FUJITSU

IP-900 Series V02
SOFTWARE USER'S GUIDE

USING IP-900 Series SAFELY

Handling of This Manual

This manual contains important information regarding the safe use of IP-900 series. Before using this product, please read this document thoroughly and pay particular attention to the "Notes on Safety." Be sure to keep this document in a safe and convenient location for quick reference.

Fujitsu makes every effort to prevent users and bystanders from being injured and to prevent property damage. Be sure to use this product in accordance with the instructions in this manual.

Warning on Electromagnetic Interference

The following notice is for USA users only.

IP-900 series have been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Regulations. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generate, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction document, 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 contains technology controlled by Foreign Exchange and Foreign Trade Law. This document or a portion thereof must not be exported (or re-exported) from Japan without authorization from the appropriate Japanese governmental authorities in accordance with such laws.

It is strictly inhibited to copy or reverse-engineer (reverse-assemble or reverse-compile) any programs included in the relevant equipment.

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PREFACE

This document explains how to use software for IP-900 series.

For information on how to install IP-900 series, connect cables and use buttons and LEDs, refer to the following manual:

- IP-900 Series User's Guide

This document is intended for system designers or administrators who use IP-900 series. It assumes that these users have a basic understanding of networks and video streaming.

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June 2018

Product Use Environment

The product explained in this document is designed and manufactured for use in standard applications such as general office work, personal devices and household appliances. This product has not been designed or manufactured for special uses requiring extremely high levels of safety, or if the required level of safety cannot be ensured, for uses where a failure, operational error or some other factor could be life-threatening or cause a physical injury (such as nuclear-reactor control in atomic facilities, automatic flight control, air traffic control, mass transportation control, medical devices for life support, or missile launch controls in weapons facilities). (In this document, these special uses are referred to as "high-risk" uses.) The customer is urged not to use this product without taking measures to guarantee the level of safety required for such high-risk uses. Customers that are likely to use this product for high-risk applications are requested to consult our sales representative before embarking on such specialized use.

Note

The contents of this manual may be revised without prior notice.

ALERT INDICATIONS

This document uses various alert indications to urge the user to use the equipment safely, to prevent users and bystanders from suffering personal injury or property damage. Alert indication consists of alert signal and alert statement. The alert signals and their meanings are as follows.

⚠WARNING	This indicates a hazardous situation that could result in death or serious personal injury if you do not perform the procedure correctly.
⚠ CAUTION	This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Alert Indication in This Manual

An alert statement follows an alert signal. An alert signal is provided in the center of a line. An alert statement is indented on both ends to distinguish it from regular text. Similarly, one space line is inserted before and after the alert statement.

(Example)

⚠WARNING

Electric shock
Consult the system administrator when checking the voltage at the outlet.
Otherwise, electric shock may result.

NOTE ON HANDLING THE PRODUCT

Maintenance

⚠WARNING

Users must not attempt to repair IP-900 series themselves. Consult the Fujitsu Service Center.

⚠ CAUTION

Read this document thoroughly before using the product. For clarification of any unclear points regarding the use of the product, consult the Fujitsu Service Center.

If a fault occurs, contact the Fujitsu Service Center with information on the fault and the alarm LED status.

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.

CONTENTS

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Chapter 1
Before Using This Product

This chapter explains items to be confirmed before using IP-900 series.

1.1 Main Features

IP-900 series is a video encoder that uses the high compression video encoding technology H.264. It enables real-time streaming of high definition (HD) and standard definition (SD) video through the optical fiber networks like FTTH.

The IP-9x0E can work as an encoder and the IP-9x0D as a decoder. When operating as an encoder, the IP-9x0E encodes input video and audio signals into the H.264 format and distributes the results over an IP network in real-time processing. When operating as a decoder, the IP-9x0D decodes encoded data received over an IP network and outputs the results as audio and video signals. In addition, the IP-9x0E operating as an encoder provides a recorder function (*1), which allows HD video data to be transmitted over a longer period of time even when the network bandwidth is low.

Also, IP-9x0E supports two types of operation mode. Encoding operation has a real-time transmission mode of stream encoded by each main encoder and sub encoder per one input, and a mode supporting audio stereo 2 channels at main encoder, which is selectable as usage.

Table 1-1 Operation Mode

Operation Mode	Main Encoder		Sub Encoder	
	Coding	Audio Channel	Coding	Audio Channel
Main H.264/MPEG-4 AVC 1stereo | Sub H.264/MPEG-4 AVC 1stereo	H.264	Stereo 1ch	H.264	Stereo 1ch
Main H.264/MPEG-4 AVC 2stereo	H.264	Stereo 2ch (*)	-	-

* In that case, sub encoder function is not available.

Table 1-2 IP-9x0E Specifications (Main H.264/MPEG-4 AVC 1 Stereo | Sub H.264/MPEG-4 AVC 1 Stereo)

The main HD video and sub HD video functions are enabled when HD option is installed.

"Ultra Low Latency (PPPP)" is enabled when Ultra low latency option is installed.

Item		Specification
Main HD video	Encoding format	H.264 HP@L4 H.264 MP@L4
	Input video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1920 x 1080i (60 -> 59.94 Hz) * 60 Hz is converted at the input interface to 59.94 Hz and encoded/transmitted at 59.94 Hz. 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	1920 x 1080: 100 Kbps to 27 Mbps 1440 x 1080: 100 Kbps to 27 Mbps 960 x 1080: 100 Kbps to 27 Mbps 1280 x 720: 3 to 27 Mbps 960 x 720: 2 to 27 Mbps 640 x 720: 500 Kbps to 27 Mbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle.
	GOP	Open / Closed selectable
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	High profile / Main profile selectable
	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP)
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable
	Refresh cycle	Selection can be made in three stages
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interface	Input: HD-SDI, HDMI (HDCP unsupported)
Main SD video	Encoding format	H.264 HP@L3 H.264 MP@L3 H.264 HP@L1.3 H.264 MP@L1.3
	Input video format	720 x 480i (59.94 Hz) 720 x 576i (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	720 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 240 (59.94 Hz input): 25 to 1000 Kbps 720 x 576 (50 Hz input): 300Kbps to 10 Mbps 352 x 576 (50 Hz input): 150 Kbps to 10 Mbps 352 x 288 (50 Hz input): 25 to 1000 Kbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle.
	GOP	Open / Closed selectable

Item		Specification
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	High profile / Main profile selectable
Main SD video	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP) * This selection is available for video resolution 720 x 480, 720 x 576, 352 x 480, or 352 x 576, and is not available for others.
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable * This selection is available for video resolution 720 x 480, 720 x 576, 352 x 480, or 352 x 576, and is not available for others.
	Refresh cycle	Selection can be made in three stages
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interfaces	Input: SD-SDI, HDMI (HDCP unsupported), and analog video
Sub HD video	Encoding format	H.264 HP@L4 H.264 MP@L4
	Input video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1920 x 1080i (60 -> 59.94 Hz) * 60 Hz is converted at the input interface to 59.94 Hz and encoded/transmitted at 59.94 Hz. 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	1920 x 1080: 100 Kbps to 27 Mbps 1440 x 1080: 100 Kbps to 27 Mbps 960 x 1080: 100 Kbps to 27 Mbps 1280 x 720: 3 to 27 Mbps 960 x 720: 2 to 27 Mbps 640 x 720: 500 Kbps to 27 Mbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle.
	GOP	Open / Closed selectable
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	High profile / Main profile selectable
	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP)
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable
	Refresh cycle	Selection can be made in three stages
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interfaces	Input: HD-SDI and HDMI (HDCP unsupported)
Sub SD video	Encoding format	H.264 HP@L3 H.264 MP@L3 H.264 HP@L1.2 H.264 MP@L1.2

Item		Specification
	Downconverter	Letter box / Side cropped / Squeeze
Sub SD video	Input video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 -> 59.94 Hz) * 60 Hz is converted at the input interface to 59.94 Hz and encoded/transmitted at 59.94 Hz. 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) 720 x 480i (59.94 Hz) 720 x 576i (50 Hz)
	Bit rate	720 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 240 (59.94 Hz input): 25 to 1000 Kbps 176 x 112 (59.94 Hz input): 25 to 1000 Kbps 720 x 576 (50 Hz input): 300Kbps to 10 Mbps 352 x 576 (50 Hz input): 150 Kbps to 10 Mbps 352 x 288 (50 Hz input): 25 to 1000 Kbps 176 x 144 (50 Hz input): 25 to 1000 Kbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle
	GOP	Open / Closed selectable
	Video PES	“1Field/1PES” / “1Frame/1PES” selectable
	Profile selection	High profile / Main profile selectable
	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP) * Can be selected when the video resolution is 720 x 480, 720 x 576, 352 x 480, or 352 x 576.
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable * This selection is available for video resolution 720 x 480, 720 x 576, 352 x 480, or 352 x 576, and is not available for others.
	Refresh cycle	Selection can be made in three stages.
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interfaces	Input: HD/SD-SDI, HDMI (HDCP unsupported), and analog video
Main audio	Encoding format	MPEG-1 Audio Layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio Layer 2: 128/256/384 Kbps MPEG-2 AAC: 64/128/256 Kbps (VBR) 56/64/128/256/384 Kbps (CBR)
	Number of channels	2
	Interfaces	Input: HD/SD-SDI (embedded) - Up to 2 channels HDMI - Up to 2 channels Analog (*1): - Up to 2 channels
Sub audio	Encoding format	MPEG-1 Audio Layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio Layer 2: 128/256/384 Kbps MPEG-2 AAC: 64/128/256 Kbps (VBR) 56/64/128/256/384 Kbps (CBR)

Item		Specification
Sub audio	Number of channels	2
	Interfaces	Input: HD/SD-SDI (embedded) - Up to 2 channels HDMI - Up to 2 channels Analog (*1) - Up to 2 channels
Multiplexing method		MPEG-2 TS with time stamp, MPEG-2 TS
Error correction		FEC, ARQ, SMPTE2022-1 FEC
Transport protocol		UDP, RTP
Network interface		10 BASE-T/100 BASE-TX (PPPoE built in) 1 port
Network time setting		SNTP client
Network management		SNMP agent
Data communication		RS-232C data communication
Superimpose		Superimpose up to four character string or time indication on input video
Local recording and file transfer		Supported CF(*2) card: 16 GB / 32 GB * Enables to record when the Main encoder system rate is less than 14.049 Mbps and the sub encoder system rate is less than 1.549 Mbps. Enables to record and load video data simultaneously when the system rate is less than 6.049 Mbps.

*1: IP-900: unbalanced, IP-920: balanced.

*2: Order CF card, separately.

Table 1-3 IP-9x0E Specifications (Main H.264/MPEG-4 AVC 2stereo)

The main HD video and sub HD video functions are enabled when HD option is installed.
"Ultra Low Latency (PPPP)" is enabled when Ultra low latency option is installed.

Item		Specification
Main HD video	Encoding format	H.264 HP@L4 H.264 MP@L4
	Input video format	1920 x 1080i (59.94Hz) 1920 x 1080i (50Hz) 1920 x 1080i (60Hz) 1920 x 1080i (60→59.94Hz) * 60 Hz is converted at the input interface to 59.94 Hz and encoded/transmitted at 59.94 Hz. 1280 x 720p (59.94Hz) 1280 x 720p (50Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	1920 x 1080: 100 Kbps to 27 Mbps 1440 x 1080: 100 Kbps to 27 Mbps 960 x 1080: 100 Kbps to 27 Mbps 1280 x 720: 3 to 27 Mbps 960 x 720: 2 to 27 Mbps 640 x 720: 500 Kbps to 27 Mbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle.
	GOP	Open / Closed selectable
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	High profile / Main profile selectable
	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP)
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable
	Refresh cycle	Selection can be made in three stages.
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interface	Input: HD-SDI, HDMI (HDCP unsupported)

Item		Specification
Main SD video	Encoding format	H.264 HP@L3 H.264 MP@L3 H.264 HP@L1.3 H.264 MP@L1.3
	Input video format	720 x 480i (59.94Hz) 720 x 576i (50Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	720 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 480 (59.94 Hz input): 100 Kbps to 10 Mbps 352 x 240 (59.94 Hz input): 25 to 1000 Kbps 720 x 576 (50 Hz input): 300Kbps to 10 Mbps 352 x 576 (50 Hz input): 150 Kbps to 10 Mbps 352 x 288 (50 Hz input): 25 to 1000 Kbps *Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. If pursuing better video quality at a same video rate, we recommend setting a low frame rate, a long refresh cycle.
	GOP	Open / Closed selectable
	Video PES	“1Field/1PES” / “1Frame/1PES” selectable
	Profile selection	High profile / Main profile selectable
	PPS interval	GOP / Picture selectable
	PPS ID	Fixed / Variable selectable
	Encoding control mode	Standard (IBBP) / Motion (IBP) / Low latency (IPPP) / Low latency (PPPP) / Ultra Low Latency (PPPP) * This selection is available for video resolution 720 x 480, 720 x 576, 352 x 480, or 352 x 576, and is not available for others.
	Pre-Filter	HEAVY / MEDIUM / LIGHT / OFF selectable * This selection is available for video resolution 720 x 480, 720 x 576, 352 x 480, or 352 x 576, and is not available for others.
	Refresh cycle	One of three stages can be selected.
	Picture mode	Normal / Dynamic texture
	Coded picture buffer	Normal / Double
	Interface	Input: SD-SDI, HDMI (HDCP unsupported), Analog video
Main audio1	Encoding format	MPEG-1 Audio Layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48kHz
	Bit rate (for 2 channels)	MPEG-1 Audio Layer 2: 128/256/384 Kbps MPEG-2 AAC: 64/128/256 Kbps (VBR) 56/64/128/256/384 Kbps (CBR)
	Number of channels	2
	Interface	Input: HD/SD-SDI (embedded) - Up to 2 channels HDMI - Up to 2 channels, analog (*1) - Up to 2 channels
Main audio2	Encoding format	MPEG-1 Audio Layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48kHz
	Bit rate (for 2 channels)	MPEG-1 Audio Layer 2: 128/256/384 Kbps MPEG-2 AAC: 64/128/256 Kbps (VBR) 56/64/128/256/384 Kbps (CBR)
	Number of channels	2
	Interface	Input: HD/SD-SDI (embedded) - Up to 2channels
Multiplexing method		MPEG-2 TS with time stamp, MPEG-2 TS
Error correction		FEC, ARQ, SMPTE2022-1 FEC

Item	Specification
Transport protocol	UDP, RTP
Network interface	10BASE-T / 100BASE-TX (PPPoE built in) 1 port
Network time setting	SNTP client
Network management	SNMP agent
Data communication	RS-232C data communication
Superimpose	Superimpose up to four character strings or time indication on input video
Local recording and file transfer	Supported CF card(*2): 16 GB / 32 GB * Enables to record when the system rate is less than 14.049Mbps. Enables to record and load video data simultaneously when the system rate is less than 6.049 Mbps.

*1: IP-900: unbalanced, IP-920: balanced.

*2: Order CF card, separately.

Table 1-4 IP-900IID/920D Specifications

"BB setting" of Reference function is enabled when Reference option is installed.

Item		Specification
@Video decoding	Encoding format	H.264 HP@L4 H.264 MP@L4 H.264 HP@L3 H.264 MP@L3 H.264 HP@L1.2 H.264 MP@L1.2 MPEG-2 MP@ML (Enables to receive IP-700II stream)
	Output video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) 720 x 480i (59.94 Hz) 720 x 576i (50 Hz) *1280x720p(29.97Hz) stream is output by 1280x720p(59.94Hz). 1280x720p(25Hz) stream is output by 1280x720p(50Hz) . *1920x1080p(29.97Hz) stream is output by 1920x1080i(59.94Hz).
	Bit rate	1920 x 1080: 100 Kbps to 27 Mbps 1440 x 1080: 100 Kbps to 27 Mbps 960 x 1080: 100 Kbps to 27 Mbps 1280 x 720: 3 to 27 Mbps 960 x 720: 2 to 27 Mbps 640 x 720: 500 Kbps to 27 Mbps 720 x 480: 100 Kbps to 10 Mbps 352 x 480: 100 Kbps to 10 Mbps 352 x 240: 25 to 1000 Kbps 720 x 576: 300Kbps to 10 Mbps 352 x 576: 150 Kbps to 10 Mbps 352 x 288: 25 to 1000 Kbps 176 x 112: 25 to 1000 Kbps 176 x 144: 25 to 1000 Kbps
	Interfaces	Output: HD/SD-SDI, HDMI (HDCP unsupported) and Analog
Upconverter	Input format	480i (59.94Hz)
	Output format	1080i (59.94Hz)
	Converting method	Pillarbox (Fill with side panels), Anamorphic (Stretch to wide screen)
Audio decoding	Encoding format	MPEG-1 Audio Layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio Layer 2: 128/256/384 Kbps MPEG-2 AAC: 64/128/256 Kbps (VBR) 56/64/128/256/384 Kbps (CBR)
	Number of channels	2
	Interfaces	Output: HDMI - Up to 2 channels, Analog (*) - Up to 2 channels
Multiplexing method		MPEG-2 TS with time stamp, MPEG-2 TS, MPEG-2 PS (IP-700II stream reception)
Error correction		FEC, ARQ, SMPTE2022-1 FEC
Transport protocol		UDP, RTP
Reference		PCR, BB, Internal
Network interface		10 BASE-T/100 BASE-TX (PPPoE built in), 1 port
Network time setting		SNTP client
Network management		SNMP agent
Data communication		RS-232C data communication

* IP-900: unbalanced, IP-920: balanced.

1.2 Typical Application Examples

This section provides system configuration examples.

The basic configuration is for video transfer over point-to-point connections. Using this configuration, a camera is connected to Encoder, and video data is transferred to the decoder over the Internet, and then output to the monitor.

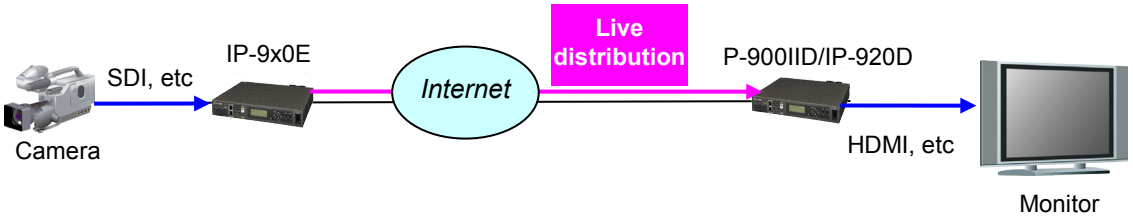

Figure 1-1 Broadcast contents transfer and live coverage

IP-9x0E such as IP-9610 can also be used for SNG video transmission to IP-9610.

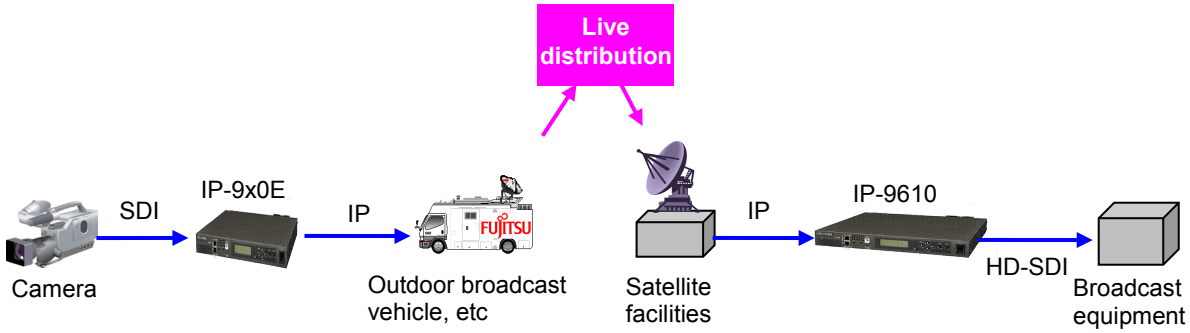

Figure 1-2 SNG System

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Chapter 2
Installation & Operation

This chapter explains how to install IP-900 series.

2.1 Updating the Software

This section explains the procedure for updating the software for the IP-900 series as well as the procedure for applying option license.

The software for the IP-900 series is pre-installed at product shipment. You do not need to install the software before using the IP-900 series. When updating the software to the latest version, use the following procedure.

The latest version can be downloaded from

"http://www.fujitsu.com/global/products/computing/peripheral/video/download/"

2.1.1 Installation Procedure

(1) Access method

Access IP-900 series GUI from the Web browser.

The default IP address of the IP-900 series as it is shipped from the factory is 10.0.0.1. Temporarily disable the proxy setting on your Web browser and then type "http://10.0.0.1" to access the Web page.

(2) Installation page

IP-9x0 ENCODER or IP-9x0 DECODER screen appears. Click SOFTWARE MANAGEMENT in the left frame of the Web browser screen. The Software management screen (installation, etc.) appears in the right frame of the Web browser screen.

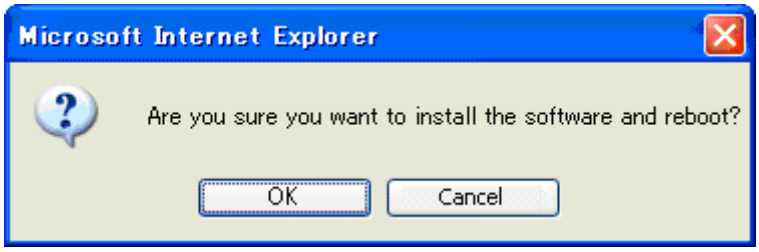
Figure 2-1 Install screen

(3) Selecting software

Select installation file field. Select the file of the software to be updated.

(4) Starting installation

Click the INSTALL button. The following confirmation dialog box appears. Click the OK button to start installation. The equipment is automatically rebooted after install is completed.



* If prior version of software for IP-900 series is already installed, you can install it on the maintenance mode. The equipment can be booted as maintenance mode with pushing MNT button, and the settings are initialized. Click the OK button to start the installation process if you confirm that no problems are occurred by the initialization.

(5) Verifying the startup

Display the IP-900 series setup screen from the Web browser, and verify that the new software has been installed and started.

⚠ CAUTION

Do not power off or press the MNT button during installation. Otherwise, you may prevent IP-900 series from starting.

Do not access another Web page during installation. Otherwise, you may lose information on the progress

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.

2.1.2 Installing an Option License

You can upgrade functions by purchasing option licenses and installing it using IP-900 series Web GUI.

(1) Applying for an installation key

If you have purchased an option license separately from the IP-900 series, you need to apply for an installation key to enable the function upgrade.

To apply for an installation key, enter the necessary information in the application form "IP900Series_LicenseRequestSheet.txt," which is on official website, and send the form by e-mail to fj-ss_nw_ipinskey@dl.jp.fujitsu.com.

When sending the file, you must specify the device serial number of the IP-900 series on which you want to install the upgrade function. You can obtain the device serial number from the label attached to the bottom of the IP-900 series or from the device serial number field on the [Common] - [Operation & Status] page of the IP-900 series on Web GUI.

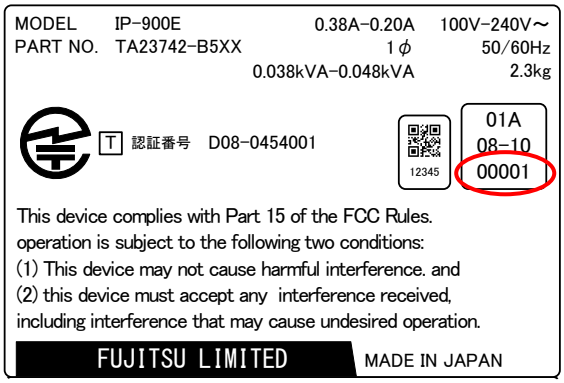


Figure 2-2 Label at the bottom of the IP-900E (e.g.)

Figure 2-3 Operation & Status (Serial number of the unit) (e.g.)

(2) Entering the option license key

Enter the installation license key you have obtained with the application procedure.

Connect to the IP-900 series using a Web browser, and then click [Install] in the left frame of the Web page. The right frame displays the installation page (for installation and related operations). In the option license field, enter the installation key obtained in Step (1) above.

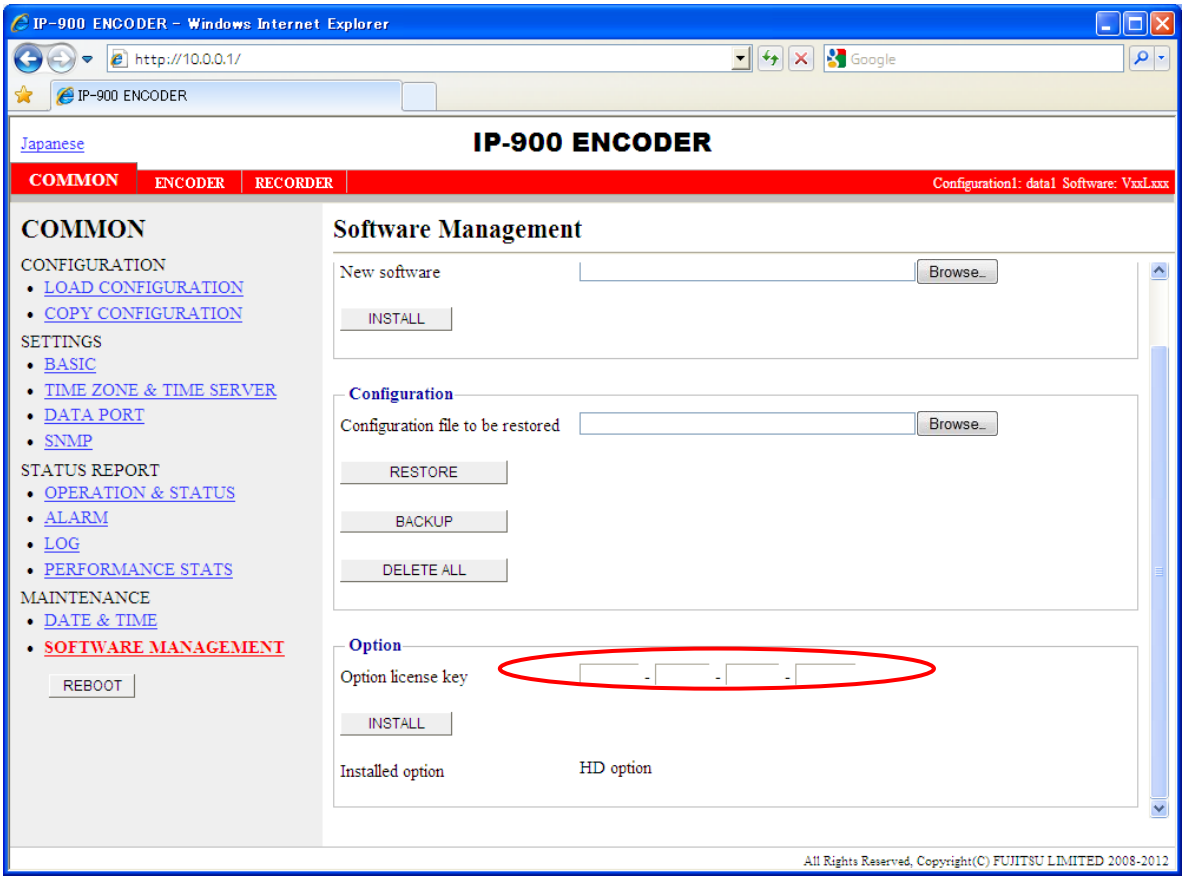


Figure 2-4 Option License Installation

(3) Starting installation

Click the INSTALL button. The confirmation dialog box shown above appears. Click OK button to start installation.

⚠ CAUTION

Do not turn off the power or press the MNT button during installation. Otherwise, you may make the IP-900 series fail to start.

Do not access another Web page during installation. Otherwise, you may lose the installation progress information.

2.2 Equipment Operation

This section explains how to operate IP-900 series software.

The Software can be operated through the Web GUI or the front panel.

2.2.1 Operation through Web GUI

All IP-900 series settings and status information can be checked on the Web GUI. Refer to Chapter 3 "Web Operation," for more information.

2.2.2 Notes

◆In the case of failing to get IP address automatically

When IP-900 series starts, the LAN port:

(1) Cannot access to DHCP server

(2) Attempts, but fails to set up a PPPoE connection.

If the conditions of (1) and (2) above are matched with your situation, all 0s (zero) are displayed and the process of getting IP address is repeated.

Take appropriate corrective action such as reviewing the settings on the DHCP and PPPoE servers or the IP address setting on IP-900 series. (Refer to Section 5.1, "Troubleshooting.")

◆Forcibly changing to the fixed IP address from DHCP, PPPoE

Start the IP-900 series by turning on the power with pressing the MNT button (for about 10 seconds) until the RDY LED lamp starts blinking in orange. The equipment is temporarily started up with the IP address and subnet mask of factory default values (LAN port : IP address:10.0.0.1, Subnet mask: 255.0.0.0).

Use this method to make the IP-900 series initial settings from a PC (*).

* When running the IP-900 series product with the default IP address, set up it after disconnecting from your network.

After configuring the settings to match with your network, connect the product to your network. If the product is connected to your network with factory default values, unexpected problems may occur on your network.

If you started the product with pressing the MNT button, set the IP address and subnet mask of the PC as follows:

- LAN port IP address: 10.aaa.bbb.ccc
(aaa and bbb can be any number from 0 to 255 and ccc can be any number from 2 to 255. Note, however, that the resulting address must be other than 10.255.255.255.)
- LAN port subnet mask: 255.0.0.0

◆Turn off the equipment over PPPoE

If you turn off the power of IP-900 series over PPPoE, the IP-900 series may take extra time to establish the next connection by the network conditions. Follow procedures below to prevent taking time by turning off the power of IP-900 series. In case of turning off the equipment, follow the PPPoE termination procedure.

Hold down the MNT button for three seconds. When the software finishes terminating processes, the product is ready for power-off and the RDY LED goes off.

After verifying that the RDY LED is off, turn the power switch to the "○" position. When the PWR LED is off, the power is turned off.

