IP-9610
SOFTWARE USER'S GUIDE

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USING IP-9610 SAFELY

Handling of This Manual

This manual contains important information regarding the safe use of IP-9610. Before you use this product, thoroughly read this document, 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-9610 has 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. When you use this device in ordinary family environment, it 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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Apple, Macintosh, and Safari are trademarks or registered trademarks of Apple Inc. in the United States and other countries.

Mozilla and Firefox are trademarks or registered trademarks of the Mozilla Foundation in the United States and other countries.

PREFACE

This document explains how to use software for IP-9610.

For information on how to install IP-9610, connect cables and use buttons and LEDs, refer to the following manual:

- IP-9610 Hardware User's Guide

This document is intended for system designers or administrators who use IP-9610. It assumes that these users have a basic understanding of networks and video streaming.

Edition 06
Sep 2016

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 will 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 seriouspersonal 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
When you check the voltage at the outlet, please consult the system administrator.
Electric shock may result.

NOTE ON HANDLING THE PRODUCT

Maintenance

⚠Warning

Users must not attempt to repair IP-9610Series themselves. Please consult the Fujitsu Service Center.

⚠Caution

Please thoroughly read this document before using this product. If you have any unclear points regarding the use of the product, please consult the Fujitsu Service Center.

If you find any faults, please contact the Fujitsu Service Center with information on the fault and the alarm LED status.

Contents

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Chapter 1
Before Using This Equipment

This chapter describes items to be confirmed before using this equipment.

1.1 Main Features

1.1.1 Features

This video encoding equipment enhanced efficiency in video compressing technology. These four main features below will support your needs.

- Supports H.264 video from 4:2:0 8 bit to 4:2:2 10 bit and 1080p, delivering high quality video encoding.
- Single unit supporting one channel of video codec and Multi unit supporting two channels of video codec. Old unit (Base unit) selected the channels when the factory is shipped.
- Scalable equipment enables configurations matching your operation scenarios to make it possible by combining SDI Input/Output Board and option licenses.
- Equipment can be operated from the Web GUI, front panel, or SNMP, providing high operability.

Table 1.4 Main functions of IP-9610 lists the main functions of this equipment.

1.1.2 Software licenses

To operate this equipment, you need to purchase a software license key and activate it. After the software license key is activated, this equipment can be operated as an encoder, decoder, or as an equipment with both encoder and decoder functions.

In addition, by installing the relevant options, extended functions such as the H.264 4:2:2 10 bit encoding function and 3G-SDI (1080p) encoding function can be added to this equipment.

For details on how to activate software license keys, refer to **Chapter 2 Installation and Operation**.

Table 1.1 Software licenses

Software license name	Function
Encoder license	Encoding function
AAC encoder option (*1)	AAC audio encoding function
10 bit encoder option (*1)	H.264 4:2:2 10 bit encoding function
3G encoder option (*1)	3G-SDI (1080p) encoding function
BISS 1/E scrambler option (*1)	BISS 1/E scrambling function
Decoder license	Decoding function
Ultra low latency option	Ultra Low Latency function

*1: Requires install of Encoder license.

1.1.3 Hardware options

By combining the each unit and hardware options, you can initially assemble the required functions in the IP-9610. You can flexibly configure the IP-9610 by selecting the SDI input board to have the equipment function as an encoder, or selecting the SDI output board to have the equipment function as a decoder.

For details on the hardware options, refer to the *IP-9610 Hardware User's Guide*.

Table 1.2 Hardware options

Hardware options	Description
SDI input board	Installed according to the number of SDI inputs/outputs. Combining two SDI input boards or two SDI output boards enables support for dual-link SDI.
SDI output board	
Codec board (*1)	It corresponds to encoding two channels by adding it to Base unit.
Audio board (*1)	With a Codec Board, this board enables support of the 16 channel s audio (stereo pairs of 8 channels) function.

*1: This option is for Base unit only.

Hardware and Software license necessary for each operational mode are shown in the following. For details on combinations of operational mode and the AV input-output interfaces, refer to **Appendix 5 AV Interface Settings**.

Table 1.3 Hardware and software license necessary for operational mode

Main hardware	Input/output Board	Software license	Operational mode
Single unit	SDI input board x1	Encoder license x1	Encoder x 1
	SDI output board x1	Decoder license x1	Decoder x 1
Multi unit	SDI input board x2	Encoder license x2	Encoder x 2
	SDI output board x2	Decoder license x2	Decoder x 2
	SDI input board x1 SDI output board x1	Encoder license x1 Decoder license x1	Encoder x 1 Decoder x 1
Base unit	SDI input board x1	Encoder license x1	Encoder x 1
	SDI output board x1	Decoder license x1	Decoder x 1
Base unit + Codec Board option	SDI input board x2	Encoder license x2	Encoder x 2
	SDI output board x2	Decoder license x2	Decoder x 2
	SDI input board x1 SDI output board x1	Encoder license x1 Decoder license x1	Encoder x 1 Decoder x 1

Table 1.4 Main functions of IP-9610

Item			Specification
Operation mode			Encoder x 1 Decoder x 1 Encoder x 2 Decoder x 2 Eccoder x 1 Decoder x 1, Decoder x 1 Encoder x 1
Encoder	Video	Input	3G-SDI, Dual-Link SDI, HD-SDI, SD-SDI Auto sensing (3G-SDI, HD-SDI, SD-SDI)
		Output	3G-SDI/Dual-Link SDI/HD-SDI/SD-SDI loop through
		Profile	High(422 10bit), High(422 8bit) High(CSC 422 8bit) *1 High(420 8bit) Main(420 8bit)
		Resolution/ Bit rate	1080p x 1920/1440/960 (50/59.94/60 Hz): 1 ~ 100 Mbps 1080i x 1920/1440/960 (50/59.94/60 Hz): 1 ~ 100 Mbps 720p x 1280/960/640 (50/59.94/60 Hz): 0.5 ~ 100 Mbps 576i x 720 (50 Hz): 0.5 ~ 100 Mbps 576i x 352 (50 Hz): 0.15 ~ 100 Mbps 480i x 720 (59.94 Hz): 0.5 ~ 100 Mbps 480i x 352 (59.94 Hz): 0.15 ~ 100 Mbps For CSC422: 1080i x 1920 (50/59.94 Hz): 8 ~ 33 Mbps 720p x 1280 (50/59.94 Hz): 8 ~ 33 Mbps 576i x 720 (50 Hz): 6 ~ 14 Mbps 480i x 720 (59.94 Hz): 6 ~ 14 Mbps
		Encoding control mode	Standard (IBBP), Motion (IBP), Low Latency (IPPP), Low Latency (PPPP), Ultra Low Latency(PPPP)
		Video PES	1 Field/1 PES, 1 Frame/1 PES
		Pre-filter	OFF, LIGHT, MEDIUM, HEAVY
		PPS insertion interval	GOP, Picture
		PPS ID	Fixed, Variable
	Audio	Input	SDI embedded
		Output	SDI embedded loop through
		Encoding / Bit rate	MPEG-1 Layer2 (Mono, Dual mono, Stereo): 64/128/192/256/384 kbps MPEG-2 AAC (Mono, Dual mono, Stereo, 5.1): 56/128/192/256/320/384/512 kbps MPEG-4 AAC (Mono, Dual mono, Stereo, 5.1): 56/128/192/256/320/384/512 kbps MPEG-4 HE-AAC V1 (Mono, Dual mono, Stereo, 5.1): 24/64/96/128/160 kbps Pass-thru (SMPTE302M): 1920/2304/2688 kbps Pass-thru (AC-3/ATSC, AC-3/DVB): 56/64/80/96/112/ 128/160/192/224/256/320/384/448/512/576/640 kbps
		Quantization format	Sampling frequency 48 kHz Quantization bit number 3D/HD: 16/20/24, SD: 16/20

Item			Specification
Decoder	Video	Output	3G-SDI/Dual-Link SDI/HD-SDI/SD-SDI
	Audio	Output	SDI embedded
Common	Ancillary data	Input	SDI embedded
		Format	Private PES (SMPTE RDD 11-2007) DID/SDID filtering ATSC Annex F (closed captions)
	Intercom	Encoding format	G.711
		Number of channels	1ch
		Analog input/output level	-20dBm, 0dBm
	Multiplexing method		MPEG-2 TS, MPEG-2 TTS
	Serial ports		2 ports, RS-232C/422 switching
	Control		Web GUI, Front panel, SNMP
	IP network	LAN (Streaming & Control)	10BASE-T/100BASE-TX/1000BASE-T x 2 (the same stream for SPTS) Fixed IP address or DHCP
		Console (Control only)	10BASE-T/100BASE-TX/1000BASE-T x 1 Fixed IP address or DHCP
		Protocol	IPv4/IPv6, http, SNMPv1/v2c, SNTP, RTP, UDP, IGMPv2, MLDv1/v2
		Error correction	SMPTE2022-1(Pro-MPEG CoP#3) FEC, Fujitsu FEC & ARQ
		IP version	IPv4/IPv6
	DVB-ASI	Streaming	DVB-ASI (SPTS/MPTS) x 2 *2
		Encryption	BISS mode 1/ mode E (Optional)

*1: CSC422 (Chroma Scalable Coding 422) is a Fujitsu Proprietary 4:2:2 encoding method and offers backward compatibility with standard 4:2:0 decoders.

*2: DVB-ASI comprises 1 input interface and 2 output interfaces. The same stream is output from 2 output interfaces. When the operation mode is Decoder x 1 or Decoder x 2, the stream from the input interface is looped output from 2 output interfaces (loop-through).

1.2 Typical Application

1.2.1 Use examples

This section presents examples of system configuration.

The basic configuration is for video transmission via point-to-point connections.

With this configuration, the camera is connected to the encoder, and video data is transmitted to the decoder over the Internet, and then output to the monitor.

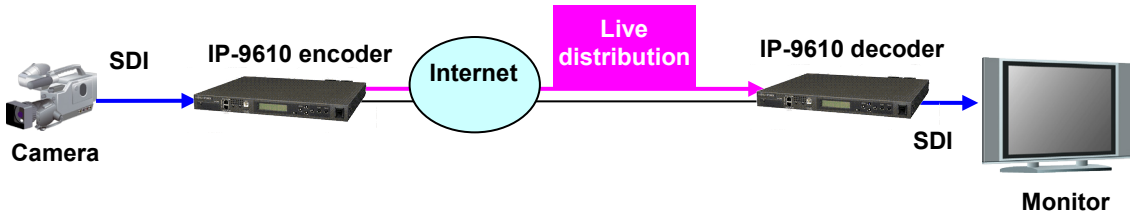


Figure 1.1 e.g. Broadcast Content Transmission or Live coverage

By using the DVB-ASI interface included with this equipment as standard, the equipment can also be used for video transmission via satellite news gathering (SNG) or field pickup equipment (FPE).

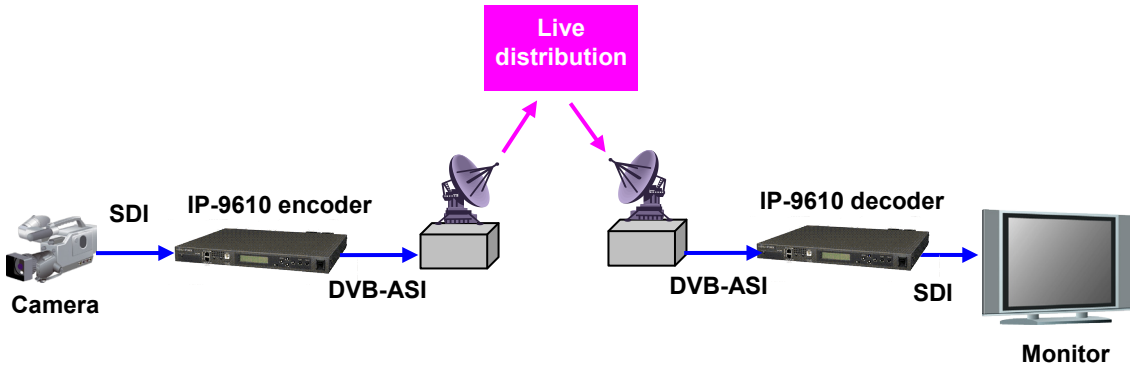


Figure 1.2 e.g. SNG System configuration

1.2.2 Operational conditions with other IP series

Operational conditions with other IP series are shown below. Operation with these software versions are confired.

With IP-900, IP-920 : V01L53 or later

With IP-9500 : V04L133 or later

Interoperation is available within the functions of each equipment.

The latest software for IP-900 and IP-920 can be downloaded at Global Website shown below.

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

Chapter 2
Installation and Operation

This chapter describes how to install license keys to this equipment.

2.1 Update the Software

The software for the IP-9610 is pre-installed at product shipment. However, you will need to activate the license key to use this equipment as an encoder or decoder.

This section describes the procedure for updating the software to the latest version, how to apply for software licenses that are required to enable optional functions, and how to install software licenses.

The latest software can be downloaded at Global Website shown below.

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

Use the Web GUI for this equipment to check or install software. For details on the operation of the Web GUI, refer to **Chapter 3 Web Operation**.

2.1.1 Check the software

This section describes how to check the version of the software installed on this equipment and how to check the optional licenses.

Click the [Maintenance] menu in the [MANAGEMENT] tab in the upper part of the Web GUI window to display the [Maintenance] page.

You can check the version of the software installed on the equipment from the "Current software version" item of "Software." You can also check the licenses that have already been installed from the "Option name" column of "Installed options."

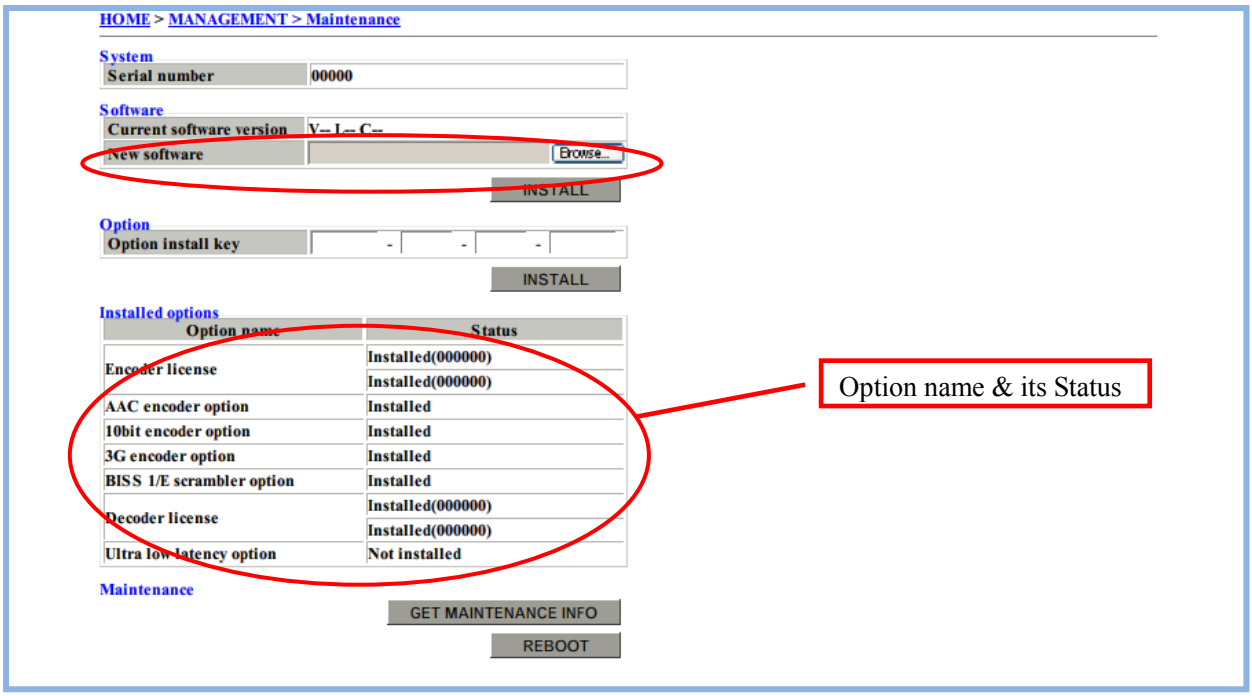


Figure 2.1 MANAGEMENT > Maintenance page

2.1.2 Procedure for updating software

(1) Select software

Click the [Maintenance] menu in the [MANAGEMENT] tab in the upper part of the Web GUI window to display the [Maintenance] page.

Click the [Browse] button for the "New Software" item in "Software" and select the software file to be updated.

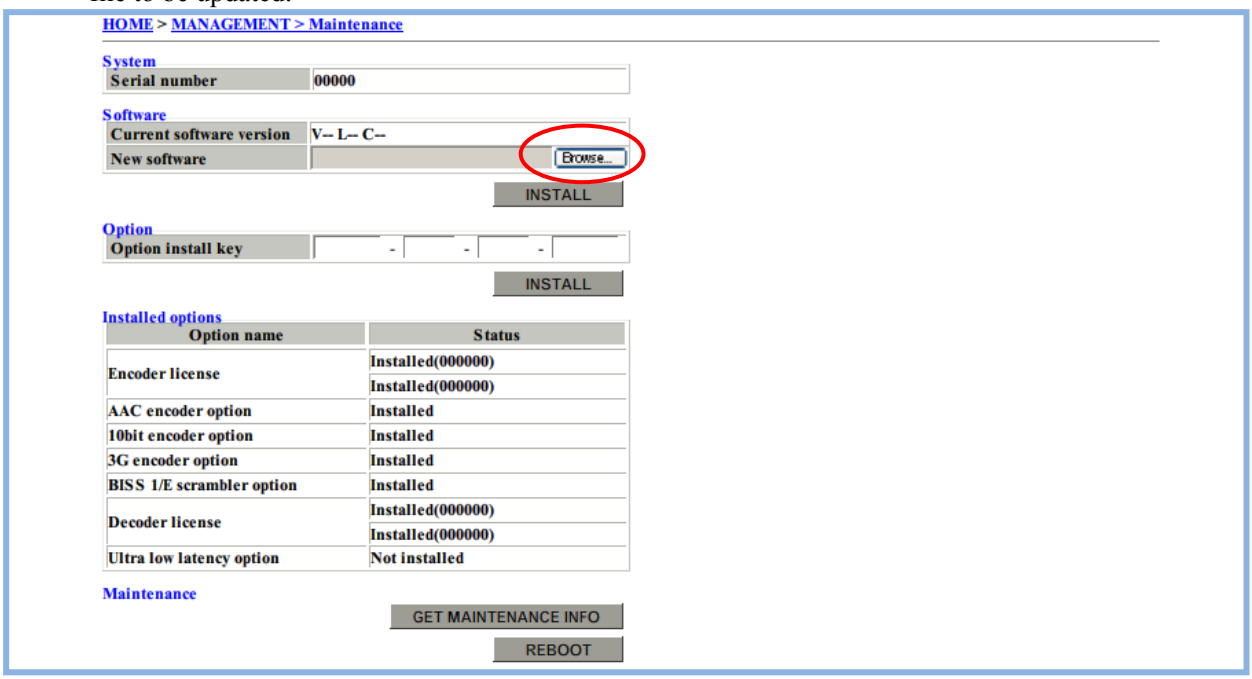


Figure 2.2 Installing software

(2) Starting install

Click the INSTALL button for "Software" starts the installation. When the installation ends, the equipment reboots.

(3) Verifying startup

Check the software version from the Web browser. For details on how to check the software version, refer to **2.1.1 Check the software.**

⚠Caution

Do not turn off the power or operate any switches on the front of the equipment during installation. Otherwise, you may make the equipment fail to boot.

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

2.1.3 Install the software license

(1) Apply for license key

If you have purchased a software license separately from this equipment, you need to apply for the license key to enable the optional functions.

To apply for an installation key, input the necessary information in the application form included in the top directory on the CD disk containing this user's guide ("LicenseRequestSheet.txt"), 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 base equipment on which you want to install the option function. You can obtain the device serial number from the [Serial number] field on the [System Status] item of the IP-9610 HOME page, which is the Web GUI.

Your license key will be sent by e-mail.

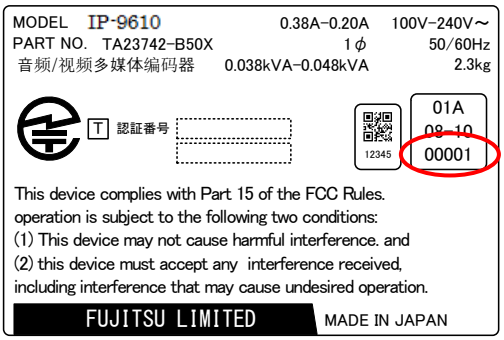
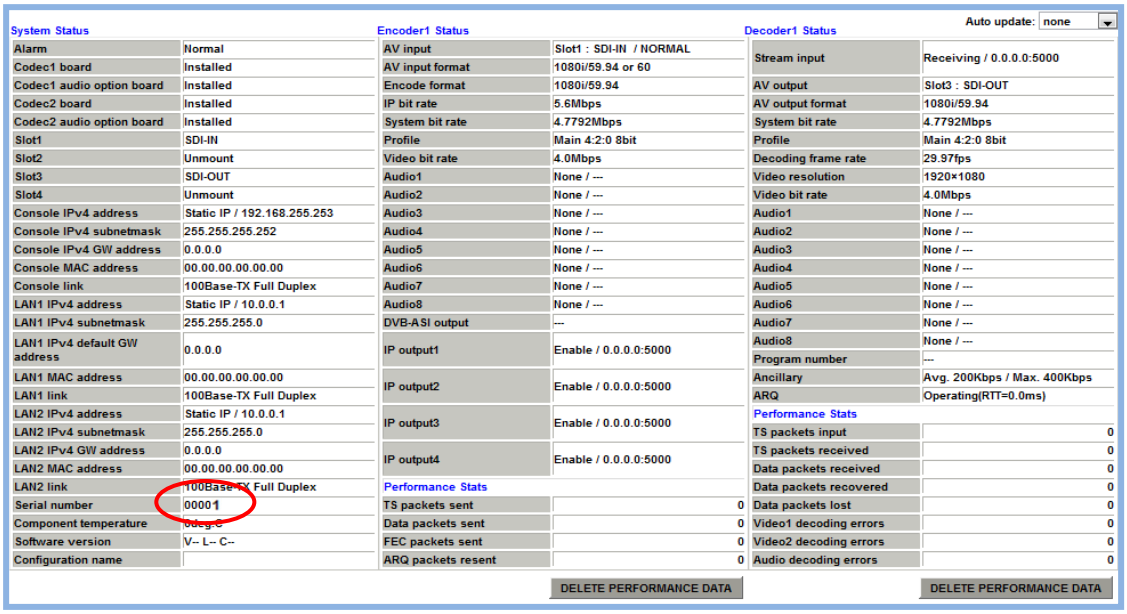


Figure 2.3 Label at bottom of equipment (e.g.)



Auto update: none

System Status	
Alarm	Normal
Codec1 board	Installed
Codec1 audio option board	Installed
Codec2 board	Installed
Codec2 audio option board	Installed
Slot1	SDI-IN
Slot2	Unmount
Slot3	SDI-OUT
Slot4	Unmount
Console IPv4 address	Static IP / 192.168.255.253
Console IPv4 subnetmask	255.255.255.252
Console IPv4 GW address	0.0.0.0
Console MAC address	00.00.00.00.00.00
Console link	100Base-TX Full Duplex
LAN1 IPv4 address	Static IP / 10.0.0.1
LAN1 IPv4 subnetmask	255.255.255.0
LAN1 IPv4 default GW address	0.0.0.0
LAN1 MAC address	00.00.00.00.00.00
LAN1 link	100Base-TX Full Duplex
LAN2 IPv4 address	Static IP / 10.0.0.1
LAN2 IPv4 subnetmask	255.255.255.0
LAN2 IPv4 GW address	0.0.0.0
LAN2 MAC address	00.00.00.00.00.00
LAN2 link	100Base-TX Full Duplex
Serial number	00001
Component temperature	[illegible] deg C
Software version	V-- L-- C--
Configuration name	

Encoder1 Status	
AV input	Slot1 : SDI-IN / NORMAL
AV input format	1080i/59.94 or 60
Encode format	1080i/59.94
IP bit rate	5.6Mbps
System bit rate	4.7792Mbps
Profile	Main 4:2:0 8bit
Video bit rate	4.0Mbps
Audio1	None / ---
Audio2	None / ---
Audio3	None / ---
Audio4	None / ---
Audio5	None / ---
Audio6	None / ---
Audio7	None / ---
Audio8	None / ---
DVB-ASI output	---
IP output1	Enable / 0.0.0.0:5000
IP output2	Enable / 0.0.0.0:5000
IP output3	Enable / 0.0.0.0:5000
IP output4	Enable / 0.0.0.0:5000
Performance Stats	
TS packets sent	0
Data packets sent	0
FEC packets sent	0
ARQ packets resent	0

DELETE PERFORMANCE DATA

Decoder1 Status	
Stream input	Receiving / 0.0.0.0:5000
AV output	Slot3 : SDI-OUT
AV output format	1080i/59.94
System bit rate	4.7792Mbps
Profile	Main 4:2:0 8bit
Decoding frame rate	29.97fps
Video resolution	1920×1080
Video bit rate	4.0Mbps
Audio1	None / ---
Audio2	None / ---
Audio3	None / ---
Audio4	None / ---
Audio5	None / ---
Audio6	None / ---
Audio7	None / ---
Audio8	None / ---
Program number	---
Ancillary	Avg. 200Kbps / Max. 400Kbps
ARQ	Operating(RTT=0.0ms)
Performance Stats	
TS packets input	0
TS packets received	0
Data packets received	0
Data packets recovered	0
Data packets lost	0
Video1 decoding errors	0
Video2 decoding errors	0
Audio decoding errors	0

DELETE PERFORMANCE DATA

Figure 2.4 “HOME” page (equipment “Serial number”) (e.g.)

(2) Input the install key

Click the [Maintenance] menu in the [MANAGEMENT] tab in the upper part of the Web GUI window to display the [Maintenance] page.

Input the acquired install key in the "Option install key" field.

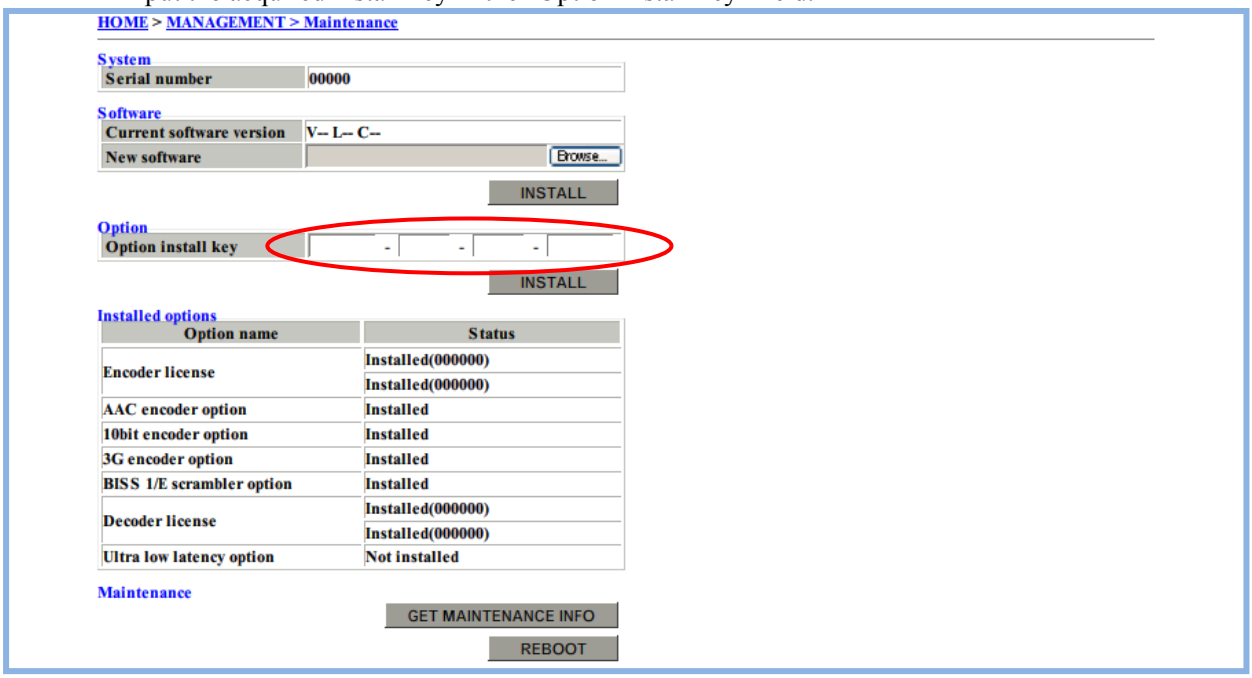


Figure 2.5 Installing the software license

(3) Start the install

Click the INSTALL button for "Option" starts the install.

(4) Check the option

Check the installed license from the Web browser. For the checking method, refer to **2.1.1 Check the** software.

⚠Caution

Do not turn off the power or operate any switches on the front of the equipment during installation. Doing so may make the equipment fail to boot.

