

IP-920E

IP-920D

Hardware User's Guide

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# USING IP-920E/IP-920D SAFELY

## Handling of This Manual

The manual contains important information regarding the safe use of IP-920E/IP-920D. Read it thoroughly before operating this device. Make sure the users of this equipment read and understand thoroughly all safety precautions contained in the manual. Keep this manual in a safe and convenient location for quick reference.

Fujitsu makes every effort to prevent users and bystanders from injury and to prevent property damage. To ensure no harm to you and bystanders, and to prevent damage to this equipment itself, be sure to use this equipment in accordance with instructions in the manual.

### **The following notice is for USA users only.**

IP-920E/IP-920D has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.

### **The following notice is for Canada users only.**

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

### **The following notice is for EU (European Union) users only.**

This is Class A product of Electromagnetic Interference (EMI) standard. In a domestic environment this product may cause radio interference in which case the user may be required to make adequate measures.

This manual includes technology controlled under the Foreign Exchange and Foreign Trade Control Law of Japan. The manual or a portion thereof must not be exported (or re-exported) without authorization from the appropriate governmental authorities in accordance with the above law.

IP-920E/IP-920D is designed and manufactured for use in standard applications such as office work, personal devices, and household appliances. The product is not intended for special uses (such as nuclear-reactor control in atomic energy facilities, aeronautic and space systems, air traffic control, operation control in mass transit systems, medical devices for life support, and missile firing controls in weapons facilities) where particularly high reliability requirements exist, where the pertinent levels of safety are not guaranteed, or where a failure or operational error could threaten a life or cause physical injury (hereafter referred to as "mission-critical" use). Customers considering use of this product for mission-critical applications must have safety-assurance measures in place beforehand. Moreover, they are requested to consult our sales representative before embarking on such specialized use.

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## **IMPORTANT NOTE TO USERS**

**READ THE ENTIRE MANUAL CAREFULLY BEFORE USING THIS PRODUCT. INCORRECT USE OF THE PRODUCT MAY RESULT IN INJURY OR DAMAGE TO USERS, BYSTANDERS OR PROPERTY.**

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# PREFACE

Thank you for purchasing the IP-920E/IP-920D.

IP-920E/IP-920D are the video transmission equipment with the H.264 encoding technology which performs the high compression ratio, and transmits the SD (Standard Definition) /HD (High Definition) video and audio signals in real time through even the optical IP network such as FTTH. (\*1) IP-920E has functions that encodes SD/HD video signals from a SD/HD camera or similar device and distributes it across the network in real-time. IP-920D has functions that decode the encoded SD/HD video signal data received via the network and displays it on a monitor or other device.

This manual is intended for system designers and system managers who use IP-920E/IP-920D. Readers are assumed to have a basic knowledge of networks and video distribution.

Figures and tables are described by using IP-920E as a sample. Functions which are not supported by IP-920D are described at each part of functions separately.

\*1: IP-920E supports only SD video. By adding optional software, IP-920E will be upgraded to support HD video.

Edition 9 Jun 2018
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## Product operating environment

- Designed for use in real-time audio/video transmission systems and in the transmission system of monitoring systems, IP-920E/IP-920D is intended for indoor use.

### Note:

The contents of this manual are subject to change without notice.

# ORGANIZATION AND CONTENTS OF THIS MANUAL

The manual consists of five chapters, an appendix, a glossary and an index.

Read Chapters 1 and 2 before install and connect this equipment. Read Chapter 3 for operating instructions, and Chapter 4 and subsequent chapters can be read as required.

## Chapter 1 Preparations

This chapter describes the checks that are required before the start of IP-920E/IP-920D operation.

## Chapter 2 Installation and Connection

This chapter describes conditions for IP-920E/IP-920D installation and explains how to connect it to peripheral this equipments.

## Chapter 3 Operating Instructions

This chapter explains how to turn on/off, set up and operate this equipment.

## Chapter 4 Connection Cable Specifications

This chapter contains a classification of how work is implemented, cable connection system diagrams and cable connector details.

## Chapter 5 Troubleshooting

This chapter describes actions to be taken if this equipment does not operate normally or if an alarm LED turns on.

## Appendix

The appendix contains views of this equipment and its basic specifications. Installation work and on-site adjustment preparations are also covered in this section.

## Glossary

The glossary defines the technical terms used in this manual.

## Index

The index lists keywords and corresponding pages on which the words appear, so necessary items can be looked up immediately.

## WARNING INDICATIONS

This manual uses warning indications to warn of conditions in order to prevent serious injury and property damage. Warning indications consist of warning markings of specific levels and warning messages. The warning markings are shown below along with their definitions.



⚠ WARNING indicates a situation that could lead to serious injury or loss of life if procedures are not followed correctly.



⚠ CAUTION indicates a situation that could lead to minor or moderate injury and/or damage to this equipment itself if procedures are not followed correctly.

### Warning indications within text

Warning markings are followed by warning messages. Every warning marking is centered on a line. Left and right indents are set for warning messages to differentiate them from ordinary text. Furthermore, the lines immediately before and after warning indications are left blank.

(e.g.)



Possibility of electric shock, fire and damage to this equipment

Always observe the precautions given below.

This indicates a hazardous situation that could lead to electric shock, fire or damage to this equipment.


- Always connect the power cord to a power receptacle for a standard two-prong plug with ground.
- Connect this equipment to the power receptacle with a capacity of 1A or more. When using a power extension cable, be sure that the total power consumption of all devices connected to the cable does not exceed the rated capacity of the cable. If a power receptacle with a low capacity or capacity below the rated value is used, the power receptacle, extension cable or power distribution wiring may overheat and start a fire.

Important warning indications are summarized below in “Safety Precautions.”

# SAFETY PRECAUTIONS

## List of important warnings

The table below contains a list of important warning indications.

 <b>WARNING</b>	In case of not following the procedures below, the situation could lead to serious injury or loss of life.
--	--

Work type	Warning
Normal use	<b>Possibility of electric shock and fire</b> If an excessive heat, smoke, an abnormal odor or an unusual noise is coming from this equipment, immediately set its power switch to OFF and remove the power cord plug from the power receptacle. Then, contact a Fujitsu Service Center. This indicates a hazardous situation that could lead to fire and electric shock.
	<b>Possibility of electric shock and fire</b> If foreign matter (e.g., water, bits of metal, fluid) gets inside this equipment, immediately set its power switch to OFF and remove the power cord plug from the power receptacle. Then, contact a Fujitsu Service Center. This indicates a hazardous situation that could lead to fire and electric shock.
	<b>Possibility of electric shock and fire</b> If this equipment has been dropped or otherwise damaged, immediately set its power switch to OFF and remove the power cord plug from the power receptacle. Then, contact Fujitsu Service Center. This indicates a hazardous situation that could lead to electric shock.
	<b>Possibility of electric shock and fire</b> To keep foreign matter out, ensure that drink containers and metal objects are not placed on or near this equipment. The presence of foreign matter such as water inside this equipment creates a hazardous situation that could lead to electric shock.
	<b>Possibility of electric shock and fire</b> Ensure that no liquid is splashed on this equipment, making it wet. The presence of foreign matter such as water inside this equipment creates a hazardous situation that could lead to fire and electric shock.
	<b>Possibility of electric shock and fire</b> Ensure that the power cord does not become damaged, and avoid tampering with it. If the power cord has a heavy object is placed on it, pulled at, bent, or becomes entangled, it could be damaged as a result. Also, the power cord could be damaged if subjected to heat, creating a hazardous situation that could lead to fire and electric shock.
	<b>Possibility of electric shock</b> Because this device contains a hazardous voltage section, never open the cover. Only a service engineer must open the cover. This warning indicates a hazardous situation that could lead to electric shock.



Work type	Warning
Installation	<p data-bbox="432 320 890 353"><b>Possibility of electric shock and fire</b></p> <p data-bbox="432 360 1492 432">Do not install this equipment in the following places because using it there may cause a fire or electric shock:</p> <ul data-bbox="459 443 1492 813" style="list-style-type: none"> <li data-bbox="459 443 858 477">• Extremely dusty or dirty place</li> <li data-bbox="459 483 762 517">• Wet or humid location</li> <li data-bbox="459 524 1492 595">• Hot location, such as a place where this equipment is exposed to direct sunlight or is near heating equipment</li> <li data-bbox="459 602 1289 636">• Near products (e.g., speakers) that generate a strong magnetic field</li> <li data-bbox="459 642 1082 676">• Location where the temperature is too hot or cold</li> <li data-bbox="459 683 1141 716">• In an environment with sharp temperature fluctuations</li> <li data-bbox="459 723 810 757">• Area with poor ventilation</li> <li data-bbox="459 763 627 797">• Near a fire</li> </ul> <p data-bbox="432 853 1257 887"><b>Possibility of electric shock, fire, and damage to this equipment</b></p> <p data-bbox="432 893 965 927">Always observe the precautions given below.</p> <p data-bbox="432 934 1492 1005">This indicates a hazardous situation that could lead to electric shock, fire and damage to this equipment.</p> <ul data-bbox="459 994 1492 1238" style="list-style-type: none"> <li data-bbox="459 994 1492 1066">• Always connect the power plug to a power receptacle for a standard two-prong plug with ground.</li> <li data-bbox="459 1072 1492 1238">• Connect this equipment to a power receptacle with a capacity of 1 A or more. When using a power extension cable, be sure that the total current consumption of all devices connected to the cable does not exceed the rated capacity of the cable. If a power receptacle with a low capacity or capacity below the rated value is used, the power receptacle, extension cable or power wiring may overheat and start a fire.</li> </ul>

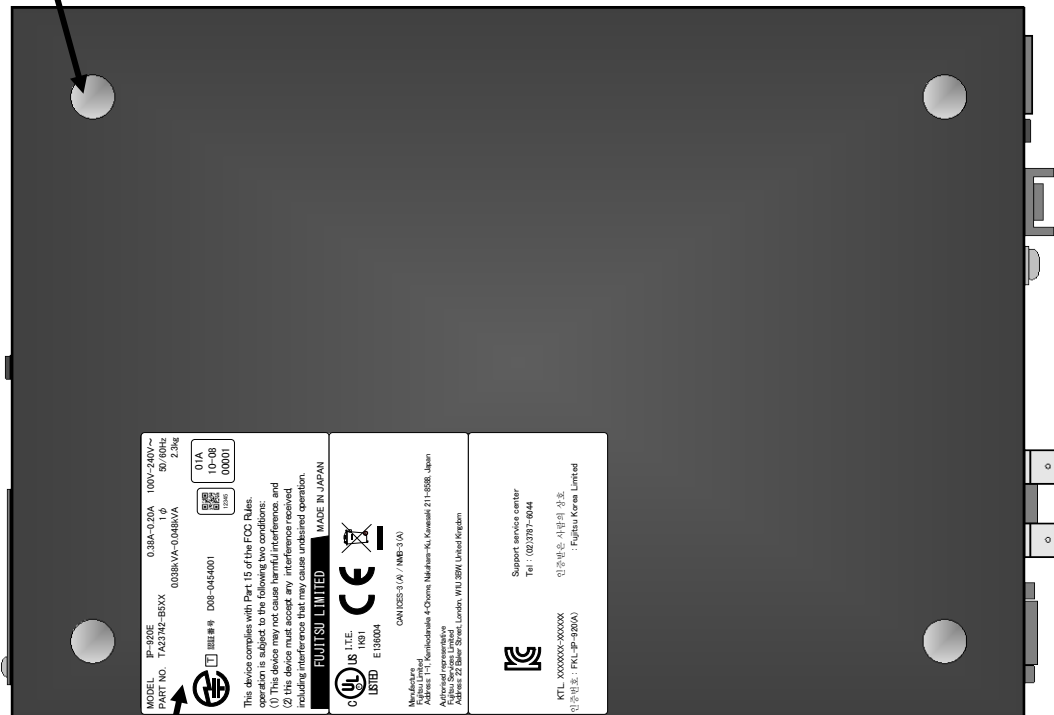
Work type	Warning
Installation and relocation	<p><b>Possibility of serious injury and damage to this equipment</b></p> <p>Do not install this equipment in places where it is exposed to shock and strong vibrations, on an incline or in unstable locations.</p> <p>This indicates a hazardous situation that could lead to serious injury or damage to this equipment.</p> <p><b>Possibility of serious injury and damage to this equipment</b></p> <p>When relocating this equipment, observe the following precautions to protect against serious injury and damage to this equipment:</p> <ul style="list-style-type: none"> <li>• Set the power switch to OFF, and disconnect all connected cables. Take care to avoid getting your feet entangled in the cables.</li> <li>• To prevent serious personal injury when moving this equipment, take special care to pay attention to your surroundings.</li> </ul>
Clean	<p><b>Possibility of fire, serious injury and damage to this equipment</b></p> <p>When cleaning this equipment, observe the following precautions to protect against fire, serious injury and damage to this equipment:</p> <ul style="list-style-type: none"> <li>• When cleaning this equipment, please do not use cleaning spray that is including combustible material. Also, please do not use it around this equipment.</li> <li>• When cleaning this equipment, please wipe off with the cloth squeezing water (or neutral detergent thinned by water).</li> <li>• When wiping off, please be careful not to put water into this equipment from switches or the spaces.</li> </ul>

## LABEL

The warning label shown below is affixed to this equipment.

- Never remove the label.
- Be sure to check the label at the bottom of this device before coming to the power supply.
- The following label is intended for users of this equipments.

Mark for rubber feet



MODEL	IP-920E	0.38A-0.20A	100V-240V~
PART NO.	TA23742-B5XX	1 φ	50/60Hz
		0.038kVA-0.048kVA	2.3kg

認証番号 D08-0454001

01A  
10-08  
00001

This device complies with Part 15 of the FCC Rules. operation is subject to the following two conditions:  
 (1) This device may not cause harmful interference, and  
 (2) This device must accept any interference received, including interference that may cause undesired operation.

**FUJITSU LIMITED** MADE IN JAPAN

US I.T.E.  
1K91  
LISTED E136004

CAN ICES-3 (A) / NMB-3 (A)

Manufacture  
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Authorized representative  
Fujitsu Services Limited  
Address: 22 Baker Street, London, W1U 3BW, United Kingdom

KTL: XXXXXXXX-XXXXXX  
인증번호 : FKL-IP-920(A)

인증받은 사람의 상호  
: Fujitsu Korea Limited

Label: IP-920E

MODEL	IP-920D	0.35A-0.18A	100V-240V~
PART NO.	TA23742-B6XX	1 φ	50/60Hz
		0.035kVA-0.045kVA	2.3kg

認証番号 D08-0454001

01A  
10-08  
00001

This device complies with Part 15 of the FCC Rules. operation is subject to the following two conditions:  
 (1) This device may not cause harmful interference, and  
 (2) this device must accept any interference received, including interference that may cause undesired operation.

**FUJITSU LIMITED** MADE IN JAPAN

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KTL: XXXXXXXX-XXXXXX  
인증번호 : FKL-IP-920(A)

인증받은 사람의 상호  
: Fujitsu Korea Limited

Label: IP-920D

IP-920E/IP-920D

# PRODUCT HANDLING PRECAUTIONS

## WARNING

### Maintenance

Do not try to repair this equipment yourself. Contact a Fujitsu Service Center.

## CAUTION

Read this manual thoroughly before attempting to operate this equipment.  
If you have any questions, contact a Fujitsu Service Center.

If a problem occurs, contact a Fujitsu Service Center.  
The Fujitsu Service Center will ask you to describe the problem, the lamp display status of alarm LEDs and other details. Check the system for this information.

### Connectable devices

Only devices that conform to this equipment interface specifications (Refer to Appendix 2.3, "Device Specifications") can be connected. Otherwise, if incompatible devices are connected, the result may be personal injury and property damage.

### CF card consideration

Please note that you need to remove the CF card or take the backup of its recorded data in case of requesting the repair of the main unit that the CF card is installed, since Fujitsu does not guarantee the recorded content during the repair work.

Please also note that the recorded content might be deleted by the process of the diagnostic and the repair work after Fujitsu starts the work even if you already cancel the repair request

### Disposal

To dispose of this equipment, contact a Fujitsu Service Center, or request a specialist to take care its disposal.

### Modification and restoration

Do not use any device that has been modified or rebuilt with refurbished used parts. Otherwise, you may result in personal injury and property damage.

# CONTENTS

<b>Chapter 1 Preparations .....</b>	<b>1</b>
1.1 Main Features.....	3
1.2 Components .....	4
1.3 Basic Application Examples .....	5
1.4 Part Names.....	6
<b>Chapter 2 Installation and Connection .....</b>	<b>11</b>
2.1 Installation Conditions .....	13
2.1.1 Environment conditions .....	13
2.1.2 Installation environment.....	13
2.1.3 Air supply and exhaust of the equipment .....	33
2.1.4 Open space required around this equipment .....	34
2.2 Power Supply System Connections .....	35
2.2.1 Connection to ground .....	35
2.2.2 Connection to power source.....	36
2.3 Audio and Video Device Connections.....	39
2.3.1 IP-920E (Encoder) .....	39
2.3.2 IP-920D (Decoder).....	40
2.4 Connection to Network .....	41
2.5 Connection to RS-232C Device .....	42
2.6 CF Card Insertion and Removal.....	43
<b>Chapter 3 Operation Instructions.....</b>	<b>1</b>
3.1 Turn ON/OFF IP-920E/920D .....	41
3.1.1 Turn on IP-920E/920D .....	41
3.1.2 Turn off IP-920E/920D .....	41
3.2 Device Settings and Operation .....	42
3.2.1 Reboot .....	43
3.3 Special Use of MNT Button .....	44
<b>Chapter 4 Cable Specifications .....</b>	<b>45</b>
4.1 Installation Preparations .....	47
4.2 Cable and Connector Details .....	49
<b>Chapter 5 Troubleshooting.....</b>	<b>59</b>
5.1 Help Information .....	61
5.2 Alarm LED Lamps .....	68
5.3 Maintenance .....	70
5.3.1 Maintenance space .....	70
5.3.2 Change equipment (Only for CE).....	71

<b>Appendix .....</b>	<b>73</b>
A.1 Appearance .....	75
A.2 Basic Specifications.....	77
A.2.1 External specifications.....	77
A.2.2 Environment specifications.....	77
A.2.3 Function specifications .....	78
A.3 Preparations for Installation Work .....	84
A.3.1 Scope of installation work.....	84
A.3.2 Unpacking and device check.....	84
A.3.3 Installation conditions .....	84
A.3.4 Connecting external cables .....	84
A.4 Preparations for On-site Turn-up.....	85
<b>Glossary and Index .....</b>	<b>89</b>
Glossary.....	91
Index .....	94
CE Conformity Information .....	96

# CHAPTER 1

## PREPARATIONS

This chapter describes the checks that are required before the start of IP-920E/  
IP-920D operation.

1.1	Main Features .....	3
1.2	Components .....	4
1.3	Basic Application Examples .....	5
1.4	Part Names .....	6

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## 1.1

## Main Features

IP-920E/IP-920D are the video transmission equipment with the H.264 encoding technology which performs the high compression ratio, and transmits the SD (Standard Definition) /HD (High Definition) video and audio signals in real time through even the optical IP network such as FTTH.

IP-920E has functions that encodes SD/HD video signals from a SD/HD camera or similar device and distributes it across the network in real-time. IP-920D has functions that decode the encoded SD/HD video signal data received via the network and displays it on a monitor or other device.

Main Features				IP-920E	IP-920D
Item	Specifications				
Video input	HD-SDI / SD-SDI	1ch	[BNC]	x	-
	HDMI 1.2a (*4)	1ch	[HDMI]	x	-
	Analog Composite	1ch	[BNC] NTSC/PAL	x	-
Video output (*1)	HD-SDI / SD-SDI	1ch	[BNC]	-	x
	HDMI 1.2a (*4)	1ch	[HDMI]	-	x
	Analog Composite (*2)	1ch	[BNC] NTSC/PAL	-	x
Audio input	HD/SD-SDI embedded	2ch	[BNC], 1 stereo pairs	x	-
	HDMI 1.2a (*4)	2ch	[HDMI]	x	-
	Analog balanced	2ch	[D-sub9-pin], female connector, 1 stereo pair	x	-
Audio output (*1)	HD/SD-SDI embedded	2ch	[BNC], 1 stereo pairs	-	x
	HDMI 1.2a (*4)	2ch	[HDMI]	-	x
	Analog balanced	2ch	[D-sub9-pin], female connector, 1 stereo pair	-	x
Reference Input (BB) (*3)	Analog Composite	1ch	[D-sub9-pin], female connector	-	x
Network	LAN	1ch	[RJ45], 10BASE-T / 100BASE-TX	x	x
Data input/output	RS-232C	1ch	[D-sub9-pin], male connector	x	x
CF CARD slot	CF CARD	1	For data storage	x	-
Installation conditions	Indoor: On a desk, mounted in a rack			x	
Dimensions	W: 210 H: 42 D: 300 (mm) Note: Excluding protrusions (i.e., not including feet)			x	
Cooling system	Forced air cooling			x	
Power supply	100-240VAC, AC Inlet connector			x	
Weight	Maximum 2.3kg			x	
Power consumption	IP-920E : 38VA or less @ 100VAC IP-920D : 35VA or less @ 100VAC			x	
Temperature Humidity	-10 to 55°C (No low temperature startup: -10 to -1°C) 20 to 90%RH (No condensing)			x	

\*1: IP-920D (Decoder) can output decoded video/audio signals from all video/audio output interfaces.

\*2: In case of HD video transmission, IP-920D cannot output video signal from "Analog composite" video interface.

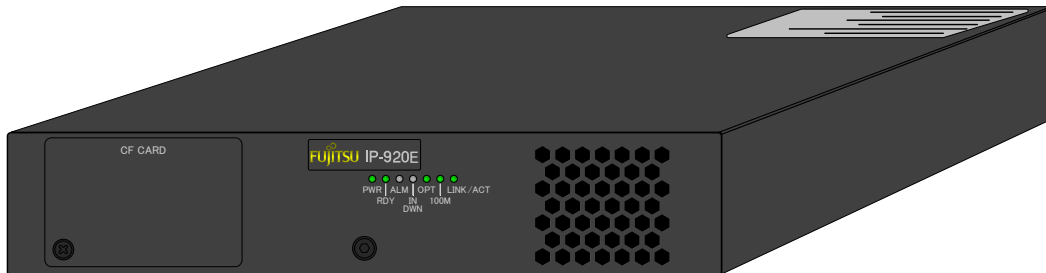
\*3: By adding optional software. IP-920D (Decoder) will be upgraded to support Reference Input.

\*4: DVI isn't supported.

## 1.2 Components

The IP-920E/IP-920D product package consists of the following components.  
 Attachments for all series consist of same contents.

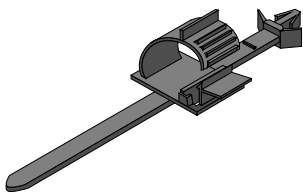
- IP-920E/IP-920D: 1 pc (cables separate order)



- Safety manual: 1pc

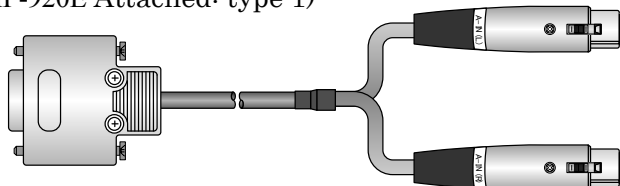


- Holder of power supply cable: 1 pc

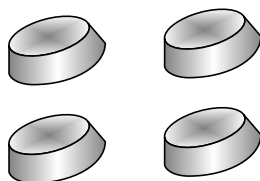


- Audio adapter cable: 1 pc

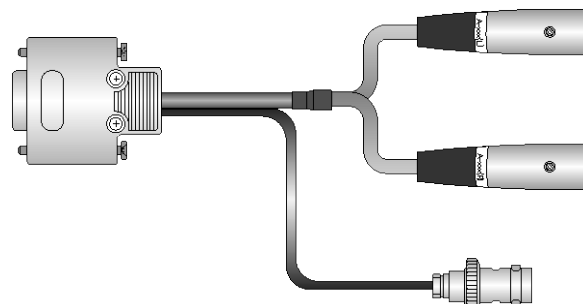
(IP-920E Attached: type 1)



- Rubber Feet: 4 pcs



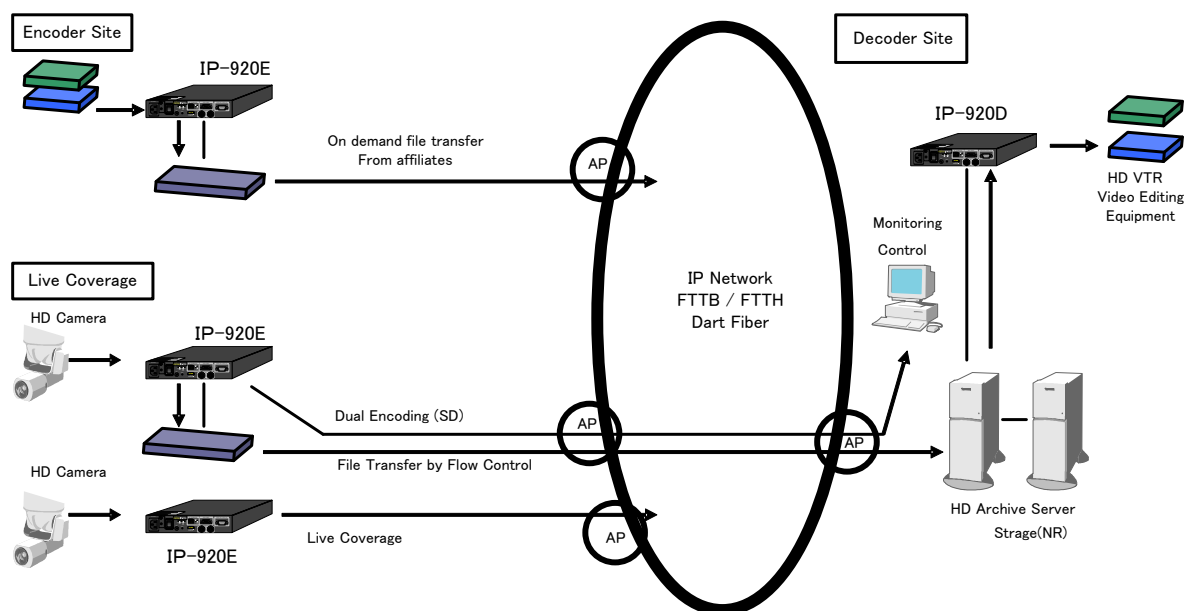
(IP-920D Attached: Audio&Reference)



# 1.3

## Basic Application Examples

Examples (system configuration) of use of IP-920E/IP-920D are shown below.



## 1.4 Part Names

This section gives the name and describes the function of individual parts of IP-920E/IP-920D.

The diagrams below show the layout of parts on the outside of this equipment, and the table below lists the name and describes the function of individual parts.

- IP-920E

Figure Front panel

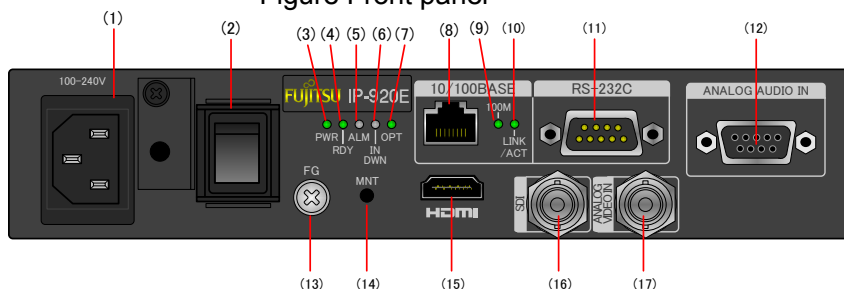


Figure Rear panel



Part names

No.	Name	Description
(1)	Power inlet connector (INPUT 100-240VAC)	Can be connected to a 100-240VAC commercial power supply by using power card with a standard two-prong plug with ground. Refer to Section 2.2.2, "Connection to a Power Source," for an explanation on using this connector. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(2)	Power button	Turns this equipment on and off.
(3)	Power LED (PWR)	Turns on when this equipment is turned on.
(4)	Status LED (RDY)	Turn on when IP-920E power is on. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(5)	Alarm LED (ALM)	Turns on when IP-920E operation is abnormal. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(6)	AV input status LED (INDWN)	Audio/Video input setting status indicator and LED that indicates the input off status during input setting. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(7)	Option LED (OPT)	Turn on when option license is installed. For more information, refer to Software guide.
(8)	LAN port (10/100BASE)	Ethernet 10BASE-T/100BASE-TX communication port. Refer to Section 2.4, "Connection to a Network," for an explanation on using this port. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(9)	Speed LED (100M)	Indicates the status of LAN port. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(10)	Status LED (LINK/ACT)	Indicates the speed of LAN port. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.

IP-920E/IP-920D

No.	Names	Description
(11)	RS-232C port (RS-232C)	RS-232C data communication port. Refer to Section 2.5, "Connection to an RS-232C Device," for an explanation on using this pin. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(12)	Audio input (ANALOG AUDIO IN)	Audio input connector. 600Ω balanced. Refer to Section 2.3, "Audio and Video Device Connections," for an explanation on using this connector. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(13)	FG terminal (FG)	Use for an FG connection to this equipment. Refer to Section 2.2.1, "Connection to ground," for an explanation on using this terminal.
(14)	Maintenance mode switch (MNT)	IP-920E start mode selector switch. When the IP-920E is turned on with this switch held down, it starts in initial start mode. Refer to Section 3.3, "Special Use of MNT Button," for an explanation on using this switch.
(15)	HDMI input (HDMI)	Digital HDMI video input connector. 50Ω unbalanced. Refer to Section 2.3, "Audio and Video Device Connections," for an explanation on using this terminal. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(16)	SDI video input (SDI)	Digital HD-SDI video input terminal. 75Ω unbalanced. Refer to Section 2.3, "Audio and Video Device Connections," for an explanation on using this terminal. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(17)	Video input (ANALOG VIDEO IN)	Analog video input terminal. 75Ω unbalanced. Refer to Section 2.3, "Audio and Video Device Connections," for an explanation on using this terminal. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(18)	CF CARD slot	Slot in which a CompactFlash® card is inserted.
(19)	AUX port (AUX)	Auxiliary port.
(20)	Test port	Factory test port.