Chapter 3
Web Operation

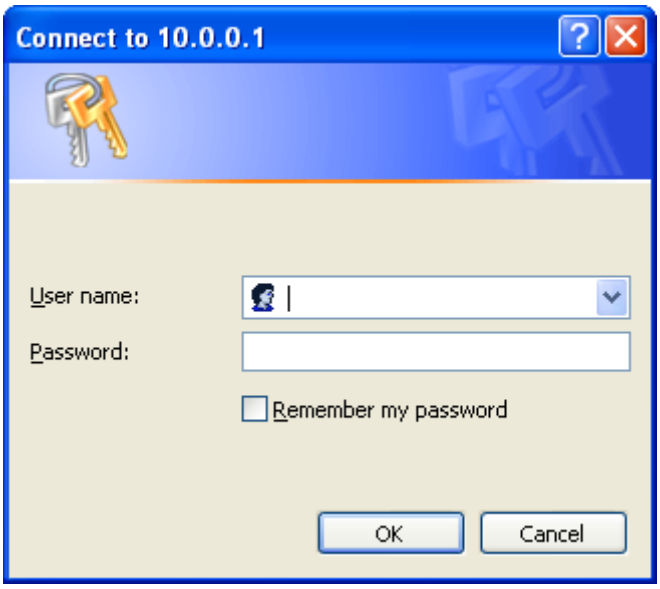
This chapter explains how to operate each function from Web GUI.

Note) For information on the IP-9x0E, refer to Section 3.1 "Starting Up," Section 3.2 "Common Menu," Section 3.3 "Encoder," and Section 3.4 "Recorder."
For information on the IP-900IID/920D, refer to Section 3.1 "Starting Up," Section 3.2 "Common Menu," and Section 3.5 "Decoder."

3.1 Starting Up

3.1.1 Login

By default, the network password shown below is invalid (not displayed).



Specify the user name and password to enable the network password function by following the instructions in Section 3.2.4, “Basic.”

Select [COMMON], [ENCODER], [DECODER] and [RECORDER] to display these menus from the upper part of the Web GUI.

The supported Web browsers are Internet Explorer, Safari, Firefox, and Google Chrome.

Browsers whose operation has been confirmed

PC :	Internet Explorer 8, 9, 10, 11
	Safari 5
	Firefox 5, 7, 10, 28, 35, 38
	Google Chrome 40, 45
Smartphone :	Android browser 4.4
	Safari 8.1
	Google Chrome 34

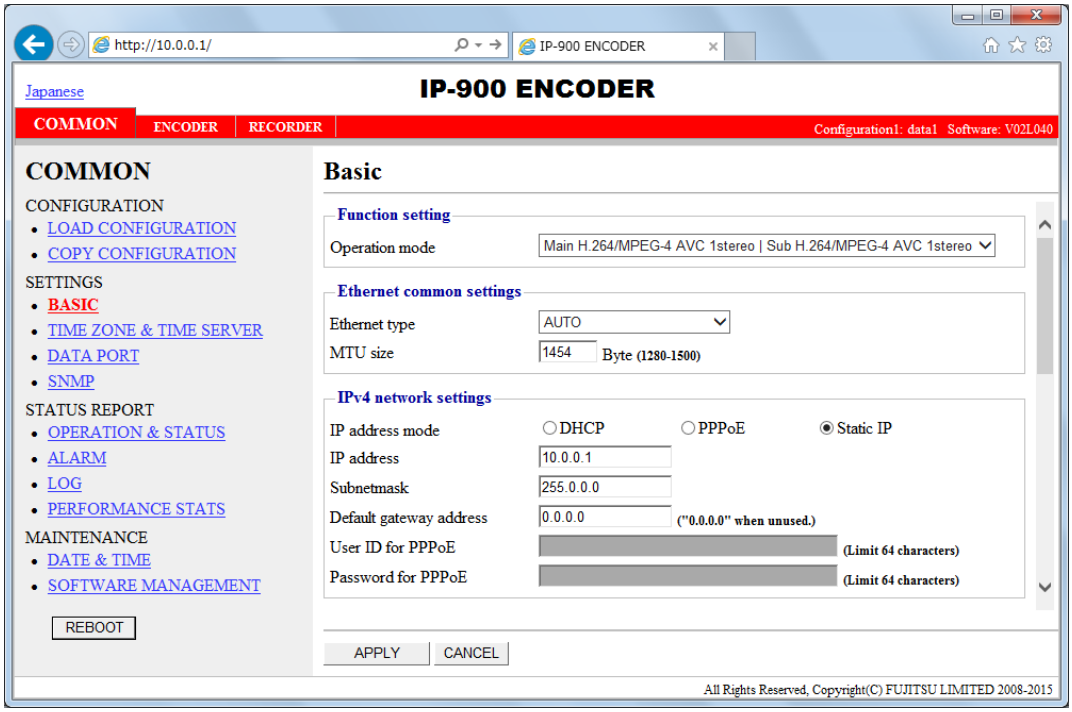


Figure 3-1 Screen for IP-900 series ENCODER Settings

Figure 3-2 Screen for IP-900 series DECODER Settings

3.1.2 Remarks

You may not be able to access the screen for a while when you turn on the power or reboot. Please wait for around 1 min. after booting.

3.2 Common Menu

3.2.1 Configuration Data

In IP-900 series terminology, the set of parameters required for operation is called "configuration data." IP-900 series has a data storage area in which up to 10 sets of configuration data can be stored. The stored data can be used by switching easily among these sets of configuration data.

For example, it is useful in switching between encoder and decoder, changing resolution or bit rates or switching the network interfaces including PPPoE, DHCP, static IP, etc.

You can use the procedures explained in Section **3.2.2 Load Configuration Data** and **3.2.3 Copy Configuration Data** to register the configuration data easily.

The parameters are listed in **Table 3-1 Parameters Preprogrammed in Configuration Data** and 10 sets can be stored independently as configuration data. Refer to the respective sections shown in the reference column in table below for details.

Table 3-1 Parameters Preprogrammed in Configuration Data

Category	Name	Group Name	Reference
COMMON	BASIC	Function setting Ethernet common setting IPv4 network settings IPv6 network settings Other settings	**3.2.4 Basic**
	TIME ZONE & TIME SERVER	Time zone setting Time server settings	**3.2.5 Time Zone & Time Server**
	DATA PORT	Operation settings	**3.2.6 Data Port**
		Port number settings	
		RS-232C settings	
	SNMP	Operation settings	**3.2.7 SNMP**
ENCODER	SETTINGS	AV input settings (Video)	**3.3.1 Setting (Encoder)**
		AV input settings (Audio)	
		Output interface settings (Main encoder IP)	
		Output interface settings (Main encoder IP port)	
		Output interface settings (Sub encoder IP)	
		Output interface settings (Sub encoder IP port)	
		Main encoder settings (Encode)	
		Main encoder settings (PID)	
		Sub encoder settings (Encode)	
		Sub encoder settings (PID)	

Category	Name	Group Name	Reference
ENCODER	ENCODER ADDRESS REPORT	Main/Sub Report settings	**3.3.2 Encoder Address Report**
		Main/Sub Destination settings	
	SUPERIMPOSE	Superimpose information (1 to 4) of Main encoder	**3.3.3 Superimpose**
		Superimpose information (1 to 4) of Sub encoder	
RECORDER	SETTINGS	Recorder settings	**3.4.1 Setting (Recorder)**
DECODER	SETTINGS	Input interface settings (Decoder ethernet)	**3.5.1 Setting (decoder)**
		Input interface settings (From Server)	
		Input interface settings (Decoder ethernet port)	
		AV output settings (Video)	
		AV output settings (Audio)	* Displayed only for IP-920E/D
		Decoder settings (Decode)	
		Decoder settings (PID)	
	REFERENCE SETTINGS	Operation settings	**3.5.2 Reference Clock (GENLOCK)**

3.2.2 Load Configuration Data

Click LOAD CONFIGURATION in the left frame of the Web screen to display the screen below in the right frame.

Figure 3-3 Load Configuration screen

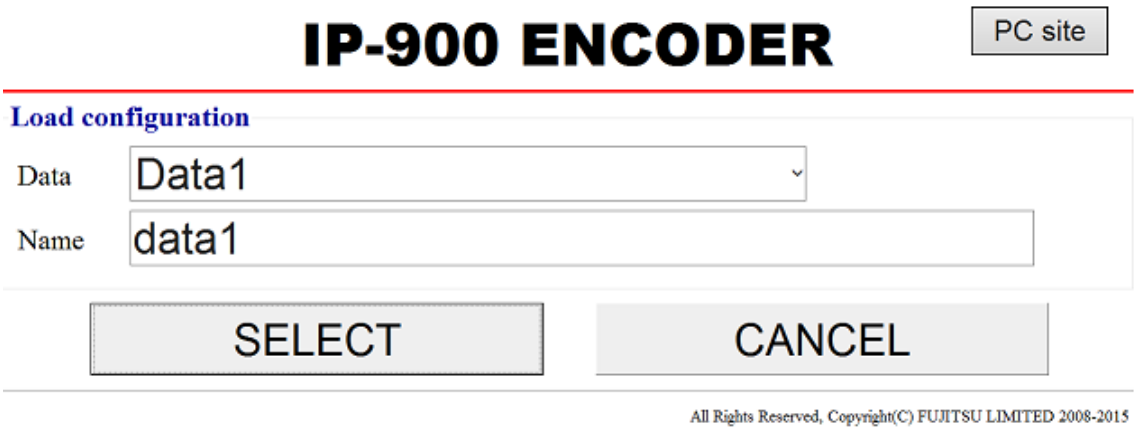


Figure 3-4 Load Configuration screen (for smartphone)

◆Registering configuration data

Select data numbers 1 to 10 from the pull down menu in "Configuration data" field.

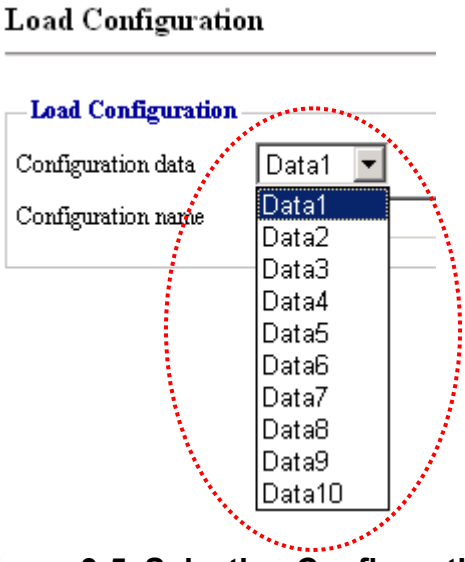
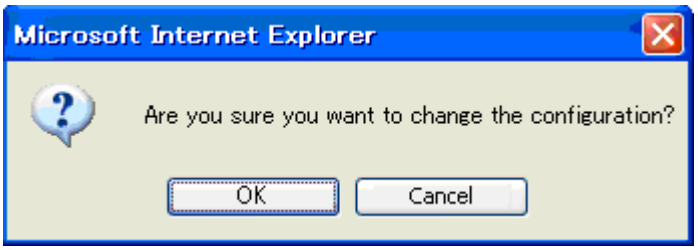


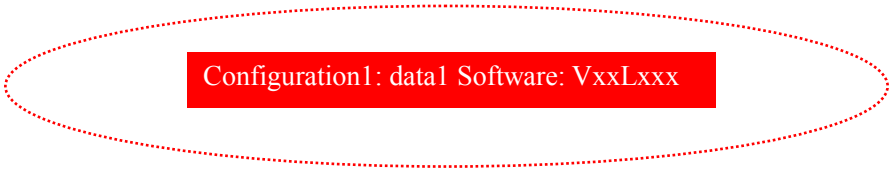
Figure 3-5 Selecting Configuration Data

Assign the selected data a name using up to 16 alphanumeric characters in the Configuration name field, and click the SELECT button. The dialog box shown below appears. Click the OK button to change the registration number.

*) Reboot is required only when the operation mode is changed between encoder and decoder after loading configuration.



Confirm that the configuration data number in the upper right red zone on the Basic setting screen is changed to the previously selected number.



Update the parameters listed in **Table 3-1 Parameters Preprogrammed in Configuration Data** using the following respective screens, and then click OK or APPLY button to update and register the configuration data.

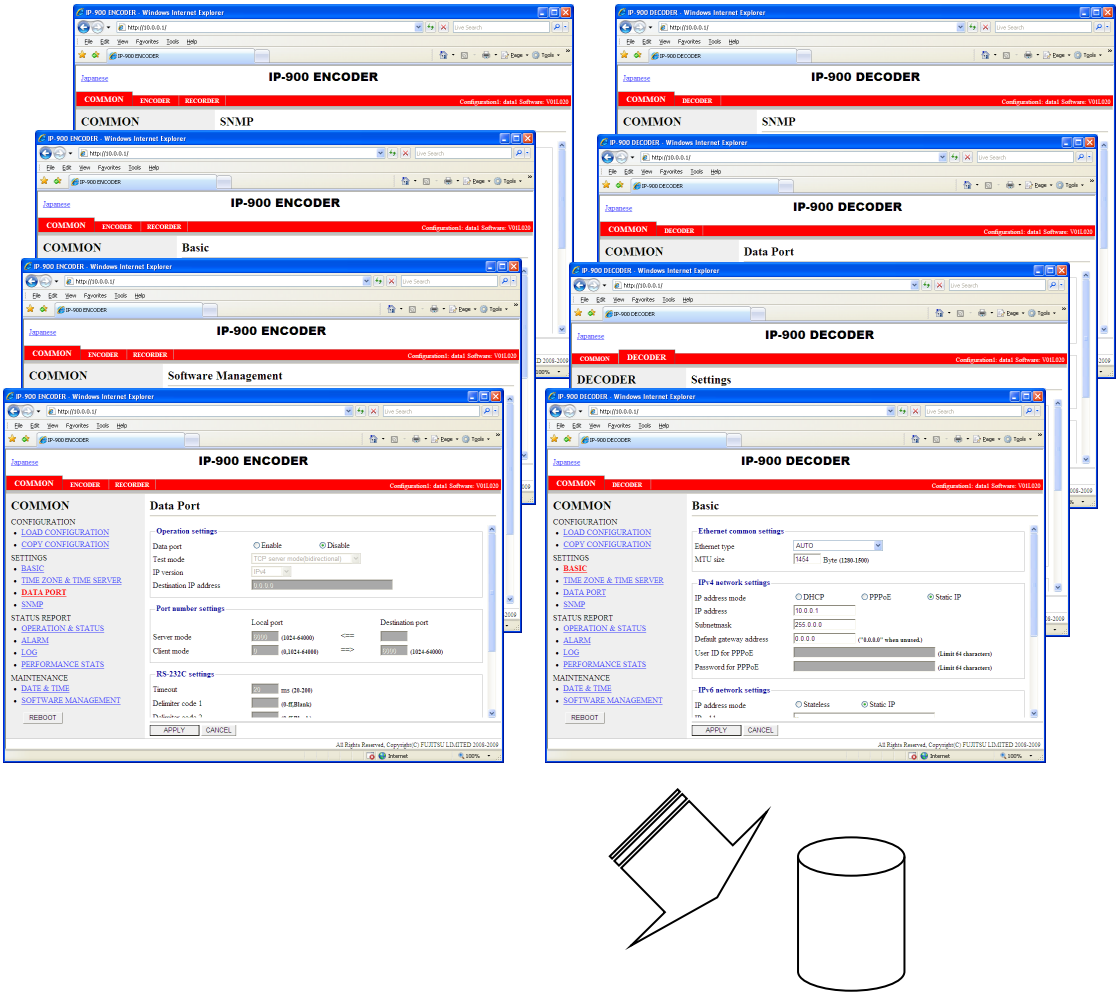


Figure 3-6 Parameters, of which 10 Sets are handled as Configuration Data

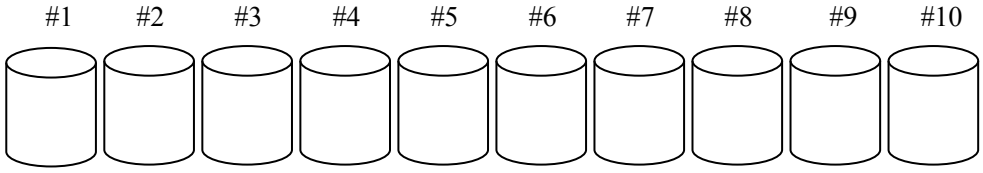


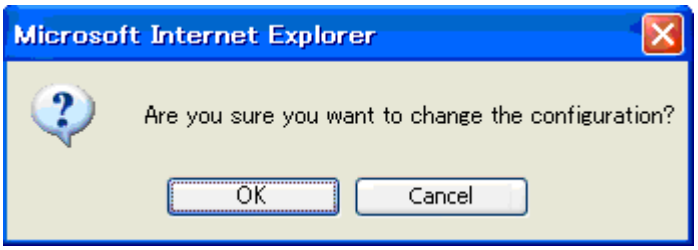
Figure 3-7 Configuration Data (10 independent sets)

◆Using configuration data

Select (from 1 to 10) the data number you want to use from the configuration data field by referring to the corresponding name in the Configuration name field.

Click the SELECT button. When the following dialog box appears, click OK button. The registration number of configuration data can be updated by IP-900 series.

*) Reboot is required only when the operation mode is changed between encoder and decoder after loading configuration.



Confirm that the configuration data number in the upper right red zone on the Basic setting screen has been changed to the previously selected number.

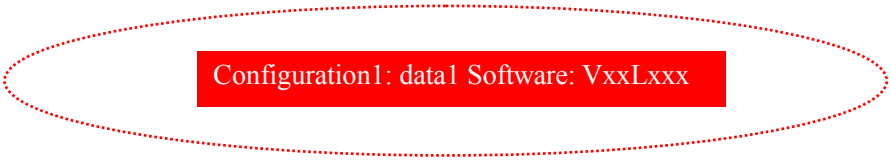


Table 3-2 Configuration Data Selection Items

	Item	Description	Parameter
Load configuration	Configuration data	<In case of updating or registering> Ten types of configuration data registered in advance can be switched, updated and registered for each. <In case of using> Ten types of configuration data registered in advance can be switched.	- Data numbers 1 to 10
	Configuration name	<In case of updating or registering > Arbitrary name can be specified for each data. <In case of using> The specified name can be used for switching configuration data.	- Arbitrary name (using 16 alphanumeric characters)

3.2.3 Copy Configuration Data

Maximum ten types of configuration data which selected in "LOAD CONFIGURATION" can be copied each other. The registered data's parameter can be used for other configuration settings.

For example, the parameter can be used for creating updated configuration data using registered configuration data.

Click COPY CONFIGURATION in the left frame of the Web GUI to display the screen below in the right frame. Set up the required settings by referring to **Table 3-3 Copy Configuration Setting Items**.

Figure 3-8 Copy Configuration screen

After completing the settings, click the COPY button. The message below appears.

Click OK to apply the settings.

Table 3-3 Copy Configuration Setting Items

	Item	Description	Parameter
Select source configuration	Configuration data	Select one of the ten types of configuration data that have already been registered to copy the data.	- Data numbers 1 to 10
Copy to	Configuration data 1-10	Select a configuration data of copying destination. Multiple configuration data can be selected, but the configuration data of origination and the configuration data which is currently in use cannot be selected.	- Radio buttons
	Configuration name	Arbitrary name can be specified for each configuration data.	- Arbitrary name (using 16 alphanumeric characters)

3.2.4 Basic

*** Basic comprises a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

You can set or change the settings of the parameters related to the network connection of IP-900 series or the operation mode in which it should operate after turning on the power. Set up the required settings by referring to **Table 3-4 Basic Setting Items**.

IMPORTANT

If you operate IP-900 series with the default IP address, disconnect it from your network. Connect it to the setting PC over a hub or directly through a UTP cable. Set it up to meet with the requirements for your network using PC and connect it to the network. If you connect it to your network with the default IP address, an unexpected failure may occur in your network.

Figure 3-9 Basic settings screen

After completing the settings, click APPLY button. The following message appears.

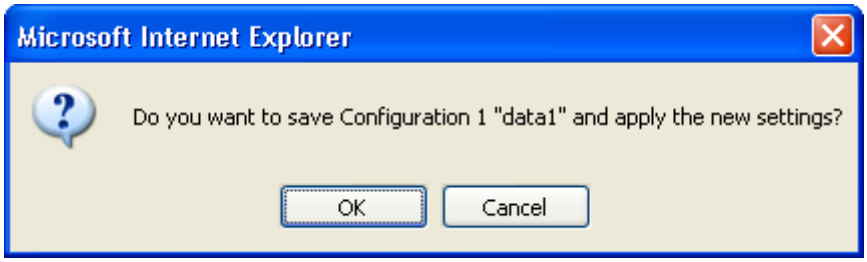


Table 3-4 Basic Setting Items

	Item	Description	Parameter
Function setting	Operation mode *for Encoder	Select the operation mode of encoder and sub encoder.	- Main H.264/MPEG-4 AVC 1stereo | Sub H.264/MPEG-4 AVC 1stereo (Default) - Main H.264/MPEG-4 AVC 2stereo
	Operation mode *for Decoder	Select the operation mode of decoder.	- Normal (Fixed)
Ethernet common settings	Ethernet type	Select the Ethernet type.	- AUTO (default) - 100Base-TX Full - 100Base-TX Half - 10Base-T Full - 10Base-T Half
	MTU size	Specify in bytes the maximum size of IP packets to be sent to the LAN.	1280 to 1500 bytes (Default: 1454) * For PPPoE, specify 1454 (recommended).
IPv4 network settings	IP address mode	Specify how to get IPv4 address	- DHCP - PPPoE - Static IP (Default)
	IP address	Specify the IPv4 address when "Static IP" is set for [IP address mode].	IPv4 address other than the following: 224.0.0.0 to 239.255.255.255 (Class D) 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 (Default: 10.0.0.1)
	Subnet mask	Specify the IPv4 subnet mask when "Static IP" is set for [IP address mode].	Subnet mask other than the following: 255.255.255.254, 255.255.255.255 (Default: 255.0.0.0)
	Default Gateway address	Specify the default gateway address of IPv4 when "Static IP" is set for [IP address mode].	IPv4 address other than the following: 224.0.0.0 to 239.255.255.255 (Class D) 240.0.0.0 to 255.255.255.255 (Class E) 127.0.0.0 to 127.255.255.255 (Default: None (represented as 0.0.0.0))
	User ID for PPPoE	Specify the user ID when "PPPoE" is set for [IP address mode].	64 en-size alphanumeric characters (Default: Blank)
	Password for PPPoE	Specify the password when "PPPoE" is set for [IP address mode].	64 en-size alphanumeric characters (Default: Blank)

	Item	Description	Parameter
IPv6 network settings	IP address mode	Specify the IPv6 address acquisition method.	- Stateless - Static IP (default)
	IP address	Specify the IPv6 address when "Static IP" is set for [IP address mode].	Global unicast IP address 2xxx:xxxx:…:xxxx to 3xxx:xxxx:…:xxxx (Default: ::)
	Prefix	Specify the prefix of the IPv6 address when "Static IP" is set for [IP address mode].	3 to 128 (Default: 64)
	Default gateway address	Specify the default gateway address when "Static IP" is set for [IP address mode].	Global unicast address 2xxx:xxxx:...:xxxx to 3xxx:xxxx:...:xxxx (Default: ::)
Other settings	User authentication	Specify whether to enable user authentication for accessing the Web screen.	- Enable - Disable (Default)
	User ID	Specify the user name for authentication.	16 alphanumeric characters (Default: Blank)
	Password	Specify the password for authentication.	16 alphanumeric characters (Default: Blank)
	WEB server title	Specify the character strings to be displayed on the title bar of the Web screen. This title is used to identify the Web screen with the equipment name.	The specified string must be not exceeded 64 single bytes. (Default: blank)

Note) If booting is worked in combination with the Cancel key (refer to IP-900 series User's Guide), the IP address and subnet mask on both LAN and CONSOLE ports are temporarily reset to the defaults (LAN IPv4 address 10.0.0.1, subnet mask 255.0.0.0, IPv6 address :: and prefix: 64). If it becomes unclear what an IP address is, connect the equipment with the defaults and use the setup menu to confirm the IP address and subnet mask. The password restriction is also disabled for this case. Hold down the MNT button until the RDY LED starts blinking in orange. The equipment reboots, but the specified IP address and subnet mask are restored in the equipment.

■ Operation Modes

Main H.264/MPEG-4 AVC 1stereo | Sub H.264/MPEG-4 AVC 1stereo
Main encoder and sub encoder encode video by H.264/MPEG-4 AVC.
Audio encoding supports stereo 1channel.
Main H.264/MPEG-4 AVC 2stereo
Main encoder encodes video by H.264/MPEG-4 AVC.
Audio encoding supports stereo 2channels.
Sub encoder is not usable.

* Encoder and Recorder settings are initialized when operation mode is changed.

3.2.5 Time Zone & Time Server

*** Time Zone & Time Server is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set the time zone and time server at the location where IP-900 series is installed. Click TIME ZONE & TIME SERVER in the left frame of the Web screen. The Time Zone & Time Server screen appears in the right frame. Make settings according to the operation mode by referring to **Table 3-5 Time Zone Setting Item** and **Table 3.6 Time Server Setting Items.**

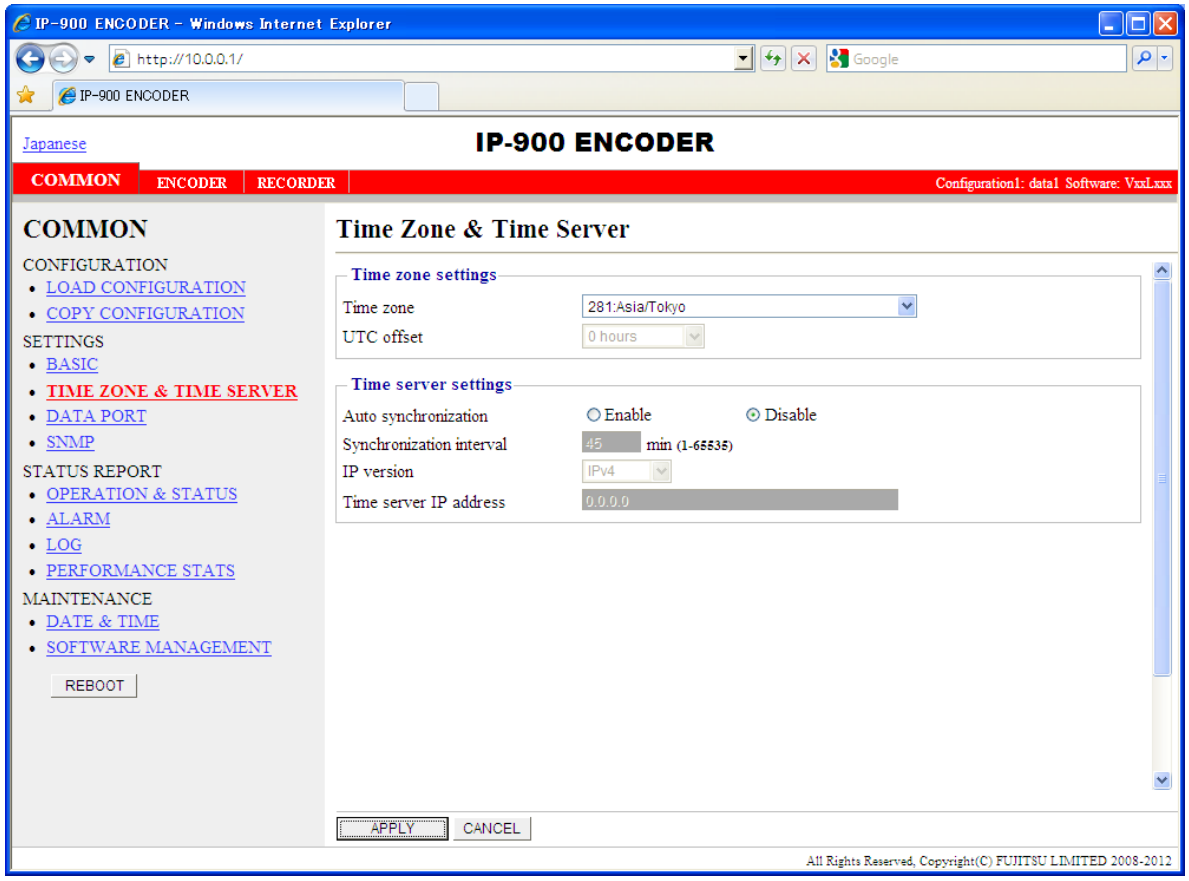


Figure 3-10 Time Zone & Time Server Settings screen

After completing the settings, click APPLY button. The message below appears. Click OK to apply the settings. *Reboot is not required.

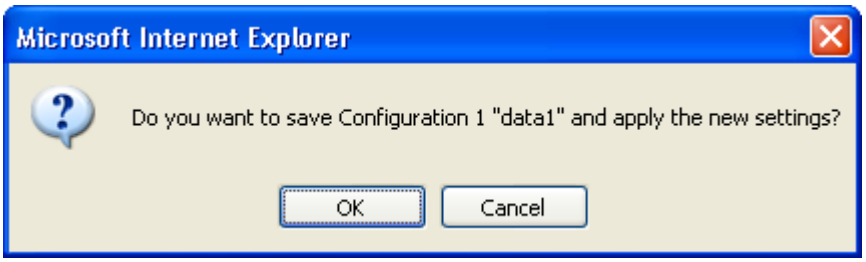


Table 3-5 Time Zone Setting Items

Item	Description	Parameter
Time zone	Select the time zone at the IP-900 series installation site.	(Default: Asia/Tokyo)
UTC offset	Specify the time difference from Coordinated Universal Time (UTC) when "UTC offset" is selected for [Time zone].	(Default: 0 Hours)

Table 3-6 Time Server Setting Items

Item	Description	Parameter
Auto synchronization	Specify whether to automatically synchronize with the time server.	- Disable (Default) - Enable
Synchronization interval	Specify in minutes the interval in which synchronization with the time server is performed.	1 to 65535 minutes (Default: 45)
IP version	Set the IP address version.	- IPv4 (Default) - IPv6
Server IP address	Set the IP address of the time server.	Other than 0.0.0.0 (Default: 0.0.0.0) * You cannot specify a multicast address.