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

2.2 Operation

This section describes the methods of operating this equipment.

2.2.1 Equipment operation methods

You can operate this equipment through the Web GUI, front panel, or SNMP.

For details on possible setting items and reference items for each operation method, refer to **Table Appendix 2-1 Browsing parameters** and **Table Appendix 3-1 Setting parameters**.

■ Operation through Web GUI

From the Web GUI, you can make all the settings and check all the status of this equipment.

For details, refer to **Chapter 3 Web Operation**.

■ Operation from front panel

By operating the front panel keys of this equipment, you can make settings or check the status of this equipment almost in the same way as with Web GUI operation.

For details, refer to **Chapter 4 Front Panel Operation**.

■ Control via SNMP

The extended MIB supports settings that are almost the same as those of the Web GUI. You can use SNMP Manager to import the extended MIB to control this equipment.

For details on SNMP settings, refer to **3.4.3 SNMP**.

2.2.2 Required setting items

Be sure to set the items below when installing this equipment. For details on setting methods, refer to **Chapter 3 Web Operation.**

- MANAGEMENT > Basic.....Settings such as the console network, user authentication
- MANAGEMENT > Time.....Setting of the time
- I/O INTERFACE > IP Interface....Settings such as the IP addresses of the LAN1 and LAN2 ports

Chapter 3
Web Operation

This chapter describes how to operate individual functions from the Web browser.

3.1 Start the Web GUI

3.1.1 Web GUI display

Type the IP address of this equipment from the Web browser to display the Web GUI (HOME page).

http://[IP address of the equipment]/

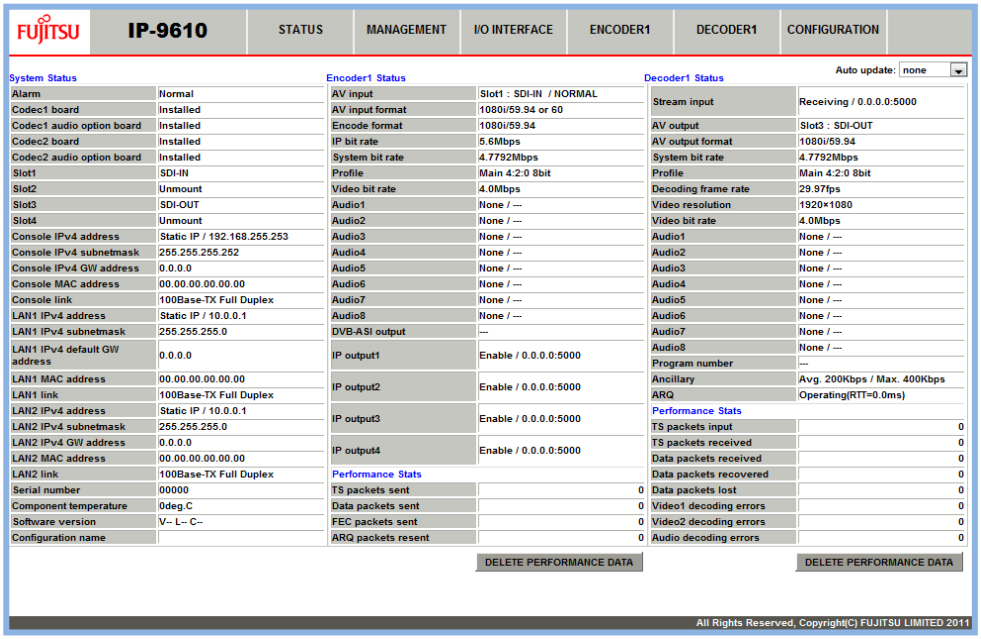
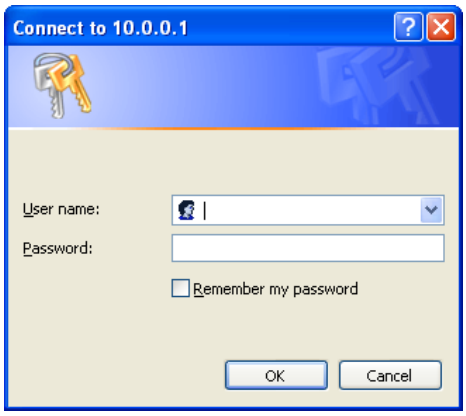


Figure 3.1 IP-9610 Web GUI (HOME page)

If the user authentication function has been enabled, the user authentication message is displayed. In such case, input your user name and password. The user authentication function is disabled in the initial state. For details on setting the user authentication function, refer to **3.4.1 Basic**.



* The IP address settings at shipment from the factory are shown below. Set the proxy setting of the Web browser off to access the equipment.
*

CONSOLE:	IP address	192.168.255.253
	Subnet mask	255.255.255.252
LAN1/2:	IP address	10.0.0.1
	Subnet mask	255.0.0.0

* If you do not know the IP address of the equipment, you can check or set it by using the front panel. For details on the operation of the front panel, refer to **Chapter 4 Front Panel Operation**.
  Also, refer to.**5.1 Troubleshooting**.

CONSOLE:	[MANAGEMENT] - [Basic] - [Console settings] menu
LAN1/2:	[I/O INTERFACE] - [IP Interface] - [LAN1/2 settings] menu

* The supported Web browsers are Internet Explorer, Safari, and Firefox.
  Browsers whose operation has been confirmed: Internet Explorer 8, 9, 10, 11
  Safari 5
  Firefox 5, 7, 10, 28

* For a while after the power-on or reboot of the equipment, you may not be able to access the Web GUI correctly. Wait for a while after the boot of the equipment, and then access the Web GUI.

⚠Caution

When you operate this equipment with the default IP address setting, disconnect the equipment from the connected network. Connect the equipment to a PC through a hub or directly. After setting up the equipment to meet the requirements of the connected network, connect the equipment to the network. If you connect the equipment to the network with the default setting, an unexpected fault may occur in the network.

3.1.2 Web GUI Basic Structure

Function menu appears when you position the mouse pointer on a function tab in the upper part of the window. The selected function page appears when you click a menu item.

Currently opened Web GUI is hierarchically displayed in the upper left of the page.

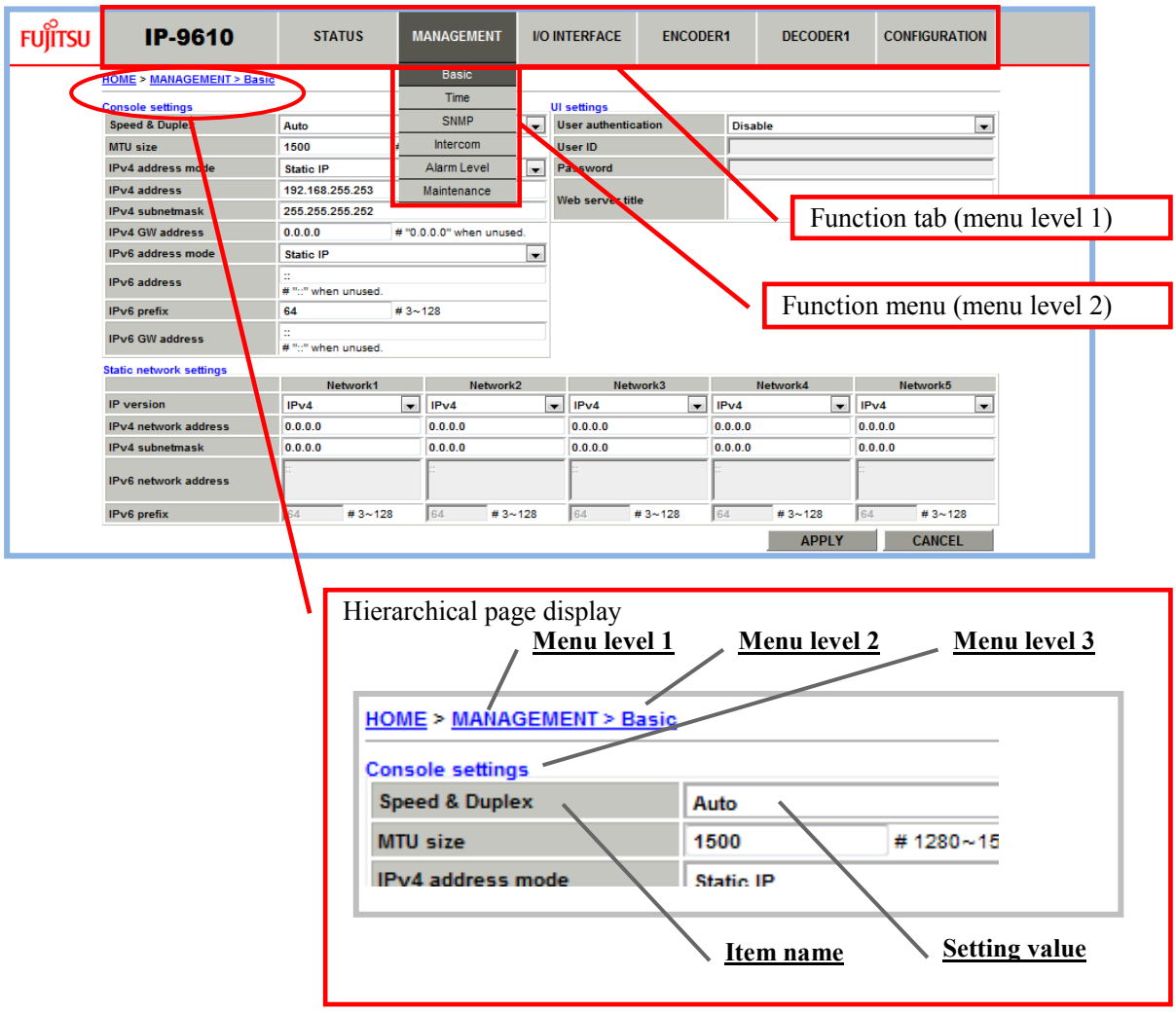


Figure 3.2 IP-9610 Web GUI structure

3.2 “HOME”

3.2.1 “HOME” page

The IP-9610 “HOME” page is displayed when you access the Web GUI for this equipment for the first time, or when you click the [IP-9610] tab located in the upper part of the Web GUI window or "HOME" in the hierarchical page display. From this page, you can check the operating status of the equipment, including the network status, encoding status, decoding status, and encoder/decoder statistical information.

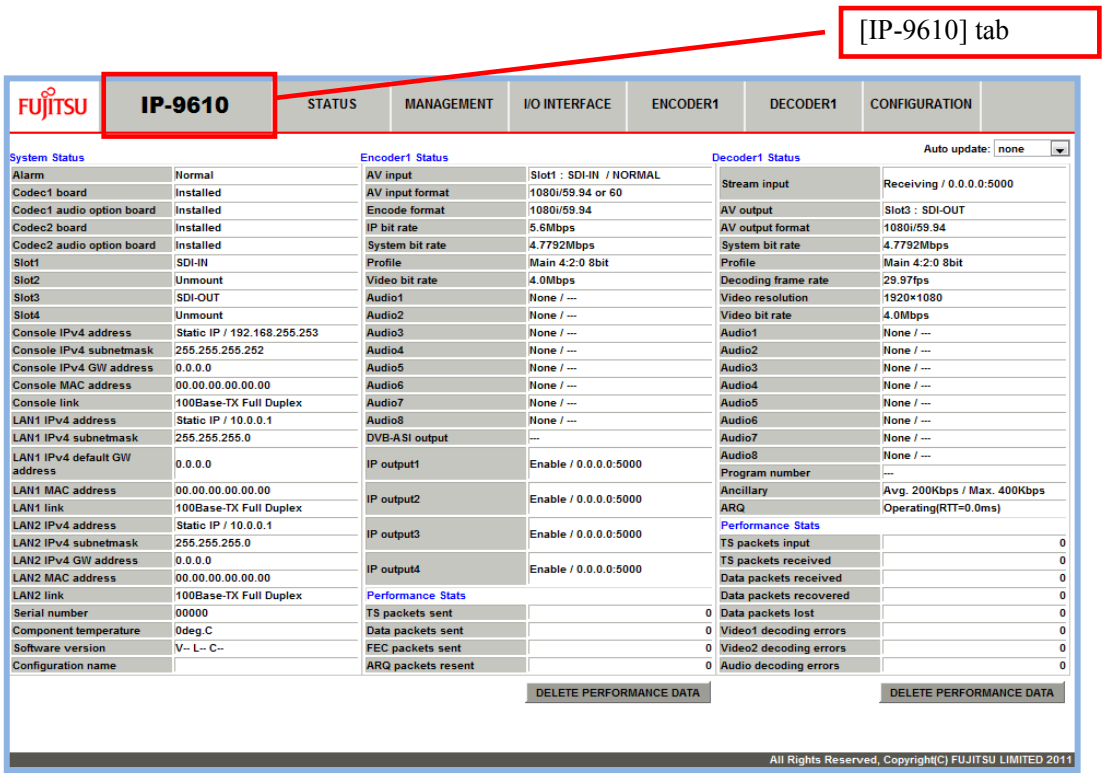


Figure 3.3 IP-9610 HOME page

Select any value from 3sec, 5sec, or 10sec from [Auto update] enables automatic update of the displayed information in the specified time intervals. Selecting [none] disables automatic update.

Click the DELETE PERFORMANCE DATA button deletes the statistical information on the corresponding encoder/decoder.

* This operation deletes not only the statistical information displayed in the “HOME” page, but also all the encoder/decoder statistical information is indicated in "**3.3.3 Performance Stats.**"

The information below can be checked from the HOME page.
For details, refer to **Table 3.1 Items displayed in the "HOME" page**.

■ System Status

You can check the basic status of the equipment including the alarm occurrence status, hardware option installation status, network setting, software versions, and configuration data names.

■ Encoder1/2 Status

You can check the basic status concerning encoder operation including the AV input status, encoding format, bit rate, coding format, and stream output status.

■ (Encoder1/2) Performance Stats

This item displays the number of packets sent out by the encoder.

■ Decoder 1/2 Status

You can check the basic status concerning decoder operation including the AV output status, decoding format, bit rate, and coding format.

■ (Decoder1/2) Performance Stats

This item displays the number of packets received by the decoder.

Table 3.1 Items displayed in the "HOME" page

	Item	Description
System Status	Alarm	**{Normal / Occur}** Alarm occurrence status
	Codec1 board	**{Not installed / Installed}** Installation status of Codec Board 1
	Codec1 audio option board	**{Not installed / Installed}** Installation status of the 8 ch audio board on Codec Board 1
	Codec2 board	**{Not installed / Installed}** Installation status of Codec Board 2
	Codec2 audio option board	**{Not installed / Installed}** Installation status of the 8 ch audio board on Codec Board 2
	Slot1	**{Unmount / SDI-IN / SDI-OUT}** Mounting status of extension slots 1 to 4
	Slot2	
	Slot3	
	Slot4	
	Console {IPv4 / IPv6} address	**IPv4 : {Static IP / DHCP) /** ***.***.***.*** **IPv6 : {Link-Local / Stateless / Static IP} /** ****:****:****:****:****:****:****:**** IP address of the console port
	Console IPv4 subnetmask	**{***.***.***.*** / ---}** Subnet mask of the console port (only IPv4)
	Console {IPv4 / IPv6} GW address	**IPv4 :** ***.***.***.*** **IPv6 :** ****:****:****:****:****:****:****:**** Default gateway address of the console port
	Console MAC address	**:**:**:**:**:** MAC address of the console port
	Console link	**{Disconnected / Connected} /** **{100Base-TX Full Duplex / 100Base-TX Half Duplex /** **10Base-T Full Duplex / 10Base-T Half Duplex /** **1000Base-T Full Duplex / 1000Base-T Half Duplex / ---}** Link status of the console port
	LAN1 {IPv4 / IPv6} address	**IPv4 : {Static IP / DHCP) /** ***.***.***.*** **IPv6 : {Link-Local / Stateless / Static IP} /** ****:****:****:****:****:****:****:**** IP address of the LAN1 port
	LAN1 IPv4 subnetmask	**{***.***.***.*** / ---}** Subnet mask of the LAN1 port (only IPv4)
	LAN1 {IPv4 / IPv6} default GW address	**IPv4 :** ***.***.***.*** **IPv6 :** ****:****:****:****:****:****:****:**** Default gateway address of the LAN1 port
	LAN1 MAC address	**:**:**:**:**:** MAC address of the LAN1 port
	LAN1 link	**{Disconnected / Connected} /** **{100Base-TX Full Duplex / 100Base-TX Half Duplex /** **10Base-T Full Duplex / 10Base-T Half Duplex /** **1000Base-T Full Duplex / 1000Base-T Half Duplex / ---}** Link status of the LAN1 port

	Item	Description
	LAN2 {IPv4 / IPv6} address	**IPv4 : {Static IP / DHCP} /** ***.***.***.*** **IPv6 : {Link-Local / Stateless / Static IP} /** ****:****:****:****:****:****:****:**** IP address of the LAN2 port
	LAN2 IPv4 subnetmask	**{***.***.***.*** / ---}** Subnet mask of the LAN2 port (only IPv4)
	LAN2 {IPv4 / IPv6} GW address	**IPv4 :** ***.***.***.*** **IPv6 :** ****:****:****:****:****:****:****:**** Default gateway address of the LAN2 port
	LAN2 MAC address	****:**:**:**:**:**** MAC address of the LAN2 port
	LAN2 link	**{Disconnected / Connected} / {100Base-TX Full Duplex / 100Base-TX Half Duplex / 10Base-T Full Duplex / 10Base-T Half Duplex / 1000Base-T Full Duplex / 1000Base-T Half Duplex / ---}** Link status of the LAN2 port
	Serial number	Serial number of the equipment
	Component temperature	Temperature inside the equipment (Celsius)
	Software version	Version of the running software
	Configuration name	Active configuration name
Encoder{1/2} Status	AV input	**{Slot-1 / Slot-2 / Slot-3 / Slot-4 /Slot-1&Slot-2 / Slot-3&Slot-4} : {Unused / SDI-IN / SDI-IN(dual)} / {Normal / Error / No input signal / ---}** AV input status
	AV input format	**{1080p/59.94 / 1080p/50 / 1080p/60 / 1080i/59.94 / 1080i/50 / 1080i/60 / 720p/59.94 / 720p/50 / 720p/60 / 480i/59.94 / 576i/50 / ---/---}** AV input format
	Encode format	**{1080p/59.94 / 1080p/50 / 1080p/60 / 1080i/59.94 / 1080i/50 / 1080i/60 / 720p/59.94 / 720p/50 / 720p/60 / 480i/59.94 / 576i/50 / ---/---}** Encoding format
	IP bit rate	Ethernet transmission rate (Mbps)
	System bit rate	System rate (Mbps)
	Profile	**{Main 4:2:0 8bit / High 4:2:0 8bit / High 4:2:2 8bit (CSC) / High 4:2:2 8bit / High 4:2:2 10bit / ---}** Profile of the video encoding system
	Video bit rate	Video rate (Mbps)
	Audio1	**{None / MPEG-1 Layer2 / MPEG-2 AAC / MPEG-4 AAC / MPEG-4 HE-AAC V1 / Pass-thru(SMPTE302M) / Pass-thru(AC-3/ATSC) / Pass-thru(AC-3/DVB) / ---} / {****kbps / ---} / {CBR / VBR / ---}** Formats of audio channels 1 ~ 8, rates (kbps), formats
	Audio2	
	Audio3	
	Audio4	
	Audio5	
	Audio6	
	Audio7	
	Audio8	

	Item	Description
	DVB-ASI output	**{Enable / Stop by lower limit / ---} / {188bytes / 204bytes}** DVB-ASI output status
	IP output1	**{Enable / Stop by lower limit / ---} / {***.***.***.*** / ****:****:****:****:****:****:****:****} / {*****}** Output status of IP streams 1 ~ 4, streaming destination IP addresses, port numbers.
	IP output2	
	IP output3	
	IP output4	
(Encoder{1/2}) Performance Stats	TS packets sent	Number of TS packets sent
	Data packets sent	Number of data packets sent
	FEC packets sent	Number of FEC packets sent
	ARQ packets resent	Number of ARQ packets re-sent
Decoder {1/2} Status	Stream input	**{No receiving / Receiving / 188bytes / 204bytes / --- } / {***.***.***.*** / ****:****:****:****:****:****:****:**** / ---} / {**** / ---}** Stream receiving status, IP stream address, and port number (for IP stream)
	AV output	**{Slot-1 / Slot-2 / Slot-3 / Slot-4 /Slot-1&Slot-2 / Slot-3&Slot-4} : {Unused / SDI-OUT / SDI-OUT(dual)}** AV output status
	AV output format	**{1080p/59.94 / 1080p/50 / 1080p/60 / 1080i/60 / 1080i/59.94 / 1080i/50 / 720p/60 / 720p/59.94 / 720p/50 / 480i/59.94 / 576i/50 / ---/--- }** AV output format
	System bit rate	System rate (Mbps)
	Profile	**{Main 4:2:0 8bit / High 4:2:0 8bit / High 4:2:2 8bit(CSC) / High 4:2:2 8bit / High 4:2:2 10bit / ---}** Profile of the video encoding system
	Decoding frame rate	**{59.94fps / 50fps / 60fps / 29.97fps / 25fps / 30fps / 14.98fps / 12.5fps / 7.493fps / 6.25fps / 1.998fps / 1.667fps / ---}** Decoding frame rate
	Video resolution	**{1920x1080 / 1440x1080 / 960x1080 / 1280x720 / 960x720 / 640x720 / 720x480 / 352x480 / 720x576 / 352x576 / ---}** Video resolution
	Video bit rate	Video rate (Mbps)
	Audio1	**{None / MPEG-1 Layer2 / MPEG-2 AAC / MPEG-4 AAC / MPEG-4 HE-AAC V1 / Pass-thru(SMPTE302M) / ---} / {****kbps / ---} / {CBR / VBR / ---}** Formats of audio channels 1 ~ 8, rates (kbps), formats
	Audio2	
	Audio3	
	Audio4	
	Audio5	
	Audio6	
	Audio7	
	Audio8	
	Program number	Program number
	Ancillary	**{Avg. xxxkbps / --- } / {Max. xxxkbps / ---}** Number of bytes of ancillary data

	Item	Description
	ARQ	**{Operating(RTT=xxxms) / ---}** ARQ operating status
(Decoder{1/2}) Performance Stats	TS packets input	Number of TS packets input
	TS packets received	Number of TS packets received
	Data packets received	Number of data packets received
	Data packets recovered	Number of packets recovered
	Data packets lost	Number of packets lost
	Video1 decoding errors	Number of Video1 decoding errors
	Video2 decoding errors	Number of Video2 decoding errors
	Audio decoding errors	Number of audio decoding errors

3.3 STATUS

Position the mouse pointer on the [STATUS] tab in the upper part of the Web GUI window to display the operating status display menu. Click a menu item to display the selected page.

Table 3.2 STATUS menu

Menu		Description
Current Alarms		Information on alarms currently occurring
Status		
	Management	Equipment operating status
	Encoder{1/2}	Operating status of Encoder {1/2}
	Decoder{1/2}	Operating status of Decoder {1/2}
Performance Stats		
	Management	Statistical information on voice communication and serial communication
	Encoder{1/2}	Statistical information on Encoder {1/2}
	Decoder{1/2}	Statistical information on Decoder {1/2}
Logs		Log information

For details on these items that are displayed in each page, refer to **Table Appendix 2-1 Browsing parameters**.

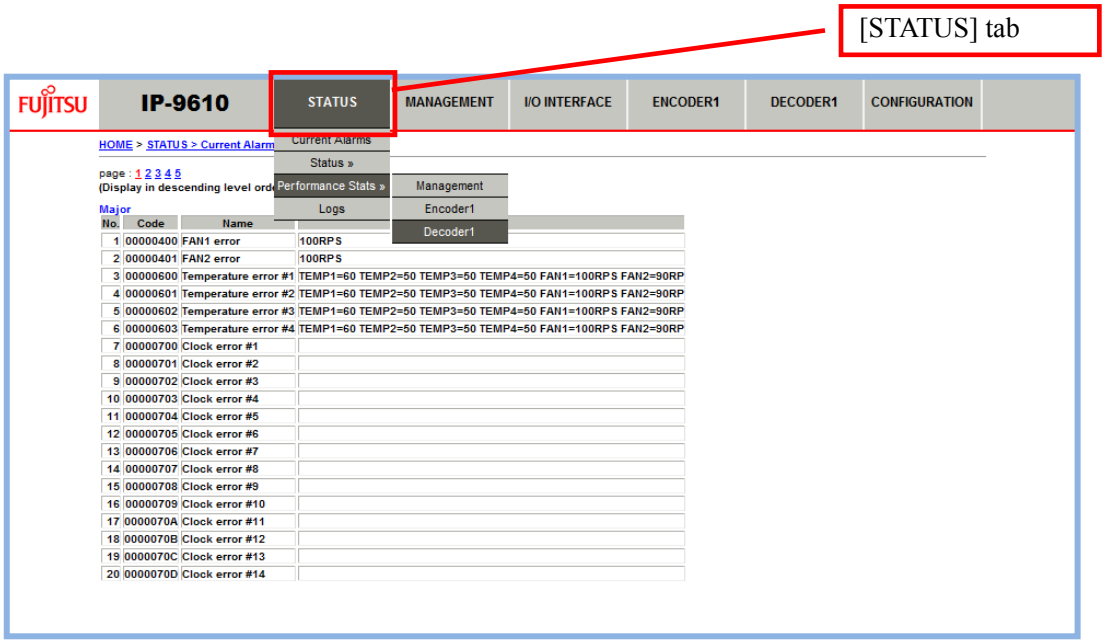


Figure 3.4 STATUS page

3.3.1 Current Alarms

This item displays alarm information regarding the currently occurring alarms.

One page of displayed alarm information contains 20 items sorted in the order of alarm levels (Major/Minor/Warning). Alarm levels can be arbitrarily set. For details on setting alarm levels, refer to **3.4.5 Alarm Level**.

For details on alarm information, refer to **Table Appendix 1-1 Alarms and logs**.

3.3.2 Status

This item displays the operating status of the equipment.

[Status] has the following sub menu items: [Management (operating status of the equipment)], [Encoder 1/2 (operating status of the encoder)], and [Decoder 1/2/ (operating status of the decoder)]. Each of these sub menu items displays a corresponding page.

[Status > Management (operating status of the equipment)]

■ System

This item displays system-related operating status items including the alarm occurrence status, hardware option installation status, network setting, software versions, and configuration data names.

■ Time server

This item displays the operating status related to the time server.

■ Intercom

This item displays the operating status related to voice communication.

■ Console

This item displays the console port operating status including the IP address, MAC address, and link status.

■ LAN1/2

This item displays the operating status of LAN ports 1 and 2 including the IP addresses, MAC addresses, and link status.

■ Serial port

This item displays the operating status of the serial port.

[Status > Encoder1/2 (operating status of the encoder)]

■ Encoder1/2 Status

This item displays the operating status of the encoders including the AV input status, encoding format, and bit rate.

■ Encoder1/2 PID

This item displays the operating status concerning the PIDs of the encoders.

[Status > Decoder1/2 (operating status of the decoder)]

■ Decoder1/2 Status

This item displays the operating status of the decoders including the stream receiving status, reference clock status, and AV output format.

■ Decoder1/2 PID

This item displays the operating status concerning the PIDs of the decoders.

3.3.3 Performance Stats

You can check the statistical information on the equipment. [Performance Stats] has the following sub menu items: [Management (statistical information on voice communication and serial communication)], [Encoder 1/2 (encoder statistical information)], and [Decoder 1/2 (decoder statistical information)]. Each of these sub menu item displays a corresponding page.

Select any value from 3sec, 5sec, or 10sec from [Auto update] enables automatic update of the displayed information in the specified time intervals. Selecting [none] disables automatic update.

Click the DELETE PERFORMANCE DATA button deletes the corresponding statistical information.

[Performance Stats> Management (statistical information on voice communication and serial communication)]

■ Intercom

This item displays the statistical information on voice communication packets including the number of audio packets sent and received and the number of abnormal packets.

■ Serial Port1/2

This item displays the number of bytes sent and received via serial ports 1 and 2.

[Performance Stats> Encoder 1/2 (encoder statistical information)]

■ DVB-ASI

This item displays the packet and data statistical information on the DVB-ASI interface concerning encoders 1 and 2.

■ IP

This item displays the packet and data statistical information on the IP interface concerning encoders 1 and 2.

[Performance Stats> Decoder 1/2 (decoder statistical information)]

■ DVB-ASI

This item displays the packet and data statistical information on the DVB-ASI interface concerning decoders 1 and 2.

■ IP

This item displays the packet and data statistical information on the IP interface concerning decoders 1 and 2.

3.3.4 Logs

You can check log information on the equipment.
For details on log information, refer to **Table Appendix 1-1 Alarms and logs**.

Click the DELETE ALL LOGS button to delete all log information.

One page of log information contains 25 items in the order in which they have been saved. The maximum of 10 pages or 250 items can be displayed. However, if the total number of items exceeds 250, these log information items are overwritten from oldest to latest.