## - IP-920D

Figure Front panel

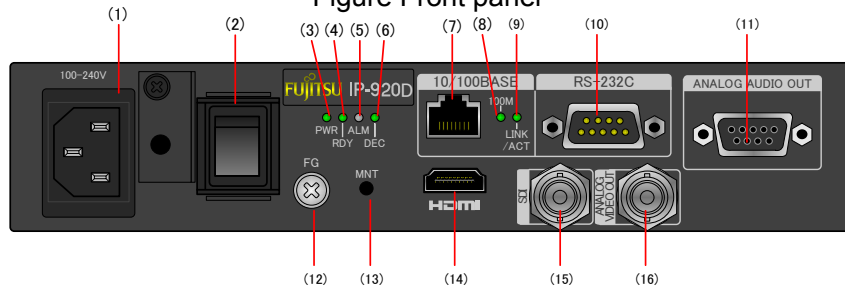
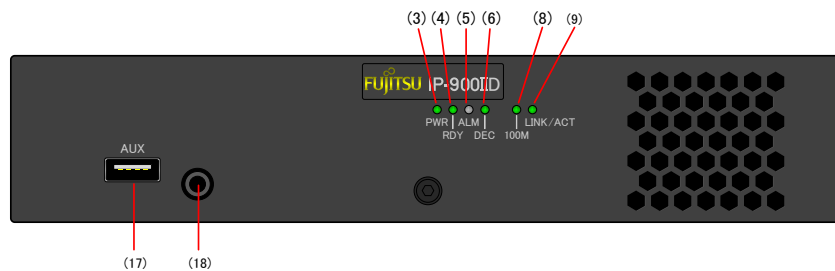


Figure Rear panel



## Part names

No.	Name	Description
(1)	Power inlet connector (INPUT 100-240VAC)	Can be connected to a 100-240VAC commercial power supply by using power card with a standard two-prong plug with ground. Refer to Section 2.2.2, "Connection to a Power Source," for an explanation on using this connector. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(2)	Power button	Turns this equipment on and off.
(3)	Power LED (PWR)	Turns on when this equipment is turned on.
(4)	Status LED (RDY)	Turn on when IP-920D power is on. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(5)	Alarm LED (ALM)	Turns on when IP-920D operation is abnormal. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(6)	Decoder LED (DEC)	Turn on when IP-920D/ is decoding then stream. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(7)	LAN port (10/100BASE)	Ethernet 10BASE-T/100BASE-TX communication port. Refer to Section 2.4, "Connection to a Network," for an explanation on using this port. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(8)	Speed LED (100M)	Indicates the status of LAN port. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(9)	Status LED (LINK/ACT)	Indicates the speed of LAN port. For more information, refer to Table 5.3, "Details of LED Indications," in Section 5.2.
(10)	RS-232C port (RS-232C)	RS-232C data communication port. Refer to Section 2.5, "Connection to an RS-232C Device," for an explanation on using this pin. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(11)	Audio output, Reference signal input (ANALOG AUDIO OUT)	A connector having usages of audio output terminal (600Ω, balanced output) and reference signal input terminal (75Ω, unbalanced input). Refer to Section 2.3, "Audio and Video Device Connections," for an explanation on using this terminal. Refer to Section 4.2, "Cable and Connector Details," for cable connection information.
(12)	FG terminal (FG)	Use for an FG connection to this equipment. Refer to Section 2.2.1, "Connection to ground," for an explanation on using this

## IP-920E/IP-920D

		terminal.
No.	Names	Description
(13)	Maintenance mode switch (MNT)	IP-920E start mode selector switch. When the IP-920E is turned on with this switch held down, it starts in initial start mode. Refer to Section 3.3, “Special Use of MNT Button,” for an explanation on using this switch.
(14)	HDMI output (HDMI)	Digital HDMI video output terminal. 50Ω unbalanced. Refer to Section 2.3, “Audio and Video Device Connections,” for an explanation on using this terminal. Refer to Section 4.2, “Cable and Connector Details,” for cable connection information.
(15)	SDI video output (SDI)	Digital HD-SDI video output terminal. 75Ω unbalanced. Refer to Section 2.3, “Audio and Video Device Connections,” for an explanation on using this terminal. Refer to Section 4.2, “Cable and Connector Details,” for cable connection information.
(16)	Video output (ANALOG VIDEO OUT)	Analog video output terminal. 75Ω unbalanced. Refer to section 2.3, “Audio and Video Device Connections,” for an explanation on using this terminal. Refer to Section 4.2, “Cable and Connector Details,” for cable connection information.
(17)	AUX port (AUX)	Auxiliary port.
(18)	Test port	Factory test port.

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## CHAPTER 2

# INSTALLATION AND CONNECTION

This chapter describes conditions for IP-920E/IP-920D installation and explains how to connect it to peripheral devices.

Figures described in this chapter are used IP-920E as a sample.

2.1	Installation Conditions .....	13
2.2	Power Supply System Connections .....	35
2.3	Audio and Video Device Connections .....	39
2.4	Connection to Network .....	41
2.5	Connection to RS-232C Device .....	42
2.6	CF Card Insertion and Removal .....	43

## CAUTION

### Possibility of serious injury

The power cord and other cables connected to IP-920E/IP-920D may become entangled with someone walking close to them, possibly leading to serious injury and property damage. Clamp the cables to the rack or floor.

## 2.1

# Installation Conditions

This section describes the installation environment, space and air supply and exhaust of the equipment.

### 2.1.1 Environment conditions

Please use this equipment in the air supply and ambient temperature which is not exceeded 55 degrees C. If the condition above is observed, you may install plural equipment as piling on a shelf. In case of using this equipment under unsupported conditions, the equipment cannot be supported by Fujitsu and it might be the cause of failure and shortening the product life remarkably.

Use this Equipment in the environment which airborne dust is under 0.15mg/m<sup>3</sup>. (In case of being over 0.15mg/m<sup>3</sup>, use dust-proofing rack.) In addition, clean up around this equipment because remarkably amount of dust is the cause of equipment errors and failures if it is attached to the equipment.

Use this Equipment in the environment which gaseous contamination is under “IEC 60721-3-3 Class 3C1”.(Refer to “Appendix 2.2 Environment Specifications - Gaseous contamination”).

### 2.1.2 Installation environment

#### 1. 19" rack mounting

Mount this equipment to 19" rack of EIA standard using the 19" rack mounting kit. We have 2 types of mounting kits; 1 unit per 1 U and 2 units per 1U.

(19" rack mounting kit is an optional product.)

If you would like to mount different way from the descriptions in this document, please consult Fujitsu Service Center or your system administrator.

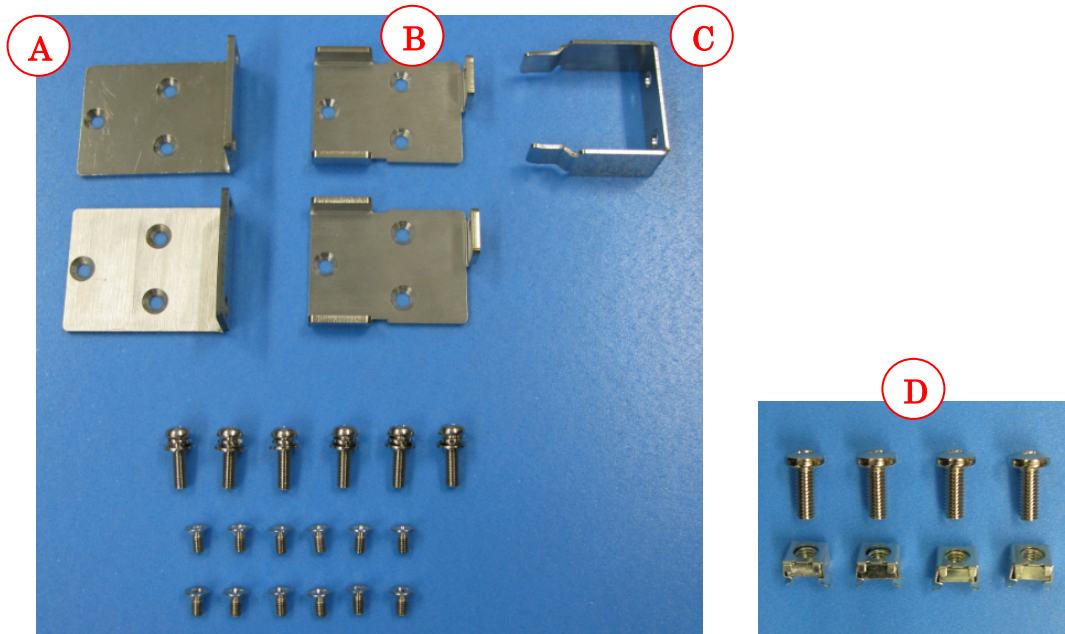
5 types of rack mounting kit are available. (Type A1, A2, B1, B2 and C2)

## CAUTION

**Use attached mounting kit and screws for installing equipment. Fix the equipment tightly with the attached rack using attached screws. In case of loosening the screws or not being fixed tightly with the equipment, it may be a cause of serious accident.**

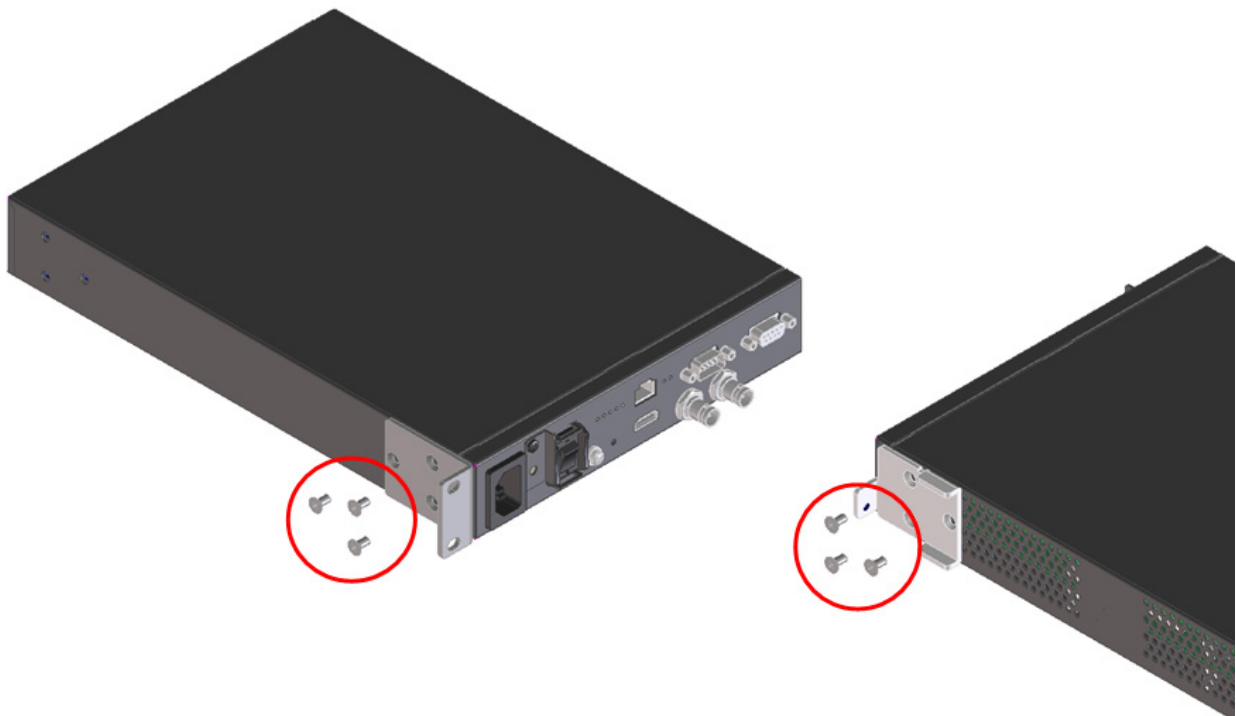
- Two IP-920 per 1U (Type C2)

(1) Check contents of the rack mounting kit.

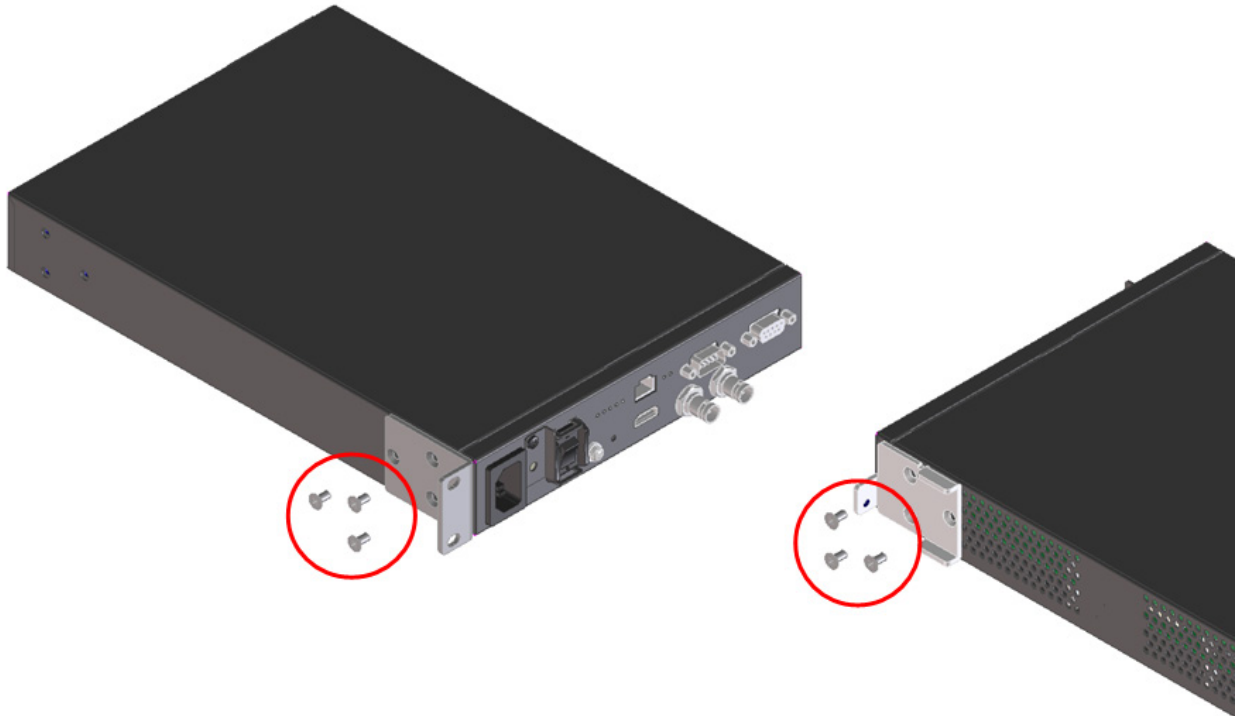


(2) Check all cables disconnected.

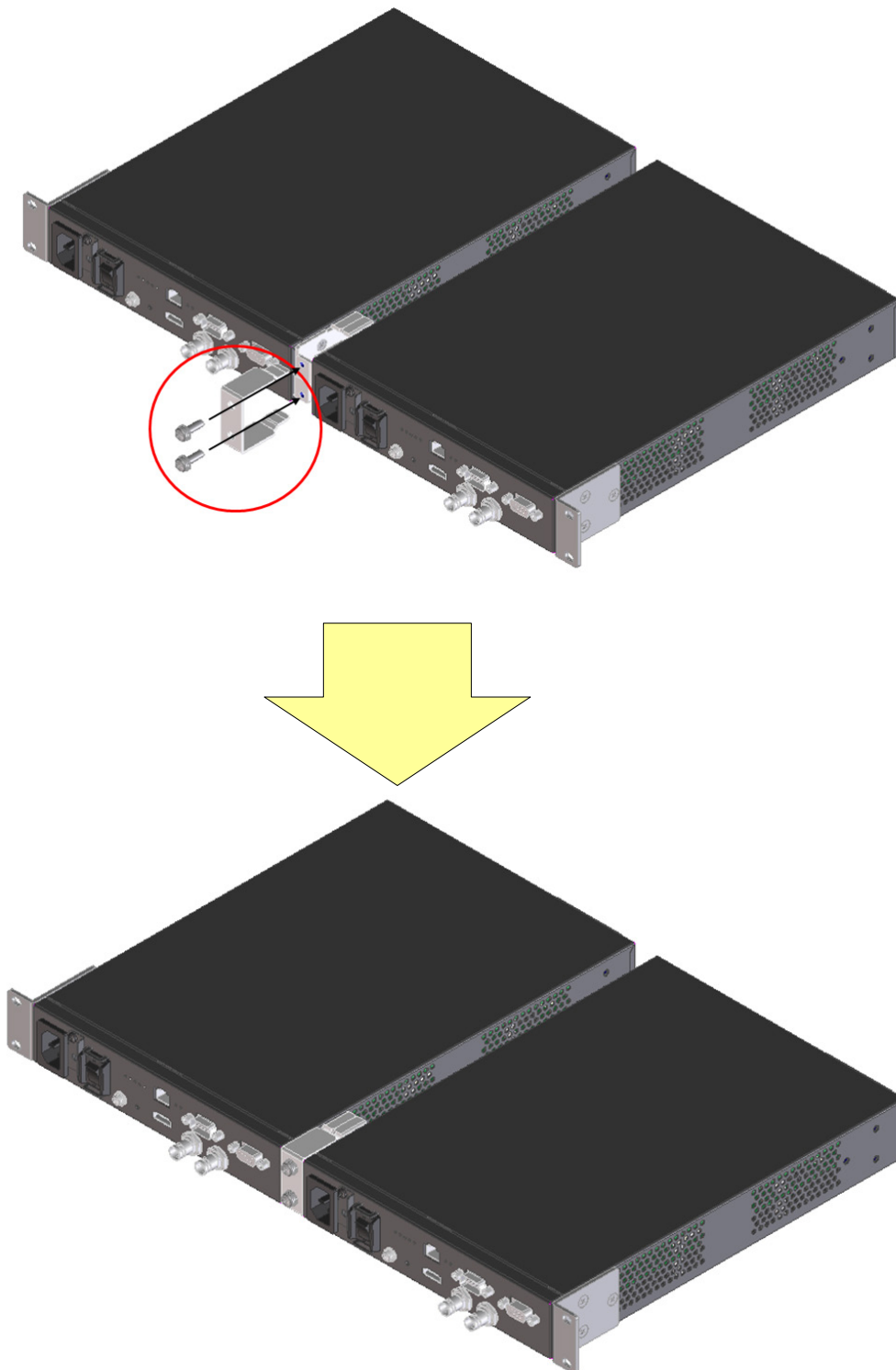
(3) Connect the first device with the rack mounting kit “A” and “B” on IP-920 using six same screws (M4).



- (4) Connect the second device with the rack mounting kit “A” and “B” on IP-920 using six same screws (M4).

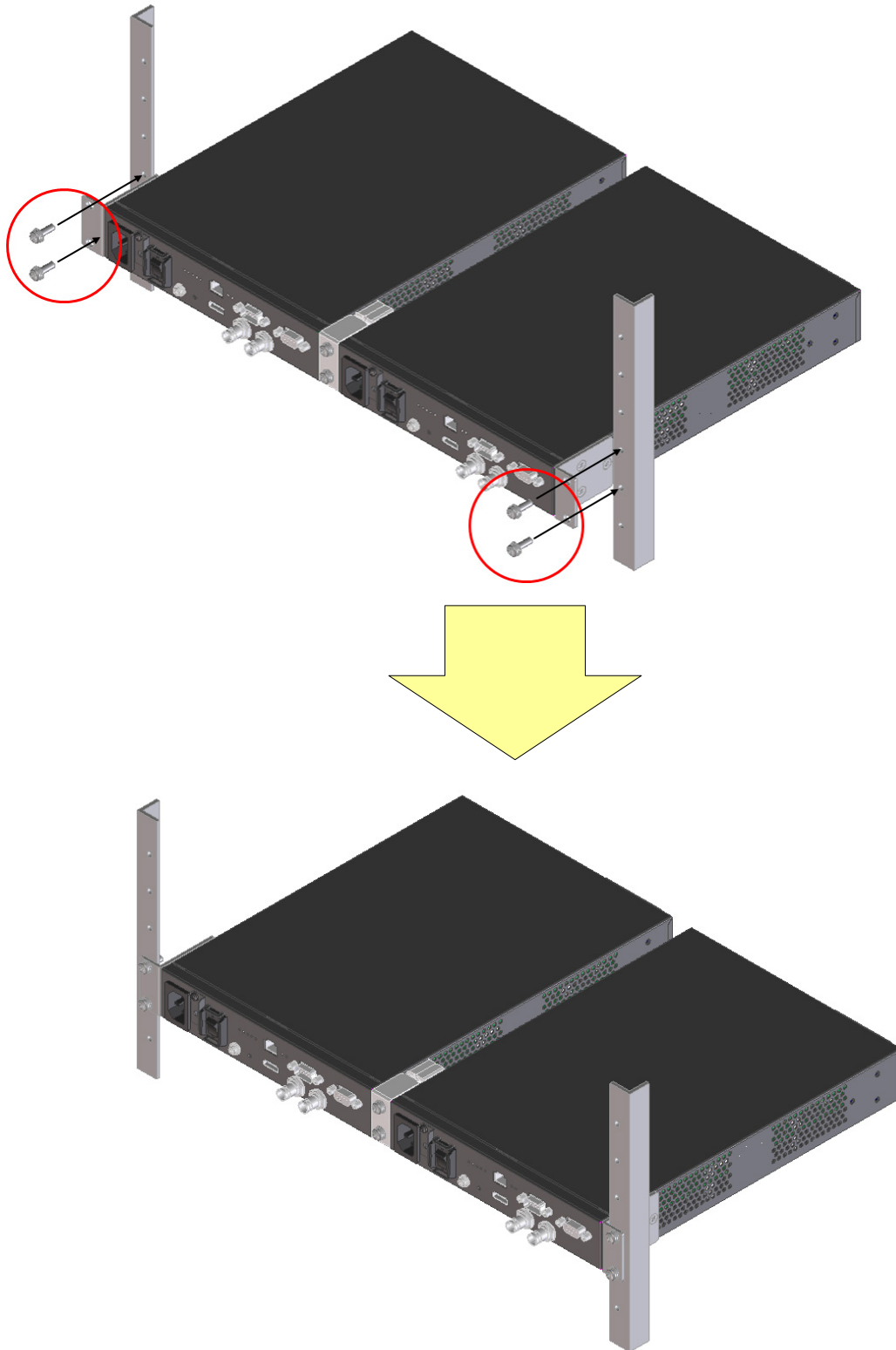


- (5) Install the mounting kit C on IP-920 using two pan head screws (M5).



- (6) Align the main unit at the desired height on the 19" rack, and firmly secure the unit in position with the screws supplied with this product. Use four pan head screws (M5) to fix the product in position.

To secure the unit to a server rack, use the cage nuts (D) and bind head screws (M6) supplied with this product.



- Removing the device

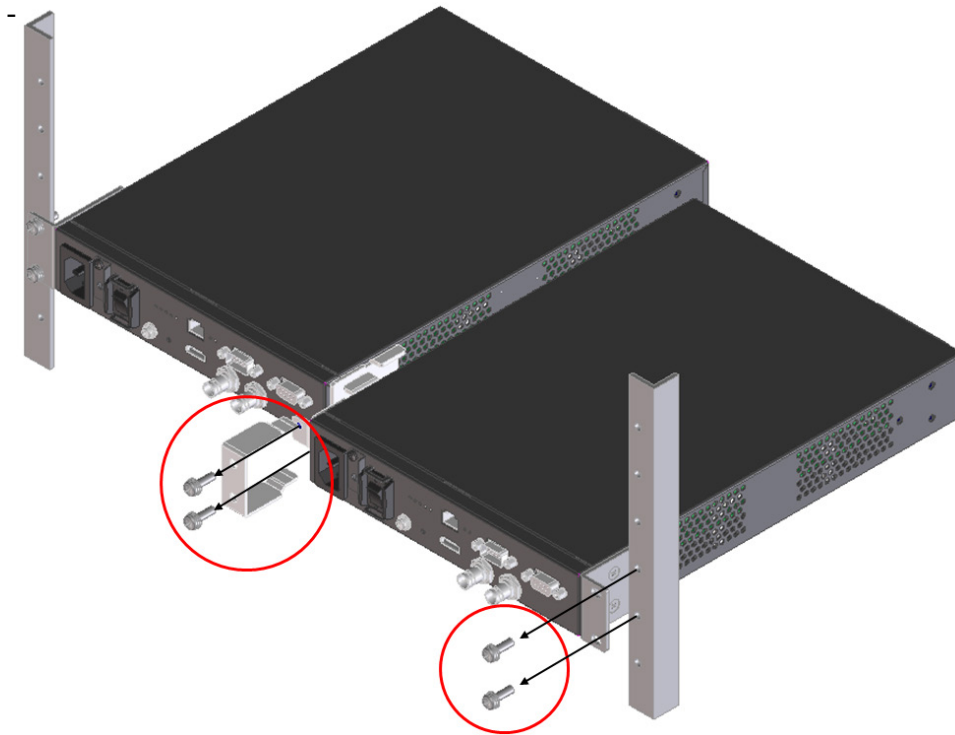
(1) When removing two devices at the same time

Remove them by reversing the installation procedure for two devices.

(2) When removing only one device

Remove the four screws shown in the figure below.

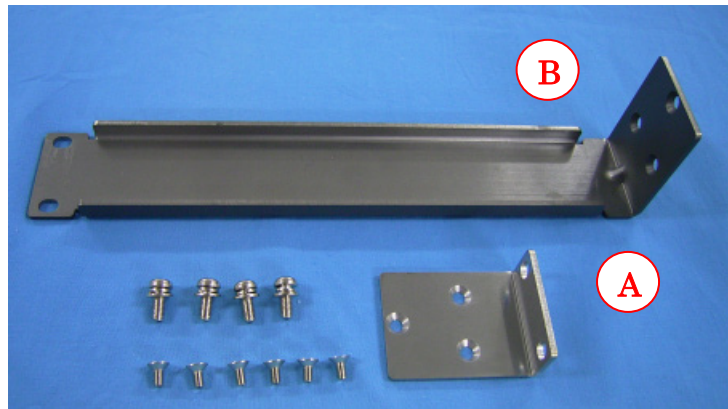
Remove the mounting brackets (C), and then remove the device.





- 1 unit per 1U (Type A1)

(1) Check components of the rack mounting kit.

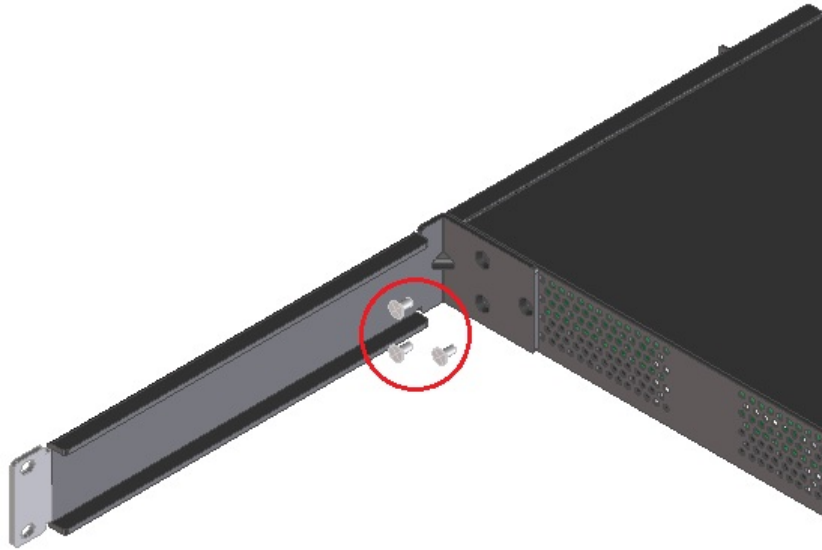


(2) Check all cables are disconnected.

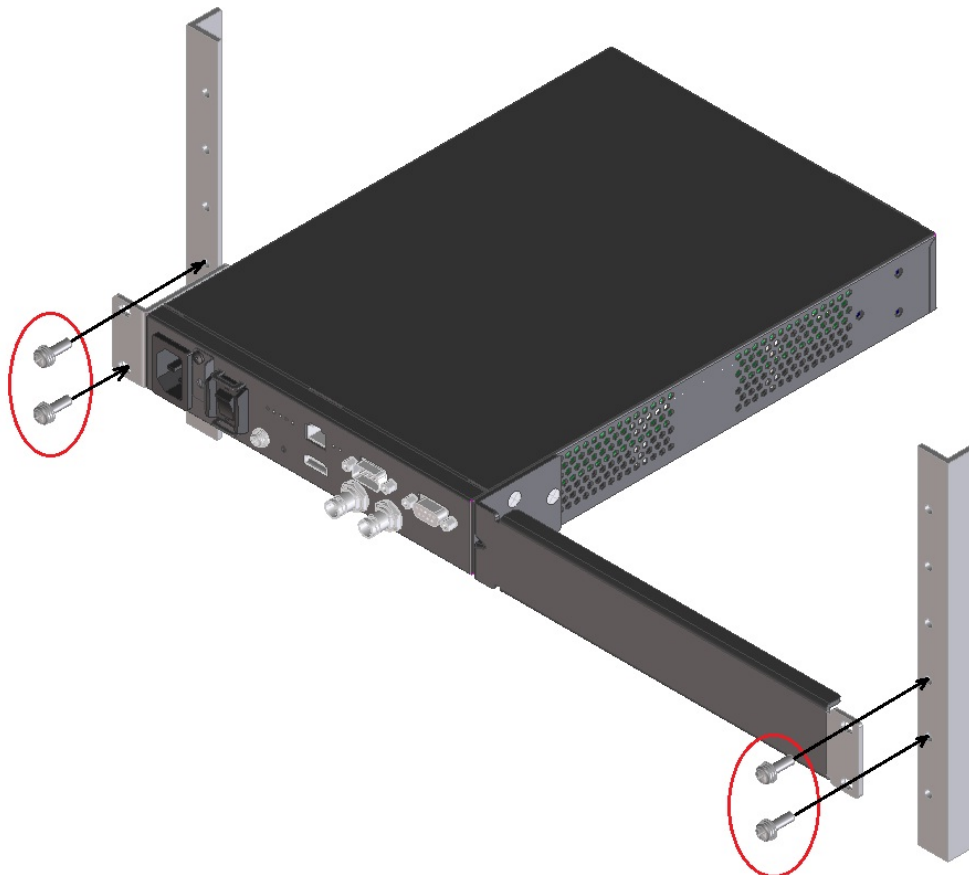
(3) Install the rack mounting kit “A” on IP-920 using three same screws (M4).



