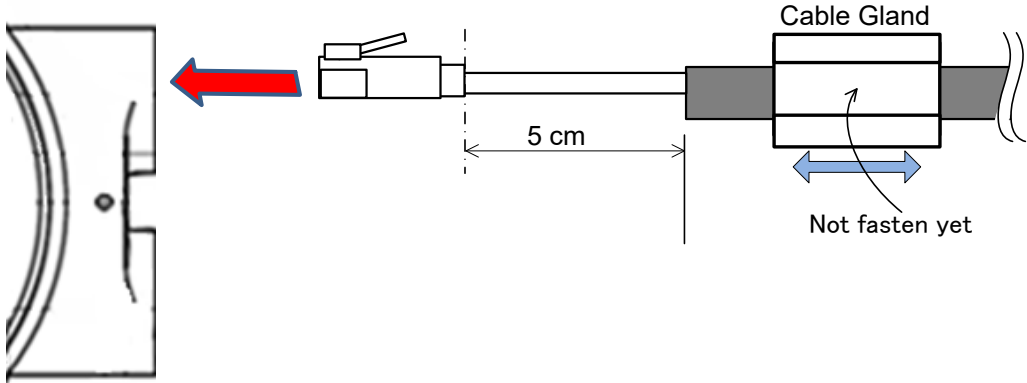
Figure 5.23   User Interface of JB-TX

⚠️ **CAUTION**
A Cable gland at this port of the JB must use the M20 x1.5 type

*Un presse-étoupe à ce port du JB doit utiliser le type M20 x1.5.*

(4) Making a LAN connection inside JB-TX
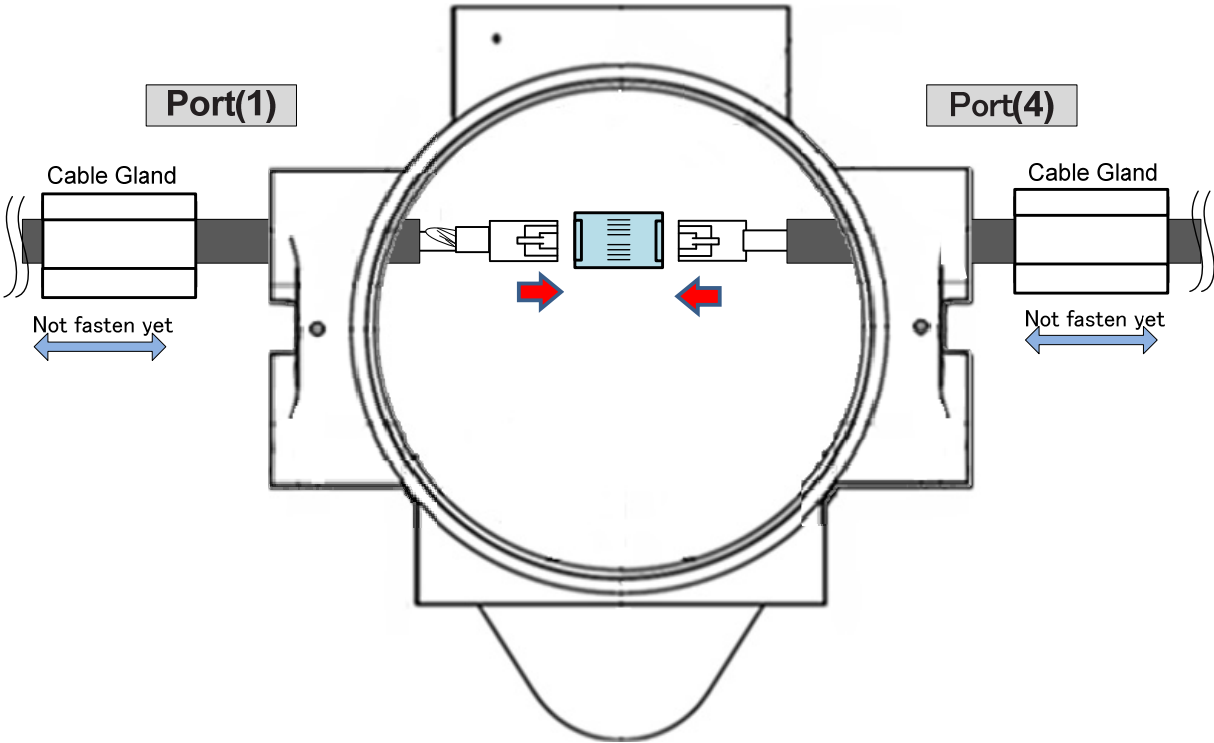
Figure 5.24   Internal Connection of JB/TX

Do not crimp (Blue-White/Blue) and (Brown-White/Brown) pairs into a RJ45 plug, at the **Port (1)**-side
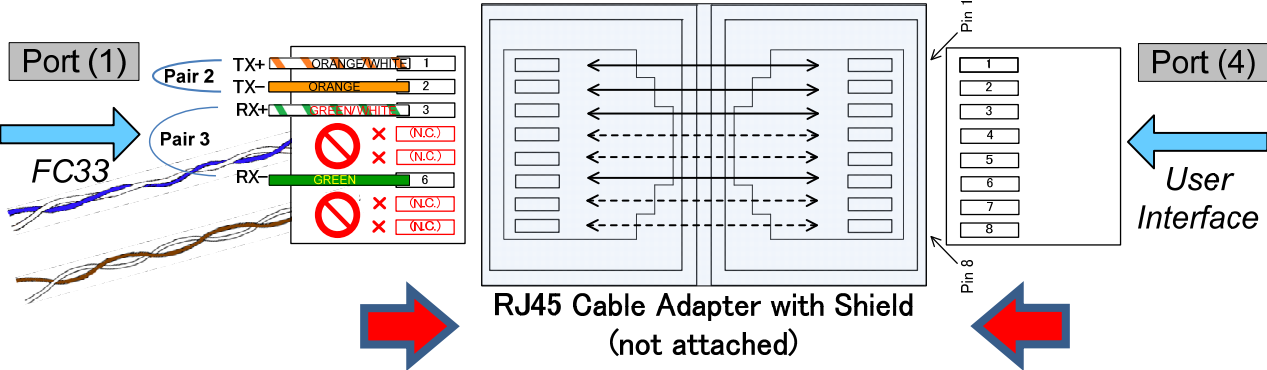
Figure 5.25   Internal Connection of JB-TX (Detail)

(5) Fasten each Cable Gland
Fasten the cable gland tightly to finish. For more detail information, please refer to section 5.7.

5.5.7.Electrical Check before Sealing

⚠️ **NOTE: RECOMMENDED**

Before the Upper-lid closing, check the AC-line is being not short-circuited each other by tester.

5.5.8.Closing the JB's Upper-lid

After all cabling is completed, close the Upper-lid by a force of around 30N·m so as to become securely tight. Pin-spanner (/CT-option) will be needed.

⚠️ **DANGER**:

Do **never** cabling work(s) against live wire(s), otherwise it can cause a serious accident.

Ne réalisez jamais de travaux de câblage avec des fils sous tension, sinon cela pourrait provoquer un accident grave.

5.5.9.Connecting FG terminal

The JB has two FG terminals externally. Connect one of the pair to the Frame Ground by **M4 screw** A cable and the screws for FG termination are not attached to the JB.
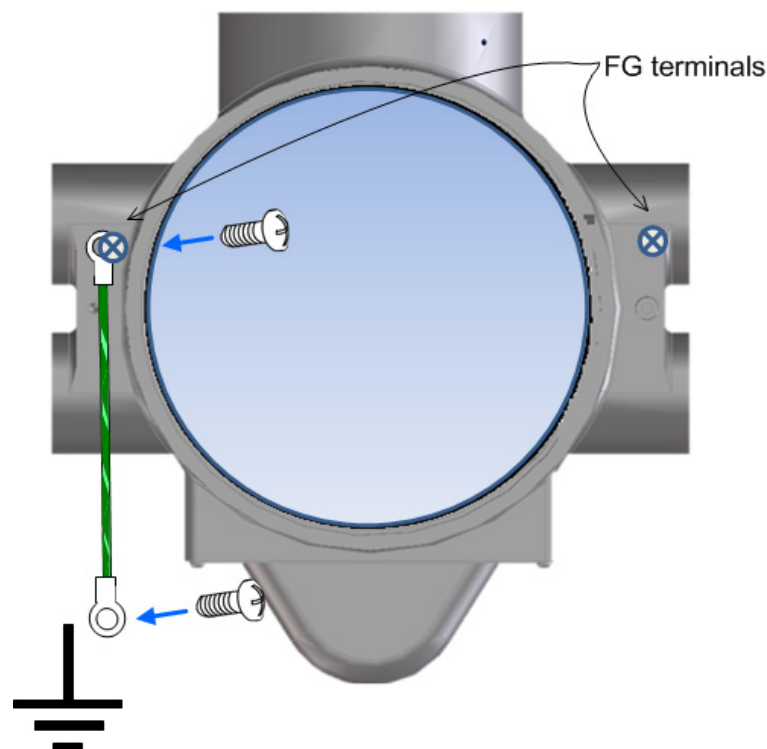
Figure 5.26 FG terminals of FC33

5.6. Cabling without JB
5.6.1. LAN communication
If the FC33's installation without JB, a treatment of the Composite cable will only be the Ethernet signals as shown below. .Please prepare RJ45-shielded modular plug to make a LAN interface.

RJ45 shielded modular plug   **RJ45 modular jack**
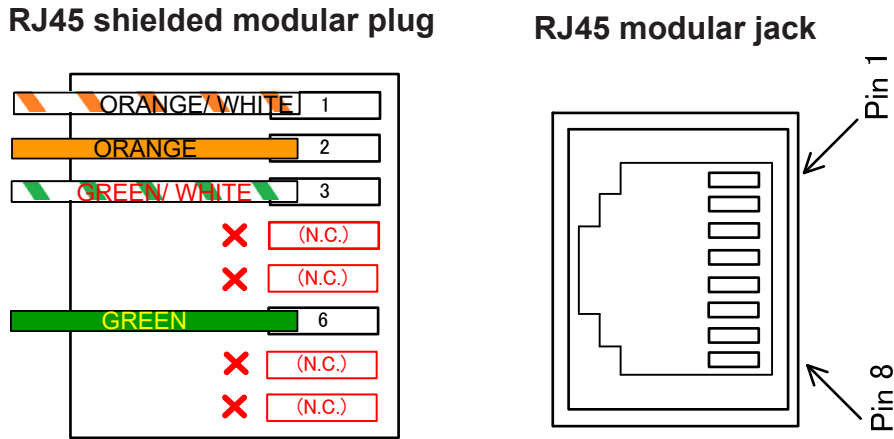
Figure 5.27 RJ45 interface

⚠️ **CAUTION!**

In case of using the JB, the Composite cable must pass through a Cable gland in advance. Otherwise, a terminated Composite cable having RJ45 plug can't pass through i**t.**

En cas d'utilisation du JB, le câble composite doit passer au préalable par un presse-étoupe. Sinon, un câble composite terminé avec une prise RJ45 ne peut pas le travers

5.6.2. Composite cable treatment
Protect nonuse cables around the RJ45 plug by waterproof putty at the surface of the Composite cable. Using **sealant** to finishing step is more effective.

(1) Remove outer coating covering with aluminum foil from the Composite cable.

30cm
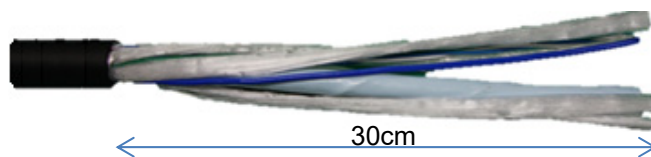
Figure 5.28   Step1 of 12

(2) Remove inner straps

15cm
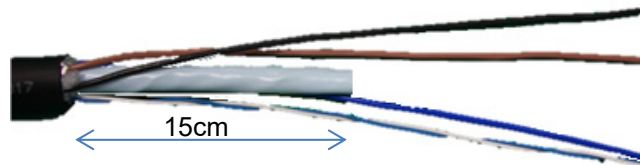
Figure 5.28   Step2 of 12

(3) Remove inner shield

5cm

Figure 5.28   Step3 of 12

(4) Remove inner rolled paper

Figure 5.28   Step4 of 12

(5) Wind a Copper foil (an attachment) to LAN cable coating

Figure 5.28   Step5 of 12

(6) Turn back a Drain line
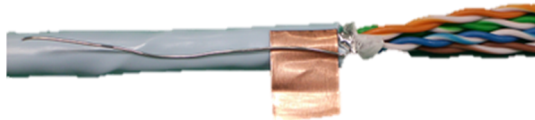
Figure 5.28   Step6 of 12

(7) Wind the Copper foil again (only one round), so as to clamp the Drain line.
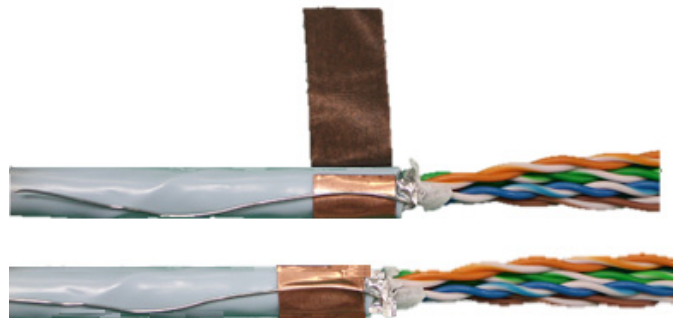
Figure 5.28   Step7 of 12

(8) Turn back 2 twist pair-cables (Blue-White/Blue and Brown-White/Brown).

Figure 5.28   Step8 of 12

(9) Put on a RJ-45-plug having a shield (not an attachment) at the end of remained cables

Figure 5.28   Step9 of 12

(10) Cut off the protruding drain line from the rim of Copper foil

Figure 5.28   Step10 of 12

(11) Become uneven tips of twist-pairs so as to prevent short circuit each other.

5mm
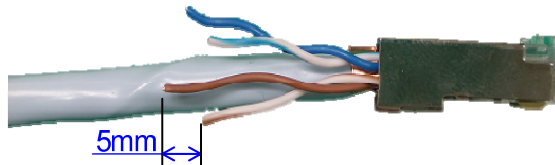
Figure 5.28   Step11 of 12

(12) Wind a tape (not an attachment) to clamp each twist pair cable.

Figure 5.28   Step12 of 12

⚠️ **Note**

Termination by network device (a media converter or a HUB etc.) within 40m from the user interface port above should be needed.

Veuillez vous assurer de toujours installer un périphérique réseau (comme un convertisseur multimédia ou un concentrateur, etc.) à moins de 40 m du port d'interface utilisateur ci-dess

5.6.3. Connecting FG terminal

For electrical safety of the Main body, connecting to FG terminal is recommended.
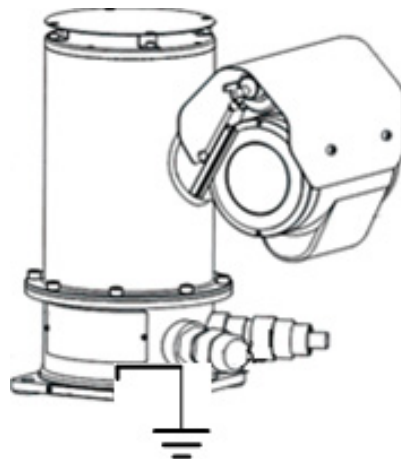
Figure 5.29   FG-termination of FC33

5.7. CABLE GLAND OF JB side(option)

(1) CABLE GLAND (M20) OF JB

A	・Nominal designation of screw thread：M20 ・Pitch of thread：1.5mm ・Quality of fit：6H6g
B	・Nominal designation of screw thread：M20 ・Pitch of thread：1.5mm ・Threads engaged：1.5mm

SURFACE ROUGHNESS :6.3a

JB MAIN BODY
MATERIAL：SUS316L stainless alloy

No.	NAME	MATERIAL
1	Main body	SUS316L
2	Gasket	Nylon
3	Packing	Silicone
4	Union	SUS316L
5	Coupling	SUS316L
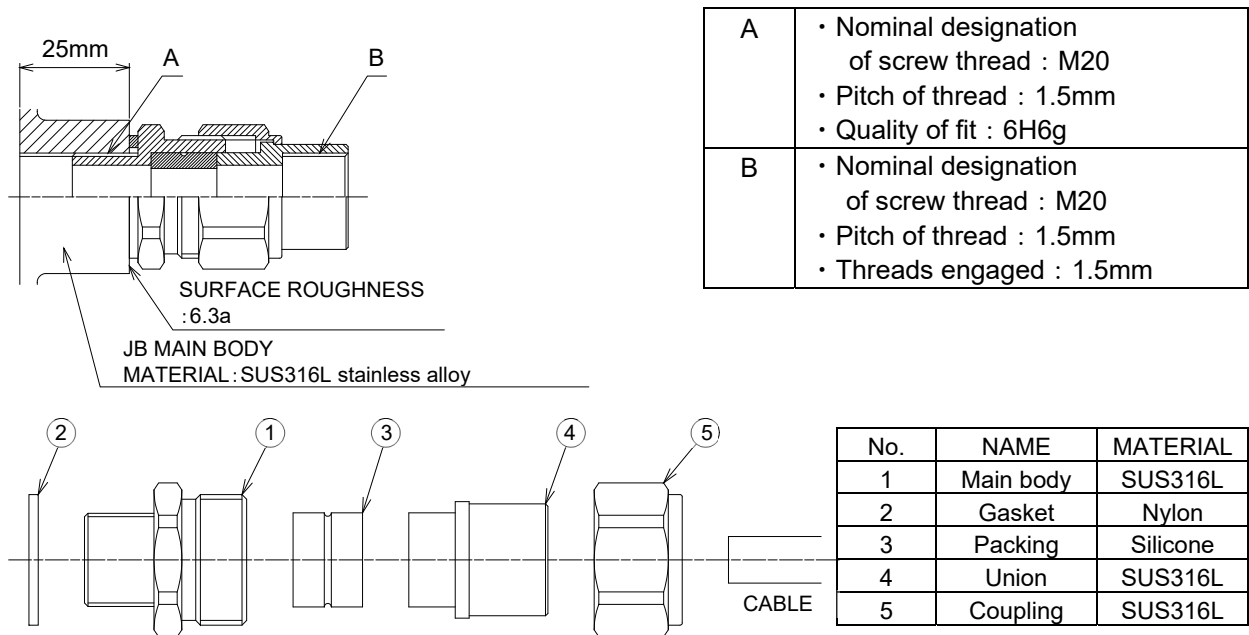
CABLE

Figure 5.30 M20 Cable Gland for the JB

To install a cable gland for JB, steps are set forth as below:
 Following shows the steps for connecting the pressure-resistant explosion-proof packing metal rig. Basic specification code EM2, EM3 and EM4 (ATEX overseas explosion-proof)

1. Remove 4 sealing plastic caps being sealed for transport from JB.
2. Tighten the connector Main Body 1(with GASKET2) to the cabling port where the sealing cap has been removed, at a torque of 30 to 40 N m
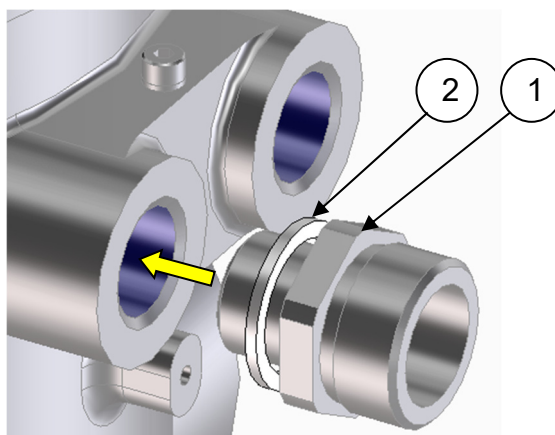
Figure 5.31 Connect Main Body1 with Gasket2

3. Insert the cable through the components as shown below:Union Coupling 4,5, and Packing 3
4. Insert that cable to the JB's inside by passing through the Main Body1
5. Keep a suitable length in the JB's inside to corresponding cabling work at the end of that cable.

6. While keeping the connector Main Body1 steady using a spanner etc., tighten the Coupling 5 once until the packing adheres, and then rotate it once and tighten it at a torque of approx. 25 N m.

7. If there are cabling ports with protruding sealing plugs, tighten them at a higher torque.

⚠ CAUTION

The cable gland does not offer sufficient pull strength. Less a pull and/or a twist affect the main body connector, use an external component that has enough pull strength to secure the cable connection.

Le presse-étoupe n'offre pas une résistance à la traction suffisante. Moins de traction et/ou une torsion affectent le connecteur du corps principal, utilisez un composant externe qui a une force de traction suffisante pour sécuriser la connexion du câble.
.