3.2.6 Data Port

*** Data Port is a group of setting items, of which 10 sets can be registered independently by selecting data number as in 3.2.1 Configuration Data.**

This setup is performed to enable data communication with another device on the IP network by connecting the external device through the RS-232C port (D-sub 9-pin) on front panel of IP-900 series.

Click DATA PORT of the left frame in the Web GUI and Data Port screen appears in the right frame, where you can set parameters for data communication with another device via the IP network. Make the required settings by referring to **Table 3-7 Data Port Setting Items** and **Table 3-8 Operations Modes**.

Figure 3-11 Data Port Settings screen

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. *Reboot is not required.

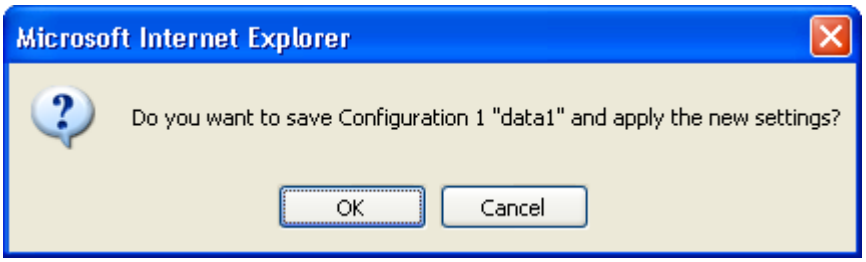


Table 3-7 Data Port Setting Items

	Item	Description	Parameter
Operation settings	Data port	Specify whether to use data port communication.	- Enable - Disable (Default)
	Operation mode	Specify the operation mode of data port communication.	- TCP server mode(Bidirectional) (Default) - TCP server mode(Receiving only) - TCP client mode(Bidirectional) - TCP client mode(Modem) *"IPv4" is the fixed value for [IP version] when TCP client mode is set.
	IP version	Set the IP address version	- IPv4 (Default) - IPv6
	Destination IP address	Specify the IP address of the data communication destination when "TCP client mode (bidirectional)" is set for [Test mode].	- IPv4 (Default) - IPv6
		Specify the IP address of the data communication destination when "TCP client mode (bidirectional)" is set for [Test mode].	Other than 0.0.0.0 (Default: 0.0.0.0)
Port number settings	Server mode	Specify the port number of the own device when "TCP server mode (bidirectional)" is set for [Test mode].	1024 to 64000 (Default: 6000)
	Client mode	Specify the port number of the own device when "TCP client mode (bidirectional)" is set for [Test mode].	0 or 1024 to 64000 (Default: 0) * A port number from 1024 to 4096 is automatically selected when "0" is set.
		Specify the port number of the destination device when "TCP client mode (bidirectional)" is set for [Test mode].	1024 to 64000 (Default: 6000)
RS-232C settings	Timeout	Specify as [ms] for [Timeout] in [RS-232C Settings] section.	20 to 200ms (Default: 20) * The duration to detect a time-out is defined as "the set value rounded down by a multiple of '20[ms]'" + "RS-232C polling interval of the device (20[ms])". e.g.) In case of setting '60'; '60' + '20' = 80 [ms] In case of setting '50' ; '40' + '20' = 60 [ms]

	Item	Description	Parameter
RS-232C settings	Delimiter code 1	Specify [Delimiter code 1] in [RS-232C Settings] section.	Blank or hexadecimal values from 00 to ff (Default: Blank) * A blank field means that no value is specified.
	Delimiter code 2	Specify [Delimiter code 2] in [RS-232C Settings] section.	Blank or hexadecimal values from 00 to ff (Default: Blank) * Blank means no values are specified.
	Baud rate	Specify the RS-232C communication speed by selecting from pull down menu.	1200/2400/4800/9600 (Default) /19200/38400 bps
	Bit length	Select the RS-232C character size.	7 bits or 8 bits (Default)
	Parity	Select whether to use RS-232C parity.	None (Default), Odd or Even
	Stop bits	Select the length of RS-232C stop bits.	1 bit (Default) or 2 bits
	Flow control	Select whether to set RS-232C flow control.	None (Default), RS or CS
	DTR signal monitoring	In case of setting as "TCP client mode(modem)" for [Operation mode], this item is enabled to set whether to monitor DTR of RS-232C control signals.	- Enable (Default) - Disable (*1)

*1: "DTR signal monitoring"

- In case of setting as "Disable", ignores DTR signal and always set as ON. The escape code is enabled and the data port connection is disconnected by AT command (ATH0) after switching to the escape mode.
- In case of setting as "Enable", the data port connection is disconnected when the DTR signal is set as OFF (default). When the DTR signal is turned ON, it is switched to the command mode that allows AT command. When signal is OFF, AT command is discarded when received. Also, the escape code is disabled. Therefore, line disconnection is performed when the DTR signal is set as OFF.

Table 3-8 Operation Modes

	Operation mode	Description
(1)	TCP server mode(Bidirectional)	Bidirectional data communication is performed between the data port and another device connected via the IP network. IP-900 series waits, at the specified port number, for connection from the destination device. (IP address setting is not required.)
(2)	TCP server mode(Receiving only)	Data received from another device connected via the IP network is output to the data port. Data received from the data port is not sent to the destination device. IP-900 series waits, at the specified port number, for connection from the destination device. (IP address setting is not required.)
(3)	TCP client mode(Bidirectional)	Bidirectional data communication is performed between the data port and another device connected via the IP network. IP-900 series sets up a connection through the specified port to the device with the specified IP address.
(4)	TCP client mode(Modem)	Bidirectional data communication is performed between the data port and the other device connected via the IP network. Destination IP address sets up a connection to the device of IP address notified by AT command from DTE connected via RS-232C. Also, decoder switches stream receiving address to the same IP address after connecting. When the operation mode is set other than "TCP client mode modem", AT command is handled same as the normal data.

Note) Following combinations of modes are available for data communication among IP-900 series:

(1) <-> (3), (4)

(2) <-> (3), (4)

Table 3-9 AT Command Supported by IP-900 Series

Item	Command	Contents	Note
1	Dn	Connected with the destination device for data port connection. IPv4 address of the connecting destination device is specified for n. The numbers other than 0 to 9 are ignored. <Example> ATD192.168.001.001 Connects the device of 192.168.1.1 for data port connection. ・When connecting with the destination device, "CONNECT" is responded and the CD signal is set to ON. ・When connection with the destination device cannot be made after a certain period of time (about 50 secs), "NO CARRIER" is responded and the command is terminated.	・Valid in case of the command mode ・3 digits + 3 digits + 3 digits + 3digits (12 digits in total) are specified for IPv4 address. "ERROR is responded to non-12 digits (0 is not omissible). <Example> ”ATD010-000-000-001<CR>”, ”ATD010.000.000.001<CR>” ・Specifies IPv4 unicast address of units other than yours for IPv4 address. "ERROR" is responded to the other addresses. ・Decoder connects data port to the device of specified IPv4 address and makes streaming request. ・Encoder connects data port to the device of specified 4 address. ・When receiving data from DTE before "CONNECT" is responded, connection is canceled, "NO CARRIER" is responded and the command is terminated.
2	Hn	The data port connection is disconnected and he CD signal is turned OFF. Only n=0 is valid.	・Valid in case of the escape mode
3	On	Switched from the escape mode during transmission. Only n=0 is valid.	・Valid in case of the escape mode
4	+++	Switched to the escape mode during transmission.	・Please input “+” for 3 consecutive times within one second when inputting. ・If the other characters are input within one second before and after inputting “+++”, it does not change to escape mode. ・If “Enable” is set for ”DTR signal surveillance”, the escape code is disabled and it does not switch to the escape mode.

Note) AT command format

- Available AT command format on IP-900 Series is given as follows:
  AT+<command>+<parameter>+<CR> (<CR> can also be <CR+LF>)
- AT command begins with AT and ends with CR code (or CR code + LF code).
- AT command’s <command>+<parameter> are 32 letters (ASCII) at the maximum.
- AT command can specify only 1 command per a line.
- AT command allows only capital or small letters and combination of them are unusable.
  (Example: ATD192.168.001.001 → usable, atD192.168.001.001 → unusable)

Table 3-10 Messages Responded by IP-900 Series

No	Result code	Contents	Note
1	OK	Command was terminated normally	
2	CONNECT	Data port connection with the destination device was made	Transmission speed is not displayed (ATX0 equivalent)
3	NO CARRIER	Line was disconnected (carrier was not detected/was lost during transmission)	
4	ERROR	Command error (unacceptable command was executed)	

Note) Result format

- The result format responded by IP-900 Series is as follows:

  ＜CR>+<LF>+<result code>+<CR>+<LF>

- Result code respond characters (ATV1 equivalent)

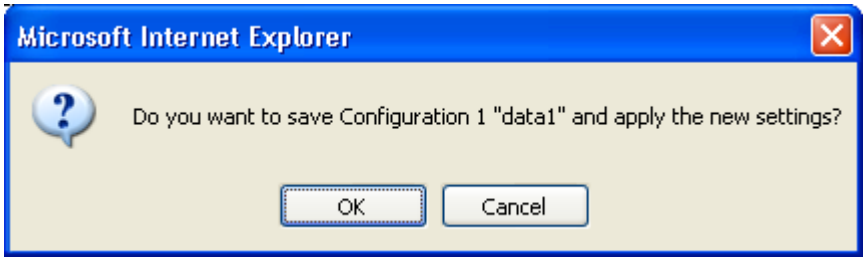
3.2.7 SNMP

*** SNMP is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Click SNMP of the left frame in the Web GUI and SNMP screen appears in the right frame, where you can set parameters for SNMP with the counterpart device over IP network. Make the required settings by referring to **Table 3-11 SNMP Setting Items**.

Figure 3-12 SNMP Settings screen

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.



■ MIB file

To download the MIB (Management Information Base) file, click the DOWNLOAD button.

Table 3-11 SNMP Setting Items

Item		Description	Parameter
SNMP agent		Specify whether to enable SNMP agent.	- Disable (Default) - Enable
Manager #1 to 10	SNMP version	Specify the SNMP version of SNMP manager.	- SNMPv1 (Default) - SNMPv2c
	Community	Specify the community name to accept the SNMP request from the SNMP manager.	Alphanumeric 16 characters (Default: Blank)
	IP version	Specify the IP version of the IP address of SNMP manager.	- IPv4 (Default) - IPv6
	IP address	Specify the IP address of SNMP manager. (Max. 10 managers can be registered.)	An IP address other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * You cannot specify a multicast address.

3.2.8 Operation & Status (Common)

Click OPERATION & STATUS in the left frame of the Web screen. The Operation & Status screen appears in the right frame, where you can check the status of equipment operation such as the state of LAN operation. Refer to **Table 3-12 Operation & Status Display Items** for details.

Selecting {3 sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the performance data in specified time intervals. Select {none} from [Auto update] to disable automatic updating.

Figure 3-13 Operation & Status screen

Table 3-12 Operation & Status Display Items

Item	Display
Serial number	Displays the serial number
LAN IP address (IPv4)	**{DHCP/PPPoE/Static IP}** Displays the IPv4 address acquisition mode.
	[xxx.xxx.xxx.xxx (IPv4)] Displays the IPv4 address. xxx.xxx.xxx.xxx: IPv4 address
LAN subnetmask (IPv4)	**xxx.xxx.xxx.xxx** Displays the IPv4 subnet mask. xxx.xxx.xxx.xxx: Subnet mask
Default gateway address (IPv4)	**xxx.xxx.xxx.xxx** Displays the default gateway address of IPv4. xxx.xxx.xxx.xxx: Default gateway address
LAN IP address (IPv6)	Link-Local/[xxxx:xxxx: ... :xxxx(IPv6)] Displays the IPv6 link-local address. xxxx:xxxx: ... :xxxx: Link-Local address
	{Stateless/Static IP} Displays the IPv6 address acquisition method. * If the IPv6 address acquisition method is "Stateless," up to four sets of global unicast address/prefix are displayed according to the address acquisition status.
	[yyyy:yyyy: ... :(IPv6)] Displays the IPv6 global unicast address. yyyy:yyyy: ... :yyyy: Global unicast address
	[zzz] Displays the prefix of the IPv6 global unicast address. zzz: Prefix
Default gateway address (IPv6)	**xxxx:xxxx: ... :xxxx** Displays the default gateway address of IPv6. xxx:xxx. ... :xxx: Default gateway address * If the IPv6 address acquisition method is "Stateless," up to four default gateway addresses are displayed according to the address acquisition status.
LAN Mac address	Displays the MAC address.
LAN link	**{Connected / Disconnected}** Displays the LINK status.
	{100Base-TX Full Duplex / 100Base-TX Half Duplex / 10Base-T Full Duplex / 10Base-T Half Duplex} Displays the LAN interface operation status.
Time server	**{Normal / Fault / Synchronization failure/ ---}** Displays the status of synchronization with the specified time server.

Item	Display
Data port	**{Normal / Normal (Command mode) / Normal (Escape mode) / Normal (DSR OFF) / Fault / ---}** Displays the communication status of data port communication. **{TCP server mode / TCP server mode (Receiving only) / TCP client mode / TCP client mode (Modem)}** Displays the operation mode of data port communication.
	{IP address} Displays the IP address of the destination device for data port communication. - TCP server mode / TCP server mode (receiving only) Displays the IP address of the destination device when data port communication is established. (Displays 0.0.0.0 when no communication is set up.) - TCP client mode Displays the IP address of the destination device for data port communication. - TCP client mode (Modem) Displays the IP address of the destination device specified by AT command.
	{Port number} Displays the port number of the destination device for data port communication. - TCP server mode / TCP server mode (receiving only) Displays the port number of the destination device when data port communication is established. - TCP client mode Displays the port number of the destination device for data port communication. - TCP client mode (Modem) Displays the port number of the destination device only when data port communication is established.
SNMP	**{Normal / ---}** Display the status of the SNMP agent.
Component temperature	Displays the internal temperature (ºC) of the equipment.

Note) {A/B} indicates that either A or B is displayed.

3.2.9 Alarm

Click ALARM of the left frame in the Web screen and the Alarm screen appears in the right frame, where you can check the alarm list. Refer to **Table 3-13 Alarm List** for details.

Select {3 sec, 5sec, or 10sec} from [Auto update] to enable automatic update of the performance data in specified time intervals. Select {none} from [Auto update] to disable automatic updating.

Figure 3-14 Alarm Settings screen

Table 3-13 Alarm List

Code	Name	Description	Details (The part after the * mark is not displayed.)
I001	SDI input down	HD/SD-SDI input signal is not detected	-
I002	HDMI input down	HDMI input signal is not detected	-
I003	Analog video input down	Analog video input signal is not detected	-
I006	Reference clock input down (*8)	External reference clock input signal is not detected	-
I011	Video synchronization error	Video synchronization error is occurred	-
I016	Reference clock synchronization failure (*8)	Synchronization failure with reference clock is occurred	-
I021	Input data error (*1)	Count-up is occurred in the performance statistics error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, refer to Table 3-14, "Bit Formats for Input Data Errors."
E001	Power error (*2)	Power failure is occurred	#1 * Power failure on CNT board #2 * Power failure on COD board
E003	Temperature error (*3)	Extreme temperature is detected (shutdown processing started)	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensors that is detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	FlashROM error (*2)	Internal FlashROM access error occurred	/dev/mtd0 to 15 * Displays the occurrence range of access error.
E00A	FlashROM check sum error (*2)	Configuration data error detected in internal FlashROM	software bundle software configuration configuration#1～#10 option * Displays the range of check sum errors.
E010	FAN error (*4)	FAN error (low speed) is occurred	xxxRPS * xxx: FAN rotational speed

Code	Name	Description	Details (The part after the * mark is not displayed.)
E013	Temperature warning (*4)	Temperature warning (alarm only) is detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensors that is detected a temperature warning. t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error	Main CODEC LSI error is detected	Blank, #1 * Displays the occurrence location of CODEC1 error.
E083	CODEC2 error	Sub CODEC LSI error is detected	-
E084	CF card access error (*6)	CF card access failure is detected	-
E085	CF card power error (*6)	Overcurrent to CF card is detected	-
E08B	SUB CPU1 error (*5)	SUB CPU1 error is detected	-
E08C	SUB CPU2 error (*5)	SUB CPU2 error is detected	-
E08E	Clock error (*2)	Clock error or interruption is detected	#1 to #4 * Indicates the location where a clock error is occurred.
E08F	Memory error (*2)	SDRAM memory check error is detected	#1 to #7 * Indicates the location where a memory error is occurred.
E093	Buffer overflow (*7)	Buffer overflow is occurred	#1, #2 * Indicates the location where a buffer overflow is occurred.

*1: The DEC LED blinks while this alarm is active. The LED is turned off for 10 seconds after the error is restored.
Refer to 3. 2. 11 Performance Statistics for the details of the statistical information counter regarding the alarm.
*2: After this error is occurred, the ALM LED remains on. The device is required to reboot to turn off the ALM LED.
*3: If an extreme temperature is detected, all LEDs except LINK/ACT, 10/100 are on. The device is required to reboot to turn off the LEDs.
*4: The ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
*5: After this error is occurred, retry for restoration is the next step. If the retry for restoration is unsuccessful, the ALM LED remains on.
The device is required to reboot to turn off the ALM LED.
*6: After this error is occurred, the ALM LED remains to blink.
*7: The ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet with the network requirement.
*8: DEC LED blinks while reference error has been occurred. The LED is turned off after reference errors are restored.

Table 3-14 Input Data Error Bit Format

Bit	63	62	61	60	59 - 0
Type	Decoder				Undefined
Interface	IP	IP	IP	IP	Undefined
Performance stats	Number of reloading TS stream	Number of discontinuous PCR	Number of video decoding errors	Number of audio decoding errors	

3.2.10 Log

Click LOG of the left frame in the Web screen and Log information appears in the right frame, where you can check the alarm log. Refer to **Table 3-15 Log Type** for details.

If you click the DELETE ALL LOGS button, the alarm log is detected completely.

* Up to 100 log items per page can be saved to up to 10 pages (1,000 log items in total). Log items exceeding 1,000 items are overwritten beginning with the chronologically oldest items.

Figure 3-15 Log information screen

Table 3-15 Log Type

Code	Name	Description	Details (The part after the * mark is not displayed.)
0001	Boot (Power ON)	Normal start with the switch	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0002	Boot (Reset)	Normal start after reboot the equipment	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0004	Boot (Initial maintenance)	Normal start using the bundled firmware	-
0005	Boot (Maintenance)	Normal start in maintenance mode	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0006	Software update	Software is updated	VxxLxxxCxx -> VyyLyyyCyy * Displays the new and old software versions. VxxLxxxCxx: Old software version VyyLyyyCyy: New software version
0007	Boot (Restart) (*1)	Restart because of CPU failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0008	Boot (Others) (*1)	Restart because of software failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0009	Shutdown	Shutdown with MNT button	-
000A	RTC initialization	RTC battery backup discharged electricity	-
000B	CF card initialization	CF card is formatted	-
000C	Configuration update	Configuration data is updated	-
000D	Basic settings update	Basic settings are updated	-

Code	Name	Description	Details (The part after the * mark is not displayed.)
000E	Configuration data change	Configuration data is changed	xxxx -> yyyy * Displays the old and new configuration names. xxxx: Old configuration name yyyy: New configuration name
000F	Configuration data initialization	Configuration data is initialized	-
0010	Option update	Option is installed	HD etc.
0020	Device reset	Reset the individual device	#11 * CODEC1 #21 * CODEC2 #12 * CODEC1(Audio stereo-2ch)
0030	Protect file recording start	Start the protected file recording	Network / DI / Network & DI * Displays the protect file recording start trigger
0031	Protect file recording stop	Stop the protected file recording	Trigger restoration / Timer expired / Full Date & Time change / Setting change / Others * Displays the protect file recording stop trigger
0032	Protect file release	Release the protected file	Timer expired / User * Displays the protect file release trigger
L001	Link error (LAN)	Link disconnection at a LAN port is occurred	-
*L001	Link error restoration (LAN)	Restored from link disconnection at a LAN port	10BaseT_HD/10BaseT_FD/100BaseTX_HD/100Base TX_FD * Displays the operating status of the LAN interface
L006	Time server synchronization failure	Time synchronization with the time server is failed	-
*L006	Time server synchronization success	Time synchronization with the time server is successful	-
L009	DHCP connection failure(*5)	DHCP server is disconnected	-
*L009	DHCP connection success(*5)	Connected to the DHCP server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the DHCP server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address

Code	Name	Description	Details (The part after the * mark is not displayed.)
L00A	PPPoE connection failure(*5)	PPPoE server is disconnected	-
*L00A	PPPoE connection success(*5)	Connected to the PPPoE server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the PPPoE server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address
L00E	DHCP connection update	IP address update is occurred during DHCP connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the DHCP server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L00F	PPPoE connection update	IP address update is occurred during PPPoE connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the PPPoE server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L010	Stateless address connection failure (*5)	IPv6 stateless address connection is failed	-
*L010	Stateless address connection success(*5)	IPv6 stateless address is successfully connected	xxxx:xxxx:…:xxxx/yy * Displays the IPv6 address acquired from the router. xxxx:xxxx: … :xxxx: IPv6 address yy: Subnet prefix length

Code	Name	Description	Details (The part after the * mark is not displayed.)
L011	Stateless address update	IPv6 stateless address update is occurred	xxxx:xxxx:…:xxx1/y1 -> xxxx:xxxx:…:xxx2/y2 * Displays the old and new IPv6 addresses acquired from the router. xxxx:xxxx: … :xxx1: Old IPv6 address y1: Old subnet prefix length xxxx:xxxx: … :xxx2: New IPv6 address y2: New subnet prefix length
I001	SDI input down	HD/SD-SDI input signal is not detected	-
*I001	SDI input restoration	Normal HD/SD-SDI input	-
I002	HDMI input down	HDMI input signal is not detected	-
*I002	HDMI input restoration	Normal HDMI input	-
I003	Analog video input down	Analog video input signal is not detected	-
*I003	Analog video input restoration	Normal analog video input	-
I006	Reference clock input down (*9)	Input signal of external reference is not detected	-
*I006	Reference clock input restoration(*9)	Normal input of external reference	-
I011	Video synchronization error	Video input PLL synchronization error is occurred	
*I011	Video synchronization error restoration	Restored from video input PLL synchronization error	
I016	Reference clock synchronization failure (*9)	Synchronization failure with reference clock is occurred	-
*I016	Reference clock synchronization failure restoration (*9)	Synchronization failure with reference input is restored	-
I021	Input data error (*2)	Count-up is occurred in the performance data error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, refer to Table 3-14, "Input data error bit format".
*I021	Input data error restoration (*2)	Restored from count-up of the performance data error counter	-
E001	Power error (*3)	Power error is occurred	#1 * Power error on CNT board #2 * Power error on COD board

Code	Name	Description	Details (The part after the * mark is not displayed.)
E003	Temperature error (*4)	Extreme temperature (shutdown processing started) is detected	* Details are as follows: #1/#2: Number of the temperature sensor that is detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	FlashROM error (*3)	Internal FlashROM access error is occurred	/dev/mtd0 to 15 * Displays the range of access error.
E00A	FlashROM check sum error (*3)	Configuration data error is detected in internal FlashROM	Software bundle software configuration configuration#1～#10 * Displays the range of check sum errors.
E010	FAN error (*5)	FAN error (low speed) is occurred	xxxRPS * xxx: FAN rotational speed
*E010	FAN error restoration (*5)	FAN speed is restored	xxxRPS * xxx: FAN rotational speed
E013	Temperature warning (*5)	Temperature warning (alarm only) is detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensors that is detected a temperature warning. t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
*E013	Temperature warning restoration (*5)	Restored from temperature warning	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2 : Number of the temperature sensors that is detected a temperature warning restoration. t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error	Main HD CODEC LSI error is detected	Blank, #1 * Displays the location of CODEC1 error.

Code	Name	Description	Details (The part after the * mark is not displayed.)
E083	CODEC2 error	Sub CODEC LSI error is detected	-
E084	CF card access error (*7)	CF card access failure is detected	-
E085	CF card power error (*7)	Overcurrent to CF card is detected	-
E08B	SUB CPU1 error (*6)	SUB CPU1 error is detected	-
*E08B	SUB CPU1 error restoration (*6)	Restored from SUB CPU1 error	-
E08C	SUB CPU2 error (*6)	SUB CPU2 error is detected	-
*E08C	SUB CPU2 error restoration (*6)	Restored from SUB CPU2 error	-
E08E	Clock error (*3)	Clock error or interruption is detected	#1 to #4 * Indicates the location where a clock error has occurred.
E08F	Memory error (*3)	SDRAM memory check error is detected	#1 to #7 * Indicates the location where a memory error has occurred.
E093	Buffer overflow (*8)	Buffer overflow is occurred	#1, #2 * Indicates the location where a buffer overflow has occurred.
*E093	Buffer overflow restoration (*8)	Restored from buffer overflow	#1, #2 * Indicates the location of buffer overflow restoration.

*1: The ALM LED is on while this alarm is active. The LED is turned off when the error is restored.
*2: The DEC LED blinks while this alarm is active. The LED is turned off for 10 seconds after the error is restored.
Refer to 3. 2. 11 Performance Statistics for the details of the performance data counter regarding the alarm.
*3: After this error is occurred, the ALM LED remains on. The device is required to reboot to turn off the ALM LED.
*4: If temperature warning is detected, all LEDs except LINK/ACT, 10/100 are on. The device is required to reboot to turn off the LEDs.
*5: The ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
*6: After this error is occurred, retry for restoration is the next step. If the retry for restoration is unsuccessful, the ALM LED remains on.
The device is required to reboot to turn off the ALM LED.
*7: After this error is occurred, the ALM LED remains to blink.
*8: The ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet with the network requirement.
*9: DEC LED blinks while reference error has been occurred. The LED is turned off after reference errors are restored.

⚠ CAUTION

If an alarm occurs, the Fujitsu maintenance engineer may ask you to collect not only alarm log information but also detailed log information about the inside of the device. Save the detailed log information to a personal computer by click the [GET LOG] button, and then hand it over to the maintenance engineer.

3.2.11 Performance Stats

Click PERFORMANCE STATS of the left frame in the Web GUI and the Performance Stats screen appears in the right frame. Select the port from {Main Encoder (Ethernet), Sub Encoder, Decoder (Ethernet), Data Port} and the interval from {All, Hour, Day, Week or Month} and then click to check the various types of performance data shown in **Table 3-16 Performance Stats Items**.

Select {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the performance data in specified time intervals. Select {none} from [Auto update] to disable automatic updating.

Click the DELETE ALL PERFORMANCE DATA button to delete all performance data.

Figure 3-16 Performance Stats screen (Main Encoder)

Figure 3-17 Performance Stats screen (Sub Encoder)

Figure 3-18 Performance Stats screen (Decoder)

Figure 3-19 Performance Stats screen (Data port)

Table 3-16 Performance Stats Items

Port	Item	Description	Display
Main Encoder (Ethernet) * Displayed only for encoder	Number of data packets sent	Displays the number of audio and video data packets sent.	{-----} The counter restarts counting from 0 after it expires.
	Number of FEC packets sent	Displays the number of FEC/SMPTE2022-1 FEC packets sent.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ request received	Displays the number of ARQ requests received.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ packets resent	Displays the number of ARQ packets resent.	{-----} The counter restarts counting from 0 after it expires.
Sub Encoder * Displayed only for encoder (*2)	Number of data packets sent	Displays the number of audio and video data packets sent.	{-----} The counter restarts counting from 0 after it expires.
	Number of FEC packets sent	Displays the number of FEC/SMPTE2022-1 FEC packets sent.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ request received	Displays the number of ARQ requests received.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ packets resent	Displays the number of ARQ packets resent.	{-----} The counter restarts counting from 0 after it expires.
Decoder (Ethernet) * Displayed only for decoder	Number of data packets received	Displays the number of audio and video data packets received.	{-----} The counter restarts counting from 0 after it expires.
	Number of data packets recovered	Displays the number of media packets recovered by the FEC/SMPTE2022-1 FEC/ARQ error correction function.	{-----} The counter restarts counting from 0 after it expires.
	Number of data packets lost	Displays the number of data packets that were abandoned on the network and could not be received. * This includes the number of media packet recovered by the FEC/SMPTE2022-1 FEC/ARQ error correction function.	{-----} The counter restarts counting from 0 after it expires.
	Number of FEC packets received	Displays the number of FEC/SMPTE2022-1 FEC packets sent.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ packets received	Displays the number of data packets received by ARQ.	{-----} The counter restarts counting from 0 after it expires.
	Number of data packets recovered by FEC	Displays the number of packets recovered with the FEC/SMPTE2022-1 FEC method.	{-----} The counter restarts counting from 0 after it expires.
	Number of ARQ request sent	Displays the number of ARQ request packets sent when a packet was lost.	{-----} The counter restarts counting from 0 after it expires.
	Number of data packets recovered by ARQ	Displays the number of data packets recovered by ARQ.	{-----} The counter restarts counting from 0 after it expires.