3.4 MANAGEMENT

Position the mouse pointer on the [MANAGEMENT] tab in the upper part of the Web GUI window to display the management information setting menu. Click a menu item to display the selected page.

Table 3.3 MANAGEMENT menu

Menu	Description
Basic	Basic information setting
Time	Time zone/time server setting
SNMP	SNMP setting
Intercom	Voice communication setting
Alarm Level	Alarm level setting
Maintenance	Maintenance function

For details on the items that can be set in each page, refer to **Table Appendix 3-1 Setting parameters**.

Click the APPLY button reflects the setting values in the equipment.

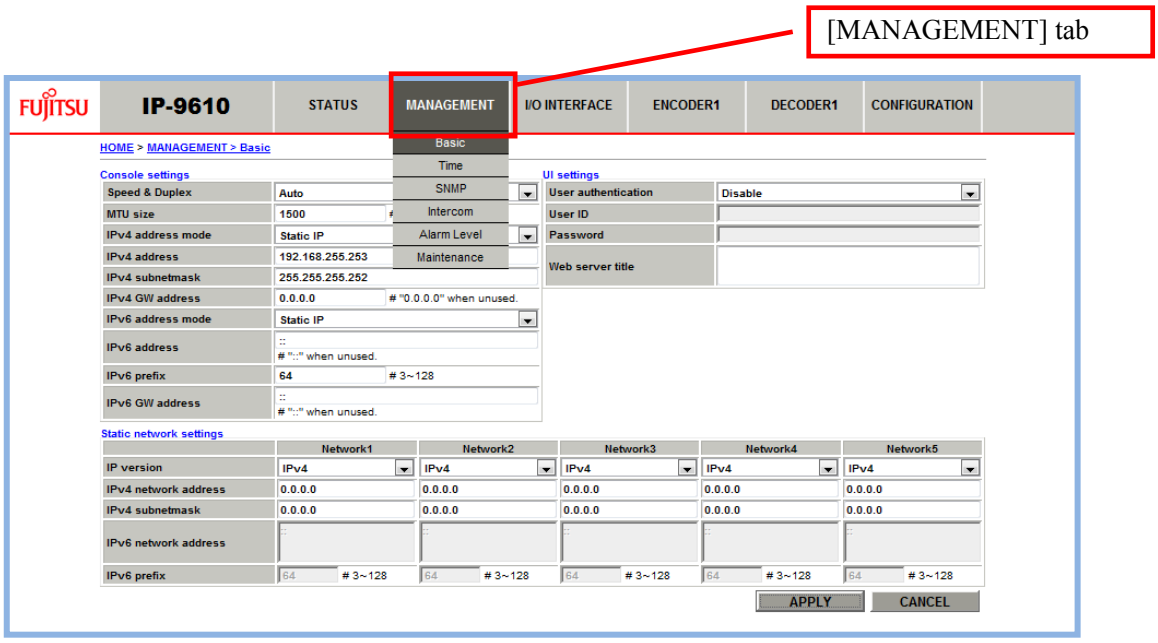


Figure 3.5 MANAGEMENT page

3.4.1 Basic

These settings include such as the console network and user authentication.

■ Console settings
The network settings are for the console port.

■ Static network1-5 settings
Static routing settings are for the console side network. You can make them for up to five networks.

■ UI settings
User authentication settings when you access the Web GUI and for setting the title information for the Web GUI.

3.4.2 Time

These settings include such as the time zone and time server.

"Component time" displays the current time of this equipment.
Click the APPLY PC TIME button sets the PC time in the equipment.
Click the SYNCHRONIZE WITH TIME SERVER button performs time synchronization with the time server. Time synchronization with the time server is enabled only when "Enable" is set for "Auto synchronization" of "Time server settings."

■ Time zone settings
The time offset settings are from the UTC.

■ Time server settings
The settings specify a time server. They are for time server synchronization.

3.4.3 SNMP

Up to five managers can be registered with these settings.

■ SNMP agent settings
The community names settings are used for authentication with managers.

■ SNMP trap settings
Trap notification settings

3.4.4 Intercom

These settings are used to perform VoIP full duplex voice communication with destination equipment in the IP network. This communication is performed between the VOICE port (RJ-25 connector) on the front of this equipment and an external device through dedicated cable connection.

Audio data that has been encoded with G711 is encapsulated in IP packets (RTP/UDP), and then transmitted bi-directionally between the devices. Error-correcting functions such as FEC/ARQ are not supported.

For details on setting conditions, refer to **Appendix 4 Intercom Settings**.

3.4.5 Alarm Level

Set alarm levels for each alarm of this equipment.

You can select any of "Major," "Minor," "Warning," or "Off" for the level of each alarm.

You can also specify "Info" or "Off" for the equipment operation and response during status changes such as equipment boot or software update. If "Info" is specified, logs are saved and traps are reported.

Select a level from the pull-down menu of the "Level" field in this page. If you would like to know how to respond for each alarm and the information, refer to **Table 3.4 Alarm Level and Response** and **Table 3.5 Information Level and Response** .

The level menu is not displayed in the pull-down menu because non-recovered alarm cannot be changed the levels.

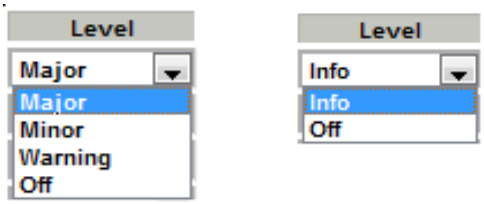


Figure 3.6 Level's pull-down menu

Table 3.4 Alarm Level and Response

Level	LED (ALM or IN-DWN)	Logging	Alarm occurrence	SNMP Trap notification
Major	On orange	Yes	Yes	Yes
Minor	Blinking orange	Yes	Yes	Yes
Warning	None	Yes	Yes	None
Off	None	Yes	None	None

Table 3.5 Information Level and Response

Level	LED (ALM or IN-DWN)	Logging	Alarm occurrence	SNMP Trap notification
Info.	None	Yes	None	Yes
Off	None	Yes	None	None

3.4.6 Maintenance

Use this item to install software and register option licenses.

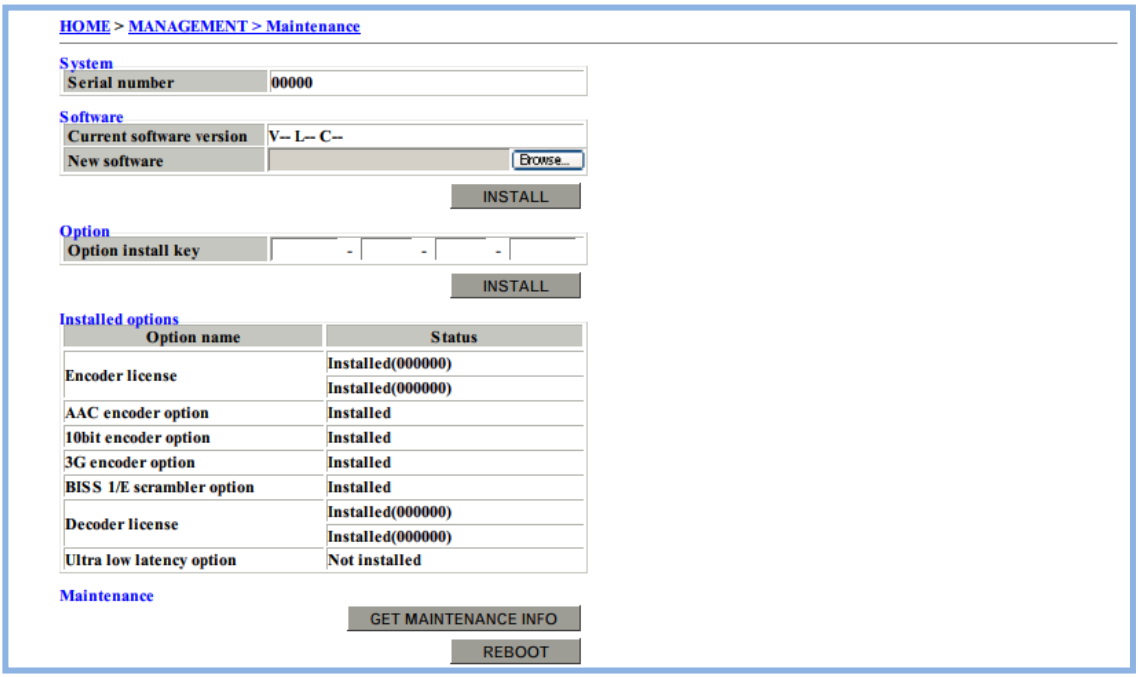


Figure 3.7 MANAGEMENT > Maintenance page

■ Software

Select a file of the software to be installed and then click the INSTALL button to install the software.

■ Option

Input a license key for option and then click the INSTALL button to install the software license.

■ Installed options

This item displays a list of the licenses that have been installed.

■ Maintenance

This item provides the following functions:

- Download maintenance information

You can download information logs concerning equipment operation and response during status changes such as equipment boot or software update.

Click the GET MAINTENANCE INFO button starts downloading.

- Reboot the equipment

You can reboot this equipment.

Click the REBOOT button reboots the equipment.

⚠Caution

Do not turn off the power or operate any switches on the front of the equipment during installation. Otherwise, you may make the equipment fail to boot.

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

3.5 I/O INTERFACE

Position the mouse pointer on the [I/O INTERFACE] tab in the upper part of the Web GUI window to display the input-output interface setting menu. Click a menu item to display the selected page.

Table 3.6 I/O INTERFACE menu

Menu	Description
AV Interface	AV interface setting
DVB-ASI Interface	DVB-ASI interface setting
IP Interface	IP interface setting
Reference	Reference clock setting
Serial Port	Serial port setting

For details of the items that can be set in each page, refer to **Table Appendix 3-1 Setting parameters**.

Click the APPLY button reflects the setting values in the equipment.

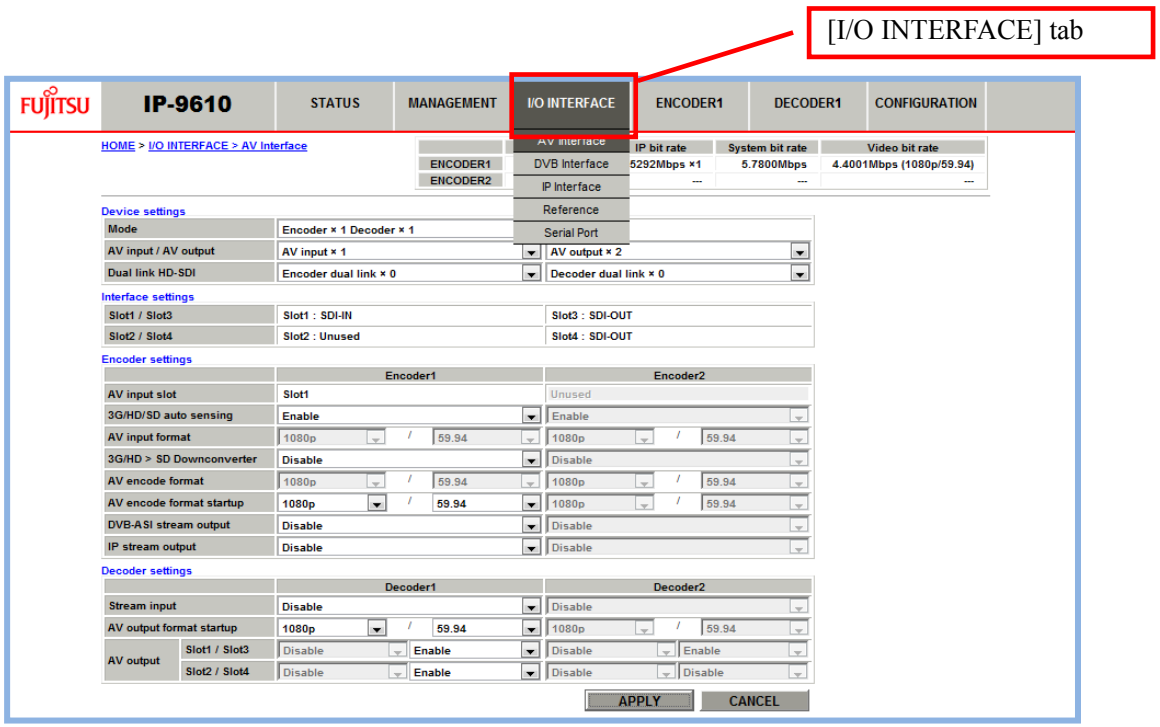


Figure 3.8 I/O INTERFACE page

3.5.1 AV Interface

Video/audio input-output settings are such as operation mode of the equipment (encoder/decoder), number of AV input-output, and whether to use Dual-Link SDI.

■ ENCODER1/ENCODER2 operation status indication

This item displays the CPU utilization and currently set bit rate in the upper part of the page. For details, refer to **Table 3.7 ENCODER1/ENCODER2 operation status indication**.

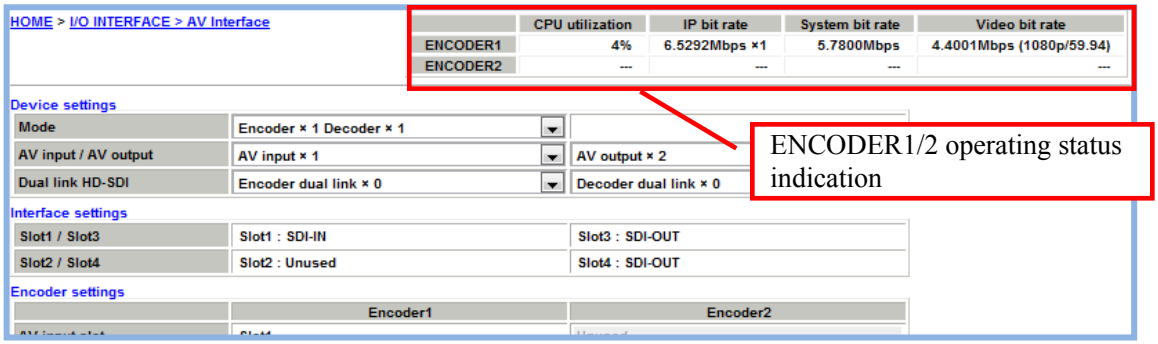


Figure 3.9 I/O INTERFACE > AV Interface page

Table 3.7 ENCODER1/ENCODER2 operation status indication

Item	Description
CPU utilization	Displays the CPU utilization for IP streaming. The CPU utilization increases in accordance with the Ethernet rate of the encoder. No settings can be made that will cause the CPU utilization to exceed 100%.
IP bit rate	Displays in equipments of Mbps the Ethernet bit rate of the encoder that is currently set. If two or more streams are distributed, the total value is displayed.
System bit rate	Displays in equipments of Mbps the system bit rate of the encoder that is currently set.
Video bit rate	Displays the video bit rate in equipments of Mbps and the AV input format of the encoder that are currently set.

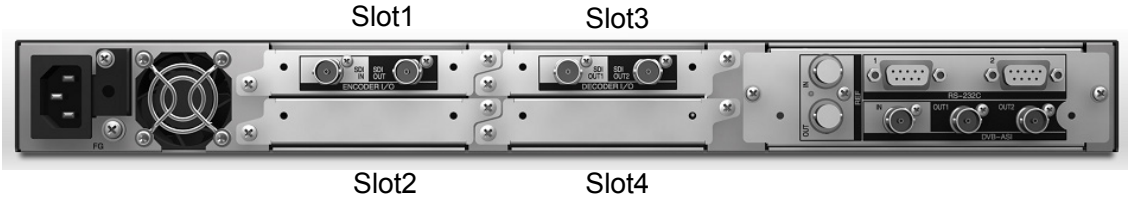
■ Device settings

The equipment operation settings such as the equipment operation mode, AV input-output interface, and Dual Link setting

■ Interface settings

The settings display the mounting locations of the slots for SDI input/output boards on the rear panel of the equipment. The mounting locations of slots are fixedly determined according to the "Device settings."

For combinations of "Device settings" and "Interface settings," refer to **Appendix 5 AV Interface Settings**.



* If Dual-link HD-SDI is used, two SDI boards are used.
Slot 1 and Slot 2 are paired and Slot 3 and Slot 4 are paired.

Figure 3.10 IP-9610 Equipment (Rear Panel)

■ Encoder settings

Encoder operation settings are such as the AV input format, encoding format, and stream output start/stop for the IP/DVB-ASI interface.

The slot used for AV input is automatically displayed for "AV input slot" according to the "Device setting."

This equipment supports 3G-SDI, HD-SDI, and SD-SDI at 50/59.94 Hz for auto sensing. If "3G/HD/SD auto sensing" is set to "Enable," the input signal is automatically recognized so that encoding process can start or stop accordingly. If "Dual link" is set, auto sensing is not supported.

For details on the setting conditions, refer to **Appendix 6 Encoder Video Input Settings**.

■ Decoder settings

Decoder operation settings such as the specification of the input interface of streams, AV output format, and AV output slot.

3.5.2 DVB-ASI Interface

These settings include such as the output packet size for the DVB-ASI interface and BISS (encryption).

■ DVB-ASI settings
Clock dependence settings and the length of output TS packets

■ Encoder1/2 BISS settings
BISS settings are to use and the mode setting of the BISS encryption system.
For use with Encoder x 1, streams are distributed as single program transport streams (SPTS). For use with Encoder x 2, streams are distributed as multi-program transport streams (MPTS), in which streams from both encoders are multiplexed.

■ Decoder1/2 BISS settings
BISS settings are to use and the mode setting of the BISS encryption system.

■ Injected ID settings
The Injected ID settings are used in MODE E.

* The Injected ID is equipment unique setting (common to all configuration data). Even when the configuration data is switched, the setting is inherited. The last made setting is used for all the configuration data. Also, the Injected ID is not a target of configuration data backup and restore.

3.5.3 IP Interface

These settings include the IP addresses of the LAN1 and LAN2 ports and other settings.

■ IP settings
IP interface mode settings.
Only “Same IP” is selectable. LAN port 1 and 2 are operated by the same IP address and same MAC address. The same IP packets are transferred from LAN 1 or 2 and the same IP packets can be received at each LAN port (1,2).

■ LAN1/2 settings
The network settings such as the IP address of the LAN port and MTU size.

3.5.4 Reference

Reference input /output settings.

This equipment has one reference input interface and one reference output interface.
Decoded video can be output after being synchronized with the input reference.

For details on the setting conditions, refer to **Appendix 7 Reference Settings**.

■ Input settings

The input settings are of the reference clock.

Decoded video can be output in synchronization with the input reference. The reference clock supports PCR synchronization/free-running/reference (Bi-sync/Tri-sync).

The equipment has only one interface of the reference input.

For operation with "Decoder x 2," select use or nonuse of the reference input for each decoder. You can also make the settings for synchronizing Decoder2 with Decoder1.

Phase adjustment can be set in equipments of nano second.

■ Output settings

The output settings are of the reference clock.

In the case of internal clock synchronization, you cannot make these settings.

Only Decoder1 has one interface of the reference output.

It is necessary to select "Through out of reference clock input" when you output the video that synchronizes with another Decoder.

3.5.5 Serial Port

These settings are used for data communication with other equipments in the IP network. The communication is performed through connection between the RS-232C port (D-sub 9 pin connector) on rear panel of the equipment and external equipment. The equipment has two serial ports. The equipment supports the operation modes shown in "**Table 3.8 Operation mode details**".

For details on setting conditions, refer to "**Appendix 8 Serial Port Settings"**.

Table 3.8 Operation mode details

Operation mode	Description
Server mode	Performs bidirectional data communication between the data port and the other equipment connected via the IP network. This equipment waits, at the specified port number, and the other equipment initiates connection. (IP address setting is not required.)
Client mode	Performs bidirectional data communication between the data port and the other equipment connected via the IP network. This equipment initiates connection with the specified port of the equipment with the specified IP address.
Client mode(Modem)	Performs bidirectional data communication between the data port and the other equipment connected via the IP network. This mode is supported only for the decoder. From the connection equipment connected via RS-232C (DTE), AT command are used to connect with the equipment whose IP address is reported. After the establishment of the connection, the IP address of the stream receiver is switched to the same IP address. If operation mode is not "TCP client mode modem," AT commands are treated in a way similar to ordinary data. For details on AT commands that can be communicated with the connection equipment (DTE) and their responses, refer to **Table 3.8 Operation mode details** and **Table 3.9 AT commands supported by this equipment**.

■ Transmission1/2 settings

This setting set operation settings such as the use of serial ports, operation modes, and the IP address specification of destination equipment.

The following modes are available: a server/client mode to control a camera or VTR (RS-232C/422 can be used) and a modem mode for CANON operation panel (only RS-232C can be used).

■ Serial port1/ 2 settings

Use these settings to select an interface type (RS-232C/422). The settings include such as communication speed, parity, and others.

Table 3.9 AT commands supported by this equipment

No.	Command	Description	Remarks
1	Dn	Connects to the remote equipment to be connected through the data port. For n, specify the IPv4 address of the remote equipment to connect to. Any characters in n that are not a number from 0 to 9 are ignored. - The specification of an IPv6 address is not supported. [Example] ATD192.168.001.001 Connects the equipment with the address "192.168.1.1" through the data port. - When the remote equipment is connected, the command returns "CONNECT" and sets the CD signal ON. - If the remote equipment cannot be connected even after a certain period of time (approximately 50 seconds), the command returns "NO CARRIER" and terminates.	- This command is valid in command mode. - Specify an IPv4 address in the format of 3 digits + 3 digits + 3digits + 3 digits (total of 12 digits). "ERROR" is returned for any specification that does not consist of 12 digits (0 is not omitted). [Example]"ATD010-000-000-001<CR>", "ATD010.000.000.001<CR>" - Specify an IPv4 unicast address other than the address of the local equipment. "ERROR" is returned for any other specification. - For a decoder, the command connects to the equipment with the specified IPv4 address through the data port and, at the same time, requests streaming. - For an encoder, the command connects to the equipment with the specified IPv4 address through the data port. - If data is received form the connection equipment (DTE) before "CONNECT" is returned, the command cancels the connection processing and returns "NO CARRIER" and then terminates.
2	Hn	Disconnects the data port connection, and sets the CD signal OFF. This command is valid only when n=0.	- This command is valid in escape mode.
3	On	Switches from escape mode to the communication-in-progress state. This command is valid only when n=0.	- This command is valid in escape mode.
4	+++	Switches from the communication-in-progress state to escape mode.	- Enter "+" three times in a row within one second to enter this command. - If another character is entered one second before or after the input of "+++", the command does not enter escape mode. - If "DTR signal monitoring" is set to "Enable," the command disables the escape code and does not enter escape mode.

* AT command format
  - The format of the AT commands that can be used for this equipment is as follows:
    AT+<command>+<parameter>+<CR> (<CR+LF> can be used instead of <CR>.)
  - An AT command starts with "AT" and ends with CR code (or CR code + LF code).
  - The <command>+<parameter> part of an AT command consists of up to 32 characters (ASCII).
  - Only one AT command can be specified in a line.
  - As for the letters used in an AT command, either only uppercase letters or only lowercase letters must be used. A combination of uppercase and lowercase letters cannot be used. ([Example] "ATD192.168.001.001" can be used, but "atD192.168.001.001" cannot.)

Table 3.10 Messages returned by this equipment

No.	Result code	Description	Remarks
1	OK	Normal end of the command	
2	CONNECT	Data port connection with the remote equipment is established.	Communication speed is not displayed (equivalent to ATX0).
3	NO CARRIER	Line disconnection (no carrier detected/lost carrier during communication)	
4	ERROR	Command error (execution of a command that is not defined in the specification)	

* Result format
  - The format of the results returned by this equipment is as follows:
    <CR>+<LF>+<result-code>+<CR>+<LF>
  - Characters are returned for the result code (equivalent to ATV1).

3.6 ENCODER

Position the mouse pointer on the [ENCODER1] or [ENCODER2] tab in the upper part of the Web GUI window to display the encoder setting menu. Click a menu item to display the selected page.

Table 3.11 ENCODER1/ENCODER2 menu

Menu	Description
Stream Output	Stream output setting
PID	PID setting
Video	Video encoding setting
Audio	Audio encoding setting
Ancillary	Ancillary data setting

For details on the items that can be set in each page, refer to **Table Appendix 3-1 Setting parameters**.

Click the APPLY button reflects the setting values in the equipment.

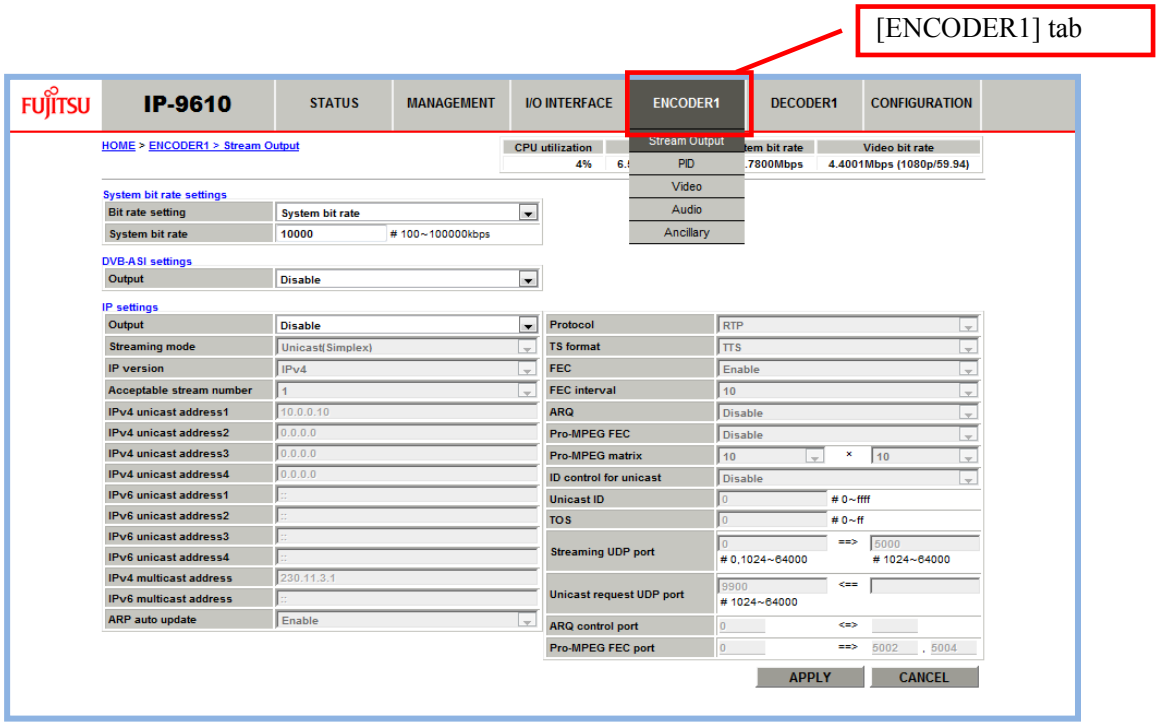


Figure 3.11 ENCODER1 page

■ ENCODER1/ENCODER2 operation status indication

This item displays the CUP utilization and currently set bit rate in the upper part of the page. For details, refer to **Table 3.12 ENCODER1/ENCODER2 operation status indication**.

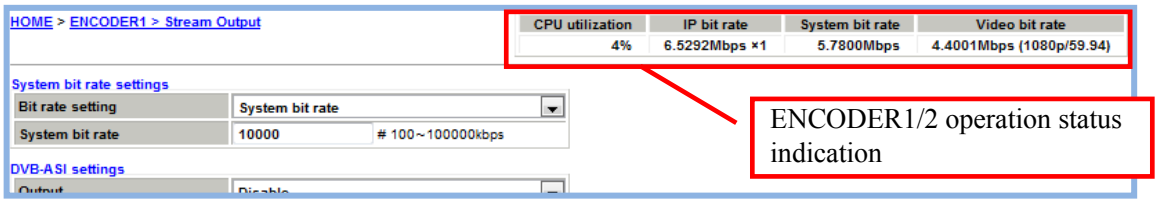


Figure 3.12 ENCODER1 > Stream Output page

Table 3.12 ENCODER1/ENCODER2 operation status indication

Item	Description
CPU utilization	Displays the CPU utilization for IP streaming. The CPU utilization increases in accordance with the Ethernet rate of the encoder. No settings can be made that will cause the CPU utilization to exceed 100%.
IP bit rate	Displays in equipments of Mbps the Ethernet bit rate of the encoder that is currently set. If two or more streams are distributed, the total value is displayed.
System bit rate	Displays in equipments of Mbps the system bit rate of the encoder that is currently set.
Video bit rate	Displays the video bit rate in equipments of Mbps and the AV input format of the encoder that are currently set.

3.6.1 Stream Output

Encoded stream output settings of the encoder such as the streaming bit rate, IP interface setting, whether there is DVB-ASI output or not.

■ System bit rate settings

The specification method settings of the bit rate of streams are distributed by the encoder and system bit rate settings.

The system bit rate in case that "Video bit rate" is selected for "Bit rate setting" is determined that depends on the bit rate specified for ENCODER1/2 > Video.