(2) SEALING PLUG (M20) OF JB

➜ **Position for installing the sealing plug at the JB**
To install a sealing plug for JB: Please refer to Figure 5.10 and Figure 5-11 (regarding the JB neither Relay-Control nor AC-Power output), for the installing port.
.
➜ **Standard size and spec. of the Sealing plug are below:**

Type	M20
Nominal diameter	1.5 [mm]
Thread length	15 [mm]
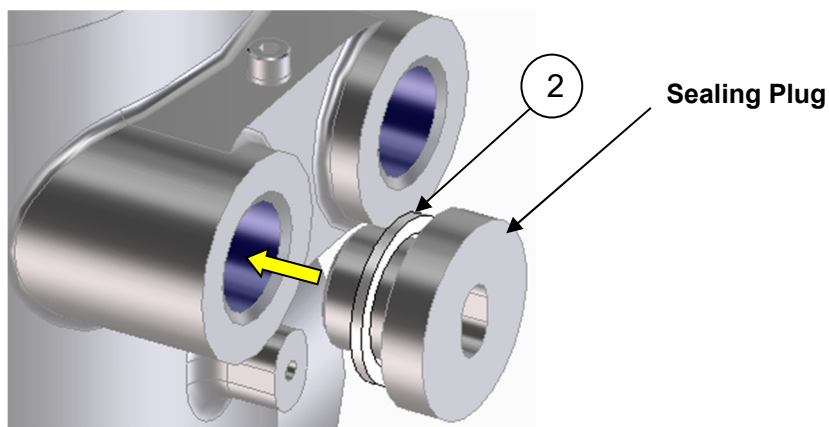
Figure 5.32 Connect Sealing Plug

5.8. Return to Zero Position

The camera can be returned to the zero position from the controller or PC. Figure 5-35 below shows the zero position. The camera automatically returns to the zero position by powering off and then on the camera body.

After the camera returns to the zero position, the zoom position comes to the wide end, the focus comes to Auto, and the Auto Exposure mode and the turning speed are maintained as previously set.

The turning speed is maintained if the specified Return to Zero Position command is used. The speed is fixed at 30°/sec immediately after the turning on the power.

⚠ CAUTION

During the camera returns to the zero position, do not remotely operate the camera from the PC(Client). If you attempt to do so, the camera may fail to normally returns to the zero position.

Pendant que la caméra revient à la position zéro, ne faites pas fonctionner la caméra à distance depuis le PC (client). Si vous essayez de le faire, la caméra risque de ne pas revenir normalement à la position zéro.
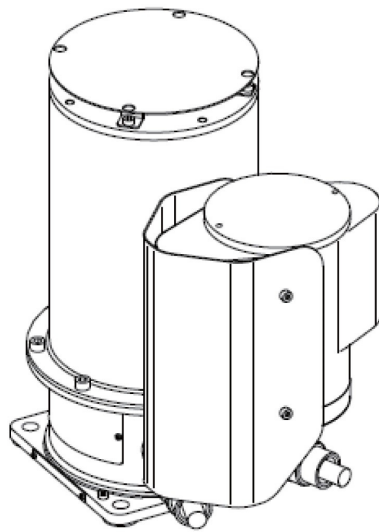
Figure 5.33   Zero position of FC33

5.9. Piping requirements for CSA Explosionproof

To comply with CSA Certification, each cable glands of FC33E should be covered by CONDUIT pipe (Refer to figure 5.34 below).
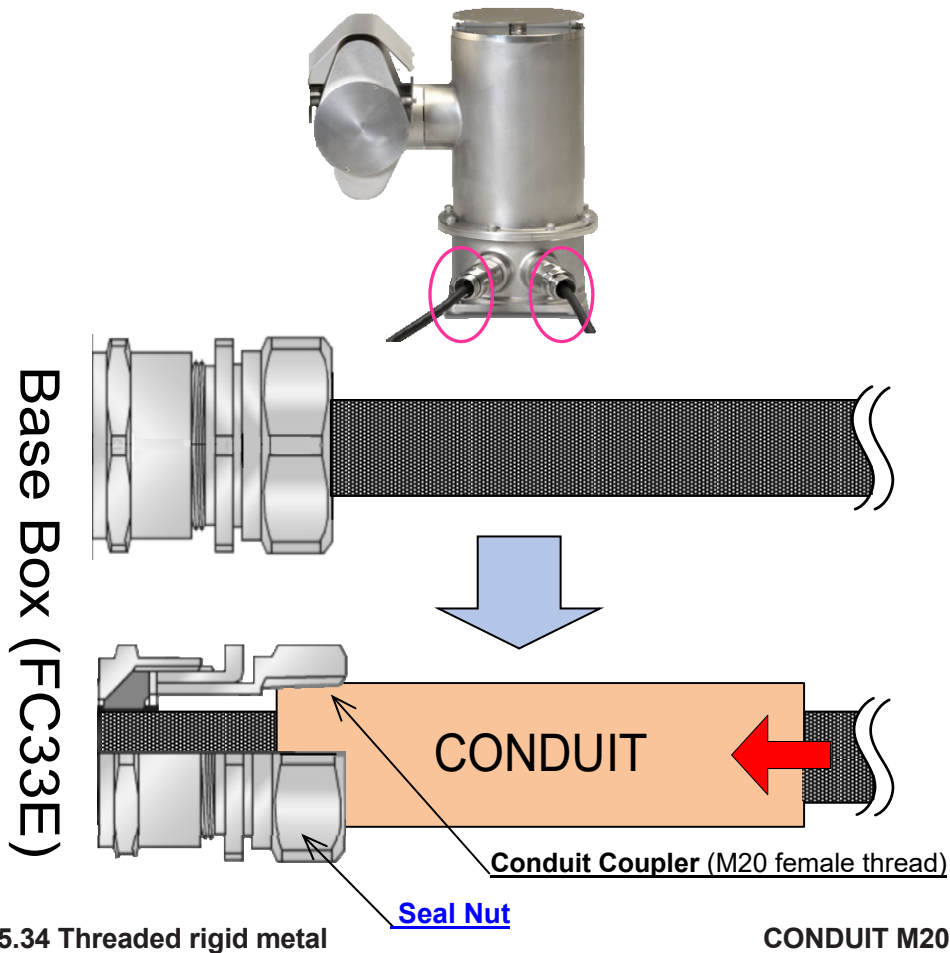
Figure 5.34 Threaded rigid metal   CONDUIT M20

Attach the **CONDUIT** to the Conduit Coupler (M20 female thread inside) and fully tighten it. Ensure that the **Seal Nut** does not come loose during this process by holding it with a spanner (not attached)
For Canadian Installations, housing of the Base box must be bonded to ground according to Section 18 of the CEC(Canadian Electrical Code) Part I Safety Standard for Electrical Installations..

For Zone 1 field wiring, according to Canadian Electrical Code, must apply CSA certified cable gland with appropriate rating. (This product complies with already such requirement at the time of factory shipment.) And the final assembly shall be evaluated and subjected to acceptance of local authority having jurisdiction. (This requirement shall be customer jurisdiction.).

For Zone 2 field wiring, please refer to appropriate rule of CEC, and take a proper measures to sealing the conduit enter..
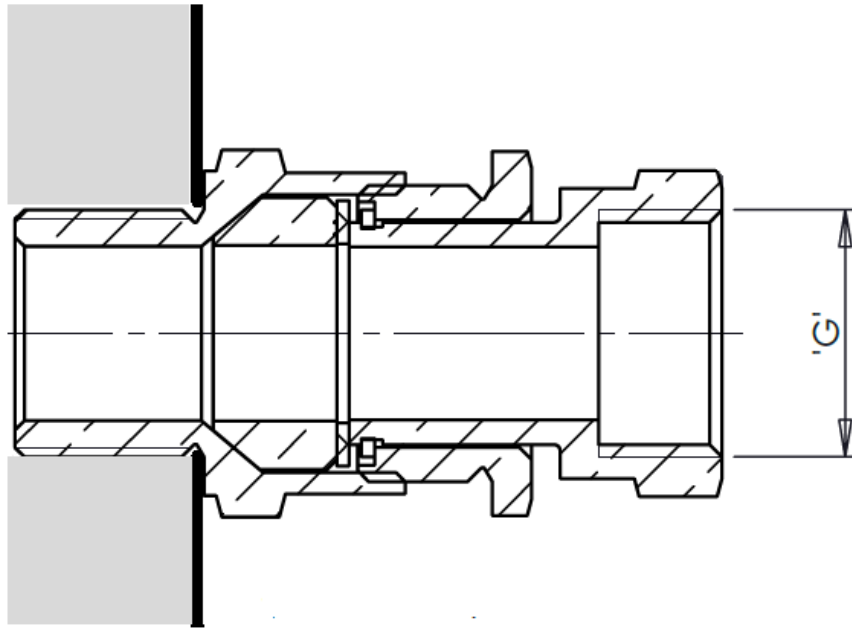
Hear, above '**G**':   [Unit: mm]
PICTH OF THREAD   1.5
THREAD ENGAGED   15
DEPTH PE RNGAGEMENT   10

Figure 5.35   Connecting interface of CONDUIT

⚠ CAUTION

Do not touch the each 2 pigtail Cables if lower minus 10 celsius degree environment.

Ne touchez aucun des 2 câbles en queue de cochon si la température ambiante est inférieure à 10 °C.

Blank Page

6. Accessing the Camera
6.1. Before Use of the IP Camera

(1) Important Notice: to making a secure system

⚠️ **CAUTION**

FC33 is not designed to be able to connect to the Internet directly.
To make a connection of FC33 (Server) and PC (Client) by network, be sure that those are being a same network.
Such network has to be isolated from the Internet by Firewall at least, or being disconnected actually and/or physically.

Le FC33 n'est pas conçu pour pouvoir se connecter directement à Internet.Pour établir une connexion de FC33 (serveur) et PC (client) par réseau, assurez-vous qu'il s'agit d'un même réseau. Ce réseau doit être isolé d'Internet par le pare-feu au moins, ou être déconnecté réellement et / ou physiquement.
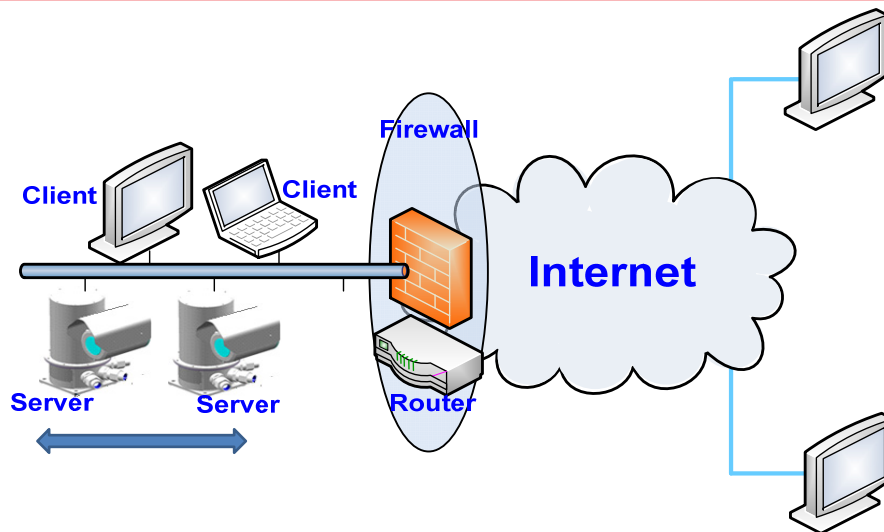
Figure 6-1   To making a Secure System

6.2. System Requirements of PC

The systems requirements of PC as a Client system for FC33E/U are shown below:

(1) OS requirement

Item	Specifications
Windows 10 *	English version, Japanese version,

Note: Operation has been confirmed with Windows 10 Pro 64bit version.

(2) Web browser

Microsoft Edge Chromium *
Note: Installation of ActiveX attached to the product and execution in Internet Explorer mode are required.

6.3. Installing Setup utility to the PC

(1) ActiveX installation

To display images using a Web browser, the following two types of software must be installed on the client PC.
ActiveX software for Web browser is included in the attached CD-R.
Microsoft Visual C++ may already be installed depending on the PC environment. In that case, installation is not required.

ActiveX software for Web browser

Item	File name	Remarks
1	rtspviewer_x.x.x.msi *1	ActiveX main module
2	vc_redist.x86.exe *2	Runtime

*1 RSTP RTSP Viewer ActiveX control
*2 Microsoft Visual C++ Runtime
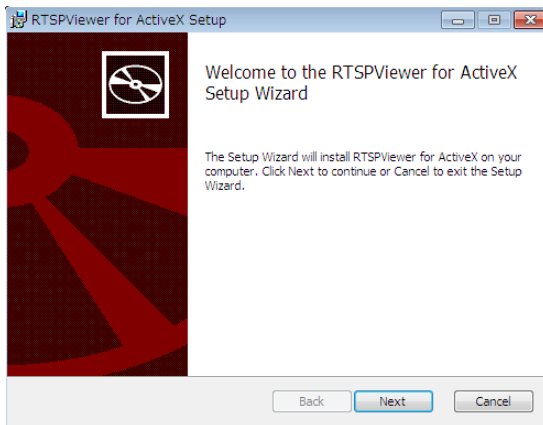
Figure 6-2   Item 1 installation
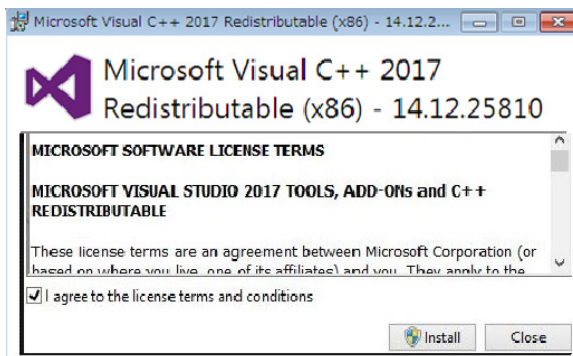
Figure 6-3   Item 2 installation

1. **Complete** the installation of the Runtime files
2. **Restart** (Reboot) the PC
3. **Once after the first installation mentioned above had been done, installing only one-software shown below is needed at the PC**

Item	File name	Remark
1	rtspviewer_x.x.x.msi	ActiveX main module
--	--	---

(Uninstalling of old version is needed before new version)

4. **Restart** (Reboot) the PC

6.4. First browser startup

This FC33 Full HDIP type has an IPv4 address 192.168.127.100 as a factory default value (at the first time) or an inputted value of "IP Address"-field at Admin Menu > Network > LAN > IPv4>screen.

(1) IE mode settings

Microsoft Edge requires Internet Explorer mode (IE mode) settings in order to run the ActiveX that handles video streaming.Please follow the steps below to set IE mode.
Steps 2. through 4. are not necessary the next time after setting once.

Step1.
Type http://192.168.127,100 to the Address field of the Web browser, and press the Enter key. Then, login window as shown below will be opened.
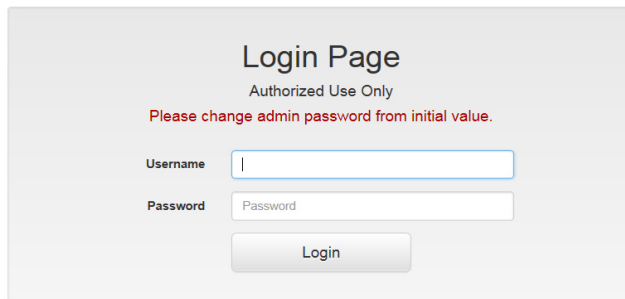
Figure 6-4   Login Page at the first time

Step2.
Click the icon "..." in the menu display at the upper right of the Web browser and select "Settings".
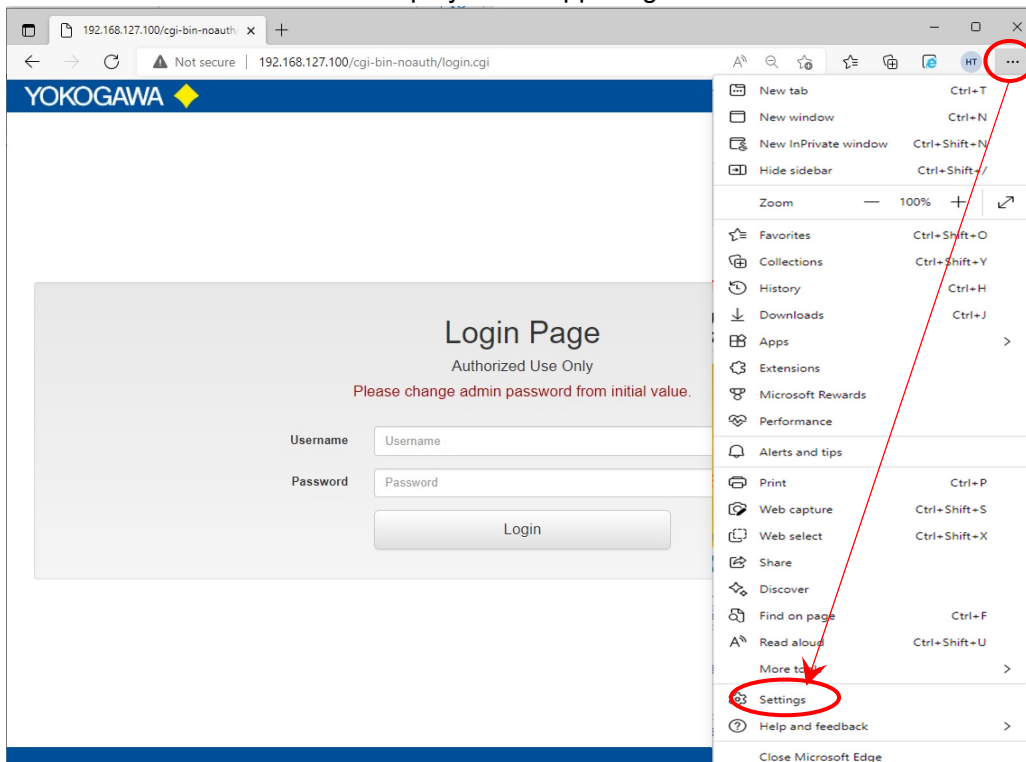
Figure 6-5 Settings menu selection screen

Step3.
Click on "Default Browser" from the settings menu on the left.
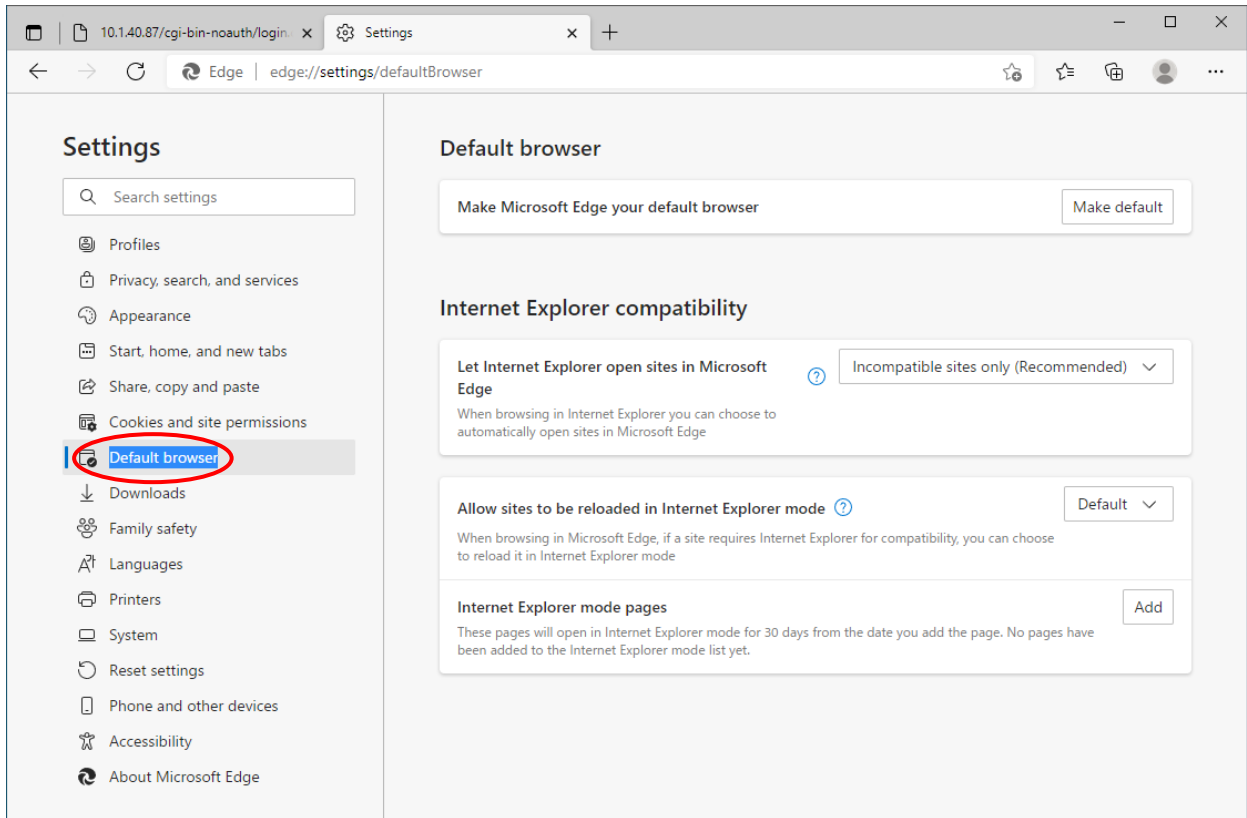
Figure 6-6 Default Browser Settings Screen