Port	Item	Description	Display
	Number of data loss exceeding concealment time	3.5.1 Setting (Decoder) Displays the number of displaying "blue" or "gray" image not receiving data for longer time than the setting value of [Packet non-receiving recognition time].	{-----} The counter restarts counting from 0 after it expires.
Decoder (Ethernet) * Displayed only for decoder	Number of reloading TS stream	Displays the number of reloading TS stream without restoring packets because of many packets lost. * In the following situation, the number is counted. 3.5.1 Setting (Decoder) - [ARQ operation] is performed. - When the number of data packets lost is 4000 or more - [ARQ operation] is not performed. - When the number of data packets lost is 24 packets or more.	{-----} The counter restarts counting from 0 after it expires.
	Number of discontinuous PCR (*1)	Displays the number of discontinuous PCR values detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
	Number of jitter control buffer exceeded capacity	Displays the number of video skip or repeat that occurs when the decoder cannot absorb the network jitter of the reception packets * It can be lowered by increasing "Jitter control buffer" in "3.5.1 Setting (Decoder)". * Its counter may increase even if there is no network jitter when the decoder receives the stream which video resolution is set to 352x288 or lower ,or which video frame rate is set to 14.985fps or lower in "3.3.1 Setting (Encoder)", or which is generated by Fujitsu IP-700II.	{-----} The counter restarts counting from 0 after it expires.
	Number of video decoding errors (*1)	Displays the number of video decoding errors detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
	Number of audio PES format mismatch	Displays the number of times that an audio PES packet that the decoder does not regard as being applicable to decoding is received. This is counted specifically in the following cases. ・For MPEG-1 Layer 2/MPEG-2 AAC -During reception of an audio stream that is not 1PES/1AAU.	{-----} The counter restarts counting from 0 after it expires.
	Number of audio decoding errors (*1)	Displays the number of audio decoding errors detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
Data port	Number of data received in byte on RS-232C	Displays the number of data bytes received through the RS-232C port.	{-----} The counter restarts counting from 0 after it expires.

Port	Item	Description	Display
	Number of data sent in byte on RS-232C	Displays the number of data bytes sent to the RS-232C port.	{-----} The counter restarts counting from 0 after it expires.
	Number of data received in byte on LAN port	Displays the number of data bytes received through the LAN port.	{-----} The counter restarts counting from 0 after it expires.
	Number of data sent in byte on LAN port	Displays the number of data bytes sent to the LAN port.	{-----} The counter restarts counting from 0 after it expires.

Note) Each counter consisted of 32 bits can be counted up to 4294967295.

*1: In case the count-up is made in this counter, DEC LED blinks for 10 seconds, I021 (Input data error) is saved as the log information.

*2: Not displayed in case “Main H.264/MPEG-4 AVC 2stereo” is set for [Operation mode].

3.2.12 Date & Time

Two types of setting modes are available. In one mode, you can enter arbitrary date and time data. In another mode, you can instruct the system to synchronize with the time server on the network.

Click DATE & TIME of the left frame in the Web GUI and the Date & Time screen appears in the right frame, where you can set the date and time of the clock built in IP-900 series.

Click the APPLY PC TIME button to set the date and time of the PC. Click the MANUAL UPDATE button after entering an arbitrary date and time sets the specified date and time.

Click the SYNCHRONIZE WITH TIME SERVER button to promptly adjust the time with the time server specified in Section 3.2.5, "Time Zone & Time Server." This function is enabled only when "Enable" is specified for Auto Synchronization.

* Any date and time between 00:00:00 on January 1, 1980 and 23:59:59 on December 31, 2030 can be specified.

Figure 3-20 Date & Time screen

3.2.13 Software Management

Click SOFTWARE MANAGEMENT of the left frame in the Web GUI and the Software Management screen appears in the right frame, where you can install software or restore, save or delete configuration data.

Figure 3-21 Software Management screen

■ Software

Specify the new file to be installed, click the INSTALL button to start installing the software.
The latest version can be downloaded from
"http://www.fujitsu.com/global/products/computing/peripheral/video/download/"

■ Configuration

× Configuration Restoration

Specify the file containing all configuration data and then click the RESTORE button to restore all the configuration data, which was saved previously, to IP-900 series.

× Configuration Backup

All the configuration data currently stored in IP-900 series can be backed up to the PC by click the BACKUP button.

× Deletion of the configuration data

All the configuration data currently stored in IP-900 series can be initialized by click the DELETE ALL button. This operation also resets information including the IP address to the state before shipment from the factory

■ Option

Enter the license key and click the INSTALL button to start installing the option.

■ OSS license

To download the terms and conditions file for OSS (Open Source Software), click the DOWNLOAD button.

Table 3-17 Software Management Items

	Item	Description
Software	Current software version	Displays the software version. V-- L-- C-- is displayed immediately after shipment from the factory.
	New software	Specify the full path of the file to be installed. The Browse button can also be used to select the file.
Configuration	Configuration file to be restored	To restore all the configuration data, specify the full path of the file. The Browse button can also be used to select the file.
	RESTORE	Use this button to restore all the configuration data. This button is enabled when a file name is specified in the "Configuration file to be restored" field.
	BACKUP	Use this button to back up all the configuration data from the IP-900 series to the PC.
	DELETE ALL	Use this button to delete all the configuration data from the IP-900 series. This operation resets all the configuration data to the default.
Option	Option license key	Enter the license key obtained when the optional license was purchased.
	Installed option	Names of installed options are displayed.

⚠ CAUTION

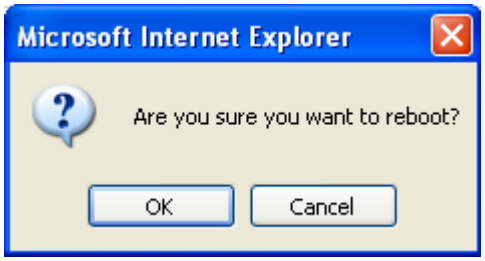
If all the configuration data is changed (restored or deleted), the IP address, subnet mask, and gateway may be changed. Note that this may cause an unexpected problem in your network.

Do not turn power off or press the MNT button while all the configuration data is being changed (being restored or deleted). Otherwise, you may prevent IP-900 series from starting.

If you access another Web screen while all the configuration data is being changed (being restored or deleted), you may lose information on the progress of the changing.

3.2.14 Reboot

Click REBOOT button in the left frame of the Web screen. The dialog box shown below appears for confirmation. Click the OK button to reboot.



3.3 Encoder

3.3.1 Setting (Encoder)

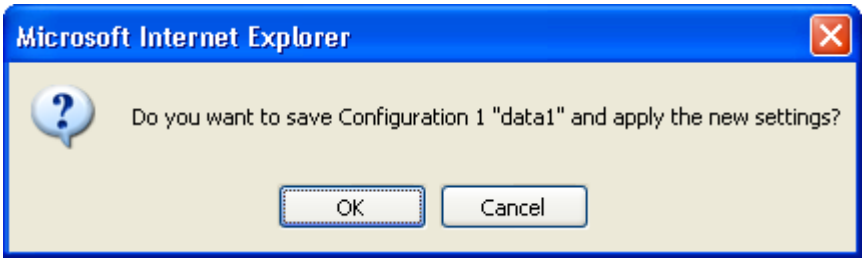
*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to encoding. Make the required settings by referring to **Table 3-18 Encoder Setting Items** and **Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range**

The same screen is displayed for SETTINGS, <AV input settings> Video, Audio, <Output interface settings> Main encoder and Sub encoder ethernet, <Main encoder settings> Encode, PID, and <Sub encoder settings> Encode, PID which are located in the frame on the left side of the Web screen. By click on the tab for each, the settings screen for each is displayed at the top of the frame on the right side.

Figure 3-22 Settings Screen (Encoder)

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.



* About [Operation Mode]

MODE1: in case of setting “Main H.264/MPEG-4 AVC 1stereo | Sub H.264/MPEG-4 AVC 1stereo” for [Operation mode].

MODE2: in case of setting “Main H.264/MPEG-4 AVC 2stereo” for [Operation mode].

×: Enable －: Disable

* Please refer to **3.2.6 Data Port"** for the detail of [Operation mode].

Table 3-18 Encoder Setting Items

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Cpu Utilization		Displays the CPU utilization for IP streaming. The CPU utilization increases in accordance with the Ethernet rate of the main encoder and sub encoder. No settings can be made that will cause the CPU utilization to exceed 100%.	You cannot specify this item.	×	×
Main SD/HD	Ethernet bit rate	Displays in units of bps the Ethernet bit rate for the main encoder that is currently set.	You cannot specify this item.	×	×
	System bit rate	Displays in units of bps the system bit rate for the main encoder that is currently set.	You cannot specify this item.	×	×
Sub SD/HD	Ethernet bit rate	Displays in units of bps the Ethernet bit rate for the sub encoder that is currently set.	You cannot specify this item.	×	-
	System bit rate	Displays in units of bps the system bit rate for the sub encoder that is currently set.	You cannot specify this item.	×	-
AV input settings (Video)	Video input port	Specify the interface for video signal input. * HDMI input does not support HDCP. Signals encrypted for the purpose of copyright protection cannot be input.	- SDI (Default) - HDMI - Analog	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
AV input settings (Video)	Video resolution	Specify the input resolution of the video signal. * The contents that can be set depend on the [Video input port] setting. * To specify HD, the HD software option needs to have been installed.	- SD (Default) - HD	×	×
	Video format	Specify the input format of the video signal.	Refer to **Table 3-21 Video Format (Main Encoder)** for set value.	×	×
	Analog video setup	* If "Analog" is specified for [Video input port], specify the setup level of the analog video input signal.	- Enable: 7.5 IRE - Disable (Default): Same as the pedestal level	×	×
	Analog video AGC	* If "Analog" is specified for [Video input port], specify whether to enable automatic gain control of the analog video input signal.	- Enable (Default) - Disable	×	×
	Display when no video input signal	Specify the fixed image to be sent when the video input is interrupted.	- Color bars (Default) - Gray - Black	×	×
	Buffer for video input	Specify whether to enable the protection buffer for video signal input. * If "Enable" is specified, a delay of up to 1 frame is caused, but video input error resistance is improved.	- Enable (Default) - Disable	×	×
AV input settings (Audio)	Audio input port	Specify the input format of the audio signal.	Refer to **Table 3-32 Audio Input Port (Main Encoder)** for set value.	×	×
	Audio1 input channel	Specify the AES channels for Audio1 of the main encoder only when "SDI" is specified for [Audio input port]. * The input channel specified for [Audio input channel] is also specified for Audio of the sub encoder.	Channel1 to Channel8 (Default: Channel1)	×	×
	Audio2 input channel	Specify the AES channels for Audio2 of the main encoder only when "SDI" is specified for [Audio input port].	Channel1 to Channel8 (Default: Channel2)	-	×
	Input level (*)	Specify the audio input level only when "Analog" is specified for [Audio input port]	-20dBm (Max. 0dBm) 0dBm (Max. 20dBm) (Default) * This function is applicable only for IP-920.	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Output interface settings (Main encoder ethernet)	IP version	Specify the IP version of the IP stream for streaming.	- IPv4 (Default) - IPv6	×	×
	Streaming mode	Specify the streaming method for the IP interface.	- Multicast (Default) - Unicast (simplex) : Specifying streaming destination - Unicast : Accepting streaming request	×	×
	Acceptable stream number	Specify the number of possible streams. * The contents that can be set depend on the [System bit rate] setting. * If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], only "1" can be specified.	1 to 4 (System rate is to 5.750 Mbps) 1 to 3 (System rate is 5.751 to 7.666 Mbps) 1 to 2 (System rate is 7.667 to 11.500 Mbps) 1 (System rate is 11.501 Mbps or higher) (Default: 1)	×	×
	Streaming destination IP address	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], specify the destination IP address of the streaming IP stream.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0	×	×
	TTL	Set IP packet TTL value.	1 to 255 (Default: 128)	×	×
	ARP auto update	If "Unicast (simplex)" is specified for [Streaming mode], specify whether to send ARP at regular intervals to check the communication with the streaming destination.	- Enable (Default) - Disable	×	×
	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to check the ID for confirming the validity of a unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the Unicast ID of the encoder and that of the decoder must be in agreement to perform streaming.	×	×
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	0000~ffff in Hexadecimal	×	×
	FEC	Specify whether to generate FEC packets.	- Enable (Default) - Disable	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Output interface settings (Main encoder ethernet)	FEC interval	Set the insertion interval for generating an FEC packet.	4 to 24 (Default: 10)	×	×
	ARQ	If "Unicast" is specified for [Streaming mode], specify whether to enable the ARQ error correction method.	- Enable - Disable (Default)	×	×
	TOS	Set IP packet TOS value.	00~ff in Hexadecimal (Default: 0)	×	×
	Protocol	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode] and "Disable" is selected for [FEC], specify the IP transport protocol.	- UDP - RTP (Default) * If "UDP" is selected, "Standard TS" is fixedly selected for [Stream format].	×	×
	Stream format	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], "Disable" is selected for [FEC], and "RTP" is specified for [Protocol], specify the stream format.	- Standard TS - Time stamped TS (Default)	×	×
	SMPTE2022 FEC	If "Standard TS" is selected for [Stream format], specify whether to generate SMPTE2022-1 FEC packets.	- Enable - Disable (Default)	×	×
	SMPTE2022 Matrix	If "Enable" is selected for [SMPTE2022 FEC], specify the generation matrix values for FEC packets.	A value of [4 to 20] x [4 to 20] can be set. (Default: 10 x 10) * N x N values that exceed 100 cannot be set.	×	×
Output interface settings (Main encoder ethernet port)	Streaming port	Specify the own device port number used for sending streams.	0, 1024 to 64000 (Default: 0) * If 0 is set, a port number between 64100 and 65000 is automatically selected.	×	×
		Specify the port number of the destination device used for sending streams.	1024 to 64000 (Default: 5000)	×	×
	Unicast request port	Specify the port number of the own device used for receiving a unicast streaming request.	1024 to 64000 (Default: 9900)	×	×
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.	×	×
	SMPTE2022 FEC port	Displays the port number of the own device used for sending SMPTE2022-1 FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.	×	×
Output interface settings (Sub encoder ethernet)	IP version	Specify the IP version of the IP stream for streaming.	- IPv4 (default) - IPv6	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Output interface settings (Sub encoder ethernet)	Streaming mode	Specify the streaming method for the IP interface.	- Multicast (Default) - Unicast (simplex) : Specifying streaming destination - Unicast : Accepting streaming request	×	-
	Acceptable stream number	Specify the number of possible streams. * The contents that can be set depend on the [System bit rate] setting. * If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], only "1" can be specified.	1 to 4 (System rate is to 5.750 Mbps) 1 to 3 (System rate is 5.751 to 7.666 Mbps) 1 to 2 (System rate is 7.667 to 11.500 Mbps) 1 (System rate is 11.501 Mbps or higher) (Default: 1)	×	-
	Streaming destination IP address	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], specify the destination IP address of the streaming IP stream.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0	×	-
	TTL	Set IP packet TTL value.	1 to 255 (Default: 128)	×	-
	ARP auto update	If "Unicast (simplex)" is specified for [Streaming mode], specify whether to send ARP at regular intervals to check the communication with the streaming destination.	- Enable (Default) - Disable	×	-
	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to check the ID for confirming the validity of a unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the Unicast ID of the encoder and that of the decoder must be in agreement to perform streaming.	×	-
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	0000~ffff in Hexadecimal (Default: 0000)	×	-
	FEC	Specify whether to generate FEC packets.	- Enable (Default) - Disable	×	-
	FEC interval	Set the insertion interval for generating an FEC packet.	4 to 24 (Default: 10)	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	ARQ	If "Unicast" is specified for [Streaming mode], specify whether to enable the ARQ error correction method.	- Enable - Disable (Default)	×	-
Output interface settings (Sub encoder ethernet)	TOS	Set IP packet TOS value.	00~ff in Hexadecimal (Default: 0)	×	-
	Protocol	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode] and "Disable" is selected for [FEC], specify the IP transport protocol.	- UDP - RTP (Default) * If "UDP" is selected, "Standard TS" is fixedly selected for [Stream format].	×	-
	Stream format	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], "Disable" is selected for [FEC], and "RTP" is specified for [Protocol], specify the stream format.	- Standard TS - Time stamped TS (Default)	×	-
	SMPTE2022 FEC	If "Standard TS" is selected for [Stream format], specify whether to generate SMPTE2022-1 FEC packets.	- Enable - Disable (Default)	×	-
	SMPTE2022 Matrix	If "Enable" is selected for [SMPTE2022 FEC], specify the generation matrix values for FEC packets.	A value of [4 to 20] x [4 to 20] can be set. (Default: 10 x 10) * N x N values that exceed 100 cannot be set.	×	-
Output interface settings (Sub encoder ethernet port)	Streaming port	Specify the own device port number used for sending streams.	0, 1024 to 64000 (Default: 0) * If 0 is set, a port number between 64100 and 65000 is automatically selected.	×	-
		Specify the port number of the destination device used for sending streams.	1024 to 64000 (Default: 5010)	×	-
	Unicast request port	Specify the port number of the own device used for receiving a unicast streaming request.	1024 to 64000 (Default: 9910)	×	-
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.	×	-
	SMPTE2022 FEC port	Displays the port number of the own device used for sending SMPTE2022-1 FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.	×	-
Main encoder settings (Encode)	Encoding operation	Specify whether to start encoding operation after the device is started or after the main encoder settings are changed.	- Enable - Disable (Default)	×	×
	Bit rate mode	Specify how the bit rate is specified.	- Video bit rate (Default) - System bit rate	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	System bit rate - HD -	If “HD” is specified for [Video resolution] and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	Refer to **Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range** for set value.	×	×
Main encoder settings (Encode)	Video resolution - HD -	If “HD” is specified for [Video resolution], specify the resolution of the video to be encoded.	Refer to **Table 3-22 Video Resolution (Main Encoder)** for set value.	×	×
	Video frame rate - HD -	If “HD” is specified for [Video resolution], specify the frame rate of the video to be encoded. *Please select one of “29.97fps”, “25fps” or “30fps” which is conformed to input video format. In case of using low bit rate with keeping video resolution, please select one of options except “29.97fps”, “25fps” and “30fps”. Please note that in this case, video image may become unsmoothed because interlaced video is thinned down and encoded.	Refer to **Table 3-23 Video Frame Rate (Main Encoder)** for set value.	×	×
	Encoding control mode - HD -	If “HD” is specified for [Video resolution], specify the control mode for video encoding.	- Quality (IBBP) (Default) - Motion (IBP) - Low Latency (PPPP) - Low Latency (IPPP) - Ultra Low Latency (PPPP)	×	×
	GOP - HD -	If “HD” is specified for [Video resolution], specify the GOP.	Refer to **Table 3-25 GOP (Main Encoder)** for set value.	×	×
	Video bit rate - HD -	If “HD” is specified for [Video resolution] and “Video bit rate” is specified for [Bit rate mode], specify the video bit rate.	Refer to **Table 3-26 Video Bit Rate (Main Encoder)** for set value.	×	×
	Bit rate mode - HD -	If “HD” is specified for [Video resolution], specify the bit rate mode of the video to be encoded.	- CBR (Default)	×	×
	Video PES - HD -	If “HD” is specified for [Video resolution], specify the PES structure of video encoding.	Refer to **Table 3-28 Video PES (Main Encoder)** for set value.	×	×
	Profile - HD -	If “HD” is specified for [Video resolution], specify the profile of the video encoding mode.	- High profile (Default) - Main profile	×	×
	PPS interval - HD -	If “HD” is specified for [Video resolution], specify the PPS interval for video encoding.	- GOP (Default) - Picture	×	×
	PPS ID - HD -	If “HD” is specified for [Video resolution], specify the PPS ID mode for video encoding.	- Fixed (Default) - Variable	×	×
	Pre-Filter - HD -	If “HD” is specified for [Video resolution], specify the strength of the pre-filter.	- OFF (Default) - LIGHT - MEDIUM - HEAVY	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Main encoder settings (Encode)	Refresh cycle - HD -	If "HD" is specified for [Video resolution], specify the refresh cycle. * The longer the refresh cycle is set, the more video quality improves; however, it takes longer to restore from video error by receive data error on the decoder.	Refer to **Table 3-30 Refresh Cycle (Main Encoder)** for set value.	×	×
	Audio1 format - HD -	If "HD" is specified for [Video resolution], specify the audio1 encoding format.	- MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	×	×
	Audio1 bit rate - HD -	If "HD" is specified for [Video resolution], specify the audio1 bit rate.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	×	×
	Audio1 bit rate mode - HD -	If "HD" is specified for [Video resolution], specify the audio1 bit rate mode to encode.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	×	×
	Audio1 language code - HD -	If "HD" is specified for [Input resolution], specify the Audio1 language code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single-byte characters (Default: Blank)	×	×
	Audio2 format - HD -	If "HD" is specified for [Input resolution], specify the audio2 encoding format.	- MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	-	×
	Audio2 bit rate - HD -	If "HD" is specified for [Input resolution], specify the audio2 bit rate.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	-	×
	Audio2 bit rate mode - HD -	If "HD" is specified for [Input resolution], specify the audio2 bit rate mode to encode.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	-	×
	Audio2 language code - HD -	If "HD" is specified for [Input resolution], specify the audio2 language code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single-byte characters (Default: Blank)	-	×
	Picture mode - HD -	If "HD" is specified for [Video resolution], specify the Picture mode in encoding. * Specify "Normal" in case of ordinary video or "Dynamic texture" in case of irregularly-changing video like wave on the surface of water.	Refer to **Table 3-31 Picture Mode, Coded Picture Buffer (Main Encoder)** for set value.	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Main encoder settings (Encode)	Coded picture buffer - HD -	If "HD" is specified for [Video resolution], specify the Coded picture buffer amount in encoding. * Specify "Normal" to minimize video latency at the normal video quality or "Double" to improve video quality even if video latency increases.	Refer to **Table 3-31 Picture Mode, Coded Picture Buffer (Main Encoder)** for set value.	×	×
	System bit rate - SD -	If "SD" is specified for [Video resolution] and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	Refer to **Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range** for set value.	×	×
	Video resolution - SD -	If "SD" is specified for [Video resolution], specify the resolution of the video to be encoded.	Refer to **Table 3-22 Video Resolution (Main Encoder)** for set value.	×	×
	Video frame rate - SD -	If "SD" is specified for [Video resolution], specify the frame rate of the video to be encoded. * In case of "720x480i/352x480i " at Video resolution, please select "29.97fps" which is conformed to input video format. In case of using low bit rate with keeping video resolution, please select one of options except "29.97fps". Please note that in this case, video image may become unsmoothed because interlaced video is thinned down and encoded.	Refer to **Table 3-23 Video Frame Rate (Main Encoder)** for set value.	×	×
	Encoding control mode - SD -	If "SD" is specified for [Video resolution], specify the control mode for video encoding.	Refer to **Table 3-24 Encoding Control Mode (Main Encoder)** for set value.	×	×
	GOP - SD -	If "SD" is specified for [Video resolution], specify the GOP.	Refer to **Table 3-25 GOP (Main Encoder)** for set value.	×	×
	Video bit rate - SD -	If "SD" is specified for [Video resolution] and "Video bit rate" is specified for [Bit rate mode], specify the video bit rate. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	Refer to **Table 3-26 Video Bit Rate (Main Encoder)** for set value.	×	×
	Bit rate mode - SD -	If "SD" is specified for [Video resolution], specify the bit rate mode of the video to be encoded.	Refer to **Table 3-27 Bit Rate Mode (Main Encoder)** for set value.	×	×
	Video PES - SD -	If "SD" is specified for [Video resolution], specify the PES structure of video encoding.	Refer to **Table 3-28 Video PES (Main Encoder)** for set value.	×	×
	Profile - SD -	If "SD" is specified for [Video resolution], specify the profile of the video encoding mode.	- High profile (Default) - Main profile	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	PPS interval - SD -	If "SD" is specified for [Video resolution], specify the PPS interval for video encoding.	- GOP (Default) - Picture	×	×
	PPS ID - SD -	If "SD" is specified for [Video resolution], specify the PPS ID mode for video encoding.	- Fixed (Default) - Variable	×	×
	Pre-Filter - SD -	If "SD" is specified for [Video resolution], specify the strength of the pre-filter.	Refer to **Table 3-29 Pre-Filter (Main Encoder)** for set value.	×	×
	Refresh cycle - SD -	If "SD" is specified for [Video resolution], specify the refresh cycle. * The longer the refresh cycle is set, the more video quality improves; however, it takes longer to restore from video error by receive data error on the decoder.	Refer to **Table 3-30 Refresh Cycle (Main Encoder)** for set value.	×	×
	Audio1 format - SD -	If "SD" is specified for [Video resolution], specify the audio1 encoding format.	- MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	×	×
	Audio1 bit rate - SD -	If "SD" is specified for [Video resolution], specify the audio1 bit rate.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	×	×
	Audio1 bit rate mode - SD -	If "SD" is specified for [Video resolution], specify the audio1 bit rate mode to encode.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	×	×
Main encoder settings (Encode)	Audio1 language code - SD -	If "SD" is specified for [Input resolution], specify the audio1 language code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single-byte characters (Default: Blank)	×	×
	Audio2 format - SD -	If "SD" is specified for [Input resolution], specify the audio2 encoding format.	- MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	-	×
	Audio2 bit rate - SD -	If "SD" is specified for [Input resolution], specify the audio2 bit rate.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	-	×
	Audio2 bit rate mode - SD -	If "SD" is specified for [Input resolution], specify the audio2 bit rate mode to encode.	Refer to **Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)** for set value.	-	×
	Audio2 language code - SD -	If "SD" is specified for [Input resolution], specify the audio2 language code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single-byte characters (Default: Blank)	-	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Picture mode - SD -	If "SD" is specified for [Video resolution], specify the Picture mode in encoding. * Specify "Normal" in case of ordinary video or "Dynamic texture" in case of irregularly-changing video like wave on the surface of water.	Refer to **Table 3-31 Picture Mode, Coded Picture Buffer (Main Encoder)** for set value.	×	×
	Coded picture buffer - SD -	If "SD" is specified for [Video resolution], specify the Coded picture buffer amount in encoding. * Specify "Normal" to minimize video latency at the normal video quality or "Double" to improve video quality even if video latency increases.	Refer to **Table 3-31 Picture Mode, Coded Picture Buffer (Main Encoder)** for set value.	×	×
	Padded data pattern	Specify the padded data pattern used in video encoding data. * If "IP satellite mode" is specified, video encoding data is padded with NULL packets. Therefore, the percentage of NULL packets in a distributed stream increases.	- Normal (Default) - IP satellite mode	×	×
Main encoder settings (PID)	NIT	Set whether to create NIT packets.	- Enable - Disable (Default)	×	×
	Carrier ID for NIT	Set whether to create carrier ID (NIT) when "Enable" is selected for [NIT].	- Enable - Disable (Default)	×	×
Main encoder settings (PID)	SDT	Set whether to create SDT packets.	- Enable - Disable (Default)	×	×
	Network name	[Network name] can be enabled to specify when "Enable" is set for [NIT].	Blank or 20 single-byte characters (Default: Blank)	×	×
	Original network ID	[Original network ID] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ffff in hexadecimal (Default: 0)	×	×
	Transport stream ID	[Transport stream ID] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ffff in hexadecimal (Default: 0)	×	×
	Program number/Service ID	Specify the program number or service ID.	1 to ffff in hexadecimal (Default: 1)	×	×
	Service type	[Service type] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ff in hexadecimal (Default: 0)	×	×
	Service provider name	[Service provider name] can be enabled to specify when "Enable" is selected for [SDT].	Blank or 16 single-byte characters (Default: Blank)	×	×
	Service name	[Service name] can be enabled to specify when "Enable" is selected for [SDT].	Blank or 16 single-byte characters (Default: Blank)	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Encoder manufacturer	[Encoder manufacturer] is shown when “Enable” is selected for [Carrier ID for NIT]. *Cannot be specified, display only.	FUJ_ Fixed	×	×
	Encoder serial number	[Encoder serial number] is shown when “Enable” is selected for [Carrier ID for NIT]. *Cannot be specified, display only.	MAC address of the unit Fixed	×	×
	Carrier identifier	[Carrier identifier] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 5 single-byte characters (Default: _____)	×	×
	Telephone number	[Telephone number] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 17 single-byte characters (Default: +00(0)0000000000_)	×	×
	Longitude	[Longitude] can be enabled to specify as “+” for eastward and “-“ for westward when “Enable” is selected for [Carrier ID for NIT].	Blank or 9 single-byte characters +000.000~±180.000 (Default: +000.0000)	×	×
	Latitude	[Latitude] can be enabled to specify as “+” for north and “-“ for south when “Enable” is selected for [Carrier ID for NIT].	Blank or 8 single-byte characters (+00.000~±90.000) (Default: +00.0000)	×	×
	User information	[User information] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 15 single-byte characters (Default: _____)	×	×
	NIT PID	[NIT PID] is shown when “Enable” is selected for [NIT]. *Cannot be specified, display only.	10 Fixed	×	×
Main encoder settings (PID)	SDT PID	[SDT PID] is shown when “Enable” is selected for [NIT]. *Cannot be specified, display only.	11 Fixed	×	×
	PMT PID	Specify the PID of the PMT.	1 to 1ffe in hexadecimal (Default: 100)	×	×
	Video PID	Specify the PID of Video.	1 to 1ffe in hexadecimal (Default: 1011)	×	×
	Audio1 PID	Specify the PID of Audio.	1 to 1ffe in hexadecimal (Default: 1100)	×	×
	Audio2 PID	Specify the PID of Audio.	1 to 1ffe in hexadecimal (Default: 1101)	-	×
	PCR PID	Specify the PID of the PCR.	1 to 1fff in hexadecimal (Default: 1001)	×	×
	PSI insertion interval - HD -	If “HD” is specified for [Video resolution], specify the interval at which to insert the PAT and PMT.	100 to 1000 msec (Default: 100) * Settable in units of 100 msec	×	×
	PSI insertion interval - SD -	If “SD” is specified for [Video resolution], specify the interval at which to insert the PAT and PMT.	100 to 1000 msec (Default: 100) * Settable in units of 100 msec	×	×
	PCR interval - HD -	If “HD” is specified for [Video resolution], specify the interval at which to insert the PCR.	30 to 1000 msec (Default: 100)	×	×