■ DVB-ASI settings

The settings specify whether to output streams to the DVB-ASI interface.

■ IP settings

The settings specify whether to output streams to the IP interface.

Use them to make following settings regarding stream output to the IP interface: IP stream output mode (Multicast/Unicast), streaming destination IP address, error correction (FEC/ SMPTE2022 FEC), and resending operation (ARQ) setting.

For unicast streaming, you can select "Unicast (Simplex)" or "Unicast". In Unicast (Simplex) mode, streams are distributed to the registered address (decoder). In Unicast mode, streams are distributed to the address (decoder) from which a streaming request has been accepted. On either mode, streams can be distributed to up to four destinations simultaneously.

For details on setting conditions, refer to **Appendix 9 Encoder Output Settings**.

3.6.2 PID

PID settings are such as SDT information, MPEG2-TS PID, and PSI insertion interval.

3.6.3 Video

Video encoding settings

The supported video encoding systems include H.264, and the supported encoding formats include 1080p, 1080i, 720p, and 480i/576i at 50, 59.94, and 60 Hz. The supported profiles include Main 420 8bit, High 420 8bit, High 422 8bit, High 422 10bit, and High 422 8bit (CSC). Also, the supported GOP structures include IBBP, IBP, IPPP, and PPPP.

Table 3.13 Set ranges of the encoder video rate shows the ranges settings of video rates for the video encoding profiles of Main 420 8bit, High 420 8bit, High 422 8bit, and High 422 10bit.

Table 3.14 Set ranges of the encoder video rates (CSC422) shows the settings ranges of video rates for the video encoding profile of High 422 8bit (CSC).

■ Common settings

The specification method settings are for the bit rate of streams distributed by the encoder and video bit rate setting. You can also use this item to make the settings for the encoding operation such as video encoding when the video input is interrupted and for the picture parameter set (PPS) insertion interval.

■ Individual settings

Video encoding parameters settings

To support auto sensing, the encoding parameters for 3G/HD/SD can be individually set.

For details on conditions settings, refer to **Appendix 10 Encoder Video Settings**.

Table 3.13 Set ranges of the encoder video rates

Encoding format	Video resolution	Video rate setting range	Recommended video rate setting range *1	System rate setting range *2
1080p / 50, 59.94, 60	1920 x 1080 1440 x 1080 960 x 1080	DVB-ASI: 1 ~100 Mbps IP: 1 Mbps ~ *3	DVB-ASI: 10 ~ 100 Mbps IP: 10 Mbps ~ *3	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps
1080i / 50, 59.94, 60 720p / 50, 59.94, 60	1920 x 1080 1440 x 1080 960 x 1080 1280 x 720 960 x 720 640 x 720	DVB-ASI: 0.5 ~ 100 Mbps IP: 0.5 Mbps ~ *3	DVB-ASI: 5 ~ 100 Mbps IP: 5 Mbps ~ *3	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps
480i / 59.94 576i / 50	720 x 480 720 x 576	DVB-ASI: 0.5 ~ 100 Mbps IP: 0.5 Mbps ~ *3	DVB-ASI: 1 ~ 100 Mbps IP: 1 Mbps ~ *3	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps
	352 x 480 352 x 576	DVB-ASI: 0.15 ~ 100 Mbps IP: 0.15 Mbps ~ *3	DVB-ASI: 0.5 ~ 100 Mbps IP: 0.5 Mbps ~ *3	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps

Table 3.14 Set ranges of the encoder video rates (CSC422)

Encoding format	Video resolution	Video rate setting range	Recommended video rate setting range *1	System rate setting range *2
1080i / 50, 59.94 720p / 50, 59.94	1920 x 1080 1280 x 720	8 ~ 33 Mbps	8 ~ 33 Mbps	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps
480i / 59.94 576i / 50	720 x 480 720 x 576	6 ~ 14 Mbps	6 ~ 14 Mbps	DVB-ASI: *4 Up to 130 Mbps IP: Up to 80 Mbps

*1 Recommend video rate setting range is a recommended value for being guaranteed video fidelity.

*2 When the system rate is specified, you assign the required rates to audio, the ancillary data, and PAT/PMT/PCR from the specified system rates, and the rest of the system to video. You cannot set a system rate lower than the limit of video rate setting range. Also, when you set the system rate higher than the upper limit of the range, the video rate is clipped at the upper limit.

*3 When the stream is output to IP interface, the rest of allocated rate to Audio, ancillary data and PAT/PMT/PCR from the upper limit is the upper limit of video rate setting range.

*4 In case of MPTS, the upper limit is 213Mbps by adding up the system rates of Encoder1 and 2.
e.g.: When the system rate of Encoder1 is 120Mbps, the upper limit of Encoder2's is 93Mbps.

3.6.4 Audio

Audio encoding settings

■ Audio settings

These audio encoding settings include such as audio encoding system, channel mode, audio rate. Audio encoding of up to 16 channels (eight stereo pairs) is supported.

Table 3.15 Setting ranges of the encoder audio rates shows the audio rate setting ranges.

For details on setting conditions, refer to **Appendix 11 Encoder Audio Settings**.

■AV adjuster settings

Set output time adjustment settings for audio. Audio output timing is earlier for specified length of time than video output.

Table 3.15 Setting ranges of the encoder audio rates

Encoding format	Channel mode *2	Audio rate setting range	Remarks
MPEG-1 Layer2	Mono	64, 128, 192 kbps	
	Dual mono, Stereo	128, 256, 384 kbps	
MPEG-2/4 AAC	Mono	56, 128, 192 kbps	
	Dual mono, Stereo	128, 256, 384 kbps	
	5.1	256, 320, 512 kbps	*2,*3
MPEG-4 HE-AAC V1	Mono	24, 64 kbps	
	Dual mono	64, 96, 128 kbps	
	Stereo	64,96kbps	
	5.1	96, 128, 160 kbps	*2,*3
Pass-thru(SMPTE302M)	-	1920, 2304, 2688 kbps	
Pass-thru(AC-3/ATSC)	-	56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640 kbps	*1
Pass-thru(AC-3/DVB)	-	56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640 kbps	

*1 Decoding is not supported.
*2 Channel mode, “5.1” can be selected only at Audio1 and Audio5.
*3 In case of selecting “5.1” for “Audio1”, “Audio2 - 4” are disabled.
In case of selecting “5.1” for “Audio5”, “Audio6 - 8” are disabled.

3.6.5 Ancillary

The transmission settings of ancillary data

For details on setting conditions, refer to **Appendix 12 Ancillary Data Settings**.

3.7 DECODER

Position the mouse pointer on the [DECODER1] or [DECODER2] tab in the upper part of the Web GUI window to display the decoder setting menu. Click a menu item to display the selected page.

Table 3.16 DECODER1/DECODER2 menu

Menu	Description
Stream Input	Stream input setting
PID	PID setting
Video & Audio	Video/audio decoding setting

For details on the items that can be set in each page, refer to **Table Appendix 3-1 Setting parameters**.

Click the APPLY button reflects the setting values in the equipment.

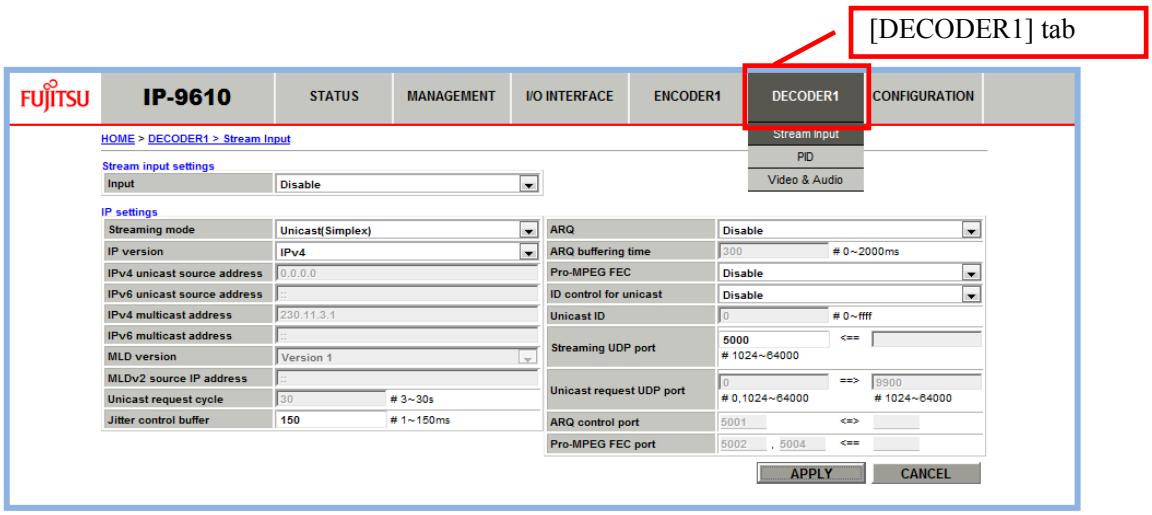


Figure 3.13 DECODER1 page

3.7.1 Stream Input

Stream input settings for decoding

■ Stream input settings

Select the stream input interface settings.

■ IP settings

The IP interface stream input settings

Use this item to make the settings for stream input to the IP interface such as IP stream input mode (Unicast/Multicast), error correction (SMPTE2022 FEC), resend operation (ARQ) settings. For the input mode of unicast, you can select "Unicast (Simplex)" or "Unicast." If "Unicast" is specified, “Unicast” requests streaming of the registered address (encoder), and receives a stream from the encoder. "Unicast (Simplex)" waits for stream receipt from the encoder.

For details on setting conditions, refer to **Appendix 13 Decoder IP Output Settings**.

3.7.2 PID

Use this item to specify the selection method for received PIDs, and make the PID settings.

3.7.3 Video & Audio

For “Error concealment” and “Line21 CC for 480i/59.94” items, you can select “Enable” or “Disable” by pull-down menu. Also, you can freely set “Concealment time” and “AV adjuster” within each limit to adjust your environment.

For further information, refer to **Table Appendix 3-1 Setting parameters**.

3.8 CONFIGURATION

This equipment can retain 10 types of configuration data and support functions for processing data, such as Load, Copy, Backup, and Restore to this equipment.

Position the mouse pointer on the [CONFIGURATION] tab in the upper part of the Web GUI window to display the configuration data setting menu. Click a menu item to display the selected page.

Table 3.17 CONFIGURATION menu

Menu	Description
Load & Delete	Configuration data loading and deleting
Copy & Rename	Configuration data copying and renaming
Backup & Restore	Configuration data backup and restore

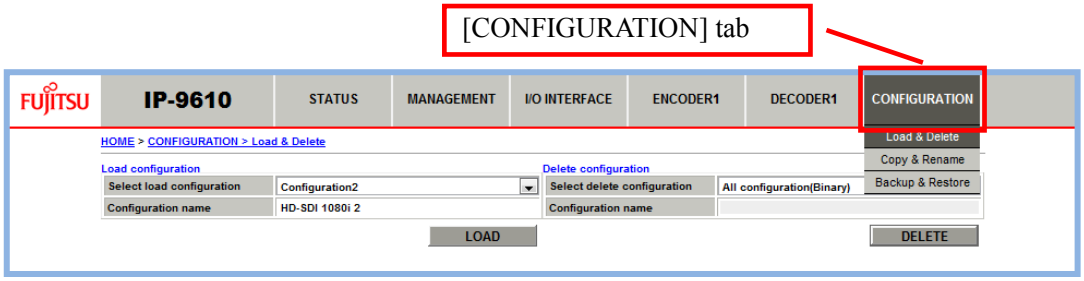


Figure 3-14 CONFIGURATION page

You can check the active configuration data by checking the [Configuration name] item of [System status] in the HOME page. For details, refer to **3.2.1 "HOME" page**.

⚠Caution

If configuration data is changed (deleted, or restored), IP network settings are changed in some cases. Note that this may cause an unexpected problem to the connected network.

Do not turn off the power or operate any switches on the front of the equipment while configuration data is being set. Otherwise, you may make the equipment fail to boot.

Do not access another Web GUI while configuration data is being set. Otherwise, you may lose the progress information.

3.8.1 Load & Delete

You can load and delete configuration data.

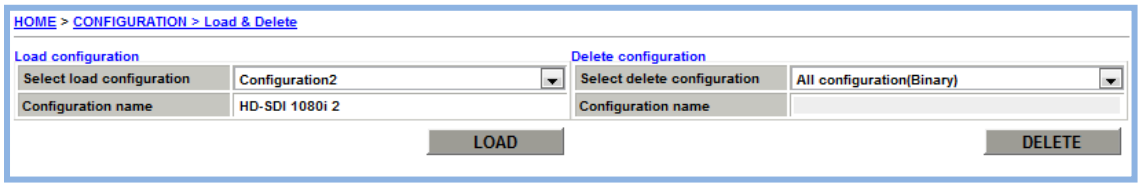


Figure 3.15 CONFIGURATION > Load & Delete page

■ Load configuration

Use this item to load configuration data.

Select the configuration data to be loaded from the [Select load configuration] item and then click the LOAD button starts the loading of the configuration data.

If operation mode is to be changed after the loading of the configuration data, the equipment reboots.

■ Delete configuration

Use this item to delete configuration data.

You can select one type from the 10 types of configuration data or select all the configuration data.

The option license and the Injected ID of the DVB-ASI interface are not deleted.

Select the configuration data to be deleted from the [Select delete configuration] item and then click the DELETE button to delete the configuration data.

If all the configuration data is deleted, the equipment reboots.

3.8.2 Copy & Rename

You can copy and rename configuration data.

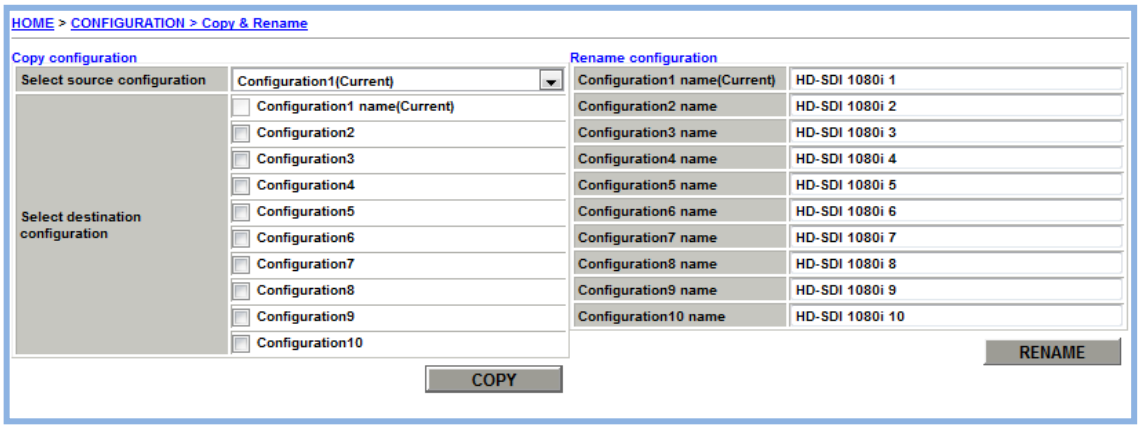


Figure 3.16 CONFIGURATION > Copy & Rename page

■ Copy configuration

Use this item to copy configuration data.

Select the configuration data that is a copy source from the [Select source configuration] item. Then, put a check on the configuration data that is a copy destination in the [Select destination configuration] items. You can put checks on multiple configuration data items as copy destinations.

You cannot specify the active configuration data and the configuration data specified as a copy source as a copy destination.

Click the COPY button to copy the configuration data.

■ Rename configuration

Use this item to rename configuration data.

Change the name of configuration data with the [Rename configuration] item and then click the RENAME button to rename the configuration data.

3.8.3 Backup & Restore

You can back up and restore configuration data.

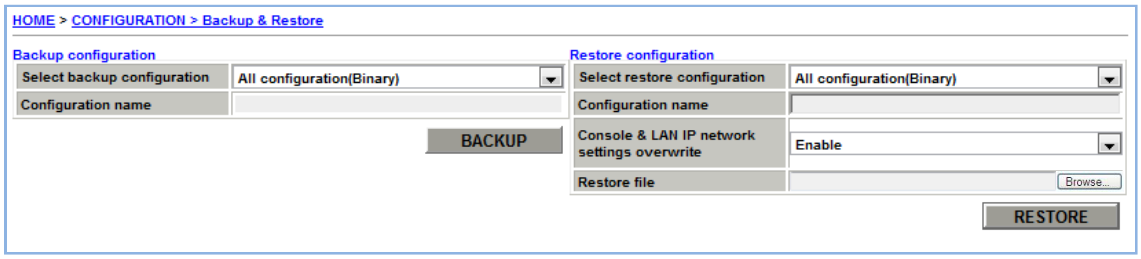


Figure 3.17 CONFIGURATION > Backup & Restore page

■ Backup configuration

Use this item to back up configuration data.

Select the configuration data to be backed up from the [Select backup configuration] item. You can specify one type from the 10 types of configuration data or specify all the configuration data.

If all the configuration data is specified, the installation state of the option licenses will also be included in the backup.

Select configuration data and then click the BACKUP button to start the backup of the configuration data to the personal computer. Specify a save destination to save the backup file.

If one arbitrary type of configuration data is specified, the backup file is saved to the personal computer as xml file. If all the configuration data is specified, the backup file is saved as a binary file.

■ Restore configuration

Use this item to restore configuration data.

Select the configuration data that is a restore target from the [Select restore configuration] item. You can specify one type from the 10 types of configuration data or specify all the configuration data.

You can make the specification so that the IP network settings of the equipment are not changed through the setting of the [Console & LAN IP network settings overwrite] item.

Click the [Browse] button for the [Restore file] item to select a configuration data file to be restored. If [Console & LAN IP network settings overwrite] is set to [Disable], the following data will not be changed:

- MANAGEMENT > Basic > Console settings
- MANAGEMENT > Basic > Static network settings
- I/O INTERFACE > IP Interface > IP settings
- I/O INTERFACE > IP Interface > LAN settings

Click the RESTORE button to start the restoration of the configuration data.

If the operation mode is changed by one arbitrary type of configuration data is restored, the equipment reboots.

[Notes]

When all the configuration data is to be restored, the same option licenses as those installed in the backup target equipment need to have been installed in the restore target equipment.

When one arbitrary type of configuration data is to be restored and the data includes settings that are enabled with some optional licenses installed, the following requirement applies: the same option licenses need to have been installed in the restore target equipment. The same applies to the hardware options.

⚠Caution

Do not turn off the power or operate any switches on the front of the equipment during installation. Otherwise, you may make the equipment fail to boot.

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

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Chapter 4
Front Panel Operation

This chapter describes the settings and operations from the front panel.

4.1 Overview

4.1.1 Front panel

The front panel of the equipment includes a display area (VFD) and operation keys, allowing almost the same control as from the Web GUI. For details on what can be controlled from the front panel, refer to **Table Appendix 2-1 Browsing parameters** and **Table Appendix 3-1 Setting parameters**.

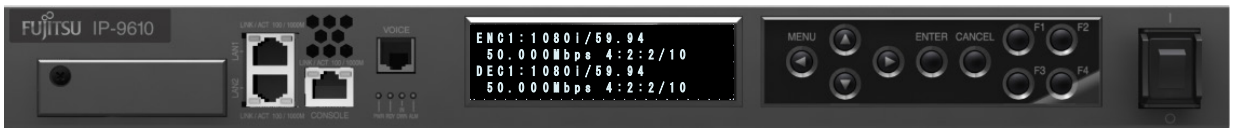


Figure 4-1 Front panel of the IP-9610 equipment

The front panel display consists of 24 characters x 4 lines. Abbreviations may sometimes be displayed because the number of characters per line is limited (e.g., ENCODER1 abbreviated as ENC1).

After 60 seconds without operation, the display transitions to the TOP screen, and the front panel brightness is reduced (from 100% to 25%).

For details on key operations, refer to **4.2.1 Descriptions of operation keys**. For details on the contents displayed by the front panel, refer to **4.3.1 Screen types**.

Figure 4-2 Front panel display and operation keys

4.2 Operations

4.2.1 Descriptions of operation keys

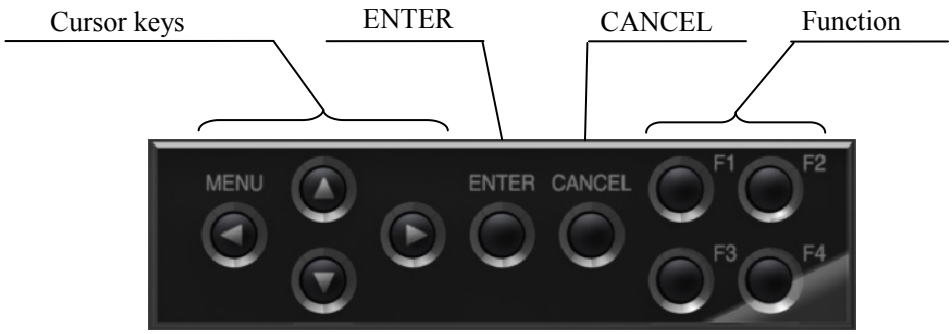


Figure 4-3 Operation keys

Table 4-1 Operation key descriptions describes for each key shown below.
For descriptions of screens, refer to **4.3.1 Screen types**.

Table 4-1 Operation key descriptions

Operation key		Description
ENTER		Use the key for a transition from the TOP screen to a Menu screen. Use the key for a transition from an item screen to a setting screen. Use the key for a transition from a setting screen to a processing-in-progress screen.
CANCEL		Use the key for a transition to the screen that is one level higher.
Cursor keys		
	Up	Use the key for a transition from a Menu screen or item screen to the screen that is one level higher. Use the key to select an arbitrary value on a setting screen.
	Down	Use the key for a transition from a Menu screen to the screen that is one level lower. Use the key to select an arbitrary value on a setting screen.
	Left	Use the key for a transition from a Menu screen to another Menu screen at the same level. Use the key to move the cursor to any position on a setting screen (to enter a value).
	Right	Use the key for a transition from a Menu screen to another Menu screen at the same level. Use the key to move the cursor to any position on a setting screen (to enter a value).
Function		Use a Function key to assign a shortcut to any item screen. Then, pressing the Function key displays the assigned item screen. For details, refer to **4.2.2 Descriptions of Function keys**.

4.2.2 Descriptions of Function keys

You can assign a shortcut to any item screen to a Function key (F1, F2, F3, or F4). When you press that Function key, displays the assigned item screen.

- Procedure for assigning a shortcut
  1) Display the item screen to be assigned.
  2) Keep pressing one of any Function keys.
  3) A shortcut to the screen is assigned to the pressed Function key. The Function key name appears at the bottom right of the front panel (23rd and 24th characters on the fourth line).

Figure 4-4 Example of front panel shortcut assignment

Once a shortcut is assigned to a key, it remains to be effective even when the equipment is turned the power off or configuration data is changed/deleted.

When the assigned items on the screen are invalid by operational data changes etc., the screen is not displayed even when you press the Function key. One of the operational data changes, for example, "I/O INTERFACE > AV interface > Device settings > Mode" item is changed to "Encoder x 1" after "DECODER1 > Stream Input > Stream input settings > Input" item is assigned to Function key.

4.3 Front Panel Display

4.3.1 Screen types

Table 4-2 Screen types describes for each screen type shown below.

Table 4-2 Screen types

Screen type	Description	Screen transition
TOP screen	The screen displays the current operating status. The screen appears at equipment boot or after 60 seconds without operation.	Pressing the ENTER key triggers a transition to a Menu screen.
Menu screen	The screen displays an arbitrary menu (items).	Pressing a cursor key triggers a transition to an arbitrary Menu screen or item screen. Pressing the CANCEL key or the Up cursor key triggers a transition to the screen that is one level higher.
Item screen	The screen displays an item and its current value.	Pressing the Left or Right cursor key triggers a transition to the next Item screen under the same menu. Pressing the ENTER key triggers a transition to a Setting screen. Pressing the CANCEL key or the Up cursor key triggers a transition to the screen that is one level higher.
Setting screen	Use the screen to change and set an item value. Setting screens vary depending on the items on them. Some screens have the user select a setting value from a list (value selection). Other screens have the user directly enter a setting value (value setting). The cursor (blinking) is displayed at the beginning of a setting value. An asterisk (*) indicates the current value (only in the case of value selection). The arrow symbols indicate the available cursor keys.	After a setting is changed to any value, pressing the ENTER key triggers a transition to the Update-in-progress screen and runs an update process. Pressing the CANCEL key triggers a transition to the screen that is one level higher.
Update-in-progress screen	The screen is displayed while an update process is running.	The transition destination screen depends on the update process results. OK/NG: Transition to an Item screen Busy: Transition to a Busy screen
Busy screen	The screen is displayed while the equipment is in the Busy status (processing in progress).	Pressing the ENTER key triggers a transition back to the update-in-progress screen and runs an update process. Pressing the CANCEL key triggers a transition to an item screen without running an update process.

4.3.2 Screen transitions

The following figure shows the relationship among screens.

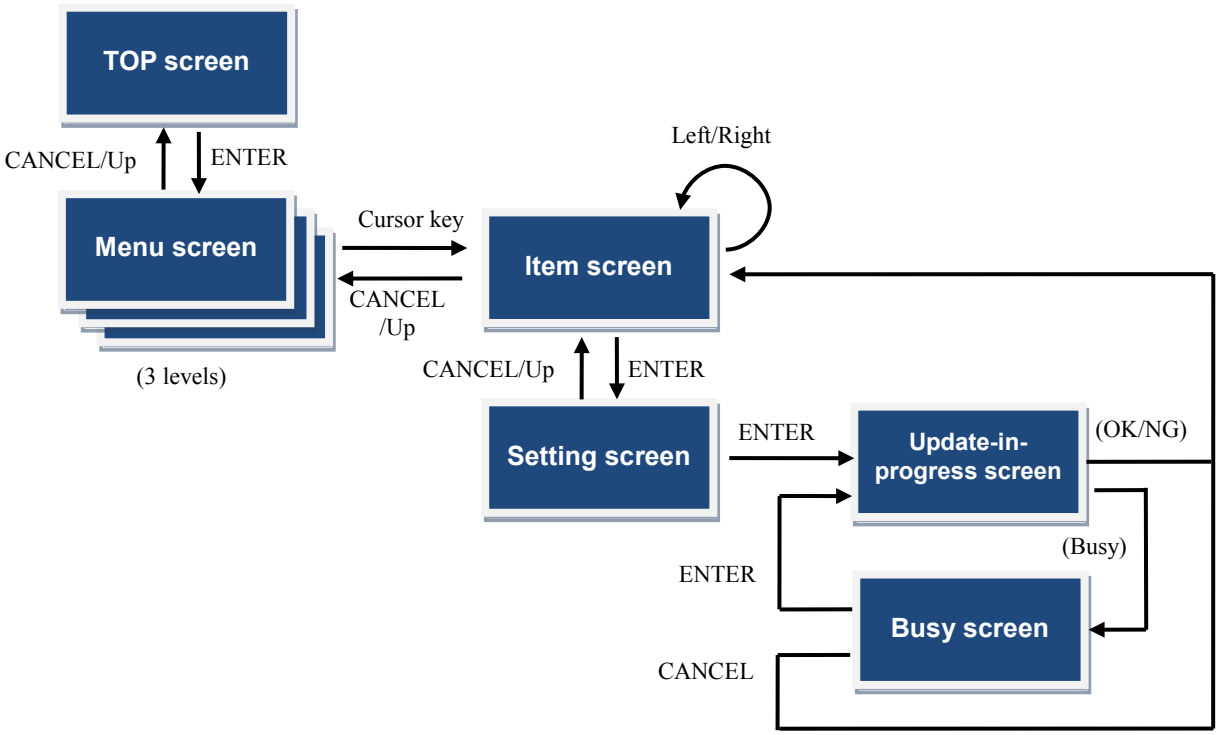
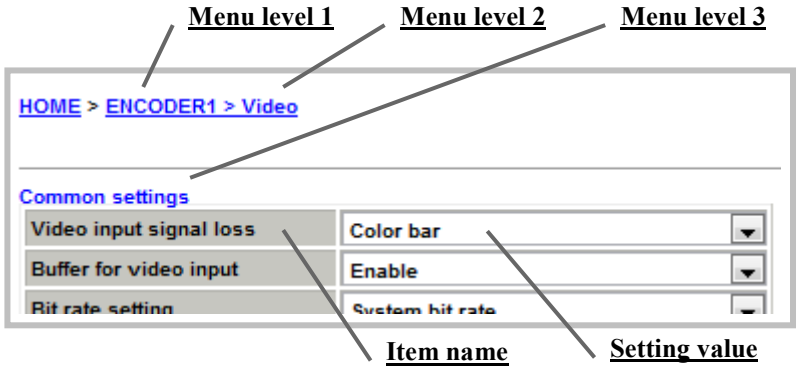


Figure 4-5 Screen transitions on the front panel

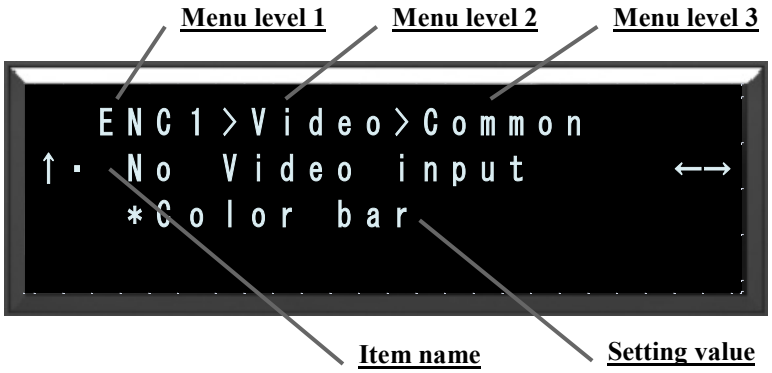
4.3.3 Screen Layout

The contents displayed on the front panel have the same hierarchical structure as on the Web GUI.