Step4.
Under "Allow sites to be reloaded in Internet Explorer mode," select "Allow," then click the "Restart" button below it to restart your browser.
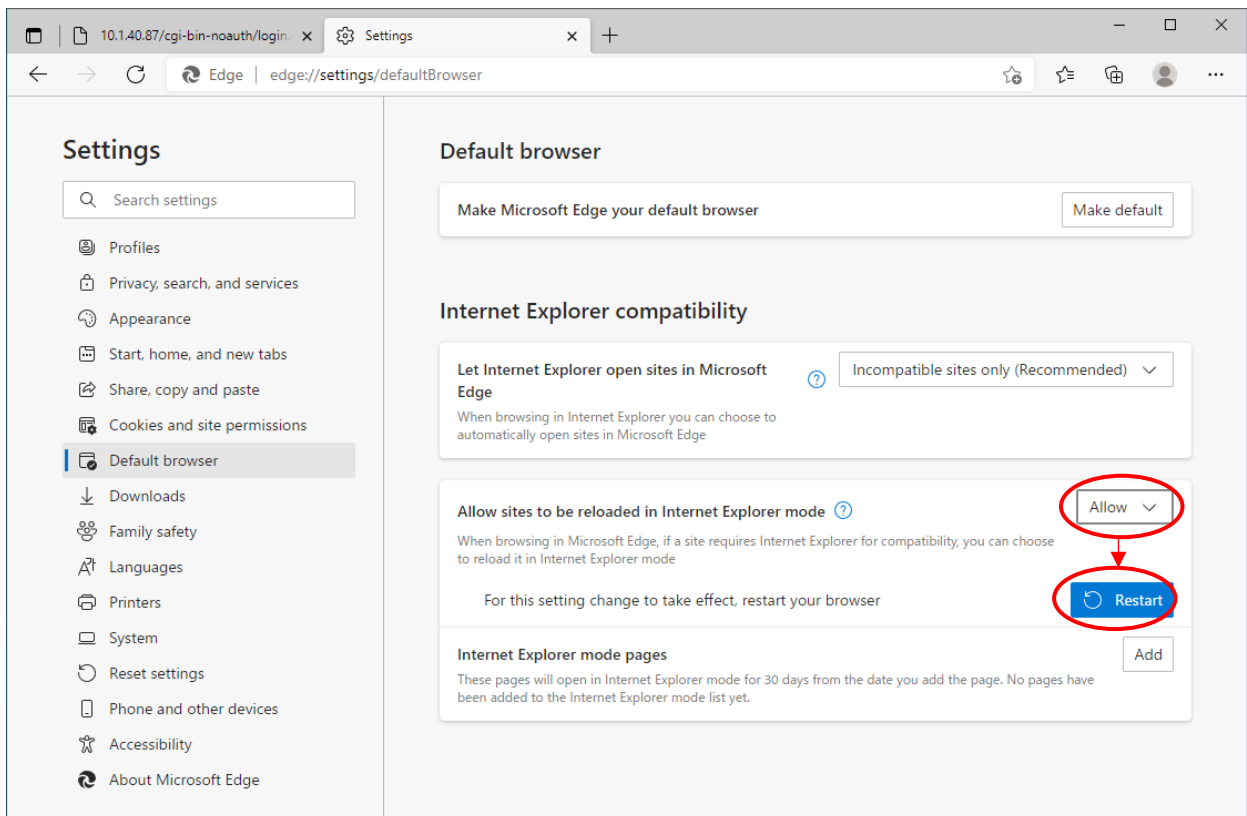
Figure 6-7 Internet Explorer mode settings

Step5.
After restarting, go to the tab that accesses Fieldeye, click again on the icon "..." in the menu display in the upper right corner, and select "Reload in Internet Explorer mode".
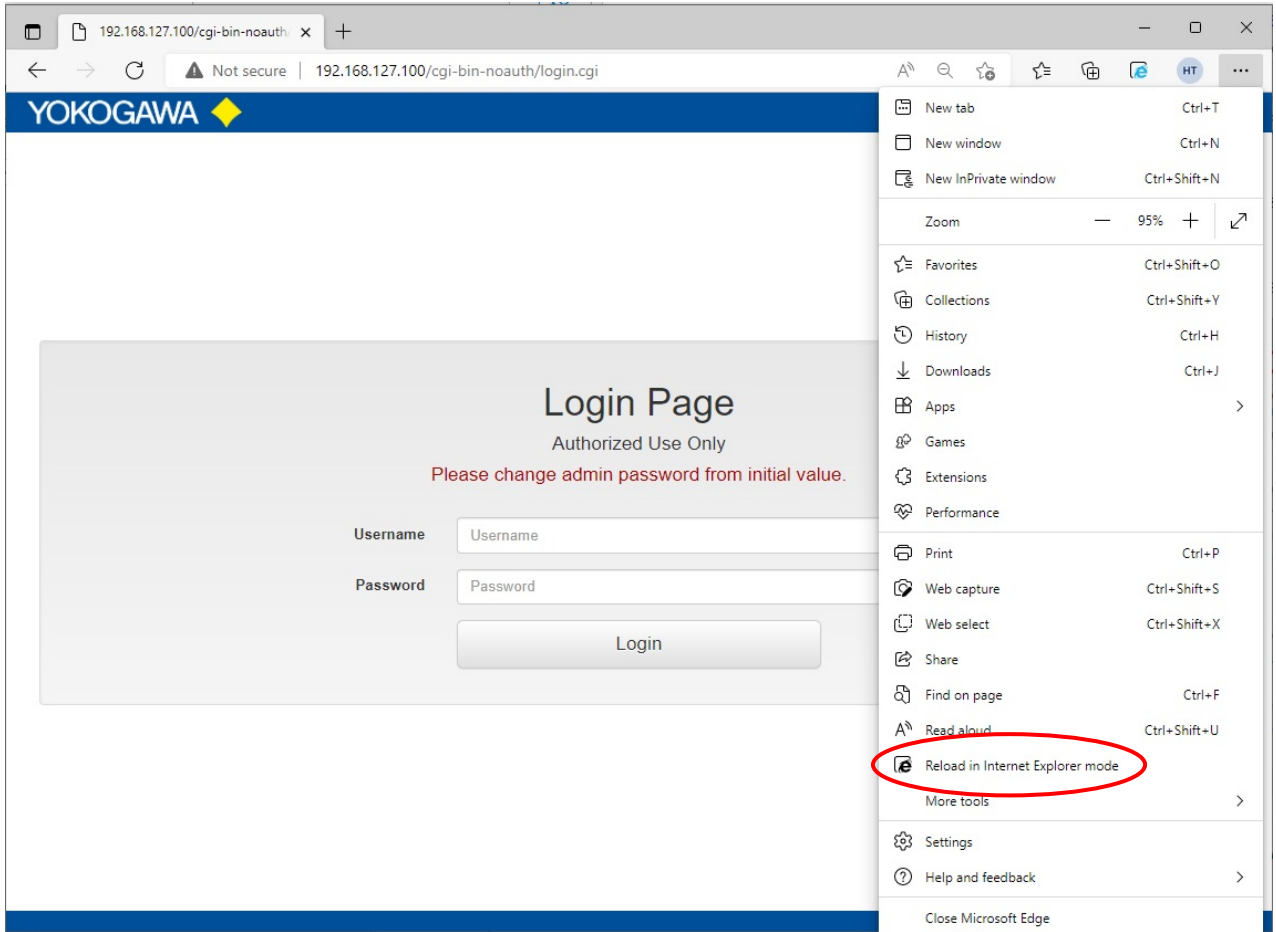
Figure 6-8 Reload Internet Explorer mode

In the pop-up menu , enable "Open this page in Internet Explorer mode next time" and click "Done".
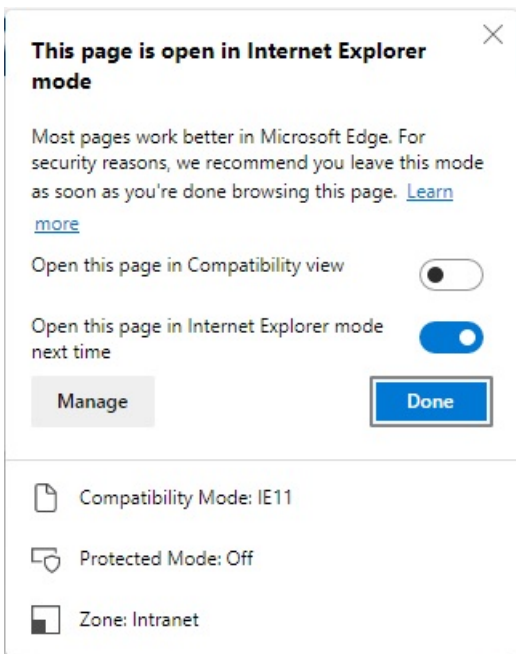
Figure 6-9 Internet Explorer mode reload settings

6.5. Changing default password

At a first log-in to FC33, default password of admin must be changed. Therefore, a screen of "changing admin's password" will be displayed at first time.
At Fill a default ID and pass-word in to the login screen, and click the Login button.

User name:	**admin**
Password :	**fieldeye2**
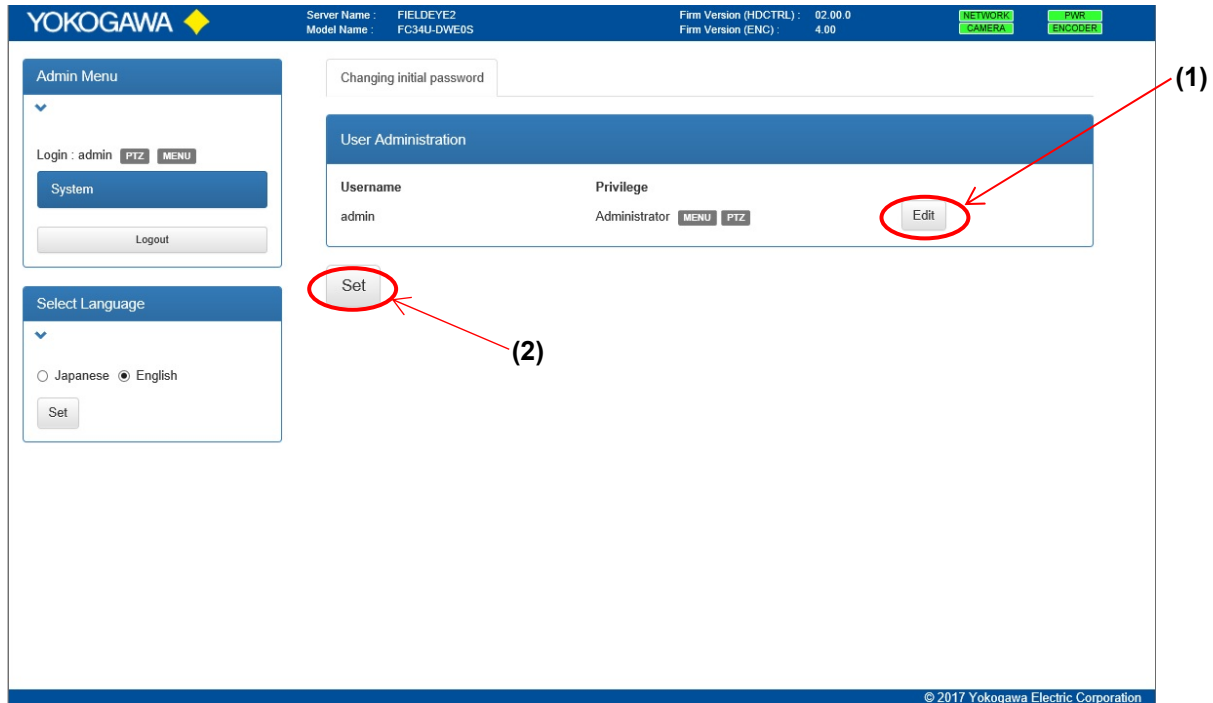
Figure 6-10   Change an initial password

(1) Press an "Edit" button
Then a dialog window for changing the initial password of admin will comes up.

Username:" admin"   keep same
Password:"■■■■■■■■■"
Type in a new password of your own; DO NOT forget this-password.

__As for the New Password:__
➢ At least 8 characters in length, with a max length of 128 characters, Including at least 2 kinds of types within 1) - 3) shown below :
➢**1)** Alphabetic characters (distinguish between upper and lower-case).
➢**2)** Numbers
➢**3)** Codes, except 4 characters of | , " / \ |
   Also, 3 characters are prohibited: | **Space, Tab, Enter** | in the Codes above

⚠ **NOTE**

Set a new administrator's New Password so that others cannot easily guess it...
Do NOT forget the NEW Password please!

(2) Click a Set button
Then the screen of "changing admin's password" will be closed, instead a second login page will come up. However, the message of "Please change admin password from initial value" will be dis-appeared in this time.

(3) Do login by the New Password as admin.

Then, the Viewer screen as Home page will be come up like below:.
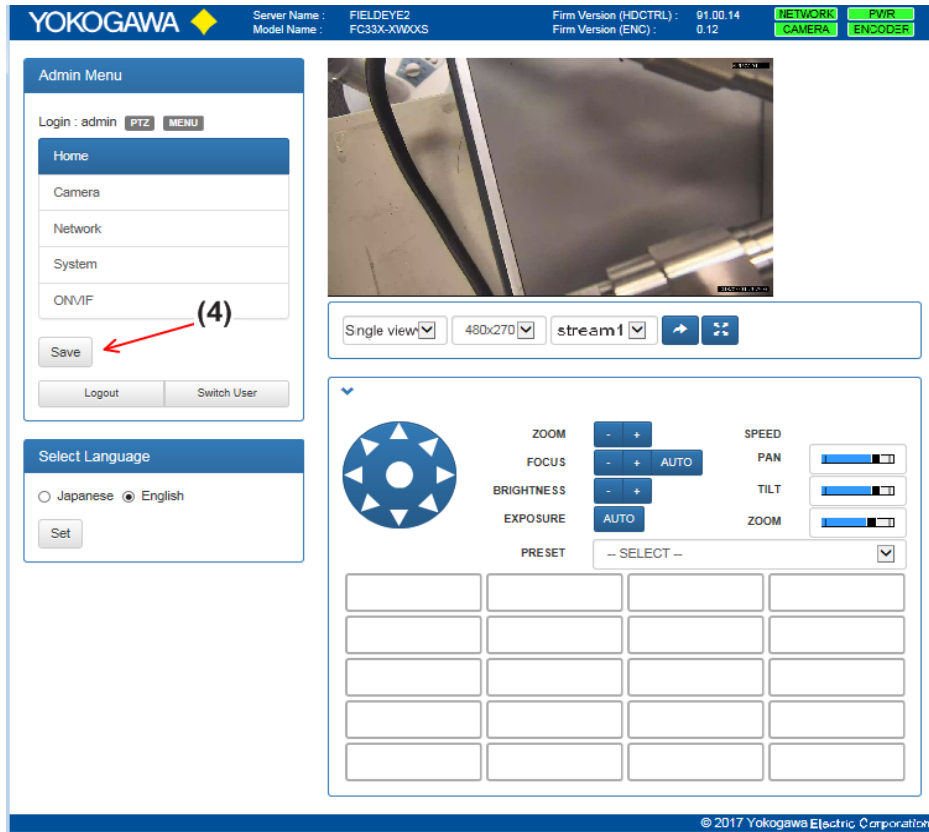
Figure 6-11   Save a New password

(4) Click a Save button

By clicking a Save-button, the **New Password** sets into this FC33.

Note:
If IE mode is not set correctly, "ActiveX control failed to load." is displayed in the video display area as shown below.
Please check the IE mode setting and perform step 5 [Reload in Internet Explorer mode].
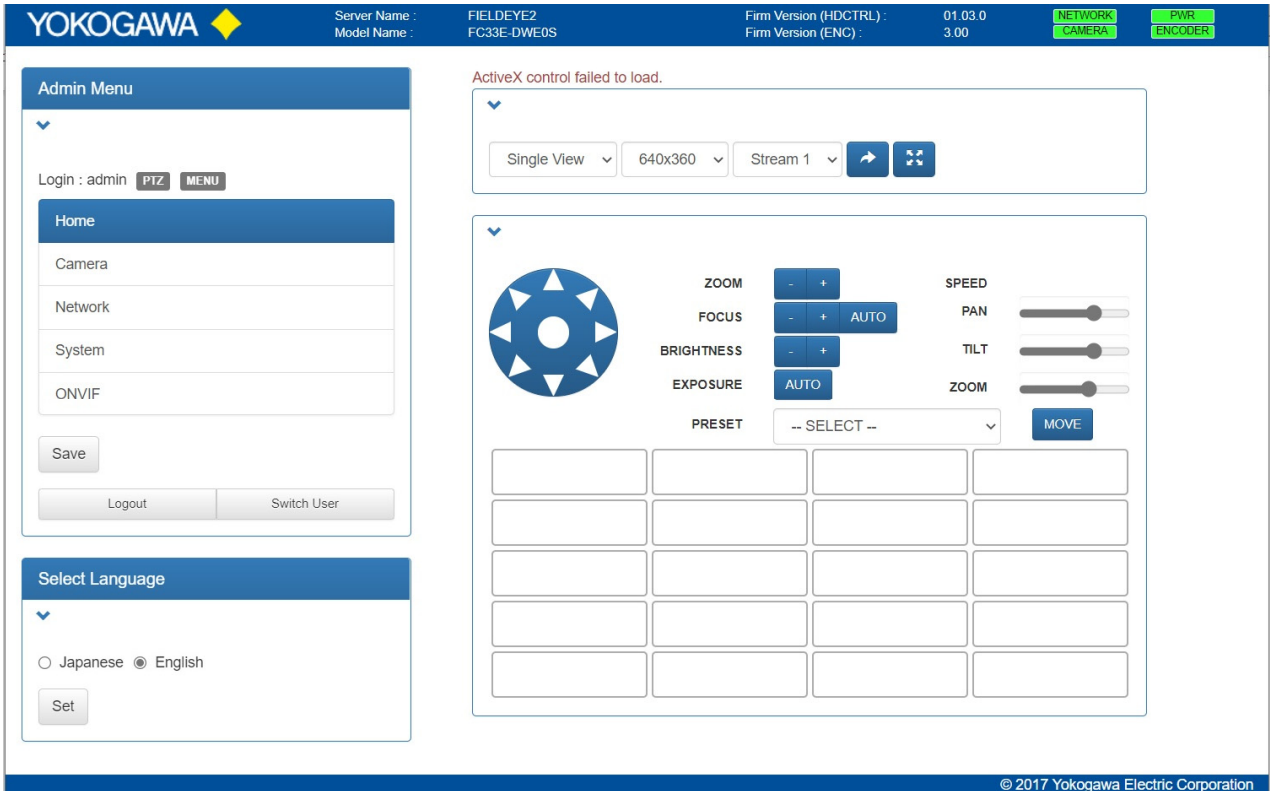
Figure 6-12 ActiveX loading error

This problem also occurs when ActiveX is not installed properly or when ActiveX execution is not permitted.
Check your ActiveX settings.

7. Accessing the Video streams

An Operator and/or Client(s) can access FC33E/U via Webpage.

7.1. Home (Viewer screen)

7.1.1. Viewer setting-field

(1) Number of screens

Single View   1 screen display
Multi View   4 screen display

(2) Size of screen(s)

Select one-size which want to from the pull down menu. (These sizes are unrelated to the resolution-setting in the video stream, at 7.2.4 Video)

960x540
640x360 :Default
480x270
320x180

(3) Video Stream selection

When the single view (1-screen) mode, selection of the "stream number-1 or 2" of the Live Viewer is available.