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	PCR interval - SD -	If "SD" is specified for [Video resolution], specify the interval at which to insert the PCR.	30 to 1000 msec (Default: 100)	×	×
Sub encoder settings (Encode)	Encoding operation	Specify whether to start encoding operation after the device is started or after the sub encoder settings are changed.	- Enable - Disable (Default)	×	-
	Downconverter	If "HD" is specified for [Video resolution] and a setting other than "1080i/60" is specified for [Video format], specify the conversion mode used for down-converting HD video to SD video.	Refer to **Table 3-34 Downconverter (Sub Encoder)** for set value.	×	-
	Bit rate mode	Specify how the bit rate is specified.	- Video bit rate (Default) - System bit rate	×	-
	System bit rate - HD -	If "HD" is specified for [Video resolution], "None" is specified for [Downconverter], and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	Refer to **Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range** for set value.	×	-
	Video resolution - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the resolution of the video to be encoded.	Refer to **Table 3-35 Video Resolution (Sub Encoder)** for set value.	×	-
Sub encoder settings (Encode)	Video frame rate - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the frame rate of the video to be encoded. * Please select one of "29.97fps", "25fps" or "30fps" which is conformed to input video format. In case of using low bit rate with keeping video resolution, please select one of options except "29.97fps", "25fps" and "30fps". Please note that in this case, video image may become unsmoothed because interlaced video is thinned down and encoded.	Refer to **Table 3-36 Video Frame Rate (Sub Encoder)** for set value.	×	-
	Encoding control mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the control mode for video encoding.	- Quality (IBBP) (Default) - Motion (IBP) - Low Latency (PPPP) - Low Latency (IPPP) - Ultra Low Latency (PPPP)	×	-
	GOP - HD -	If "HD" is specified for [Video resolution], specify the GOP.	Refer to **Table 3-38 GOP (Sub Encoder)** for set value.	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Video bit rate - HD -	If "HD" is specified for [Video resolution], "None" is specified for [Downconverter], and "Video bit rate" is specified for [Bit rate mode], specify the video bit rate. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	Refer to **Table 3-39 Video Bit Rate (Sub Encoder)** for set value.	×	-
	Bit rate mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the video bit rate mode.	- CBR (Default)	×	-
	Video PES - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PES structure of video encoding.	Refer to **Table 3-41 Video PES (Sub Encoder)** for set value.	×	-
	Profile - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the profile of the video encoding mode.	- High profile (Default) - Main profile	×	-
	PPS interval - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PPS interval for video encoding.	- GOP (Default) - Picture	×	-
	PPS ID - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PPS ID mode for video encoding.	- Fixed (Default) - Variable	×	-
	Pre-Filter - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the strength of the pre-filter.	- OFF (Default) - LIGHT - MEDIUM - HEAVY	×	-
Sub encoder settings (Encode)	Refresh cycle - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the refresh cycle. * The longer the refresh cycle is set, the more video quality improves; however, it takes longer to restore from video error by receive data error on the decoder.	Refer to **Table 3-43 Refresh Cycle (Sub Encoder)** for set value.	×	-
	Audio format - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the audio encoding format.	- MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	×	-
	Audio bit rate - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the audio bit rate.	Refer to **Table 3-45 Audio Bit Rate, Audio Bit Rate Mode (Sub Encoder)** for set value.	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Audio bit rate mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the audio bit rate mode to encode.	Refer to **Table 3-45 Audio Bit Rate, Audio Bit Rate Mode (Sub Encoder)** for set value.	×	-
	Audio language code - HD -	If "HD" is specified for [Input resolution], specify the code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single byte character (Default: Blank)	×	-
	Picture mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the Picture mode in encoding. * Specify "Normal" in case of ordinary video or "Dynamic texture" in case of irregularly-changing video like wave on the surface of water.	Refer to **Table 3-44 Picture Mode, Coded Picture Buffer (Sub Encoder)** for set value.	×	-
	Coded picture buffer - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the Coded picture buffer amount in encoding. * Specify "Normal" to minimize video latency at the normal video quality or "Double" to improve video quality even if video latency increases.	Refer to **Table 3-44 Picture Mode, Coded Picture Buffer (Sub Encoder)** for set value.	×	-
	System bit rate - SD -	If "SD" is specified for [Video resolution], "Letter box" or "Side cropped" is specified for [Downconverter], and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	Refer to **Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range** for set value.	×	-
Sub encoder settings (Encode)	Video resolution - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the resolution of the video to be encoded.	Refer to **Table 3-35 Video Resolution (Sub Encoder)** for set value.	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Video frame rate - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the frame rate of the video to be encoded. * In case of "720x480i/352x480i " at Video resolution, please select "29.97fps" which is conformed to input video format. In case of using low bit rate with keeping video resolution, please select one of options except "29.97fps". Please note that in this case, video image may become unsmoothed because interlaced video is thinned down and encoded.	Refer to **Table 3-36 Video Frame Rate (Sub Encoder)** for set value.	×	-
	Encoding control mode - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the control mode for video encoding.	Refer to **Table 3-37 Encoding Control Mode (Sub Encoder)** for set value.	×	-
	GOP - SD -	If "SD" is specified for [Video resolution], specify the GOP.	Refer to **Table 3-38 GOP (Sub Encoder)** for set value.	×	-
	Video bit rate - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], and "Video bit rate" is specified for [Bit rate mode], specify video bit rate. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	Refer to **Table 3-39 Video Bit Rate (Sub Encoder)** for set value.	×	-
	Bit rate mode - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the video bit rate mode.	Refer to **Table 3-40 Bit Rate Mode (Sub Encoder)** for set value.	×	-
	Video PES - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PES structure of video encoding.	Refer to **Table 3-41 Video PES (Sub Encoder)** for set value.	×	-
	Profile - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the profile of the video encoding mode.	- High profile (Default) - Main profile	×	-
	PPS interval - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PPS interval for video encoding.	- GOP (Default) - Picture	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Sub encoder settings (Encode)	PPS ID - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PPS ID mode for video encoding.	- Fixed (Default) - Variable	×	-
	Pre-Filter - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the strength of the pre-filter.	Refer to **Table 3-42 Pre-Filter (Sub Encoder)** for set value.	×	-
	Refresh cycle - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the refresh cycle. * The longer the refresh cycle is set, the more video quality improves; however, it takes longer to restore from video error by receive data error on the decoder.	Refer to **Table 3-43 Refresh Cycle (Sub Encoder)** for set value.	×	-
	Audio format - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the audio encoding mode.	Encoding format - MPEG-1 Layer2 (Default) - MPEG-2 AAC - None	×	-
	Audio bit rate - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the audio bit rate.	Refer to **Table 3-45 Audio Bit Rate, Audio Bit Rate Mode (Sub Encoder)** for set value.	×	-
	Audio bit rate mode - SD -	If "SD" is specified for [Video resolution] or "Letter box"/"Side cropped" is specified for [Downconverter], specify the audio bit rate mode to encode.	Refer to **Table 3-45 Audio Bit Rate, Audio Bit Rate Mode (Sub Encoder)** for set value.	×	-
	Audio language code - SD -	If "SD" is specified for [Input resolution], specify the code in three-letter code of ISO 639-2. * Refer to **Table 3-20 Main ISO 639-2 Language Code** for the main language code.	Blank or 3 single-byte characters (Default: Blank)	×	-
	Picture mode - SD -	If "SD" is specified for [Video resolution] or "Letter box"/"Side cropped" is specified for [Downconverter], specify the audio adjustment mode in encoding. * Specify "Normal" in case of ordinary video or "Dynamic texture" in case of irregularly-changing video like wave on the surface of water.	Refer to **Table 3-44 Picture Mode, Coded Picture Buffer (Sub Encoder)** for set value.	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Sub encoder settings (Encode)	Coded picture buffer - SD -	If "SD" is specified for [Video resolution] or "Letter box"/"Side cropped" is specified for [Downconverter], specify the Coded picture buffer amount in encoding. * Specify "Normal" to minimize video latency at the normal video quality or "Double" to improve video quality even if video latency increases.	Refer to **Table 3-44 Picture Mode, Coded Picture Buffer (Sub Encoder)** for set value.	×	-
	Padded data pattern	Specify the padded data pattern used in video encoding data. * If "IP satellite mode" is specified, video encoding data is padded with MPEG2-TS NULL packets. Therefore, the percentage of NULL packets in a distributed stream increases.	- Normal (Default) - IP satellite mode	×	-
Sub Encoder Settings (PID)	NIT	Set whether to create NIT packets.	- Enable - Disable (Default)	×	-
	Carrier ID for NIT	Set whether to create carrier ID (NIT) when "Enable" is selected for [NIT].	- Enable - Disable (Default)	×	-
	SDT	Set whether to create SDT packets.	- Enable - Disable (Default)	×	-
	Network name	[Network name] can be enabled to specify when "Enable" is set for [NIT].	Blank or 20 single-byte characters (Default: Blank)	×	-
	Original network ID	[Original network ID] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ffff in hexadecimal (Default: 0)	×	-
	Transport stream ID	[Transport stream ID] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ffff in hexadecimal (Default: 0)	×	-
	Program number/Service ID	Specify the program number or service ID.	1 to ffff in hexadecimal (Default: 1)	×	-
	Service type	[Service type] can be enabled to specify when "Enable" is selected for [NIT] or [SDT].	0~ff in hexadecimal (Default: 0)	×	-
	Service provider name	[Service provider name] can be enabled to specify when "Enable" is selected for [SDT].	Blank or 16 single-byte characters (Default: Blank)	×	-
	Service name	[Service name] can be enabled to specify when "Enable" is selected for [SDT].	Blank or 16 single-byte characters (Default: Blank)	×	-
	Encoder manufacturer	[Encoder manufacturer] is shown when "Enable" is selected for [Carrier ID for NIT]. *Cannot be specified, display only.	FUJ_ Fixed	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
	Encoder serial number	[Encoder serial number] is shown when “Enable” is selected for [Carrier ID for NIT]. *Cannot be specified, display only.	MAC address of the unit Fixed	×	-
	Carrier identifier	[Carrier identifier] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 5 single-byte characters (Default: _____)	×	-
	Telephone number	[Telephone number] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 17 single-byte characters (Default: +00(0)0000000000_)	×	-
Sub Encoder Settings (PID)	Longitude	[Longitude] can be enabled to specify as “+” for eastward and “-“ for westward when “Enable” is selected for [Carrier ID for NIT].	Blank or 9 single-byte characters +000.000~±180.000 (Default: +000.0000)	×	-
	Latitude	[Latitude] can be enabled to specify as “+” for north and “-“ for south when “Enable” is selected for [Carrier ID for NIT].	Blank or 8 single-byte characters (+00.000~±90.000) (Default: +00.0000)	×	-
	User information	[User information] can be enabled to specify when “Enable” is selected for [Carrier ID for NIT].	Blank or 15 single-byte characters (Default: _____)	×	-
	NIT PID	[NIT PID] is shown when “Enable” is selected for [NIT]. *Cannot be specified, display only.	10 Fixed	×	-
	SDT PID	[SDT PID] is shown when “Enable” is selected for [NIT]. *Cannot be specified, display only.	11 Fixed	×	-
	PMT PID	Specify the PID of the PMT.	1 to 1ffe in Hexadecimal (Default: 100)	×	-
	Video PID	Specify the PID of Video.	1 to 1ffe in Hexadecimal (Default: 1011)	×	-
	Audio PID	Specify the PID of Audio.	1 to 1ffe in Hexadecimal (Default: 1100)	×	-
	PCR PID	Specify the PID of the PCR.	1 to 1fff in Hexadecimal (Default: 1001)	×	-
	PSI insertion interval - HD -	If “HD” is specified for [Video resolution] and “None” is specified for [Downconverter], specify the interval at which to insert the PAT and PMT.	100 to 1000 msec (Default: 100) * Settable in units of 100 msec.	×	-
	PSI insertion interval - SD -	If “SD” is specified for [Video resolution] or “Letter box”/”Side cropped” is specified for [Downconverter], specify the interval at which to insert the PAT and PMT.	100 to 1000 msec (Default: 100) * Settable in units of 100 msec.	×	-
	PCR interval - HD -	If “HD” is specified for [Video resolution] and “None” is specified for [Downconverter], specify the interval at which to insert the PCR.	30 to 1000 msec (Default: 100)	×	-

Item		Description	Parameter	Operation mode	
				MODE 1	MODE 2
Sub Encoder Settings (PID)	PCR interval - SD -	If "SD" is specified for [Video resolution] or "Letter box"/"Side cropped" is specified for [Downconverter], specify the interval at which to insert the PCR.	30 to 1000 msec (Default: 100)	×	-

Table 3-19 Main encoder/Sub encoder System Bit Rate Setting Range

Main Encoder／Sub-encoder		
Video Resolution	Video frame rate	System bit rate setting range
1920×1080 1280×720	30fps 29.97fps/25fps	Up to30.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 3 to 27 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 3 Mbps. When the system bit rate is set with the video bit rate of higher than 27 Mbps, the video bit rate is fixed to 27 Mbps.
1440×1080 960×720	30fps 29.97fps/25fps	Up to30.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 2 to 27 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 2 Mbps. When the system bit rate is set with the video bit rate of higher than 27 Mbps, the video bit rate is fixed to 27 Mbps.
960×1080 640×720	30fps 29.97fps/25fps	Up to30.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 0.5 to 27 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.5 Mbps. When the system bit rate is set with the video bit rate of higher than 27 Mbps, the video bit rate is fixed to 27 Mbps.
1920×1080 1440×1080 960×1080	14.985fps 9.99fps 4.995fps 1.998fps 0.999fps 0.4995fps	Up to7.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 0.1 to 5 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.1 Mbps. When the system bit rate is set with the video bit rate of higher than 5 Mbps, the video bit rate is fixed to 5 Mbps.
720×480 720×576	29.97fps/25fps	Up to12.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 0.3 to 10 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.3 Mbps. When the system bit rate is set with the video bit rate of higher than 10 Mbps, the video bit rate is fixed to 10 Mbps.
352×480 352×576	29.97fps/25fps	Up to12.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 0.15 to 10 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.15 Mbps. When the system bit rate is set with the video bit rate of higher than 10 Mbps, the video bit rate is fixed to 10 Mbps.

720×480 352×480	14.985fps 9.99fps 4.995fps 1.998fps 0.999fps 0.4995fps	Up to7.000 Mbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 0.1 to 5 Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.1 Mbps. When the system bit rate is set with the video bit rate of higher than 5 Mbps, the video bit rate is fixed to 5 Mbps.
352×240 352×288	14.985fps/12.5fps 9.99fps/8.333fps 7.493fps/6.25fps 4.995fps/4.167fps 2.997fps/2.5fps 1.998fps/1.667fps 0.999fps/1fps	Up to 3000 Kbps (can be set in 1 Kbps increment) The system bit rate setting with the video bit rate range of 25 to 1000 Kbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 25 Kbps. When the system bit rate is set with the video bit rate of higher than 1000 Kbps, the video bit rate is fixed to 1000 Kbps.
176x112 176x144 *Only Sub-encoder	14.985fps/12.5fps 9.99fps/8.333fps 7.493fps/6.25fps 4.995fps/4.167fps 2.997fps/2.5fps 1.998fps/1.667fps 0.999fps/1fps	Up to 3000 Kbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 25 to 1000 Kbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 25 Kbps. When the system bit rate is set with the video bit rate of higher than 1000 Kbps, the video bit rate is fixed to 1000 Kbps.

Table 3-20 Main ISO 639-2 Language Code

Language	Three-letter code
Danish	dan
Dutch	dut/nld (*1)
English	eng
Finnish	fin
French	fre/fra (*1)
German	ger/deu (*1)
Italian	ita
Norwegian	nor
Portuguese	por
Spanish	spa
None	blank

*1: Two codes are allocated for one language.

Setting condition of Encoder setting items are shown below.

Table 3-21 Video Format (Main Encoder)

		Video format							
Video input port	Input resolution	1080i/59.94	1080i/50	1080i/60	1080i/60(->59.94) (*1)	720p/59.94	720p/50	480i/59.94	576i/50
SDI	SD							×	×
	HD	×	×	×	×	×	×		
HDMI (*2)	SD							×	×
	HD	×	×	×	×	×	×		
Analog	SD							×	×

*1: Transmit video by converting input signal from 60 Hz to 59.94 Hz.

*2: In case of HDMI input, HDCP is not supported. Encrypted signals cannot be input for copyright protection

Table 3-22 Video Resolution (Main Encoder)

	Video resolution											
Video format	1920x 1080	1440x 1080	960x 1080	1280x 720	960x720	640x720	720x480	352x480	352x240	720x576	352x576	352x288
1080i/59.94	×	×	×									
1080i/50	×	×	×									
1080i/60	×	×	×									
1080i/60 (->59.94)	×	×	×									
720p/59.94				×	×	×						
720p/50				×	×	×						
480i/59.94							×	×	×			
576i/50										×	×	×

Table 3-23 Video Frame Rate (Main Encoder)

Video resolution	Video frame rate (fps)																		
	29.97	25	30	59.94	50	14.985	9.99	7.493	4.995	2.997	1.998	0.999	0.4995	12.5	8.333	6.25	4.167	2.5	1.667	1
1920x1080	×	×	×			×	×		×		×	×	×							
1440x1080	×	×	×			×	×		×		×	×	×							
960x1080	×	×	×			×	×		×		×	×	×							
1280x720				×	×															
960x720				×	×															
640x720				×	×															
720x480	×					×	×		×		×	×	×							
352x480	×					×	×		×		×	×	×							
352x240						×	×	×	×	×	×	×								
720x576		×																		
352x576		×																		
352x288														×	×	×	×	×	×	×

Table 3-24 Encoding Control Mode (Main Encoder)

Video resolution	Video frame rate (fps)	Encoding control mode			
		IBBP	IBP	IPPP	PPPP
1920x1080	30/29.97/25	×	×	×	×
	Enable			×	
1440x1080	30/29.97/25	×	×	×	×
	Enable			×	
960x1080	30/29.97/25	×	×	×	×
	Enable			×	
1280x720	--	×	×	×	×
960x720	--	×	×	×	×
640x720	--	×	×	×	×
720x480	29.97/25	×	×	×	×
	Enable			×	
352x480	29.97/25	×	×	×	×
	Enable			×	
352x240	7.493	×		×	
	Enable			×	
720x576	--	×	×	×	×
352x576	--	×	×	×	×
352x288	6.25	×		×	
	Enable			×	

Table 3-25 GOP (Main Encoder)

Encoding control mode	GOP	
	Open	Closed
IBBP	×	×
IBP	×	×
IPPP	×	×
PPPP		

Table 3-26 Video Bit Rate (Main Encoder)

Video resolution	Video frame rate (fps)	Video bit rate											
		25/40/45/50/96/128/160/192/256/384/512/768/1000 Kbps	100 Kbps	150 Kbps	200 Kbps	300/400 Kbps	500 Kbps	1 Mbps	1.3 Mbps	2 Mbps	3/4/5 Mbps	6/7/8/9/10 Mbps	11/12/14/16/18/20/27 Mbps
1920x1080	30/29.97/25										×	×	×
	Enable		×		×	×	×	×		×	×		
1440x1080	30/29.97/25									×	×	×	×
	Enable		×		×	×	×	×		×	×		
960x1080	30/29.97/25						×	×		×	×	×	×
	Enable		×		×	×	×	×		×	×		
1280x720	--										×	×	×
960x720	--									×	×	×	×
640x720	--						×	×		×	×	×	×
720x480	29.97/25					×	×	×	×	×	×	×	
	Enable		×		×	×	×	×		×	×		
352x480	29.97/25			×	×	×	×	×	×	×	×	×	
	Enable		×	×	×	×	×	×	×	×	×		
352x240	--	×											
720x576	--					×	×	×	×	×	×	×	
352x576	--			×	×	×	×	×	×	×	×	×	
352x288	--	×											

Table 3-27 Bit Rate Mode (Main Encoder)

Video resolution	Video frame rate (fps)	Encoding control mode	Bit rate mode	
			CBR	VBR
1920x1080	--	--	×	
1440x1080	--	--	×	
960x1080	--	--	×	
1280x720	--	--	×	
960x720	--	--	×	
640x720	--	--	×	
720x480	--	--	×	
352x480	--	--	×	
352x240	7.493	IBBP		×
		IPPP	×	
	Enable	--	×	
720x576	--	--	×	
352x576	--	--	×	
352x288	6.25	IBBP		×
		IPPP	×	
	Enable	--	×	

Table 3-28 Video PES (Main Encoder)

Video resolution	Encoding control mode	Video PES	
		1Field/1PES	1Frame/1PES
1920x1080	IBBP	×	×
	Enable	×	
1440x1080	IBBP	×	×
	Enable	×	
960x1080	IBBP	×	×
	Enable	×	
1280x720	--		×
960x720	--		×
640x720	--		×
720x480	IBBP	×	×
	Enable	×	
352x480	IBBP	×	×
	Enable	×	
352x240	--		×
720x576	IBBP	×	×
	Enable	×	
352x576	IBBP	×	×
	Enable	×	
352x288	--		×

Table 3-29 Pre-Filter (Main Encoder)

Video resolution	Pre-Filter			
	OFF	LIGHT	MEDIUM	HEAVY
1920x1080	×	×	×	×
1440x1080	×	×	×	×
960x1080	×	×	×	×
1280x720	×	×	×	×
960x720	×	×	×	×
640x720	×	×	×	×
720x480	×	×	×	×
352x480	×	×	×	×
352x240	×			
720x576	×	×	×	×
352x576	×	×	×	×
352x288	×			

Table 3-30 Refresh Cycle (Main Encoder)

Video Resolution	Frame Rate	Encoding control mode	Refresh cycle (frame)
1920x1080 1440x1080 960x1080	29.97	IBBP	15/30/60
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	34/68/134
	25	IBBP	12/24/48
		IBP	12/24/48
		IPPP	12/24/48
		PPPP	34/68/134
	30	IBBP	30/60/120
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	34/68/134
	14.985	IPPP	15/30/60
	9.99	IPPP	10/20/40
	4.995	IPPP	5/10/20
	1.998	IPPP	2/4/8
	0.999	IPPP	1/2/4
	0.4995	IPPP	1/2/4
1280x720 960x720 640x720	59.94	IBBP	30/60/120
		IBP	28/56/112
		IPPP	30/60/120
		PPPP	90/180/360
	50	IBBP	24/48/96
		IBP	24/48/96
		IPPP	24/48/96
		PPPP	90/180/360
720x480 352x480	29.97	IBBP	15/30/60
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	30/60/120
	14.985	IPPP	15/30/60
	9.99	IPPP	10/20/40
	4.995	IPPP	5/10/20
	1.998	IPPP	2/4/8
	0.999	IPPP	1/2/4
	0.4995	IPPP	1/2/4
720x576 352x576	25	IBBP	12/24/48
		IBP	12/24/48
		IPPP	12/24/48
		PPPP	36/72/144
352x240	14.985	IPPP	7/15/30
	9.99	IPPP	5/10/20
	7.493	IBBP	6/15/30
		IPPP	7/15/30
	4.995	IPPP	5/10/20
	2.997	IPPP	3/6/12
	1.998	IPPP	4/8/16
	0.999	IPPP	2/4/8
352x288	12.5	IPPP	6/12/24
	8.333	IPPP	4/8/16
	6.25	IBBP	6/12/24
		IPPP	6/12/24
	4.167	IPPP	4/8/16
	2.5	IPPP	2/5/10
	1.667	IPPP	2/5/10
	1	IPPP	2/5/10

Table 3-31 Picture Mode, Coded Picture Buffer (Main Encoder)

Video resolution	Encoding control mode	Picture mode		Coded picture buffer	
		Normal	Dynamic texture	Standard	Double
1920x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
1440x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
960x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
1280x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
960x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
640x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
720x480	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x480	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x240	--	×		×	×
720x576	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x576	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x288	--	×		×	×

Table 3-32 Audio Input Port (Main Encoder)

Video input port	Audio input port		
	SDI	HDMI	Analog
SDI	×		×
HDMI		×	×
Analog			×

Table 3-33 Audio Bit Rate, Audio Bit Rate Mode (Main Encoder)

Audio format	Audio bit rate (Kbps) / Audio bit rate mode							
	56/CBR	64/CBR	64/VBR	128/CBR	128/VBR	256/CBR	256/VBR	384/CBR
MPEG-1 Layer2				×		×		×
MPEG-2 AAC	×	×	×	×	×	×	×	×

Table 3-34 Downconverter (Sub Encoder)

	Downconverter		
Video format	Letter box	Side cropped	Squeeze
1080i/59.94	×	×	×
1080i/50	×	×	×
1080i/60			
1080i/60 (->59.94)	×	×	
720p/59.94	×	×	
720p/50	×	×	
480i/59.94			
576i/50			

Table 3-35 Video Resolution (Sub Encoder)

		Video resolution													
Video format	Downconverter	1920 x1080	1440 x1080	960 x1080	1280 x720	960x720	640x720	720x480	352x480	352x240	176x112	720x576	352x576	352x288	176x144
1080i/59.94	None	×	×	×											
	Enable							×	×	×	×				
1080i/50	None	×	×	×											
	Enable											×	×	×	×
1080i/60	--	×	×	×											
1080i/60 (->59.94)	None	×	×	×											
	Enable							×	×	×	×				
720p/59.94	None				×	×	×								
	Enable							×	×	×	×				
720p/50	None				×	×	×								
	Enable											×	×	×	×
480i/59.94	--							×	×	×	×				
576i/50	--											×	×	×	×

Table 3-36 Video Frame Rate (Sub Encoder)

Video resolution	Video frame rate (fps)																			
	29.97	25	30	59.94	50	14.985	9.99	7.493	4.995	2.997	1.998	0.999	0.4995	12.5	8.333	6.25	4.167	2.5	1.667	1
1920x1080	×	×	×			×		×	×		×	×	×							
1440x1080	×	×	×			×		×	×		×	×	×							
960x1080	×	×	×			×		×	×		×	×	×							
1280x720				×	×															
960x720				×	×															
640x720				×	×															
720x480	×					×		×	×		×	×	×							
352x480	×					×		×	×		×	×	×							
352x240						×	×	×	×	×	×	×								
176x112						×	×	×	×	×	×	×								
720x576		×																		
352x576		×																		
352x288														×	×	×	×	×	×	×
176x144														×	×	×	×	×	×	×

Table 3-37 Encoding Control Mode (Sub Encoder)

Video resolution	Video frame rate (fps)	Encoding control mode			
		IBBP	IBP	IPPP	PPPP
1920x1080	30/29.97/25	×	×	×	×
	Enable			×	
1440x1080	30/29.97/25	×	×	×	×
	Enable			×	
960x1080	30/29.97/25	×	×	×	×
	Enable			×	
1280x720	--	×	×	×	×
960x720	--	×	×	×	×
640x720	--	×	×	×	×
720x480	29.97/25	×	×	×	×
	Enable			×	
352x480	29.97/25	×	×	×	×
	Enable			×	
352x240	7.493	×		×	
	Enable			×	
176x112	--			×	
720x576	--	×	×	×	×
352x576	--	×	×	×	×
352x288	6.25	×		×	
	Enable			×	
176x144	--			×	

Table 3-38 GOP (Sub Encoder)

Encoding control mode	GOP	
	Open	Closed
IBBP	×	×
IBP	×	×
IPPP	×	×
PPPP		

Table 3-39 Video Bit Rate (Sub Encoder)

		Video bit rate											
Video resolution	Video frame rate (fps)	25/40/45/50/96/128/160/192/256/384/512/768/1000 Kbps	100 Kbps	150 Kbps	200 Kbps	300/400 Kbps	500 Kbps	1 Mbps	1.3 Mbps	2 Mbps	3/4/5 Mbps	6/7/8/9/10 Mbps	11/12/14/16/18/20/27 Mbps
1920x1080	30/29.97/25										×	×	×
	Enable		×		×	×	×	×		×	×		
1440x1080	30/29.97/25									×	×	×	×
	Enable		×		×	×	×	×		×	×		
960x1080	30/29.97/25						×	×		×	×	×	×
	Enable		×		×	×	×	×		×	×		
1280x720	--										×	×	×
960x720	--									×	×	×	×
640x720	--						×	×		×	×	×	×
720x480	29.97/25					×	×	×	×	×	×	×	
	Enable		×	×	×	×	×	×	×	×	×		
352x480	29.97/25			×		×	×	×	×	×	×	×	
	Enable		×	×	×	×	×	×	×	×	×		
352x240	--	×											
176x112	--	×											
720x576	--					×	×	×	×	×	×	×	
352x576	--			×		×	×	×	×	×	×	×	
352x288	--	×											
176x144	--	×											

Table 3-40 Bit Rate Mode (Sub Encoder)

Video resolution	Video frame rate (fps)	Encoding control mode	Bit rate mode	
			CBR	VBR
1920x1080	--	--	×	
1440x1080	--	--	×	
960x1080	--	--	×	
1280x720	--	--	×	
960x720	--	--	×	
640x720	--	--	×	
720x480	--	--	×	
352x480	--	--	×	
352x240	7.493	IBBP		×
		IPPP	×	
	Enable	--	×	
176x112	--	--	×	
720x576	--	--	×	
352x576	--	--	×	
352x288	6.25	IBBP		×
		IPPP	×	
	Enable	--	×	
176x144	--	--	×	

Table 3-41 Video PES (Sub Encoder)

Video resolution	Encoding control mode	Video PES	
		1Field/1PES	1Frame/1PES
1920x1080	IBBP	×	×
	Enable	×	
1440x1080	IBBP	×	×
	Enable	×	
960x1080	IBBP	×	×
	Enable	×	
1280x720	--		×
960x720	--		×
640x720	--		×
720x480	IBBP	×	×
	Enable	×	
352x480	IBBP	×	×
	Enable	×	
352x240	--		×
176x112	--		×
720x576	IBBP	×	×
	Enable	×	
352x576	IBBP	×	×
	Enable	×	
352x288	--		×
176x144	--		×

Table 3-42 Pre-Filter (Sub Encoder)

Video resolution	Pre-Filter			
	OFF	LIGHT	MEDIUM	HEAVY
1920x1080	×	×	×	×
1440x1080	×	×	×	×
960x1080	×	×	×	×
1280x720	×	×	×	×
960x720	×	×	×	×
640x720	×	×	×	×
720x480	×	×	×	×
352x480	×	×	×	×
352x240	×			
176x112	×			
720x576	×	×	×	×
352x576	×	×	×	×
352x288	×			
176x144	×			

Table 3-43 Refresh Cycle (Sub Encoder)

Video Resolution	Frame Rate	Encoding control mode	Refresh cycle (frame)
1920x1080 1440x1080 960x1080	29.97	IBBP	15/30/60
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	34/68/134
	25	IBBP	12/24/48
		IBP	12/24/48
		IPPP	12/24/48
		PPPP	34/68/134
	30	IBBP	15/30/60
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	34/68/134
	14.985	IPPP	15/30/60
	9.99	IPPP	10/20/40
	4.995	IPPP	5/10/20
	1.998	IPPP	2/4/8
	0.999	IPPP	1/2/4
	0.4995	IPPP	1/2/4
1280x720 960x720 640x720	59.94	IBBP	30/60/120
		IBP	28/56/112
		IPPP	30/60/120
		PPPP	90/180/360
	50	IBBP	24/48/96
		IBP	24/48/96
		IPPP	24/48/96
		PPPP	90/180/360
720x480 352x480	29.97	IBBP	15/30/60
		IBP	14/28/56
		IPPP	15/30/60
		PPPP	30/60/120
	14.985	IPPP	15/30/60
	9.99	IPPP	10/20/40
	4.995	IPPP	5/10/20
	1.998	IPPP	2/4/8
	0.999	IPPP	1/2/4
	0.4995	IPPP	1/2/4
720x576 352x576	25	IBBP	12/24/48
		IBP	12/24/48
		IPPP	12/24/48
		PPPP	36/72/144
352x240	14.985	IBBP	7/15/30
	9.99	IPPP	5/10/20
	7.493	IBBP	6/15/30
		IPPP	7/15/30
	4.995	IPPP	5/10/20
	2.997	IPPP	3/6/12
	1.998	IPPP	4/8/16
	0.999	IPPP	2/4/8
352x288	12.5	IBBP	6/12/24
	8.333	IPPP	4/8/16
	6.25	IBBP	6/12/24
		IPPP	6/12/24
	4.167	IPPP	4/8/16
	2.5	IPPP	2/5/10
	1.667	IPPP	2/5/10
	1	IPPP	2/5/10
176x112	14.985	IPPP	7/15/30
	9.99	IPPP	5/10/20
	7.493	IPPP	7/15/30
	4.995	IPPP	5/10/20
	2.997	IPPP	3/6/12
	1.998	IPPP	4/8/16
	0.999	IPPP	2/4/8

Video Resolution	Frame Rate	Encoding control mode	Refresh cycle (frame)
176x144	12.5	IPPP	6/12/24
	8.333	IPPP	4/8/16
	6.25	IPPP	6/12/24
	4.167	IPPP	4/8/16
	2.5	IPPP	2/5/10
	1.667	IPPP	4/8/16
	1	IPPP	2/5/10

Table 3-44 Picture Mode, Coded Picture Buffer (Sub Encoder)

		Picture mode		Coded picture buffer	
Video resolution	Encoding control mode	Normal	Dynamic texture	Standard	Double
1920x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
1440x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
960x1080	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
1280x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
960x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
640x720	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
720x480	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x480	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x240	-	×		×	×
176x112	-	×		×	×
720x576	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x576	IBBP	×	×	×	×
	IBP	×	×	×	×
	Enable	×		×	
352x288	-	×		×	×
176x144	-	×		×	×

Table 3-45 Audio Bit Rate, Audio Bit Rate Mode (Sub Encoder)

	Audio bit rate (Kbps) / Audio bit rate mode							
Audio format	56/CBR	64/CBR	64/VBR	128/CBR	128/VBR	256/CBR	256/VBR	384/CBR
MPEG-1 Layer2				×		×		×
MPEG-2 AAC	×	×	×	×	×	×	×	×

⚠ CAUTION

Enables to record when the Main encoder system rate is less than 14.049 Mbps and the sub encoder system rate is less than 1.549 Mbps.