- (4) Install the rack mounting kit “B” on IP-920 series using three same screws (M4).



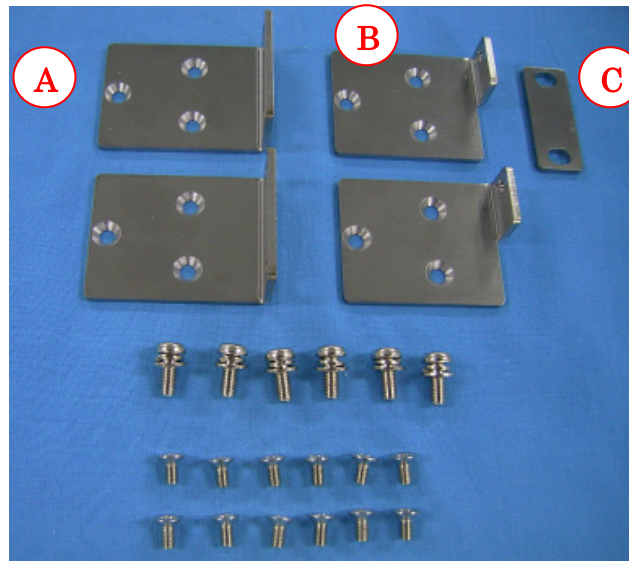
- (5) Install IP-920 on 19” rack using four pan head screws (M5).



- Removing the device  
Remove the device by reversing the installation procedure.

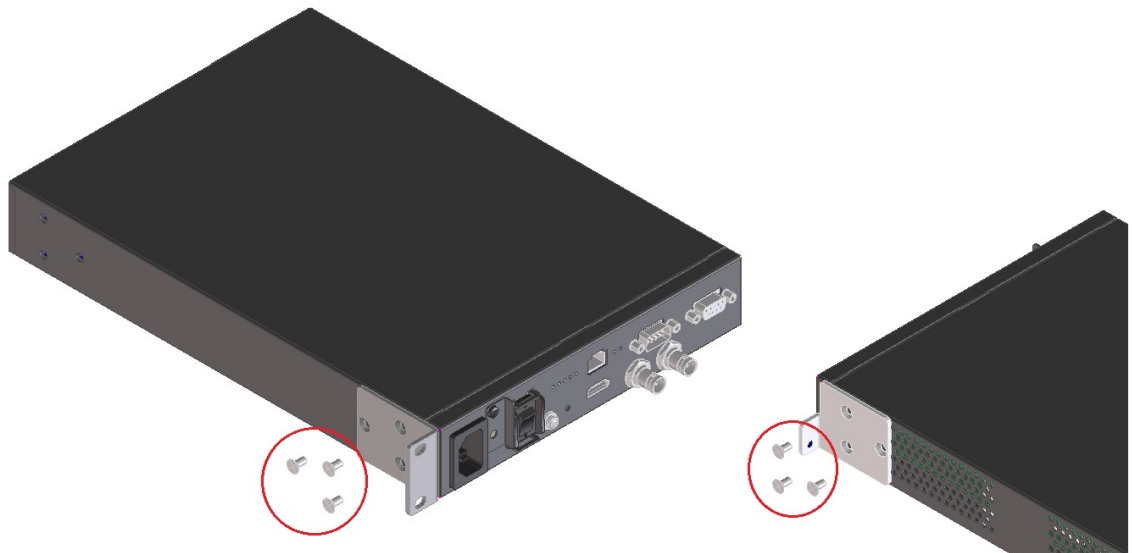
- 2 units per 1U (Type A2)

(1) Check components of the rack mounting kit.

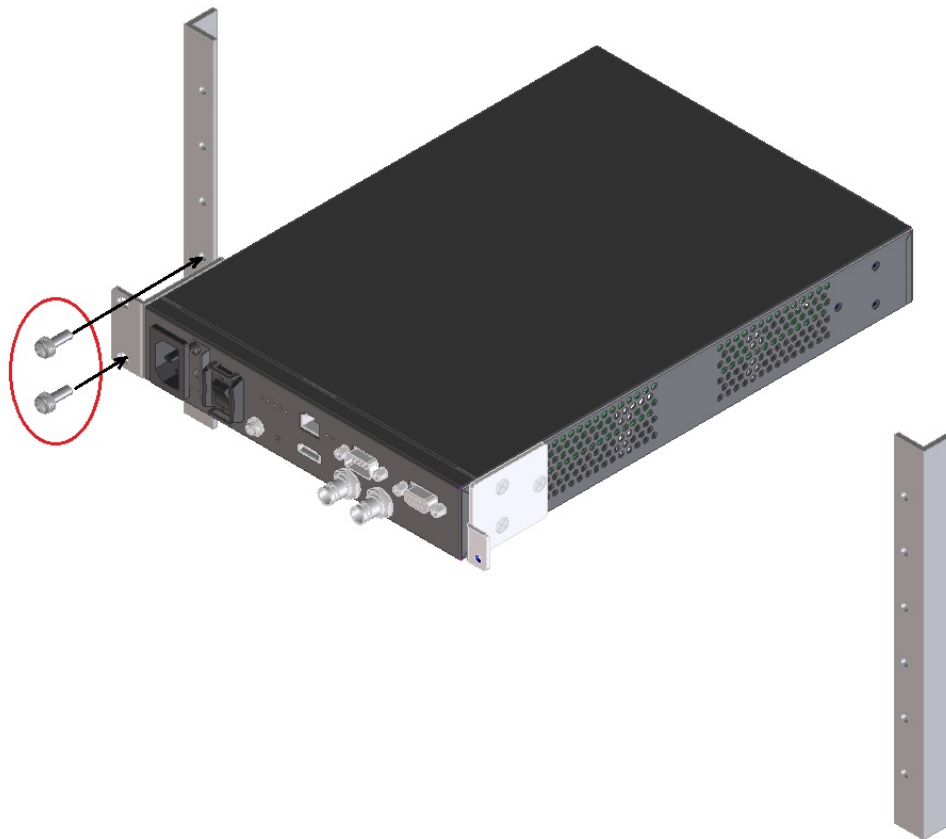


(2) Check all cables are disconnected.

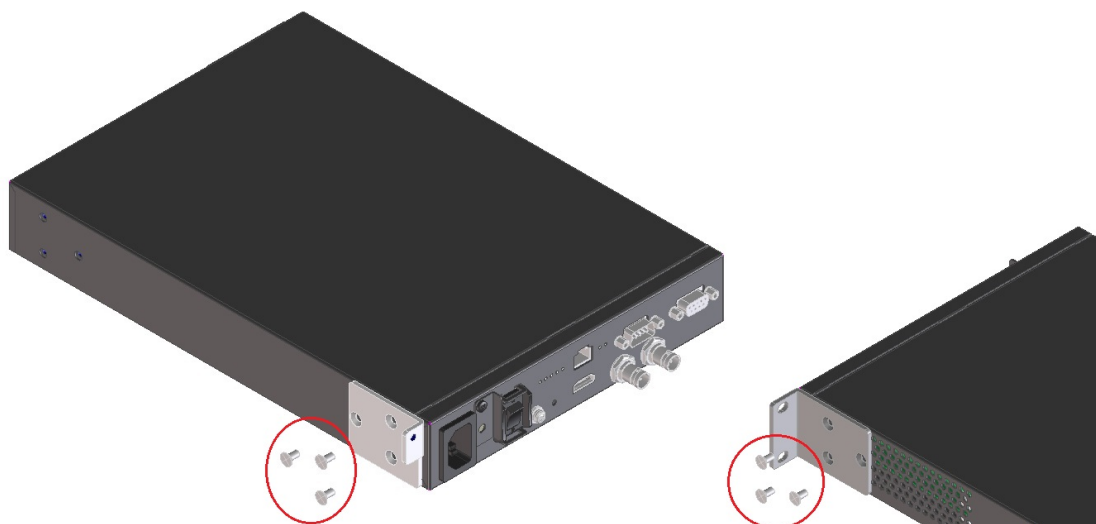
(3) Connect the first device with the rack mounting kit “A” and “B” on IP-920 using six same screws (M4).



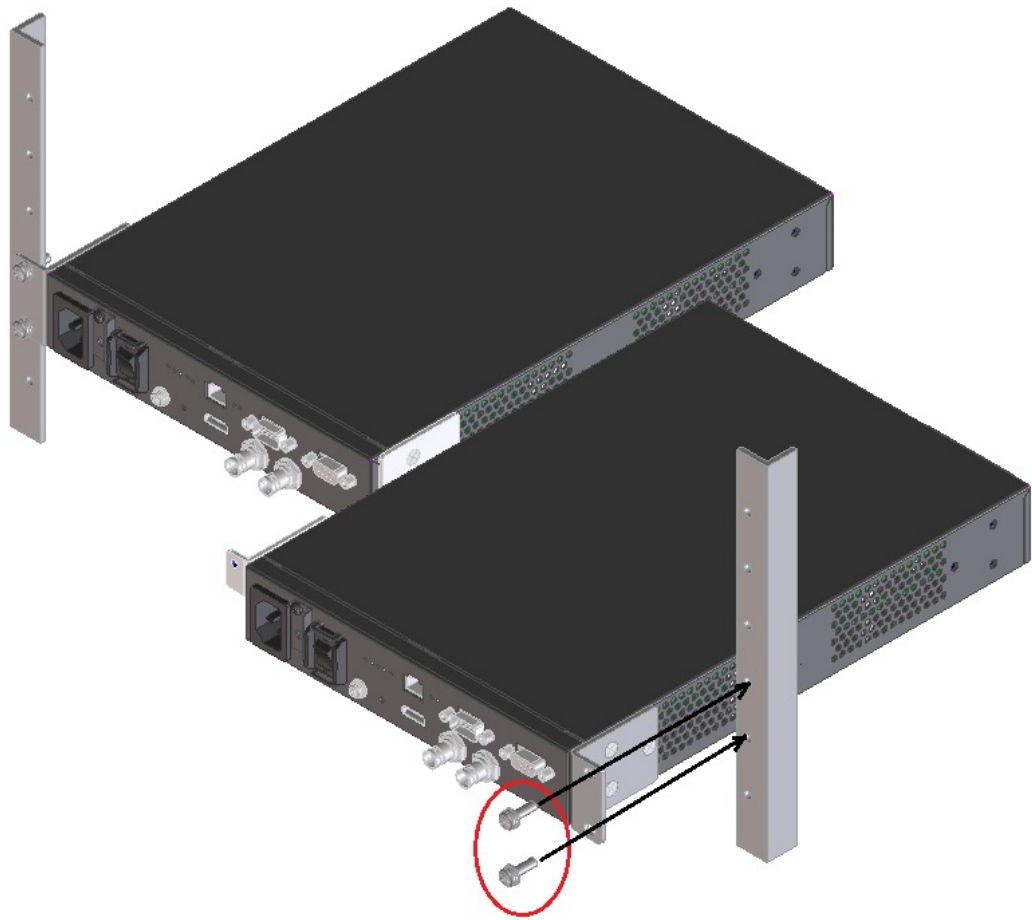
- (4) Install IP-920 on 19" rack using two pan head screws (M5).



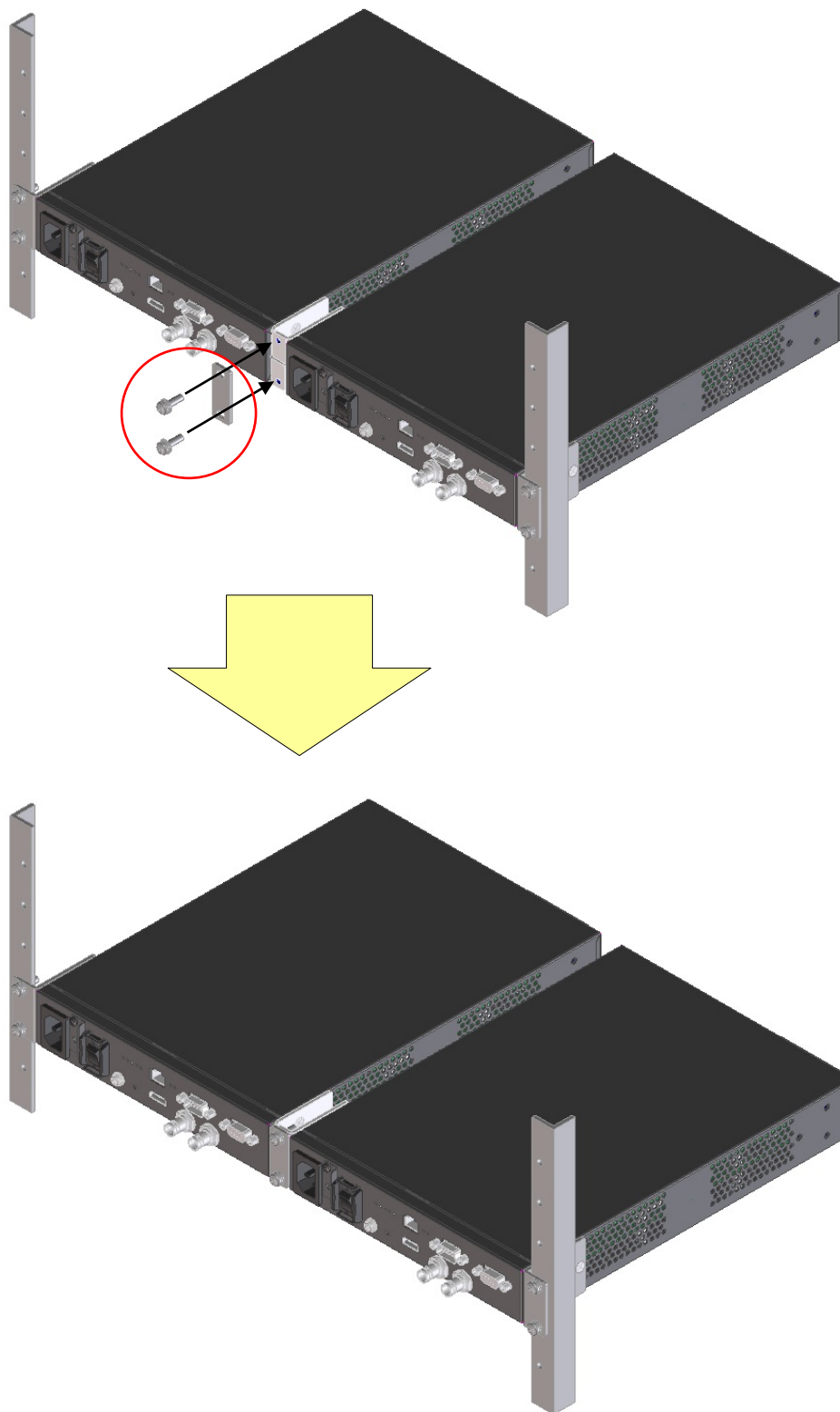
- (5) Connect the second device with the rack mounting kit "A" and "B" on IP-920 using six same screws (M4).



- (6) Install IP-920 on 19" rack using two pan head screws (M5).



- (7) Install the mounting kit C on IP-920 using two pan head screws (M5).



- Removing the device  
Remove the device by reversing the installation procedure.

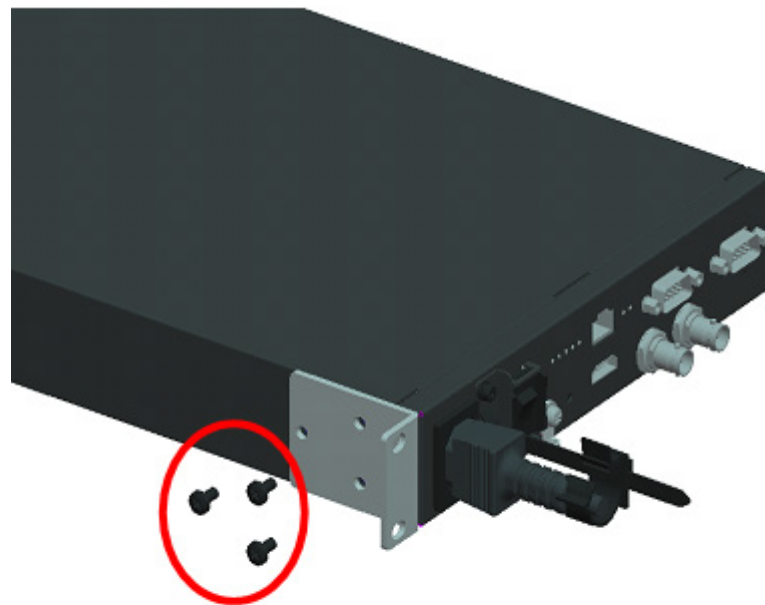
- 1 unit per 1U(Type B1)

(1) Check components of the rack mounting kit.

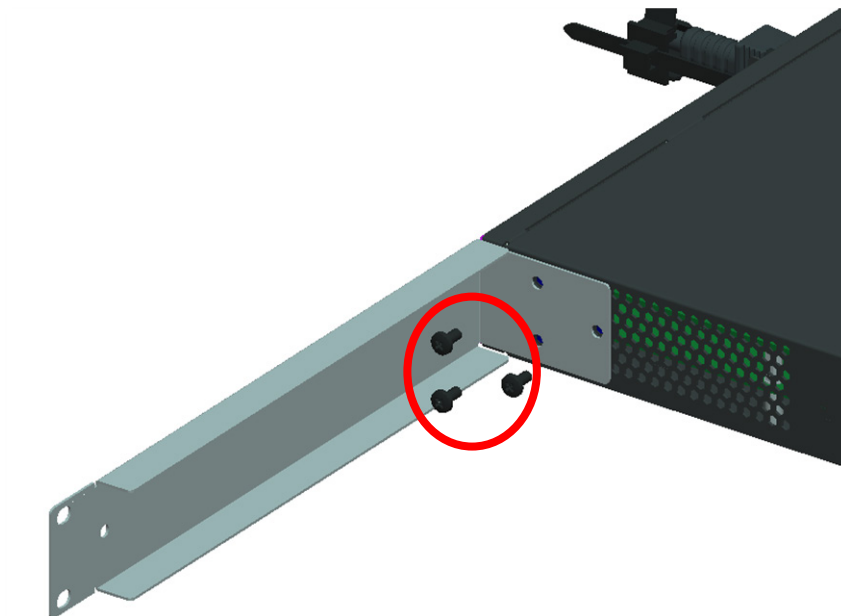


(2) Check all cables are disconnected.

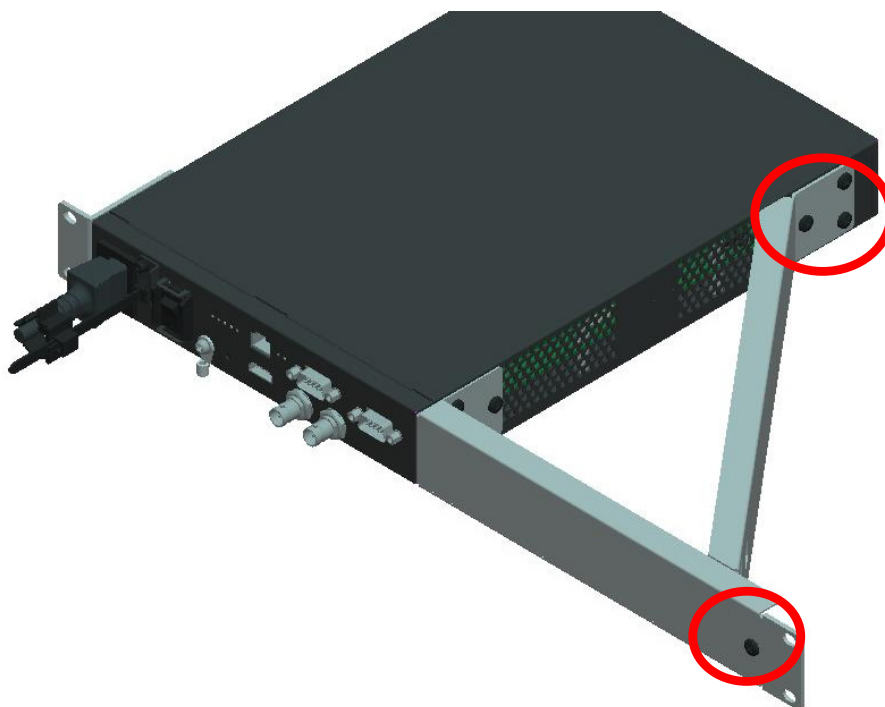
(3) Install the rack mounting kit A on this equipment using three same screws (M4).



- (4) Install the rack mounting kit B on this equipment using three same screws (M4).

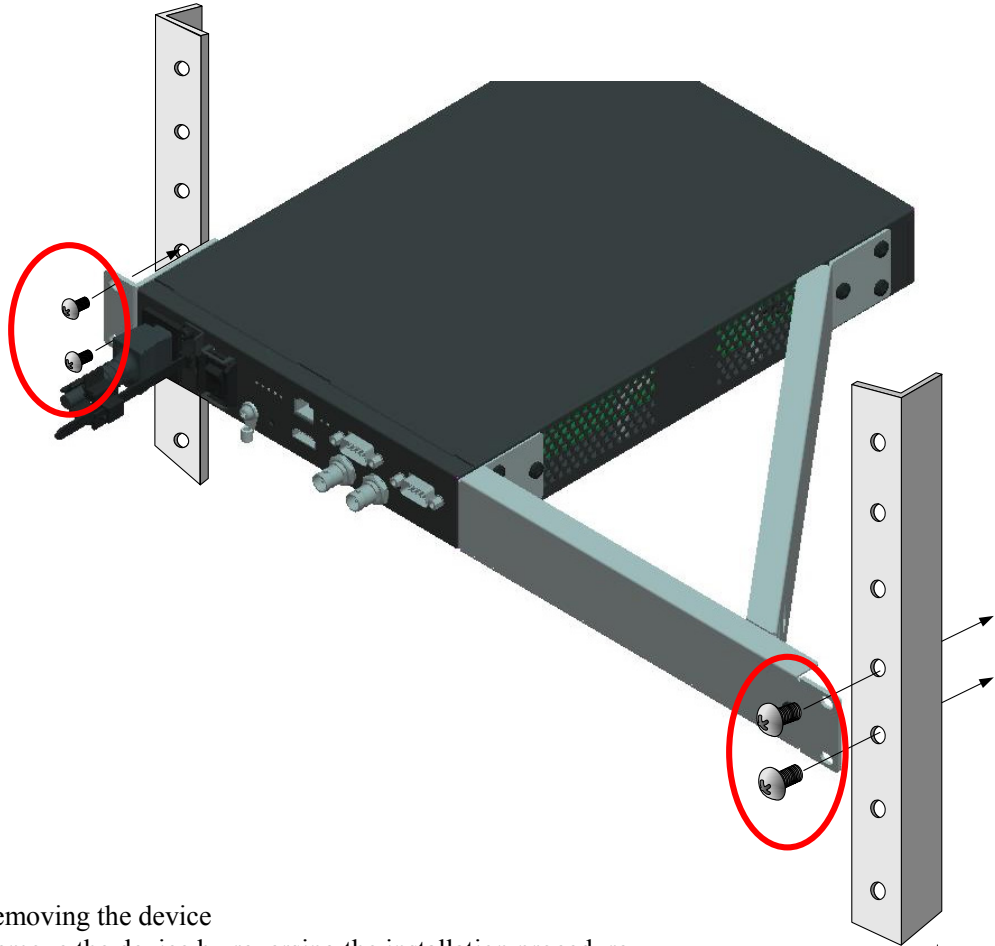


- (5) Install the rack mounting kit C and B on this equipment using four screws (M4).





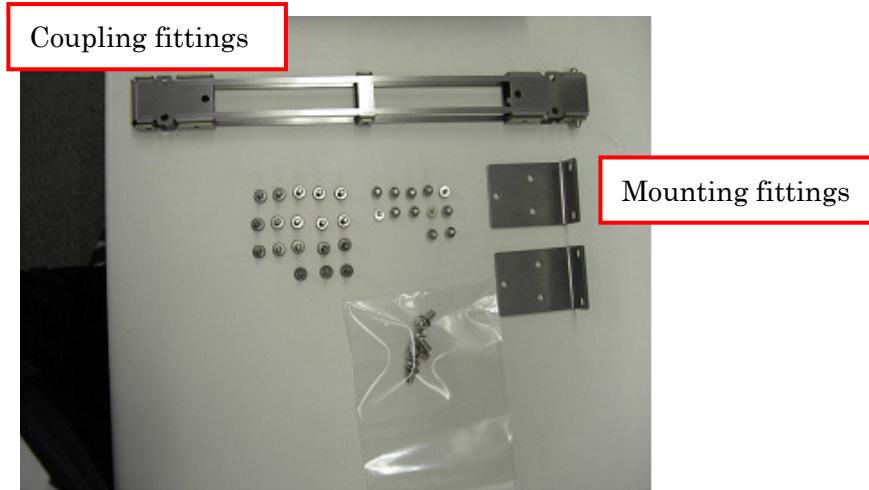
(6) Install 19" rack on this equipment using four pan head screws (M5).



- Removing the device  
Remove the device by reversing the installation procedure.

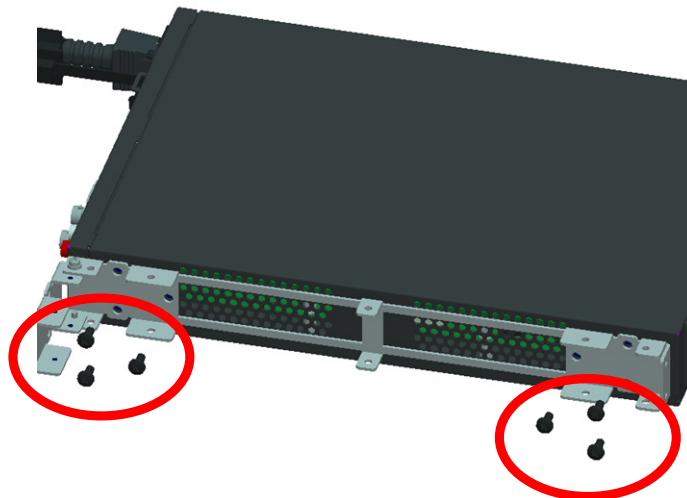
- 2 units per 1U(Type B2)

(1) Check contents of the rack mounting kit.

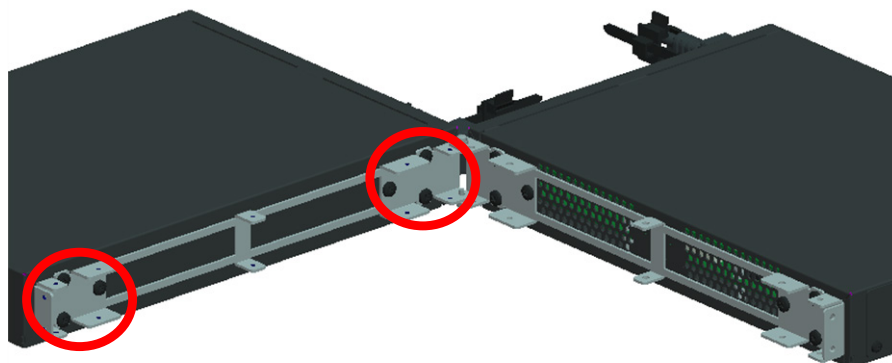


(2) Check all cables are disconnected.

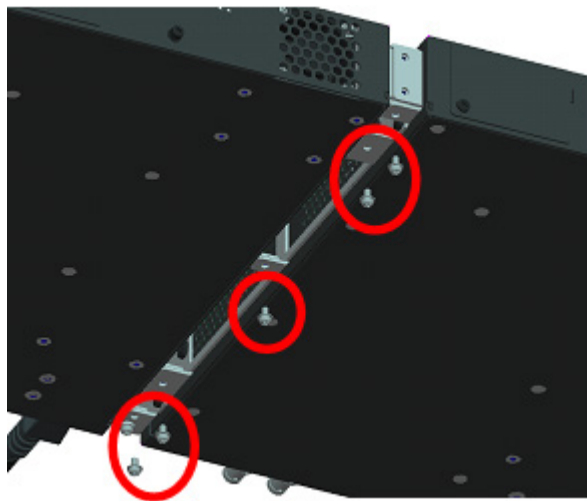
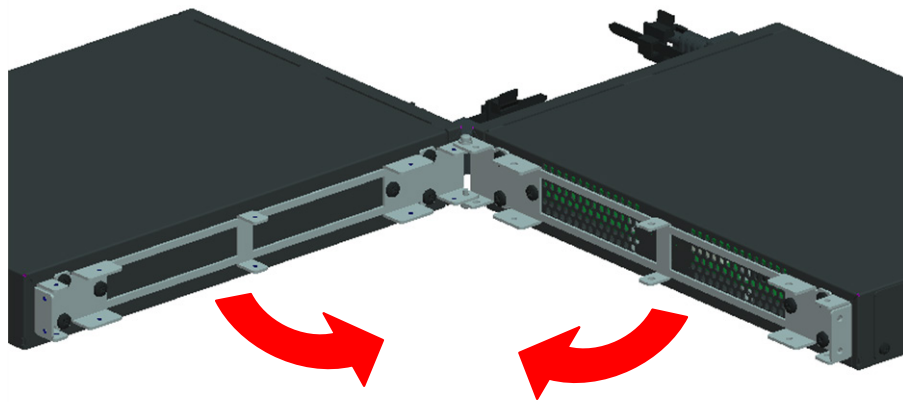
(3) Connect the first device with the connecting kit using six same screws (M4).