7.1.2. Viewer Console-field

A Console-field for the Live Viewer consists of PT (Pan and Tilt)-Direction Circle, Zoom controller, Preset position, Optical adjustment controller and Matrix table of function buttons.
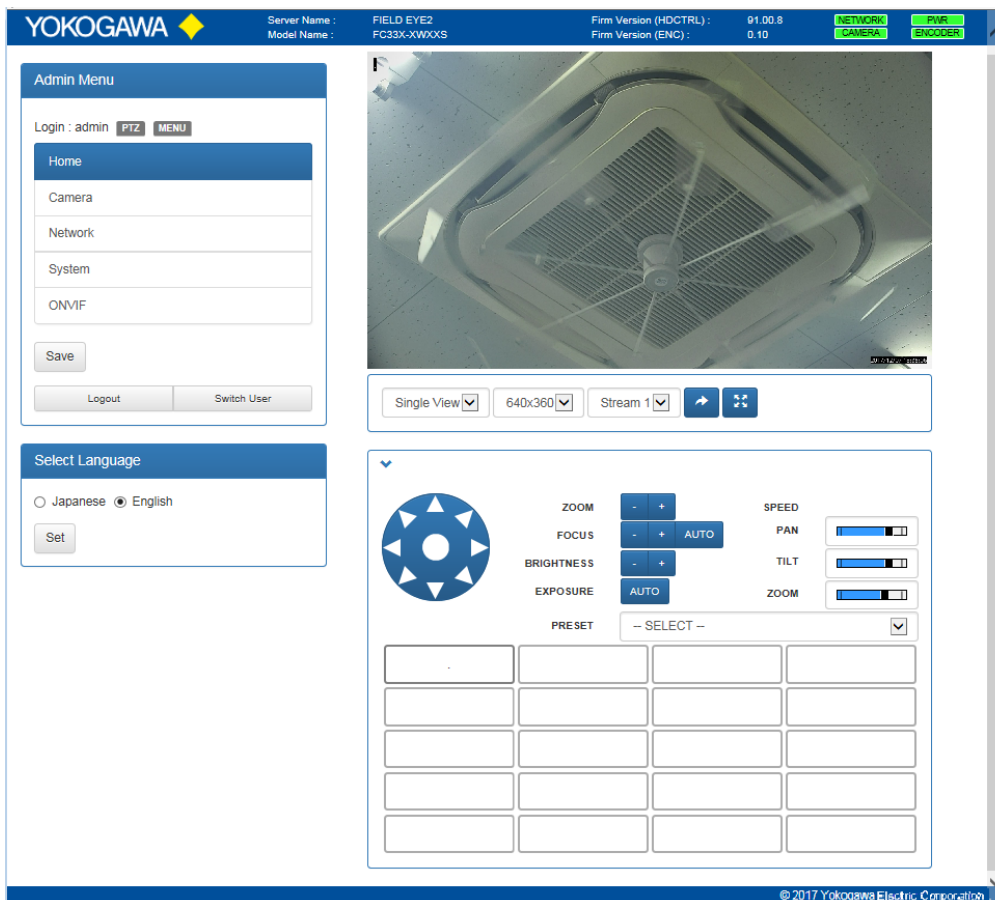
Figure 7-1   Viewer console

(1) PT-Direction Circle and Zoom Ctrl

Any triangle on the circumference can move to that direction. However if click a center button, camera will return to the Home position any time. Zoom-/+ button controls zooming function.

Go to Home
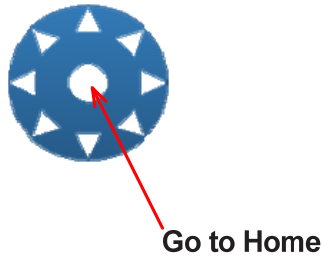
Figure 7-1A Console functions of the Viewer

(2) Optical adjustments and speed control

As for the Optical adjustment menu, manual/auto-focus and brightness are available.
Speed bars can control PT speed by the PT direction circle and zoom -/+ button respectably.

Slide Bar(s)
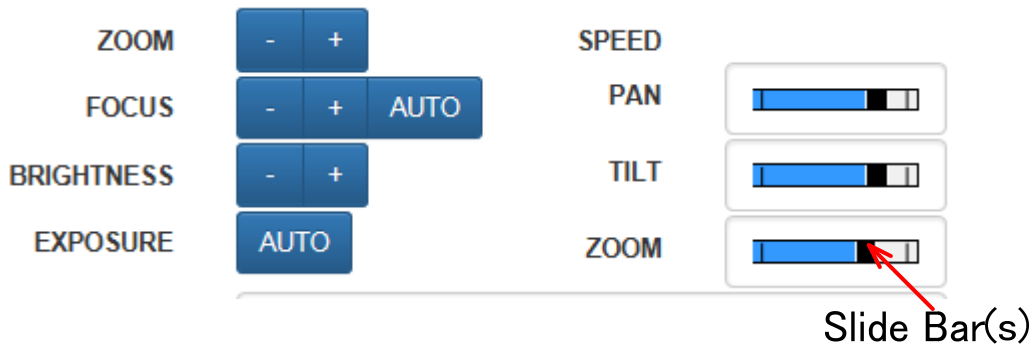
Figure 7-1B Console functions of the Viewer

(3) Moving to Preset-point

Preset positions configured in advance can display and select in a pull down menu.

Preset position 1-128
are selectable
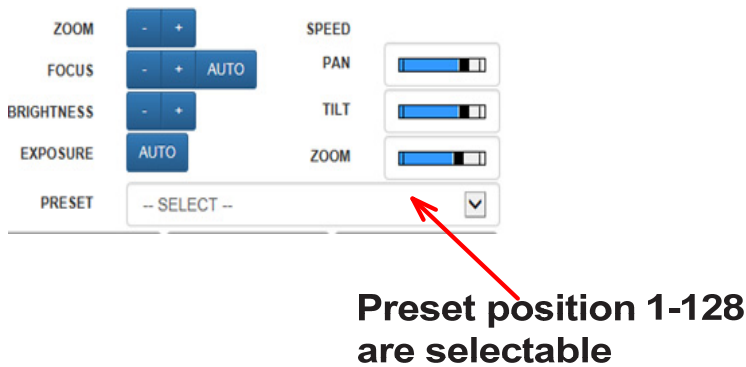
Figure 7-1C Console functions of the Viewer (2/2)

7.1.3. Language setting-field

Language of the browser can select by radio-buttons in this field. Clicking a button of "Set" below determines the selection.

7.1.4. Title Bar

Title Bar in the Home window shows fundamental information that are Server Name, Model Name, and firmware versions which are shown below: the Server Name can be changed(Please refer to 7.4.1).

(1) Firm Version (HDCTRL):

A displayed numbers of 6-columns: AB.CD.EF (where A to F are natural numbers) shows a version of Ctrl module firmware being embedded into HDCTRL_BD.

(2) Firm Version (ENC):

A displayed numbers of 3-columns: A.BC (where A, B and C are natural numbers) shows a version of Encoder module firmware being embedded into ENC_BD.

7.1.5. Status Indicator

Status indicators of 4 at an Upper-right-corner are updated every 60 seconds. These indicators are provided by an internal video encoder board (shown as **ENC_BD** of **Fig.3-2** in the block diagram).
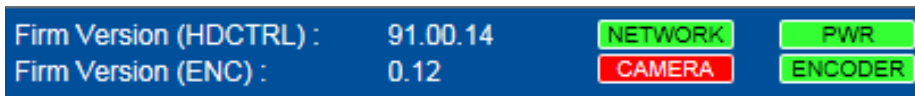
Figure 7-2 Example of the Status Indicator

(1) NETWORK

Displaying	Detected status(s)
RED:	CGI (Common Gateway Interface)-communication via the IP network failed Please check IP connection between FC33 and the PC which is executing Web browser.
	Next, reboot the camera and PC. If still the RED displayed, please contact Yokogawa's sales distributor or sales office.
GREEN:	A web access (CGI communication /CGI call) to this camera by Web browser has succeeded.

(2) PWR

Displaying	Detected status(s) :
RED:	An error status(s) has been detected at the power unit of FC33. Voltage fluctuation exceeding 10 percent had been detected at DC5V or DC12V against the rated voltages
	Reboot the camera and check the indicator again. If the RED was still displayed, in spite of the normal AC power inputting, please confirm operation LOG file(s) and get it. To obtain such LOG file(s), please refer to section 7.5.4. And contact Yokogawa's sales distributor or sales office.
GREEN:	Each DC voltage output in the main body is being into the rated range (±10%).

(3) CAMERA

Displaying   Detected status(es)   :
RED: One or more error status enumerated below has been detected by Control module
             firmware of the HDCTRL_BD:
             (a) A communication error has been detected between ENC BD and HD Camera
             module.
             (For example, a control-command to the camera-module was not completed with
             successfully).
             (b) Abnormal occurrence at the motor driven system or control system.
             (c) Abnormal occurrence at the peripheral system
             (d) Deviation from the preset temperature(s)
             (e) Abnormal processing during system start-up sequence.
             (f) Occurrence of read / write error at the flash memory.

             Self-recovery might be possible by doing re-start of the camera in some case.
             "Removing" each cause both inside and outside: being into over 60°C (140°F) as
             an outside temperature, and/or being into a status of high-load Image processer,
             and so on, each of those may have cancelation of the RED.

             If the RED still remains even if such "removing", moreover after re-starting the
             camera, please confirm the operation LOG file(s) and get it. To obtain such LOG
             file(s), please refer to section 7.5.4.
             And contact Yokogawa's sales distributor or a sales office.

PURPLE: Showing an under updating the FIRMWARE on the "Controller Module" (please refer to
             Figure 3.3). During such the period, ENCODER can't work. Please complete the
             updating to quit showing the Purple.

ORANGE   Transition to the normal operation status is not completed yet. For example, during a
             boot sequence of the HD camera module, during the warm-up operation under low
             temperatures, and so on, this will be being displayed.
             If some failure factors exist, indicating period will be extended because of re-try
             during the boot sequence.

GREEN: No abnormality enumerated above is detected.

(4) ENCODER

Displaying   Detected status(es)   :
RED: By internal anomaly detection, the Reboot-sequence occurred. ENC-BD executes a
             software watch dog timer (WDT) in case of the internal anomaly detection. As a result,
             the Reboot will occur by the encoder board (ENC-BD). Re-start of the camera can turn
             off the RED.

             If the RED still remains even if Re-starting, please confirm the operation LOG file(s)
             and get it. To obtain such LOG file(s), please refer to section 7.5.4.
             And contact Yokogawa's sales distributor or a sales office.

GREEN: Current start-up state of the ENC-BD is not a result of the internal anomaly
             detection..

7.2. Camera Configuration
7.2.1. Preset

(1) Preset Position

Up to 128 preset points can be configured in the Position table.

Click an "Edit" button first, then editing a dialog popup window will come up.

By Clicking "OK" in the dialog popup window, the current position being displayed on the screen now will be registered.

Once a registration have been done, by clicking "Go to", the camera starts movement for reproducing that preset position.

Figure 7-3 Preset Tab

(2) Preset Function Assigns

Select and click the number to edit first, then editing a dialog popup window will come up. Select a function from the pull-down menu list. By Clicking "OK" in the dialog popup window, the selected function is assigned to that number.

Table 7-1 "**Source functions**" which can assign to the each number in the "**Destination functions**"

Function name	Description of function
No Function	
Auto ICR ON Auto ICR OFF	AUTO-ICR: ON: Camera selects either an automatic control ON or OFF for the Color/Monochrome mode. AUTO-ICR:OFF: Camera is locked to color mode always, even if under low light intensity This Selection available when NightShot is "OFF"
Backlight Compensation ON	Backlight correction ON
Backlight Compensation OFF	Backlight correction OFF
Night Shot ON	Image(s) will be changed to Monochrome mode compulsorily. IR cut filter is removed (ICR-ON) More high priority than "AUTO-ICR:ON"
Night Shot OFF	Image(s) will be changed to Color mode. IR cut filter is on (ICR-OFF)
AF-Fix ON	Retains the current focus mode setting during operation.
AF-Fix OFF	Auto Focus mode is entered during operation.
AE-Fix ON	Retains the current exposure mode setting during operation.
AE-Fix OFF	Exposure mode is set to Auto mode during operation.
Manual Focus	Change to Manual focus mode Focus value is fixed to a current value.
Shutter Speed UP Shutter Speed DOWN	Shutter Speed setting :Total 22 steps (→Exposure mode will be changed to Manual) UP: Change to a (next) faster shutter speed DOWN: Change to a (next) slower shutter speed
Gain UP Gain DOWN	:Total 15 steps (→Exposure mode will be changed to Manual) UP: Change to a higher Gain DOWN: Change to a lower Gain
Exposure Auto	Exposure mode will be changed to Auto

Table 7-1 (CONT.)

Function name	Description of function
Wiper ON	**After the wiper goes on;** **It automatically goes off and the wiper blade stops in the predetermined position.**
Wiper OFF	**Break a wiping motion**
Defroster ON	**Enable a Preventing function for suppressing dew condensation or frost formation.**
Defroster OFF	**Disable the Preventing function for suppressing dew condensation or frost formation.**
F3(Relay) ON	**External relay contact control (for JB):**
F3(Relay) OFF	⚠️ **NOTE:** **Each setting status is being hold until a change by an opposite command.**
Presetting Command SEQ START	**Start a Preset Tour and STOP it**
Presetting Command SEQ STOP	
PAN/TILT Speed UP	**Pan/Tilt Speed control:**
PAN/TILT Speed DOWN	**UP: Change to a (next) faster step of speed settings** **DOWN: Change to a (next) slower step of speed settings**
Reboot	**FC33 executes a reboot sequence.**
Function Command SEQ START	**Start a SEQ Command and STOP it**
Function Command SEQ STOP	
Go to HOME	**Camera goes to the HOME position**
Focus Speed UP	**Focusing Speed control:**
Focus Speed DOWN	**UP: Change to a (next) faster step of speed settings** **DOWN: Change to a (next) slower step of speed settings** **Displaying Log date ON/OFF**
Zoom Speed UP	**Zooming Speed control:**
Zoom Speed DOWN	**UP: Change to a (next) faster step of speed settings** **DOWN: Change to a (next) slower step of speed settings**
Log OSD ON	**Displaying Log date ON/OFF**
Log OSD OFF	
Slow Shutter ON	**Slow shutter mode ON/OFF**
Slow Shutter OFF	
Digital Zoom ON	**Digital Zoom mode ON/OFF**
Digital Zoom OFF	
Auto Focus	**Set to Auto focus mode**
Go To Last Preset Position	**Move to a latest preset position** **(If no preset movement has been done, do nothing.)**
Stabilizer ON	**ON: Activate a digital Stabilizer function in the camera module. Tele-end is more effective than Wide-end.** **OFF: Default**
Stabilizer OFF	
Defog ON	**Enable a Defrosting device**
Defog OFF	**Disable the Defrosting device**

⚠️ **NOTE**

See section 7.2.6."Detail" also, for reference.

7.2.2.Camera Control

(1) Function Button Assigns

Figure 7-4 Camera Control Tab

The Matrix table of Function buttons in the Console-field (with the Viewer screen) can be configured or customized by this tab-menu. If click any numbers, a dialogue window will open to configure the function of that number button. Those 20 function buttons are always displaying with / near the Live View screen. .

(2) SEQ Command Function Assigns

Sequential command can execute. To make a command sequence, click a number step by step. An interval time between next number command can be configured by wait-field as timeout timer. Up to 8 steps of command-function can be linked.

⚠️ **NOTE**

To start an assigned command functions, move to Details-tab and click a "START" button of Command SEQ Control field.

IM 85A7C03-16E

7.2.3.OSD

Given texts up to 20 characters can be displayed respectively by overlapped form on the Screen by setting in those fields below. Clicking a check box of "Enable", a field for setting a text will open.
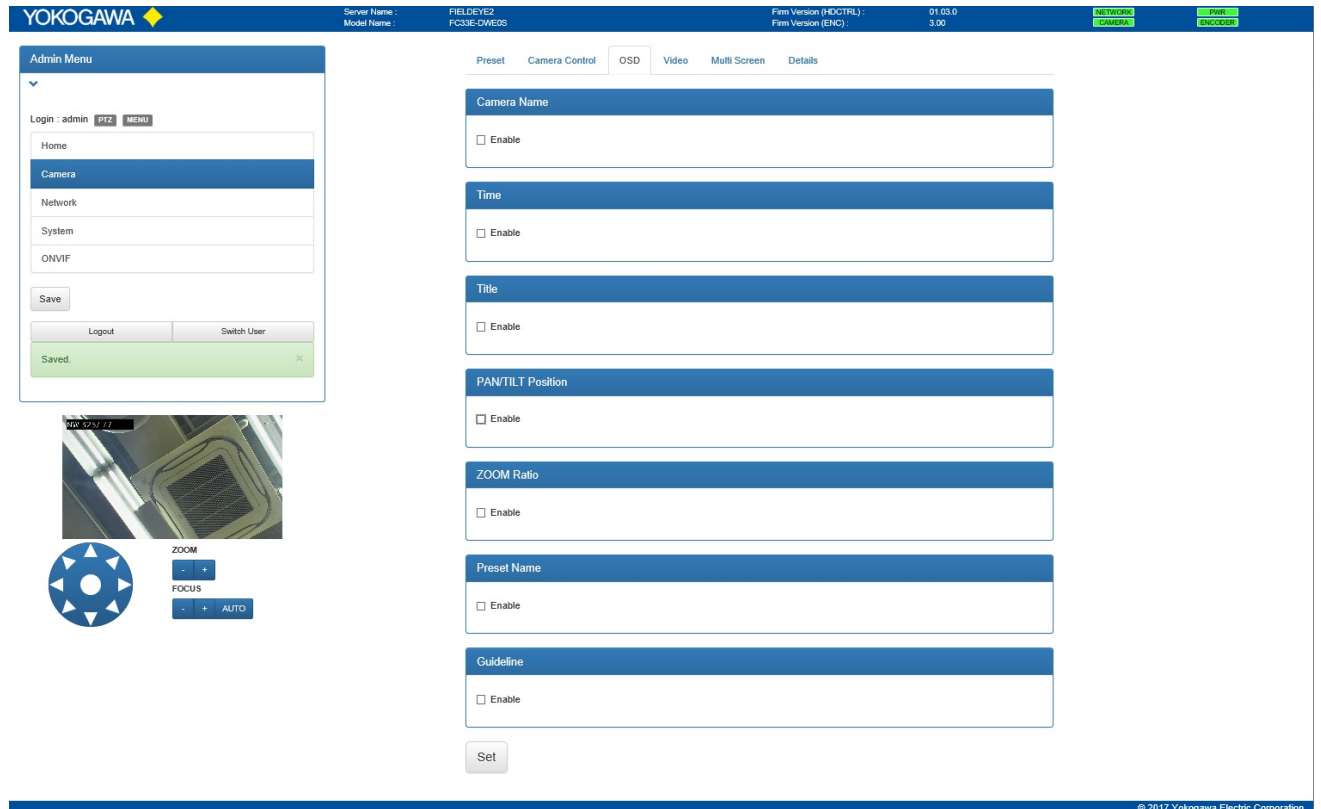
Figure 7-5 OSD Tab

(1) Camera name
  Camera name (Server's name) on the screen(s) can describe by this field, instead of FIELDEYE2.

(2) Time
  Current time can display on the screen overlapping.

(3) Title
  This field does not work.

(4) PAN/TILT Position

Current camera pan and tilt position can display on the screen overlapping.
Position parameter means a displaying location on the each screen.
Font size can input values from 11 to 36.
Setting a "background-color" on, displaying text will have a background.
Clicking a "Set" button of this page bottom determines the all setting

    ON: **Display a current P/T position (by degrees) always**
    OFF: **No displaying.**

⚠️ **NOTE**

Zero position's coordinates: (Pan:0°,Tilt-90°), See 5.8, Fig.5.33
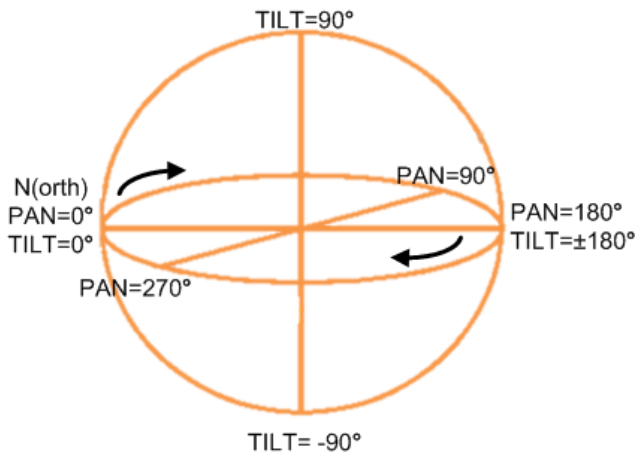
⚠️ **NOTE**

Those settings will be reflected only to the screen(s) connecting the Server Camera of the stream(s).

(5) Zoom ratio

Current camera zoom ratio can display on the screen overlapping.
    ON: **When zoom ratio is changed, the current value is displayed on the viewer screen for about 2 seconds.**
    OFF: **No displaying.**

(6) Preset name

Only when the camera reached to the preset point having a name, it will display on the screen overlapping.

(7) Guide line

Turn on an "Enable" button, to display a cross hairs on the screen.

7.2.4.Video

(1) Image Sensor Mode

Resolutions of 2M and 1.3M Pixels (16:9) are selectable at the CMOS image sensor.
Clicking a "Set" button of this page bottom determines the all setting.

(2) Stream 1

The Video encoder board (see **ENC_BD** of **Fig.3-2** in the block diagram)) can provide up to 2 streams to the client(s).