If [Stream format] of Output interface settings (Main encoder ethernet) described in Section 3.3.1,"Setting (Encoder)," is "Standard TS," recording cannot be performed.

3.3.2 Encoder Address Report

*** This function is enabled only when the device operation mode is encoder mode.**

*** Encoder address report is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

To dynamically obtain an IP address using DHCP or PPPoE, the IP address needs to be known. If the report destination is specified in advance, the obtained IP address is reported to the specified destination. IP-900 series decoder or a PC running a certain type of software (*1) is normally specified as the report destination. If the decoder is specified in advance as the report destination, you can specify an encoder from the Web screen to request streaming. (Refer to Section 3.5.2 for information about decoder setting and operation.)

The same screen is displayed for Encoder Address Report, Main Encoder, and Sub Encoder, which are located in the frame on the left side of the Web screen. By click on the tab for each, the Encoder Address Report screen for each is displayed at the top of the frame on the right side.

Make the required settings by referring to **Table 3-46 Setting Items for Encoder Address Report**.

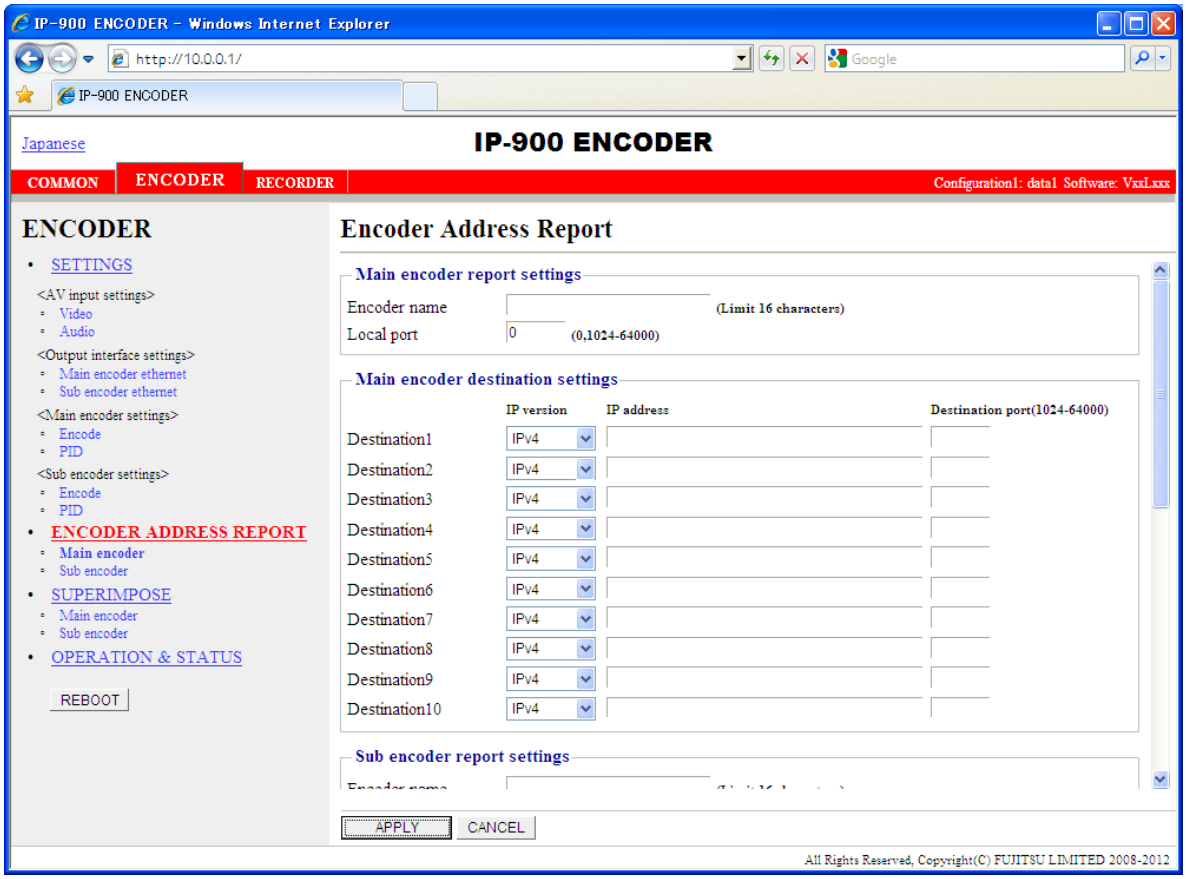


Figure 3-23 Encoder Address Report screen

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

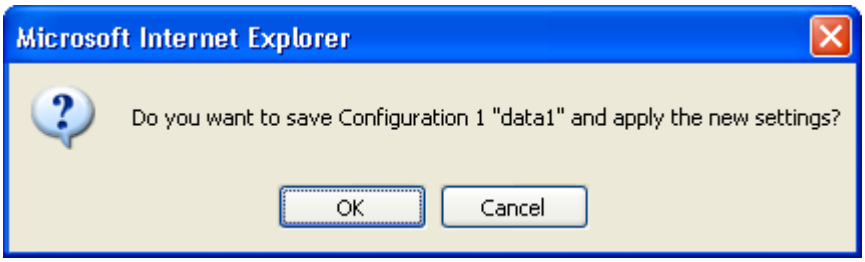


Table 3-46 Setting Items for Encoder Address Report

	Item		Description	Value
Main encoder report settings	Encoder name		Specify an arbitrary name used to identify the encoder.	Up to 16 characters
	Local port		Specify the own device port number used to send an encoder address message.	0 or 1024 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 64100 to 65000 is automatically selected.
Main encoder destination settings	Destination 1 to 10	IP version	Specify the IP version of the IP address of the destination device to which the encoder report is to be sent.	- IPv4 (default) - IPv6
		IP address	Specify the IP address of the destination device to which the encoder report is to be sent.	Other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * A multicast address cannot be set.
		Destination port	Specify the port number of the destination device to which the encoder report is to be sent.	- Blank or 1024 to 64000 (Default: Blank) * A blank field means that no value is specified.
Sub encoder report settings (*1)	Encoder name		Specify an arbitrary name used to identify the encoder.	Up to 16 characters
	Local port		Specify the own device port number used to send an encoder address message.	0 or 1024 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 64100 to 65000 is automatically selected.
Sub encoder destination settings (*1)	Destination 1 to 10	IP version	Specify the IP address of the destination device to which the encoder report is to be sent.	- IPv4 (Default) - IPv6
		IP address		Other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * A multicast address cannot be set.
		Destination port	Specify the port number of the destination device to which the encoder report is to be sent.	- Blank or 1024 to 64000 (Default: Blank) * A blank field means that no value is specified.

*1: Not displayed in case “Main H.264/MPEG-4 AVC 2stereo” is set for [Operation mode].

⚠ CAUTION

The device does not send the encoder address report when the following condition applies: [IP version] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [IP version] of Main encoder destination settings described in Section 3.3.2, "Encoder Address Report," do not match. (The same thing can be said regarding the sub encoder.)

The device does not send the encoder address report when the following condition applies: "Unicast (simplex)" is selected for [Streaming mode] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [Streaming destination IP address] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [IP address] of Main encoder destination settings described in Section 3.3.2, "Encoder Address Report," do not match. (The same thing can be said regarding the sub encoder.)

3.3.3 Superimpose

*** 10 sets of settings can be configured independently by selecting appropriate configuration data as explained in Section 3.2.1, "Configuration Data."**

The superimpose function superimposes a character string (consisting of up to 24 en-size or 48 en-size characters) or a time indication (year, month, day, hour, minute, and second) on the encoded image. You can specify up to four types of string superimpositions (or one type of time superimposition) on the main and sub encoders.

The same screen is displayed for Superimpose, Main encoder, and Sub-encoder, which are located in the left frame on the Web screen. Click the tab for each to bring the superimposition information screen to the top of the right frame. Specify the necessary information by referring to **Table 3-47 Main Encoder/Sub Encoder Superimpose Settings**

Figure 3-24 Superimpose screen

After completing the setting, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

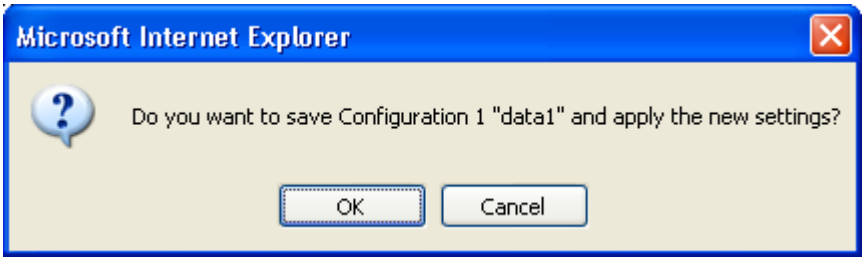


Table 3-47 Main Encoder/Sub Encoder Superimpose Settings

	Item	Description	Value
Main/Sub encoder superimpose settings 1 to 4 (*2)	Superimpose setting	Specify whether to enable character superimposition by using the superimpose function to display the characters.	Enable Disable (Default)
	Horizontal position	Specify the number of pixels from the left end of the screen to indicate the horizontal position from where the specified character string starts to be superimposed.	0 to 1919 (*1)
	Vertical position	Specify the number of lines from the top end of the screen to indicate the vertical position from where the specified character string starts to be superimposed.	0 to 1079 (*1)
	Font size	Specify the font size of character strings to be superimposed.	- SD:32/HD:64 Displays characters in a size of: 32×32 dots if the input resolution is SD 64×64 dots if the input resolution is HD - SD:48/HD:96 Displays characters in a size of: 48×48 dots if the input resolution is SD 96×96 dots if the input resolution is HD
	Font color	Specify the font color of character strings to be superimposed.	- White (Default) - Black - Red - Blue - Green
	Effects	Specify the background of character strings to be superimposed.	- Filled (Default) - Shaded - Bordered
	Background color	Specify the background color of character strings to be superimposed.	- Black (Default) - Translucent black - White - Translucent white - Transparent
	Time * Only available for superimpose 4 settings	Specify whether to superimpose time.	- Enable - Disable (Default)

	Item	Description	Value
Main/Sub encoder superimpose settings 1 to 4 (*2)	Character string	Specify the character strings to be superimposed.	A character string that consists of 48 single-byte characters or 24 double-byte characters.

*1: The display area varies depending on the monitor that outputs the image.
*2: In case “Main H.264/MPEG-4 AVC 2stereo” is set for [Operation mode], sub encoder superimpose settings are not displayed.

3.3.4 Operation & Status (Encoder)

*** This function is enabled only when the device operation mode is encoder mode.**

Click OPERATION & STATUS in the left frame of the Web screen. The Operation & Status screen appears in the right frame.

From this screen, you can check encoder operation information such as on encoding and video input.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the Operation & Status information in specified time intervals. Selecting {none} from [Auto update] disables the automatic updating.

Figure 3-25 Operation & Status (Encoder) screen

You can control encoding and streaming. When the status is "Stopped," click the START button starts encoding. To stop encoding, click the STOP button.

Table 3-48 Encoder Operation & Status Display Items

Item	Display
Main encoder	**{Operating / Stopped}** Displays the operation status as the result of setting in the Settings screen or the operation of the encoding START or STOP button.
	Number of possible streams: N **Destination IP address: Port number {Normal / Fault}** N=1 If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], the value is fixed to "1". 1-4 If "Unicast" is specified for [Streaming mode], a value from "1" to "4" is displayed. The number of possible streams depends on the [System bit rate] and [Acceptable stream number] settings. Displays whether an error occurred for each streaming destination IP address.
Sub encoder (*1)	**{Operating / Stopped}** Displays the operation status as the result of setting in the Settings screen or the operation of the encoding START or STOP button.
	Number of possible streams: N **Destination IP address: Port number {Normal / Fault}** N=1 If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], the value is fixed to "1". 1-4 If "Unicast" is specified for [Streaming mode], a value from "1" to "4" is displayed. The number of possible streams depends on the [System bit rate] and [Acceptable stream number] settings. Displays whether an error occurred for each streaming destination IP address.
Video input	**{Normal / Fault / No video signal}** Displays the input state of the video signal.

Note) {A/B} indicates that either A or B is displayed.

*1: Not displayed in case “Main H.264/MPEG-4 AVC 2stereo” is set for [Operation mode].

⚠ CAUTION

Enables to record when the Main encoder system rate is less than 14.049 Mbps and the sub encoder system rate is less than 1.549 Mbps.

If [Stream format] of Output interface settings (Main encoder ethernet) described in Section 3.3.1,"Setting (Encoder)," is "Standard TS," recording cannot be performed.

3.4 Recorder

An optional CF card is required for this function.

3.4.1 Setting (Recorder)

*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to recording. Make the required settings by referring to **Table 3-49 Recorder**. Set the date and time of the clock built in IP-900 series.

The recorder records encoded streams when the main encoder operates. Recording cannot be performed for some system bit rates because of performance limitations.

"Network down" and "Relay input", etc. can be recorded in the trigger as protected file. After the trigger is restored, protected file can be downloaded.

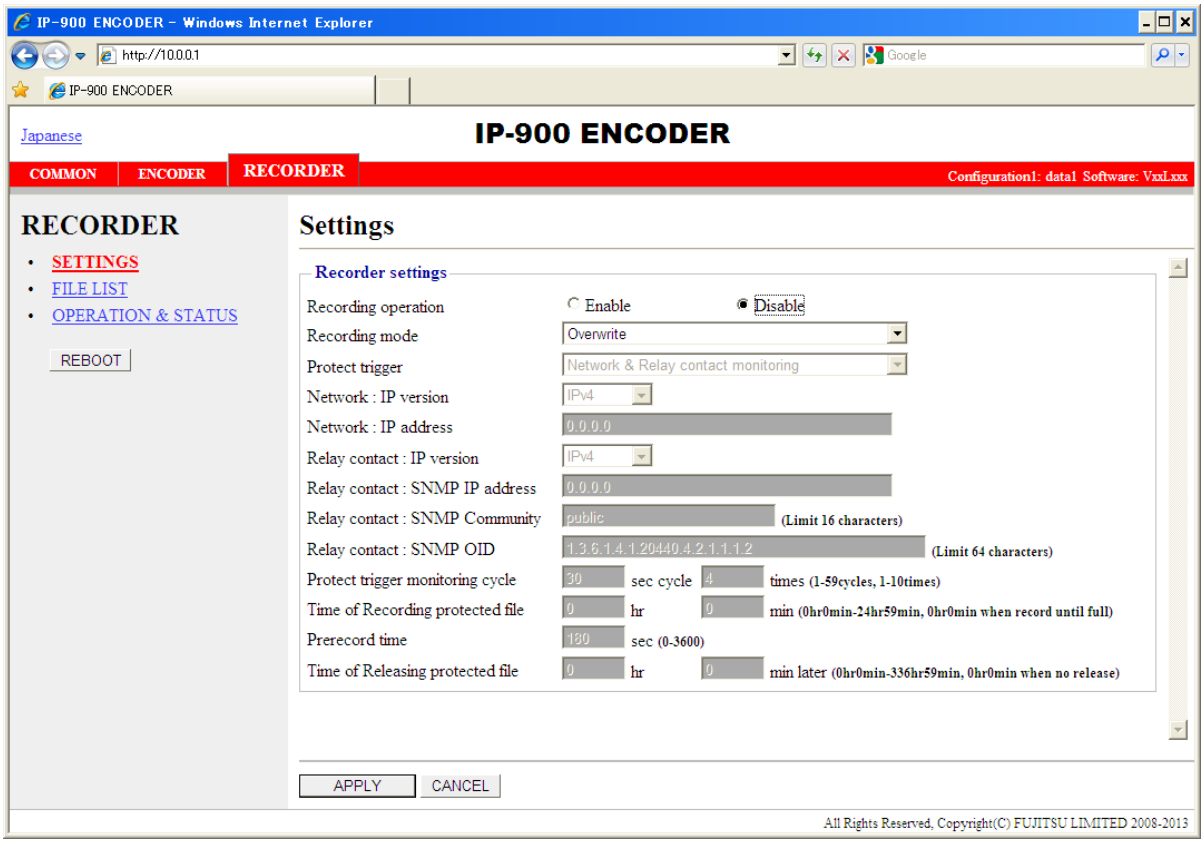


Figure 3-26 Setting (Recorder) screen

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

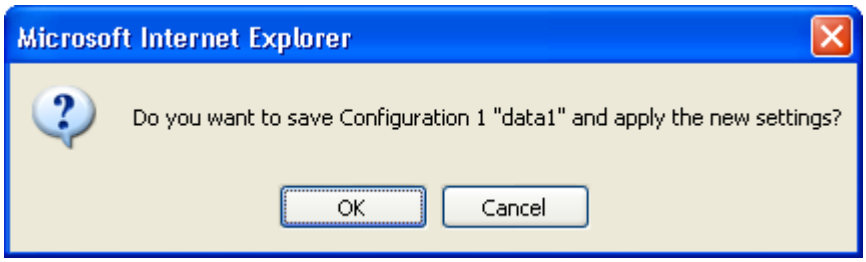


Table 3-49 Recorder Setting Items

	Item	Description	Parameter
Recorder settings	Recording operation	Specify whether to perform recording operation upon start of the device.	- Enable - Disable (Default)
	Recording mode	Select the recording mode.	- Record until full - Overwrite (Default) - Record until start position - Overwrite except protected file - Record until full after protect trigger
	Protect trigger	Specify the trigger to protect the local recording data when "Recording mode" is set for [Overwrite except protected file] or [Record until full after protect trigger].	- Network monitoring by ping - Relay contact monitoring by SNMP - Network & Relay contact monitoring - Number of Main encoder streaming - Number of Main & Sub encoder streaming
	Network : IP version	Specify the IP address version of the monitoring device by ping.	- IPv4 (Default) - IPv6
	Network : IP address	Specify the IP address of the monitoring device by ping.	Other than 0.0.0.0 (Default: 0.0.0.0) * You cannot specify a multicast address.
	Relay contact : IP version	Specify the IP address version of the monitoring device by snmp.	- IPv4 (Default)
	Relay contact : SNMP IP address	Specify the IP address of the monitoring device by snmp.	Other than 0.0.0.0 (Default: 0.0.0.0) * You cannot specify a multicast address.
	Relay contact : SNMP Community	Specify the community name to access to the monitoring device by snmp.	Alphanumeric 16 characters (Default: Blank)

Recorder settings	Relay contact : SNMP OID	Specify the object identifier to access to the monitoring device by snmp. (*1)	64 characters (Default: 1.3.6.1.4.1.23441.1.1.3.1.0)
	Protect trigger monitoring cycle	Specify the polling time to check the trigger.	1 to 59 sec cycle, 1 to 10 times (Default 30sec cycles, 4times) * when the same state continues
	Time of Recording protected file (*2)	Specify the recording time as a protected file from the trigger detection when "Recording mode" is set for [Record until full after protect trigger].	0 hr 0 min to 24 hr 59 min * 0hr0min when record until full
	Prerecord time (*2)	Specify the time for creating protected files by seconds backward from the trigger detection.	0 to 3600 sec
	Time of Releasing protected file (*2)	Specify the time from the trigger detection to the release of protected file.	0 hr 0 min to 336 hr 59 min * 0hr0min when no release

*1 : SNMP MIB interface for Relay input signal information.
SYNTAX : OCTET STRING
STRING : ”0” is No input signal, “1” is Exist input signal. Only the first string.

*2 : There is a time lag of a few minutes from a few seconds depending on the System rate of the main encoder and the refresh cycle.

⚠ CAUTION

Recorded data is destroyed if the device power is turned off during recording. Be sure to stop recording before turning off the device power.

If the device is started with an unused CF card or previous CF card (V02L002) inserted, the CF card is formatted unconditionally. Please back up necessary data of the CF card before software upgrades.

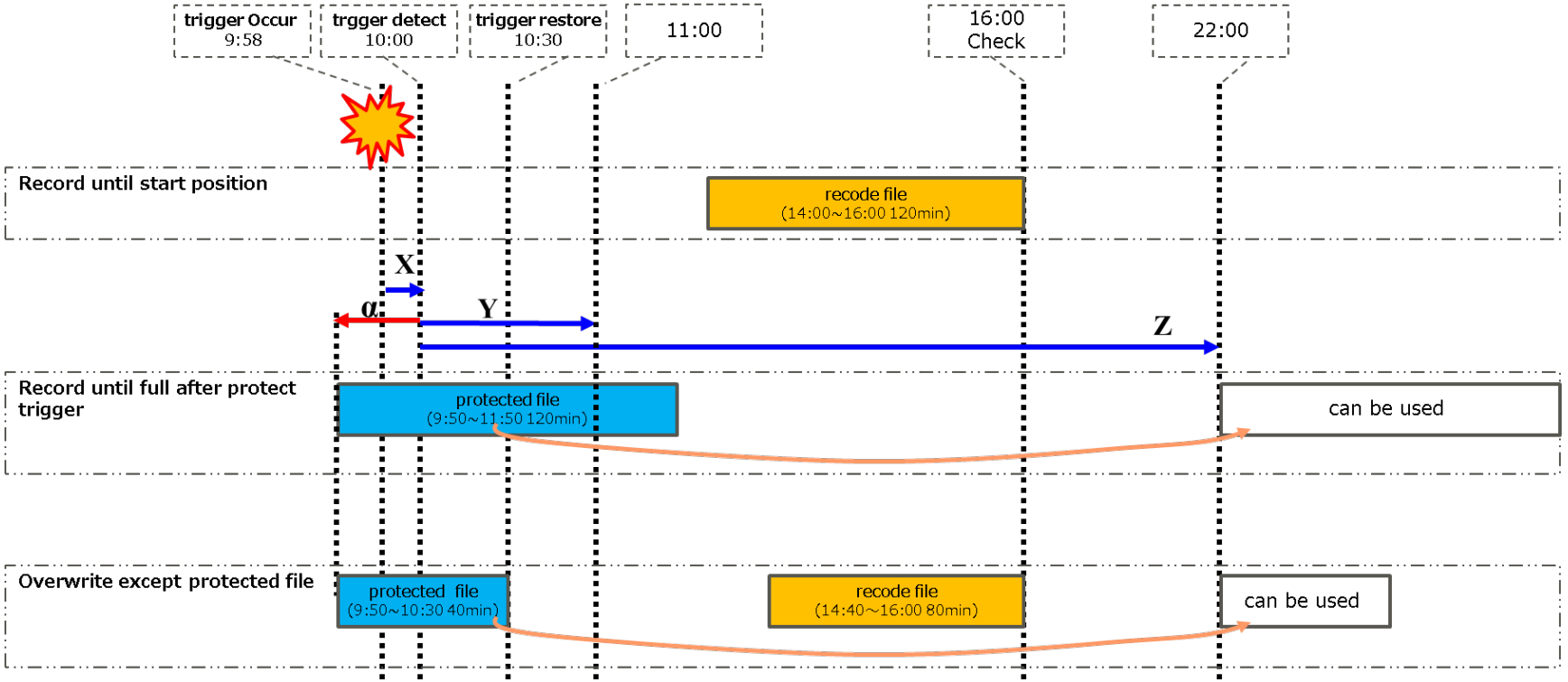
If [Stream format] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," is "Standard TS," recording cannot be performed.

The maximum system bit rate when the streaming and recording are activated simultaneously is limited up to "main encoder system rate is 14.049 Mbps", "sub encoder system rate is 1.549 Mbps"

The maximum system bit rate when the recording and record data downloading are activated simultaneously is limited up to "main encoder system rate is 6.049 Mbps".

■Example : In the case of setting parameters as follows CF card capacity in 120 minutes

Protect trigger monitoring cycle	X=30sec cycle, 4times(120sec)
Time of Recording protected file	Y=1hour
Prerecord time	α=600sec
Time of Releasing protected file	Z=12hours



3.4.2 File List

*** This function is enabled only when the device operation mode is encoder mode.**

Click FILE LIST in the left frame of the Web screen. The Data List screen appears in the right frame. In this screen, you can check the file list or download files.

Protected file becomes "Protect" the left of the list, and is displayed at the head. "Time of Releasing protected file" is displayed.

Figure 3-27 File List screen

Click the UPDATE button updates the list.

To download a file, check the relevant check column at the left end of the list and confirm that the start time and acquisition time are automatically set in the Download field, and then click the DOWNLOAD button.

Click the DELETE FIRST FILE button deletes the first file in the list. Click the DELETE ALL FILES button deletes all files.

Click the RELEASE PROTECTED FILE button to release the protected file.

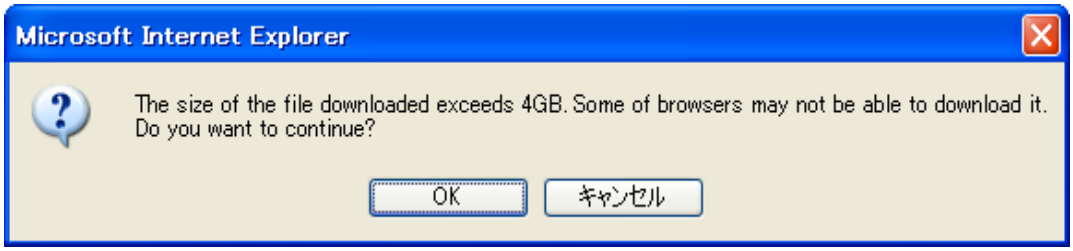
Recorded data can be downloaded by specifying any time range within the range indicated for each file in the list. Note, however, that data with the specified time range spanning two or more files cannot be downloaded.

Data is downloaded with a file name in the following format:
yyyymmddhhmmssHHMMSS.mpg
<Description>
yyyy = Year
mm = Month
dd = Day
hh = Hour
mm = Minute
ss = Second
HH = Hours (acquisition duration specified in hours)
MM = Minutes (acquisition duration specified in minutes)
SS = Seconds (acquisition duration specified in seconds from 0 to 59)

Note) The time for which data can be recorded depends on the system bit rate and the capacity of the CF card.

⚠ CAUTION

The following dialog box appears in case that the file download size exceeds 4GB. Some of browsers may not be able to download it.



File deletion works only when recording is stop. The protected file cannot delete.

The maximum system bit rate when the recording and record data downloading are activated simultaneously is limited up to "main encoder system rate is 6.049 Mbps".

3.4.3 Operation & Status (Recorder)

*** This function is enabled only when the device operation mode is encoder mode.**

Operation & Status related to recording are displayed.