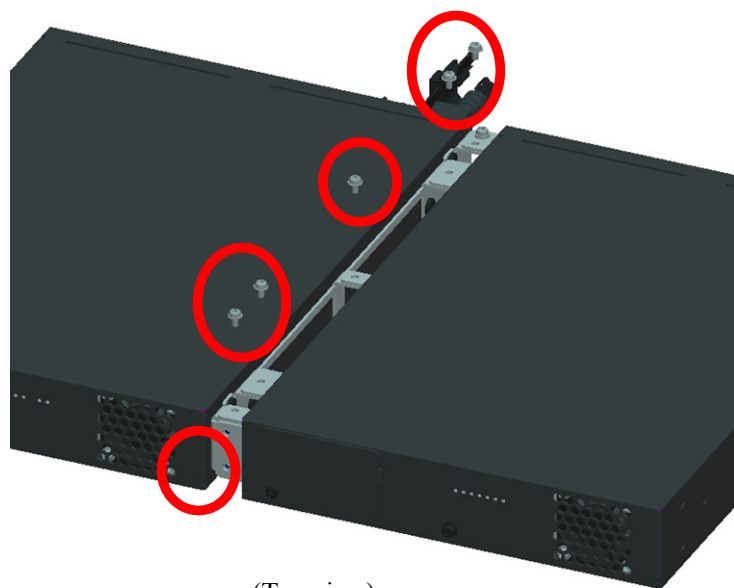
(4) Connect the second device with the connecting kit using six same screws (M4).



(5) Rotate the connecting kit, and fix with twelve screws (M4).

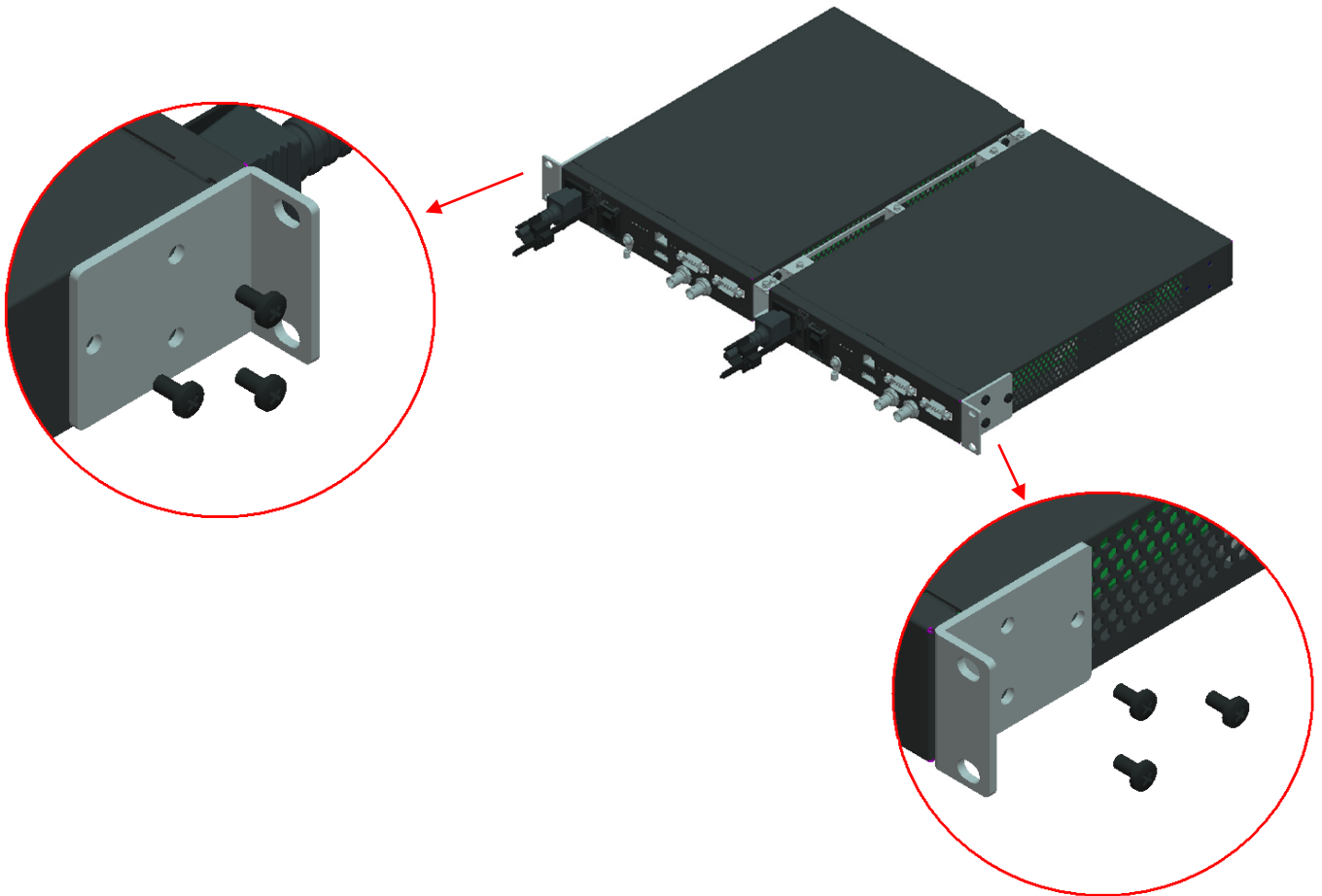


(Bottom view)

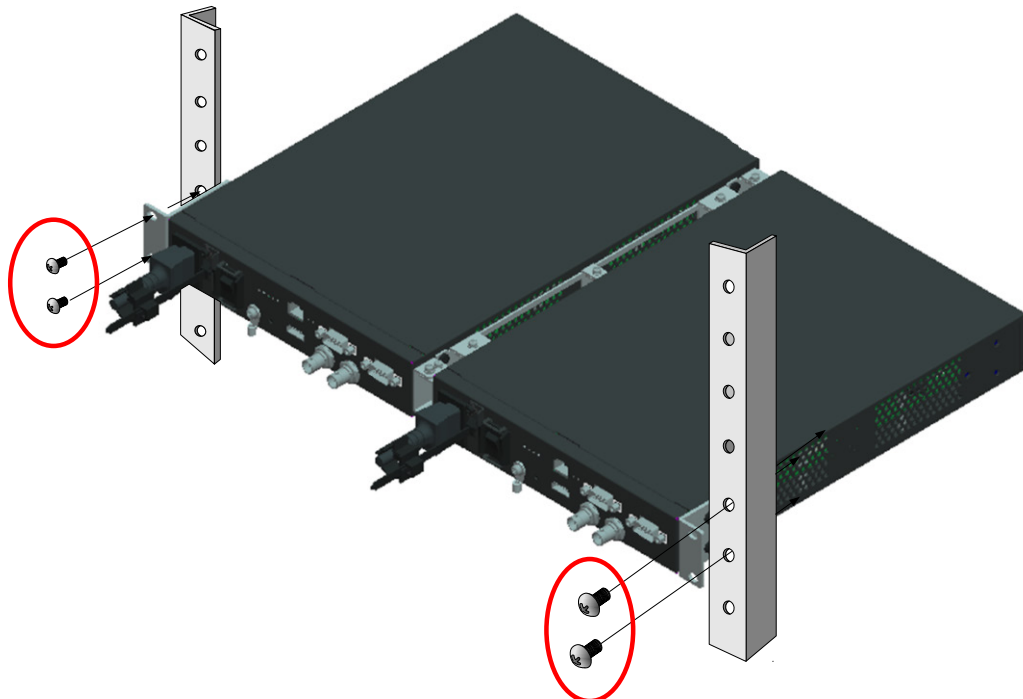


(Top view)

(6) Install the mounting kit on 2 units using six same screws(M4).



(7) Install 2 units on 19" rack using four pan head screws (M5).

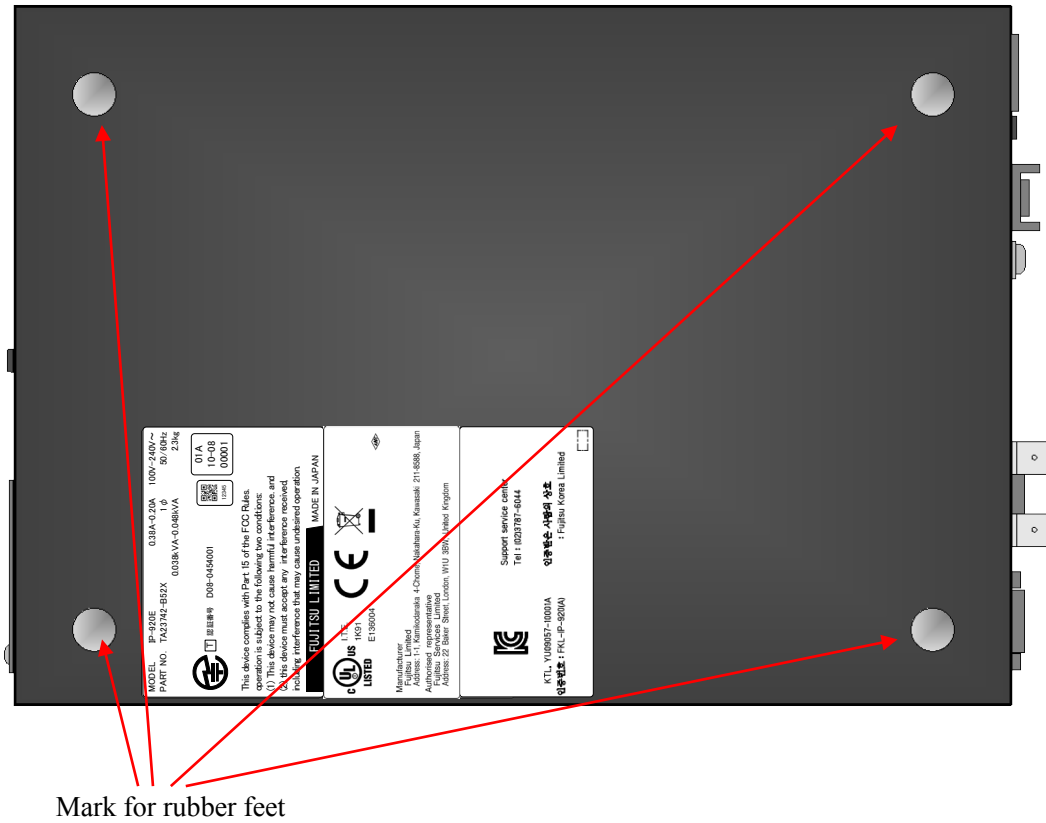


- Removing the device

Remove the device by reversing the installation procedure.

## 2. Place the equipment to a Table

Attach 4 rubber feet on the parts marked on the bottom of this equipment as below. Refer to “Open space required around this equipment” before deciding the place for this equipment.



## CAUTION

### **Safety installation instruction:**

#### **1) Multiple pile**

The maximum 5 IP-920E/IP-920D can be piled under the environment condition specified. Please install considering the maintenance-ability. When IP-920E/IP-920D are piled, please fix them to avoid to fall (Do not cover the air intake.). Refer to Section 2.1.4, “Open space required around this equipment” for the installation space.

#### **2) rack mounting**

- a) When IP-920E/IP-920D is installed in a closed or multiple equipment rack, the operating ambient temperature inside of the rack environment may be greater than room ambient. Therefore, the consideration should be given to operate in the environment compatible with the specifications in Appendix 2.2 “Environment Specifications.”
  - The consideration for adjustment of the air condition such as air circulation should be given to prevent the internal rack ambient from exceeding the maximum operating ambient temperature of IP-920E/IP-920D.
  - The maximum operating ambient temperature for IP-920E/IP-920D: 55°C.
- b) The installation of IP-920E/IP-920D in a rack should be such that the amount of airflow required for safe operation of IP-920E/IP-920D is not compromised.
  - IP-920E/IP-920D has ventilation opening at the right and rear side.
  - Do not cover or close these ventilation openings to prevent overheating.
- c) The mounting of IP-920E/IP-920D in a rack should be such that a hazardous condition is not archived due to uneven mechanical loading. To keep stability of the entire rack, please fix the rack to wall or floor by suitable means.
  - Be careful about injury during installation of IP-920E/IP-920D into rack.
  - Do not install IP-920E/IP-920D into your rack where IP-920E/IP-920D may make the entire rack unstable.
  - The weight of IP-920E/IP-920D with the maximum configuration: 2.3 kg
- d) When using a bracket for mounting two products and you remove one product, do not leave the remaining one that is fixed at one end only unattended. If you apply pressure to a product that is supported at one end only, it may deform the mounting bracket.

- e) If IP-920E/IP-920D is supplied from the power strip or the service outlet of other devices, it may overload the power supply cord of the power strip or other devices.
- Confirm that the current rating of the power strip or the service outlet exceeds the combined ratings of all equipment is supplying.
  - The electrical rating of IP-920E : Rated 100-240 VAC, 50/60 Hz, 1 phase, 0.38 - 0.20 A(IP-920E)/0.35 - 0.18 A(IP-920D).
- f) The reliable earth of the rack-mounted equipment must be maintained. The particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of the power strips or the power distribution unit).
- Note:** The high leakage current may flow through the power strip earth conductor if all power supply cords of IP-920E/IP-920D are connected to one power strip. The earth connection is essential before connecting supply. If the power strip is not directly connected to the branch circuit, the power strip which has the industrial type attachment plug should be used.

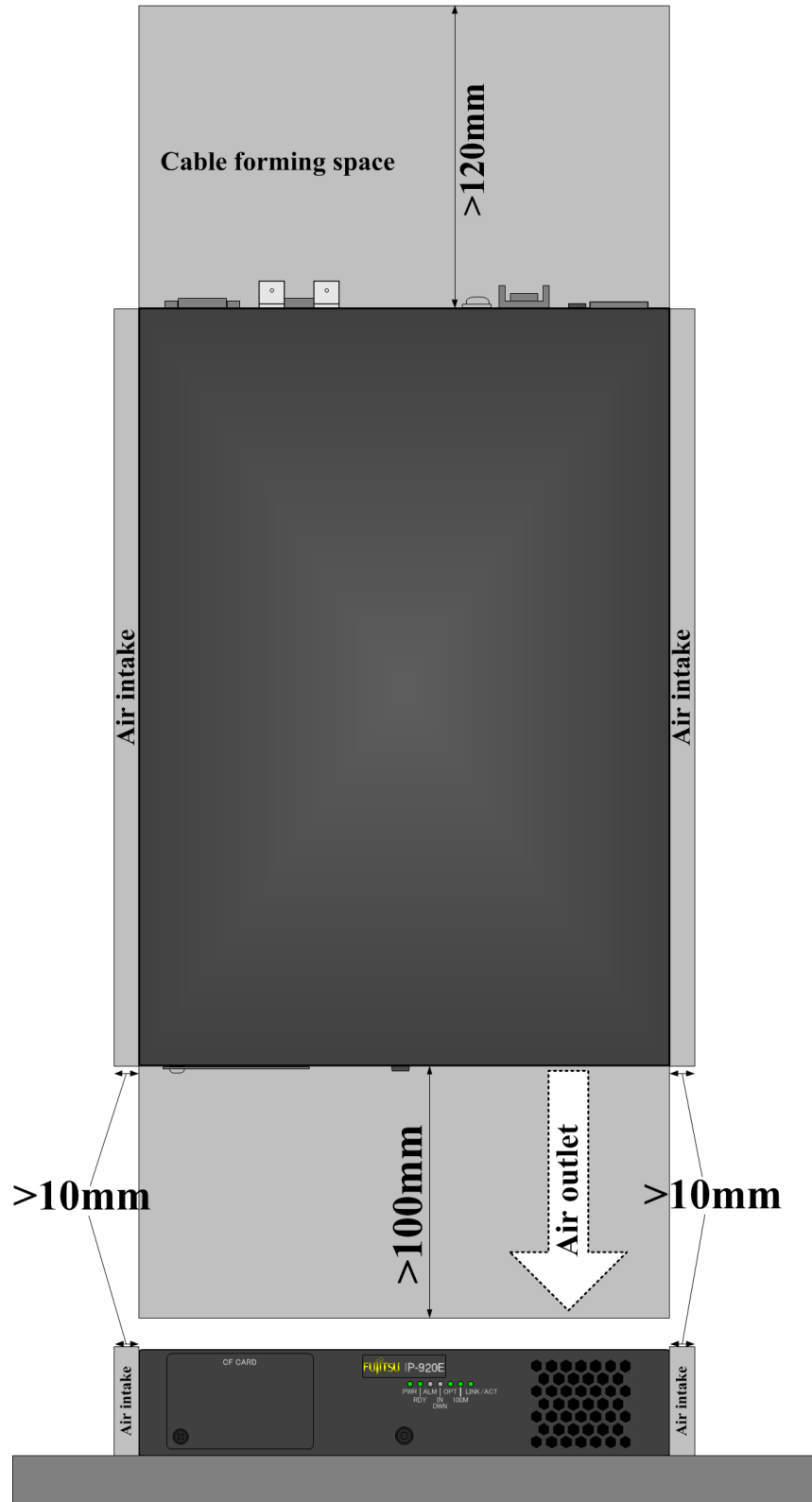
### 2.1.3 Air supply and exhaust of the equipment

IP-920E/IP-920D is forced air cooled equipment. Be sure not to block the opening. Provide an adequate amount of space around the opening.

## 2.1.4 Open space required around this equipment

Provide the indicated (parts with hatched area) below, cable forming space, operation space and air intake/exhaust.

For the information of maintenance space, refer to Section 5.3.1, “Maintenance space.”





## 2.2

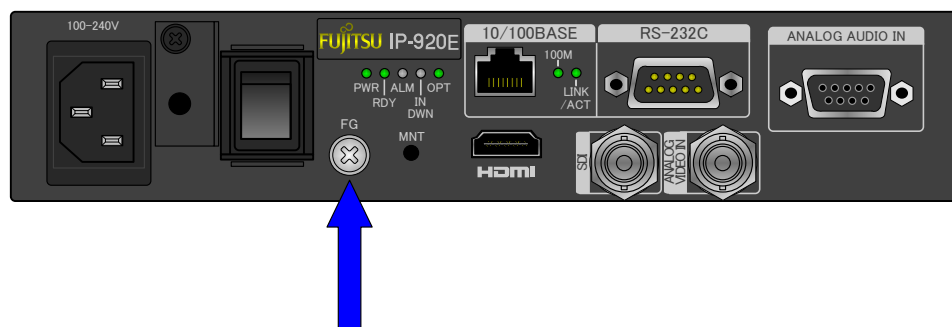
# Power Supply System Connections

This section explains ground and power-source connections.

### 2.2.1 Connection to ground

Use a power cord with the standard two-prong plug with ground wire for FG and external ground connections.

When the exogenous noise influences IP-920E/IP-920D, connect the FG terminal to an external ground.



FG terminal (M4)

Figure Connection to ground

## 2.2.2 Connection to power source

IP-920E/IP-920D operation requires a power supply of 100-240 VAC. Insert the power cord with the standard two-prong plug with ground into the inlet connector.

The power cord is not supplied with this equipment. Procure it separately.

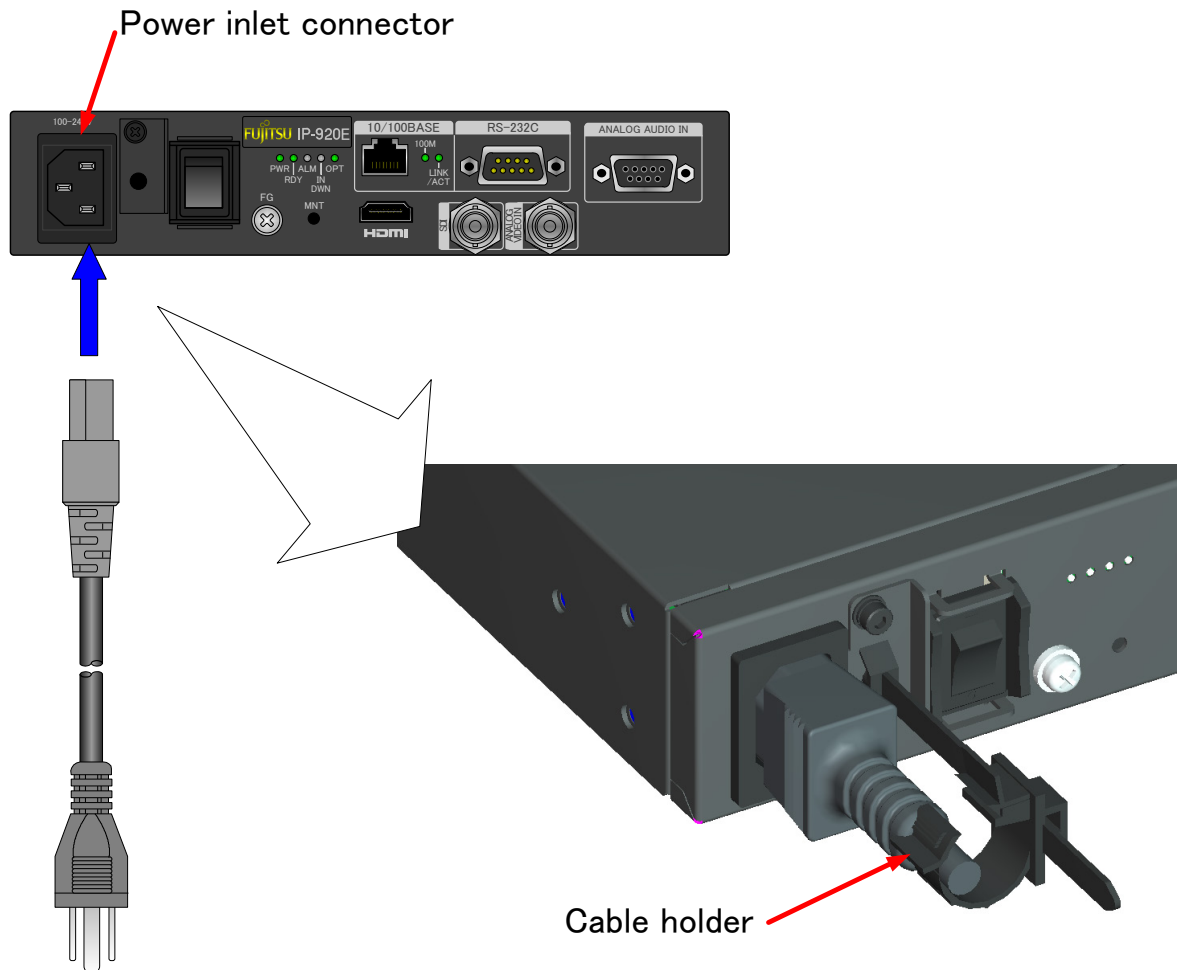




















Figure Power cord connection

### AC cord clamp












Insert the AC cord clamp into the AC cord clamp hole and fix the power cord as shown in figure above. When remove the AC cord clamp, screw out and remove it with the mounting kit.

## USABLE DETACHABLE POWER SUPPLY CORD SET

MODEL	Input	Connector	Cord	Attachment Plug cap
North America <*1> <*2>	100-120V	IEC C-13 Rated 13A, 125V UL, CSA Approved 	Type SJT, No.16 AWG Min. 3-Conductors (Single phase;2-current carrying conductors & ground) UL, CSA Approved	NEMA (5-15P) parallel blade Rated 13A, 125V UL, CSA Approved 
	200-240V	IEC C-13 Rated 15A, 250V UL, CSA Approved 	Type SJT, No.14 AWG Min. 3-Conductors (Single phase; 2-current carrying conductors & ground) UL, CSA Approved	NEMA (6-15P) tandem blade Rated 15 A, 250 V UL, CSA Approved 
Europe <*2>	100-240V	IEC C-13 Rated 10A, 250V <*1>	CENELEC OC 3X1.0 square mm<*1> <HAR>	Rated 10 A, 250 V <*1>
Australia	100-240V	IEC C-13 Rated 10A, 250V 	Cable: AS OD 3 X1.0 square mm e.g. 	Rated 10 A, 250 V 
U.K <*2>	100-240V	IEC C-13 Rated 10A, 250V 	BS OC 3 X1.00 square mm	Rated 10 A, 250 V 
Japan	100V	IEC C-13 Rated 13A, 125V	Type HVCTF cross section area 1.25 square mm 3-Conductors (Single phase;2-current carrying conductors & ground)	NEMA (5-15P) parallel blade Rated 13 A, 125 V
		METI Approved  or <PSE>	METI Approved  or <PSE>	METI Approved  or <PSE>
Korea	220V (Class I)	IEC 60320-1 (IEC C-13) Rated 12A, 250V 	Comply with KSC3304. Type VCTF cross section area 1.25 (0.50 or 1.00 or 2.00) square mm 3-Conductors (Single phase;2-current carrying conductors & ground) or 	Comply with KSC8305. Rated 12A, 250V 
	220V (Class II)	IEC 60320-1 (IEC C-13) Rated 3A, 250V 	Comply with KSC3304. Type VCTFK cross section area 1.25 (0.50 or 0.75 or 1.00 or 2.00) square mm 2-Conductors or 	Comply with KSC8305. Rated 12A, 250V 

**Note:** \*1. Be sure that the detachable proper Supply cord has the approval of the appropriate safety agencies of the country where the equipment will be used.  
\*2. Cable length of above Power Supply cord shall be shorter than 4.5 m.

**CERTIFICATION MARKING**

Country	Agency	Certification Mark	Country	Agency	Certification Mark
Austria	OVE		Italy	IMQ	
Belgium	CEBEC		Norway	NEMKO	
Denmark	DEMKO		Spain	AEE	
Finland	FEI		Sweden	SEMKO	
France	UTE		Switzerland	SEV	
Germany	VDE				

**⚠ WARNING****Possibility of electric shock, fire, and damage to this equipment**

Always observe the precautions given below.

This indicates a hazardous situation that could lead to electric shock, fire, or damage to this equipment.

Always connect the power cord to a power receptacle for the standard two-prong plug with ground.

Use a power receptacle with a capacity of 1A or more. When using a power extension cable, be sure that the total power consumption of all devices connected to the cable does not exceed the rated capacity of the cable. If the power receptacle capacity is low, or power consumption exceeds the rated value, the power cord or power wiring may overheat and start a fire.

**⚠ CAUTION****Possibility of damage to this equipment**

Do not turn on this equipment until connection of peripheral devices is completed. Otherwise, this equipment may be damaged.

**100-240VAC**

Using a power cord with the standard two-prong plug with ground, connect IP-920E/IP-920D to 100-240 VAC outlet.

Provide a power receptacle for the standard two-prong plug with ground.

## 2.3

# Audio and Video Device Connections

### 2.3.1 IP-920E (Encoder)

2 Digital and 1 analog video input connectors are equipped for connecting with video output equipment.

- SDI Video Input (Digital Video)

Connect to SDI IN connector using BNC cable. Input digital HD-SDI or SD-SDI signal. The signal is terminated with  $75\Omega$  impedance.

- HDMI Input (Digital Video)

Connect to HDMI connector on front panel of IP-900E using the HDMI cable. Input digital signal of HDMI. The signal is terminated with  $50\Omega$ .

- Analog Video Input

Connect to ANALOG VIDEO IN connector using BNC cable with NTSC or PAL signal.

2 Digital and 1 analog audio input connectors are equipped for connecting with audio output equipment.

- Digital Audio Input

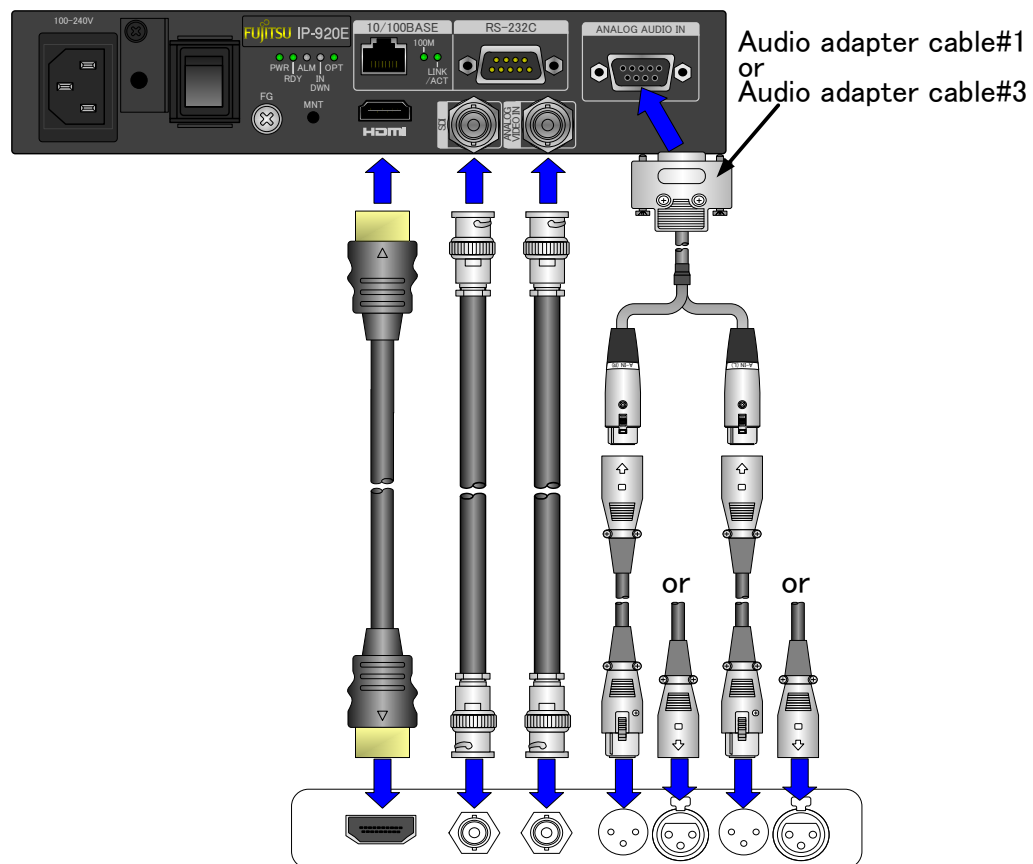
SDI Embedded Audio and HDMI audio are supported.

- Analog Audio Input

Connect to ANALOG AUDIO IN connector of IP-920E using the audio adaptor cable.

The figure of cable connections are shown below.

**NOTE:** For details about connectors and cables, refer to Section 4.2, “Cable and Connector Details.” For electrical specifications, refer to Appendix 2.3, “Function Specifications.”



Video & Audio Output Device  
Figure Audio and video output device connections

### 2.3.2 IP-920D (Decoder)

2 Digital and 1 analog video output connectors are equipped for connecting with video input equipment.

- SDI Video Output (Digital Video)

Connect to SDI of IP-920D using BNC cable. It outputs Digital HD-SDI or SD-SDI signal.