Table 7-2 Stream 1 settings

Specification	Parameter	Description
Encoder	H.264 JPEG	Select an encoding format of the Stream1. Default setting is H.264.
Resolution	1920x1080 1280x 960 1280x 720 1024x 768 960x 540 640x 480 640x 360 480x 270 320x 240 320x 180	Default setting is 1280x 720.
Framerate (frame/sec)	60 - 1	Default setting is 30.
Bitrate	20Mbps-196k bps	Default setting is 8Mbps.
Rate Control	VBR / CBR	
GOP (Group Of Picture)	150 - 1	Default setting is 30, H.264 only
Profile	Base line Main High	Each specification parameters for H.264 will set to the encoder.
Session Timeout	0 – 7200	Time out timer of the Stream session. Unit is sec.
Multicast option menu		
Address		Group address setting
Port Number	0 - 65535	
TTL	0 - 255	Time to live setting
Auto Start Streaming	ON / OFF	Default setting is OFF. (No multicast streaming)

(3) Stream 2

Table 7-3 Stream 2 settings

Specification	Parameter	Description
Encoder	JPEG H.264	Select an encoding format of the Stream2. Default setting is JPEG.
Resolution	1920x1080 1280x 960 1280x 720 1024x 768 640x 480 640x 360 320x 240	Default setting is 640x 360.
Framerate (frame/sec)	60 - 1	
Quality	2 - 97	97:Highest image Quality– 2: Lowest image Quality (Note: this value is not proportionate to traffic data size.)
Session Timeout	0 – 7200	Time out timer of the Stream session. Unit is sec. Default setting is 60(sec).
Multicast option menu		
Address		Group address setting
Port Number	0 - 65535	
TTL	0 - 255	Time to live setting
Auto Start Streaming	ON / OFF	Default setting is OFF. (No multicast streaming)

7.2.5.Multi Screen

Clicking a "Set" button of this page bottom determines the all setting below.

(1) Streaming Protocol

To request a Streaming Protocol to the Video Encoder board (Server), use those buttons as the client.
As the layer4 protocol, UDP, TCP and HTTP are selectable by radio buttons.

(2) Multi Screen

Displaying divide-by-four on the Live Viewer is the Multi-screen mode.
Configuration of the Multi-screen mode at the Home (Viewer screen(s)) is available at this tab page.
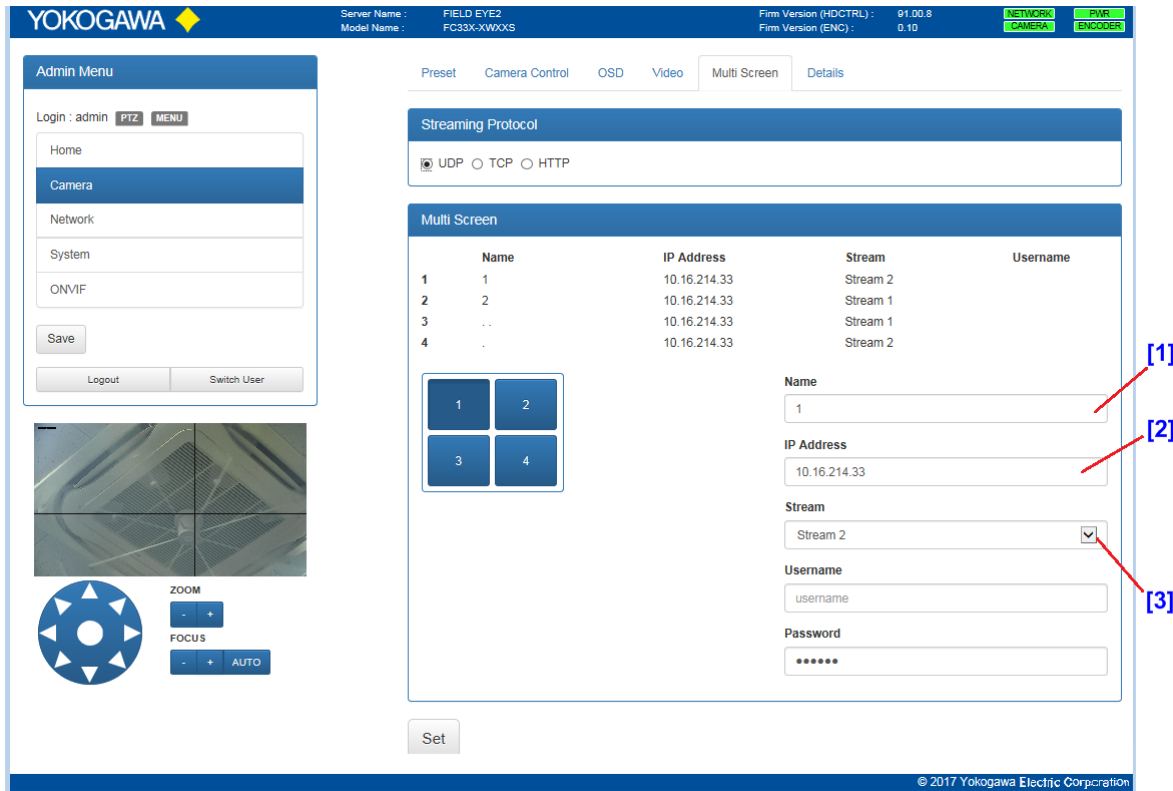
Figure 7-6 Multi Screen Tab

Select a screen number from 1 to 4. **[1]** Enter the "name" of the selected screen's number for displaying. **[2]** Next, specify an "IP address" as the Server. **[3]** Select a stream number 1 or 2, at that IP encoder board (**ENC_BD** of Fig.3-2) of that specified server. Up to 4 streams (screens) are allocable. User name and pass-word for each of stream are available according to the need.
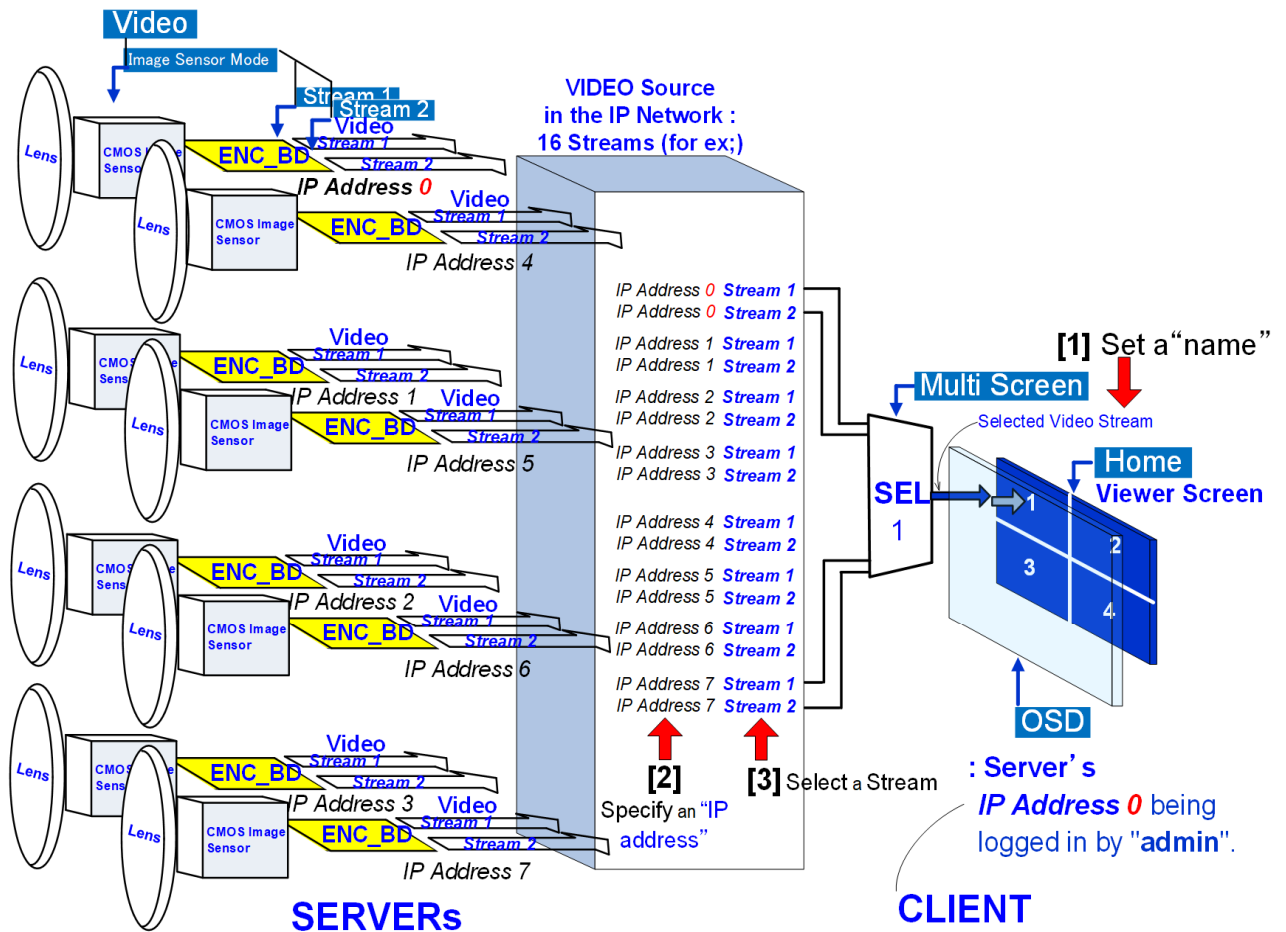
※*If there are 8 FC33s in the local network **for example**, up to 16 streams are selectable per one **Multi Screen**.*

Figure 7-7 Multi Screen configuration

(3) Set

By clicking a Set-button in the bottom of this tab-page, all allocations against each screen above will be defined.

7.2.6. Detail

Server's (Camera itself) resource management is executable at this page. There are 2 menus which are Control Commands and Configuration Commands.

(1) Control Commands

Any settings at this menu are not preserved after an AC-power-off/on.

Table 7-4 Controls

Specification	Parameter	Description / Action
Auto Focus	-	This command is issued by clicking Submit
Manual Focus	-	This command is issued by clicking Submit
White Balance Trigger	-	This command is issued by clicking Submit
Brightness	UP	By clicking a Submit button with selection of up or down, Brightness can be controlled step by step manually.
Shutter Speed	DOWN	Same as above, but replace a word having shaded to "Shutter Speed".
IRIS		Same as above, but replace a word having shaded part to "IRIS".
Gain		Same as above, but replace a word having shaded part to "Gain".

Table 7-4   (CONT.)

Specification	Parameter	Description / Action
Still Frame	ON ，OFF	By clicking an ON button, Live viewer screen becomes a Still Picture display. Clicking an OFF, the display returns to Live viewer screen.
Pan/Tilt Speed	PAN TILT PANTILT 0.1deg/s 1deg/s	2-speed ranges of pan-tilt movement can select. Select a rotating-motor(s), and assigns it the speed-range (0.1 or 1 degree/sec). Finally, clicking a "Submit" to determine the setting.
Focus Speed Zoom Speed	Value: 0-7	The speed-value of left is applied by clicking Submit
Wiper	ON ，OFF	Wiping can turn on or off. After the wiper goes on; then it automatically goes off and the wiper blade stops in the predetermined position.
Defroster	ON ，OFF	Setting OFF is not recommended. The defroster is a prevention function for suppressing dew condensation, frost formation or freezing inside of the window glass.
*F key	F3 ON ，OFF	Clicking "ON" with F3:Turn on the external contact point. Clicking "OFF" with F3: Turn off the external contact point *Note: F3 Relay: ON and F3 Relay: OFF are same function (See the table 7-1)*
Preset Move	Preset number :1-128	Camera goes to selected preset point by clicking Submit
Preset Tour	ON ，OFF	ON: Start an endless (from minimum to maximum) tracing tour of along the registered Preset points OFF: Abort an itinerant tracing tour of along the registered Preset points.
Get Current Position Submit	PAN TILT ZOOM FOCUS	0°-360°: 0000h-3AE3h (translate to decimal system) 0°-180°: 0000h-1D71h (translate to decimal system) Wide-Tele:1000h-7DFEh (translate to decimal system) Far-Near:1000h-C000h (translate to decimal system) Clicking "Submit" go to a position (where are pointed by 4-columns, above) directly.
Original Position Adjusting	-	Execute an adjustment command when return to the zero position
Move to last Power Off Position	-	Camera goes to a position where the Power-off was executed previously.
Output Log to OSD	ON ，OFF UP，DOWN	There are 2 files recording logs endlessly: ➢ Common time axis: running (machine) time Unit : [minutes] ➢ Events being recorded (logged) on the time line Error info. : Up to 100 events in the latest Temperature info.: Up to 50 record in the latest Unit : [degree, Celsius] Measurement Points: CPU board, Camera module ON: Displaying log data of internal Temperature information on the screen Displaying log data of internal Error information on the screen UP/DOWN button :Scrolling the display up/down
Output Status to OSD	ON ，OFF	ON: Displaying current configuration list (settings) on the screen
Command SEQ Control	SATART STOP	➔See 7.2.2 (2) SEQ Command Function Assigns
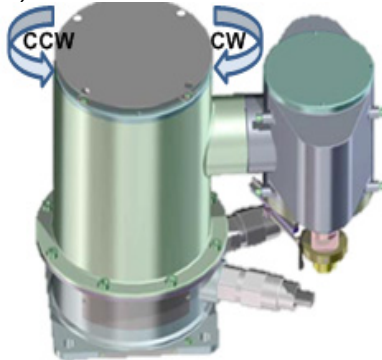
(2) Configuration Commands

Any settings at this menu are preserved even after an AC-power-off/on.

Table 7-5 Configurations

Specification	Parameter	Description / Action
AutoICR	-	This command is issued by clicking ON
Backlight Compensation (BLC)	-	This command is issued by clicking ON
Slow Shutter	-	This command is issued by clicking ON
Digital Zoom	-	This command is issued by clicking ON
NightShot	-	This command is issued by clicking ON
AF Fixed Mode	-	This command is issued by clicking ON
AE Fixed Mode (Fixed Exposure)	-	This command is issued by clicking ON
Exposure Mode	Auto Manual Shutter Priority IRIS Priority Brightness	By clicking each tab, a corresponding exposure mode will be applied.
White Balance	Auto Indoor Outdoor One Push	By clicking each tab, a corresponding mode will be applied. Auto: Calculating the White Balance based on whole screen's color information(Default setting) Indoor: 3200K Std. mode Outdoor: 5800K Std. mode One Push: Locking on to the illumination condition of the target. If powered off, lock on will be released.
Motion Detect	-	This command is issued by clicking ON ON: Detect a brightness changing when staying at the each preset point, excluding each PTZ-movement time between preset points.
Gamma Correction	OFF ON SMART1 SMART2	No Correction Auto Correction Auto Correction (enhance contrast) Auto Correction (more enhance contrast)
AGC MAX	0-11	Auto gain control level: 0(min)-11(max), 12 levels are selectable by value-setting-field, and it can determine by SET-button.
Digital Zoom Ratio Limit	x12 - x2	By clicking each tab, a corresponding Ratio Limit value will be applied as a limited value when zoom-in (+).
Stabilization	-	ON: Activate a digital Stabilizer function in the camera module. Tele-end is more effective than Wide-end. OFF: Default
SD Control (Wide Dynamic Range Mode)	-	ON: Mitigate an Intensity of contrast. OFF: Default
Zoom Speed Auto Change	-	ON: To apply zooming-speed of 3-stages automatically from Wide (faster) to Tele (slower). OFF:
Defogger	-	This command is issued by clicking ON
Speed 13 step Mode	-	ON: Each step of pan-tilt movement speed in the variable range makes rough.(for supporting older peripheral controllers) OFF: Default
Motor Speed Limit of high Zoom	-	ON: Restrict Pan-tilt speeds according to current optical zoom magnification. Zooming magnification: / Pan-tilt speed limit 1 x – 9 x / Same as each speed setting Over 9 x – 18 x / 3 degree /sec Over 18 x – 36 x / 1 degree /sec OFF:

Table 7-5.   (CONT.)

Specification	Parameter	Description / Action
PAN Swing Limit: Area	OFF ON-CW ON-CCW	Default Limitation to go to CW-direction. Limitation to go to CCW-direction. *(Note: During return to zero-position is excluding, even if both ON mode.)*
PAN Swing Limit: Position	Start-Position Stop-Position	Set a Panning Range inhibiting to turn by Positions from Start to Stop.
Preset Tour Stop Interval	Stop Interval: 1-99	Set a common interval time between each commands during sequence commands executing. 1 to 99 are selectable Default interval time 15. [second]
Preset Auto Restart	Idle Interval: 10 Second(s) - 99 Minute(s) Preset Position to move:0-128	Start a Preset sequence tour just after THIS time out timer has finished. Idle Interval: Radio button with value setting field ON: set more than 10 second on to the radio-buttons. OFF: set s value of "0". If value "0" is selected at Minute(s) with "ON" setting, **Stop** an endless Preset sequence tour. Preset No value setting field Select a Preset Position from 1 to 128 to go. If value "0" is selected with "ON" setting, **Start** an endless Preset sequence tour.
Back to last Power OFF Position	-	If an OFF-ON sequence of AC-power has executed with this ON button selected, the Camera returns to the position which was powered off previously.
Fixed Preset Move Speed	-	ON: Pan and Tilt speeds become fixed values to 30 degree/sec.
Precise Preset Stop Position	-	ON: A high positioning accuracy is preferentially controlled than the driving speed, at PAN and TILT motors.
Camera Configuration Init.		Initializing Camera module only

7.3. Network Configuration
7.3.1. LAN

This clause describes IP address configuration for establishing session(s) of video stream(s) on the screen(s).FC33E/U supports only IP version 4.

⚠️ **NOTE**

To the administrator, assigning a fixed IP address is strongly recommended, so as to be able to keep a permission of all functions of that log-in Server via that fixed IP address always.
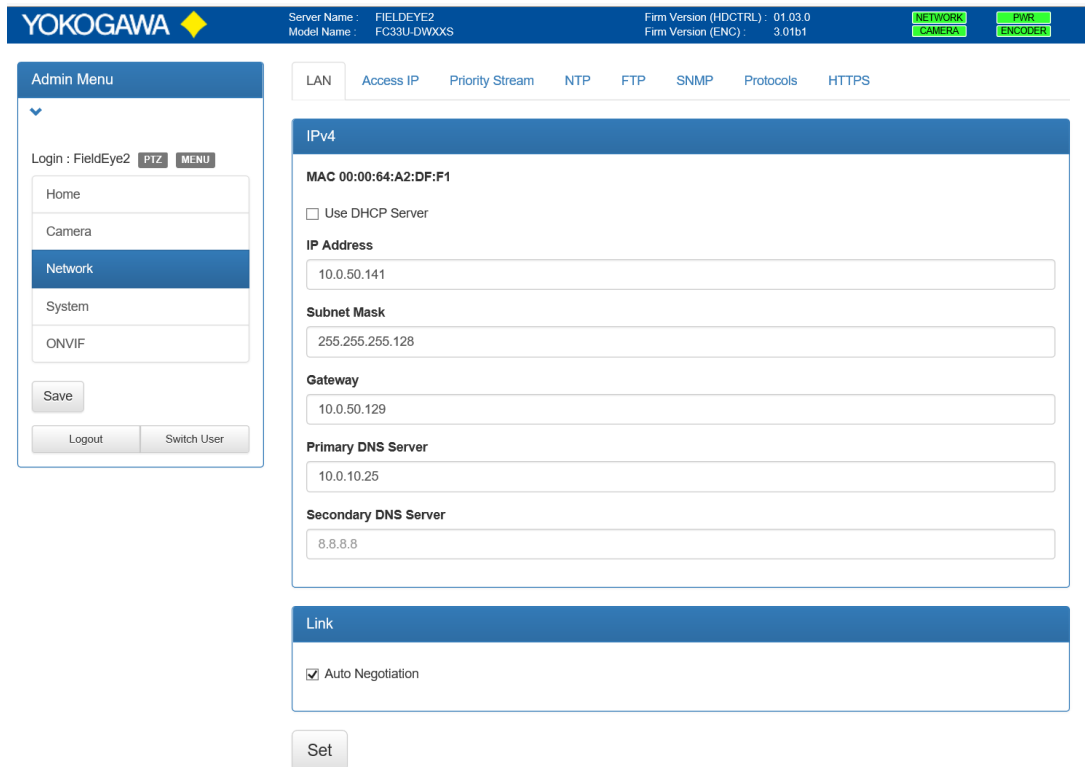
Figure 7-8 LAN tab

(1) IPv4
If a Check box of "Use DHCP Sever" is OFF, fixed IPv4 address can be set manually.
Please type a Subnet Mask and a Gateway (address) in each field.
If the Check box of "Use DHCP Sever" is ON, and if you are going to use DHCP protocol, please consult your network manager in advance. Primary and/or Secondary DNS Sever address are able to type, if you need.

(2) Link
Select an auto negotiation setting of TCP/IP communication. If this check box is off, select physical layer's aspects manually by radio buttons.

(3) Set
By clicking a set-button, returning a belt of green success, if no error.

⚠️ **NOTE**

Each setting of this screen will be reflected after restarting this Server camera and rebooting the PC.When turn AC-power off, do not forget the inputted IP ddress.