Web GUI



Front panel



* An asterisk (*) indicates the current value (in the case of value selection).
* The arrow symbols indicate the available cursor keys.

Figure 4-6 Screen Layout on the front panel

4.3.4 Screen Menu

This section shows main contents displayed on the front panel.

The description covers only up to Menu level 2. For details on specific display items, refer to **Appendix 2 Browsing Parameter List** and **Appendix 3 Setting Parameter List**. For details on special operations (shutdown, date/time setting, and equipment reboot) from the front panel, refer to **4.4 Special Operations**.

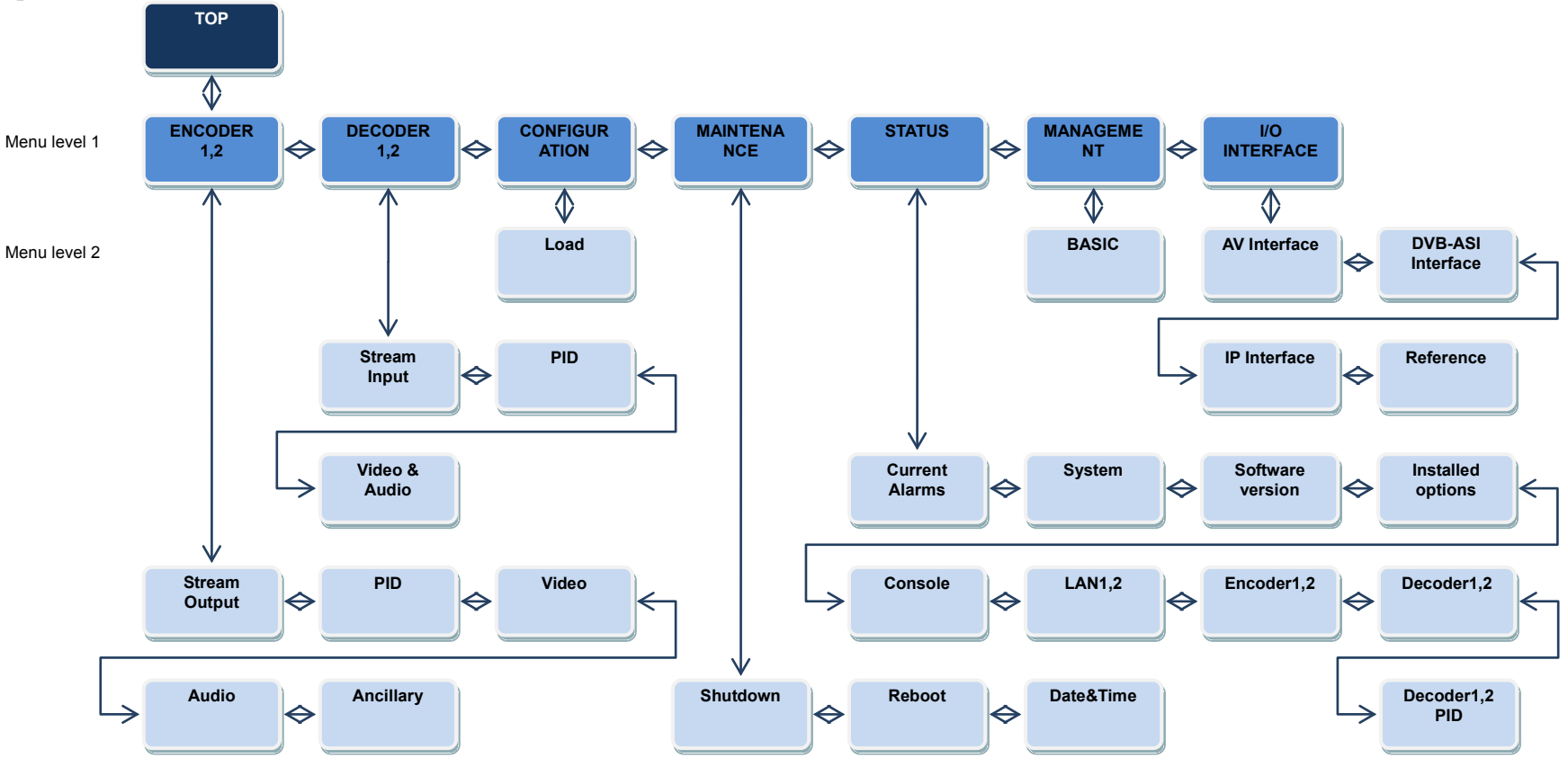


Figure 4-7 Menu displayed on the front panel

4.4 Special Operations

4.4.1 Shutdown

You can shutdown the equipment through the key operations at front panel. Then, the equipment is safely turned off through the switch of the front panel.

To shut it down, display the Shutdown item of the Maintenance menu, and press the ENTER key.

Figure 4-8 Shutdown screen

4.4.2 Date/Time setting

You can set the date and time of the equipment through the key operations at front panel.
Set the date and time from the Date&Time item of the Maintenance menu.

Figure 4-9 Date/time setting screen

4.4.3 Equipment Reboot

You can reboot the equipment through the key operations of front panel.
Set the reboot from the REBOOT item of the Maintenance menu.

Figure 4-10 Equipment Reboot Screen

4.4.4 Boot in maintenance mode

If the equipment cannot boot, you can restore the equipment to the factory default condition by booting the equipment in maintenance mode and re-install the software.

To boot the equipment in maintenance mode, turn on power switch with pressing the CANCEL key, and keep pressing the CANCEL key until the RDY LED starts blinking orange. Specify the following IP addresses and subnet masks after booting the equipment:

CONSOLE:	IP address	192.168.255.253
	Subnet mask	255.255.255.252
LAN1/2:	IP address	10.0.0.1
	Subnet mask	255.0.0.0

⚠Caution

When you boot the equipment in maintenance mode, disconnect the equipment from the connected network. Otherwise, an unexpected fault may occur in the network.

Chapter 5
Troubleshooting

This chapter describes how to respond if video/audio output fails, an alarm LED goes on, or any other malfunctions occur.

5.1 Troubleshooting

If you think your equipment is malfunctioning, take actions as described in the following table according to the actual conditions.

If conditions do not improve after you would take actions, please contact the Fujitsu Service Center.

⚠ Warning

Electric shock
Contact your system administrator when you check the voltage of a power outlet.
Otherwise, an electric shock may occur.

Table 5-1 Check items and Countermeasures

Classification	Condition	Check item	Countermeasures
Power supply / Boot	The power does not turn on.	Is the power cable connected?	Confirm that the plug is correctly inserted into the outlet.
		Is the power outlet voltage normal?	Measure the voltage with a multimeter, and confirm that the voltage is normal. If another device is connected to the same outlet, check the operation of that device.
Hardware	The ALM LED is on.	A hardware error occurred.	Investigate the error from the Web GUI or the front panel.
	All LEDs except LAN and CONSOLE are on.	Has the ambient temperature of the equipment risen above the range in the specifications?	Adjust the temperature so that the ambient temperature of the equipment meets the specifications.
		Is there any shielding material in the installation space?	Remove the shielding material.
		Is a blank panel installed in empty optional slot?	Install the blank panel.
Operation	Commands cannot be used via a LAN. (The Web GUI cannot be displayed.)	Is the RDY LED blinking?	The LED is blinking while the equipment is booting. Wait until the LED stays on. Do not take any action.
		Is the IP address of the equipment correct? If you do not know the IP address of the equipment, you can check it from the front panel.	- LAN1/LAN2 port Check and set the IP address from the [I/O INTERFACE] - [IP Interface] - [LAN1/2 settings] menu. - CONSOLE port Check and set the IP address from the [MANAGEMENT] - [Basic] - [Console settings] menu.
		Does the front panel display the IP address correctly?	Automatic IP address acquisition may have failed. Review the DHCP server and IP address mode settings from the front panel.
		Have the LINK LEDs on the equipment and hub gone on?	If LINK is not on, the UTP cable is not correctly connected. Check the UTP cable.

Classification	Condition	Check item	Countermeasures
		Execute the PING command. Does the equipment respond?	If there is no response: - Check the network settings of the PC, and confirm that the netmask and gateway address are correct.
		Are you using the correct browser type and settings?	- Confirm that you are using the latest version of the browser. - Set "Do not use a proxy server" in the browser settings, and then try again.
Video	No video is output. (Black screen)	Is the power to the monitor on?	Check the monitor power and operation.
		Is the power to the equipment on?	Confirm that the PWR LED is on.
		Is the equipment correctly connected to the monitor?	Confirm that the equipment is correctly connected to the monitor.
	A blue/gray screen is output.	Has decoding started?	Confirm that a stream is being received for decoding, by referring to **3.3.2 Status**. Confirm whether the stream input setting is set Disable, by referring to **3.7.1 Stream Input**.
		Does the setup have the correct settings?	Confirm the settings of the live streaming address and port number.
		Is the encode operation running on the streaming source equipment?	Confirm that live streams were distributed from the streaming source equipment. Confirm that the encode operation is running, by referring to **3.3.2 Status**. For unicast streams, confirm that the number of streams is within the range of streams that can be distributed by the encoder.
	Only color bars are displayed.	Is video input to the streaming source equipment normal?	If there is no video input, the encoder outputs color bars or gray video images, depending on the "Display when no video signal input" setting on the AV input setup page. Check video input.
	Video reception sometimes stops. Alternatively, video images are unstable.	Has a receiving error occurred?	Check the number of received data packets in decoder information by referring to **3.3.3 Performance Stats**. Display the information several times. If there is any missing packet counted, there is likely a high network load or a problem in settings. Contact your network administrator.
		Is the MTU size too small?	Use the value recommended for the network used.
Audio	No sounds come out.	Is the power to the equipment on?	Confirm that the PWR LED is on.
		Is the equipment correctly connected to the speaker?	Check the connection between the equipment and speaker.
		Is the volume of the speaker too low?	Check the volume of the speaker.
		Has an alarm occurred on the streaming source equipment?	If an alarm occurred, refer to the manual of the streaming source equipment.
		Is the streaming source equipment correctly connected to the audio source?	Check the connection of the audio cable.
	Noise is generated.	Disconnect the audio output cable from the equipment. Does that eliminate the noise?	If disconnecting the cable does not eliminate the noise, check the audio cable and audio output device.
		Has a receiving error occurred?	Check the number of received data packets in decoder information by referring to **3.3.3 Performance Stats**. Display the information several times. If there is any missing packet counted, there is likely a high network load or a problem in settings. Contact your network administrator.

Classification	Condition	Check item	Countermeasures
Data	Data communication is disabled.	Are port settings correct? Do the local and remote equipments have matching port settings?	Check them by referring to **3.5.5 Serial Port**.
		Is the operation mode consistent between the local and remote equipments?	Check them by referring to **3.5.5 Serial Port**.
		Do the equipment and the data input/output device have matching RS-232C settings?	Check them by referring to **3.5.5 Serial Port**.
		Is the data input/output device operating normally?	Confirm the operation of the data input/output device.
Preparation	The software cannot be installed.	Is the file specification correct? Has the license key been entered correctly?	If the message "Installation was denied (incorrect file or license) Please try again here" appears, the file specification or the entered license key is incorrect.

5.2 Alarm LED Goes on

An alarm LED (ALM or INDWN) goes on when an alarm is detected on the equipment. When an alarm LED goes on, check the alarm that occurred, from the Web GUI or front panel of the equipment.

5.2.1 Checking an alarm

For details on how to check alarms from the Web GUI, refer to **3.3.1 Current Alarms**. For details on how to operate the front panel, refer to **4.1.1 Front panel**. The front panel displays alarm codes. For details on alarm codes, refer to **Table Appendix 1-1 Alarms and logs**.

For details on how to check alarm logs, refer to **3.3.4 Logs**.

Each main alarm type and corresponding actions are described in **Table 5-2 Main alarm types and actions** below. After an alarm occurs, take the necessary action according to the details below.

Table 5-2 Main alarm types and actions

Alarm type	Actions
Network	Check for an error in the network and remote equipments. If you cannot confirm any error, contact your system administrator.
Hardware error	Turn off the power once and then turn it on again. Then, if the equipment is still not operating normally, contact a Fujitsu maintenance engineer. The maintenance engineer whom you contact may ask you for the alarm code.
Input error	Check for an error in video input, reference input, and other input signals. Check the equipment and cables connected to input pins.

5.2.2 LED display

Table 5-3 LED indications describes for each indication of the LED type below. Note that the display status of alarm LEDs (ALM and INDWN) varies depending on the alarm level, if the alarm is On or Blinking. For details on alarm level settings, refer to **3.4.5 Alarm Level**.

Table 5-3 LED indications

LED type		On	Blinking	Off
PWR	Green	Power on	-	Power off
RDY	Green	Operating normally	Booting normally	Shutdown status
	Orange	Operating in maintenance mode	Booting in maintenance mode	-
IN DWN	Orange	Network or input error type of Major alarm	Network or input error type of Minor alarm	No alarm
ALM	Orange	Hardware error type of Major alarm	Hardware error type of Minor alarm	No alarm
LINK/ACT	Green	Link established	Ether frame detected	No link established
100/1000M	Green	100M operation	1000M operation	10M operation

* During a shutdown of the equipment because of an abnormal temperature, all LEDs except LINK/ACT and 100/1000M are on.
* When two codec boards are being used, alarm LED (ALM or IN DWN) will turn on or blinking if alarm is generated on one of codec board. For a setup of a codec board, see "I/O INTERFACE>AV interface>Device settings" of Table Appendix 3-1 Setting parameters.

Appendixes

Tables of Settings and Conditions

Appendix 1 Alarm/Log List

This appendix lists alarms and logs.
Key to LED symbols -: Not applicable; On: On; B: Blinking; Off: Off; A: Depends on the alarm level

Table Appendix 1-1 Alarms and logs

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
1				The Power is off							
2	00900100	Info.	Yes	Boot (Power ON)	V01L01C01 data1 ENCODERx1 DECODERx1 Maintenance mode for bundle startup	On	-	-	-	-	-
3	00900200	Info.	Yes	Boot (Reset)	V01L01C01 data1 ENCODERx1 DECODERx1 Maintenance mode for bundle startup	-	-	-	-	-	-
4	00900300	Info.	Yes	Boot (Reboot)	V01L01C01 data1 ENCODERx1 DECODERx1 Maintenance mode for bundle startup	-	-	-	-	-	-
5	00900400	Info.	Yes	Boot (Others)	V01L01C01 data1 ENCODERx1 DECODERx1 Maintenance mode for bundle startup	-	-	-	-	-	-
6	00900500	Info_Off	Yes	Software update	V01L01C01 -> V01L02C01, etc.	-	-	-	-	-	-
7	00900600	Info.	Yes	Configuration update	"All configuration," "Configuration1," etc.	-	-	-	-	-	-
8	00900700	Info_Off	Yes	Shutdown		-	Off	-	-	-	-
9	00900800	Info_Off	Yes	RTC initialization		-	-	-	-	-	-
10	00900900	Warning	Yes	RTC device access error		-	-	-	-	-	A
11	00900A00	Info.	Yes	Settings update		-	-	-	-	-	-
12	00900B00	Info.	Yes	Configuration data change	Configuration1 data1 -> Configuration2 data2, etc.	-	-	-	-	-	-
13	00900C00	Off	Yes	FlashROM error	/dev/mtd0, etc.	-	-	-	-	-	A

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
14	00900D00	Off	Yes	FlashROM check sum error	"software" or "bundle software" or "configuration" or "configuration1~10" or "option"	-	-	-	-	-	A
15	00900E00	Info.	Yes	Option update	"encoder," etc.	-	-	-	-	-	-
16	00900F00	Info.	Yes	Configuration data initialization	"All configuration," "Configuration1," etc.	-	-	-	-	-	-
17	00800100	Warning	Yes	Link error (CONSOLE)		-	-	Off	Off	A	-
18	*00800100	Warning	Yes	Link error restoration (CONSOLE)	100BaseTX_HD, etc.	-	-	On	On	Off	-
19	00800200	Warning	Yes	Link error (LAN1)		-	-	Off	Off	A	-
20	*00800200	Warning	Yes	Link error restoration (LAN1)	100BaseTX_HD, etc.	-	-	On	On	Off	-
21	00800300	Warning	Yes	Link error (LAN2)		-	-	Off	Off	A	-
22	*00800300	Warning	Yes	Link error restoration (LAN2)	100BaseTX_HD, etc.	-	-	On	On	Off	-
23	00800400	Warning	Yes	Time server synchronization error		-	-	-	-	A	-
24	*00800400	Warning	Yes	Time server synchronization error restoration		-	-	-	-	Off	-
25	00800500	Warning	Yes	DHCP connection error (CONSOLE)		-	-	-	-	A	-
26	*00800500	Warning	Yes	DHCP connection error restoration (CONSOLE)	10.0.0.1/24,10.0.0.254	-	-	-	-	Off	-
27	00800600	Warning	Yes	DHCP connection error (LAN1&LAN2)		-	-	-	-	A	-
28	*00800600	Warning	Yes	DHCP connection error restoration (LAN1&LAN2)	10.0.0.1/24,10.0.0.254	-	-	-	-	Off	-
29	00800800	Info.	Yes	DHCP connection update (CONSOLE)	10.0.0.1/24,10.0.0.254 -> 10.0.0.100/24,10.0.0.254	-	-	-	-	-	-
30	00800A00	Info.	Yes	DHCP connection update (LAN1&LAN2)	10.0.0.1/24,10.0.0.254 -> 10.0.0.100/24,10.0.0.254	-	-	-	-	-	-
31	00800B00	Warning	Yes	Stateless address connection error (CONSOLE)		-	-	-	-	A	-
32	*00800B00	Warning	Yes	Stateless address connection error restoration (CONSOLE)	2000::1/64	-	-	-	-	Off	-
33	00800C00	Warning	Yes	Stateless address connection error (LAN1&LAN2)		-	-	-	-	A	-
34	*00800C00	Warning	Yes	Stateless address connection error restoration (LAN1&LAN2)	2000::1/64	-	-	-	-	Off	-
35	00800D00	Info.	Yes	Stateless address update (CONSOLE)	2000::1/64 -> ::/0	-	-	-	-	-	-
36	00800E00	Info.	Yes	Stateless address update (LAN1&LAN2)	2000::1/64 -> ::/0	-	-	-	-	-	-
37	00800F00	Minor	Yes	DVB-ASI input down		-	-	-	-	A	
38	*00800F00	Minor	Yes	DVB-ASI input restoration		-	-	-	-	Off	
39	00801000	Minor	Yes	DVB-ASI synchronization failure		-	-	-	-	A	
40	*00801000	Minor	Yes	DVB-ASI synchronization restoration		-	-	-	-	Off	
41	00700000	Minor	Yes	Intercom error		-	-	-	-	-	A

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
42	*00700000	Minor	Yes	Intercom error restoration		-	-	-	-	-	Off
43	00700200	Minor	Yes	VFD device error		-	-	-	-	-	A
44	00000400	Major	Yes	FAN error	100RPS	-	-	-	-	-	A
45	*00000400	Major	Yes	FAN error restoration	100RPS	-	-	-	-	-	Off
46	00000500	Minor	Yes	Temperature warning #1	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	A
47	00000501	Minor	Yes	Temperature warning #2	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	A
48	00000502	Minor	Yes	Temperature warning #3	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	A
49	00000503	Minor	Yes	Temperature warning #4	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	A
50	*00000500	Minor	Yes	Temperature warning restoration #1	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	Off
51	*00000501	Minor	Yes	Temperature warning restoration #2	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	Off
52	*00000502	Minor	Yes	Temperature warning restoration #3	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	Off
53	*00000503	Minor	Yes	Temperature warning restoration #4	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	-	-	-	-	-	Off
54	00000600	Major	No	Temperature error #1	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	On *4	On *4	-	-	On *4	On *4
55	00000601	Major	No	Temperature error #2	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	On *4	On *4	-	-	On *4	On *4
56	00000602	Major	No	Temperature error #3	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	On *4	On *4	-	-	On *4	On *4
57	00000603	Major	No	Temperature error #4	TEMP1=60 TEMP2=50 TEMP3=50 TEMP4=50 FAN=100RPS	On *4	On *4	-	-	On *4	On *4
58	00000700	Major	No	Clock error #1		-	-	-	-	-	On
59	00000701	Major	No	Clock error #2		-	-	-	-	-	On
60	00000702	Major	No	Clock error #3		-	-	-	-	-	On
61	00000703	Major	No	Clock error #4		-	-	-	-	-	On
62	00000704	Major	No	Clock error #5		-	-	-	-	-	On
63	00000705	Major	No	Clock error #6		-	-	-	-	-	On
64	00000706	Major	No	Clock error #7		-	-	-	-	-	On
65	00000707	Major	No	Clock error #8		-	-	-	-	-	On
66	00000708	Major	No	Clock error #9		-	-	-	-	-	On
67	00000709	Major	No	Clock error #10		-	-	-	-	-	On
68	00000800	Major	No	Power error #1		-	-	-	-	-	On

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
69	00000801	Major	No	Power error #2		-	-	-	-	-	On
70	10000800	Major	No	CODEC1 : Power error		-	-	-	-	-	On
71	20000800	Major	No	CODEC2 : Power error		-	-	-	-	-	On
72	01000800	Major	No	SLOT1 : Power error		-	-	-	-	-	On
73	02000800	Major	No	SLOT2 : Power error		-	-	-	-	-	On
74	03000800	Major	No	SLOT3 : Power error		-	-	-	-	-	On
75	04000800	Major	No	SLOT4 : Power error		-	-	-	-	-	On
76	10000900	Off	No	Memory error #1		-	-	-	-	-	-
77	20000900	Off	No	Memory error #2		-	-	-	-	-	-
78	10000901	Off	No	Memory error #3		-	-	-	-	-	-
79	20000901	Off	No	Memory error #4		-	-	-	-	-	-
80	00000900	Off	No	Memory error #5		-	-	-	-	-	-
81	00000901	Off	No	Memory error #6		-	-	-	-	-	-
82	00000902	Off	No	Memory error #7		-	-	-	-	-	-
83	00000903	Off	No	Memory error #8		-	-	-	-	-	-
84	00000904	Major	No	Memory error #9		-	-	-	-	-	On
85	00000905	Major	No	Memory error #10		-	-	-	-	-	On
86	00000906	Major	No	Memory error #11		-	-	-	-	-	On
87	00000907	Major	No	Memory error #12		-	-	-	-	-	On
88	00000908	Major	No	Memory error #13		-	-	-	-	-	On
89	00000909	Major	No	Memory error #14		-	-	-	-	-	On
90	0000090A	Major	No	Memory error #15		-	-	-	-	-	On
91	00000A00	Major	Yes	Internal Module : Not installed		-	-	-	-	-	A
92	00000B00	Major	Yes	Internal Module : error		-	-	-	-	-	A
93	11100000	Minor	Yes	SLOT1-CODEC1 : SDI input down		-	-	-	-	A	-
94	21100000	Minor	Yes	SLOT1-CODEC2 : SDI input down		-	-	-	-	A	-
95	12100000	Minor	Yes	SLOT2-CODEC1 : SDI input down		-	-	-	-	A	-
96	22100000	Minor	Yes	SLOT2-CODEC2 : SDI input down		-	-	-	-	A	-
97	23100000	Minor	Yes	SLOT3-CODEC2 : SDI input down		-	-	-	-	A	-
98	24100000	Minor	Yes	SLOT4-CODEC2 : SDI input down		-	-	-	-	A	-
99	*11100000	Minor	Yes	SLOT1-CODEC1 : SDI input restoration		-	-	-	-	Off	-
100	*21100000	Minor	Yes	SLOT1-CODEC2 : SDI input restoration		-	-	-	-	Off	-
101	*12100000	Minor	Yes	SLOT2-CODEC1 : SDI input restoration		-	-	-	-	Off	-
102	*22100000	Minor	Yes	SLOT2-CODEC2 : SDI input restoration		-	-	-	-	Off	-

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
103	*23100000	Minor	Yes	SLOT3-CODEC2 : SDI input restoration		-	-	-	-	Off	-
104	*24100000	Minor	Yes	SLOT4-CODEC2 : SDI input restoration		-	-	-	-	Off	-
105	11100100	Minor	Yes	SLOT1-CODEC1 : Video synchronization error		-	-	-	-	A	-
106	21100100	Minor	Yes	SLOT1-CODEC2 : Video synchronization error		-	-	-	-	A	-
107	12100100	Minor	Yes	SLOT2-CODEC1 : Video synchronization error		-	-	-	-	A	-
108	22100100	Minor	Yes	SLOT2-CODEC2 : Video synchronization error		-	-	-	-	A	-
109	23100100	Minor	Yes	SLOT3-CODEC2 : Video synchronization error		-	-	-	-	A	-
110	24100100	Minor	Yes	SLOT4-CODEC2 : Video synchronization error		-	-	-	-	A	-
111	*11100100	Minor	Yes	SLOT1-CODEC1 : Video synchronization error restoration		-	-	-	-	Off	-
112	*21100100	Minor	Yes	SLOT1-CODEC2 : Video synchronization error restoration		-	-	-	-	Off	-
113	*12100100	Minor	Yes	SLOT2-CODEC1 : Video synchronization error restoration		-	-	-	-	Off	-
114	*22100100	Minor	Yes	SLOT2-CODEC2 : Video synchronization error restoration		-	-	-	-	Off	-
115	*23100100	Minor	Yes	SLOT3-CODEC2 : Video synchronization error restoration		-	-	-	-	Off	-
116	*24100100	Minor	Yes	SLOT4-CODEC2 : Video synchronization error restoration		-	-	-	-	Off	-
117	01100200	Warning	Yes	SLOT1 : Interface board selection error		-	-	-	-	-	A
118	02100200	Warning	Yes	SLOT2 : Interface board selection error		-	-	-	-	-	A
119	03100200	Warning	Yes	SLOT3 : Interface board selection error		-	-	-	-	-	A
120	04100200	Warning	Yes	SLOT4 : Interface board selection error		-	-	-	-	-	A
121	*01100200	Warning	Yes	SLOT1 : Interface board selection error restoration		-	-	-	-	-	Off
122	*02100200	Warning	Yes	SLOT2 : Interface board selection error restoration		-	-	-	-	-	Off
123	*03100200	Warning	Yes	SLOT3 : Interface board selection error restoration		-	-	-	-	-	Off
124	*04100200	Warning	Yes	SLOT4 : Interface board selection error restoration		-	-	-	-	-	Off
125	10110200	Minor	Yes	CODEC1 : Reference clock input down		-	-	-	-	A	-
126	20110200	Minor	Yes	CODEC2 : Reference clock input down		-	-	-	-	A	-

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
127	*10110200	Minor	Yes	CODEC1 : Reference clock input restoration		-	-	-	-	Off	-
128	*20110200	Minor	Yes	CODEC2 : Reference clock input restoration		-	-	-	-	Off	-
129	10110300	Minor	Yes	CODEC1 : Reference clock synchronization failure		-	-	-	-	A	-
130	20110300	Minor	Yes	CODEC2 : Reference clock synchronization failure		-	-	-	-	A	-
131	*10110300	Minor	Yes	CODEC1 : Reference clock synchronization restoration		-	-	-	-	Off	-
132	*20110300	Minor	Yes	CODEC2 : Reference clock synchronization restoration		-	-	-	-	Off	-
133	10200000	Off	Yes	CODEC1 : ENCODE hardware error		-	-	-	-	-	A
134	20200000	Off	Yes	CODEC2 : ENCODE hardware error		-	-	-	-	-	A
135	*10200000	Off	Yes	CODEC1 : ENCODE hardware error restoration		-	-	-	-	-	Off
136	*20200000	Off	Yes	CODEC2 : ENCODE hardware error restoration		-	-	-	-	-	Off
137	10200100	Off	Yes	CODEC1 : DECODE hardware error		-	-	-	-	-	A
138	20200100	Off	Yes	CODEC2 : DECODE hardware error		-	-	-	-	-	A
139	*10200100	Off	Yes	CODEC1 : DECODE hardware error restoration		-	-	-	-	-	Off
140	*20200100	Off	Yes	CODEC2 : DECODE hardware error restoration		-	-	-	-	-	Off
141	10200200	Off	Yes	CODEC1 : ENCODE software error		-	-	-	-	-	A
142	20200200	Off	Yes	CODEC2 : ENCODE software error		-	-	-	-	-	A
143	*10200200	Off	Yes	CODEC1 : ENCODE software error restoration		-	-	-	-	-	Off
144	*20200200	Off	Yes	CODEC2 : ENCODE software error restoration		-	-	-	-	-	Off
145	10200300	Off	Yes	CODEC1 : DECODE software error		-	-	-	-	-	A
146	20200300	Off	Yes	CODEC2 : DECODE software error		-	-	-	-	-	A
147	*10200300	Off	Yes	CODEC1 : DECODE software error restoration		-	-	-	-	-	Off
148	*20200300	Off	Yes	CODEC2 : DECODE software error restoration		-	-	-	-	-	Off
149	10200400	Minor	Yes	CODEC1 : Input data error	#XXXXXXXXXXXXXXXX (For derails, refer to **"Input data error alarm counter and bit correspondence**" in Table Appendix 1-2.)	-	-	-	-	A	-

No.	ALMCODE	Default level	Level change setting	Alarm name	Detailed parameter (example) No bilingual support here.	LED					
						PWR	RDY *3	LINK/ACT *1	100/ 1000M *2	IN_ DWN	ALM
150	20200400	Minor	Yes	CODEC2 : Input data error	#XXXXXXXXXXXXXXXX (For derails, refer to **"Input data error alarm counter and bit correspondence**" in Table Appendix 1-2.)	-	-	-	-	A	-
151	*10200400	Minor	Yes	CODEC1 : Input data error restoration	#XXXXXXXXXXXXXXXX (For derails, refer to **"Input data error alarm counter and bit correspondence**" in Table Appendix 1-2.)	-	-	-	-	Off	-
152	*20200400	Minor	Yes	CODEC2 : Input data error restoration	#XXXXXXXXXXXXXXXX (For derails, refer to **"Input data error alarm counter and bit correspondence**" in Table Appendix 1-2.)	-	-	-	-	Off	-
153	10200500	Minor	Yes	CODEC1 : Buffer overflow		-	-	-	-	-	A
154	20200500	Minor	Yes	CODEC2 : Buffer overflow		-	-	-	-	-	A
155	*10200500	Minor	Yes	CODEC1 : Buffer overflow restoration		-	-	-	-	-	Off
156	*20200500	Minor	Yes	CODEC2 : Buffer overflow restoration		-	-	-	-	-	Off
157	10200600	Minor	Yes	CODEC1 : Video/System rate error	"lower limit=2000kbps, calc=980kbps" or "upper limit=2000kbps, calc=2100kbps"	-	-	-	-	-	A
158	20200600	Minor	Yes	CODEC2 : Video/System rate error	"lower limit=2000kbps, calc=980kbps" or "upper limit=2000kbps, calc=2100kbps"	-	-	-	-	-	A
159	*10200600	Minor	Yes	CODEC1 : Video/System rate error restoration		-	-	-	-	-	Off
160	*20200600	Minor	Yes	CODEC2 : Video/System rate error restoration		-	-	-	-	-	Off
161	10200700	Major	Yes	CODEC1 : Not installed		-	-	-	-	-	A
162	20200700	Major	Yes	CODEC2 : Not installed		-	-	-	-	-	A
163	10200800	Major	Yes	CODEC1 : Audio option board not installed		-	-	-	-	-	A
164	20200800	Major	Yes	CODEC2 : Audio option board not installed		-	-	-	-	-	A
165	*10200800	Major	Yes	CODEC1 : Audio option board installed		-	-	-	-	-	Off
166	*20200800	Major	Yes	CODEC2 : Audio option board installed		-	-	-	-	-	Off

*1 Link established: On; Ether frame detected: Blinking; No link established: Off

*2 10M: Off; 100M: On; 1000M: Blinking

*3 Green: On (operating normally), Blinking (software activation or shutdown process in progress), Off (software not operating)
Orange: On (maintenance mode), Blinking (maintenance mode activation in progress)
Green/Orange: Blinking alternately (SD card in operation)

*4 Temperature-related shutdown process, all LEDs except LINK/ACT and 100/1000 are on. Turn off and on the equipment to restore operation.