- HDMI Output (Digital Video)

Connect to HDMI connector of IP-920D using HDMI cable. It outputs Digital signal.

- Analog Video Output

Connect to ANALOG VIDEO OUT connector of IP-920D using BNC cable with NTSC or PAL signal.

1 reference input is equipped for connecting with reference output equipment.

- Reference Input

Connect ANALOG AUDIO OUT connector of IP-920D using the audio adaptor cable.

2 Digital and 1 analog audio output connectors are equipped for connecting with audio input equipment.

- Digital Audio Output

SDI Embedded Audio and HDMI audio are supported.

- Analog Audio Output

Connect ANALOG AUDIO OUT connector using the audio adaptor cable.

The figure of cable connections are shown below.

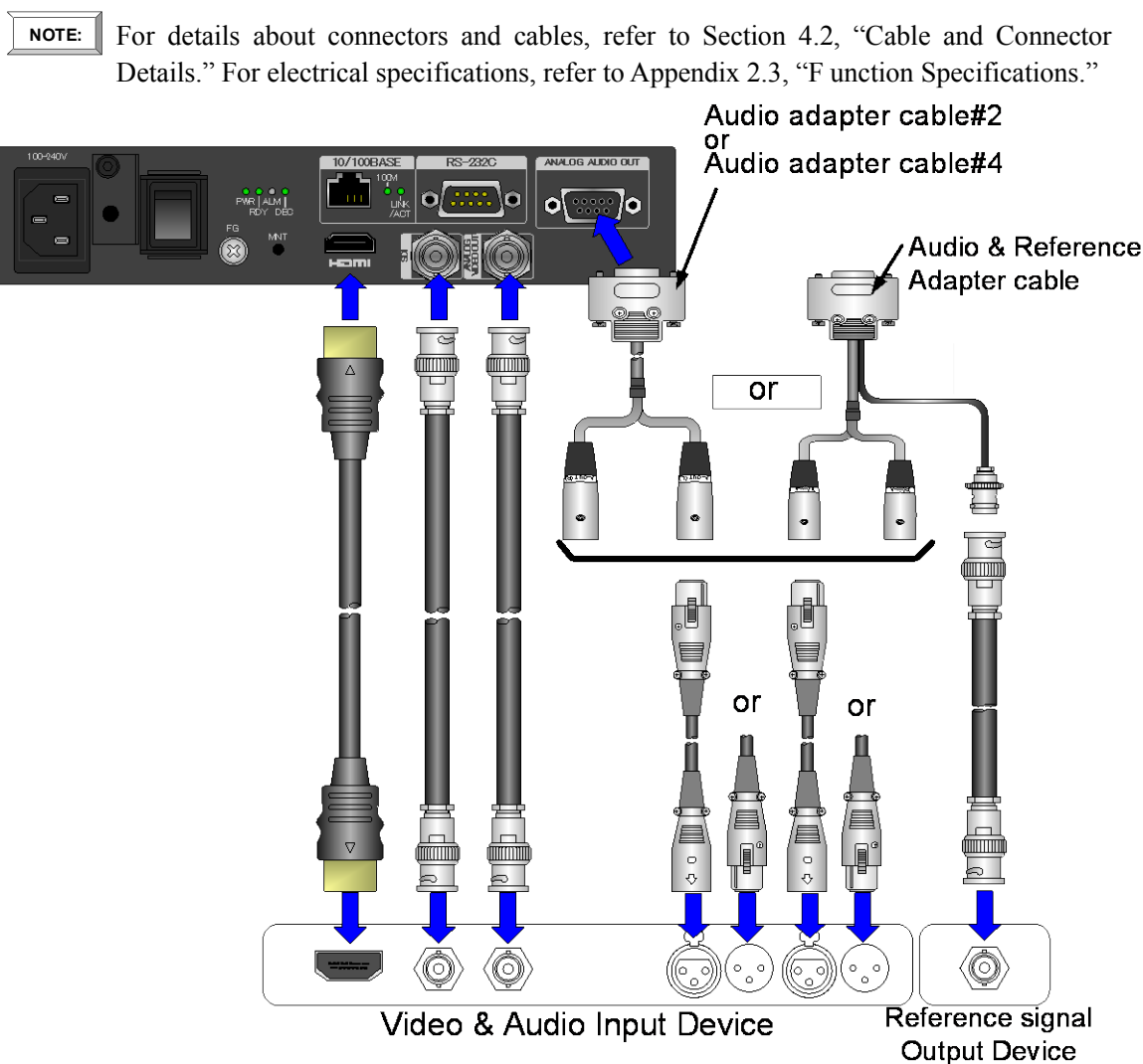


Figure Audio and video input device connections

## 2.4

# Connection to Network

To connect IP-920E/IP-920D to a LAN device, connect the LAN device to the LAN communication port of IP-920E/IP-920D using a LAN cable (UTP cable). The LAN communication port specification of IP-920E/IP-920D is 10BASE-T/100BASE-TX.

The figure below shows the connection method.

**NOTE:** For details about connectors and cables, refer to Section 4.2, “Cable and Connector Details.” For electrical specifications, refer to Appendix 2.3, “Function Specifications.”

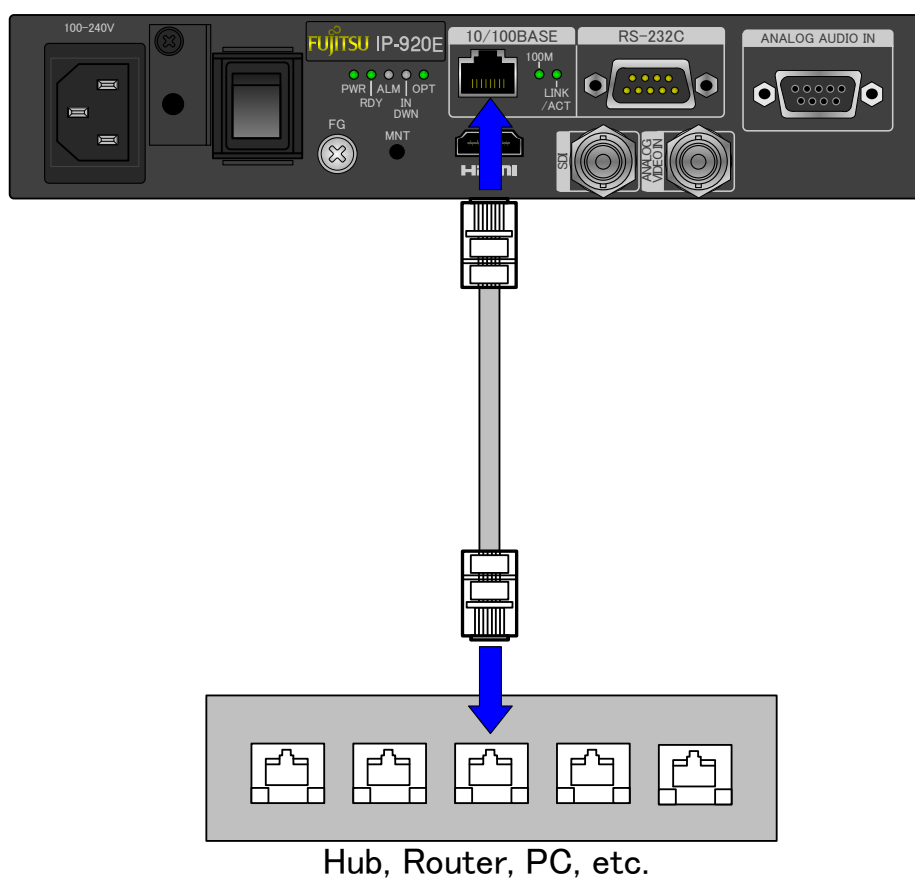


Figure Connection to a network

## CAUTION

Please do not provision the IP address below.

- IP address commonly unused (0.0.0.0, 255.255.255.255, etc...)
- Loop back address (127.xxx.xxx.xxx)
- Class D and Class E addresses
- IP address already used

For more information, refer to IP-920E/IP-920D Software User's Guide.

## 2.5

## Connection to RS-232C Device

IP-920E/IP-920D [RS-232C] connector works as communication port. The physical connector of IP-920E/IP-920D is the D-sub 9 pins (male) and the specification is DTE. Use a cross connection or straight cable corresponding to the connected device. Refer to Section 4.2, “Cable and Connector Details” for details.

The figure below shows the connection method.

**NOTE:** For details about connectors and cables, refer to Section 4.2, “Cable and Connector Details.”

For electrical specifications, refer to Appendix 2.3, “Function Specifications.”

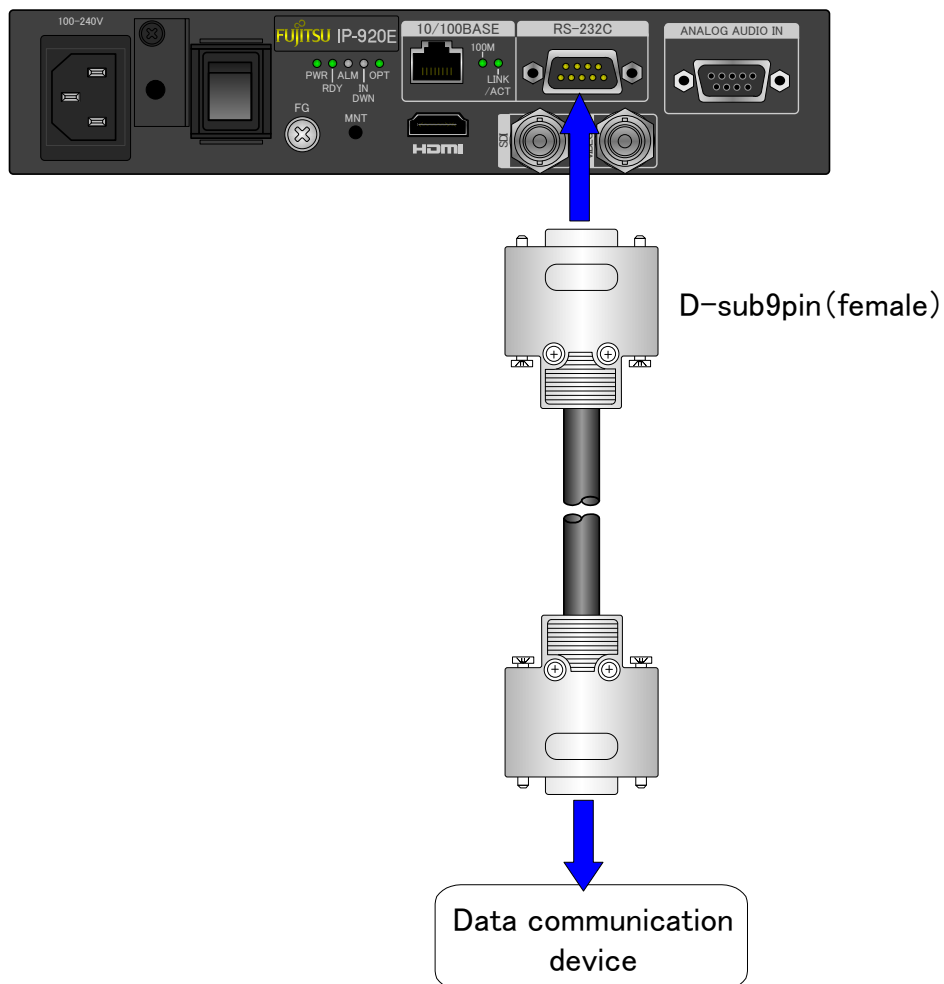


Figure Connection to RS-232C input/output device



## 2.6

## CF Card Insertion and Removal

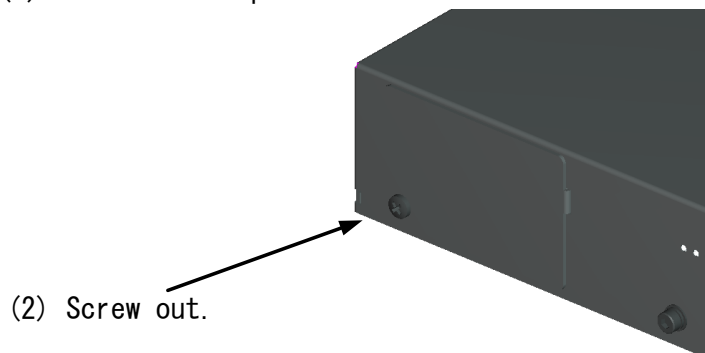
IP-920D doesn't support CF card slot.

In order to insert the CF card, the front cover of IP-920E must be opened by screwing out the cover. No storage card is supplied with IP-920E. It can be procured separately, depending on the system.

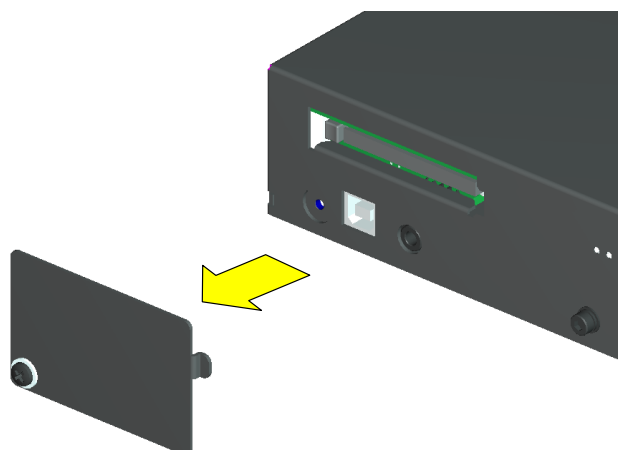
The CF card removal procedure is shown below.

**Please turn off the power to insert or remove the CF card.**

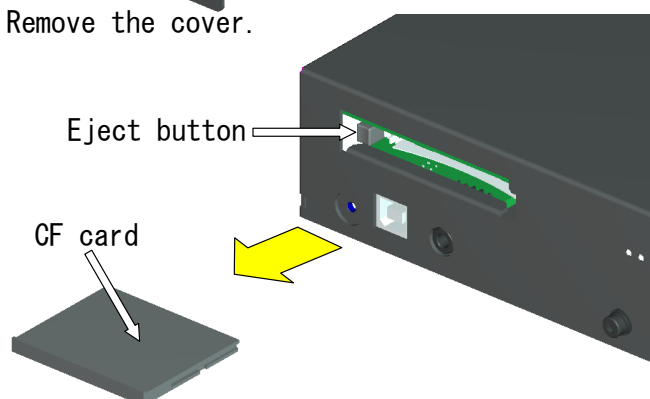
- (1) Check if the power is OFF.



- (2) Screw out.



- (3) Remove the cover.



- (4) Press the eject button and remove the CF card.  
 ※CF card is unequipped initially (Separate order).
- (5) Replace CF card and cover it.

Please contact Fujitsu office what type of CF card is available to use.



### Updating the Software

The CF card is formatted when upgrading from before V02L002 to after V02L010. Please back up necessary data of the CF card before it upgrades.

### CF card consideration

Please note that you need to remove the CF card or take the backup of its recorded data in case of requesting the repair of the main unit that the CF card is installed, since Fujitsu does not guarantee the recorded content during the repair work.

Please also note that the recorded content might be deleted by the process of the diagnostic and the repair work after Fujitsu starts the work even if you already cancel the repair request



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# CHAPTER 3

## OPERATION INSTRUCTIONS

This section explains how to turn on/off, setup and operate this equipment.

Figures described in this chapter are used IP-920E as a sample.

3.1	Turn ON/OFF IP-920E/920D.....	41
3.2	Device Settings and Operation .....	42
3.3	Special Use of MNT Button.....	44

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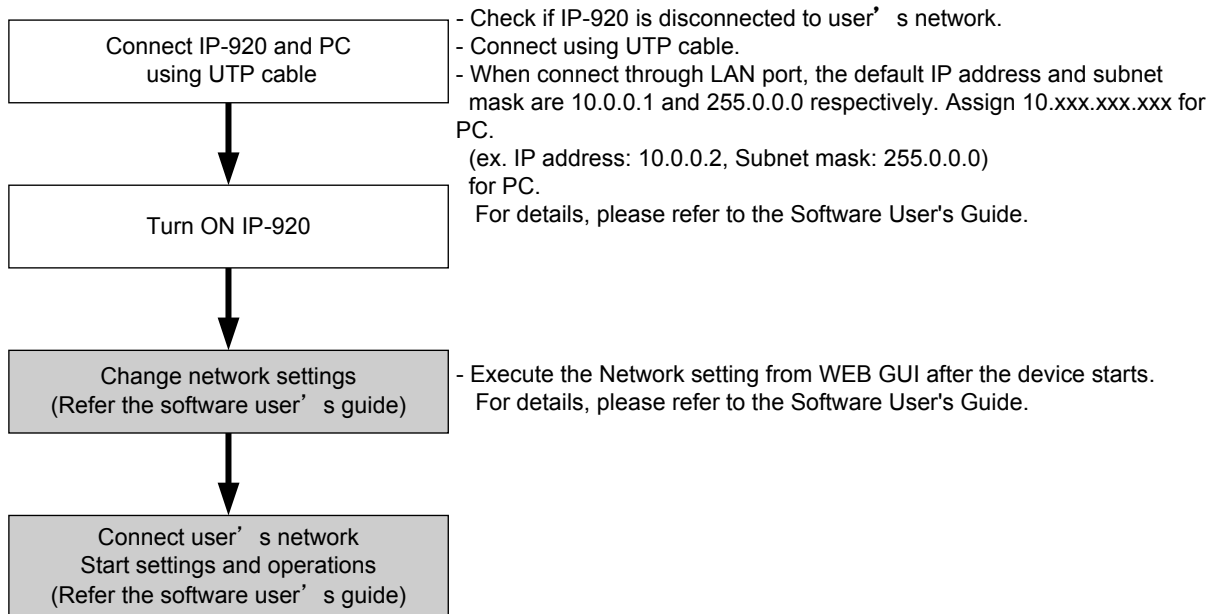
## 3.2

# Device Settings and Operation

### ■Setup Procedure

The setup procedure is shown below.

Refer to Software User's Guide for the procedure of the software installation and the each setting.



### ■Web browser recommended

The recommended web browser is as follow.

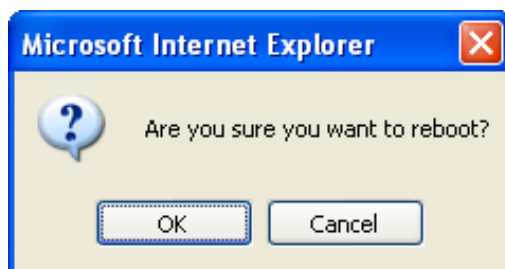
- Internet Explorer 6.0 SP2 or later



This section briefly explains the basic functions of the setup pages.

### 3.2.1 Reboot

Clicking the **REBOOT** button displayed in the left frame of the browser reboots this equipment. When you click the button, the following dialog box shown below appears for confirmation. Click OK to reboot.



## 3.3

# Special Use of MNT Button

You can start IP-920E/IP-920D by turning on the power while holding down the [MNT] Button (for about 10 seconds) until the RDY LED begins blinking in orange. When you start IP-920E/IP-920D with the initial IP address and subnet mask with which the IP-920E/IP-920D is shipped from the factory (IP address 10.0.0.1, Subnet mask: 255.0.0.0).

Use this function when making initial settings for IP-920E/IP-920D from a control terminal (such as a PC having a LAN interface) (\*1).

- \*1 When you operate the IP-920E/IP-920D with the default IP address, connect this equipment to a control terminal and make setting from the terminal with this equipment disconnected from your network.

After making settings according to the requirements for your network, connect this equipment to the network. If this equipment with the default settings made at the factory is connected to the network, an unexpected problem may occur with your network.

If you start IP-920E/IP-920D while holding the [MNT] button, set the IP addresses and subnet masks of the control terminal to connect as follows:

- IP address : 10.xxx.xxx.xxx  
(xxx is any number from 0 to 255, excluding 10.0.0.0, 10.0.0.1, and 10.255.255.255.)
- Subnet mask : 255.0.0.0

# CHAPTER 4

## CABLE SPECIFICATIONS

This chapter contains a type of how work is implemented, cable connection system diagrams, and cable connector details

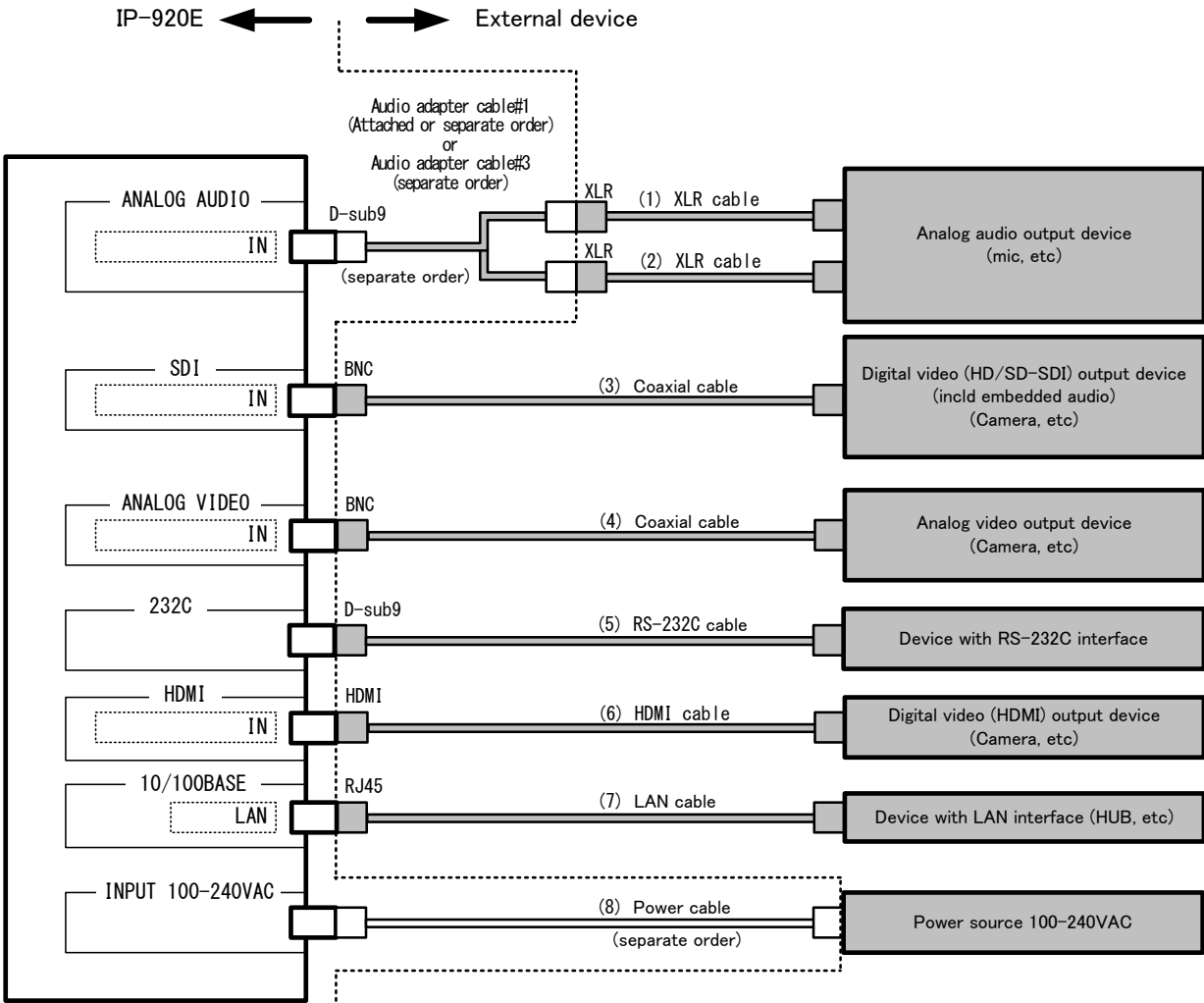
4.1	Installation Preparations.....	47
4.2	Cable and Connector Details .....	49

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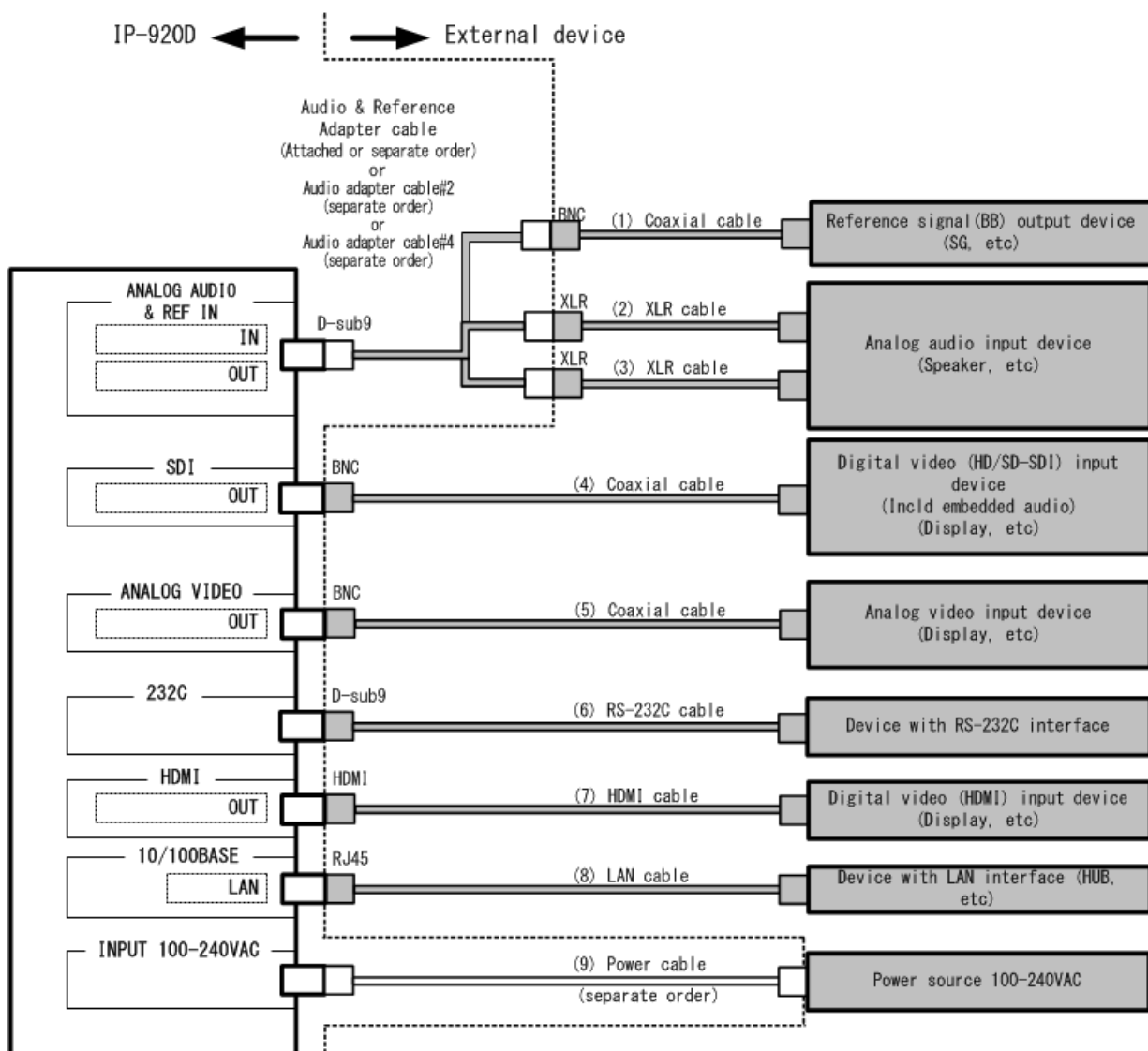
4.1

Installation Preparations

A type of IP-920E/IP-920D installation work is shown below.



(IP-920E)

**(IP-920D)**

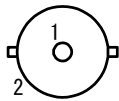
When constructing a system that uses IP-920E/IP-920D, consideration must be given so that its boundary between IP-920E/IP-920D and other devices is similar to that shown in the above figure. Since the type of work may change depending on the system, procure equipment and perform work based on consultations with a system designer.