7.3.2. Access IP

An accessible IP list from other Clients is able to management at this screen.
Using a radio button "Allow", accessible IP as a client can be appended to this field (White-list).
Using a radio button "Deny", forbidden IP as a client can be appended to this field (Black-list)

By clicking a Set-button, returning a belt of green "Done" with a message. Each setting of this screen will be reflected after restarting of this Server camera.
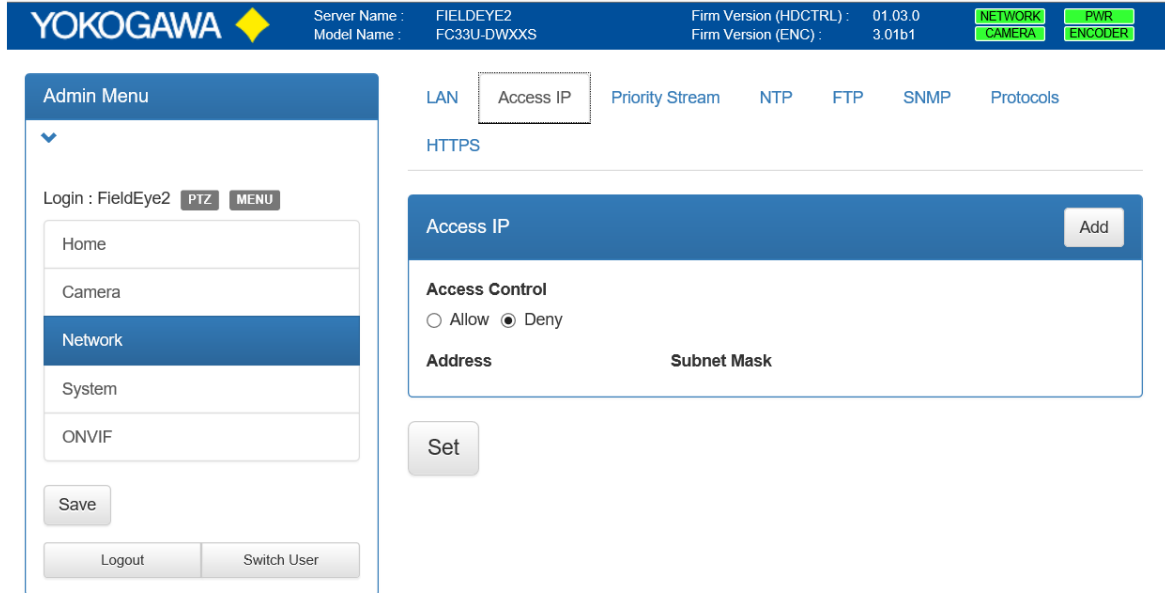
Figure 7-9 Access IP Tab

7.3.3. Stream Priority

Priority stream(s) can be set at this screen.
By clicking a Set-button, returning a belt of green success. Each setting of this screen will
be reflected after restarting this Server camera.
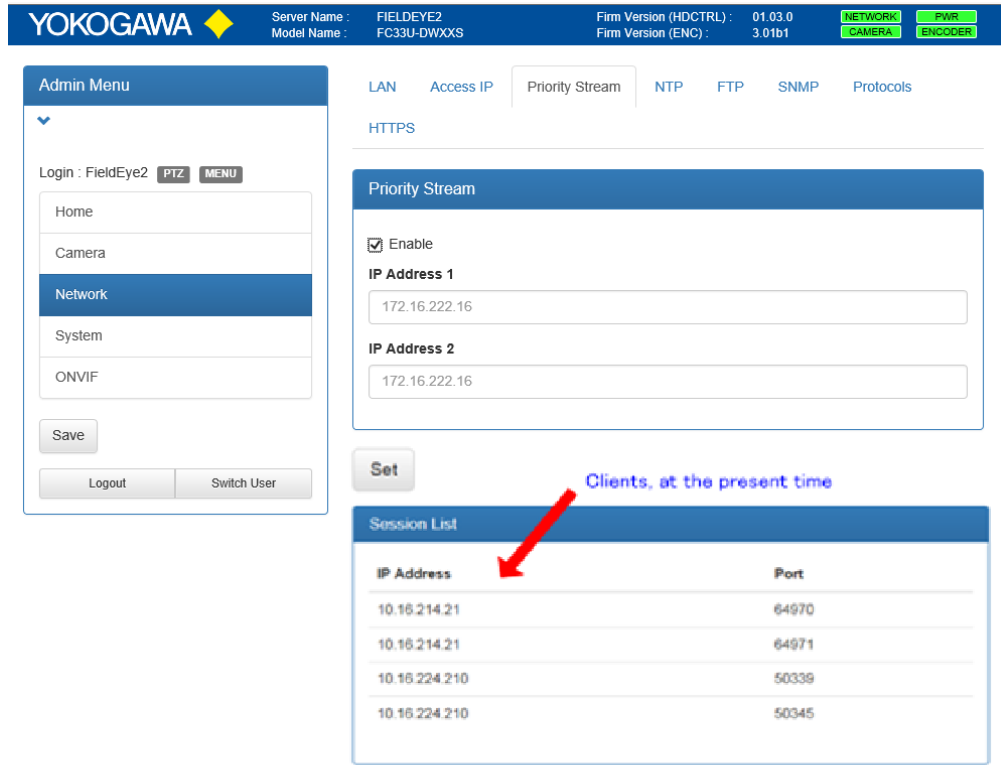
Figure 7-10 Priority Stream Tab

7.3.4. Session List

Clients which are connecting to this camera's encoder to receive video stream will be shown.
Each Client in the List depicts its own IP Address and its destination Port number.
The encoder of this camera as a video server function, up to 14 sessions can be linked up at one
time.

7.3.5. NTP

(1) NTP Server
NTP configuration can be set as this screen. If you use NTP server, set a radio button "Use" on.
As for NTP server, IP address or domain name of primary and secondary can be typed in
at each field.

(2) Sync Time
An execution time of NTP synchronization can be set at this field.

(3) Set
By clicking a set-button, returning a belt of green success.

7.3.6. FTP

(1) FTP

Uploading images ((2) Snapshot and (3) Motion-detect) can be executed by file transfer to a FTP server.

Fill a destination IP address into a first field, and fill the Path information of that IP address into a second field (this Path information of that FTP Server can describe a sub directory's information by using "/"). User name and password are usable as optional fields according to security needs.

(2) Snapshot

Regarding the image file format, snapshot are available.
If the box is enabled by checked, 2 types of cyclical transfer patterns are selectable.

Radio button	Periodical file transfer's pattern
Cycle	Daily based time-schedule
Fixed	Interval (time out) timer base, till a next transfer execution

(3) Motion detect

If the box is enabled by checked, motion detections are available. When the camera module detects brightness-changing over a certain threshold value, a report file will be created and transmitted to the designated FTP server.

Figure 7-11 FTP Tab

(4) Set

By clicking a Set-button, returning a belt of green success. Each setting of (1)-(3) will be reflected to this camera after restarting.

(5) Reaction when motion detect

When the camera module detects a motion, the frame of corresponding screen(s) on the Viewer screen will be flashing with red.

7.3.7.SNMP

(1) SNMP
If the checkbox is set by checking, Simple Network Management Protocol (SNMP) becomes to useable, and setting field shown below will unfold.

Community: fill in a "community name" for accessing MIB
Device name: fill in a "sysname" which is displaying at MIB list of the Client(s)..
Contact: fill in a e-mail address of "syscontact" which is displaying at MIB list
Mode: select a version of SNMP by checkbox.

Figure 7-12 SNMP Tab

(2) Set
By clicking a Set-button, returning a belt of green success. Each setting will be reflected at once.

7.3.8.Protocols

As a network configuration on the IP-protocol-stack, protocols shown below are selectable,
If the checkbox is set by checking, the corresponding Protocols become useable and assign
a corresponding port number.

(1) HTTP
Default TCP/IP port number value is 80.

(2) HTTPS
Default TCP/IP port number value is 443. For detail, please refer to another instruction document
as IM85A7C04-01E, via the Web.

(3) RTSP
For transport streams, default port number is 554
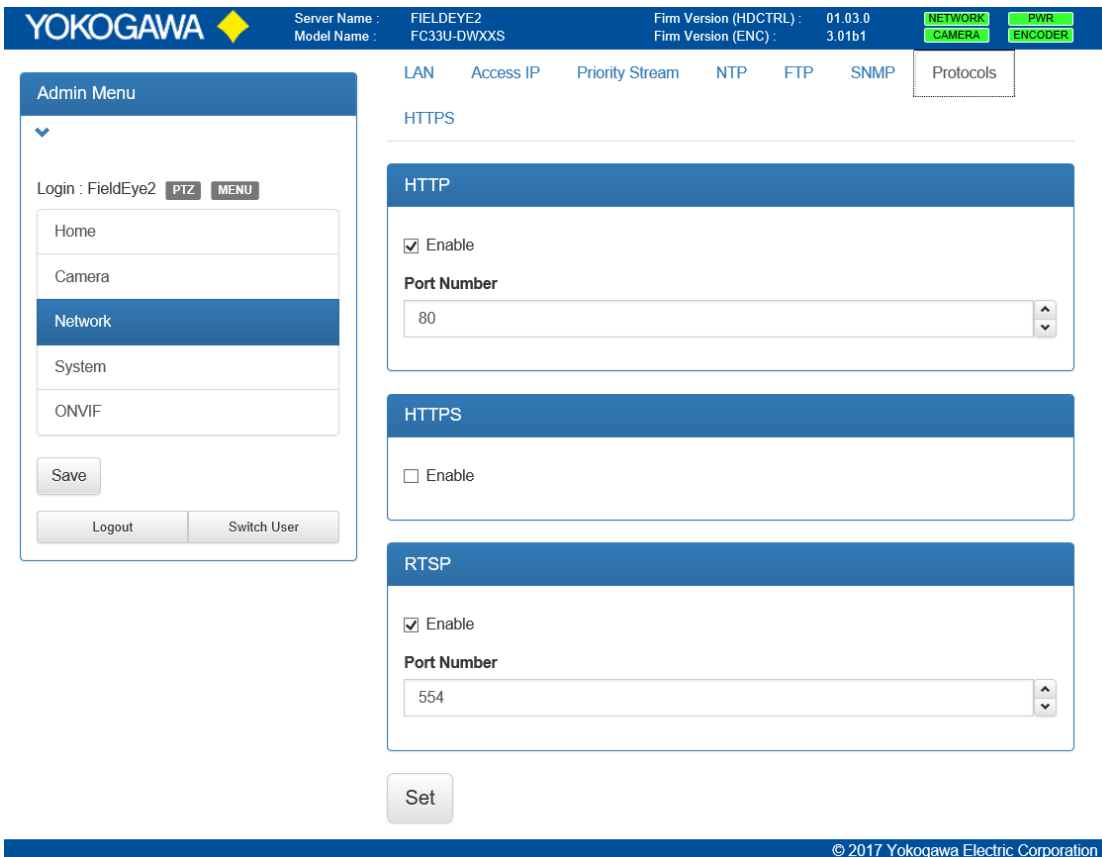
Figure 7-13 Protocols Tab

(4) Set
By clicking a Set-button, returning a belt of green success. Each setting of (1)-(3) will be reflected
to this camera after restarting.

7.4. System Configuration
7.4.1.Server Name
(1) Server Name
Entering a server name is available at this field. Default setting is FIELDEYE2.

(2) Set
By clicking a Set-button, returning a belt of green success. Setting will be reflected at once.

7.4.2. Users
(1) User Administration
To log on to this camera as an allowed user becomes available by registering to this field.
To register a new user as a client of this camera, click an Add-button. An editing window will open.

There are 3 authorization-radio buttons, shown below:
☐ **MENU** ☐ **PTZ** ☐ **AUTO**

Setting a password is usable as an optional field necessary of security needs or your policy.
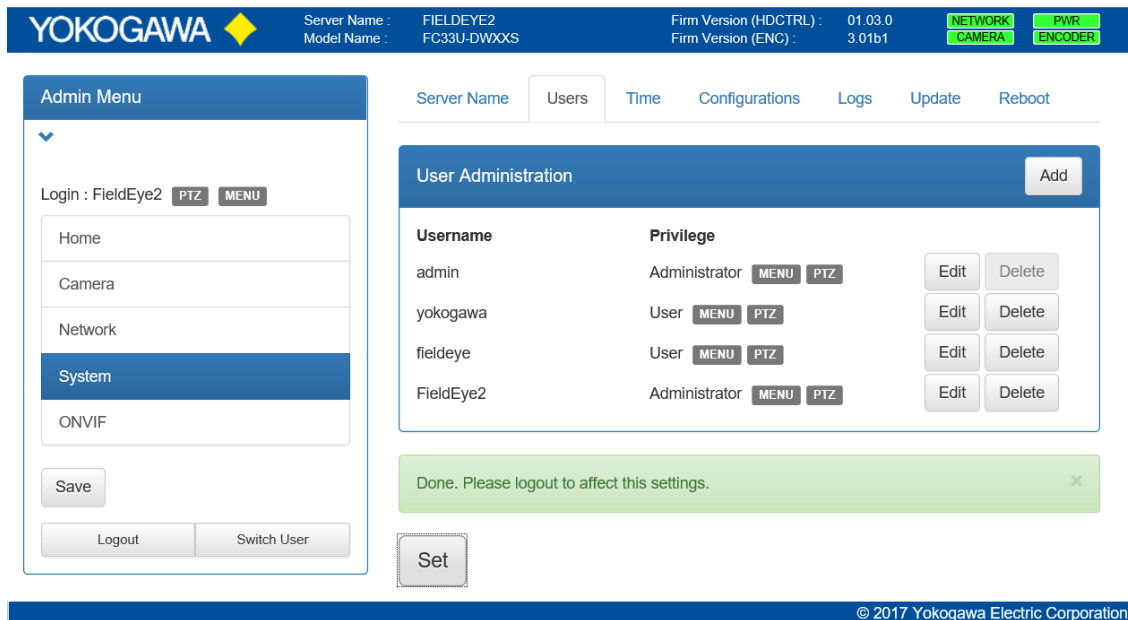
Figure 7-14 Users Tab

(2) Set
By clicking a Set-button, returning a belt of green success (as shown above). Each setting will be reflected to this camera after restarting.

7.4.3.Time

Time setting of the camera is available at this Time-tag.

(1) Date & Time

Current internal time is shown at this field and overwriting is also possible.
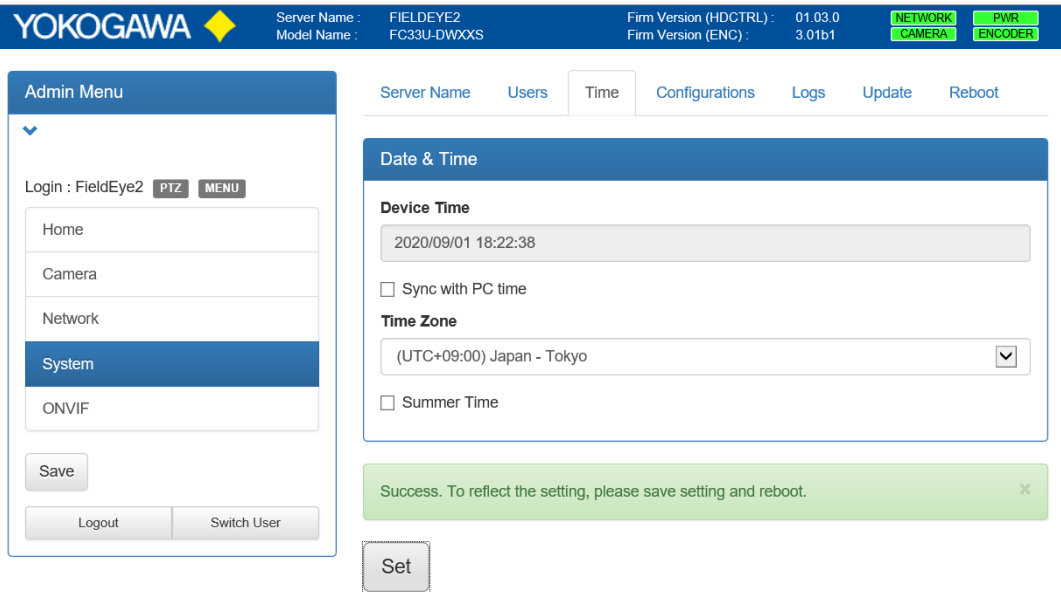
Figure 7-15 Time Tab

(2) Set

By clicking a Set-button, returning a belt of green success (as shown above). Each setting will be reflected to this camera after restarting.

7.4.4.Configurations
Setup and maintenance information can be obtained from this Configuration-Tag.

(1) Backup Configurations
A system configuration file of this camera can be downloaded from this menu.
If click a Get-button, a file:config-yyyymmddhhmmss.bin becomes ready for download.
(Note: *yyyymmddhhmmss* comes from internal time information, on this file's name)
If this kind of file has been obtained, storing to a suitable folder or an external storage device is recommended as backup.

(2) Restore Configurations
The system configuration file of this camera can be up-loaded from this menu.
If click a File reference-button, a reference window for selecting (or searching) a target-up-load file will be opened. Select the target file:config-yyyymmddhhmmss.bin. And click a Submit-button for upload.

(3) Reset Configurations
If executing this menu, initialization setting to the factory default will be applied.
IPv4 configurations (see 7.3.1) can be reserved by a radio button setting shown below.

☐ All configurations ☐ KeepIPv4 configurations
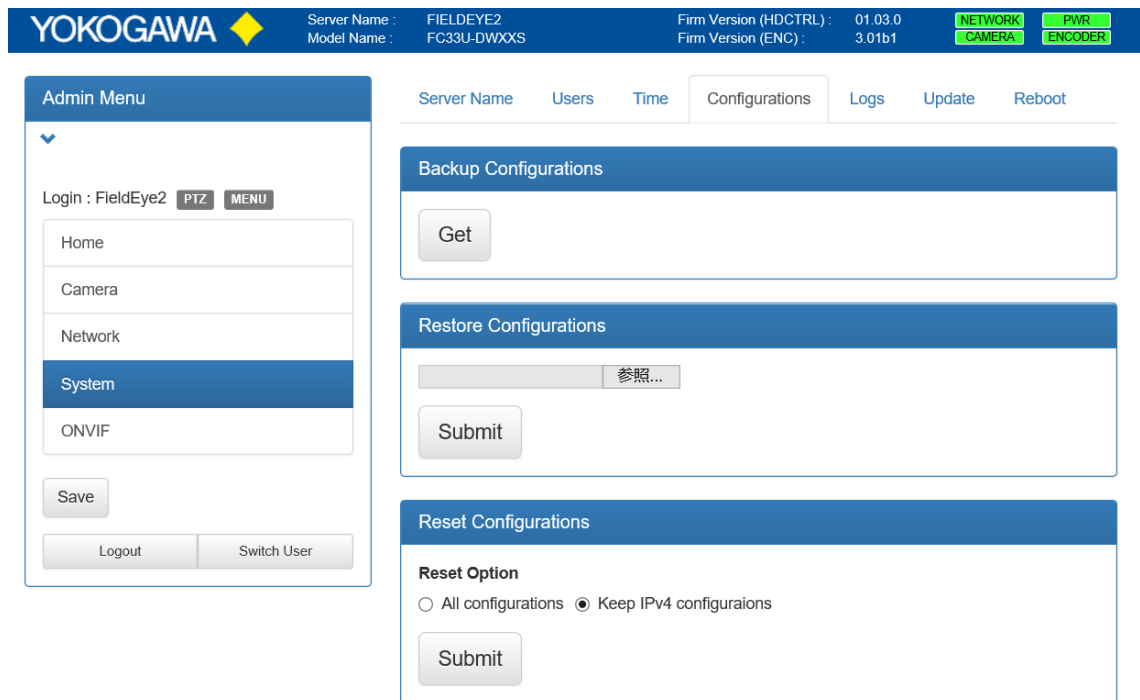
Figure 7-16 Configurations Tab

7.4.5.Logs

(1) Device Log

A log file of this camera can be downloaded from this menu.

If click a Get-button, a file:config-yyyymmddhhmmss.bin becomes ready for download.

(Note: "*yyyy mmddhhmmss*" comes from internal time information, on this file's name)

To enable decompression of this file, change a file extension from "bin" to "tar.gz".

(2) Show log

Internal log files can display from this menu.

Select a log file name which is needed to view.