Table Appendix 1-2 Input data error alarm counter and bit correspondence

Bit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26 to 64
Type	Encoder												Decoder													Undefined
Interface	IP	IP	IP	IP	IP	IP	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	IP	IP	IP	IP	IP	IP	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	DVB-ASI	Undefined
Error Item	Number of ancillary data (private PES) input errors	Number of ancillary data (private PES) exceeded capacity	Number of AC-3 input errors	Number of AC-3 timeouts	Number of ancillary data (ATSC CC) input errors	Number of ancillary data (ATSC CC) exceeded capacity	Number of ancillary data (private PES) input errors	Number of ancillary data (private PES) exceeded capacity	Number of AC-3 input errors	Number of AC-3 input timeouts	Number of ancillary data (ATSC CC) input errors	Number of ancillary data (ATSC CC) exceeded capacity	Number of reloading packets	Number of discontinuous PCR	Number of video 1 decoding errors	Number of video 2 decoding errors	Number of audio decoding errors	Number of ancillary data (private PES) decoding errors	Number of discontinuous PCR	Number of video 1 decoding errors	Number of video 2 decoding errors	Number of audio decoding errors	Number of ancillary data (private PES) decoding errors	Number of BISS decoding errors (unsupported TSC)	Number of BISS decoding errors (unused)	

Appendix 2 Browsing Parameter List

This appendix lists parameters that can be browsed from the Web GUI, via SNMP, or from the front panel (VFD).
Yes: Supported; No: Not supported

Table Appendix 2-1 Browsing parameters

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
STATUS	Current Alarms	-	Major/Minor/Warning	Code/Name/Detail	Indication of alarm that has occurred	Yes	Yes	Yes
	Status	Management	System	Alarm	Alarm occurrence status	Yes	Yes	Yes
				Codec1 board	Installation status of codec board 1	Yes	Yes	Yes
				Codec1 audio option board	8-channel audio board installation status on codec board 1	Yes	Yes	Yes
				Codec2 board	Installation status of codec board 2	Yes	Yes	Yes
				Codec2 audio option board	8-channel audio board installation status on codec board 2	Yes	Yes	Yes
				Slot1-4	Occupancy status of expansion slots 1 to 4	Yes	Yes	Yes
				Serial number	Equipment serial number	Yes	Yes	Yes
				Component temperature	Equipment internal temperature (Celsius)	Yes	Yes	Yes
				Software version	Active software version	Yes	Yes	Yes
				Configuration name	Active configuration name	Yes	Yes	Yes
			Time server	Time server	Synchronization status and IP address of time server	Yes	Yes	No
			Intercom	Intercom	Voice communication status, and remote equipment IP address and port number	Yes	Yes	No
			Console	IPv4 address	Console port IP address (IPv4)	Yes	No	Yes
				IPv4 subnetmask	Console port subnet mask (IPv4)	Yes	No	Yes
				IPv4 GW address	Default gateway address (IPv4) of console port	Yes	No	Yes
				IPv6 address	Console port IP address (IPv6)	Yes	No	Yes
				IPv6 GW address	Default gateway address (IPv6) of console port	Yes	No	Yes
				MAC address	Console port MAC address	Yes	No	Yes
				Link	Console port link status	Yes	No	Yes
			LAN1,2	IPv4 address	LAN1/LAN2 port IP address (IPv4)	Yes	No	Yes
				IPv4 subnetmask	LAN1/LAN2 port subnet mask (IPv4)	Yes	No	Yes

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
				IPv4 GW address	Default gateway address (IPv4) of LAN1/LAN2 port	Yes	No	Yes
				IPv6 address	LAN1/LAN2 port IP address (IPv6)	Yes	No	Yes
				IPv6 GW address	Default gateway address (IPv6) of LAN1/LAN2 port	Yes	No	Yes
				MAC address	LAN1/LAN2 port MAC address	Yes	No	Yes
				Link	LAN1/LAN2 port link status	Yes	No	Yes
			Serial port	Serial port1	Serial port 1 operating status, and remote equipment IP address and port number	Yes	Yes	No
				Serial port2	Serial port 2 operating status, and remote equipment IP address and port number	Yes	Yes	No
		Encoder1,2	Encoder1,2 Status	AV input	AV input status	Yes	Yes	Yes
				AV input format	AV input format	Yes	Yes	Yes
				Encode format	Encoding format	Yes	Yes	Yes
				IP bit rate	Ethernet transmission bit rate (Mbps)	Yes	Yes	Yes
				System bit rate	System bit rate (Mbps)	Yes	Yes	Yes
				Profile	Profile for video encoding method	Yes	No	Yes
				Resolution	Video resolution	Yes	Yes	Yes
				Video bit rate	Video bit rate (Mbps)	Yes	Yes	Yes
				Audio1-8	Format, bit rate (kbps), and encoding scheme of audio channels 1 ~ 8	Yes	No	Yes
				DVB-ASI output	DVB-ASI output status	Yes	No	Yes
				IP output1-4	Output status of IP streams 1 ~ 4, and streaming destination IP address and port number	Yes	Yes	Yes
				Ancillary	Number of bytes in ancillary data	Yes	Yes	Yes
			Encoder1,2 PID	Network name	Network name	Yes	No	No
				Original network ID	Original network ID	Yes	No	No
				Transport stream ID	Transport stream ID	Yes	No	No
				Program number	Program number	Yes	No	No
				Service type	Service type	Yes	No	No
				Service provider name	Service provider name	Yes	No	No
				Service name	Service name	Yes	No	No
				PMT PID	PMT PID	Yes	No	No

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
				PCR PID	PCR PID	Yes	No	No
				Video1 PID	Video1 PID	Yes	No	No
				Video2 PID	Video2 PID(CSC422)	Yes	No	No
				Audio1-8 PID	PIDs of Audio1 ~ Audio8	Yes	No	No
				Ancillary PID	Ancillary PID	Yes	No	No
		Decoder1,2	Decoder1,2 Status	Stream input	Stream reception status, IP stream address, and port number (in cases of IP stream)	Yes	Yes	Yes
				AV output	AV output status	Yes	No	Yes
				AV output format	AV output format	Yes	Yes	Yes
				System bit rate	System bit rate (Mbps)	Yes	Yes	Yes
				Profile	Profile for video encoding method	Yes	Yes	Yes
				Decoding frame rate	Decoding frame rate	Yes	Yes	Yes
				Video resolution	Video resolution	Yes	Yes	Yes
				Video bit rate	Video bit rate (Mbps)	Yes	Yes	Yes
				Audio1	Format, rate (kbps), and encoding scheme of audio channels 1 ~ 8	Yes	Yes	Yes
				Ancillary	Number of bytes in ancillary data	Yes	Yes	Yes
				ARQ	ARQ operating status	Yes	Yes	Yes
			Decoder1,2 PID	Network name	Network name	Yes	Yes	Yes
				Original network ID	Original network ID	Yes	Yes	Yes
				Transport stream ID	Transport stream ID	Yes	Yes	Yes
				Program number	Program number	Yes	Yes	Yes
				Service type	Service type	Yes	Yes	Yes
				Service provider name	Service provider name	Yes	Yes	Yes
				Service name	Service name	Yes	Yes	Yes
				Encoder manufacturer	Encoder manufacturer	Yes	Yes	Yes
				Encoder serial number	Encoder serial number	Yes	Yes	Yes
				Carrier identifier	Carrier identifier	Yes	Yes	Yes
				Telephone number	Telephone number	Yes	Yes	Yes
				Longitude	Longitude	Yes	Yes	Yes

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
				Latitude	Latitude	Yes	Yes	Yes
				User information	User information	Yes	Yes	Yes
				PMT PID	PMT PID	Yes	Yes	Yes
				PCR PID	PCR PID	Yes	Yes	Yes
				Video1 PID	Video1 PID	Yes	Yes	Yes
				Video2 PID	Video2 PID(CSC422)	Yes	Yes	Yes
				Audio1-8 PID	PIDs of Audio1 to Audio8	Yes	Yes	Yes
				Ancillary PID	Ancillary PID	Yes	Yes	Yes
	Performance Stats	Management	Intercom	Data packets received	Number of voice communication packets received	Yes	Yes	No
				Data packets lost	Number of voice communication packets that could not be received because they were discarded on network	Yes	Yes	No
				Data packets dumped	Number of packets in incorrect format or with format error	Yes	Yes	No
				Data packets sent	Number of voice communication packets sent	Yes	Yes	No
				Data packets lost at sending	Number of voice communication packets failed to be sent	Yes	Yes	No
			Serial Port1	Data received in byte on serial port	Serial port 1: Number of bytes received from serial port	Yes	Yes	No
				Data sent in byte on serial port	Serial port 1: Number of bytes sent to serial port	Yes	Yes	No
				Data received in byte on LAN port	Serial port 1: Number of bytes received from LAN port	Yes	Yes	No
				Data sent in byte on LAN port	Serial port 1: Number of bytes sent to LAN port	Yes	Yes	No
			Serial Port2	Data received in byte on serial port	Serial port 2: Number of bytes received from serial port	Yes	Yes	No
				Data sent in byte on serial port	Serial port 2: Number of bytes sent to serial port	Yes	Yes	No
				Data received in byte on LAN port	Serial port 2: Number of bytes received from LAN port	Yes	Yes	No
				Data sent in byte on LAN port	Serial port 2: Number of bytes sent to LAN port	Yes	Yes	No
		Encoder1,2	DVB-ASI	TS packets sent	Number of TS packets sent	Yes	Yes	No
				AC-3 input errors	Number of AC-3 input errors encountered during pass-thru (AC-3/ATSC) or pass-thru (AC-3/DVB) audio transmission	Yes	Yes	No
				AC-3 input timeout	Number of AC-3 input timeouts encountered during pass-thru (AC-3/ATSC) or pass-thru (AC-3/DVB) audio transmission	Yes	Yes	No
				ATSC CC input	Number of ancillary data inputs during ATSC CC ancillary data transmission	Yes	Yes	No
				ATSC CC input errors	Number of ancillary data input errors encountered during ATSC CC ancillary data transmission	Yes	Yes	No

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
				ATSC CC exceeded capacity	Number of times that ATSC CC transmission capacity for ancillary data was exceeded	Yes	Yes	No
				Private PES input	Number of ancillary data inputs during private PES transmission of ancillary data	Yes	Yes	No
				Private PES input errors	Number of ancillary data input errors encountered during private PES transmission of ancillary data	Yes	Yes	No
				Private PES exceeded capacity	Number of times that private PES transmission capacity for ancillary data was exceeded	Yes	Yes	No
			IP	Data packets sent	Number of media packets sent	Yes	Yes	No
				FEC packets sent	Number of FEC packets sent	Yes	Yes	No
				ARQ request received	Number of automatic repeat request (ARQ) packets received	Yes	Yes	No
				ARQ packets resent	Number of media packets resent	Yes	Yes	No
				AC-3 input errors	Number of AC-3 input errors encountered during pass-thru (AC-3/ATSC) or pass-thru (AC-3/DVB) audio transmission	Yes	Yes	No
				AC-3 input timeout	Number of AC-3 input timeouts encountered during pass-thru (AC-3/ATSC) or pass-thru (AC-3/DVB) audio transmission	Yes	Yes	No
				ATSC CC input	Number of ancillary data inputs during ATSC CC ancillary data transmission	Yes	Yes	No
				ATSC CC input errors	Number of ancillary data input errors encountered during ATSC CC ancillary data transmission	Yes	Yes	No
				ATSC CC exceeded capacity	Number of times that ATSC CC transmission capacity for ancillary data was exceeded	Yes	Yes	No
				Private PES input	Number of ancillary data inputs during private PES transmission of ancillary data	Yes	Yes	No
				Private PES input errors	Number of ancillary data input errors encountered during private PES transmission of ancillary data	Yes	Yes	No
				Private PES exceeded capacity	Number of times that private PES transmission capacity for ancillary data was exceeded	Yes	Yes	No
		Decoder1,2	DVB-ASI	TS packets input	Total number of TS packets input into decoders	Yes	Yes	No
				TS packets received	Number of TS packets to be decrypted	Yes	Yes	No
				Data loss exceeding concealment time	Number of times that "blue" or "gray" video image was output because of failure to receive data within set time period beyond which no packet is recognized as received	Yes	Yes	No
				BISS decrypted	Number of BISS-decrypted TS packets	Yes	Yes	No
				BISS decryption errors (unsupported TSC)	Number of TS packets not decrypted because they had been encrypted by unsupported encryption method	Yes	Yes	No
				BISS decryption errors(unused)	Number of TS packets not BISS-decrypted because BISS was disabled	Yes	Yes	No
				Discontinuous PCR	Number of PCR discontinuities detected during decoding	Yes	Yes	No

Level 1	Level 2	Sub menu	Level 3	Item name	Item outline	Web	SNMP	VFD
				Video1 decoding errors	Number of Video1 decoding errors detected during decoding	Yes	Yes	No
				Video2 decoding errors	Number of Video2 decoding errors detected during decoding	Yes	Yes	No
				Audio PES format mismatch	Number of times that decoder received audio PES packet not valid for decoding	Yes	Yes	No
				Audio decoding errors	Number of audio decoding errors detected during decoding	Yes	Yes	No
				Private PES received	Number of times that ancillary data was received during private PES transmission of ancillary data	Yes	Yes	No
				Private PES decoding errors	Number of detected ancillary data errors in decoding during private PES transmission of ancillary data	Yes	Yes	No
			IP	Data packets received	Number of media packets received	Yes	Yes	No
				Data packets recovered	Number of media packets recovered by FEC/ARQ error correction function	Yes	Yes	No
				Data packets lost	Number of media packets not received because they were discarded on network	Yes	Yes	No
				FEC packets received	Number of FEC packets received	Yes	Yes	No
				ARQ packets received	Number of media packets received in response to automatic repeat request (ARQ)	Yes	Yes	No
				Data packets recovered by FEC	Number of packets recovered by FEC	Yes	Yes	No
				ARQ request sent	Automatic repeat request (ARQ) packet sent when missing packet error occurs	Yes	Yes	No
				Data packets recovered by ARQ	Number of packets recovered by ARQ	Yes	Yes	No
				Data loss exceeding concealment time	Number of times that "blue" or "gray" video image was output because of failure to receive data within set time period beyond which no packet is recognized as received	Yes	Yes	No
				Reloading TS stream	Number of packet reloads without packet recovery because too many packets were missing	Yes	Yes	No
				Discontinuous PCR	Number of PCR discontinuities detected during decoding	Yes	Yes	No
				Video1 decoding errors	Number of Video1 decoding errors detected during decoding	Yes	Yes	No
				Video2 decoding errors	Number of Video2 decoding errors detected during decoding	Yes	Yes	No
				Audio PES format mismatch	Number of times that decoder received audio PES packet not valid for decoding	Yes	Yes	No
				Audio decoding errors	Number of audio decoding errors detected during decoding	Yes	Yes	No
				Private PES received	Number of times that ancillary data was received during private PES transmission of ancillary data	Yes	Yes	No
				Private PES decoding errors	Number of detected ancillary data errors in decoding during private PES transmission of ancillary data	Yes	Yes	No
	Logs	-	-	No./Time/Code/Level/Name/Detail	Log information display	Yes	Yes	No

Appendix 3 Setting Parameter List

This appendix lists parameters that can be browsed from the Web GUI, via SNMP, or from the front panel (VFD).
Yes: Supported; No: Not supported

The Level1-3, Item name, Value of the setting parameters list corresponds to the Web GUI are shown in right figure.

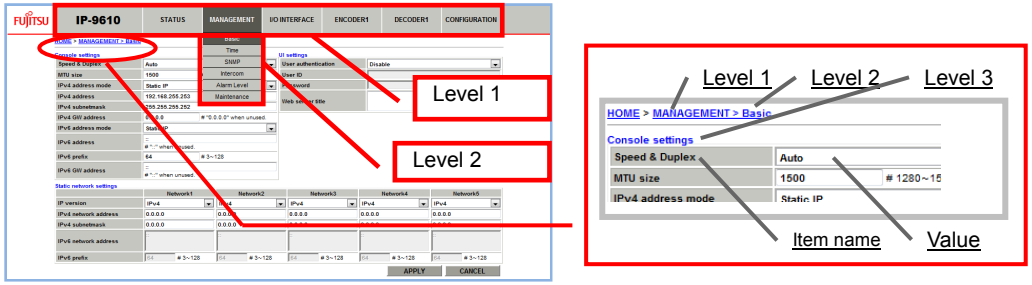


Table Appendix 3-1 Setting parameters

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
MANAGEMENT	Basic	Console settings	Speed & Duplex	Specifies the transmission bit rate of the console port.	- Auto - Auto (Max 100Mbps) - Auto (Max 10Mbps) - 100Base-TX Full Duplex - 100Base-TX Half Duplex - 10Base-T Full Duplex - 10Base-T Half Duplex	Yes	Yes	Yes
			MTU size	Specifies the MTU size of the console port.	1280 ~ 1500 bytes	Yes	Yes	Yes
			IPv4 address mode	Specifies the IPv4 address mode of the console port.	- Static IP - DHCP	Yes	Yes	Yes
			IPv4 address	Specifies the IPv4 address of the console port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 subnetmask	Specifies the IPv4 subnet mask of the console port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 GW address	Specifies the IPv4 gateway address of the console port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 address mode	Specifies the IPv6 address mode of the console port.	- Static IP - Stateless	Yes	Yes	Yes
			IPv6 address	Specifies the IPv6 address of the console port.	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 prefix	Specifies the IPv6 prefix of the console port.	3 ~ 128	Yes	Yes	Yes
			IPv6 GW address	Specifies the IPv6 gateway address of the console port.	xxxx:xxxx:...:xxxx	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
		UI settings	User authentication	Specifies whether to enable/disable user authentication for Web access.	- Enable - Disable	Yes	Yes	No
			User ID	User ID in cases of user authentication	16 single-byte alphanumeric characters	Yes	Yes	No
			Password	Password in cases of user authentication	16 single-byte alphanumeric characters	Yes	Yes	No
			Web server title	Specifies the title information displayed by the Web server.	64 single-byte characters or 32 double-byte characters	Yes	Yes	No
		Static network1-5 settings	IP version	IP version used for static routing to the network on the console side	- IPv4 - IPv6	Yes	Yes	Yes
			IPv4 network address	IPv4 network address for static routing	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 subnetmask	IPv4 network subnet mask for static routing	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 network address	IPv6 network address for static routing	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 prefix	IPv6 network prefix for static routing	3 ~ 128	Yes	Yes	Yes
	Time	Time zone settings	UTC offset	Time offset from UTC	From -12 ~ +14 hours (in 1-hour steps) +5.5 hours	Yes	Yes	No
		Time server settings	Auto synchronization	Specifies whether to enable/disable time synchronization.	- Enable - Disable	Yes	Yes	No
			Synchronize interval	Specifies the time synchronization interval for cases where time synchronization is enabled.	1 ~ 65535 minutes	Yes	Yes	No
			IP version	IP version for communication with the time synchronization server	- IPv4 - IPv6	Yes	Yes	No
			Time server IPv4 address	IPv4 address of the time synchronization server	xxx.xxx.xxx.xxx	Yes	Yes	No
			Time server IPv6 address	IPv6 address of the time synchronization server	xxxx:xxxx:...:xxxx	Yes	Yes	No
		Current time	APPLY PC TIME	Sets the PC time in the equipment	-	Yes	No	No
			SYNCHONIZE WITH TIME SERVER	Performs time synchronization with the time server	-	Yes	No	No
	SNMP	SNMP agent settings	Community1-5	Community name used for authentication between the SNMP manager and agent	16 single-byte alphanumeric characters	Yes	Yes	No
		SNMP trap settings	Trap	Specifies whether to enable/disable trap notification.	- Enable - Disable	Yes	Yes	No
			SNMP version	SNMP version for trap transmission	- SNMPv1 - SNMPv2c	Yes	Yes	No

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Community	Community name assigned for trap transmission	16 single-byte alphanumeric characters	Yes	Yes	No
			IP version	IP version for trap transmission	- IPv4 - IPv6	Yes	Yes	No
			IPv4 address	Trap destination IPv4 address	xxx.xxx.xxx.xxx	Yes	Yes	No
			IPv6 address	Trap destination IPv6 address	xxxx:xxxx:...:xxxx	Yes	Yes	No
	Intercom	Intercom settings	Intercom	Specifies whether to enable/disable intercom.	- Enable - Disable	Yes	Yes	No
			Output level	Specifies the analog output level.	- -20dBm - 0dBm	Yes	Yes	No
			Synchronize with	Specifies whether to link the intercom connection destination with the encoder/decoder.	- Encoder1 - Encoder2 - Decoder1 - Decoder2	Yes	Yes	No
			IP version	IP version for intercom connection	- IPv4 - IPv6	Yes	Yes	No
			Destination IPv4 address	IPv4 address of the intercom connection destination device	xxx.xxx.xxx.xxx	Yes	Yes	No
			Destination IPv6 address	IPv6 address of the intercom connection destination device	xxxx:xxxx:...:xxxx	Yes	Yes	No
			UDP port server	UDP reception port number used for intercom	1024 ~ 64000	Yes	Yes	No
			UDP port client	UDP source port number used for intercom	0,1024 ~ 64000	Yes	Yes	No
				UDP destination port number used for intercom	1024 ~ 64000	Yes	Yes	No
	Alarm Level	Code/Name	Level	Specifies the level of each alarm.	- Info/Off - Major/Minor/Warning/Off	Yes	Yes	No
	Maintenance	Software	INSTALL	Install the software	-	Yes	No	No
		Option	INSTALL	Install the software license	-	Yes	No	No
		Maintenance	GET MAINTENANCE DATA	Download information logs	-	Yes	No	No
			REBOOT	Reboot the equipment	-	Yes	Yes	Yes
I/O INTERFACE	AV interface	Device settings	Mode	Specifies the equipment operation mode.	- Encoder x 1 - Decoder x 1 - Encoder x 2 - Decoder x 2 - Encoder x 1 Decoder x 1 - Decoder x 1 Encoder x 1	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			AV input	Specifies the number of AV input interfaces.	- AV input x 1 - AV input x 2	Yes	Yes	Yes
			AV output	Specifies the number of AV output interfaces.	- AV output x 1 - AV output x 2 - AV output x 3 - AV output x 4	Yes	Yes	Yes
			Dual link HD-SDI Encoder	Number of interfaces to be used as a dual link HD-SDI	- Encoder dual link x 0 - Encoder dual link x 1 - Encoder dual link x 2	Yes	Yes	Yes
			Dual link HD-SDI Decoder	Number of interfaces to be used as a dual link HD-SDI	- Decoder dual link x 0 - Decoder dual link x 1 - Decoder dual link x 2	Yes	Yes	Yes
		Encoder settings Encoder1,2	3G/HD/SD auto sensing	Specifies whether to enable/disable auto sensing.	- Enable - Disable	Yes	Yes	Yes
			AV input format	Specifies a fixed AV input format.	- 1080p/59.94,50,60 - 1080i/59.94,50,60 - 720p/59.94,50,60 - 480i/59.94 - 576i/50	Yes	Yes	Yes
			3G/HD > SD Downconverter	Specifies the conversion method used for down-conversion to SD video.	- Disable - Letter Box - Center Cut - Squeeze	Yes	Yes	Yes
			AV encode format	Specifies the encoding format.	- 1080p/59.94,50,60 - 1080i/59.94,50,60 - 720p/59.94,50,60 - 480i/59.94 - 576i/50	Yes	Yes	Yes
			AV encode format startup	Specifies the encoding format used when "Auto sensing" is set to Enable and there is no AV input. (The original encoding format is used as is during AV input and until an AV input failure.) * This parameter can be specified only if "Auto sensing" is set to Enable.	- 1080p/59.94,50,60 - 1080i/59.94,50,60 - 720p/59.94,50,60 - 480i/59.94 - 576i/50	Yes	Yes	Yes
			DVB-ASI stream output	Specifies whether to enable/disable stream output to DVB-ASI.	- Enable - Disable	Yes	Yes	Yes
			IP stream output	Specifies whether to enable/disable stream output to IP.	- Enable - Disable	Yes	Yes	Yes
		Decoder settings Decoder1,2	Stream input	Specifies the stream input interface.	- Disable - IP - DVB-ASI	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			AV output format startup	Specifies the AV output format used at the equipment startup time or after a decoder setting change.	- 1080p/59.94,50,60 - 1080i/59.94,50,60 - 720p/59.94,50,60 - 480i/59.94 - 576i/50	Yes	Yes	Yes
			AV output slot1	Specifies whether to enable/disable AV output to slot 1.	- Enable - Disable	Yes	Yes	Yes
			AV output slot2	Specifies whether to enable/disable AV output to slot 2.	- Enable - Disable	Yes	Yes	Yes
			AV output slot3	Specifies whether to enable/disable AV output to slot 3.	- Enable - Disable	Yes	Yes	Yes
			AV output slot4	Specifies whether to enable/disable AV output to slot 4.	- Enable - Disable	Yes	Yes	Yes
	DVB-ASI Interface	DVB-ASI settings	Sync	Specifies whether operation depends on a free-running clock or external input.	- Internal - Slave	Yes	Yes	Yes
			TS packet size	Specifies the length of a TS packet to be output from DVB-ASI.	- 188bytes - 204bytes	Yes	Yes	Yes
		Encoder1,2 BISS settings	BISS	Specifies whether to enable/disable BISS.	- Enable - Disable	Yes	Yes	No
			BISS mode	Specifies the BISS encryption mode.	- MODE 1 - MODE E	Yes	Yes	No
			Session word	Specifies the session word used in MODE 1.	- 12-digit (fixed) hexadecimal number	Yes	Yes	No
			Encrypted session word	Specifies the encrypted session word used in MODE E.	- 14-digit (fixed) hexadecimal number	Yes	Yes	No
		Decoder1,2 BISS settings	BISS	Specifies whether to enable/disable BISS.	- Enable - Disable	Yes	Yes	No
			BISS mode	Specifies the BISS encryption mode.	- MODE 1 - MODE E	Yes	Yes	No
			Session word	Specifies the session word used in MODE 1.	- 12-digit (fixed) hexadecimal number	Yes	Yes	No
			Encrypted session word	Specifies the encrypted session word used in MODE E.	- 16-digit (fixed) hexadecimal number	Yes	Yes	No