4.2

Cable and Connector Details

(1) SDI VIDEO cable

Connector



Front view

Pin assignment

SIGNAL	①	①	SIGNAL
SG	②	②	SG

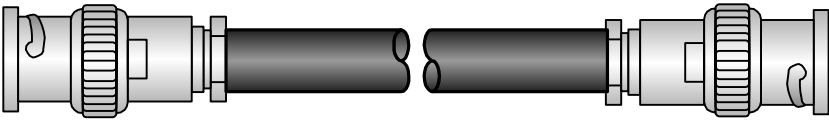
Maximum length

HD-SDI	100m	(Coaxial cable 75 Ω 5C-FB or more)
SD-SDI	100m	(Coaxial cable 75 Ω 5C-FB or more)

Order

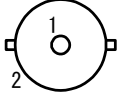
Coaxial cable with BNC connector  
Product code: TBD

Coaxial cable 75 Ω  
5C-FB or more



(2) Analog VIDEO cable

Connector



Front view

Pin assignment

SIGNAL	①	①	SIGNAL
SG	②	②	SG

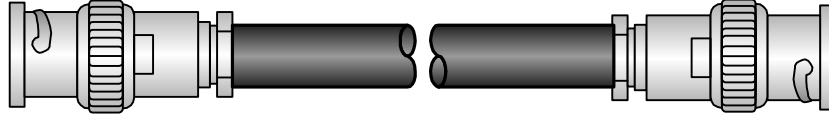
Maximum length

NTSC	Color	: 30m	(Coaxial cable 75 Ω 3C-2T)
	Mono	: 200m	(Coaxial cable 75 Ω 3C-2T)

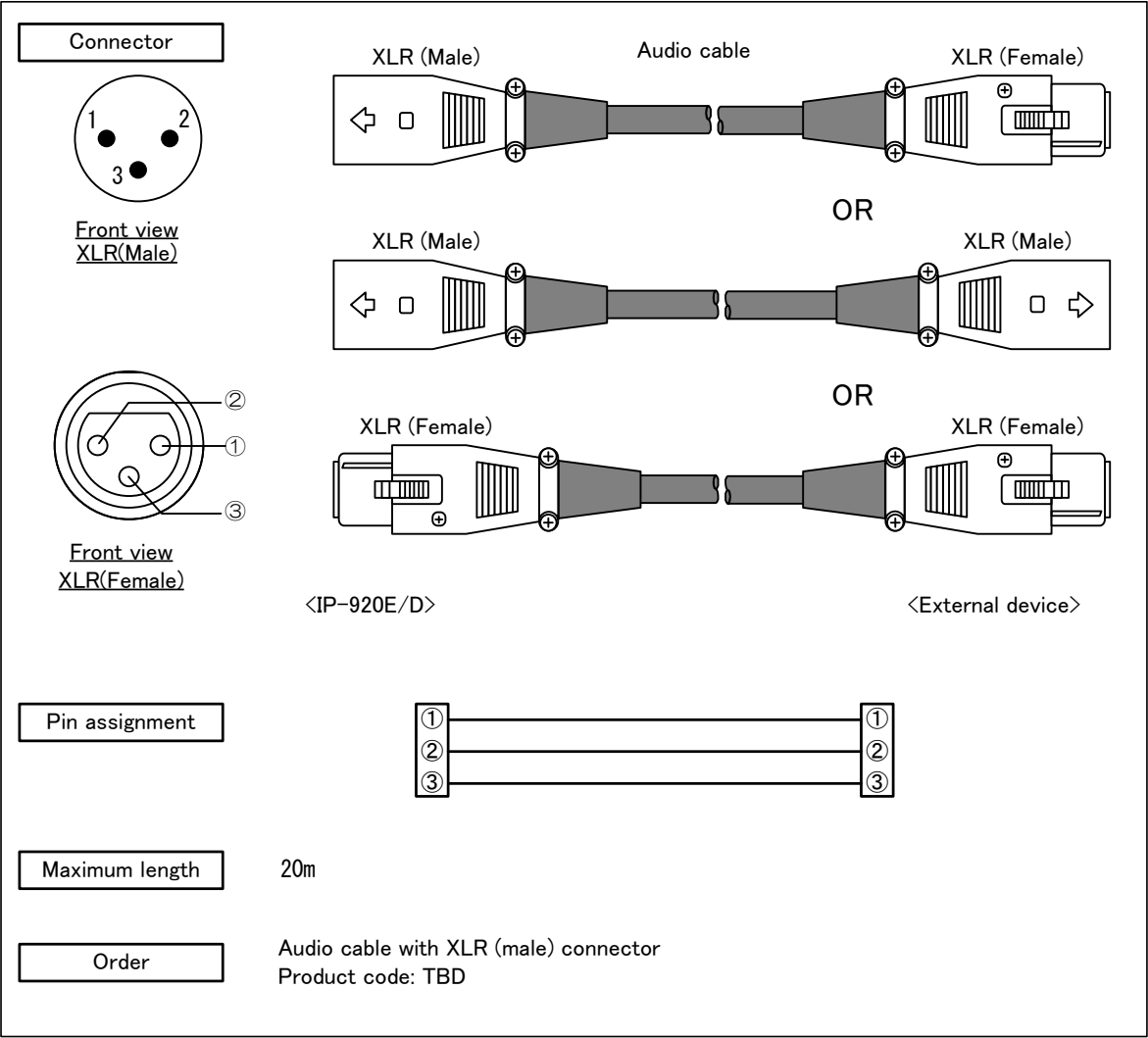
Order

Coaxial cable with BNC connector  
Product code: TBD

Coaxial cable 75 Ω  
(3C-2V or more)

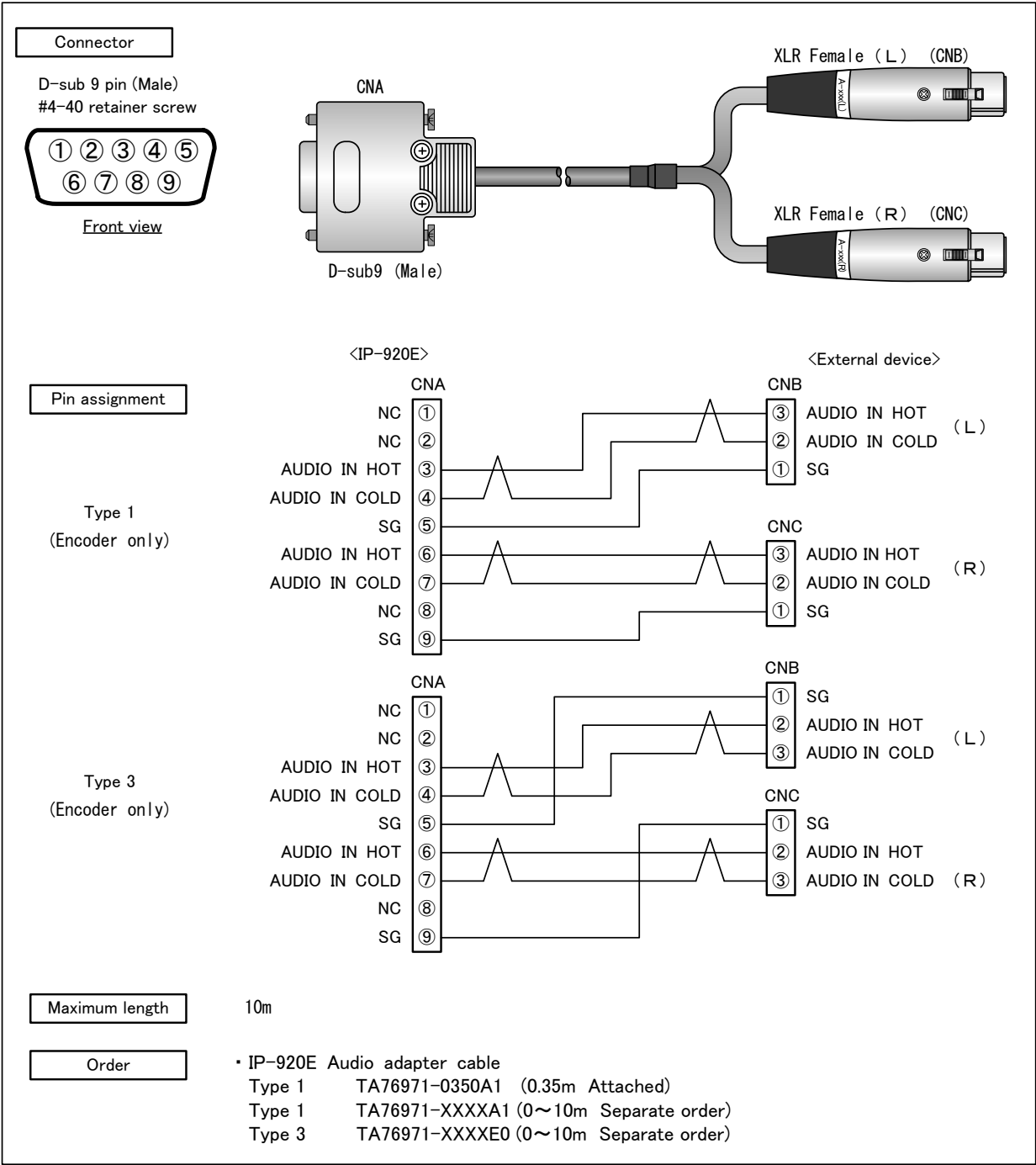


(3) Analog AUDIO cable

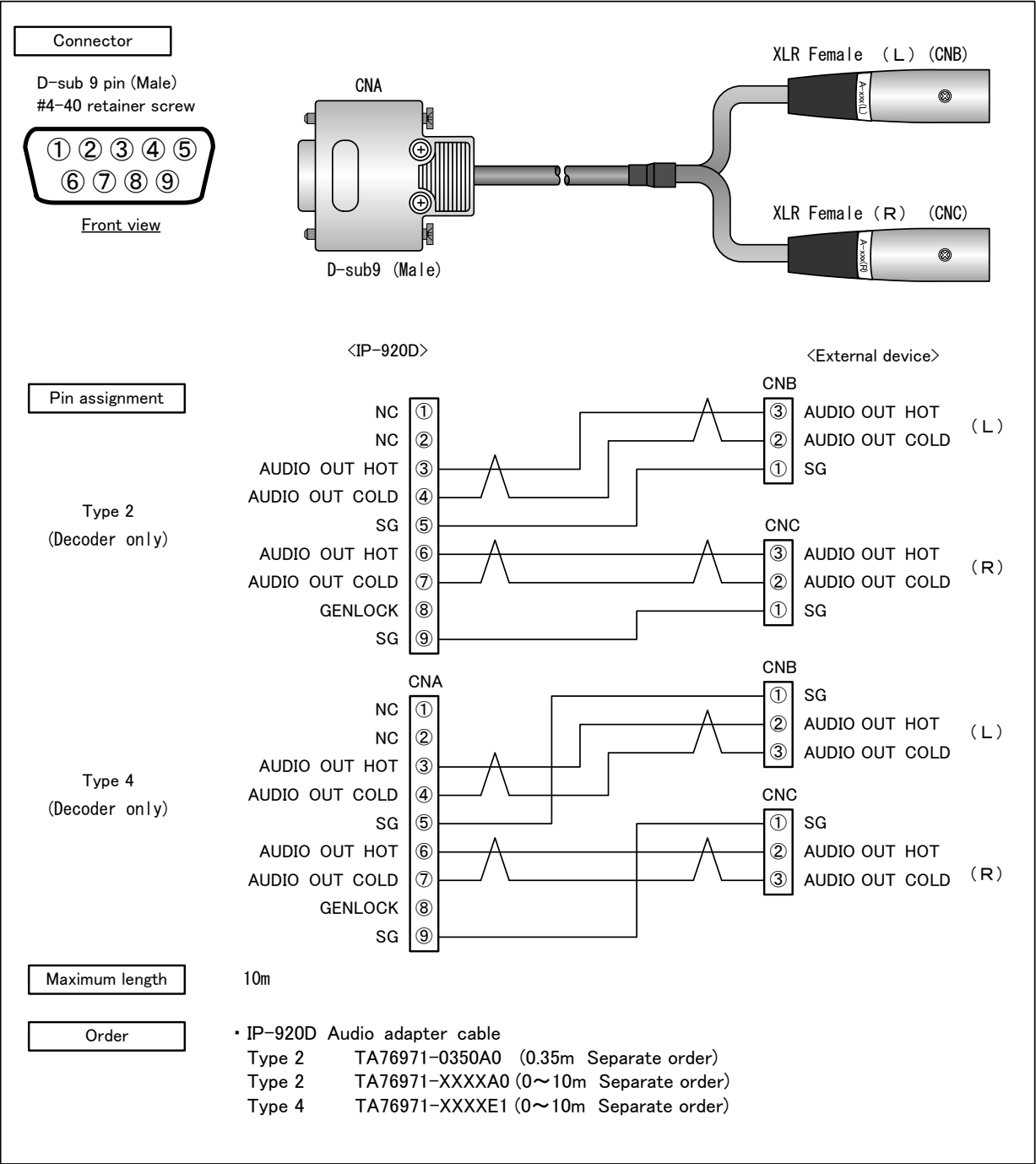




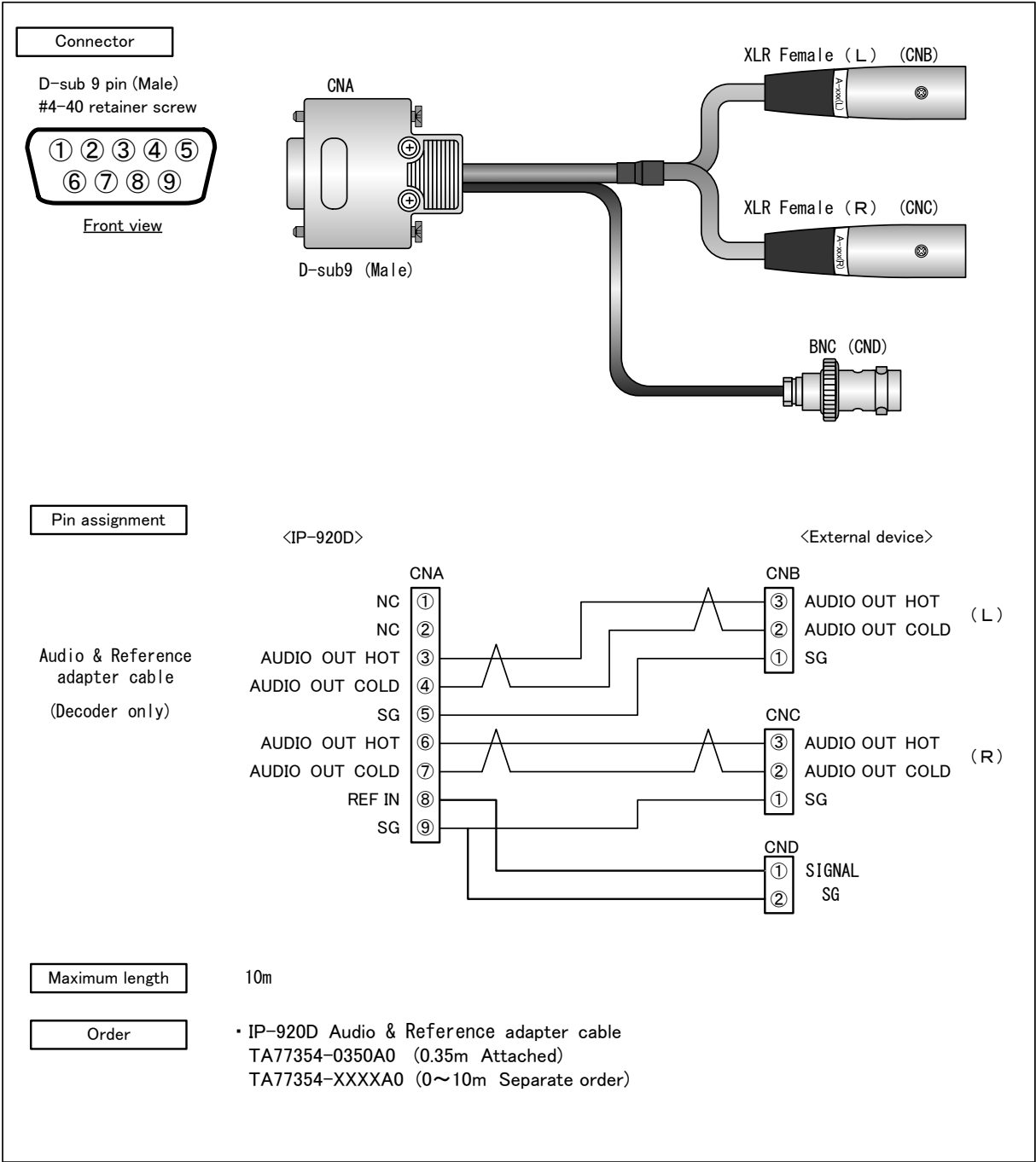
(4) AUDIO Adapter cable (#1, #3)



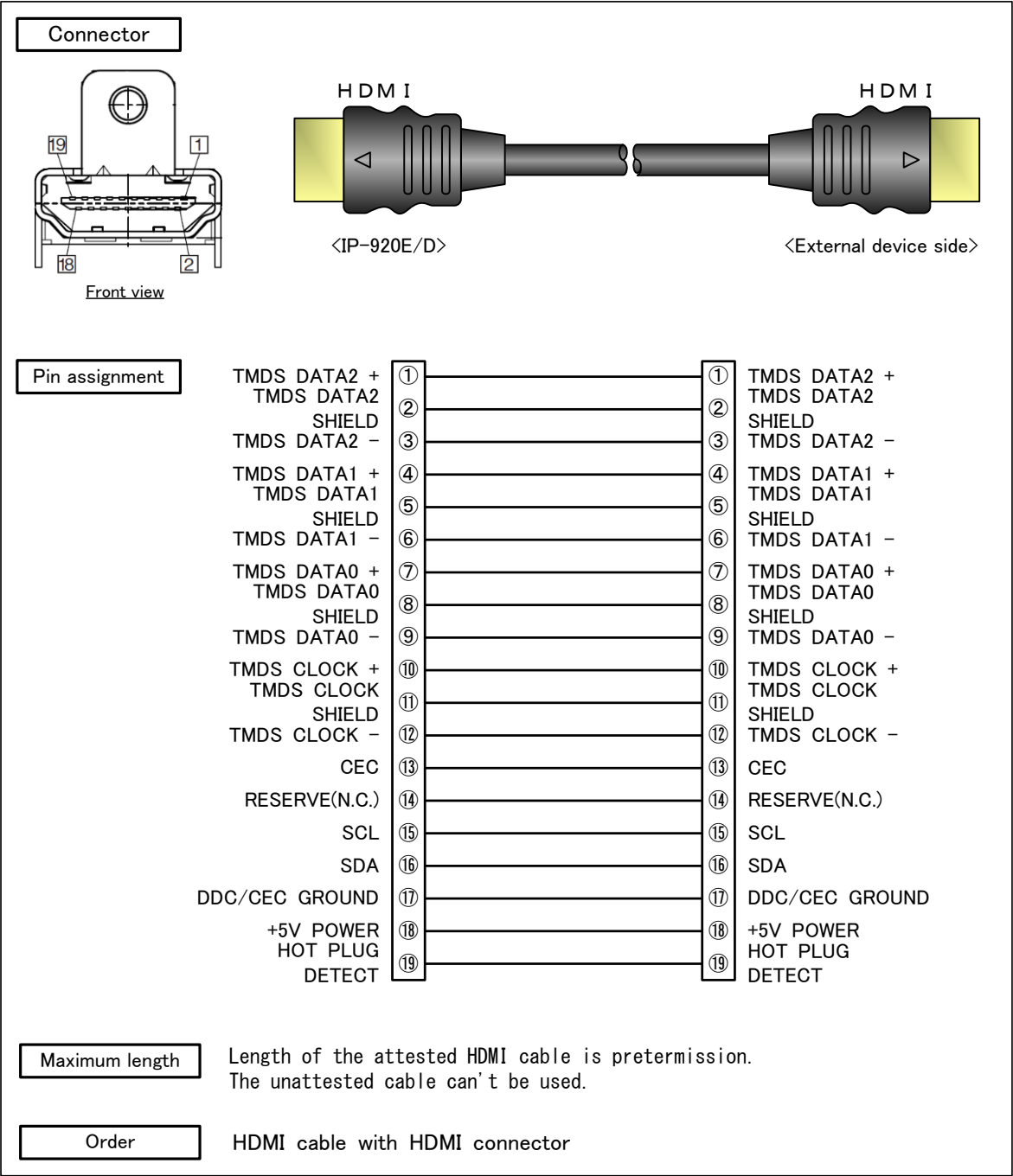
(5) AUDIO Adapter cable (#2, #4)



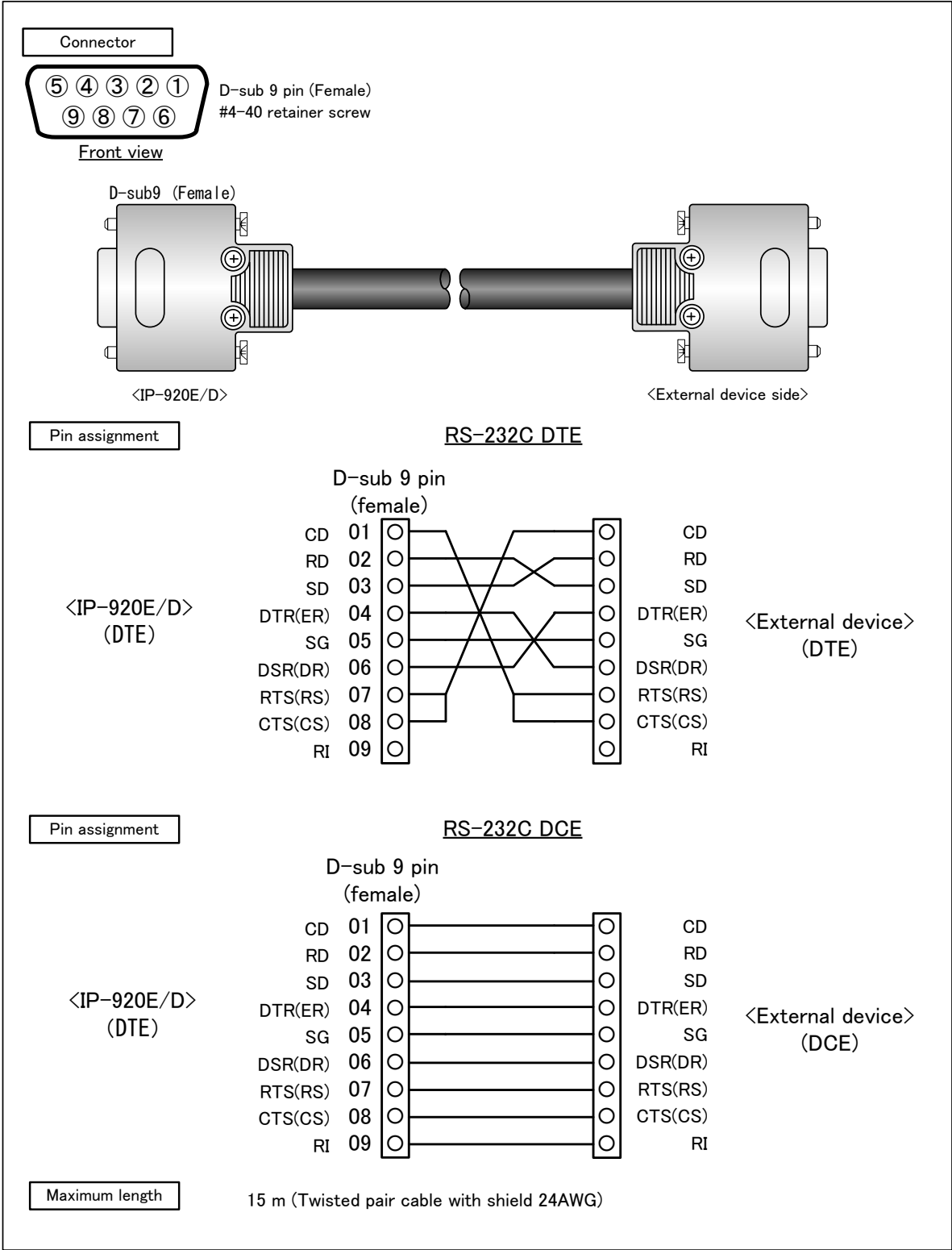
(6) Audio & Reference Adapter cable



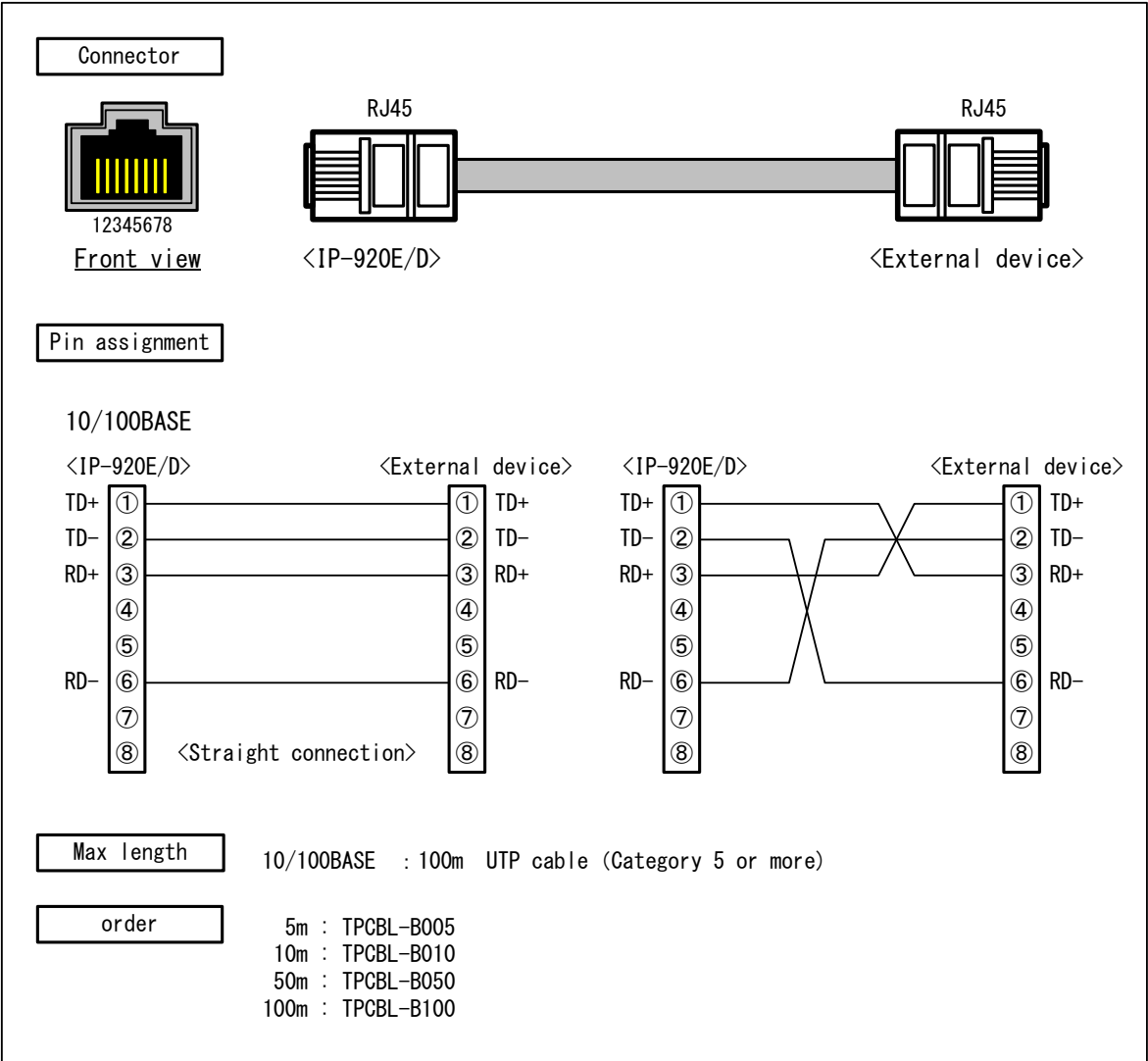
(7) HDMI cable



(8) RS-232C cable

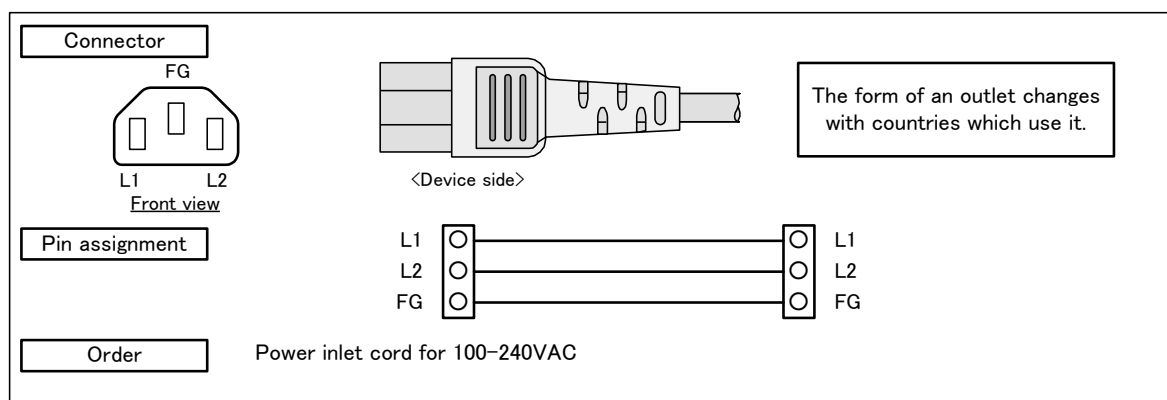
















(9) LAN cable









**(10) 100 - 240 VAC power cord**

The power supply cable is not contained in this device. Please prepare the cable which suits the country which uses it.












**USABLE DETACHABLE POWER SUPPLY CORD SET**

MODEL	Input	Connector	Cord	Attachment Plug cap
North America <*1> <*2>	100-120V	IEC C-13 Rated 13A, 125V UL, CSA Approved 	Type SJT, No.16 AWG Min. 3-Conductors (Single phase;2-current carrying conductors & ground) UL, CSA Approved	NEMA (5-15P) parallel blade Rated 13A, 125V UL, CSA Approved 
	200-240V	IEC C-13 Rated 15A, 250V UL, CSA Approved 	Type SJT, No.14 AWG Min. 3-Conductors (Single phase; 2-current carrying conductors & ground) UL, CSA Approved	NEMA (6-15P) tandem blade Rated 15 A, 250 V UL, CSA Approved 
Europe <*2>	100-240V	IEC C-13 Rated 10A, 250V <*1> 	CENELEC OC 3X1.0 square mm<*1> <HAR>	Rated 10 A, 250 V <*1> 
Australia	100-240V	IEC C-13 Rated 10A, 250V 	Cable: AS OD 3 X1.0 square mm e.g. 	Rated 10 A, 250 V 
U.K <*2>	100-240V	IEC C-13 Rated 10A, 250V 	BS OC 3 X1.00 square mm	Rated 10 A. 250 V 
Japan	100V	IEC C-13 Rated 13A, 125V	Type HVCTF cross section area 1.25 square mm 3-Conductors (Single phase;2-current carrying conductors & ground)	NEMA (5-15P) parallel blade Rated 13 A, 125 V
		METI Approved or  <PSE>	METI Approved or <PSE> 	METI Approved or <PSE> 

Korea	220V (Class I)	IEC 60320-1 (IEC C-13) Rated 12A, 250V 	Comply with KSC3304. Type VCTF cross section area 1.25 (0.50 or 1.00 or 2.00) square mm 3-Conductors (Single phase; 2-current carrying conductors & ground) or 	Comply with KSC8305. Rated 12A, 250V 
	220V (Class II)	IEC 60320-1 (IEC C-13) Rated 3A, 250V 	Comply with KSC3304. Type VCTFK cross section area 1.25 (0.50 or 0.75 or 1.00 or 2.00) square mm 2-Conductors or 	Comply with KSC8305. Rated 12A, 250V 

Note: \*1. Be sure that the detachable proper Supply cord has the approval of the appropriate safety agencies of the country where the equipment will be used.  
\*2. Cable length of above Power Supply cord shall be shorter than 4.5 m.