Search window can use for character string retrieval.
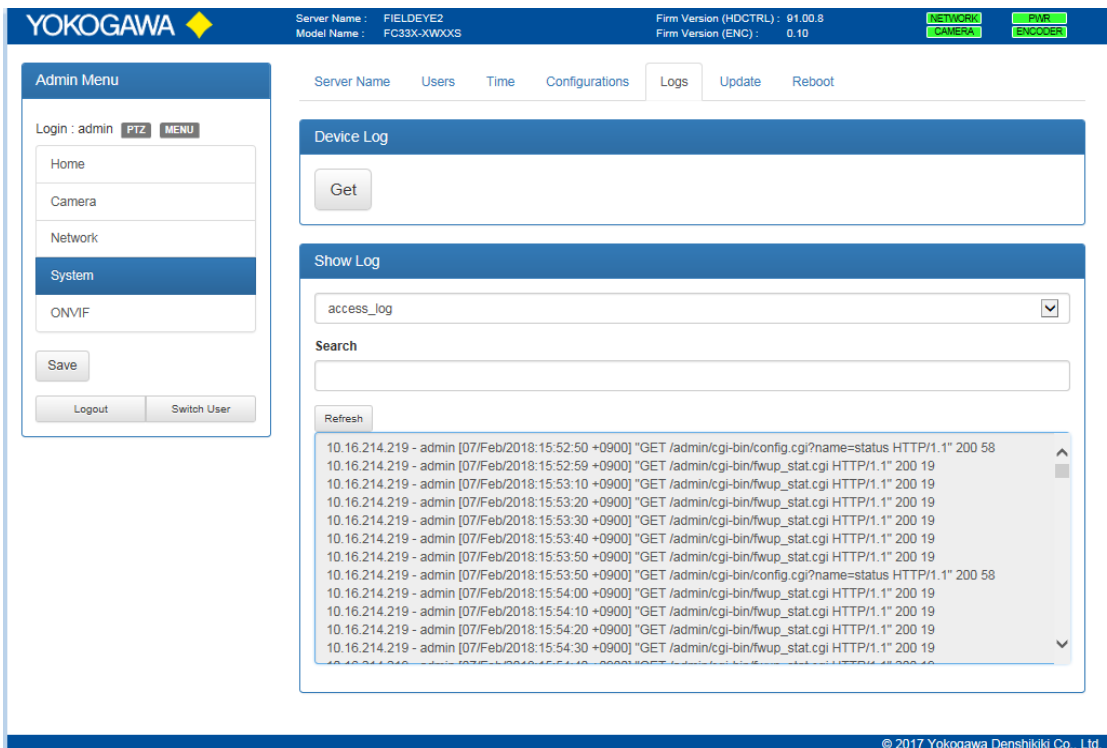
Figure 7-17 Logs Tab

(3) StorageLog

To obtain storage Log file(s), click Get button. If there is no storage log files, no file names will be displayed in the frame.
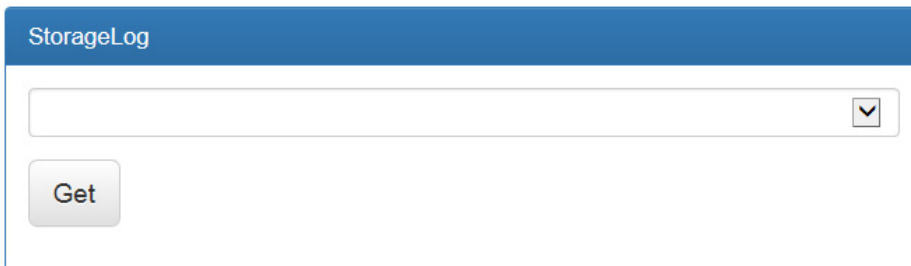
Figure 7-18 StrageLog Tab

(4) Acquisition of LOGs

In case of acquiring Log-files, select "error-log" from pull-down menu of the Show-Log (refer to item-(2) above). Current log will be displayed within the frame of Show Log. By clicking "Refresh", displaying logs turn to latest.
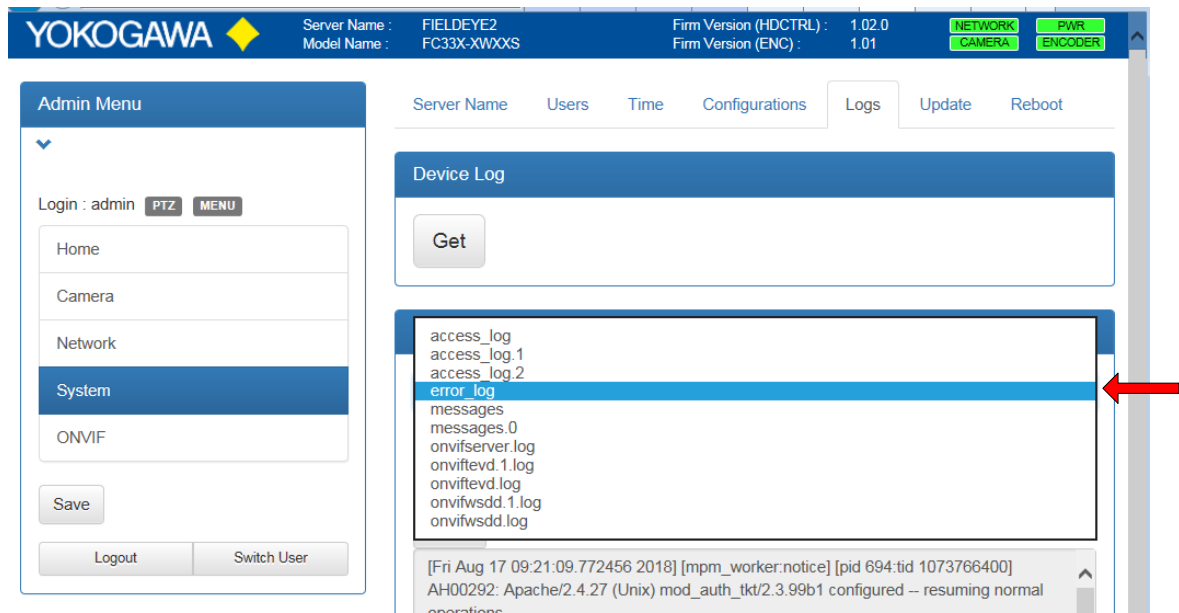
Figure 7-19 Show Log window

Put a cursor at the beginning of the 1st line of LOG, and copy by dragging a mouse from the top to end-line, with moving the scroll bar.

Next, paste all rows into an appropriate text file and save it. If another error-log (n) has been generated at directly under the original error-log, save its contents also in the same way. (where; (n) = natural number, for ex; starting from "1") .

When inquiry, please prepare the error-log-text file and Device Log (refer to item-(1) above), in advance. .

7.4.6.Update

(1) Firmware Update for Camera Module
If click a File reference-button, a reference window for selecting (or searching) a Camera-update file will be opened. Select and click a Submit-button for upload.

(2) Firmware Update for Control Module
If click a File reference-button, a reference window for selecting (or searching) a Controller-update file will be opened. Select and click a Submit-button for upload.

(3) Firmware Update for Encoder Module
If click a File reference-button, a reference window for selecting (or searching) an Encoder-update file will be opened. Select and click a Submit-button for upload.

Figure 7-20 Update Tab

⚠️ **NOTE**

If executing the Upload, please be aware of the Risks of malware infection. Strict control of against Download resources and Upload destination is strongly recommended..

Si vous exécutez le téléchargement, veuillez être conscient des risques d'infection par des logiciels malveillants. Un contrôle strict des ressources téléchargées et de la destination du téléchargement est fortement recommandé.

7.4.7.Reboot

(1) Reboot
Restarting this camera can be executed from this menu.

(2) Submit
Click a Submit-button and reply to a confirmation-message, reboot sequence will be executed.

7.5. ONVIF

This FC33E/U is ONVIF® Profile S compliant.

7.5.1.Profile

Current setting profiles can be displayed at this menu.
If click a left-side-small triangle mark, detail-list will be deployed. .
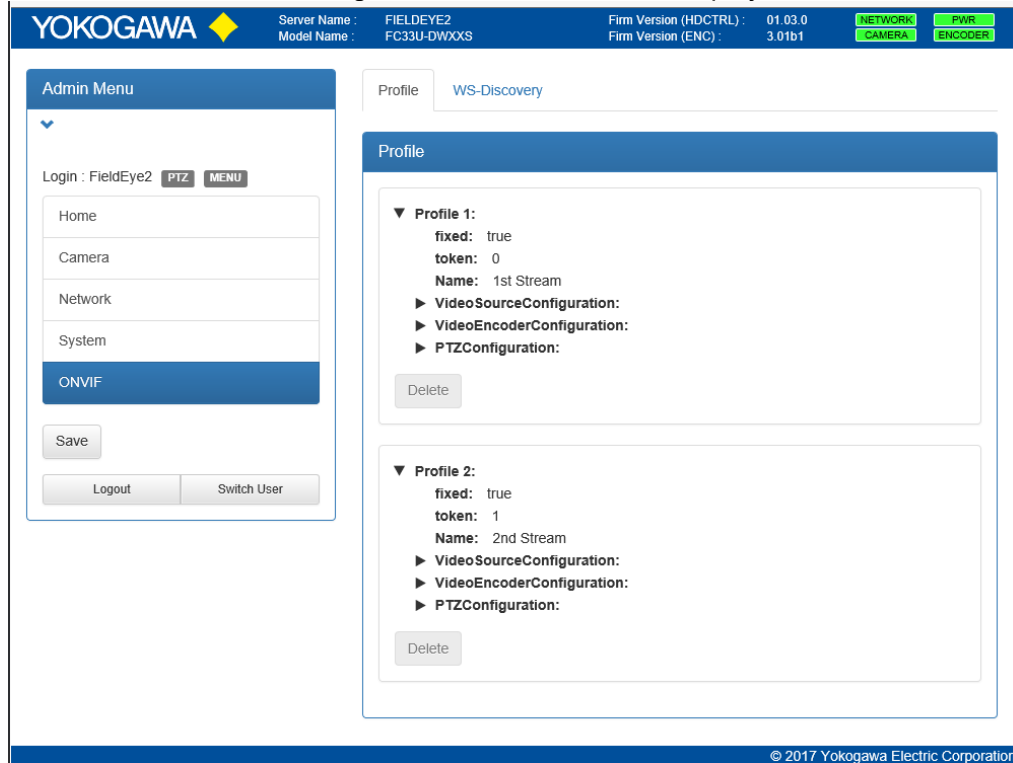
Figure 7-21 ONVIF Tab

7.5.2.WS-discovery

Enabling and disabling the WS-Discovery function can be switched at this menu.
Default setting is an enable, so as to be able to detect by ONVIF Client.
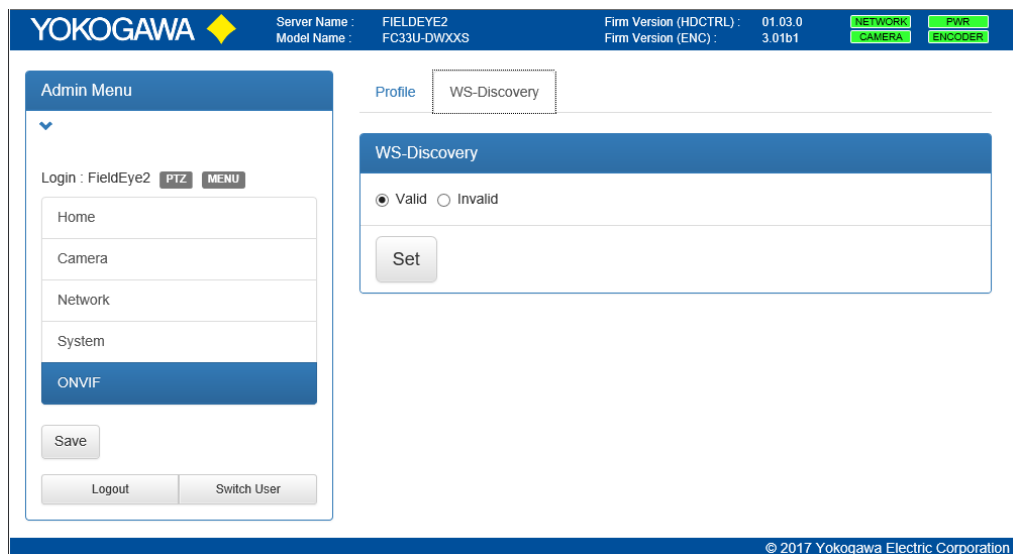
Figure 7-22 WS-Discovery Tab

8. Trouble Shooting
8.1. Viewer screen

(1) Video does not display on the screen
➔Check the network(s) along the connection route.
➔This occurs when the IE mode of your browser is not set correctly, ActiveX is not installed correctly, or the IE mode setting has expired. Please recheck your browser's IE mode setting.
➔Delete the browser history data, close all browsers, and then open the browser again to access the site.
   Try again at a new browser
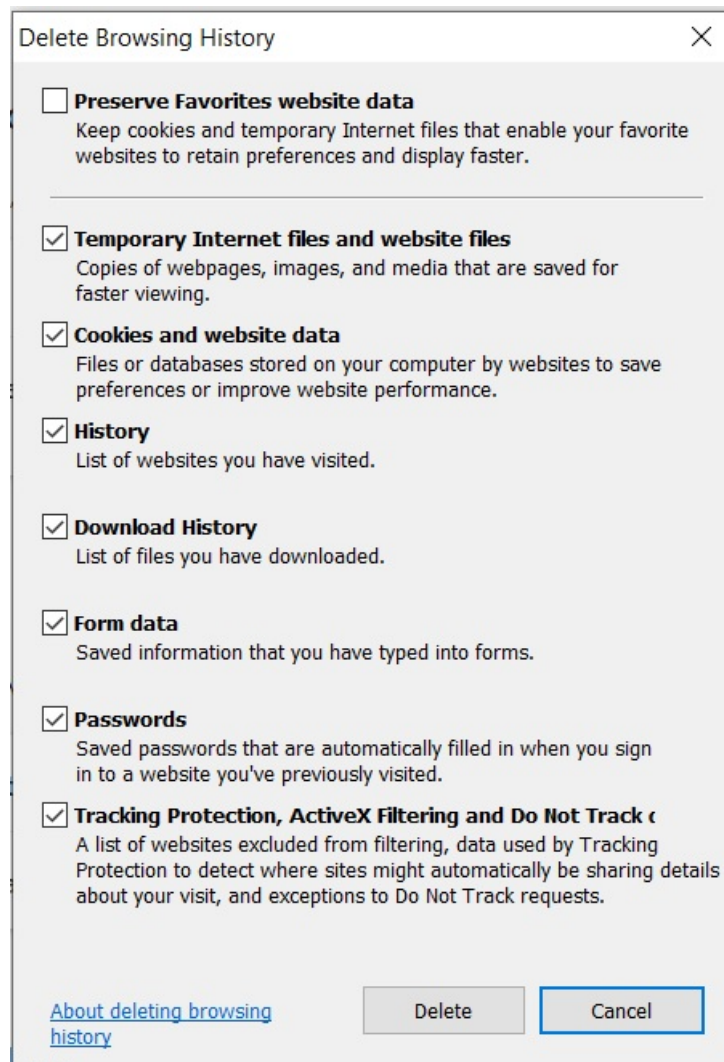
Figure 8-1

➔If the Viewer screen shows a unified Blue totally though the Viewer window itself came up, **no** video stream(s) are coming in from the Camera module. Check the status indicators at the right end of the Title bar. And take a corresponding or suitable measure(s), with reference to description of the 7.1.5.

(2) Video does not work

➔Check the button of **Still Image** in the Details tab. (Admin Menu Camera > Details > Control Commands)
➔Inspect the parameter settings of the stream(see **7.2.4 Video**),if those are being suitable or not.

8.2. Login screen

(1) Login screen does not appear on the PC's browser.

➔Check the IP address setting. Controller-(Client) PC and this Camera-(Server) should belong to a same local network and have an own different address each other.

➔Execute a **Ping command** against this Camera's IP address.

8.3. Turning operation

(1) PAN motion does not work

➔Check the Area and/or Position of **"PAN Swing Limit:"** in the Details tab (Admin Menu:

Camera > Details > Configuration Commands)

➔Try Power Off/On sequence using the AC-power-line, to check a mechanical function itself against the PAN motor. Does the camera return to the "Zero-position" (see **5.8** Return to Zero-Position)

9. Hardware Maintenance
9.1 Inspection of the Main body

Conduct the following inspection and handling depending on the situation to ensure that the camera remains in a good condition over a prolonged period. Particularly if you are using the camera continuously in a high temperature environment, inspecting and/or repairing the camera by Yokogawa at least once every two years is recommended in consideration of service lives of the components.

(1)Inspection and cleaning of contaminants on the window glass

⚠️ **CAUTION**

Never remove the window glass from the front cover because the glass may cut the cables inside the camera.

Ne retirez jamais la vitre de la fenêtre du capot avant car la vitre pourrait couper les câbles à l'intérieur de la caméra.

(2)Inspection of image quality
Each operation (zoom focus, and brightness, etc.) in the Optical system works normally?

(3)Inspection of the Encoder board function
Are the video streams as good as it was in the past?

(4)Inspection of accuracy of the Preset-pointing
Is the accuracies reproducibility of each point as good as it was in the past?

(5)Inspection of installation status

(6)Inspection and replacement of wiper blade
•Can water droplets be wiped off by wiping?
•If necessary, replace the wiper blade as instructed below:

9.2 Wiper Exchanging
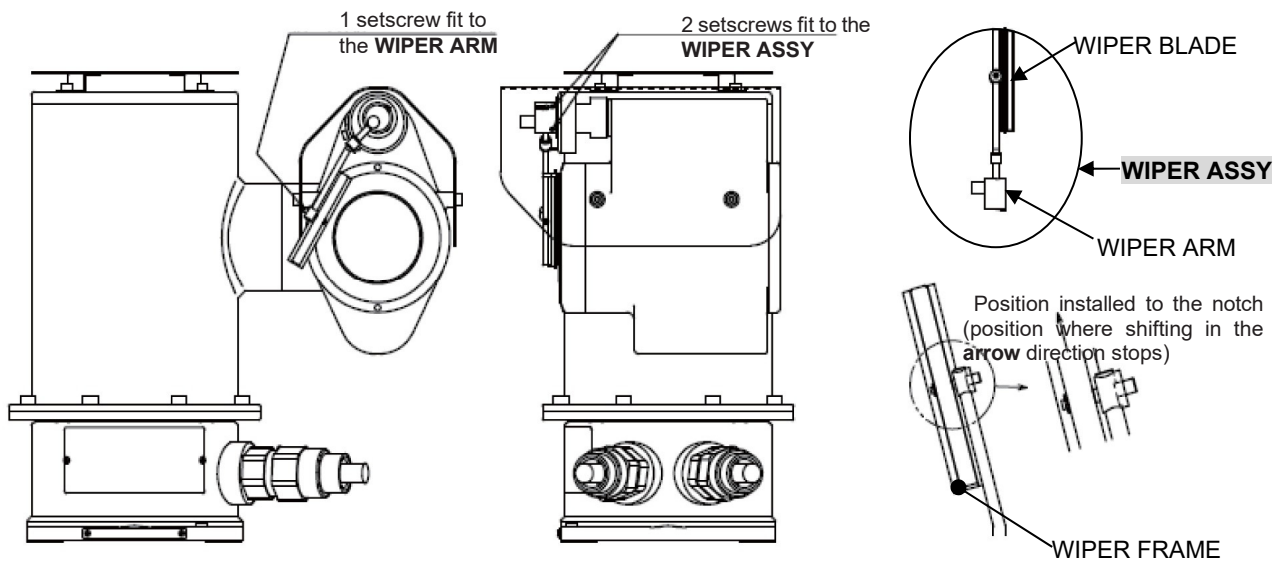
Figure 9-1 Wiper exchanging

⚠ CAUTION

Do not HOLD or INSERT any small hard foreign matters between front glass surface and the WIPER BLADE. If moving on as is, it may bruise front glass.

Ne PAS TENIR OU INSÉRER de petits corps étrangers durs entre la surface vitrée avant et la LAME D'ESSUIE-GLACE. Un déplacement dans cet état pourrait endommager la vitre avant.

[Method 1] (Exchange **WIPER ASSY**)
1) If a Hood is attached to the camera module, at first remove it by loosening four securing screws on both side
2) Remove the **WIPER ASSY** from the camera module. (Using the hexagon wrench of the accessories, loosen and remove the two setscrews securing the **WIPER ASSY**.)
3) Replace the WIPER BLADE with a new one.
4) Install the **WIPER ASSY** to the position to the camera module, shown in the figure.
5) Verify the wiper's swing range, and adjustment, however before operation see above (**! CAUTON**)
6) Reattach the installed Hood with its original screws.
7) During the steps of from 2) to 4), AC power-line **unplug**

[Method 2] (Exchange **WIPER BLADE**)
1) Loosen and remove the setscrew securing the WIPER FRAME's pin to the **WIPER ARM**, shown in the figure of far-left above.
2) Remove the WIPER FRAME holding old WIPER BLADE
3) Pluck out the old WIPER BLADE.
4) Insert the new WIPER BRADE (The position to install it is the apical end relative to the notch of the installing part of the **WIPER FRAME**, shown in the figure of far-right above..)
5) Reattach the WIPER FRAME holding new WIPER BLADE by plus pin, to the **WIPER ARM**

Table 9-1 Parts to be maintained in wiper replacement

Target to replace	Product name	Part number	Lot of order
Wiper blades	WIPER BLADE	K7500EN	10 Wiper Blades for 1 set
Whole of wiper assembly	WIPER ASSY (One of the Wiper blade is attaching)	K7500EA	1 piece

9.3 Inspection of the JB

(1) Inspection of mechanical-jointing
Inspection and check the Bracket and/or each mechanical-jointing parts of JB.