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
		Injected ID settings	Injected ID	Specifies the injected ID used in MODE E. * The injected ID is unique within the equipment (common to all configuration data). Its setting remains in effect even after a configuration data change. The last setting is used for all configuration data. Note also that configuration data is not subject to backup or restore.	- 14-digit (fixed) hexadecimal number	Yes	Yes	No
	IP Interface	IP settings	IP mode	Specifies the IP interface mode.	- Same IP	Yes	Yes	Yes
		LAN1,2 settings	Speed & Duplex	Specifies the transmission bit rate of the LAN port.	- Auto - Auto (Max 100Mbps) - Auto (Max 10Mbps) - 100Base-TX Full Duplex - 100Base-TX Half Duplex - 10Base-T Full Duplex - 10Base-T Half Duplex	Yes	Yes	Yes
			MTU size	Specifies the MTU size of the LAN port.	1280 ~ 1500 bytes	Yes	Yes	Yes
			IPv4 address mode	Specifies the IPv4 address mode of the LAN port.	- Static IP - DHCP	Yes	Yes	Yes
			IPv4 address	Specifies the IPv4 address of the LAN port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 subnetmask	Specifies the IPv4 subnet mask of the LAN port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 default GW	Specifies the IPv4 default gateway address of the LAN port.	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 address mode	Specifies the IPv6 address mode of the LAN port.	- Static IP - Stateless	Yes	Yes	Yes
			IPv6 address	Specifies the IPv6 address of the LAN port.	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 prefix	Specifies the IPv6 prefix of the LAN port.	3 ~ 128	Yes	Yes	Yes
			IPv6 default GW	Specifies the IPv6 default gateway address of the LAN port.	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
	Reference	Input settings	Reference clock input	Specifies whether to enable/disable external clock input.	- Disable - Tri-sync(HDSYNC) - Bi-sync(Black burst)	Yes	Yes	Yes
			Phase adjustment	Specifies the phase to be adjusted, in nanoseconds.	-200000 ~ 200000 ns	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Decoder1	Specifies the clock used for Decoder1.	- Reference clock input - Internal - PCR	Yes	Yes	Yes
			Decoder2	Specifies the clock used for Decoder2.	- Reference clock input - Internal - PCR - Decoder1	Yes	Yes	Yes
		Output settings	Reference clock output	Specifies whether to enable/disable external clock output.	- Disable - Bi-sync(Black burst) - Through out of reference clock input	Yes	Yes	Yes
	Serial port	Transmission1,2 settings	Serial port	Specifies whether to enable/disable serial port use.	- Enable - Disable	Yes	Yes	No
			Mode	Specifies the IP communication mode.	- Server mode - Client mode - Client mode (Modem)	Yes	Yes	No
			IP version	IP version for IP communication	- IPv4 - IPv6	Yes	Yes	No
			Destination IPv4 address	IPv4 address of the IP communication destination device	xxx.xxx.xxx.xxx	Yes	Yes	No
			Destination IPv6 address	IPv6 address of the IP communication destination device	xxxx:xxxx:...:xxxx	Yes	Yes	No
			TCP port server	TCP reception port number used for IP communication	1024 ~ 64000	Yes	Yes	No
			TCP port client	TCP source port number used for IP communication	0,1024 ~ 64000	Yes	Yes	No
				TCP destination port number used for IP communication	1024 ~ 64000	Yes	Yes	No
		Serial port1,2 settings	Type	Specifies the serial port interface.	- RS-232c - RS-422	Yes	Yes	No
			Timeout	Specifies the reception timeout limit.	20 ~ 200 ms	Yes	Yes	No
			Delimiter code 1	Specifies delimiter code 1.	0-ff, Blank	Yes	Yes	No
			Delimiter code 2	Specifies delimiter code 2.	0-ff, Blank	Yes	Yes	No
			Baud rate	Specifies the communication speed.	- 1200 bps - 2400 bps - 4800 bps - 9600 bps - 19200 bps - 38400 bps	Yes	Yes	No
			Bit length	Specifies the character size.	- 7bits - 8bits	Yes	Yes	No

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Parity	Specifies whether to use parity.	- None - Odd - Even	Yes	Yes	No
			Stop bits	Specifies the stop bit length.	- 1bits - 2bits	Yes	Yes	No
			Flow control	Specifies flow control.	- None - RS/CS	Yes	Yes	No
			DTR signal monitoring	Specifies whether to enable/disable DTR monitoring of RS-232C control signals.	- Enable - Disable	Yes	Yes	No
ENCODER1,2	Stream Output	System bit rate settings	Bit rate setting	Specifies the bit rate specification method.	- Video bit rate - System bit rate	Yes	Yes	Yes
			System bit rate	Specifies the system bit rate.	Up to 130000 kbps	Yes	Yes	Yes
		DVB-ASI settings	Output	Specifies whether to enable/disable stream output to DVB-ASI.	- Enable - Disable	Yes	Yes	Yes
		IP settings	Output	Specifies whether to enable/disable stream output to IP.	- Enable - Disable	Yes	Yes	Yes
			Streaming mode	Specifies the IP stream output mode.	- Unicast(Simplex) - Unicast - Multicast	Yes	Yes	Yes
			IP version	IP version for IP stream output	- IPv4 - IPv6	Yes	Yes	Yes
			Acceptable stream number	Number of output IP streams	1 ~ 4	Yes	Yes	Yes
			IPv4 unicast address1	IPv4 unicast destination address 1	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 unicast address2	IPv4 unicast destination address 2	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 unicast address3	IPv4 unicast destination address 3	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv4 unicast address4	IPv4 unicast destination address 4	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 unicast address1	IPv6 unicast destination address 1	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 unicast address2	IPv6 unicast destination address 2	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 unicast address3	IPv6 unicast destination address 3	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv6 unicast address4	IPv6 unicast destination address 4	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv4 multicast address	IPv4 multicast destination address	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 multicast address	IPv6 multicast destination address	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			ARP auto update	Specifies whether to enable/disable periodic ARP transmission.	- Enable - Disable	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Protocol	Specifies the IP transport protocol.	- RTP - UDP	Yes	Yes	Yes
			TS format	Specifies the MPEG TS format.	- TS - TTS	Yes	Yes	Yes
			FEC	Specifies whether to enable/disable FEC packet generation.	- Enable - Disable	Yes	Yes	Yes
			FEC interval	Specifies the FEC packet insertion interval.	4 ~ 24	Yes	Yes	Yes
			ARQ	Specifies whether to enable/disable ARQ.	- Enable - Disable	Yes	Yes	Yes
			SMPTE2022 FEC	Specifies whether to enable/disable SMPTE2022 FEC.	- Enable (dual) - Enable (single) - Disable	Yes	Yes	Yes
			SMPTE2022 matrix	Specifies the SMPTE2022 FEC matrix (column).	4 ~ 20	Yes	Yes	Yes
				Specifies the SMPTE2022 FEC matrix (row).	4 ~ 20	Yes	Yes	Yes
			ID control for unicast	Specifies whether to enable/disable unicast ID control.	- Enable - Disable	Yes	Yes	Yes
			Unicast ID	Specifies the unicast ID.	0 ~ ffff	Yes	Yes	Yes
			TOS	Specifies the TOS value.	0 ~ ff	Yes	Yes	Yes
			Streaming UDP port	UDP source port number for IP streaming	0,1024 ~ 64000	Yes	Yes	Yes
				UDP destination port number for IP streaming	1024 ~ 64000	Yes	Yes	Yes
			Unicast request UDP port	Port number for receiving unicast streaming request	1024 ~ 64000	Yes	Yes	Yes
	PID	PID settings	NIT	Specifies whether to enable/disable NIT generation.	- Enable - Disable	Yes	Yes	Yes
			Carrier ID for NIT	Specifies whether to enable/disable Carrier ID generation.	- Enable - Disable	Yes	Yes	Yes
			SDT	Specifies whether to enable/disable SDT generation.	- Enable - Disable	Yes	Yes	Yes
			Network name	Specifies the network name.	20 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Original network ID	Specifies the original network ID.	0 ~ ffff	Yes	Yes	Yes
			Transport stream ID	Specifies the transport stream ID.	0 ~ ffff	Yes	Yes	Yes
			Program number	Specifies the program number.	1 ~ ffff	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Service type	Specifies the service type.	0 ~ ff	Yes	Yes	Yes
			Service provider name	Specifies the service provider name.	16 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Service name	Specifies the service name.	16 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Carrier Identifier	Specifies the carrier identifier.	5 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Telephone Number	Specifies the telephone number.	17 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Longitude	Specifies the longitude.	9 single-byte alphanumeric characters or less	Yes	Yes	Yes
			Latitude	Specifies the latitude.	8 single-byte alphanumeric characters or less	Yes	Yes	Yes
			User Information	Specifies the user information.	15 single-byte alphanumeric characters or less	Yes	Yes	Yes
			PMT PID	Specifies the PMT PID.	1 ~ 1ffe	Yes	Yes	Yes
			PCR PID	Specifies the PCR PID.	1 ~ 1fff	Yes	Yes	Yes
			PCR interval	Specifies the PCR insertion interval.	30 ~ 100 ms	Yes	Yes	Yes
			Video1 PID	Specifies the Video1 PID.	1 ~ 1ffe	Yes	Yes	Yes
			Video2 PID	Specifies the Video2 PID (CSC422).	1 ~ 1ffe	Yes	Yes	Yes
			Audio1-8 PID	Specifies the PIDs of Audio1 to Audio8.	1 ~ 1ffe	Yes	Yes	Yes
			Ancillary PID	Specifies the ancillary PID.	1 ~ 1ffe	Yes	Yes	Yes
			PSI insertion interval	Specifies the PSI insertion interval.	100 ~ 1000 ms	Yes	Yes	Yes
			PSI insertion in GOP cycle	Specifies whether to enable/disable PSI insertion at the GOP interval.	- Enable - Disable	Yes	Yes	Yes
	Video	Common settings	Video input signal loss	Specifies the encode video used if video input fails.	- Color bar - Gray - Black	Yes	Yes	Yes
			Buffer for video input	Specifies whether to enable/disable the protection buffer for video input.	- Enable - Disable	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Bit rate setting	Specifies the bit rate specification method.	- Video bit rate - System bit rate	Yes	Yes	Yes
			Video bit rate	Specifies the video bit rate.	150 ~ 100000 kbps	Yes	Yes	Yes
			PPS interval	Specifies the PPS insertion interval.	- GOP - Picture	Yes	Yes	Yes
			PPS ID	Specifies the PPS ID.	- Fixed - Variable	Yes	Yes	Yes
			Padded data pattern	Specifies the padding data pattern.	- Normal - IP satellite mode	Yes	Yes	Yes
		Individual settings 3G	Profile	Specifies the video encoding profile.	- Main 420 8bit - High 420 8bit - High 422 8bit - High 422 10bit	Yes	Yes	Yes
			Video resolution	Specifies the video resolution.	- 1920x1080 - 1440x1080 - 960x1080	Yes	Yes	Yes
			GOP structure	Specifies the encoding control mode.	- Standard(IBBP) - Motion (IBP) - Low Latency(IPPP) - Low Latency(PPPP) - Ultra Low Latency(PPPP)	Yes	Yes	Yes
			Video PES for interlace	Specifies the video PES format of interlaced video.	- 1Field/1PES - 1Frame/1PES	Yes	Yes	Yes
			Pre-Filter	Specifies the prefilter strength.	- OFF - LIGHT - MEDIUM - HEAVY	Yes	Yes	Yes
			GOP cycle	Specifies the GOP interval.	- 1cycle - 2cycle - 4cycle	Yes	Yes	Yes
			Adaptive GOP	Specifies the GOP structure.	- Enable - Disable	Yes	Yes	Yes
		Individual settings HD	Profile	Specifies the video encoding profile. * If "High 422 8bit (CSC)" is selected here, "Adaptive GOP" is fixed at Disable.	- Main 420 8bit - High 420 8bit - High 422 8bit(CSC) - High 422 8bit - High 422 10bit	Yes	Yes	Yes
			Video resolution	Specifies the video resolution.	- 1920x1080/1280x720 - 1440x1080/960x720 - 960x1080/640x720	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			GOP structure	Specifies the encoding control mode.	- Standard(IBBP) - Motion (IBP) - Low Latency(IPPP) - Low Latency(PPPP) - Ultra Low Latency(PPPP)	Yes	Yes	Yes
			Video PES for interlace	Specifies the video PES format of interlaced video.	- 1Field/1PES - 1Frame/1PES	Yes	Yes	Yes
			Pre-Filter	Specifies the prefilter strength.	- Off - LIGHT - MEDIUM - HEAVY	Yes	Yes	Yes
			GOP cycle	Specifies the GOP interval.	- 1cycle - 2cycle - 4cycle	Yes	Yes	Yes
			Adaptive GOP	Specifies the GOP structure.	- Enable - Disable	Yes	Yes	Yes
		Individual settings SD	Profile	Specifies the video encoding profile. * If "High 422 8bit (CSC)" is selected here, "Adaptive GOP" is fixed at Disable.	- Main 420 8bit - High 420 8bit - High 422 8bit(CSC) - High 422 8bit - High 422 10bit	Yes	Yes	Yes
			Video resolution	Specifies the video resolution.	- 720x480/720x576 - 352x480/352x576	Yes	Yes	Yes
			GOP structure	Specifies the encoding control mode.	- Standard(IBBP) - Motion (IBP) - Low Latency(IPPP) - Low Latency(PPPP) - Ultra Low Latency(PPPP)	Yes	Yes	Yes
			Video PES for interlace	Specifies the video PES format of interlaced video.	- 1Field/1PES - 1Frame/1PES	Yes	Yes	Yes
			Pre-Filter	Specifies the prefilter strength.	- Off - LIGHT - MEDIUM - HEAVY	Yes	Yes	Yes
			GOP cycle	Specifies the GOP interval.	- 1cycle - 2cycle - 4cycle	Yes	Yes	Yes
			Adaptive GOP	Specifies the GOP structure.	- Enable - Disable	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
	Audio	Audio1-8 settings	Coding	Specifies the audio encode scheme.	- None - MPEG-1 Layer2 - MPEG-2 AAC - MPEG-4 AAC - MPEG-4 HE-AAC V1 - Pass-thru(SMPTE302M) - Pass-thru(AC-3/DVB) - Pass-thru(AC-3/ATSC)	Yes	Yes	Yes
			Channel mode	Specifies the audio channel mode.	- Mono - Dual mono - Stereo - 5.1	Yes	Yes	Yes
			Input source	Specifies the AES channel used as the audio input source.	- Embedded1 - Embedded2 - Embedded3 - Embedded4 - Embedded5 - Embedded6 - Embedded7 - Embedded8	Yes	Yes	Yes
			Quantization bit for 3G/HD	Specifies the quantization bit for 3G/HD input.	- 16bit - 20bit - 24bit	Yes	Yes	Yes
			Quantization bit for SD	Specifies the quantization bit for SD input.	- 16bit - 20bit	Yes	Yes	Yes
			Bit rate	Specifies the audio bit rate.	24 ~ 2688kbps	Yes	Yes	Yes
			Frame	Specifies the AES3 frame mode assumed for AC-3 stream multiplexing.	- Left - Right - Left & Right	Yes	Yes	Yes
			Stream number	Specifies the number of the AC-3 stream multiplexed to an audio frame.	- Stream number0 - Stream number1 - Stream number2 - Stream number3 - Stream number4 - Stream number5 - Stream number6 - Stream number7	Yes	Yes	Yes
			Language	Specifies the audio language code using a 3-character ISO 639-2 code.	3 single-byte alphabetic or space characters	Yes	Yes	Yes
		AV adjuster settings	AV adjuster	Specifies the output adjustment time for audio.	0 ~ 200 ms	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
	Ancillary	Ancillary settings	Ancillary	Specifies whether to enable/disable ancillary data use.	- Enable - Disable	Yes	Yes	Yes
			Data format	Specifies the format for transmitted ancillary data.	- Private PES - ATSC CC	Yes	Yes	Yes
			Data select	Specifies the transmission data specification method assumed for private PES transmission.	- Byte - DID/SDID	Yes	Yes	Yes
			Byte size	Specifies the number of bytes per frame of the transmitted ancillary data.	100 ~ 3000	Yes	Yes	Yes
			VITC data	Specifies whether to enable/disable VITC data transmission if a DID/SDID is specified.	- Enable - Disable	Yes	Yes	Yes
			CC data	Specifies whether to enable/disable CC data transmission if a DID/SDID is specified.	- Enable - Disable	Yes	Yes	Yes
			DID/SDID 1-8	Specifies the DID/SDID to be transmitted if DID/SDID transmission is specified.	DID:1 ~ ff SDID:0 ~ ff	Yes	Yes	Yes
			Line21 CC for 480i/59.94	Specifies whether to transmit the video area of lines 21 to 258, 261, and 262 instead of the video area of lines 23 to 262 if the video input is 480i/59.94.	- Enable - Disable	Yes	Yes	Yes
DECODER1,2	Stream Input	Stream input settings	Input	Specifies the stream input interface.	- Disable - DVB-ASI - IP	Yes	Yes	Yes
		IP settings	Streaming mode	Specifies the IP stream input mode.	- Unicast(Simplex) - Unicast - Multicast	Yes	Yes	Yes
			IP version	IP version for IP stream input	- IPv4 - IPv6	Yes	Yes	Yes
			IPv4 unicast source address	IPv4 unicast source address	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 unicast source address	IPv6 unicast source address	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			IPv4 multicast address	IPv4 multicast address	xxx.xxx.xxx.xxx	Yes	Yes	Yes
			IPv6 multicast address	IPv6 multicast address	xxxx:xxxx:...:xxxx	Yes	Yes	Yes
			MLD version	Specifies the MLD version used for IPv6 multicast group management.	- Version 1 - Version 2	Yes	Yes	Yes
			MLDv2 source IP address	Specifies the IPv6 address of the IPv6 multicast streaming source from which reception is permitted.	xxxx:xxxx:...:xxxx	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Unicast request cycle	Specifies the send interval of unicast streaming requests.	3 ~ 30 seconds	Yes	Yes	Yes
			Jitter control buffer	Specifies the buffer time for LAN jitter absorption.	1 ~ 150 ms	Yes	Yes	Yes
			ARQ	Specifies whether to enable/disable ARQ.	- Enable - Disable	Yes	Yes	Yes
			ARQ buffering time	Specifies the ARQ buffering time.	0 ~ 2000 ms	Yes	Yes	Yes
			SMPTE2022 FEC	Specifies whether to enable/disable SMPTE2022 FEC.	- Enable - Disable	Yes	Yes	Yes
			ID control for unicast	Specifies whether to enable/disable unicast ID control.	- Enable - Disable	Yes	Yes	Yes
			Unicast ID	Specifies the unicast ID.	0 ~ ffff	Yes	Yes	Yes
			Streaming UDP port	UDP reception port number for IP streaming	1024 ~ 64000	Yes	Yes	Yes
			Unicast request UDP port	Port number of the unicast streaming request source	0,1024 ~ 64000	Yes	Yes	Yes
				Port number of the unicast streaming request destination	1024 ~ 64000	Yes	Yes	Yes
	PID	PID settings	Mode	Specifies the reception PID selection method.	- Auto - Program number - PMT - Manual	Yes	Yes	Yes
			Program number	Specifies the program number to be received.	1 ~ ffff	Yes	Yes	Yes
			PMT PID	Specifies the PMT PID to be received.	1 ~ 1ffe	Yes	Yes	Yes
			PCR PID	Specifies the PCR PID to be received with manual mode selected.	1 ~ 1fff	Yes	Yes	Yes
			Video1 PID	Specifies the video PID to be received with manual mode selected.	1 ~ 1fff	Yes	Yes	Yes
			Video2 PID	Specifies the video PID (CSDC422) to be received with manual mode selected.	1 ~ 1fff	Yes	Yes	Yes
			Audio1-8 PID	Specifies the Audio1 to Audio8 PIDs to be received with manual mode selected.	1 ~ 1fff	Yes	Yes	Yes
			Ancillary PID	Specifies the ancillary PID to be received.	1 ~ 1fff	Yes	Yes	Yes
	Video & Audio	Video & Audio settings	Concealment time	Time limit beyond which no stream is recognized as received	5 ~ 600 seconds	Yes	Yes	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
			Display when no data receiving	Specifies the video output image used if no packet is received.	- Blue - Gray	Yes	Yes	Yes
			Error concealment	Specifies whether to use freeze control to prevent block noise when a packet loss occurs. * This setting is not worked during receiving “Ultra low latency” mode’s stream.	- Enable - Disable	Yes	Yes	Yes
			AV adjuster	Specifies the output adjustment time for audio.	0 ~ 200 ms	Yes	Yes	Yes
			Line21 CC for 480i/59.94	Specifies whether to transmit the video area of lines 21 to 258, 261, and 262 instead of the video area of lines 23 to 262 if the video output is 480i/59.94.	- Enable - Disable	Yes	Yes	Yes
			Ultra low latency	Specifies whether to recognize ultra low latency stream automatically. In case of setting “Enable”, ultra low latency stream is automatically recognized and switched the mode. In case of setting “Disable”, the decoder works as same as normal one.	- Enable - Disable	Yes	Yes	Yes
STATUS	Performance Stats	Intercom	DELETE PERFORMANCE DATA	Delete the statistical information on voice communication	-	Yes	Yes	No
		Serial Port1,2	DELETE PERFORMANCE DATA	Delete the statistical information on serial communication	-	Yes	Yes	No
		Encoder1,2	DELETE PERFORMANCE DATA	Delete the encoder statistical information	-	Yes	Yes	No
		Decoder1,2	DELETE PERFORMANCE DATA	Delete the decoder statistical information	-	Yes	Yes	No
	Logs		DELETE ALL LOGS	Delete all log information	-	Yes	Yes	No
CONFIGURATION	Backup&Restore	Backup configuration	BACKUP	Back up configuration data	-	Yes	No	No
		Restore configuration	RESTORE	Restore configuration data	-	Yes	No	No
	Load&Delete	Load configuration	LOAD	Load configuration data	-	Yes	Yes	Yes
		Copy configuration	COPY	Copy configuration data	-	Yes	No	No
		Delete configuration	DELETE	Delete configuration data	-	Yes	Yes	Yes
		Rename configuration	RENAME	Rename configuration data	-	Yes	Yes	No
-	-	-	Shutdown	Shutdown the equipment	-	No	No	Yes

Level 1	Level 2	Level 3	Item name	Item outline	Value	Setting via Web	Setting via SNMP	Setting via VFD
-	-	-	Date&Time	Set the date and time	-	No	Yes	Yes

Appendix 4 Intercom Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 4-1 Synchronize with

	Synchronize with				
AV Interface > Device settings > Mode	None	Encoder1	Encoder2	Decoder1	Decoder2
Encoder x 1	Yes	Yes			
Decoder x 1	Yes			Yes	
Encoder x 2	Yes	Yes	Yes		
Decoder x 2	Yes			Yes	Yes
Encoder x 1 Decoder x 1	Yes	Yes		Yes	
Decoder x 1 Encoder x 1	Yes	Yes		Yes	

Appendix 5 AV Interface Settings

Table Appendix 5-1 AV interface patterns

					Interface settings			
Mode	AV input	AV output	Encoder Dual link HD-SDI	Decoder Dual link HD-SDI	Slot1	Slot2	Slot3	Slot4
Encoder x 1	AV input x 1	-	Encoder Duallink x 0	-	SDI-IN	-	-	-
	AV input x 1	-	Encoder Duallink x 1	-	SDI-IN(Dual)	SDI-IN(Dual)	-	-
Decoder x 1	-	AV output x 1	-	Decoder Duallink x 0	SDI-OUT	-	-	-
	-	AV output x 1	-	Decoder Duallink x 1	SDI-OUT(Dual)	SDI-OUT(Dual)	-	-
	-	AV output x 2	-	Decoder Duallink x 0	SDI-OUT	-	SDI-OUT	-
	-	AV output x 2	-	Decoder Duallink x 2	SDI-OUT(Dual)	SDI-OUT(Dual)	SDI-OUT (Dual)	SDI-OUT(Dual)
	-	AV output x 3	-	Decoder Duallink x 0	SDI-OUT	SDI-OUT	SDI-OUT	-
	-	AV output x 4	-	Decoder Duallink x 0	SDI-OUT	SDI-OUT	SDI-OUT	SDI-OUT
Encoder x 2	AV input x 1	-	Encoder Duallink x 0	-	SDI-IN (Enc1&Enc2)	-	-	-
	AV input x 1	-	Encoder Duallink x 1	-	SDI-IN(Dual) (Enc1&Enc2)	SDI-IN(Dual) (Enc1&Enc2)	-	-
	AV input x 2	-	Encoder Duallink x 0	-	SDI-IN (Enc1)	-	SDI-IN (Enc2)	-
	AV input x 2	-	Encoder Duallink x 1	-	SDI-IN(Dual) (Enc1)	SDI-IN(Dual) (Enc1)	SDI-IN (Enc2)	-
	AV input x 2	-	Encoder Duallink x 2	-	SDI-IN(Dual) (Enc1)	SDI-IN(Dual) (Enc1)	SDI-IN(Dual) (Enc2)	SDI-IN(Dual) (Enc2)
Decoder x 2	-	AV output x 2	-	Decoder Duallink x 0	SDI-OUT (Dec1)	-	SDI-OUT (Dec2)	-
	-	AV output x 2	-	Decoder Duallink x 1	SDI-OUT(Dual) (Dec1)	SDI-OUT(Dual) (Dec1)	SDI-OUT (Dec2)	-
	-	AV output x 2	-	Decoder Duallink x 2	SDI-OUT(Dual) (Dec1)	SDI-OUT(Dual) (Dec1)	SDI-OUT (Dual) (Dec2)	SDI-OUT(Dual) (Dec2)
	-	AV output x 3	-	Decoder Duallink x 0	SDI-OUT (Dec1)	SDI-OUT (Dec1 or Dec2)	SDI-OUT (Dec2)	-
	-	AV output x 3	-	Decoder Duallink x 1	SDI-OUT(Dual) (Dec1)	SDI-OUT(Dual) (Dec1)	SDI-OUT (Dec2)	SDI-OUT (Dec2)
	-	AV output x 4	-	Decoder Duallink x 0	SDI-OUT (Dec1)	SDI-OUT (Dec1 or Dec2)	SDI-OUT (Dec2)	SDI-OUT (Dec1 or Dec2)

					Interface settings			
Mode	AV input	AV output	Encoder Dual link HD-SDI	Decoder Dual link HD-SDI	Slot1	Slot2	Slot3	Slot4
Encoder x 1 Decoder x 1	AV input x 1	AV output x 1	Encoder Duallink x 0	Decoder Duallink x 0	SDI-IN	-	SDI-OUT	-
	AV input x 1	AV output x 1	Encoder Duallink x 0	Decoder Duallink x 1	SDI-IN	-	SDI-OUT (Dual)	SDI-OUT(Dual)
	AV input x 1	AV output x 1	Encoder Duallink x 1	Decoder Duallink x 0	SDI-IN(Dual)	SDI-IN(Dual)	SDI-OUT	-
	AV input x 1	AV output x 1	Encoder Duallink x 1	Decoder Duallink x 1	SDI-IN(Dual)	SDI-IN(Dual)	SDI-OUT (Dual)	SDI-OUT(Dual)
	AV input x 1	AV output x 2	Encoder Duallink x 0	Decoder Duallink x 0	SDI-IN	-	SDI-OUT	SDI-OUT
	AV input x 1	AV output x 2	Encoder Duallink x 1	Decoder Duallink x 0	SDI-IN(Dual)	SDI-IN(Dual)	SDI-OUT	SDI-OUT
	AV input x 1	AV output x 3	Encoder Duallink x 0	Decoder Duallink x 0	SDI-IN	SDI-OUT	SDI-OUT	SDI-OUT
Decoder x 1 Encoder x 1	AV input x 1	AV output x 1	Encoder Duallink x 0	Decoder Duallink x 0	SDI-OUT	-	SDI-IN	-
	AV input x 1	AV output x 1	Encoder Duallink x 0	Decoder Duallink x 1	SDI-OUT(Dual)	SDI-OUT(Dual)	SDI-IN	-
	AV input x 1	AV output x 1	Encoder Duallink x 1	Decoder Duallink x 0	SDI-OUT	-	SDI-IN(Dual)	SDI-IN(Dual)
	AV input x 1	AV output x 1	Encoder Duallink x 1	Decoder Duallink x 1	SDI-OUT(Dual)	SDI-OUT(Dual)	SDI-IN(Dual)	SDI-IN(Dual)
	AV input x 1	AV output x 2	Encoder Duallink x 0	Decoder Duallink x 0	SDI-OUT	SDI-OUT	SDI-IN	-
	AV input x 1	AV output x 2	Encoder Duallink x 1	Decoder Duallink x 0	SDI-OUT	SDI-OUT	SDI-IN(Dual)	SDI-IN(Dual)
	AV input x 1	AV output x 3	Encoder Duallink x 0	Decoder Duallink x 0	SDI-OUT	SDI-OUT	SDI-IN	SDI-OUT