#### CERTIFICATION MARKING

Country	Agency	Certification Mark	Country	Agency	Certification Mark
Austria	OVE		Italy	IMQ	
Belgium	CEBEC		Norway	NEMKO	
Denmark	DEMKO		Spain	AEE	
Finland	FEI		Sweden	SEMKO	
France	UTE		Switzerland	SEV	
Germany	VDE				



# CHAPTER 5

## TROUBLESHOOTING

This section explains how to turn on/off, setup and operate this equipment.

This chapter describes actions to be taken if this equipment does not operate normally or if an alarm LED turns on.

Figures described in this chapter are used IP-920Es' as a sample.

5.1	Help Information.....	61
5.2	Alarm LED Lamps .....	68
5.3	Maintenance.....	70

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# 5.1

## Help Information

If a problem is found in device operation, take recommended action described in the table below, according to the applicable conditions. If you cannot solve the problem after taking each recommended action, contact to Fujitsu Service Center.

### WARNING

Possibility of electric shock

Contact your system administrator before checking the voltage of a power outlet. Otherwise, electric shock may occur.

Table 5.1.1 Problem descriptions and recommended actions (IP-920E)

No.	Class	Status	Description	Recommended action
1.	Power	Power cannot be turned on.	Is the power cable connected?	Check the power cable is properly connected to the outlet.
2.			Is the outlet voltage normal?	Measure the voltage with a tester and check the voltage is normal. When another device is connected to the same outlet, check the other device's performance.
3.	Device	The ALM LED is on.	Equipment error is occurred.	Contact to CE in Fujitsu Service Center. CE may ask the alarm code for checking your status. Check each alarm code using log information screen of Web GUI before you contact to us.
4.		The ALM LED is blinking.	Settings/ Performances of the equipment and each error is shown.	Check alarm code using log information screen of Web GUI. The countermeasures are shown.
			E013 Temperature warning	Check whether the condition is satisfied with “2.1 Installation Conditions” or not. - Do you secure certain space for air supply and exhaust opening? -Is ambient temperature within the condition? In case of having problems in the conditions above, reboot the equipment after excluding the all problems. In case of not having any problems, contact to Fujitsu CE because the equipment might be failed.
			E084 CF card access error E085 CF card power error	CF card or this equipment might be abnormal. In case that you have the spare CF card, please check whether the problem is recovered after replacing the failed card to the spare. Contact CE in Fujitsu Service Center in case that you do not have the spare or the problem is not recovered even after the replacement.
			L009 DHCP connection failure L00A PPPoE connection failure	Please refer to 43 of this table.
5.		The LEDs excluding LAN are on.	Is the ambient temperature of this equipment within the condition of specification?	If yes, adjust the temperature within the condition of specification. ⇒Refer to “2.1.1 Environment Conditions”.
	Do you secure indicated space in the condition for air supply and exhaust opening?		If no, secure the space. ⇒Refer to “2.1.3 Air supply and exhaust of the equipment”.	

No.	Class	Status	Description	Recommended action
6.	Data	Data communication is disabled.	Is the port setting correct?	Check the data input-output port settings. ⇒Refer to Software User's Guide.
7.			Is the data input/output device operating normally?	Check the operation of the data input/ output devices.
8.			Are this equipment and the communication destination device correctly connected?	Check cable connections between this equipment and communication destination equipment and the cable pin assignments.
9.	Video	The INDWN lamp lights in orange.	Is the power to the video/audio output device (such as a camera) selected for input turned on?	Check the selected power supply of video/audio output device and the performance.
			Is this equipment correctly connected to the video/audio output device? (e.g. SDI signal was connected to analog video input of this equipment by mistake.)	Check the connection between this equipment and video/audio output devices correctly and whether the cable has problems or not.
10.			Are the specified input video/audio format matched with video/output device (such as camera) this equipment correctly connected to the video/audio output device? (e.g. Although this equipment was set as SD-SDI input setting, HD-SD signal input was detected by mistake.)	Check whether the format is set to the using video/audio format for this equipment and output device or not.
11.		The INDWN lamp blinks in orange.	Are the specified input video/audio format matched with video/output device (such as camera) this device correctly connected to the video/audio output device? (e.g. Although this equipment is set as 59.94Hz, the output device was set as 50Hz by mistake.)	Check whether the format is set to the using video/audio format for this equipment and output device or not.
12.		No images can be output on the receiving device (black screen).	Is the monitor which connects to the receiving device working normally?	Check the power and operation of the monitor.
13.			Is the receiving device working normally?	Check the power and operation of the receiving device.
14.			Is the receiving device and monitor connected correctly?	Check connections between the receiving device and the monitor.
15.			Does alarm occur on the receiving device?	If yes, refer to the user's guide of receiving device and follow the instructions.
16.			Does a color bar or gray screen appear on the receiving device when image input of this equipment is set to non-input? (Since this operation generates an alarm, obtaining the system administrator's approval before conducting this test.)	When color bar or the blue screen is displayed, the network and receiving device would be worked normally. Check whether the correct image is input in this equipment or not.
17.		Blue/gray screen is output.	Is the RDY LED blinking?	The hardware system is operating while the RDY LED is blinking. Wait until the LED remains on.
18.			Is the RDY LED turned on in orange?	This equipment is started in the maintenance mode. Reboot this equipment.
19.			Is the ALM LED blinking?	ALM LED blinks when IP address obtaining might be failed to get. Check IP address setting (For more information, refer to the Software User's Guide).

No.	Class	Status	Description	Recommended action
20.	Video	Blue/gray screen is output	Has the encoder started encoding?	Set the encoder to start encoding.
21.			Has the decoder started decoding?	Set the decoder to start decoding.
22.			Is the streaming setting correct?	Make the correct streaming setting of this device and the encoder by referring to the Software User's Guide.
23.			Is the network normal?	Refer to "Network" in this table.
24.		Image/audio output is distorted.	Is packet loss occurring on the decoder?	If yes, confirm the followings. - Is system bit rate exceeding connected network capacity? - Are FEC/ARQ settings in this device and the opposed device correct? - Are the network device and LAN port settings (AUTO, Full/Half-duplex, etc) the same?
25.		The image output is distorted. (Analog input case)	Is the setting of encoder PAL when the camera or display is NTSC type?	Change encoder setting from PAL to NTSC. (Check decoder setting too.)
26.			Is the setting of encoder NTSC when the camera or display is PAL type?	Change encoder setting from NTSC to PAL. (Check decoder setting too.)
27.		The video contents look whitish. (Analog input case)	When AGC setting of encoder change ON or OFF, the video contents improve normal.	Encoder is working normal. If this problem improves normal when changing ON or OFF, the input or output signal is bigger or smaller than the normal range. Check this equipment connected.
28.			When AGC setting of encoder change ON or OFF, the video contents does not improve normal.	Encoder is working normal. The iris adjustment of the camera is possibly necessary.
29.		The video contents look dark.	When AGC setting of encoder change ON or OFF, the video contents improve normal.	Encoder is working normal. If this problem improves normal when changing ON or OFF, the input or output signal is bigger or smaller than the normal range. Check this equipment connected.
30.			When AGC setting of encoder change ON or OFF, the video contents does not improve normal.	Encoder is working normal. The iris adjustment of the camera is possibly necessary.
31.	Audio	Spoken words cannot be heard on the receiving device.	Isn't "None" selected in the audio format setting of this device?	Select an item other than "None" and set audio to be encoded.
32.			Is the receiving device turned on?	Check the power and operation of the receiving device.
33.			Are connections correct between the receiving device and speakers?	Check the connection between the receiving device and speakers.
34.			Does an alarm occur on receiving device?	If yes, refer to the user's guide of the receiving device.
35.		Noise is generated on the receiving device.	Can the noise be eliminated on the receiving device in case of pulling out the audio input cable at this equipment?	If pulling out the cable from this equipment eliminates the noise, audio signals may have noise. Check the audio output device.

No.	Class	Status	Description	Recommended action
36.	Audio	Noise is generated on the receiving device.	Is the receiving device operating normally?	If pulling out the line input cable from the receiving device does not eliminate the noise, this equipment can be assumed to be operating normally. Check the receiving device.
37.			Is packet loss occurred on the decoder?	If yes, confirm the followings. - Is system bit rate exceeding connected network capacity? - Are FEC/ARQ settings of this device and the opposed device correct? - Are the network device and LAN port settings (AUTO, Full/half-duplex, etc) the same?
38.	Network	The LINK/ACT LED for the LAN port is not turned on.	Is the power to the communication destination device turned on?	Check the power supply and operation of the communication destination device.
39.			Are the LINK LEDs on this device and the hub turned on?	If the LINK LEDs are not ON, the LAN cable is not connected. Connect the LAN cable correctly.
40.		Device setting through a LAN is disabled.	Is the IP address specified from the Web browser correct?	Specify a correct IP address from the Web browser on the control terminal.
41.			Are the network settings (IP address, subnet mask, etc.) on the control terminal PC correct?	Make correct settings by referring to the PC user's guide and OS handbook. If this device is started with the default settings made before shipment from the factory, refer to "Section 3.2, "Device Settings and Operation," for the network settings for the control terminal PC.
42.			Is a reply received in response to a PING command issued to the IP address of this equipment?	If a reply is not received, turn on the power to this equipment while holding down the MNT button to start the system with the default IP address (10.0.0.1) set before shipment from the factory. Confirm the IP address. If the problem persists, check the status on the LAN. For information on this startup procedure, refer to Section 3.3, "Special Use of MNT Button."
43.			Is ALM LED blinking?	IP address mode setting is not proper. After rebooting this equipment with the default IP address set before shipment from the factory, connect to the Web and confirm these alarm codes.  - L009 DHCP connection failure Check DHCP-related setting and DHCP server setting/operation of this device are correct. - L00A PPPoE connection failure Check PPPoE-related setting and PPPoE server (carrier side) operation of this device are correct.  For details, please refer to the Software User's Guide.

Table 5.1.2 Problem descriptions and recommended actions (IP-920D)

No.	Class	Status	Description	Recommended action
1	Power	Power cannot be turned on.	Is the power cable connected?	Check the power cable is properly connected to the outlet.
2			Is the outlet voltage normal?	Measure the voltage with a tester and check the voltage is normal. When another device is connected to the same outlet, check the other device's performance.
3	Device	The ALM LED is on.	Equipment error is occurred.	Contact to CE in Fujitsu Service Center. CE may ask the alarm code for checking your status. Check each alarm code using log information screen of Web GUI before you contact to us.
4		The ALM LED is blinking.	Settings/Performances of the equipment and each error is shown.	Check alarm code using log information screen of Web GUI. The countermeasures are shown.
			E013 Temperature warning	Check whether the condition is satisfied with “2.1 Installation Conditions” or not. - Do you secure certain space for air supply and exhaust opening? - Is ambient temperature within the condition? In case of having problems in the conditions above, reboot the equipment after excluding the all problems. In case of not having any problems, contact to Fujitsu CE because the equipment might be failed.
			L009 DHCP connection failure L00A PPPoE connection failure	Please refer to 43 of this table.
5		The LEDs excluding LAN are on.	Is the ambient temperature of this equipment within the condition of specification?	If yes, adjust the temperature within the condition of specification. ⇒Refer to “2.1.1 Environment Conditions”.
			Do you secure indicated space in the condition for air supply and exhaust opening?	If no, secure the space. ⇒Refer to “2.1.3 Air supply and exhaust of the equipment”.
6	Data	Data communication is disabled.	Is the port setting correct?	Check the data input-output port settings. ⇒Refer to Software User's Guide.
7			Is the data input/output device operating normally?	Check the operation of the data input/output device.
8			Are this equipment and the communication destination device correctly connected?	Check cable connections between this equipment and communication destination device and the cable pin assignments.
9	Video	No image can be output on the receiving device (black screen).	Is the receiving device turned on?	Check the power and operation of this equipment on the receiving device.
10			Is the power of device turned on?	Check that PWR LED lights.
11			Is this equipment correctly connected to the monitor?	Check the connection between device and the monitor.
12			Is the video output setting of this device correct?	Check the video output setting of this device allows the monitor to display.
13			Is ALM LED turned on?	Refer to clause 3 in this table.

No.	Class	Status	Description	Recommended action
14	Video	No image can be output on the receiving device (black screen).	Does a color bar or gray screen appear on the receiving device if image input of the Encoder device is set to non-input? (Since this operation generates an alarm, obtaining the system administrator's approval before conducting this test.)	If the blue screen is displayed, the receiving device can be assumed to be operated normally. Verify that the correct image is input in the Encoder device.
15		Displayed blue/gray screen on the receiving device	Is the RDY LED blinking?	The hardware system is operating while the RDY LED is blinking. Wait until the LED remains on.
16			Is the RDY LED turned on orange?	This equipment is started in the maintenance mode. Reboot this equipment.
17			Is DEC LED off?	Decoder is not working. Check the followings.
18			Has the decoder started decoding?	Set the decoder to start decoding.
19			Has the encoder started encoding?	Check the encoder is starting to encode.
20			Is the streaming setting correct?	Make correct live stream settings of this device and encoder by referring to the Software User's Guide.
21			Is the network normal?	Refer to "Network" in this table.
22			Is DEC LED blinking in green?	(When the reference function is used) Check reference output equipment, converting cable and reference cable which are connected to reference input connector. Check the format settings of this equipment and reference output equipment.
23		Received image sometimes freezes or distorted.		Refer to clause 44 in this table
24			Is DEC LED blinking in green?	(When the reference function is used) Refer to clause 22 in this table
25		The image output is distorted. (Analog output case)	Is the setting of encoder PAL when the camera or display is NTSC type?	Change decoder setting from PAL to NTSC. (Check encoder setting too.)
26			Is the setting of encoder NTSC when the camera or display is PAL type?	Change encoder setting from NTSC to PAL. (Check encoder setting too.)
27		The video contents look whitish.	When AGC setting of encoder change ON or OFF, the video contents improve normal.	Encoder is working normal. If this problem improves normal when changing ON or OFF, the input or output signal is bigger or smaller than the normal range. Check this equipment connected.
28			When AGC setting of encoder change ON or OFF, the video contents does not improve normal.	Encoder is working normal. The iris adjustment of the camera is possibly necessary.
29		The video contents look dark.	When AGC setting of encoder change ON or OFF, the video contents improve normal.	Encoder is working normal. If this problem improves normal when changing ON or OFF, the input or output signal is bigger or smaller than the normal range. Check this equipment connected.
30			When AGC setting of encoder change ON or OFF, the video contents does not improve normal.	Encoder is working normal. The iris adjustment of the camera is possibly necessary.
31	Audio	Spoken words cannot be heard on this equipment	Has the receiving device been turned on the power?	Check the power and operation of the receiving device.



No.	Class	Status	Description	Recommended action
32	Audio	Spoken words cannot be heard on this equipment	Isn't "None" selected in the audio format setting of the encoder?	Select an item other than "None" and set audio to be encoded.
33			Are connections correct between the receiving device and speakers?	Check the connection between the receiving device and speakers.
34			Is ALM LED turned on?	Refer to clause 3 in this table.
35		Noise is generated on this equipment.	Does noise disappear when disconnecting LAN cable?	If not, this device is considered as abnormal.
36			Does noise disappear when disconnecting audio input cable from the encoder?	If so, audio signal input to the encoder is considered to be mixed with noise. Check the audio output device.
37			Is packet loss occurring? (Is DEC LED blinking in green?)	Refer to clause 44 in this table.
38	Network	The LINK/ACT LED for the LAN port is not turned on.	Is the power to the communication destination device turned on?	Verify the power supply and operation of the communication destination device.
39			Are the LINK LEDs on this device and the hub turned on?	If the LINK LEDs are not ON, the LAN cable is not connected. Connect the LAN cable correctly.
40		Device setting through a LAN is disabled.	Is the IP address specified from the Web browser correct?	Specify a correct IP address from the Web browser on the control terminal.
41			Are the network settings (IP address, subnet mask, etc.) on the control terminal PC correct?	Make correct settings by referring to the PC user's guide and OS handbook. If this device is started with the default settings made before shipment from the factory, refer to "Section 3.2, "Device Settings and Operation," for the network settings for the control terminal PC.
42			Is a reply received in response to a PING command issued to the IP address of this equipment?	If a reply is not received, turn on the power to this equipment while holding down the MNT button to start the system with the default IP address (10.0.0.1) set before shipment from the factory. Confirm the IP address. If the problem persists, check the status on the LAN. For information on this startup procedure, refer to Section 3.3, "Special Use of MNT Button."
43		The DEC LED is blinking in green.	Is ALM LED blinking?	IP address mode setting is not proper. After rebooting this equipment with the default IP address set before shipment from the factory, connect to the Web and confirm these alarm codes. - L009 DHCP connection failure Check DHCP-related setting and DHCP server setting/operation of this device are correct. - L00A PPPoE connection failure Check PPPoE-related setting and PPPoE server (carrier side) operation of this device are correct. For details, please refer to the Software User's Guide.
44			Error is occurring in the received stream data. Check connected network and the encoder are set/operated correctly.	If so, confirm the followings. ▪ Is system bit rate exceeding connected network capacity? ▪ Are FEC/ARQ settings of this device and the encoder correct? ▪ Are the network device and LAN port settings (AUTO, Full/Half-duplex, etc) the same?

## 5.2

## Alarm LED Lamp

This section describes corrective actions to take if an alarm LED turns on.

The appropriate corrective action depends on the alarm code displayed. Refer to the table below for this information.

**Reference**

Refer to Software User's Guide for information how to check the alarm log check and an example with displayed information.

**Table 5.2 Alarm codes and corrective actions**

Code	Corrective action
Lxxx	LAN network related alarms are shown as "Lxxx". Alarm LED is not turned on. Each code's description and the countermeasures are shown below. Check the network and destination device. If an error cannot be identified or recovered, contact your system administrator or Fujitsu CE.
L001	LAN is not connected. Check the connecting status of LAN cable and the settings of the network equipment such as hub.
L006	Time synchronization with the time server is failed. Check time server and the related settings of this equipment and whether the server works correctly or not.
L009	Failed to establish DHCP connection. Check DHCP server and the related settings of this equipment and whether the server works correctly or not.
L00A	Failed to establish PPPoE connection. Check PPPoE related settings and whether the server (provider side) works correctly or not.
L010	Failed to IPv6 Stateless Address Autoconfiguration. Check IPV6 router and the related settings of this equipment and whether the router works correctly or not.
Ixxx	This alarm is related with input status. Each INDWN LED (IP-920E) and DEC LED (IP-920D) is turned on or blinked. Each code's description and the countermeasures are shown below. If an error cannot be identified or recovered, contact your system administrator or Fujitsu CE.
I001 (Only IP-920E)	No SDI input signals. Check SDI output equipment and SDI cable which are connected to SDI input terminal. INDWN LED is turned on in orange.
I002 (Only IP-920E)	No HDMI input signals. Check HDMI output equipment and HDMI cable which are connected to HDMI input terminal. INDWN LED is turned on in orange.
I003 (Only IP-920E)	No Analog video input signals. Check Analog video output equipment and analog video cable which are connected to Analog video input connector. INDWN LED is turned on in orange.
I006 (Only IP-920D)	No reference input signals. Check reference output equipment, converting cable and reference cable which are connected to reference input connector. DEC LED blinks in green.
I011 (Only IP-920E)	Synchronization error with input signals. Check whether format settings of this equipment for the signal are adequately specified or not. INDWN LED blinks in orange.
I016 (Only IP-920D)	Synchronization error with reference input signals. Check the format settings of this equipment and reference output equipment. DEC LED blinks in green.
I021 (Only IP-920D)	Errors are detected in the received stream data. Check whether the using rate of sending side (Encoder) is appropriate for the network or not.
Exxx	This alarm shows the error of this equipment and ALM LED is turned the light on or blinked. Turn off the equipment at once and turn on the power again. In case of not turning off ALM LED even if you reboot the power, contact Fujitsu CE. Our CE may ask you the alarm code. Please refer to "Table 4-3 Alarm Code List" of our software Users Guide for the details.

xxx: Indicates three-digit numbers. Refer to Software User's Guide.  
In addition, LED display details are shown in the following table:

Table 5.3 LED display details

Display	Description
PWR	Turns on in green when this equipment is turned on.
RDY	Blinks in green in the operation preparation state, and lights in green in the operation state. Blinks in orange in the maintenance mode waiting state, and lights in orange in maintenance mode.
INDWN	No LED lights in normal state. Lights in orange in the state of audio/video input down or abnormal. Blinks in orange when the input signal slipping for encoder and the reference clock input down for decoder.
ALM	Alarm LED. Blinks or lights in orange when a device alarm occurs. For more details of the alarm log, refer to Section 3.2.7, "Log" of IP-920E/IP-920D Software User's Guide."
OPT	Lights in green when the HD upgrade option is installed.
DEC	Decoding and reference input statuses are displayed by the LED. This LED is turned on in green during decoding and turned off when decoding is not being performed. DEC LED blinks in green when a decoding error occurs. DEC LED blinks in green when reference input is down or synchronization error occurs for the frequency is out of the range.
100M	Turns on in green if the connected LAN is 100BASE-TX. Turns off if the connected LAN is 10BASE-T.
LINK/ACT	Indicates the LAN connection status and data send status. Turns on in green when there is a LAN (HUB) connection. Turns off when there is no LAN connection. Blinks in green when communication is in progress.

Note) In case of detecting temperature alarm, ALM LED is turned on and the equipment will move to shut down mode.  
After moving to the shutdown mode, all LED are turned on except LINK/ACT,100M.

## 5.3 Maintenance

### 5.3.1 Maintenance space

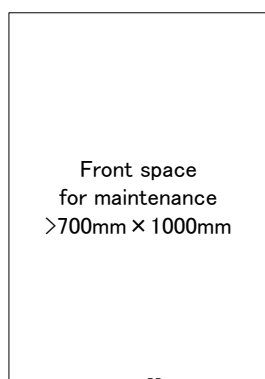
When the operators do the maintenance work, the maintenance space below is required in addition to Section 2.1.4, “Open space required around this equipment.”

#### Desk-top installation:

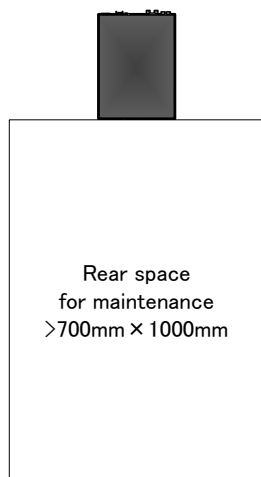
Please allocate the space more than 1 m in front or rear for maintenance.

#### Rack installation:

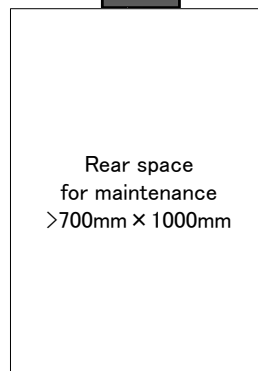
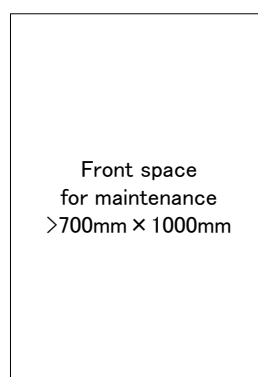
Please allocate the space more than 1 m in front and rear for maintenance.



Front access case

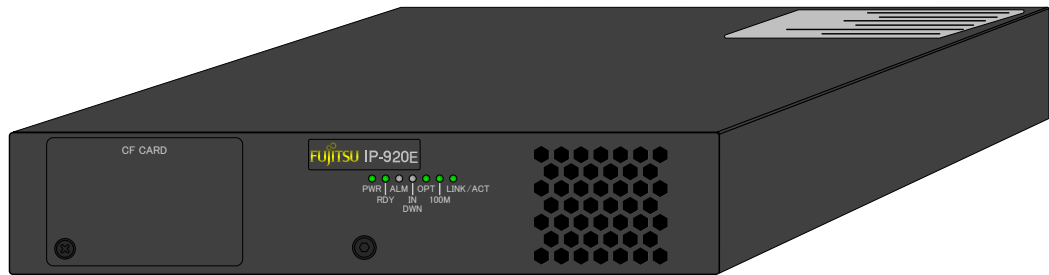


Rear access case



### 5.3.2 Change equipment (Only for CE)

When the failure situation is not recovered even if you check and follow the instructions by referring to Section 5.1, “Help Information”, the hardware might be failure. Change hardware as below.



The equipment itself is regarded as repair unit. When you regarded it as failure, please change the equipment.

In case that the optional CF card is installed in the main unit, please do not forget to remove it and re-install in the replaced unit.

Please refer to Section 2.6, “CF card insertion and removal,” for the respective maintenance.

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# Appendix

The appendix contains view of this equipment and its main specifications. Notes on installation work and preparations for on-site turn-up are also contained in this section.

Figures described in this chapter are used IP-920E as a sample.

A.1	Appearance .....	75
A.2	Basic Specifications .....	77
A.3	Preparations for Installation Work.....	84
A.4	Preparations for On-site Turn-up .....	85

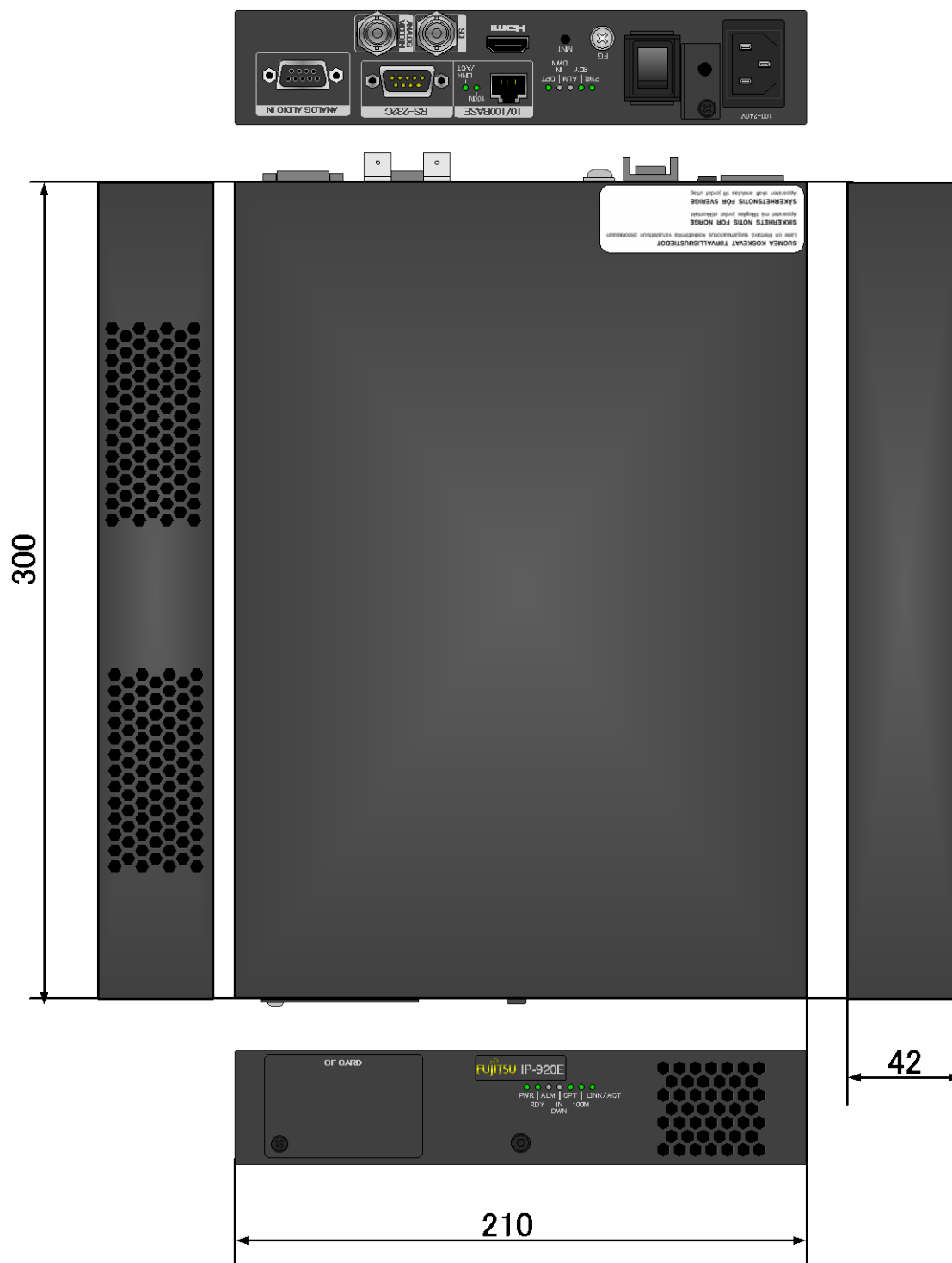
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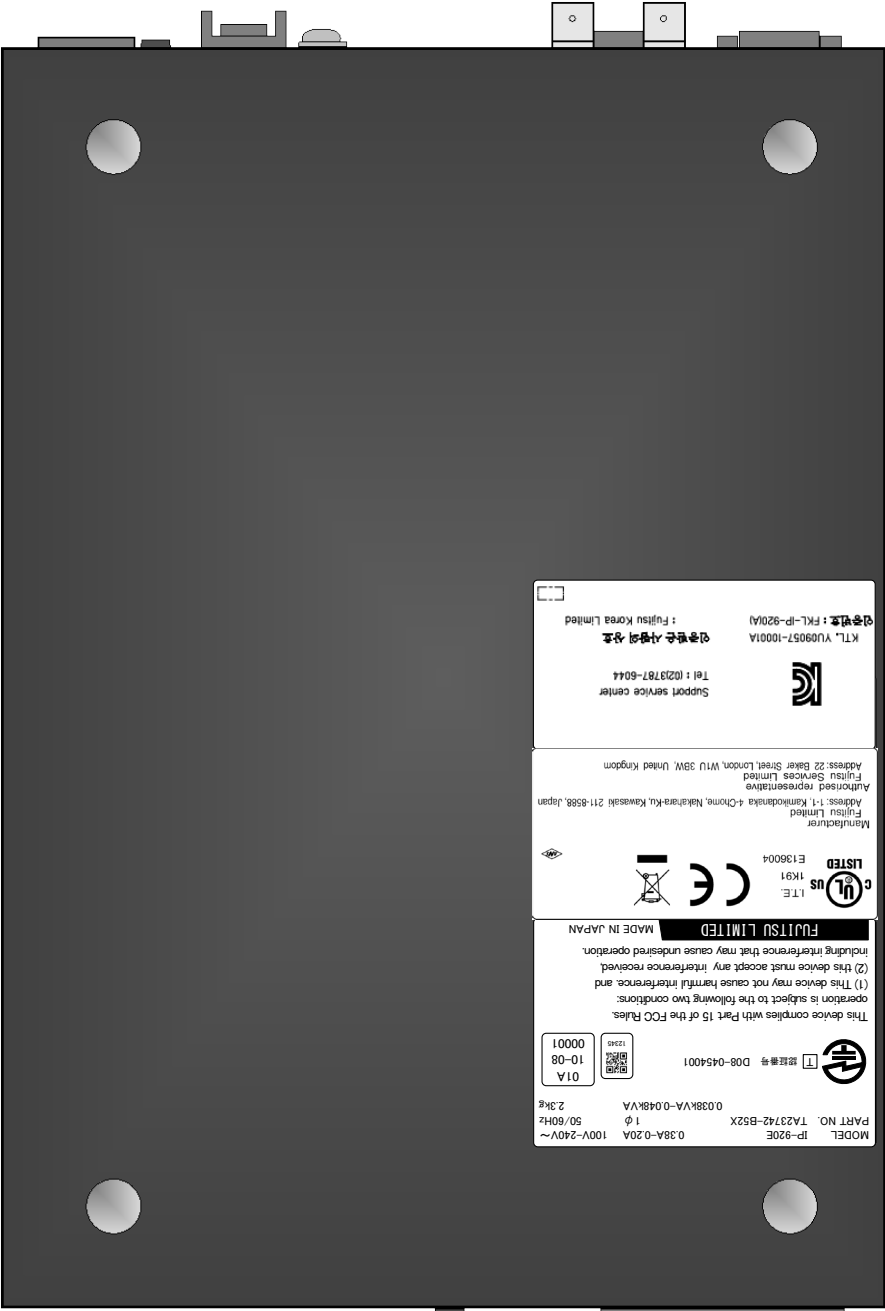
# A.1

## Appearance

The appearance of IP-920E/IP-920D is shown below.