(2) Inspection of each port
Inspection watertight condition at each 4-connection-port
As for the other items, please refer to the ATEX Directive 2014/34/EU guidelines

9.4 Parts Exchanging / Adding

Table 9-2 Parts to be maintained at JB

No.	PART NAME	PART No.	Description	Lot of order
1	CABLE GLAND (M20)	**K7501JQ**	Cables Terminal Treatment Parts	1
2	Gasket	**K7501JM**	Cables Terminal Treatment Parts	1
3	Sealing Plug (for installing only)	**K7501JR**	Put this (those) on Unused port(s).	1
4	Bracket (with 4-M6 screws) **/BR**	**K7500LE**	4-M6 Screws are used for jointing with the JB	1
5	Cover **/SH**	**K7500LF**	Front cover for JB (with 4 set screws)	1
6	Shade **/SD**	**K7500EC**	Top Shade for Upper-lid of JB (with 4 set screws)	1
7	Pin Spanner **/CT**	**K7501LL**	Upper-lid opener	1

⚠️ **WARNING**

Never open the Upper - lid of the JB when AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT.

N'ouvrez jamais le couvercle supérieur du JB DANS UNE ATMOSPHÈRE EXPLOSIVE.

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10. Repair

When this product needs to be repaired, it shall be delivered to and repaired in our factory. (Removal of the camera and transportation to our service site shall be at your cost). If repair is needed, contact the agent from whom you purchased the product, appropriate sales personnel, or our contact personnel of repair.

11. Warranty Rules

(1) The warranty period is one year from the date of purchase. Failures generated within the warranty period will be repaired free of charge.
(2) Warranty is limited to the body of the product.
(3) Repair carried out as a result of the following conditions will be charged even if the warranty period is still valid:

➢Failure or damage caused by misuse, use out of the specification range, unauthorized repair or modifications.
➢Failure or damage caused by transportation, movement, dropping of the product and so on after purchase.
➢Failure or damage caused by a fire, natural disaster (damage from an earthquake, storm, flood, thunderbolt, etc.), salt, gas or abnormal voltage.

(4) Any other damage the cause of which is not considered our responsibility of excluded from the scope of warranty.
(5) Contact the agent from whom you purchased the product or our appropriate sales personnel.

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INSTALLATION AND OPERATING PRECAUTIONS FOR TIIS FLAMEPROOF EQUIPMENT

Apparatus Certified Under Technical Criteria (IEC-compatible Standards)

1.General

The following describes precautions on electrical apparatus of flameproof construction (hereinafter referred to as flameproof apparatus) in explosion-protected apparatus.

Following the Labor Safety and Health Laws of Japan, flameproof apparatus is subjected to type tests to meet either the technical criteria for explosion proof electrical machinery and equipment (standards notification no. 556 from the Japanese Ministry of Labor) (hereinafter referred to as technical criteria), in conformity with the IEC Standards, or the "Recommended Practice for Explosion-Protected Electrical Installations in General Industries," published in 1979. These certified apparatus can be used in hazardous locations where explosive or inflammable gases or vapors may be present.

Certified apparatus includes a certification label and an equipment nameplate with the specifications necessary for explosion requirements as well as precautions on explosion protection. Please confirm these precautionary items and use them to meet specification requirements.

For electrical wiring and maintenance servicing, please refer to "Internal Wiring Rules" in the Electrical Installation Technical Standards as well as "USER'S GUIDELINES for Electrical Installations for Explosive Gas Atmospheres in General Industry," published in 1994.

To meet flameproof requirements, equipment that can be termed "flameproof" must:

(1) Be certified by a Japanese public authority in accordance with the Labor Safety and Health Laws of Japan and have a certification label in an appropriate location on its case, and

(2) Be used in compliance with the specifications marked on its certification label, equipment name plate and precautionary information furnished.

2.Electrical Apparatus of Flameproof Type of Explosion-Protected Construction

Electrical apparatus which is of flameproof construction is subjected to a type test and certified by the Japanese Ministry of Labor aiming at preventing explosion caused by electrical apparatus in a factory or any location where inflammable gases or vapors may be present. The flameproof construction is of completely enclosed type and its enclosure shall endure explosive pressures in cases where explosive gases or vapors entering the enclosure cause explosion. In addition, the enclosure construction shall be such that flame caused by explosion does not ignite gases or vapors outside the enclosure.

In this manual, the word "flameproof" is applied to the flameproof equipment combined with the types of protection "e", "o", "i", and "d" as well as flameproof equipment.

3.Terminology

(1) Enclosure

An outer shell of an electrical apparatus, which encloses live parts and thus is needed to configure explosion-protected construction.

(2) Shroud

A component part which is so designed that the fastening of joint surfaces cannot be loosened unless a special tool is used.

(3) Enclosure internal volume

This is indicated by:— the total internal volume of the flameproof enclosure minus the volume of the internal components essential to equipment functions.

(4) Path length of joint surface

On a joint surface, the length of the shortest path through which flame flows from the inside to outside of the flameproof enclosure. This definition cannot be applied to threaded joints.

(5) Gaps between joint surfaces

The physical distance between two mating surfaces, or differences in diameters if the mating surfaces are cylindrical.

Note: The permissible sizes of gaps between joint surfaces, the path length of a joint surface and the number of joint threads are determined by such factors as the enclosure's internal volume, joint and mating surface construction, and the explosion classification of the specified gases and vapors.

4. Installation of Flameproof Apparatus

(1) Installation Area

Flameproof apparatus may be installed, in accordance with applicable gases, in a hazardous area in Zone 1 or 2, where the specified gases are present. Those apparatus shall not be installed in a hazardous area in Zone 0.

Note: Hazardous areas are classified in zones based upon the frequency of the appearance and the duration of an explosive gas atmosphere as follows:
Zone 0: An area in which an explosive gas atmosphere is present continuously or is present for long periods.
Zone 1: An area in which an explosive gas atmosphere is likely to occur in normal operation.
Zone 2: An area in which an explosive gas atmosphere is not likely to occur in normal operation and if it does occur it will exist for a short period only.

(2) Environmental Conditions

The standard environmental condition for the installation of flameproof apparatus is limited to an ambient temperature range from –20°C to +40°C (for products certified under Technical Criteria). However, some field-mounted instruments may be certified at an ambient temperature up to +60°C as indicated on the instrument name plates. If the flameproof apparatus are exposed to direct sunshine or radiant heat from plant facilities, appropriate thermal protection measures shall be taken.

5. External Wiring for Flameproof Apparatus

Flameproof apparatus require cable wiring for their electrical connections. For cable wiring, cable glands (cable entry devices for flameproof type) to wiring connections shall be attached. All non-live metal parts such as the enclosure shall be securely grounded. For details, refer to the "USER'S GUIDELINES for Electrical Installations for Explosive Gas Atmospheres in General Industry," published in 1994.

(1) Cable Wiring

- For cable wiring, cable glands (cable entry devices for flameproof type) specified or supplied with the apparatus shall be directly attached to the wiring connections to complete sealing of the apparatus.
- Screws that connect cable glands to the apparatus are those for G-type parallel pipe threads (JIS B 0202) with no sealing property. To protect the apparatus from corrosive gases or moisture, apply non-hardening sealant such as liquid gaskets to those threads for waterproofing.
- Specific cables shall be used as recommended by the "USER'S GUIDELINES for Electrical Installations for Explosive Gas Atmospheres in General Industry," published in 1994.
- In necessary, appropriate protective pipes (conduit or flexible pipes), ducts or trays shall be used for preventing the cable run (outside the cable glands) from damage.
- To prevent explosive atmosphere from being propagated form Zone 1 or 2 hazardous location to any different location or non-hazardous location through the protective pipe or duct, apply sealing of the protective pipes in the vicinity of individual boundaries, or fill the ducts with sand appropriately.
- When branch connections of cables is made, a flameproof or increased-safety connection box shall be used. In this case, flameproof or increased-safety cable glands meeting the type of connection box must be used for cable connections to the box.

6. Maintenance of Flameproof Apparatus To maintain the flameproof apparatus, do the following. (For details, refer to Chapter 10 "MAINTENANCE OF EXPLOSION-PROTECTED ELECTRICAL INSTALLATION" in the USER'S GUIDELINES for Electrical Installations for Explosive Gas Atmospheres in General Industry.)

(1) Maintenance servicing with the power on.

Flameproof apparatus shall not be maintenance-serviced with its power turned on. However, in cases where maintenance servicing is to be conducted with the power turned on, with the equipment cover removed, always use a gas detector to check that there is no explosive gas in that location. If it cannot be checked whether an explosive gas is present or not, maintenance servicing shall be limited to the following two items:

(a) Visual inspection
Visually inspect the flameproof apparatus, metal conduits, and cables for damage or corrosion, and other mechanical and structural defects.

(b) Zero and span adjustments
These adjustments should be made only to the extent that they can be conducted from the outside without opening the equipment cover. In doing this, great care must be taken not to cause mechanical sparks with tools.

(2) Repair

If the flameproof apparatus requires repair, turn off the power and transport it to a safety (non-hazardous) location. Observe the following points before attempting to repair the apparatus.

(a) Make only such electrical and mechanical repairs as will restore the apparatus to its original condition. For the flameproof apparatus, the gaps and path lengths of joints and mating surfaces, and mechanical strength of enclosures are critical factors in explosion protection. Exercise great care not to damage the joints or shock the enclosure.

(b) If any damage occurs in threads, joints or mating surfaces, inspection windows, connections between the sensor and terminal box, shrouds or clamps, or external wiring connections which are essential in flameproofness, contact Yokogawa Electric Corporation.

Note: Do not attempt to re-process threaded connections or refinish joints or mating surfaces.

(c) Unless otherwise specified, the electrical circuitry and internal mechanisms may be repaired by component replacement, as this will not directly affect the requirements for flameproof apparatus (however, bear in mind that the apparatus must always be restored to its original condition). If you attempt to repair the flameproof apparatus, company-specified components shall be used.

(d) Before starting to service the apparatus, be sure to check all parts necessary for retaining the requirements for flameproof apparatus. For this, check that all screws, bolts, nuts, and threaded connections have properly been tightened.

(3) Prohibition of specification changes and modifications

Do not attempt to change specifications or make modifications involving addition of or changes in external wiring connections.

7. Selection of Cable Entry Devices for Flameproof Type

⚠ **CAUTION**

The cable glands (cable entry devices for flameproof type) conforming to IEC Standards are certified in combination with the flameproof apparatus. So, Yokogawa-specified cable entry devices for flameproof type shall be used to meet this demand.

References:

(1) Type Certificate Guide for Explosion-Protected Construction Electrical Machinery and Equipment (relating to Technical Standards Conforming to International Standards), issued by the Technical Institution of Industrial Safety, Japan

(2) USER'S GUIDELINES for Electrical Installations for Explosive Gas Atmospheres in General Industry (1994), issued by the Japanese Ministry of Labor, the Research Institute of Industrial Safety

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ATEX/IECEx Certification

⚠️ **WARNING**
___

DO NOT OPEN WHEN AN EXPLOSIVE
ATMOSPHERE MAY BE PRESENT
___

1.Technical Data

IECEx CML 16.0096X
Type of protection: Flameproof,Dust Ingition
STANDARDS:
  IEC 60079-0:2017 Ed 7.0, IEC 60079-1:2014 Ed 7.0
  IEC 60079-31:2013 Ed 2.0
Marking: Ex db IIC T5 Gb, Ex tb IIIC T100°C Db
Ta= -40°C to +60°C

EC Type Examination Certificate:
CML 14 ATEX 1097X
Equipment: FC33E pan and tilt CCTV camera
Manufacture: Yokogawa Electric Corporation

Compliance with the Essential Health and Safety
Requirements, with the exception of those listed in the
confidential report, has been demonstrated through
compliance with the following documents:
(EN IEC 60079-0:2018, EN 60079-1:2014,
 EN 60079-31:2014)
Explosion-proof class: Ex db IIC T5, Ex tb IIIC T100°C

⟨Ex⟩
II 2 GD
Ex db IIC T5 Gb
Ex tb IIIC T100°C Db
Ta= -40°C to +60°C

2.Installation

・All the cabling should be conformed to the local
installation requirement and electrical code of the
country.
・Please use the cable glands satisfying the
requirement of Ex "db.".
・Please use the cable glands satisfying the
requirement of IP grade.

3.Operation

⚠️ **CAUTION**
___

Take care not to generate mechanical sparking when
access to the instrument and peripheral devices in
hazardous area.
___

4.Repair and Maintenance

⚠️ **WARNING**
___

Any parts replacing except for optional parts
and/or modifying the housing cases are
prohibited. In such a case certification becomes
invalid.
___

5.Name plate FC33E (Explosion-Proof Full HD IP type Pan Tilt Zoom CCTV COLOR CAMERA)
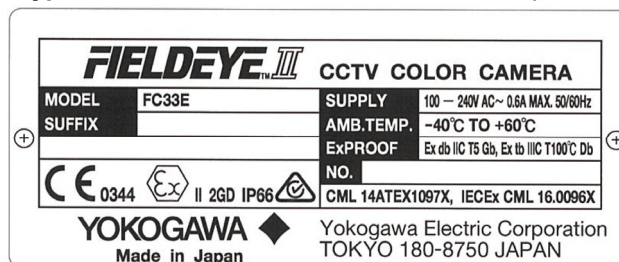
MODEL: Specified model code
SUFFIX: --
SUPPLY: Supply voltage
AMB.TEMP: Ambient temperature
CE: CE marking
0344: The identification number of the notified body
II 2GD: Group II, Category 2 Gas, Dust atmosphere
NO.: Manufacturing serial number (NNYMnnnnn)

NN: Identification Code of Production Site
Y: Completion Year: 2020AD :W, 2021AD :X,
2022AD: Y, 2023AD: Z, 2024AD :1, … 2032AD :9,
2033AD:A,…
M: product Month,
nnnnn: serial number

YOKOGAWA◆ Tokyo 180-8750 JAPAN:
The manufacturer name and the address ***1**
Manufacturer: Yokogawa Electric Corporation.

***1: "180-8750" is a zip code which represents the following address:
9-32 Nakacho, 2-chome Musashino-shi, Tokyo, Japan**

6.Warning marking label
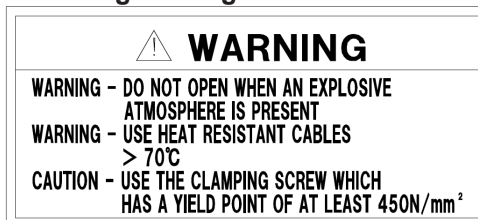
7.Effects to non-metal materials by chemical materials

⚠ **WARNING**

This FC33E enclosure incorporates a cemented part, manufactured using silicone adhesive and also an integral cable seal –rubber sealing ring – manufactured from silicone.

The end use should consider the effects of any chemicals or aggressive substances that may be present in the hazardous area that may affect the performance of these materials.

CSA Explosionproof

⚠️ **WARNING**

A modification of the equipment would no longer comply with the construction described in the certificate documentation.

Une modification de l'équipement ne serait plus conforme à la construction décrite dans la documentation du certificat.

.

Certificate:	**80009215**
Master Contract:	172608
Project:	80009215

Issued to: **Yokogawa Electric Corp.**

**2-9-32 Nakacho
Musashino-shi
Tokyo 180-8750
JAPAN**

The products listed below are eligible to bear the CSA Mark shown

(CSA logo)

2.Installation

・All wiring shall comply with C22.1
・In order to prevent the earthing conductor from loosening, the conductor must be secured to the terminal, tightening the screw with appropriate torque. Care must be taken not to twist the conductor.

3.Operation

⚠️ **CAUTION**

Take care not to generate mechanical sparking when access to the instrument and peripheral devices in hazardous area.

Veiller à ne pas générer d'étincelles mécaniques lors de l'accès à l'instrument et aux périphériques en zone dangereuse.

4. Repair and Maintenance

⚠️ **WARNING**

Any parts replacing except for optional parts and/or modifying the housing cases are prohibited. In such a case certification becomes invalid.

Tout remplacement de pièces à l'exception des pièces optionnelles et/ou toute modification des boîtiers est interdit. Dans un tel cas, la certification devient invalide

1. PRODUCTS

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Ex db IIC T5 Gb
Pan Tilt Zoom Type CCTV Cameras Models FC33E*** Rated 100~240 Vac, 50/60 Hz, ambient range: -40°C to 60°C.

Type Designation
FC33E - * a b c * /*

a = Wiper
W: With wiper
N: Without wiper

b = Control signal
E: HDIP type

c =Type of protection

2: CSA certification
*: number or letter not relevant for the explosion safety properties

5.Name plate FC33E


```
FIELDEYE.Ⅱ   CCTV COLOR CAMERA
MODEL    FC33E        SUPPLY      100 — 240V AC~ 0.6A MAX. 50/60Hz
SUFFIX                AMB.TEMP.   -40℃ TO +60℃
(CSA) LR81741C        Ex MARKING  Ex db IIC T5 Gb
      F5              NO.
              TYPE 4X/IP66  CSA20CA80009215X
YOKOGAWA ◆            Yokogawa Electric Corporation
Made in Japan        TOKYO 180-8750 JAPAN
```

MODEL: Specified model code
SUFFIX: --
SUPPLY: Supply voltage
AMB.TEMP: Ambient temperature
NO.: Manufacturing serial number (NNYMnnnnn)

NN: Identification Code of Production Site
Y: product year
M: product month
nnnnn: serial number

※ *year and month of production will be being depicted.*
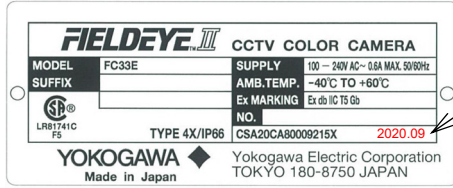
※ :for example.

YOKOGAWA ◆ Tokyo 180-8750 JAPAN:
The manufacturer name and the address ***1**
Manufacturer: Yokogawa Electric Corporation.

*1: "180-8750" is a zip code which represents the following address:
9-32 Nakacho, 2-chome Musashino-shi, Tokyo, Japan

6. Warning marking label
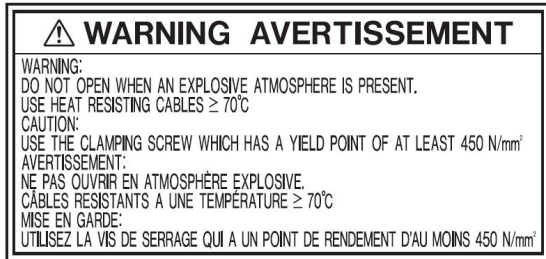
 WARNING
USE HEAT RESISTING CABLE ≥ 70℃.

UTILISER UN CÂBLE RÉSISTANT À UNE
CHALEUR ≥ 70℃.

 CAUTION
USE THE CLAMPING SCREW WHICH HAS A
YIELD POINT OF AT LEAST 450N/mm2.

UTILISER LA VIS DE SERRAGE AYANT UNE
LIMITE D'ÉLASTICITÉ D'AU MOINS 450 N/mm2

7. Conditions of Acceptability:
(1)The above models are permanently connected,
Equipment Class I, Pollution Degree 2, Overvoltage
Category II

(2)Mode of operation: Continuous

(3)Environmental Conditions: -40 to 60°C, 2000 m
max., 20 to 95% RH

(4)This equipment employs flamepath joints that
have not been tested at the maximum joint
dimensions and minimum flamepath lengths
permitted by the standard. When the equipment is to
be repaired, maintained or inspected, contact the
manufacturer for information on dimensions.

(5)For Zone 1 field wiring according to Canadian
Electrical Code, must apply CSA certified Ex
cable gland with appropriate rating. And the final
assembly shall be evaluated and subjected to
acceptance of local authority having jurisdiction.

(6) Certification information
Warning: A modification of the equipment would
no longer comply with the construction
described in the certificate documentation.

(7) 'Contact Output (Relay contact output):
Contact Rating: 48 DC., 100 mA (HDIP type
Only)

(8) Take care not to generate mechanical spark
when access to the equipment and the peripheral
devices in hazardous locations.

(9) Maintenance and Repair
Only personnel authorized by Yokogawa Electric
Corporation can repair the equipment.

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Yokogawa Electric Corporation

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```
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 *
 */
```

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```
/***********************************************************************
 * NCSA HTTPd Server
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 * National Center for Supercomputing Applications
 * University of Illinois at Urbana-Champaign
 * 605 E. Springfield, Champaign, IL 61820
 * httpd@ncsa.uiuc.edu
 *
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 *
 ***********************************************************************
 *
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 *
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```
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# This comes from X11R5 (mit/util/scripts/install.sh).
#
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```

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```
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                ===============
```

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 Written by Adam Twiss (adam@zeus.co.uk). March 1996

Thanks to the following people for their input:
  Mike Belshe (mbelshe@netscape.com)
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```
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