Appendix 6 Encoder Video Input Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 6-1 3G/HD/SD auto sensing

	3G/HD/SD auto sensing	
Encoder Dual link HD-SDI	Disable	Enable
Encoder Duallink x 0	Yes	Yes
Encoder Duallink x 1	Yes	
Encoder Duallink x 2	Yes	

Table Appendix 6-2 AV input format

		AV input format										
Encoder Dual link HD-SDI	3G/HD/SD auto sensing	1080p/59.94	1080p/50	1080p/60	1080i/59.94	1080i/50	1080i/60	720p/59.94	720p/50	720p/60	480i/59.94	576i/50
Encoder Duallink x 0	Disable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Enable											
Encoder Duallink x 1	Disable	Yes	Yes	Yes								
Encoder Duallink x 2	Disable	Yes	Yes	Yes								

Table Appendix 6-3 3G/HD > SD Downconverter

		3G/HD > SD Downconverter			
3G/HD/SD auto sensing	AV input format	Disable	Letter Box	Center Cut	Squeeze
Disable	1080p/59.94	Yes	Yes	Yes	Yes
	1080p/50	Yes	Yes	Yes	Yes
	1080p/60	Yes			
	1080i/59.94	Yes	Yes	Yes	Yes
	1080i/50	Yes	Yes	Yes	Yes
	1080i/60	Yes			
	720p/59.94	Yes	Yes	Yes	Yes
	720p/50	Yes	Yes	Yes	Yes
	720p/60	Yes			
	480i/59.94	Yes			
	576i/50	Yes			
Enable	-	Yes	Yes	Yes	Yes

Table Appendix 6-4 AV encode format

		AV encode format										
AV input format	3G/HD > SD Downconverter	1080p/59.94	1080p/50	1080p/60	1080i/59.94	1080i/50	1080i/60	720p/59.94	720p/50	720p/60	480i/59.94	576i/50
1080p/59.94	Disable	Yes										
	Other than above										Yes	
1080p/50	Disable		Yes									
	Other than above											Yes
1080p/60	-			Yes								
1080i/59.94	Disable				Yes							
	Other than above										Yes	
1080i/50	Disable					Yes						
	Other than above											Yes
1080i/60	-						Yes					
720p/59.94	Disable							Yes				
	Other than above										Yes	
720p/50	Disable								Yes			
	Other than above											Yes
720p/60	-									Yes		
480i/59.94	-										Yes	
576i/50	-											Yes

Table Appendix 6-5 AV encode format startup

	AV encode format startup										
3G/HD/SD auto sensing	1080p/59.94	1080p/50	1080p/60	1080i/59.94	1080i/50	1080i/60	720p/59.94	720p/50	720p/60	480i/59.94	576i/50
Disable											
Enable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 7 Reference Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 7-1 Reference input settings

	Decoder1			Decoder2			
Reference clock input	Reference clock input	PCR	Internal	Reference clock input	PCR	Internal	Decoder1
Tri-sync(HDSYNC)	Yes	Yes	Yes	Yes	Yes	Yes	
Bi-sync(Black Burst)	Yes	Yes	Yes	Yes	Yes	Yes	
Disable			Yes		Yes	Yes	
		Yes			Yes	Yes	Yes

Table Appendix 7-2 Reference clock output

		Reference clock output		
Reference clock input	Decoder1	Disable	Bi-sync(Black Burst)	Through out of reference clock input
Tri-sync(HDSYNC)	All	Yes		
Bi-sync(Black Burst)	Reference clock input	Yes		Yes*1
	Other than above	Yes		
Disable	PCR	Yes	Yes	
	Other than above	Yes		

*1 It is necessary to select "Through out of reference clock input" when you output the video that synchronizes with another Decoder.

Appendix 8 Serial Port Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 8-1 Serial port settings

	Type		IP version	
Mode	RS-232c	RS-422	IPv4	IPv6
Server mode	Yes	Yes	Yes	Yes
Client mode	Yes	Yes	Yes	Yes
Client mode(Modem)	Yes		Yes	

Table Appendix 8-2 Synchronize with

		Synchronize with		
AV Interface > Device settings > Mode	Mode	None	Decoder1	Decoder2
Encoder x 1	All	Yes		
Decoder x 1	Client mode(Modem)	Yes	Yes	
	Other than above	Yes		
Encoder x 2	All	Yes		
Decoder x 2	Client mode(Modem)	Yes	Yes	Yes
	Other than above	Yes		
Encoder x 1 Decoder x 1	Client mode(Modem)	Yes	Yes	
	Other than above	Yes		
Decoder x 1 Encoder x 1	Client mode(Modem)	Yes	Yes	
	Other than above	Yes		

Table Appendix 8-3 Flow control

		Flow control	
Mode	Type	None	RS/CS
Server mode	RS-232c	Yes	Yes
	RS-422	Yes	
Client mode	RS-232c	Yes	Yes
	RS-422	Yes	
Client mode(Modem)	RS-232c	Yes	

Appendix 9 Encoder Output Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 9-1 IP Protocol settings

	Acceptable stream number				ARP auto update		Protocol	
Streaming mode	1	2	3	4	Disable	Enable	RTP	UDP
Unicast(simplex)	Yes	Yes*1	Yes*1	Yes*1	Yes	Yes	Yes	Yes
Unicast	Yes	Yes*1	Yes*1	Yes*1	Yes		Yes	
Multicast	Yes				Yes		Yes	Yes

*1 No settings can be set the total IP bit rate exceeded 200Mbps.

Table Appendix 9-2 TS format

		TS format	
Streaming mode	Protocol	TTS	TS
Unicast(simplex)	RTP	Yes	Yes
	UDP		Yes
Unicast	RTP	Yes	
Multicast	RTP	Yes	Yes
	UDP		Yes

Table Appendix 9-3 IP output settings

			FEC		SMPTE2022 FEC			ARQ		ID control for unicast	
Streaming mode	Protocol	TS format	Disable	Enable	Disable	Enable (dual)	Enable (single)	Disable	Enable	Disable	Enable
Unicast(simplex)	RTP	TTS	Yes	Yes	Yes			Yes		Yes	
		TS	Yes		Yes	Yes	Yes	Yes		Yes	
	UDP	TS	Yes		Yes			Yes		Yes	
Unicast	RTP	TTS	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Multicast	RTP	TTS	Yes	Yes	Yes			Yes		Yes	
		TS	Yes		Yes	Yes	Yes	Yes		Yes	
	UDP	TS	Yes		Yes			Yes		Yes	

Appendix 10 Encoder Video Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 10-1 Video resolution

		Video resolution									
Video input	Profile	1920x1080	1440x1080	960x1080	1280x720	960x720	640x720	720x480	720x576	352x480	352x576
3G	Main(420 8bit)	Yes	Yes	Yes							
	High(420 8bit)	Yes	Yes	Yes							
	High(422 8bit)	Yes	Yes	Yes							
	High(422 10bit)	Yes	Yes	Yes							
HD	Main(420 8bit)	Yes	Yes	Yes	Yes	Yes	Yes				
	High(420 8bit)	Yes	Yes	Yes	Yes	Yes	Yes				
	High(CSC422 8bit)*1	Yes			Yes						
	High(422 8bit)	Yes	Yes	Yes	Yes	Yes	Yes				
	High(422 10bit)	Yes	Yes	Yes	Yes	Yes	Yes				
SD	Main(420 8bit)							Yes	Yes	Yes	Yes
	High(420 8bit)							Yes	Yes	Yes	Yes
	High(CSC422 8bit)*1							Yes	Yes		
	High(422 8bit)							Yes	Yes	Yes	Yes
	High(422 10bit)							Yes	Yes	Yes	Yes

*1 When "AV input format" is set to 60Hz, "High(CSC422 8bit)" cannot be selected in "Profile".

Table Appendix 10-2 GOP structure

Profile	GOP structure				
	Standard(IBBP)	Motion（IBP）	Low Latency(IPPP)	Low Latency(PPPP)	Ultra Low Latency(PPPP)
Main(420 8bit)	Yes	Yes	Yes	Yes	Yes
High(420 8bit)	Yes	Yes	Yes	Yes	Yes
High(CSC422 8bit)	Yes		Yes	Yes	
High(422 8bit)	Yes	Yes	Yes	Yes	Yes
High(422 10bit)	Yes	Yes	Yes	Yes	Yes

Table Appendix 10-3 Adaptive GOP

Profile	GOP structure	Adaptive GOP	
		Enable	Disable
Main(420 8bit)	Standard(IBBP)	Yes	Yes
	Motion（IBP）	Yes	Yes
	Low Latency(IPPP)		Yes
	Low Latency(PPPP)		Yes
	Ultra Low Latency(PPPP)		Yes
High(420 8bit)	Standard(IBBP)	Yes	Yes
	Motion（IBP）	Yes	Yes
	Low Latency(IPPP)		Yes
	Low Latency(PPPP)		Yes
	Ultra Low Latency(PPPP)		Yes
High(CSC422 8bit)	Standard(IBBP)		Yes
	Low Latency(IPPP)		Yes
	Low Latency(PPPP)		Yes
High(422 8bit)	Standard(IBBP)	Yes	Yes
	Motion（IBP）	Yes	Yes
	Low Latency(IPPP)		Yes
	Low Latency(PPPP)		Yes
	Ultra Low Latency(PPPP)		Yes
High(422 10bit)	Standard(IBBP)	Yes	Yes
	Motion（IBP）	Yes	Yes
	Low Latency(IPPP)		Yes
	Low Latency(PPPP)		Yes
	Ultra Low Latency(PPPP)		Yes

Table Appendix 10-4 Video PES for interlace

GOP structure	Video PES for interlace	
	1 field per PES	1 frame per PES
Standard(IBBP)	Yes	Yes
Motion（IBP）	Yes	
Low Latency(IPPP)	Yes	
Low Latency(PPPP)	Yes	
Ultra Low Latency(PPPP)	Yes	

Table Appendix 10-5 GOP cycle

AV encode format	GOP structure	GOP cycle		
		1cycle	2cycle	4cycle
1080p/59.94	Standard(IBBP)	30 frame M=3, N=30	60 frame M=3, N=60	120 frame M=3, N=120
	Motion（IBP）	28 frame M=2, N=28	56 frame M=2, N=56	112 frame M=2, N=112
	Low Latency(IPPP)	30 frame M=1, N=30	60 frame M=1, N=60	120 frame M=1, N=120
	Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
	Ultra Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
1080p/50	Standard(IBBP)	24 frame M=3, N=24	48 frame M=3, N=48	96 frame M=3, N=96
	Motion（IBP）	24 frame M=2, N=24	48 frame M=2, N=48	96 frame M=2, N=96
	Low Latency(IPPP)	24 frame M=1, N=24	48 frame M=1, N=48	96 frame M=1, N=96
	Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
	Ultra Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
1080p/60	Standard(IBBP)	30 frame M=3, N=30	60 frame M=3, N=60	120 frame M=3, N=120
	Motion（IBP）	28 frame M=2, N=28	56 frame M=2, N=56	112 frame M=2, N=112

AV encode format	GOP structure	GOP cycle		
		1cycle	2cycle	4cycle
	Low Latency(IPPP)	30 frame M=1, N=30	60 frame M=1, N=60	120 frame M=1, N=120
	Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
	Ultra Low Latency(PPPP)	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136	272 frame M=1, N=0, Refresh interval=272
1080i/59.94	Standard(IBBP)	15 frame M=3, N=15	30 frame M=3, N=30	60 frame M=3, N=60
	Motion（IBP）	14 frame M=2, N=14	28 frame M=2, N=28	56 frame M=2, N=56
	Low Latency(IPPP)	15 frame M=1, N=15	30 frame M=1, N=30	60 frame M=1, N=60
	Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136
	Ultra Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136
1080i/50	Standard(IBBP)	12 frame M=3, N=12	24 frame M=3, N=24	48 frame M=3, N=48
	Motion（IBP）	12 frame M=2, N=12	24 frame M=2, N=24	48 frame M=2, N=48
	Low Latency(IPPP)	12 frame M=1, N=12	24 frame M=1, N=24	48 frame M=1, N=48
	Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136
	Ultra Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136
1080i/60	Standard(IBBP)	15 frame M=3, N=15	30 frame M=3, N=30	60 frame M=3, N=60
	Motion（IBP）	14 frame M=2, N=14	28 frame M=2, N=28	56 frame M=2, N=56
	Low Latency(IPPP)	15 frame M=1, N=15	30 frame M=1, N=30	60 frame M=1, N=60
	Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136

AV encode format	GOP structure	GOP cycle		
		1cycle	2cycle	4cycle
	Ultra Low Latency(PPPP)	34 frame M=1, N=0, Refresh interval=34	68 frame M=1, N=0, Refresh interval=68	136 frame M=1, N=0, Refresh interval=136
720p/59.94	Standard(IBBP)	30 frame M=3, N=30	60 frame M=3, N=60	120 frame M=3, N=120
	Motion（IBP）	28 frame M=2, N=28	56 frame M=2, N=56	112 frame M=2, N=112
	Low Latency(IPPP)	30 frame M=1, N=30	60 frame M=1, N=60	120 frame M=1, N=120
	Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
	Ultra Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
720p/50	Standard(IBBP)	24 frame M=3, N=24	48 frame M=3, N=48	96 frame M=3, N=96
	Motion（IBP）	24 frame M=2, N=24	48 frame M=2, N=48	96 frame M=2, N=96
	Low Latency(IPPP)	24 frame M=1, N=24	48 frame M=1, N=48	96 frame M=1, N=96
	Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
	Ultra Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
720p/60	Standard(IBBP)	30 frame M=3, N=30	60 frame M=3, N=60	120 frame M=3, N=120
	Motion（IBP）	28 frame M=2, N=28	56 frame M=2, N=56	112 frame M=2, N=112
	Low Latency(IPPP)	30 frame M=1, N=30	60 frame M=1, N=60	120 frame M=1, N=120
	Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
	Ultra Low Latency(PPPP)	45 frame M=1, N=0, Refresh interval=45	90 frame M=1, N=0, Refresh interval=90	180 frame M=1, N=0, Refresh interval=180
480i/59.94	Standard(IBBP)	15 frame M=3, N=15	30 frame M=3, N=30	60 frame M=3, N=60
	Motion（IBP）	14 frame M=2, N=14	28 frame M=2, N=28	56 frame M=2, N=56

AV encode format	GOP structure	GOP cycle		
		1cycle	2cycle	4cycle
	Low Latency(IPPP)	15 frame M=1, N=15	30 frame M=1, N=30	60 frame M=1, N=60
	Low Latency(PPPP)	30 frame M=1, N=0, Refresh interval=30	60 frame M=1, N=0, Refresh interval=60	120 frame M=1, N=0, Refresh interval=120
	Ultra Low Latency(PPPP)	30 frame M=1, N=0, Refresh interval=30	60 frame M=1, N=0, Refresh interval=60	120 frame M=1, N=0, Refresh interval=120
576i/50	Standard(IBBP)	12 frame M=3, N=12	24 frame M=3, N=24	48 frame M=3, N=48
	Motion（IBP）	12 frame M=2, N=12	24 frame M=2, N=24	48 frame M=2, N=48
	Low Latency(IPPP)	12 frame M=1, N=12	24 frame M=1, N=24	48 frame M=1, N=48
	Low Latency(PPPP)	36 frame M=1, N=0, Refresh interval=36	72 frame M=1, N=0, Refresh interval=72	144 frame M=1, N=0, Refresh interval=144
	Ultra Low Latency(PPPP)	36 frame M=1, N=0, Refresh interval=36	72 frame M=1, N=0, Refresh interval=72	144 frame M=1, N=0, Refresh interval=144

M=anchor picture interval, N=I picture interval

Appendix 11 Encoder Audio Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 11-1 Audio settings

	Channel mode *1				frame			Stream number						
Format	Mono	Dual mono	Stereo	5.1	Left	Right	Left&Right	0	1	2	3	4	5	6
MPEG1 Layer 2	Yes	Yes	Yes											
MPEG2 AAC	Yes	Yes	Yes	Yes										
MPEG4 AAC	Yes	Yes	Yes	Yes										
MPEG4 HE-AAC V1	Yes	Yes	Yes	Yes										
Pass-thru (SMPTE302M)														
Pass-thru (AC-3/ATSC)					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pass-thru (AC-3/DVB)					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*1 Channel mode, “5.1” can be selected only at Audio1 and Audio5.

Table Appendix 11-2 Quantization bit settings

	Quantization bit for 3G/HD			Quantization bit for SD	
Format	16	20	24	16	20
MPEG1 Layer 2	Yes			Yes	
MPEG2 AAC	Yes			Yes	
MPEG4 AAC	Yes			Yes	
MPEG4 HE-AAC V1	Yes			Yes	
Pass-thru(SMPTE302M)	Yes	Yes*1	Yes	Yes	Yes*1
Pass-thru(AC-3/ATSC)	Yes			Yes	
Pass-thru(AC-3/DVB)	Yes			Yes	

*1. Please set "20 bit" when if it connects the decoder of IP-9500 series equipments.

Table Appendix 11-3 Audio bit rate

		Bit rate(kbps)																			
Format	Channel mode	24	56	64	80	96	112	128	160	192	224	256	320	384	448	512	576	640	1920	2304	2688
MPEG-1 Layer2	Mono			Yes				Yes		Yes											
	Dual mono/Stereo							Yes				Yes		Yes							
MPEG-2/4 AAC	Mono							Yes		Yes											
	Dual mono/Stereo							Yes				Yes		Yes							
	5.1											Yes	Yes			Yes		Yes			
MPEG-4 HE-AAC V1	Mono	Yes		Yes																	
	Dual mono			Yes		Yes		Yes													
	Stereo			Yes		Yes															
	5.1					Yes		Yes	Yes												
Pass-thru(SMPTE302M)	-																		Yes	Yes	Yes
Pass-thru(AC-3/DVB)	-		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Pass-thru(AC-3/ATSC)	-		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			

Table Appendix 11-4 Major ISO 639-2 language codes

Language	3-character language 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
No specification	Blank

*1 Two codes are assigned to one language.

Appendix 12 Ancillary Data Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 12-1 Data select

	Data select	
Data format	Byte	DID/SDID
Private PES	Yes	Yes
ATSC CC		

Table Appendix 12-2 Private PES settings

	Byte size	VITC data		CC data	
Data select		Enable	Disable	Enable	Disable
Byte	100 to 3000 bytes				
DID/SDID		Yes	Yes	Yes	Yes

Table Appendix 12-3 DID/SDID

			DID/SDID		
Data select	VITC data	CC data	DID/SDID1 to DID/SDID6	DID/SDID7	DID/SDID8
Byte	-	-			
DID/SDID	Enable	Enable	Yes		
		Disable	Yes	Yes	
	Disable	Enable	Yes	Yes	
		Disable	Yes	Yes	Yes

Appendix 13 Decoder IP Output Settings

Key: Item name : Setting item Item name : Condition item
Yes: Selectable

Table Appendix 13-1 Decoder stream input settings

	ARQ		SMPTE2022 FEC		ID control for unicast	
Streaming mode	Disable	Enable	Disable	Enable	Disable	Enable
Unicast(simplex)	Yes		Yes	Yes	Yes	
Unicast	Yes	Yes	Yes		Yes	Yes
Multicast	Yes		Yes	Yes	Yes	

Appendix 14 Port Numbers Used

Table Appendix 14-1 Port numbers used

Description			Port number (initial value)	Remarks
Intercom	UDP port server	UDP reception port number used for intercom	1024 ~ 64000 (7000)	(*1)
	UDP port client	UDP source port number used for intercom	0,1024 ~ 64000 (0) (*2)	
		UDP destination port number used for intercom	1024 ~ 64000 (7000)	
Serial	TCP port server	TCP reception port number used for IP communication	1024 ~ 64000 (6000)	
	TCP port client	TCP source port number used for IP communication	0,1024 ~ 64000 (0) (*2)	
		TCP destination port number used for IP communication	1024 ~ 64000 (6000)	
Encoder	Streaming UDP port	UDP source port number for IP streaming	0,1024 ~ 64000 (0) (*2)	
		UDP destination port number for IP streaming	1024 ~ 64000 (5000)	
	ARQ control port	Port number of ARQ control packet source	[UDP source port number for IP streaming] + 1 (automatic setting)	
		Port number of ARQ control packet destination	[UDP destination port number for IP streaming] + 1 (automatic setting)	
	SMPTE2022 FEC port	Port number of SMPTE2022 FEC source	Same as [UDP source port number for IP streaming]	
		Port number of SMPTE2022 FEC destination	[UDP destination port number for IP streaming] + 2 (automatic setting) [UDP destination port number for IP streaming] + 4 (automatic setting)	
	Unicast request UDP port	Port number for receiving unicast streaming requests	1024 ~ 64000 (9900)	
Decoder	Streaming UDP port	UDP reception port number for IP streaming	1024 ~ 64000 (5000)	
	ARQ control port	Port number for receiving ARQ control packets	[UDP reception port number for IP streaming] + 1	
	SMPTE2022 FEC port	SMPTE2022 FEC reception port number	[UDP reception port number for IP streaming] + 2 (automatic setting) [UDP reception port number for IP streaming] + 4 (automatic setting)	

Description			Port number (initial value)	Remarks
Decoder	Unicast request UDP port	Port number of unicast streaming request source	0,1024 ~ 64000 (0) (*2)	
		Port number of unicast streaming request destination	1024 ~ 64000 (9900)	
HTTP	Port for Web GUI access		80	
DHCP(Client)	Port for IP address acquisition via DHCP		68	
NTP	Port for time synchronization with time server		123	
SNMP	SNMP MIB reception port		161	
SNMP(TRAP)	SNMP trap destination port		162	

*1: Depends on the setting. You can set a port number within the range shown.
*2: When the specified port number is 0, a port number ranged from 64100 to 65000 is automatically assigned.

Glossary

AAC（Advanced Audio Coding）

An audio encoding scheme used with the MPEG-2 and MPEG-4 video compression standards. AAC was standardized as ISO 13818-7 in April 1997.AAC has superior compression efficiency and supports sampling frequencies of up to 96 kHz.

AC-3

An audio encoding scheme developed by Dolby Laboratories, Inc. in the United States. AC-3 is also called 5.1 Channel Surround because it consists of five independent audio channels and one channel dedicated to low-frequency sound.

AES/EBU

AES (Audio Engineering Society) and EBU (European Broadcasting Union) standardized for the professional digital audio input/output (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.

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)

Error correction method that error packet will be resent automatically when packet error is detected at receiver (Decoder) side.

Auto Sensing

A function that automatically recognizes input signals and starts or stops encoding accordingly. This product supports the 3G-SDI, HD-SDI, and SD-SDI formats at 50/59.94 Hz for auto sensing.

BB (Black Burst)

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

BISS (Basic Interoperable Scrambling System)

A scrambling system formulated by the EBU in May 2002. This system has three 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.

BNC (Bayonet Neill Concelman)

One of the coaxial cable connecters has 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.

CAT (Conditional Access Table)

This is the information table to support the limited receiving.

CC (Closed Caption)

Data for Broadcast Captioning. It is multiplexed at ancillary data area, virtual or horizontal blanking area of video signal, in HD/SD-SDI signal.

Center Cut

One of the methods to downconvert video source of screen size ratio (aspect ratio) is from 16:9 to 4:3. The resulting image has both left and right sides cropped.

CSC422 (Chroma Scalable Coding 422)

A 4:2:2 encoding system unique to the IP-9610. 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 streams and a 0:0:2 video streams. The 4:2:0 video streams include a brightness signal and low-frequency color-difference signal. The 0:0:2 video streams include only a high-frequency color-difference signal. Then, the encoder encodes two video streams. The 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.

DID/SDID

A DID (Data IDentifier word for ancillary data) or SDID (Secondary Data IDentifier word) identifies the type of user data transmitted in an ancillary data packet.

Downconverter

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

Dual-Link SDI

A video transmission scheme can transmit video images at a bit rate of 2.970 Gbps through two coaxial cables.

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

This is the 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.

Embedded Audio

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

Encrypted session word

A 16-character (64 bit) word is 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.

FEC (Forward Error Correction)

In addition to the sending packet, a method is that the sender transmits redundant packet to the receiver for error correction. It enables the receiver to correct errors without the need to request the sender for retransmission.

GOP (Group Of Pictures)

Smallest structural equipment is composed of a movie. A GOP consists of three types of frames: I frame, P frame, and B frame.

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.

HE-AAC (High-Efficiency Advanced Audio Coding)

An extension to MPEG-4 AAC.HE-AAC provides very high sound quality at 64 kbit/s and even lower bit rates.

H.264

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

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 Interter frame. Frame encoded by using previous and next coming I frame or P frame.

Injected ID

A 14-character (56-bit) ID is 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 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 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-9610.

IP-9610 Software

The name of the IP-9610 control software.

Language Code

A code is for identifying the language of a transmitted audio stream. A language is represented by a three-character code defined in ISO 639 Part 2.

LED (Light-Emitting Diode)

The IP-9610 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 the methods to downconvert video source of screen size ratio (aspect ratio) is from 16:9 to 4:3. The resulting image has black bars at both upper/down parts of the video.

MLD v1 (Multicast Listener Discovery version 1)

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

MLD v2 (Multicast Listener Discovery version 2)

A protocol 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 addresses (or addresses that are not specific origination addresses).

MPEG-4

Video data compressing method 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 is 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 has the 13 bits information, included in TS packet.

Pillarboxing

A video conversion method converts video images from 4:3 to 16:9 by shrinking the original image, placing it in the middle of the screen, and adding blank bars on both sides.

PMT (Program Map Table)

ID table identifies audio, video, and so on.

PPS (Picture Parameter Set)

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

Pre-Filter

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

Private PES

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

Profile

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

Program Clock Reference (PCR)

A clock is referenced by a MPEG-2 transports streams to synchronize the transmitter (encoder) and receiver (decoder) clocks and thus is synchronized encoding and decoding.

Program Number/Service ID

ID for identifying a channel (service) is 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

Pro-MPEG FEC is FEC method which is standardized by Pro-MPEG Forum (Professional-MPEG Forum). Redundancy packets of 2-dimensions (Column x Row) are transmitted. It is already standardized as "SMPTE2022-1".

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.)

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.

RS-232C

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

RS-422

A serial communication standard is standardized by the Electronic Industries Alliance (EIA). RS-422 can make transmission robust against noise. It supports cable lengths of up to 1.2 km and communication speeds of up to 10 Mbps.

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 is 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 is specified by the user in BISS MODE 1. The specified session word is used for encryption or decryption in BISS MODE 1.

SMPTE2022-1 FEC

The same FEC method as described in "Pro-MPEG FEC". Redundancy packets of 2-dimensions (Column x Row) are transmitted.

SNMP v1 (Simple Network Management Protocol version 1)

Communication protocol is 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 is 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.

Squeezing

A video conversion method converts video images from 16:9 to 4:3 by horizontally compressing the original image.

Symbol Rate

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

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.

TOS (Type Of Service)

Type of service 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 when sync signal shrinks by the signal attenuation.

TS (Transport Stream)

Abbreviation of Transport Stream and 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 broadcast errors may occur.

TSC (Transport Scrambling Control)

A field in MPEG-2 TS header information 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.

Unicast

Communication method with a station at a single address; that is, most general one-to-one communication.)

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 equipment system as a reference value, making adjustments that insert leap seconds to compensate for the time difference from Greenwich Mean Time (GMT.)

VFD (Vacuum Fluorescent Display)

A display device that uses light-emitting phosphors to display characters. The characters have excellent visibility because the emitted light is in the shape of the characters.

VITC (Vertical Interval Time Code)

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

3G-SDI

A family of interfaces used in the high-definition video transmission required for 1080p and digital cinema. With a transmission capacity as high as 3 Gbps, 3G-SDI enables transmission of 1080/60p signals through a single BNC cable.

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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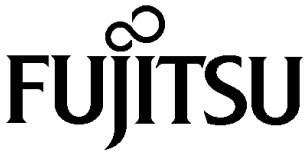
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