Select {3sec, 5sec, or 10sec} from [Auto update] to enable automatic update of the Operation & Status information in specified time intervals. Select {none} from [Auto update] to disable automatic updating.

Figure 3-28 Operation & Status (Recorder)

You can control the recording operation. When the recording operation is "Stopped," click the START button starts recording. To stop recording, click the STOP button.

Table 3-50 Recorder Operation & Status Display Items

Item	Display
Recording mode	**{Recording until full / Overwrite / Record until start position / Overwrite except protected file / Record until full after protect trigger / ---}** Displays the recording mode selected in the Settings screen.
Recorder	**{Recording / Stopped}** Displays the operation status caused by the setting in the Settings screen or by the operation of the recording START or STOP button.
Media	**{Equipped: Normal / Equipped: Fault / Equipped: Media Full /Unequipped}** Displays whether an error related to recording to the CF card occurred or that a CF card is not mounted in the device.
Media size	**{XX.XGB(Now setting:YYhrYYmin) / ---}** Displays the size of the CF card used for the recording in megabytes and the storage time in the CF card in the current settings.
Network	**{Normal / Fault / ---}** Displays the network status.
Relay contact	**{Normal: No contact signal / Normal: Exist contact signal / Fault / ---}** Displays the status of the relay contact.

Note) **{A/B}** indicates that either **A** or **B** is displayed.

⚠ CAUTION

The maximum system bit rate when the streaming and recording are activated simultaneously is limited up to "main encoder system rate is 14.049 Mbps", "sub encoder system rate is 1.549 Mbps".

If [Stream format] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," is "Standard TS," recording cannot be performed.

3.5 Decoder

3.5.1 Setting (Decoder)

*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to stream receiving. Make the required settings by referring to

Table 3-51 Decoder Setting Items.

The same screen is displayed for SETTINGS, <Input interface settings> Decoder ethernet, <AV output settings> Video and Audio (only IP-900D) and <Decoder settings> Decode which are located in the left frame on the Web screen. Click the tab for each brings the setup screen to the top of the right frame.

* No selections of Output interface are available on Decoder. Video/Audio can be output to all of the interfaces. Analog output for receiving HD streams is turned to the selected screen (Blue or Gray) in "Display when no data receiving" of "AV output settings (Video)" section.

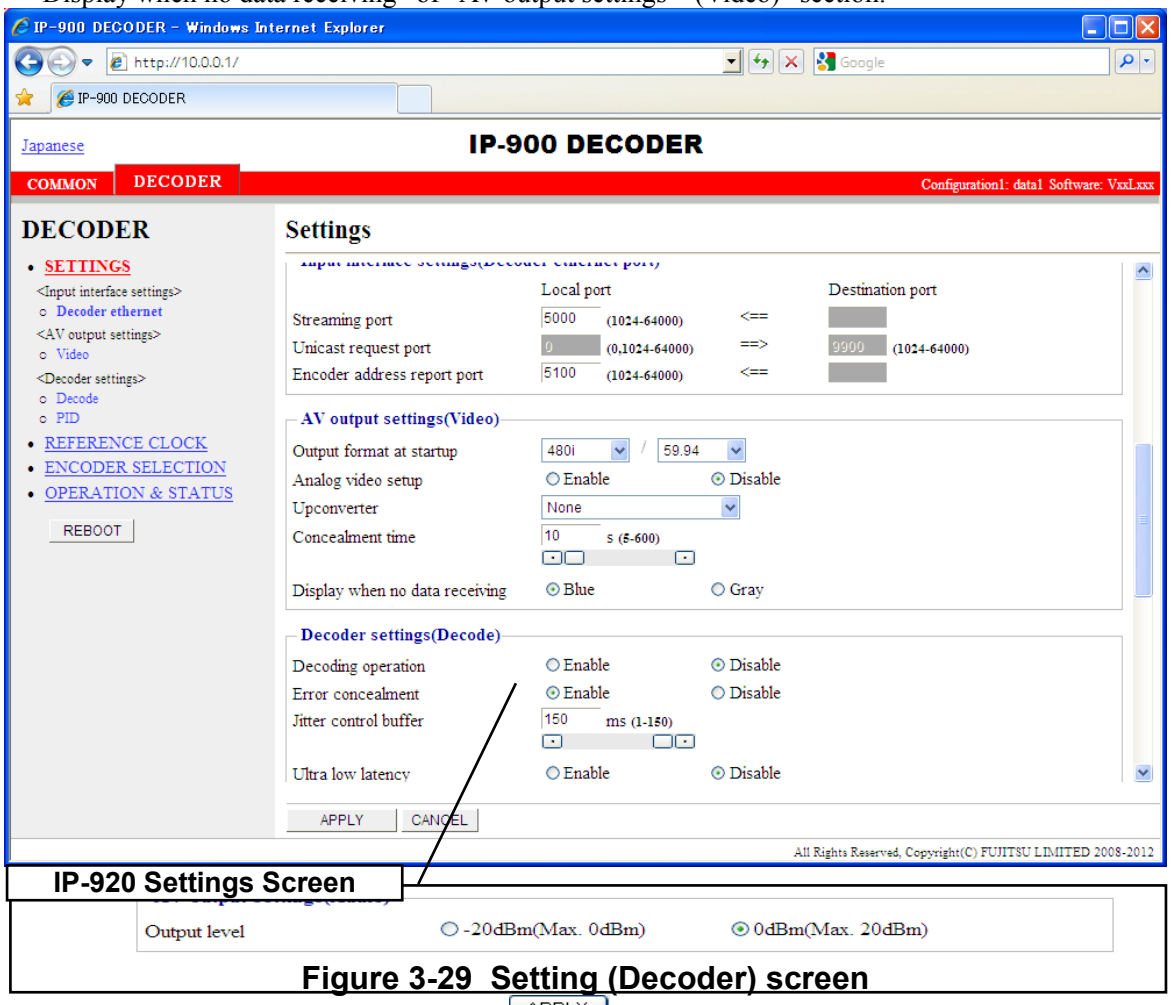


Figure 3-29 Setting (Decoder) screen

After completing the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

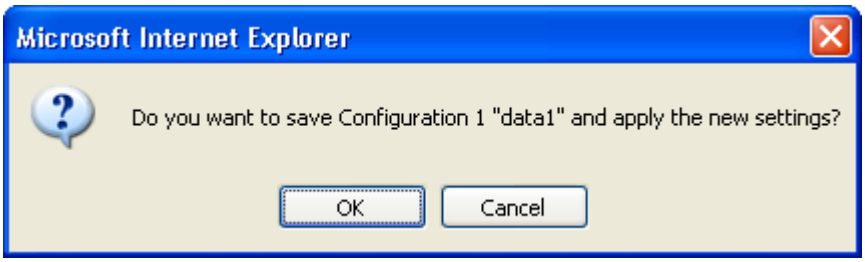


Table 3-51 Decoder Setting Items

	Item	Description	Parameter
Input interface settings (Decoder ethernet)	IP version	Specify the IP version for IP streaming.	- IPv4 (Default) - IPv6
	Streaming mode	Specify the type of broadcasting for IP streaming.	- Multicast (Default) - Unicast
	Streaming origination IP address	If "Unicast" is specified for [Streaming mode], specify the IP address of the streaming origination device. If "Multicast" is specified for [Streaming mode], specify the multicast address for streaming.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0
	IGMP version	If "IPv4" is specified for [IP version] and "Multicast" is specified for [Streaming mode], specify the IGMP version of the IGMP to be used for the group management of IPv4 multicast.	- Version 2 (Default) - Version 3
	IGMPv3 source IP address	If "Version 3" is set for [IGMP Version], specify the IPv4 address of the IPv4 multicast origination device that accepts receiving.	Other than 0.0.0.0 (Default: 0.0.0.0) * You cannot specify a multicast address.
	MLD version	If "IPv6" is specified for [IP version] and "Multicast" is specified for [Streaming mode], specify the MLD version of the MLD to be used for the group management of IPv6 multicast.	- Version 1 (Default) - Version 2
	MLDv2 source IP address	If "Version 2" is set for [MLD Version], specify the IPv6 address of the IPv6 multicast origination device that accepts receiving.	IPv6 address that is not the following: ffxx:xxxx:…:xxxx (multicast address) (Default: "::") * If this address does not match the origination IPv6 address of IPv6 multicast, streams cannot be received.
	Unicast request cycle	Specify the cycle at which the unicast stream request is sent.	- 3 to 30 seconds (Default: 30 seconds)

	Item	Description	Parameter
Input interface settings (Decoder ethernet)	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to report the ID for confirming the validity of the unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the unicast ID of the encoder and that of the decoder must be in agreement to receive streams.
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	Hexadecimal number between 0000 and ffff
	ARQ	If "Enable" is selected for [ID control for unicast], specify a valid ID value.	- Enable - Disable (Default)
	ARQ buffering time	Specify the wait time in msec for an ARQ retransmitted packet. * This will increase the delay by the time specified here.	0 to 2000 ms (Default: 300 ms)
	SMPTE2022 FEC	Specify whether to receive SMPTE2022-1 FEC packets to activate the SMPTE2022-1 FEC error correction method.	- Enable - Disable (Default)
Input interface settings (From Server)	ARQ	When receiving streaming from Fujitsu server (FutureyeII, etc), specify whether to enable the ARQ error correction method.	- Enable - Disable (Default)
	ARQ buffering time	When receiving streaming from Fujitsu server (FutureyeII, etc), specify the wait time in msec for an ARQ retransmitted packet. * This will increase the delay by the time specified here.	0 to 2000ms (Default: 300 ms)
Input interface settings (Decoder ethernet port)	Streaming port	Specify the own device port number used to receive streams.	1024 to 64000 (Default: 5000)
	Unicast request port	Specify the streaming request source port number (own device) in unicast streaming mode.	0, or10240 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 32768 to 61000 is automatically selected.
		Specify the streaming request destination port number in unicast streaming mode.	1024 to 64000 (Default: 9900)
	Encoder address report port	Specify the own device port number used to receive an encoder address report.	1024 to 64000 (Default: 5100)
	SMPTE2022 FEC port	Displays the port number of the own device used for receiving SMPTE2022-1 FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
AV output settings(video)	Output format at startup	Specify the format of the video output signal to be used after the device is started or after the decoder settings are changed. * When any stream has been received, a setting conforming to the input format of the encoder is used.	- 1080i/59.94 - 1080i/50 - 1080i/60 - 720p/59.94 - 720p/50 - 480i/59.94 (Default) - 576i/50

	Item	Description	Parameter
AV output settings(video)	Analog video setup	Specify the setup level of the analog video output signal.	- Enable: 7.5 IRE - Disable (Default): Same as the pedestal level
	Upconverter	Select whether to work as Upconverter.	- None (Default) - 480i/59.94 -> 1080i/59.94 (Pillar box) - 480i/59.94 -> 1080i/59.94 (Anamorphic) - 480i/59.94 -> 1080i/59.94 (Aspect ratio) *In case of '480i/59.94 -> 1080i/59.94 (Aspect ratio)', upconverter mode is automatically selected based on the aspect ratio information in the stream header. When it is recognized as 'squeeze', the video is upconverted by 'Anamorphic'. Otherwise, it is upconverted by 'Pillar box'.
	720p->1080i Convert	Specify whether to convert to 1080i when 720p stream is received.	- Disable (Default) - Enable
	Concealment time	Specify the time it takes until the system recognizes that packets have not been received.	- 5 to 6000 seconds (Default: 10 seconds)
	Display when no data receiving	Specify the video signal to be output when no packets are received.	- Blue (Default) - Gray
AV output settings (Audio) *Displayed only for IP-920D	Output level	Specify the audio output level.	- -20dBm (Max. 0dBm) - 0dBm (Max. 20dBm) (Default)
Decoder settings (Decode)	Decoding operation	Specify whether to enable receiving and decoding streaming video upon starting.	- Enable - Disable (Default)
	Error concealment	Specify whether to enable the freeze control that prevents block noise in the event of packet loss. * This setting is not enabled when “Ultra Low Latency (PPPP)” is selected and received the stream.	- Enable (Default) - Disable
	Jitter control buffer	Specify the buffering time for absorption of LAN network jitter. * This will increase the delay by the time specified here but reduce the video distortion caused by network jitter. * The video may be distorted if network jitter is generated for longer than the specified buffer time.	- 1 to 150 ms (Default: 150 ms)
	Ultra low latency	Select whether to recognize “Ultra low latency” stream automatically. * In case of being selected “Enable”, “Ultra low latency” stream can be automatically recognized and work as a decoder both normal and “Ultra low latency” mode. In case of being selected “Disable”, the Decoder works as normal mode.	- Enable - Disable (Default) * This function is enabled after installing “Ultra Low Latency” option.

	Item	Description	Parameter
Decoder settings (PID)	PID mode	Specify the method of selecting the program to be received. * You can select from the following: automatically obtain a PMT PID; specify a program number or service ID to select a PID; specify a PMT PID; or individually specify a video/audio PID.	- AUTO (Default) - Manual
	PMT PID	Receiving PMT PID can be enabled to set when “Manual” is selected for [PID mode].	1 to 1ffe in hexadecimal (Default: 100)
	Video PID	Specify the PID of Video to be received, only when “Manual” is specified for [PID mode].	1 to 1fff in hexadecimal (Default: 1011) * If 1fff is set, video is not received.
	Audio PID	Specify the PID of Audio to be received, only when “Manual” is specified for [PID mode]. Audio of designated ID can be output to channel 1 of SDI and HDMI.	1 to 1fff in hexadecimal (Default: 1100) * If 1fff is set, audio is not received.
	PCR PID	Specify a PID of the PCR to be received, only when “Manual” is specified for [PID mode].	1 to 1fff in hexadecimal (Default: 1001)

3.5.2 Reference Clock (GENLOCK)

*** Reference Clock Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to external clock synchronization. Make the required settings by referring to **Table 3-52 Reference Clock Setting Items**,

Figure 3-30 Reference Clock screen

After completing the settings, click the “APPLY” button. The message below appears. Click the OK button to apply the settings. * Reboot is not required.

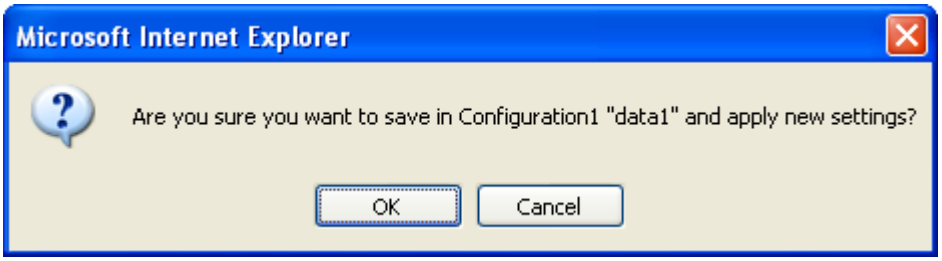


Table 3-52 Reference Clock Setting Items

	Item	Description	Parameter
Operation settings	Reference clock setting	Specify the type of external clock synchronization signal. * If “PCR” is set, it synchronizes with the line and if “Internal” is set, it synchronizes with the internal oscillator.	- PCR (Default) - Internal - BB * BB can be enabled to select after adding “Reference” option.
	Phase adjustment	Adjusting phase can be set by “ns” when “BB” is selected for [Reference clock].	Default: 0ns -300000~300000 ns

⚠ CAUTION

Do not input other signals except BB for reference input.

3.5.3 Encoder Selection

*** This function is enabled only when the device operation mode is decoder mode.**

Click ENCODER SELECTION in the left frame of the Web screen. The Encoder Selection screen appears in the right frame.

This screen displays the status and IP address of the encoder ready to perform streaming. Specifying the encoder distributing a stream starts receiving the stream. Specify in advance the IP address of the decoder in the encoder as the destination. Refer to Section 3.3.2 for encoder setting. **Table 3-20 Main ISO 639-2 Language Code** lists the display items.

Figure 3-31 Encoder Selection screen

The message below is displayed when the APPLY button is clicked after selecting the radio button for the encoder you want to select. Click OK to send a streaming request to the selected encoder.
* Reboot is not required.

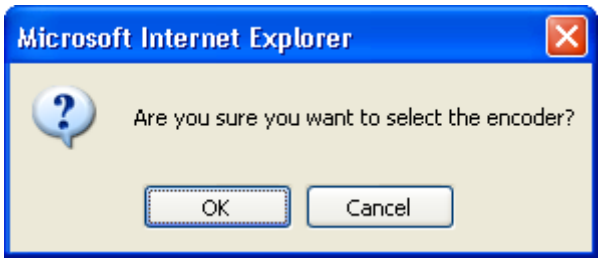


Table 3-53 Encoder Selection Items

Item	Display
Radio Button	Specify the encoder you want to select. If one is currently selected, "Selected" is displayed.
Encoder name	Displays the name assigned to the encoder.
Origination IP address	Displays the IP address of the encoder.
IP multicast address	Displays the multicast address for streaming when the encoder is performing multicast streaming.
Unicast request port	Displays the Unicast request port number defined in the encoder.
Streaming port	Displays the port number for receiving used by the decoder when the encoder is performing multicast streaming or unicast (simplex) streaming.
Streaming status	**{Streaming / Number of possible streams: x / Stopped}** Displays the streaming status of the encoder. Number of possible streams for encoder

Note) **{A / B}** indicates that either **A** or **B** is displayed.

3.5.4 Operation & Status (Decoder)

*** This function is enabled only when the device operation mode is decoder mode.**

Click OPERATION & STATUS in the left frame of the Web screen. The Operation & Status screen appears in the right frame.

Operation & Status information related to the decoder, including the stream receiving status, can be checked.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the Operation & Status information in specified time intervals. Selecting {none} from [Auto update] disables the automatic updating.

Figure 3-32 Operation & status (Decoder) screen

You can control starting and stopping of the receiving and decoding operation. When the decoding operation is "Stopped," click the START button to start decoding. To stop decoding, click the STOP button.

Table 3-54 Decoder Operation & Status Display Items

Item	Display
Decoding operation	**{Normal (Receiving) / Normal (No stream receiving) / Stopped}** Displays the decoder's operation status as a result of settings in the Setting screen or operation of the START/STOP button for receiving streaming.
Input interface	**{IPv4 / IPv6}** Displays the IP version of received streams.
Reference input	**{Fault / No input signal / Normal / ---}** Operating status of reference input is shown.
Video encoding mode	**{H.264/MPEG-4 AVC / MPEG-2（MODE=XXX） / MPEG-2 / ---}** Displays the video encoding mode of received streams. XXX: Fujitsu MPEG-2 PS mode number
Video output mode	**{1080i/59.94 / 1080i/50 / 1080i/60 / 720p/59.94 / 720p/50 / 480i/59.94 / 576i/50}** Displays the video output format information.
System bit rate	**{--.---- Mbps / ---.- Kbps / ---}** Displays the system bit rate of received streams.
Decoding frame rate	**{29.97fps / 25fps / 30fps / 59.94fps / 50fps / 14.985fps / 12.5fps / 9.99fps / 8.333fps / 7.493fps / 6.25fps / 4.995fps / 4.167fps / 2.997fps / 2.5fps / 1.998fps / 1.667fps / 0.999fps / 1fps / 0.4995fps / ---}** Displays the frame rate of received streams.
Video resolution	**{1920×1080 / 1440×1080 / 960×1080 / 1280×720 / 960×720 / 640×720 / 720×480 / 720×576 / 352×480 / 352×576 / 352×240 / 352×288 / 176×112 / 176×144 / ---}** Displays the video resolution of received streams.
Video bit rate	**{-- Mbps/---Kbps/---}** Displays the video bit rate of received streams.
Audio	**{XXX / YY Kbps/ZZZ /---}** XXX: **{MPEG-1 Layer2 /MPEG-2 AAC**/ Transparent**}** Displays the audio encoding format of received streams. YY: **{---Kbps}** Displays the audio bit rate of received streams. ZZZ: **{ZZZ}** Displays the language code of received stream.
Streaming origination IP address	**{XXX.XXX.XXX.XXX / ---}** Displays the IP address of the streaming origination device. XXX.XXX.XX.XXX: IP address
Streaming port	**{XXXXX}** Own device port number used to receive streams. XXX: Port number
Unicast request port	**{XXXXX / ---}** Streaming request source port number in unicast streaming mode XXXX: Port number
ARQ	**{Operating (RTT=XXXmsec) / Stopped / ---}** Displays the ARQ operation status. During operation, the Round Trip Time is also displayed. XXX: Round Trip Time
Network name	**{XXXXXXXXXXXXXXXXXXXX/---}** Displays Network name.
Original network ID	**{XXXX/---}** Displays Original network ID.
Transport stream ID	**{XXXX/---}** Displays Transport stream ID.
Program number/ Service ID	**{XXXX / ---}** Displays the received program number/service ID. XXXX: Displays the program number/service ID in hexadecimal.
Service type	**{XX/---}** Displays Service type.

Service provider name	**{XXXXXXXXXXXXXXXX/---}** Displays Service provider name.
Service name	**{XXXXXXXXXXXXXXXX/---}** Displays Service name.
Encoder manufacturer	**{XXXXX/---}** Displays Encoder manufacturer.
Encoder serial number	**{XXXXXXXXXXX/---}** Displays Encoder serial number.
Carrier identifier	**{XXXXX/---}** Displays Carrier ID.
Telephone number	**{XXXXXXXXXXXXXXXX/---}** Displays Telephone number.
Longitude	**{XXXXXXXX/---}** Displays Longitude.
Latitude	**{XXXXXXX/---}** Displays Latitude.
User information	**{XXXXXXXXXXXXXXX/---}** Displays User information.
PMT PID	**{XXXX / ---}** Displays the PID of received program map table. XXXX: displays the PMT PID in hexadecimal.
Video PID	**{XXXX / ---}** Displays the PID of received video. XXXX: displays the Video PID in hexadecimal.
Audio PID	**{XXXX / ---}** Displays the PID of received video. XXXX: displays the Audio PID in hexadecimal.
PCR PID	**{XXXX/---}** Displays the PID of received PCR. XXXX: displays the PCR PID in hexadecimal.

Note) **{A / B}** indicates that either **A** or **B** is displayed.

Chapter 4
Troubleshooting

This chapter explains how to respond in case audio/video is not output or an alarm LED goes on.

4.1 Troubleshooting

If you think your IP-900 series is malfunctioning, follow the corresponding corrective action in the table below, according to the applicable conditions.

If a problem persists, contact the Fujitsu Service Center.

⚠WARNING

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

Table 4-1 Check Items and Corrective Action

Classification	Symptom	Check	Corrective action
Power / Starting up	Power cannot be turned on.	Is the power cable connected?	Make sure that the power cable is properly connected to the outlet.
		Is the outlet voltage normal?	Measure the voltage with a tester to confirm that the voltage is normal. If another device is connected to the same outlet, check the operation of the device.
Hardware	The ALM LED is on.	IP-900 series is faulty.	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.
	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 "IP-900 Series User's Guide 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 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.

Classification	Symptom	Check	Corrective action
Hardware	The ALM LED is blinking	L009 DHCP connection failure L00A PPPoE connection failure	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.
	The LEDs excluding 100M and LINK/ACT are on.	Is the ambient temperature of IP-900 series higher than that in the specifications?	Adjust the temperature conditions so that the ambient temperature of IP-900 series meets the specifications.
		Is there any shielding material in the installation area?	Remove the shielding material.
Operation	Commands via a LAN cannot be used (the setup menu cannot be displayed).	Is the RDY LED blinking?	The hardware system is operating while the RDY LED is blinking. Wait until the LED remains on.
		Are the LINK LEDs on IP-900 series and hub on?	If they are not, the UTP cable is not connected. Check the UTP cable.
		Issue a PING command to the IP address of IP-900 series. Does it respond?	If not: - Check the TCP/IP settings (to check whether the net mask and gateway address are valid) on the client PC. - Start IP-900 series with the default IP address and check the IP address by referring to Section 2.2, "Equipment Operation." If the problem persists, check the operation on the network side.
		Are the browser used and its settings valid?	- Make sure that IE6.0 SP2 or a later version is used. - Set "Disable proxy" on the browser, and retry the operation.

Classification	Symptom	Check	Corrective action
Video	No video is output (black screen)	Is the monitor turned on?	Check the monitor power and operation.
		Is IP-900 series turned on?	Confirm that the PWR-LED is on.
		Is IP-900 series correctly connected to the monitor?	Check the connection between the IP-900 series and monitor.
	Blue/gray screen is output.	Has decoding started?	Refer to Section 3.5.3, "Operation & Status (Decoder)," and confirm that "Normal (Receiving)" is displayed for "Decoding."
		Is the setup normal?	Check the streaming address and port number settings.
		Is "Operating" displayed for "Encoding" on the streaming source device?	Confirm that the streaming source device is distributing streams. In the case of IP-900 encoder, refer to Section 3.3.4, "Operation & Status (Encoder)" and confirm that "Operating" is displayed for "Encoding." In the case of Unicast, confirm that the number of possible streams of encoder is observed.
	Only color bars are displayed.	Is the video input of the source device normal?	In the case of IP-900 encoder, if video input is not received, the encoder outputs color bars or gray view according to the setting of "Display when no video signal input" on the AV input setup page. Check video input.
		Is the copy protected content like DVD input to HDMI interface?	The HDMI signal protected by HDCP (High-bandwidth Digital Copy Protection system) cannot be input to IP-900 series from the view point of the copy right protection. Check video input.
	Receiving video sometime stops or video image is unstable.	Is a receiving error present?	Check the number of data packets received (decoder information) according to Section 3.2.11, "Performance Statistics." Display the Performance Summary frame several times. If the number of data packets lost is counted up, the network load may be high or there may be a problem with the setting. Consult your network administrator.
		Is a low video rate, a high frame rate, and the short refresh cycle?	Video image might become unstable for a low video-rate, a high frame rate, and the short refreshing cycle. It is a limit of the encoding and is not trouble. Please set a low frame rate, a long refresh cycle.
		Is the MTU size too small?	Use the size recommended for the network used.
Audio	No sound is generated.	Is IP-900 series turned on?	Confirm that the PWR LED is on.
		Is IP-900 series correctly connected to the speaker?	Check the connection between IP-900 series and speaker.
		Is the volume of the speaker used too low?	Check the volume of the speaker.
		Is an alarm generated on the streaming source device?	If an alarm is generated, refer to the operating manual of the streaming source device.
		Is the streaming source device correctly connected to the audio source?	Check the connection of the audio cable.
	Noise is generated.	Disconnect the audio output cable from IP-900 series. Does it eliminate the noise?	If noise does not disappear even after the cable is disconnected, check the audio cable and audio output equipment.

Classification	Symptom	Check	Corrective action
Audio	Noise is generated.	Is a receiving error present?	Check the number of data packets received (decoder information) according to Section 3.2.11, "Performance Statistics." Display the Performance Statistics frame several times. If the number of data packets lost is counted up, the network load may be high or there may be a problem with the setting. Consult your network administrator.
Data	Data communicati on is disabled.	Is the port setting normal? Is the port setting consistent with the destination device?	Check the setting according to Section 3.2.6, "Data Port."
		Is the operation mode consistent with the destination device?	Check the setting according to Section 3.2.6, "Data Port."
		Is the RS-232C setting consistent with the data input/output device?	Check the setting according to Section 3.2.6, "Data Port."
		Is the data input/output device operating normally?	Check the operation of the data input/output device.
Preparation	Software cannot be installed.	Are IP-900 series IP address, subnet mask and gateway address properly set?	Start IP-900 series with the default IP address according to Section 2.2, "Equipment Operation," and check the IP address. If the problem persists, check the operating status on the network side.
		Is the file specification valid? Is the license key entered correctly?	If the message "Installation was denied (incorrect file or license) Please try again here" is displayed, the file specification is invalid or the license key is entered incorrectly.

4.2 Alarm LED Goes On

This section explains corrective action to be taken if an alarm LED (ALM or INDWN) goes on.
The appropriate corrective action depends on the alarm code displayed. Refer to the table below for this information.

For information on how to check the alarm log, refer to Section 3.2.10 "Log".

Table 4-2 Alarm Codes and Corrective Action

Code	Corrective action
Lxxx	Check the network and partner device. If an error cannot be identified, contact your system administrator.
Exxx	Turn off the device and then turn it on again. If the device is still operating abnormally after being powered on again, contact your maintenance personnel. Then, he/she may ask the alarm code.
Ixxx	This indicates a loss of video input. Check the video output device and video cable connected to the video input terminal.

xxx: Indicates three alphanumeric characters. Refer to Table 4-3, "Alarm Code List," for details.