IP-920E/IP-920D



Bottom View

## A.2

## Basic Specifications

This chapter describes the external specifications, environment specifications, and function specifications of this equipment.

### A.2.1 External specifications

This equipment has the following external specifications:

Item	Specifications
Installation conditions	Indoor: Installation on a desk or in a rack that is mounted
Dimensions	Width: 210, Height: 42, Depth: 300 (mm) (excluding projections)
Cooling method	Forced air cooling (maintenance-free fan used)
Power	100-240VAC
Weight	Max. 2.3 kg
Power consumption	IP-920E : 38 VA or less @ 100VAC IP-920D : 35 VA or less @ 100VAC

### A.2.2 Environment specifications

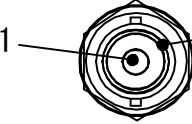
This equipment has the following environmental specifications:

Item	Specifications
Power conditions	100-240 VAC $\pm$ 10%, 50/60 Hz $\pm$ 3 Hz
Temperature and humidity conditions	Temperature: -10 to 55°C (No low temperature startup: -10 to -1°C) Humidity: 20 to 90% (without condensation) (Conditions for guaranteed operation and characteristics)
Dust	Communication equipment room or office environment (0.15 mg/m <sup>3</sup> or less)
Gaseous contamination	In accordance to IEC 60721-3-3 Class 3C1 Sulphur dioxide SO <sub>2</sub> : Max 0.037 cm <sup>3</sup> /m <sup>3</sup> Hydrogen sulphide H <sub>2</sub> S : Max 0.0071 cm <sup>3</sup> /m <sup>3</sup> Chlorine Cl : Max 0.034cm <sup>3</sup> /m <sup>3</sup> Hydrogen chloride HCl : Max 0.066 cm <sup>3</sup> /m <sup>3</sup> Hydrogen fluoride HF : Max 0.0036 cm <sup>3</sup> /m <sup>3</sup> Ammonia NH <sub>3</sub> : Max 0.42 cm <sup>3</sup> /m <sup>3</sup> Ozone O <sub>3</sub> : Max 0.005 cm <sup>3</sup> /m <sup>3</sup> Nitrogen oxides NO <sub>2</sub> : Max 0.052 cm <sup>3</sup> /m <sup>3</sup>
EMI (Electro Magnetic Interference - regulation)	FCC (part 15) Class A EN55022 Class A VCCI Class A

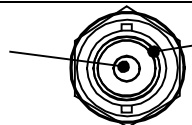
### A.2.3 Function specifications

This chapter describes functional specifications of individual parts of this equipment.

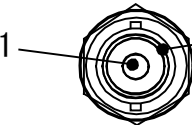
(IP-920E only)

Name	Specifications		Remarks
Digital SDI VIDEO input	Signal format: NRZI Input impedance: 75Ω (Unbalanced) Signal amplitude: 800mVp-p Maximum amplitude level: 800mVp-p ± 10%		
Connector name	SDI	BNC	
Pin number	Signal name	Remarks	
1	SIGNAL		
2	SG		

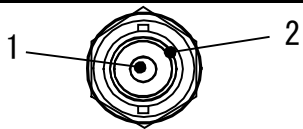
(IP-920E only)

Name	Specifications		Remarks
Analog VIDEO input	Signal format: NTSC (Analog composite, 29.97frames/s) PAL (Analog composite, 25frames/s) Input impedance: 75Ω (Unbalanced) Signal amplitude: 1.0 Vp-p Maximum amplitude level: 0.5dB (0dB=100IRE) Permissible cable length: 30m (3C-2T or equivalent)		
Connector name	ANALOG VIDEO IN	BNC	
Pin number	Signal name	Remarks	
1	SIGNAL		
2	SG		

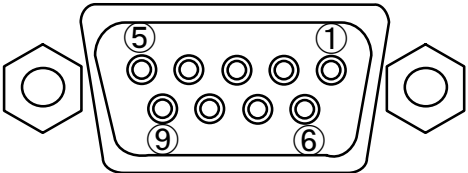
(IP-920D only)

Name	Specifications		Remarks
Digital SDI VIDEO output	Signal format: NRZI Output impedance: 75Ω (Unbalanced) Signal amplitude: 800mVp-p Maximum amplitude level: 800mVp-p ± 10%		
Connector name	SDI	BNC	
Pin number	Signal name	Remarks	
1	SIGNAL		
2	SG		

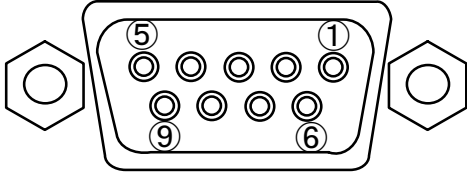
## (IP-920D only)

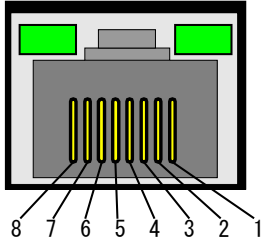
Name	Specifications		Remarks
Analog VIDEO output	Signal format: NTSC (Analog composite, 29.97frames/s) PAL (Analog composite, 25frames/s) Output impedance: 75Ω (Unbalanced) Signal amplitude: 1.0 Vp-p Maximum amplitude level: 0.5dB (0dB=100IRE) Permissible cable length: 30m (3C-2T or equivalent)		
Connector name	ANALOG VIDEO OUT	BNC	
Pin number	Signal name	Remarks	
1	SIGNAL		
2	SG		

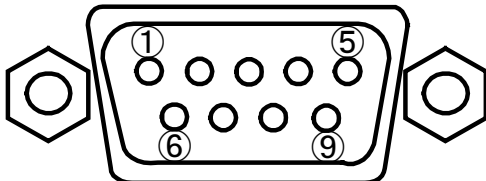
## (IP-920E only)

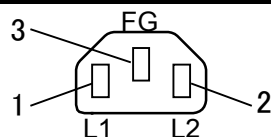
Name	Specifications		Remarks
Analog AUDIO input	Signal format: Analog audio Input impedance: 600Ω (Balanced) Signal amplitude: Max. 12Vp-p		
Connector name	ANALOG AUDIO IN	D-sub 9 pin(Female)	
	Signal name	Remarks	
1	N.C		
2	N.C		
3	HOT(L)		
4	COLD(L)		
5	SG		
6	HOT(R)		
7	COLD(R)		
8	N.C		
9	S G		

(IP-920D only)

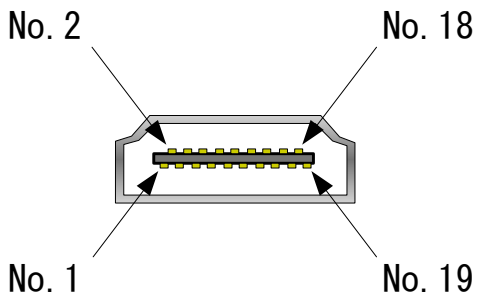
Name	Specifications		Remarks
Analog AUDIO output	Signal format: Analog audio Output impedance: 600Ω (Balanced) Signal amplitude: Max. 12Vp-p		
Reference (BB) Input	Signal format: BB(NTSC) w/o SETUP, BB(PAL) Input impedance: 75Ω (Unbalanced) Signal amplitude : 1.0Vp-p Maximum amplitude level: +0.5dB (0dB=100IRE)		
Connector name	ANALOG AUDIO OUT	D-sub 9 pin(Female)	
	Signal name	Remarks	
1	N.C		
2	N.C		
3	HOT(L)		
4	COLD(L)		
5	SG		
6	HOT(R)		
7	COLD(R)		
8	REF		
9	S G		

Name	Specifications		Remarks
LAN interface	[10BASE-T] System standard: IEEE802.3 Transmission clock: 10Mbit/s±10000ppm(±0.01%) Load impedance: 100Ω Transmission coding: Manchester coding		
	[100BASE-TX] System standard: IEEE802.3u Transmission clock: 125 Mbit/s±5000ppm(±0.005%) Load impedance: 100Ω Transmission coding: 4B5B		
Connector name	10/100 BASE	RJ-45	
Pin number	Signal name	Remarks	
1	TD+	Trans. data+	
2	TD-	Trans. data-	
3	RD+	Reciv. data+	
4	N.C.	-	
5	N.C.	-	
6	RD-	Reciv. data-	
7	N.C.	-	
8	N.C.	-	
Cable	Standard: ANSI/TIA/EIA568A CAT5 Pin assignment: Comply with one of two below Pin No.    1    2    3    4    5    6    7    8 T568A   W/G   G   W/O   Bl   W/Bl   O   W/Br   Br T568B   W/O   O   W/G   Bl   W/Bl   G   W/Br   Br [W: white, G: green, O: orange, Bl: blue, Br: brown]		

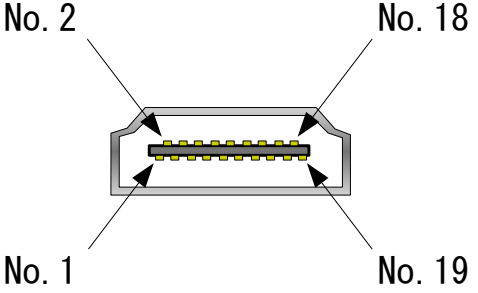
Name	Specifications		Remarks
Data interface (RS-232C)	No. of CH : 1 ch Signal system : Asynchronous Connection : DTE Bit rate : 1200, 2400, 4800, 9600, 19200, 38400 bps Data length : 7/ 8 Parity : NONE/ODD/EVEN Stop bit : 1/2		RS-232C
Connector name	RS-232C	D-sub 9 pin(male)	
Pin number	Signal name	Remarks	
1	CD	Carrier Detect	
2	RD	Receive Data	
3	SD	Send Data	
4	DTR (ER)	Data Terminal Ready	
5	SG	Signal Ground	
6	DSR (DR)	Data set Ready	
7	RTR (RS)	Request to Send	
8	CTS (CS)	Clear to Send	
9	RI	Ring Indicator	

Name	Specifications		Remarks
POWER	Parallel 2 pin with ground Input voltage : 100-240VAC±10% Connector : Inlet Button : Locker button Input protection : Built-in fuse Withstand voltage : 1,500 VAC		
Connector name	100-240V		
Pin number	Signal name	Remarks	
1	L1		
2	L2		
3	FG		

(IP-920E only)

Name	Specifications	Remarks
HDMI input	Version : 1.2a	Length of the attested HDMI cable is pretermisson. The unattested cable can't be used. DVI isn't supported.
	Signal format : TMDS	
	Input impedance : 50 ohms ±10%	
	Maximum length : -----	
	connector : 19PIN Type A	
Connector name	HDMI IN	HDMI 19 pin Type A
Pin number	Signal name	Remarks
1	TMDS DATA2 +	
2	TMDS DATA2 SHIELD	
3	TMDS DATA2 -	
4	TMDS DATA1 +	
5	TMDS DATA1 SHIELD	
6	TMDS DATA1 -	
7	TMDS DATA0 +	
8	TMDS DATA0 SHIELD	
9	TMDS DATA0 -	
10	TMDS CLOCK +	
11	TMDS CLOCK SHIELD	
12	TMDS CLOCK -	
13	CEC	
14	RESERVE(N.C)	
15	SCL	
16	SDA	
17	DDC/CEC GROUND	
18	+5V POWER	
19	HOT PLUG DETECT	

(IP-920D only)

Name	Specifications	Remarks
HDMI output	Version : 1.2a Signal format : TMDS Output impedance : 50 ohms ±10% Maximum length : ----- connector : 19PIN Type A	Length of the attested HDMI cable is pretermisson. The unattested cable can't be used. DVI isn't supported.
Connector name	HDMI OUT	HDMI 19 pin Type A
Pin number	Signal name	Remarks
1	TMDS DATA2 +	
2	TMDS DATA2 SHIELD	
3	TMDS DATA2 -	
4	TMDS DATA1 +	
5	TMDS DATA1 SHIELD	
6	TMDS DATA1 -	
7	TMDS DATA0 +	
8	TMDS DATA0 SHIELD	
9	TMDS DATA0 -	
10	TMDS CLOCK +	
11	TMDS CLOCK SHIELD	
12	TMDS CLOCK -	
13	CEC	
14	RESERVE(N.C)	
15	SCL	
16	SDA	
17	DDC/CEC GROUND	
18	+5V POWER	
19	HOT PLUG DETECT	



LED name		ON	Blinking	OFF	Remarks
PWR	G	Turn ON Power	---	Power OFF	
RDY	G	Normal operation	Starting up	Software inactive	Blink interval: 0.5s Maintenance mode (Cancel button startup): LAN subnet mask (255.0.0.0)
	O	Maintenance mode LAN (IP=10.0.0.1, Subnet=255.0.0.0)	Maintenance mode starting up		
ALM	O	Equipment alarm	FAN alarm Temperature alarm CF card access error IP address acquisition failure	Normal operation	
IN DWN (IP920E only)	O	Video input down/fault	Reference clock slipping Reference clock input down/fault	Normal operation	HD-SDI video input or reference clock input monitoring
LINK/ACT [LAN]	G	LINK established	LAN packets detection	Cable disconnection or software inactive	
100M	G	100BASE operation	---	10BASE operation	
OPT (IP-920E only)	G	HD-option installed	---	HD-option not installed	
DEC (IP-920D only)	G	Decoding stream	Packet loss	Not decoding stream	
		---	Reference input signal down Reference input signal synchronization error		

G: Green, O: Orange

Name	Button type	Specifications	Behavior
POWER	Locker button	Turn ON/OFF	

## A.3

# Preparations for Installation Work

This section contains notes and describes check items for installation work.

### A.3.1 Scope of installation work

For details about the scope of installation work, refer to Section 4.1, “Installation Preparations.”

### A.3.2 Unpacking and device check

Unpack and check this equipment as follows:

- During unpacking, carefully handle this equipment so as not to apply shock to it or damage its appearance.
- Check this equipment and accompanying package are not damaged.
- Check wiring does not have a short circuit and is not disconnected.
- Check no incorrect screws are contained in the package.

### A.3.3 Installation conditions

For the classification of this work, refer to Section 2.1, “Installation Conditions.”

The installation method may differ depending on the site where this equipment is installed. In principle, the installation method conforms to the appropriate method for the site.

Do not install this equipment at the following locations:

- Place exposed to direct sunlight or near a heater.
- Humid or dusty place
- Place where this equipment is exposed to shock or vibration
- Unstable place, such as on a slope or place with a lot of weight on it
- Place where this equipment is subject to strong magnetic and radio waves

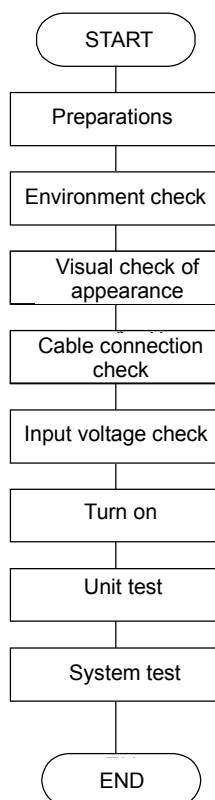
### A.3.4 Connecting external cables

Refer to Chapter 2, “Installation and Connection,” for the connection methods, Section 4.2, “Cables and Connector Details,” and A.2.3, “Function specifications,” for device connector pin assignments.

**A.4**

## Preparations for On-site Turn-up

This chapter explains the workflow of on-site turn-up.



Since system configurations of this equipment are diverse depending on the applications used, this chapter describes the checking process for only a single device.

**(1) Preparations**

- 1) Check the system configuration  
Check the entire system configuration.
- 2) Check the units and cables to be connected to this equipment  
Check the units to be connected to this equipment, cables that have to be procured, and installation conditions.
- 3) Tools and measuring instruments necessary for work:
  - Digital multimeter
  - General-purpose tools

**(2) Environment check**

- 1) Ambient air temperature, humidity and power supply  
Check the ambient air temperature, the humidity and power supply conform to A.2.2, “Environment Specifications.
- 2) Ground connection (FG)  
Check using a grounding resistance of 100 ohms, a wire of 2mm<sup>2</sup> or thicker, or your country’s applicable standard.

**(3) Visual check of appearance**

- 1) Check this equipment surface has no damage such as scratches, dirt, rust, deformation or peeling of its coating.
- 2) Check the patent nameplate and device nameplate are still attached, and that buttons are not damaged.
- 3) Check the connectors are not loose.

**(4) Cable connection check**

Check the individual cables are connected as prescribed in system specifications.  
Refer to Chapter 2, “Installation and Connection,” for the connection methods, Section 4.2, “Cables and Connector Details,” and A.2.3, “Function specifications,” for device connector pin assignments.  
Hardware settings need not be set in this equipment.

**(5) Input voltage check**

Check the voltage of power supplied to this equipment is in a range of 100-240 VAC ± 10%.

**(6) Turn on**

- 1) Set Power button on the front panel to [ON].
- 2) Check PWR LED lamp on the front panel is on.

**(7) Unit test**

- 1) Since this device executes a self-check immediately after power is turned on, check the RDY LED on the front of the panel does not light after power is turned on.
- 2) The LEDs light if the self-check detects an unusual condition.

**(8) System test**

- 1) Software installation  
Install appropriate software following IP-900 Series Software User's Guide.
- 2) Set-up check  
Various devices settings complying with the system specification are made from the control terminal either directly or via the network.
- 3) Input video check  
Check the video input to this equipment is correctly output to the monitor (television).
- 4) Data communication check  
Check the line used by the system is connected.
- 5) Status check  
After the final setup, when the equipment is in the system operation state, check this equipment status LED (RDY) on the front of this equipment lights in green, and that the alarm LED (ALM) is off.

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## Glossary and Index

Glossary .....	91
Index .....	94
CE Conformity Information .....	96

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# Glossary

## Alarm Log

Record of errors that have occurred on devices and communication lines

## BB (Black Burst)

This is the black color level signal to use the synchronization.

## BNC (Bayonet Neill Concelman)

Type of coaxial connector whose characteristic impedance is 75  $\Omega$ . A locking system called a bayonet lock is used, ensuring cables are easy to connect and remove, and secure connections. The connector is compact and lightweight and has a frequency range compatible with the high frequency of 4 GHz, so it can be used for measuring instruments and digital audio equipment.

## Browser

General name for programs that support users who want to select desired options from available options. Using a browser, a user can trace links on the Internet to access such multimedia information as text, audio, and video by simply using a pointing device (e.g., mouse) to select items.

## DCE (Data Circuit terminating Equipment)

Data circuit terminating equipment. DCE is a term from ITU-T. Similar to modems and DSUs, it changes signals to waveform that are suitable for their transmission routes.

## DHCP (Dynamic Host Configuration Protocol)

This is the protocol to assign IP address dynamically when startup and to release it when shutdown. The IP address prepared by DHCP server is assigned.

## DTE (Data Terminating Equipment)

Data terminating equipment. It is one kind of terminal equipment (e.g., PC). DTE is a term from ITU-T and is paired with DCE.

## Embedded Audio

It is the scheme to embed (multiplex) AES/EBU digital audio signals in the auxiliary data area (blanking area) of the serial digital signal.

## FG (Frame Ground)

Ground for a cabinet

## Flow Control

Procedure for controlling the flow of data between two devices. Its purpose is to prevent data loss when this equipment buffer becomes full.

## Gateway

Equipment that connects network systems that use different protocols. It basically converts one protocol into another to support operation between two networks. In a broader sense, a gateway sometimes means a device that transfers information between any two networks.

## HD-SDI (High Definition television – Serial Digital Interface)

HD-SDI is the serial digital interface to transmit HD (High Definition) video signal, which transmission rate is 1.485 Gbps. It can transmit multiplexing HD video signal, PCM audio signal and data signal such as time stamp.

## HDMI (High Definition Multimedia Interface)

One of the multimedia interfaces integrated the audio, video and control and communicate each other.

## H.264

This is one of the video compression coding systems standardized in ITU (International Telecommunication Union) in May, 2003. It is also standardized as a part of MPEG-4 (MPEG-4 part 10 Advanced Video Coding) in ISO (International Organization for Standard). Therefore, it is commonly called H.264/MPEG-4 AVC or H.264/AVC, showing both of parties.

This technology is used for the various applications from the low bit rate and low resolution of the mobile TV to the high bit rate, high resolution of HDTV. It is improved that the data capacity is half comparing MPEG-2 used wide spread.

## HTTP (Hyper Text Transfer Protocol)

Protocol used for sending and receiving files and other data between a WWW server and WWW browser

## Hub

Concentrator required for using 10BASE-T or 100BASE-TX as a local area network (LAN)

standard. Twisted-pair cables are used to connect hubs. A high-speed hub conforms to 100BASE-TX, and a switching hub has switching functions.

#### IP (Internet Protocol)

Protocol used between host computers to transfer packets over all of the Internet. The codes that identify the destinations and senders in packet transfers are called IP addresses. An IP address is a 32-bit code that can identify a network and host in the network. A unique IP address must be allocated to each hosts that communicates on the Internet.

#### IP Address

Code used for identifying a node (e.g., PC) operating using TCP/IP. This 32-bit number is divided into four 8-bit sections, and an example of this is 200.10.101.1.

#### IP Multicast

Technology for transmitting identical data to multiple remote destinations simultaneously using TCP/IP. An address system called class D is used for multicasting. In the class D address system, the first four bits (1110) indicate a multicast, and the remaining 28 bits specify a multicast group. Path control methods for IP multicasting are PIM and DVMRP, but no one method has become the standard yet.

#### LAN (Local Area Network)

Data communication system in a specific area (maximum of 6 miles or about 10 km). It provides moderate to high data transfer speeds.

#### LED (Light-Emitting Diode)

The IP-920E/IP-920D has a power LED lamp and alarm LED lamps. The power LED lamp is lit in green to indicate this equipment is on. An alarm LED lamp is lit in red to indicate that an alarm has been generated.

#### MPEG-4

Standard for the compression and coding of color video for storage purposes, and the name of the organization promoting this standardization is used in the name of the standard. MPEG-4 handles not only regular image and voice data but also a comprehensive range of multimedia data, including computer graphics and text. It defines a flexible framework for a scalable object encoding system depending on technological developments. It has a transfer speed ranging from several tens of Kbps to several tens of Mbps (low bit rate

to wide range). It is intended for low-speed communication by general-purpose multimedia encoding systems on mobile terminals.

#### PING

A command supported by operating systems such as UNIX and Windows that are used in a TCP/IP network to determine whether IP packets can reach or have reached a communication destination.

#### PPPoE (Point to Point Protocol over Ethernet)

This is the user authentication standard for the connection such as PPP connection on the Ethernet network.

#### PS

MPEG-2 method of multiplexing audio, video, and data. It is an abbreviation of Program Stream, and it is used for transmission and storage in an error-free environment.

#### RS-232C

Interface standard that was mainly established by the Electronics Industry Association (EIA) for communication between data terminals and data communications equipment

#### SD-SDI (Standard Definition television – Serial Digital Interface)

Standard definition digital video interface standardized in SMPTE259M.

#### SG (Signal Ground)

Ground for signals

#### Subnet Mask

Mask value used for obtaining a subnet network address from an IP address. The subnet address is obtained by using an AND operation between an IP address and subnet mask.

#### TCP (Transmission Control Protocol)

Abbreviation of Transmission Control Protocol, the protocol required for direct connection to the Internet. In the OSI reference model, TCP corresponds to the transport layer and IP corresponds to the network layer. TCP has been a global standard protocol that is supported by major operating systems, including UNIX, OS/2, and Windows.

#### TS (Transport Stream)

The stream used in the multi-programs multiplexing, standardized in MPEG-2 systems. The transport stream offers features for error correction for transportation over unreliable media, and is used in broadcast applications and ATM

telecommunication.

#### TTL (Time To Live)

Abbreviation of time to live, which indicates the survival time of a packet in a network. If a packet sent to a network happens to enter a loop because of a setting error on a router, it will not survive forever but will be discarded when the time specified in the Time To Live field of the IP header is reached.

#### UDP (User Datagram Protocol)

Abbreviation of User Datagram Protocol, which is a TCP/IP transaction protocol used for specific applications such as remote network management and naming service access

#### Unicast

Communication with a station at a single address (i.e., most general one-to-one communication)

#### UTP Cable

Abbreviation of unshielded twisted pair. It is a unshielded pair of wires twisted together, and these wires are used for Ethernet cabling and other purposes.

#### 10BASE-T

LAN that uses unshielded twisted-pair (UTP) cables and complies with the IEEE 802.3 standard. A 10BASE-T connection uses a concentrator called a hub. It is widely used because special cabling work is not necessary and wiring can be done easily. The maximum length of cable wiring is 100 m.

#### 100BASE-TX

One of the 100BASE LAN standards (also called Fast Ethernet), it supports a transfer rate of 100 Mbps. Other 100BASE standards are 10BASE-T4 and 100BASE-FX, and the difference is the type of cable used. 100BASE-TX uses unshielded twisted-pair (UTP) cables. It also uses the RJ-45 connector, which is similar to the modular jacks used for telephones.

# Index

## 1

100-240VAC .....	3, 77, 81
100-240VAC power cord .....	57
100BASE-TX .....	3, 6, 8, 36, 80
10BASE-T .....	3, 6, 8, 36, 80

## A

Alarm LED .....	6, 8
Alarm LED lamp .....	68
Analog AUDIO cable .....	50
Analog VIDEO cable .....	49
Appearance .....	75
Appendix .....	73
AUDIO Adapter cable .....	51, 52, 53
Audio and video device connections .....	34
Audio input .....	3, 7
Audio output .....	3, 8
AUX port .....	7, 9
AV input status LED .....	6

## B

Basic application examples .....	5
Basic specifications .....	77

## C

Cable and connector details .....	49
Cable Specifications .....	45
CF card .....	38
CF Card Insertion and Removal .....	38
CF CARD slot .....	3, 7
Change of maintenance parts .....	71
Components .....	4
Connecting external cables .....	84
Connection to an RS-232C device .....	37
Connection to ground .....	30
Connection to network .....	36
Connection to power source .....	31
Cooling method .....	77
Cooling system .....	3

## D

Data input/output .....	3
-------------------------	---

### IP-920E/IP-920D

Data interface .....	81
Decoder LED .....	8
Device settings and operation .....	42
Dimensions .....	3, 77
Dust .....	77

## E

Environment specifications .....	77
External specifications .....	77

## F

FG terminal .....	7, 8
Function specifications .....	78

## G

Glossary .....	91
Glossary and Index .....	89

## H

HDMI .....	3, 7, 9, 34, 35, 82
HDMI cable .....	54
HD-SDI .....	7, 9, 35
Help Information .....	61
Humidity .....	3, 77

## I

Index .....	94
Installation and Connection .....	11
Installation conditions .....	3, 13, 77, 84
Installation preparations .....	47
IP address .....	44, 64, 67

## L

LAN cable .....	56
LAN interface .....	80
LAN port .....	6, 8

## M

Main features .....	3
---------------------	---

Maintenance mode switch .....	7, 9
Maintenance space.....	70

## N

Network .....	3
NTSC .....	3

## O

Operation Instructions.....	41
Option LED .....	6

## P

Part names.....	6
Power.....	77, 81
Power button.....	6, 8
Power consumption.....	3, 77
Power inlet connector .....	6, 8
Power LED .....	6, 8
Power ON/OFF .....	41
Power supply .....	3
Power supply system connections .....	30
Powering off .....	41
Powering on.....	41
Preparation for installation work .....	84
Preparations .....	1
Preparations for On-site Turn-up .....	85

## R

RS-232C .....	7, 8
RS-232C cable.....	55

RS-232C interface.....	81
RS-232C port .....	7, 8

## S

Scope of installation work.....	84
SDI VIDEO cable .....	49
SD-SDI.....	35
Setup operations.....	42
Special Use of Cancel Key.....	44
Status LED .....	6, 8

## T

Temperature .....	3, 77
Troubleshooting .....	59

## U

Unpacking and device check.....	84
UTP cable.....	36

## V

Video input.....	3, 7, 9, 78
Video output.....	3, 7, 9, 78, 79, 80

## W

Web browser recommended.....	42
Weight.....	3, 77

# **CE Conformity Information**

Following address can be reached at for regarding the CE conformity information.

Fujitsu Services Limited  
Address: 22 Baker Street, London, W1U 3BW, United Kingdom

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