Table 4-3 Alarm Code List

Code	Name	Description	Details (The part after the * mark is not displayed.)
0001	Boot (Power ON)	Normal start with the switch	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0002	Boot (Reset)	Normal start after reboot the equipment	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0004	Boot (Initial maintenance)	Normal start using the bundled firmware	-
0005	Boot (Maintenance)	Normal start in maintenance mode	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0006	Software update	Software is updated	VxxLxxxCxx -> VyyLyyyCyy * Displays the new and old software versions. VxxLxxxCxx: Old software version VyyLyyyCyy: New software version
0007	Boot (Restart) (*1)	Restart because of CPU failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0008	Boot (Others) (*1)	Restart because of software failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0009	Shutdown	Shutdown with MNT button	-
000A	RTC initialization	RTC battery backup discharged electricity	-
000B	CF card initialization	CF card is formatted	-
000C	Configuration update	Configuration data is updated	-
000D	Basic settings update	Basic settings are updated	-

Code	Name	Description	Details (The part after the * mark is not displayed.)
000E	Configuration data change	Configuration data is changed	xxxx -> yyyy * Displays the old and new configuration names. xxxx: Old configuration name yyyy: New configuration name
000F	Configuration data initialization	Configuration data is initialized	-
0010	Option update	Option is installed	HD etc.
0020	Device reset	Reset the individual device.	#11 * CODEC1 #21 * CODEC2 #12 * CODEC1(Audio stereo-2ch)
0030	Protect file recording start	Start the protected file recording	Network / DI / Network & DI * Displays the protect file recording start trigger
0031	Protect file recording stop	Stop the protected file recording	Trigger restoration / Timer expired / Full Date & Time change / Setting change / Others * Displays the protect file recording stop trigger
0032	Protect file release	Release the protected file	Timer expired / User * Displays the protect file release trigger
L001	Link error (LAN)	Link error at a LAN port is occurred	-
*L001	Link error restoration	Restored from link error at a LAN port	10BaseT_HD/10BaseT_FD/100BaseTX_HD/100Base TX_FD * Displays the operating status of the LAN interface
L006	Time server synchronization failure	Time synchronization with the time server is failed	-
*L006	Time server synchronization success	Time synchronization with the time server is successful	-
L009	DHCP connection failure(*5)	DHCP server is disconnected	-
*L009	DHCP connection success(*5)	Connected to the DHCP server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the DHCP server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address
L00A	PPPoE connection failure(*5)	PPPoE server is disconnected	-

Code	Name	Description	Details (The part after the * mark is not displayed.)
*L00A	PPPoE connection success(*5)	Connected to the PPPoE server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the PPPoE server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address
L00E	DHCP connection update	IP address update is occurred during DHCP connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the DHCP server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L00F	PPPoE connection update	IP address update is occurred during PPPoE connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the PPPoE server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L010	Stateless address connection failure (*5)	IPv6 stateless address connection is failed	-
*L010	Stateless address connection success(*5)	IPv6 stateless address connection is successful	xxxx:xxxx:…:xxxx/yy * Displays the IPv6 address acquired from the router. xxxx:xxxx: … :xxxx: IPv6 address yy: Subnet prefix length

Code	Name	Description	Details (The part after the * mark is not displayed.)
L011	Stateless address update	IPv6 stateless address update is occurred	xxxx:xxxx:…:xxx1/y1 -> xxxx:xxxx:…:xxx2/y2 * Displays the old and new IPv6 addresses acquired from the router. xxxx:xxxx: … :xxx1: Old IPv6 address y1: Old subnet prefix length xxxx:xxxx: … :xxx2: New IPv6 address y2: New subnet prefix length
I001	SDI input down	HD/SD-SDI input signal is not detected	-
*I001	SDI input restoration	Normal HD/SD-SDI input	-
I002	HDMI input down	HDMI input signal is not detected	-
*I002	HDMI input restoration	Normal HDMI input	-
I003	Analog input down	Analog video input signal is not detected	-
*I003	Analog input restoration	Normal analog video input	-
I006	Reference clock input down	External reference clock input signal is not detected	
*I006	Reference clock input restoration	Normal external reference input	
I011	Video synchronization error	Video input PLL synchronization error is occurred	
*I011	Video synchronization error restoration	Restored from video input PLL synchronization error	
I016	Reference clock synchronization failure	Synchronization failure with reference clock input is occurred	
*I016	Reference clock synchronization failure restoration	Restored from synchronization failure with reference clock input	
I021	Input data error (*2)	Count-up is occurred in the performance data error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, refer to Table 3-12, "Input data error bit format".
*I021	Input data error restoration (*2)	Restored from count-up of the performance data error counter	-
E001	Power error (*3)	Power error is occurred	#1 * Power error on CNT board #2 * Power error on COD board

Code	Name	Description	Details (The part after the * mark is not displayed.)
E003	Temperature error (*4)	Extreme temperature (shutdown processing started) is occurred	* Details are as follows: #1/#2: Number of the temperature sensors that is detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	FlashROM error (*3)	Internal FlashROM access error is occurred	/dev/mtd0 to 15 * Displays the range of access error.
E00A	FlashROM check sum error (*3)	Configuration data error detected in internal FlashROM	Software bundle software configuration configuration#1~#10 * Displays the range of check sum errors.
E010	FAN error (*5)	FAN error (low speed) is occurred	xxxRPS * xxx: FAN rotational speed
*E010	FAN error restoration (*5)	FAN speed is restored	xxxRPS * xxx: FAN rotational speed
E013	Temperature warning (*5)	Temperature warning (alarm only) is detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensor that is detected a temperature warning. t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
*E013	Temperature warning restoration (*5)	Restored from temperature warning	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2 : Number of the temperature sensor that is detected a temperature warning restoration. t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error	Main HD CODEC LSI error is detected	Blank, #1 * Displays the location of CODEC1 error.

Code	Name	Description	Details (The part after the * mark is not displayed.)
E083	CODEC2 error	Sub CODEC LSI error is detected	-
E084	CF card access error (*7)	CF card access failure is detected	-
E085	CF card power error (*7)	Overcurrent to CF card is detected	-
E08B	SUB CPU1 error (*6)	SUB CPU1 error is detected	-
*E08B	SUB CPU1 error restoration (*6)	Restored from SUB CPU1 error	-
E08C	SUB CPU2 error (*6)	SUB CPU2 error is detected	-
*E08C	SUB CPU2 error restoration (*6)	Restored from SUB CPU2 error	-
E08E	Clock error (*3)	Clock error or interruption is detected	#1 to #4 * Indicates the location where a clock error has occurred.
E08F	Memory error (*3)	SDRAM memory check error is detected	#1 to #7 * Indicates the location where a memory error has occurred.
E093	Buffer overflow (*8)	Buffer overflow is occurred	#1, #2 * Indicates the location where a buffer overflow has occurred.
*E093	Buffer overflow restoration (*8)	Restored from buffer overflow	#1, #2 * Indicates the location of buffer overflow restoration.

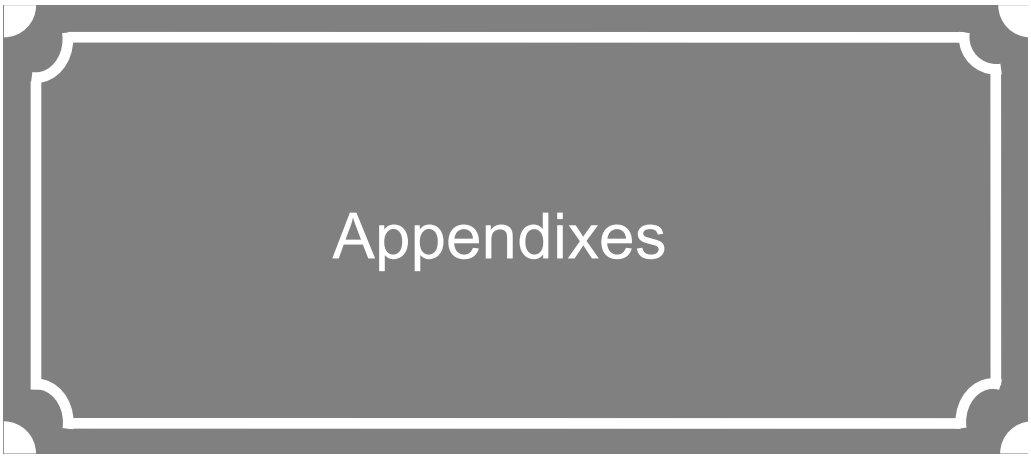
*1: ALM LED is on while this alarm is active. The LED is turned off when the error is restored.
*2: IN DWN LED blinks while this alarm is active. The LED is turned off for 10 seconds after the error is restored.
Refer to 3. 2. 11 Performance Statistics for the details of the performance data counter regarding the alarm.
*3: After this error is occurred, the ALM LED remains on. The device is required to reboot to turn off the ALM LED.
*4: If temperature warning is detected, all LEDs except LINK/ACT, 10/100 are on. The device is required to reboot to turn off the LEDs.
*5: ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
*6: After this error is occurred, retry for restoration is the next step. If the retry for restoration is unsuccessful, the ALM LED remains on.
The device is required to reboot to turn off the ALM LED.
*7: After this error is occurred, the ALM LED remains to blink.
*8: ALM LED blinks while this alarm is active. The LED is turned off when the alarm cause is restored.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet with the network requirement.
*9: DEC LED blinks when reference error is occurred. The LED is turned off after restoring from reference error.

The following table summarizes the LED display detail.

Table 4-4 Alarm LED Detail

LED	Description
PWR	Goes on when the device is powered on.
RDY	Blinks in green when the device ready for operation and stays on when the device runs in operation state. This LED also blinks in orange when the device is ready for maintenance mode, which can be entered by turning on the power while holding down the MNT button, and stays on in orange when the device runs in maintenance mode.
IN DWN	Remains off during normal operation, and goes on in orange when input signals are interrupted.
ALM	Alarm LED, which blinks or goes on when a device alarm occurs. For conditions of whether it blinks or goes on, refer to Table 4-3, "Alarm Code List."
DEC	Goes on in green during decoding. This LED is turned off when decoding is not being operated. It blinks in green when reference error is occurred. (*1) It blinks for 10 seconds also when the statistics input error counter is incremented.
OPT	Lights in green when HD option is installed. (*2)

*1: Only for IP-900IID/920D.
*2: Only for IP-9x0E.



Glossary

AES/EBU

AES (Audio Engineering Society) and EBU (European Broadcasting Union) standardized for the professional digital audio I/O (IEC-60958 TYPE-1.) It was applied to ANSI (American National Standard Institute) too.

Alarm Log

A record of errors occurred on devices and communication lines.

Anamorphic

One of up-converting method from 4:3 screen size ratio (aspect ratio) SD video source to 16:9 screen size ratio HD video. Anamorphic stretches video source horizontally to fit 16:9 screen size ratio and this also makes image stretch. Squeezed video can be displayed as it was by using anamorphic.

Ancillary Data

Transmitted kinds of data located in the blanking area of digital video interface (e.g., audio data and time code data.)

ARP (Address Resolution Protocol)

A protocol that is used to acquire the MAC address of the transmission destination of Ethernet frames. This protocol uses an IP address to acquire the MAC address. If the MAC address of the transmission destination of IP packets is unknown, an ARP packet requesting the MAC address is broadcast. The MAC address is acquired using the response to this request.

ARQ (Automatic Repeat Request)

An error correcting method that error packet will be re-transmitted automatically when packet error is detected at the receiver (Decoder.) IP-9500/IP-900 series products have the real-time high error-control ability, equipped with the original “FEC + ARQ hybrid method.”

BISS (Basic Interoperable Scrambling System)

A scrambling system formulated by the EBU in May 2002. This system has 3 modes: MODE 0, MODE 1 and MODE E. In MODE 1, a 12-character (48-bit) session word is used for encryption and decryption. In MODE E, a 16-character (64-bit) encrypted session word and 14-character (56-bit) injected ID are used for encryption and decryption. In MODE 0, encryption is not used.

BB (Black Burst)

Sync signal of black level’s video signal which is used to be synchronize

BNC (Bayonet Neill Concelman)

One of the coaxial cable connecters which have the 75ohms impedance. It uses the lock called Bayonet Lock and is very easy and compact to use. It is used for the test gear and the digital audio because it supports up to 4GHz high frequency.

Browser

A generic name for programs that support a user who wants to fetch a desired option from a number of options. Using a browser, the user can trace links on the World Wide Web to access such multimedia information as text, audio, and video by the simple selection of items with a mouse or other pointing device.

Carrier Frequency

Radio wave output frequency of a modulator card. Low-frequency transmission data is overlaid on a high-frequency signal during modulation, and this high-frequency signal is called a carrier wave. The frequency of a carrier wave is called the carrier frequency.

CAT (Conditional Access Table)

An information table to support the limited receiving.

CC (Closed Captioning)

Data for broadcast captioning. It is multiplexed at ancillary data area, virtual or horizontal blanking area of video signal, in HD/SD-SHI signal.

CF Card

A memory card of CompactFlash that is used as storage for recorded data in IP-9500/IP-900 series products.

Chroma Format

Representation of the ratio of the brightness component (Y) and 2 color-difference components (Pb and Pr) expressed for an image. The 2 formats generally used are 4:2:2 and 4:2:0.

CPB (Coded Picture Buffer)

Buffering encoded data inputted to decoder. The CPB size affects video latency and video quality having an opposing relation. The video quality improves because encoding quantity per picture can be increased when CPB buffer is set large; however, the latency increases due to a large buffer capacity.

CSC4:2:2 (4:2:2 Chroma Scalable Coding)

4:2:2 encoding system unique to the IP-9500 series. In this system, the encoder applies bandwidth splitting to the color-difference signal of an input 4:2:2 video stream and generates two video streams: a 4:2:0 video stream and a 0:0:2 video stream. The 4:2:0 video stream includes a brightness signal and low-frequency color-difference signal. The 0:0:2 video stream includes only a high-frequency color-difference signal. Then, the encoder encodes two video streams. The IP-9500e decoder decodes these two video streams and combines the low-frequency and high-frequency color-difference signals to output the 4:2:2 video stream. Since a conventional 4:2:0 decoder can decode and output the 4:2:0 stream included in a CSC422 stream, the CSC422 encoding system achieves scalability between 4:2:2 video and 4:2:0 video.

Downconverter

Converting from HD-SDI signal to SD-SDI signal. 3 modes are available: Squeeze, Side cropped, and Letter box.

DVB-ASI (Digital Video Broadcasting - Asynchronous Serial Interface)

Standard interface in DVB (Digital Video Broadcasting: European Digital Broadcasting standardization organization) and used in MPEG CODEC most commonly. It is the asynchronous serial interface and standardized in ETSI 101 891.

DVB-S (Digital Video Broadcasting - Satellite)

Standard interface for satellite broadcasting formulated by the DVB (European standardization body for digital broadcasting.)

DVB-S2 (Digital Video Broadcasting - Satellite - Second Generation)

Successor standard to DVB-S. DVB-S2 adopts more efficient error correction encoding and multi-value modulation with 16 values or more, ensuring an increased transmission capacity. It supports various data formats in addition to MPEG-2 TS. This enables flexible operation because the modulation method, encoding rate, and roll-off rate can be changed.

Dynamic Texture

A method to describe change of texture pattern that changes over time like a waving water area. Mainly used in computer graphics technology; in case of IP-900 series Dynamic Texture means picture mode for irregularly-changing video like wave on the surface of water.

Embedded Audio

A method to embed AES/EBU digital audio signal into the blank area of SDI (Serial Digital Interface) signal.

Encrypted Session Word

16-character (64-bit) word specified by the user in BISS MODE E. A session word is derived from the specified encrypted session word (and injected ID.) Then, encryption or decryption in BISS MODE E is performed.

Ethernet

The protocol that has been standardized by the IEEE 802.3 Committee, defining the physical and link layers of a LAN. Typical Ethernet connections use twisted pair cables, such as 10BASE-T or 100BASE-TX, and switching hubs.

Factory Shipment Firmware

Firmware that is installed at a factory before shipping and has the minimum function like the installer, and so on.

FEC (Forward Error Correction)

A method that the sender transmits redundant packet to the receiver for error correction in addition to the sending packet. It enables the receiver to correct errors without the need to request the sender for retransmission.

Flow Control

The procedure for controlling the flow of data between two devices. Its purpose is to prevent data from being lost when a device buffer becomes full.

GATEWAY

A node that connects network systems that use different protocols. A gateway basically converts one protocol into another to support operation between two networks. In a looser sense, gateway sometimes means a machine that transfers information between any two networks.

GOLD CODE SEQ N

An index number that generates the initial values used to generate the Gold code, which is used for physical layer scrambling processing in the DVB-S2 standard.

GOP (Group Of Pictures)

The smallest of the structural units composing a movie. A GOP consists of 3 types of frames: I frame, P frame, and B frame.

HDCP (High-bandwidth Digital Content Protection system)

One of the copy protection technologies for the illegal content copy between the video player and the video display.

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 like time stamp.

HDMI (High Definition Multimedia Interface)

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

H.264

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 like the mobile TV to the high bit rate, high resolution like HDTV. It is improved that the data capacity is half comparing MPEG-2 used wide spread.

HTTP (Hyper Text Transfer Protocol)

The protocol is for transferring files and other data over a Web server and a browser.

HUB

A concentrator required to use 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. A switching hub has switching functions.

IBBP/IBP/IPPP/PPPP

Video encoding structure with using I, P, and B frame.

I frame: Intra frame. Frame encoded by using internal video information.

P frame: Prediction Picture frame. Frame encoded by using correlation with previous frame.

B frame: Bi-directional Inter frame. Frame encoded by using previous and next coming I frame or P frame.

IF-band

A part of a very high frequency band (VHF band: 30 to 300 MHz.) The IF-band is selected only when an IF-band modulator card is used for operation.

IGMPv2

Protocol defined in RFC2236 for receiving IPv4 multicast datagram. IGMPv2 includes functions for participating in and leaving from IPv4 multicast group and so on.

IGMPv3

Protocol defined in RFC3376. In addition to IGMPv2 function, information sources filtering function that can be specified to receive multicast datagram transmitted from dedicated IPv4 address has been added.

Injected ID

14-character (56-bit) ID specified by the user in BISS MODE E. A session word is derived from the specified injected ID and encrypted session word. Then, encryption or decryption in BISS MODE E is performed.

IP (Internet Protocol)

A protocol used for transferring packets between host computers anywhere on the Internet. The identifiers used to identify the destinations and senders for packet transfer are called IP addresses. An IP address is a 32-bit value that can identify a network and a host on the network. Each host that communicates on the Internet must be assigned a unique IP address.

IP Satellite Mode

A function used in transmission using IP satellite connection. It distributes streams that inhibit the bit stuffing function of the HDLC procedure, which is used in IP satellite connection (This function inserts 0 after five 1's in a row.)

IPv6

IP protocol that is the successor to IPv4, which is currently the dominant IP protocol version on the Internet. The network address length is extended from 32 bits in IPv4 to 128 bits to solve the address space exhaustion problem that is worsening with the growth in use of the Internet. IPv6 also provides stateless address auto-configuration that allows an IPv6 address to be automatically generated based on the information from the router and the MAC address of the IP-900 series.

IP Address

A numeric identifier that identifies a node (e.g., a computer) operating under TCP/IP. An IP address is a 32-bit value divided into four 8-bit segments separated by dots (e.g., 200.10.101.1).

IP Multicast

TCP/IP term that refers to a technology by which the same data is transmitted to many destinations at the same time. An address class, called Class D, is used for multicasting. The first

four bits (1110) of a Class D address specify multicasting, and the remaining 28 bits specify a multicast group.

LAN (Local Area Network)

A data communication system that covers a limited area of about 6 miles (10 kilometers) and provides transmission speeds in the mid to high range.

L-band

The name of the frequency band from 0.5 to 1.5 GHz, according to the classification of microwave frequencies by IEEE. The L-band belongs to the ultra-high frequency band (UHF band: 03 to 3 GHz.) The L-band is selected only when an L-band modulator card is used for operation.

LCD (Liquid Crystal Display)

A display device utilizing liquid crystal cells. It works by having 2 sheets of a polarizing material with liquid crystal in between, when an electrical current is applied to the liquid crystal molecules they become scattered allowing light to pass through. LCD itself does not produce luminescence and uses reflected light in the light and fluorescent (backlight) in the dark. There are 2 main types: simple matrix LCD such as STN and DSTN, and active matrix LCD such as TFT.

LED (Light-Emitting Diode)

The IP-9500/IP-900 series has power LED and alarm LED lamps. The power LED lamp lights in green to indicate that the power is on. The alarm LED lamp lights in red to indicate that an alarm has occurred.

Letter Box

One of down-converting method from 16:9 screen size ratio (aspect ratio) HD video source to 4:3 screen size ratio SD video. The resulting image has black bars at both upper/down parts of the video.

MLD v1 (Multicast Listener Discovery version 1)

A protocol that has been defined by RFC2710. It is used to detect a multicast listener that receives an IPv6 multicast datagram.

MLD v2 (Multicast Listener Discovery version 2)

A protocol that has been defined by RFC3810. In addition to the MLD v1 supporting function, it has an information source filtering function, which enables the specification for receiving only the packets sent from specific origination IPv6 addresses (or IPv6 addresses that are not specific origination IPv6 addresses).

MPEG-4

Video data compression method that is a part of the MPEG standard. MPEG-4 was designed to distribute video images of low picture quality (due to a high compression ratio) over slow communication lines (e.g., cellular phone and telephone lines.) MPEG-4 was also designed to transmit video together with audio at about 64 kilobits per second.

NIT (Network Information Table)

Physical network information for sending streams is stored in this table.

NTSC (National Television Standards Committee)

The standard for analog television systems established by a US standardization body.

NTSC images are made of 29.97 interlaced frames per second, each of which is composed of 525 scan lines in total.

Original network ID

ID for identifying a transport stream. Each transport stream is identified by the combination of an original network ID and a transport stream ID.

PAL (Phase Alternating Line)

The standard for analog color television broadcasting developed in Germany. PAL images are made of 25 interlaced frames per second, each of which is composed of 625 scan lines in total.

PAT (Program Association Table)

Table included TS (Transport Stream) and the list in PMT PID. The PID of PMT is 0.

PES (Packetized Elementary Stream)

A packetized method provided by MPEG2 System. Encoded video or audio bit streams are called “Elementary Stream.” These streams are packetized by standard and are called “PES.”

PID

A packet identifier which has the 13 bits information, included in TS packet.

Pilot Mode

A mode adopted in the DVB-S2 standard to improve synchronization characteristics at a low C/N ratio. This device has a setting for specifying whether to insert the pilot signal for synchronized playback into physical layer frames.

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.

Pillar box

One of up-converting method from 4:3 screen size ratio (aspect ratio) SD video source to 16:9 screen size ratio HD video. Pillar box adds black pillar blank at both side to fit 16:9 screen size ratio video.

PMT (Program Map Table)

ID table which identifies audio, video, and so on.

PPPoE (Point to Point Protocol over Ethernet)

PPPoE is a specification for connecting the users on an Ethernet to the Internet. PPPoE supports authentication and enables a point-to-point connection to be established in the normally multipoint architecture of Ethernet.

PPS (Picture Parameter Set)

A header in NAL (Network Abstraction Layer) of H.264/AVC, which information on the whole picture encoding is described.

Private PES

Packetized elementary stream standardized by MPEG2 System that user can use arbitrarily for data transmission.

Pre-Filter

Filter that works before encoding video signal for an improvement of video quality with violent movement at low encoding rate.

Profile

This defines various encoding formats used for compressing the image. Profile can be changed depending on the use of the compressed image.

Program Number/Service ID

ID for identifying a channel (service) provided by a broadcasting company. By specifying a program number/service ID, you can select an arbitrary transport stream from multiple transport streams.

Pro-MPEG FEC

Please refer to SMPTE2022-1 FEC.

Proxy

A computer network service that allows clients to make indirect network connections to other network services.

PS (Program Stream)

An MPEG-2 method for multiplexing video, audio, and data, the PS method is used for transmission and storage in an error-free environment.

PSI (Program Specific Information)

This is the information which program each ES in TS packet belongs (e.g., PAT, PMT, and CAT.)

QPSK, 8PSK (Quadrature Phase Shift Keying, 8 Phase Shift Keying)

PSK is a modulation system that expresses information using a combination of multiple carrier waves with a phase shift between them. The system that uses 4 waves with phase-shifts separated by an angle of 90 degrees is called QPSK. Each modulated signal (one symbol) can transmit two bits of data. The system that uses eight waves with phase-shifts separated by an angle of 45 degrees is called 8PSK. Each modulated signal (one symbol) can transmit three bits of data.

Refresh Cycle

Frame cycle between I frames for Quality (IBBP) and Motion (IBP) of Encoding control mode. Frame cycle of updating one screen image by using intra-slice for Low Latency (PPPP) and Ultra Low Latency (PPPP) of Encoding control mode.

Roll-off Factor

Another name for roll-off rate. The factor for the processing of spectrum forming for transmission data is called the roll-off factor. The purpose of the processing is to increase the frequency usage rate while suppressing interference in the carrier. Generally, a larger factor increases interference in the carrier but also increases resistance to selective phasing.

RS-232C

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

RF (Radio Frequency)

High frequency-wireless-electric signal for satellite broadcast output by a modulator card.

RTP

Abbreviation of real-time transport protocol. This transport protocol is for transferring the image data or the voice data in real time.

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

Standard definition digital video interface standardized in SMPTE259M.

SDT (Service Description Table)

Detail descriptions such as service name of the system and service providers are stored in this table.

Session Word

12-character (48-bit) word specified by the user in BISS MODE 1. The specified session word is used for encryption or decryption in BISS MODE 1.

Side Cropped

One of down-converting method from 16:9 screen size ratio (aspect ratio) HD video source to 4:3 screen size ratio SD video. The resulting image has both left and right sides cropped.

SMPTE2022-1 FEC

SMPTE2022-1 FEC (formerly Pro-MPEG FEC) specifies 2-dimensional FEC (Forward Error Correction) method that is standardized by SMPTE. This method generate and send 2-dimensional (columns x rows) redundant packets in order to correct packet errors over the network.

SNMP v1 (Simple Network Management Protocol version 1)

Communication protocol defined by RFC1065, RFC1066, and RFC1213 for monitoring and controlling network devices. The protocol defines a framework for network management protocols and other protocols. This framework is used for SNMP v2c, SNMP v3, etc.

SNMP v2c (Simple Network Management Protocol version 2c)

Communication protocol defined by RFC1901 and RFC1908 for monitoring and controlling network devices. The protocol enables communications using v2, which has higher communication security and performance, on a community basis similar to communications using v1.

Spectrum

Specified spectrum sense for the IP-9500 series can be "Normal" or "Inverted." Select the setting according to local configuration of your wireless devices and transponders.

Squeeze

One of down-converting method from 16:9 screen size ratio (aspect ratio) HD video source to 4:3 screen size ratio SD video. Because this method makes 16:9 screen size ratio video compress horizontally to convert 4:9 screen size ratio video, object can be displayed vertically long. Squeezed video can be displayed as it was by using anamorphic up-converting method.

Symbol Rate

Symbol transmission speed defined by the number of symbols sent to the transmission line per second. The unit of measurement is symbol/s.

Synchronization between Decoders

A function that makes output video between 2 decoders get into synchronization. Set the reference setting of one decoder “Enable(Master)”, another “Enable(Slave)”. The master decoder outputs Black Burst signal for synchronization between decoders from ANALOG VIDEO out terminal. Connecting this signal with GENLOCK in terminal of the slave decoder allows output video between decoders to get into synchronization.

System rate

Data amount per second of the encoding data including up to MPEG2 system. The data for the network packet or FEC packet is not included.

Subnet Mask

Mask value that is used to obtain the network address of a subnet from an IP address. The subnet address is obtained when the IP address is ANDed with the 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.

TOS (Type Of Service)

Type of service that can be added within IP packets. It is used for controlling the order of priority of packets in the router etc.

Tri-sync

Sync signal used for High Definition TV. There is a feature of not generating the phase gap even if sync signal shrinks by the signal attenuation.

TS (Transport Stream)

Abbreviation of Transport Stream, which is an MPEG-2 systems for multiplexing video, audio, and data. A stream consists of packets, each of which has a fixed length of 188 bytes. The TS method is used for transmission in an environment such as ATM communication or digital broadcasting where errors can occur.

TSC (Transport Scrambling Control)

A field in MPEG-2 TS header information, which indicates the scrambling mode of a stream. The TSC of a stream that is encrypted with the BISS method is defined as 2.

TTL (Time To Live)

Abbreviation of Time To Live, which indicates the survival time of a packet on 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 specified survival time is reached.

TTS (Time stamped Transport Stream)

192byte packet consist of basic 188byte MPEG TS and 4byte-timestamp counted by 27MHz clock.

UDP (User Datagram Protocol)

Abbreviation of User Datagram Protocol. UDP 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 (that is, most general one-to-one communication.)

Upconverter

It is to convert from SD to HD signal with enlarging the signal resolution.

USB (Universal Serial Bus)

One of the serial bus standards for connecting peripheral devices to a PC. The first USB1.0 was developed in 1996. Today, USB2.0 provides greater enhancement in transfer speed and load reduction, which made it spread rapidly and became the most commonly used standard for PC environment.

UTP Cable

UTP is an abbreviation of unshielded twisted pair. A UTP cable is an unshielded pair of wires twisted together, and is used for Ethernet cabling and other purposes.

UTC (Coordinated Universal Time)

International standard time. The UTC is calculated based on the time measured by an atomic clock, which uses the second in the SI unit system as a reference value, making adjustments that insert leap seconds to compensate for the time difference from Greenwich Mean Time (GMT.)

Video User Data

Data area standardized by H.264 video encoding method that user can use arbitrarily for data transmission.

VITC (Vertical Interval Time Code)

Time code signal embedded in the vertical blanking area of video sync signal.

10BASE-T

LAN that uses unshielded twisted-pair (UTP) cables and complies with the IEEE 802.3 standard. 10Base-T connection is made simple by using a concentrator called a hub without any special cabling work required. For this reason, 10Base-T is the most widely used form. The maximum cable length is 100 meters.

100BASE-TX

One of the 100Base LAN standards (also called Fast Ethernet.) 100Base-TX supports transfer rates of 100 megabits per second. Other 100Base standards are 100Base-T4 and 100Base-FX. 100Base-TX differs from the other 100Base standards in the type of cable used (UTP cable.) It also uses RJ-45 connectors, which are similar to the modular jacks used for telephones.

1000BASE-T

One of the Gigabit Ethernet standards which have the maximum 1Gbps speed. It was standardized as IEEE802.3ab in 1999. This is the standard that uses the UTP cable of the category 5 (CAT5) or the enhanced category 5 (CAT5e) and uses all of 4 pairs signal wires. The maximum cable length is 1000 meters and the network topology is the star type.

16APSK (16 Amplitude Phase Shift Keying)

APSK is a modulation system that expresses information using a combination of multiple carrier waves with different phases and amplitude values. Each modulated signal (one symbol) can transmit four bits of data.

4:2:0

One of the video formats. In this format, the numbers of pixels for the color-difference components (Pb and Pr) are half the number of pixels for the brightness component (Y) in the horizontal and vertical directions.

4:2:2

One of the video formats. In this format, the numbers of pixels for the color-difference components (Pb and Pr) are half the number of pixels for the brightness component (Y) in only the horizontal direction.

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User's Guide

Edition 15 June 2018

FUJITSU