
**User's
Manual**

**Contents Recorder & Player
VT3000E**

Thank you for purchasing the Contents Recorder & Player VT3000E. This User's Manual contains useful information about the precautions, functions, and operating procedures of the instrument. To ensure correct use, please read this manual thoroughly before operation. Keep this manual in a safe place for quick reference in the event a question arises.

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions. Illustrated screen contents in this manual may differ slightly from what actually appears on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Copying or reproducing all or any part of the contents of this manual without YOKOGAWA's permission is strictly prohibited.
- The warranty card is included in the packing box, and replacement cards will not be provided. Please read the warranty carefully, and keep the card in a safe place.

Trademarks

- MS-DOS is a registered trademark of Microsoft Corporation.
- Other company and product names are trademarks or registered trademarks of their respective holders.

Revisions

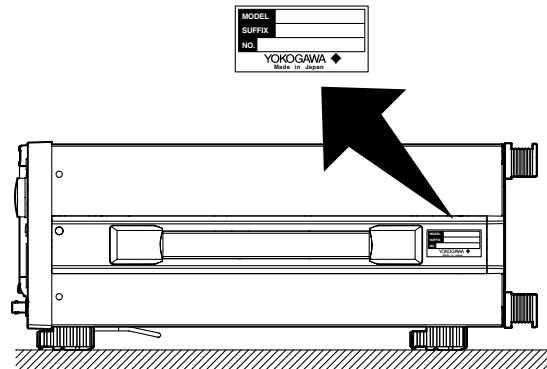
- 1st Edition July 2001

Checking the Contents of the Package

Unpack the box and check the contents before operating the instrument. If some of the contents are not correct, are missing, or are physically damaged, contact the dealer from which you purchased them.

VT3000E

Check that the model name and suffix code given on the name plate on the rear panel match those on the order.



MODEL

7065351	channel output model, 256 MB memory
7065362	channel output model, 256 MB memory per channel
7065373	channel output model, 256 MB memory per channel

SUFFIX

Specifications	Code	Notes
Power cord	-M	UL/CSA Standard power cord (Part No.: A1006WD and A1253JZ) [Maximum rated voltage: 125 V, Maximum rated current: 7 A]
	-D	UL/CSA Standard power cord (Part No.: A1006WD)
	-F	VDE Standard power cord (Part No.: A1009WD) [Maximum rated voltage: 250 V, Maximum rated current: 10 A]
	-R	AS Standard power cord (Part No.: A1024WD) [Maximum rated voltage: 240 V, Maximum rated current: 10 A]
	-J	BS Standard power cord (Part No.: A1023WD) [Maximum rated voltage: 250 V, Maximum rated current: 5 A]
	-Q	BS Standard power cord (Part No.: A1054WD) [Maximum rated voltage: 250 V, Maximum rated current: 10 A]
Options	/HD1	30 GB HDD option
	/BS1	BS digital multiplexing plug-in software
	/M11	Additional 256 MB of memory to ch1 (512 MB total)
	/M13	Additional 768 MB of memory to ch1 (1024 MB total)
	/M21	Additional 256 MB of memory to ch2 (512 MB total)
	/M23	Additional 768 MB of memory to ch2 (1024 MB total)
	/M31	Additional 256 MB of memory to ch3 (512 MB total)
	/M33	Additional 768 MB of memory to ch3 (1024 MB total)

NO. (Instrument Number)

When contacting the dealer from which you purchased the instrument, please quote the instrument number.

Standard Accessories

The following standard accessories are supplied with the instrument:

Part Name	Part Number	Quantity	Notes
1. Power cord	A1006WD	1	UL/CSA Standard
	A1009WD	1	VDE Standard
	A1024WD	1	AS Standard
	A1023WD	1	BS Standard straight type
	A1054WD	1	BS Standard angle type
2. Rubber feet for the hind feet	A9088ZM	1	Two rubber feet in one set
3. User's Manual	IM706535-01E	1	User's Manual (this manual)

Optional Accessories (Sold Separately)

The accessories in the chart below are sold separately. For information and ordering, contact your dealer.


Part Name	Part Number	Quantity	Notes
BNC cable	366924	1	BNC-BNC, length: 1 m
BNC cable	366925	1	BNC-BNC, length: 2 m
Rack mount kit	751535-E4	1	For EIA single mount
Rack mount kit	751535-J4	1	For JIS single mount


Safety Precautions


This instrument is an IEC safety class 1 instrument (provided with terminal for protective earth grounding).


The following general safety precautions must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. YOKOGAWA Electric Corporation assumes no liability for the customer's failure to comply with these requirements.


The following symbols are used on this instrument.


 "Handle with care." To avoid injury, death, or damage to the instrument, the operator must refer to the explanation in the User's Manual or Service Manual.

 Alternating current

 ON (power)

 OFF (power)

 ON (power) state

 OFF (power) state

Make sure to comply with the safety precautions listed below. Failure to comply might result in injury or death.

WARNING

Power Supply

Ensure that the source voltage matches the voltage of the power supply before turning ON the power.

Power Cord and Plug

To prevent the possibility of electric shock or fire, be sure to use the power cord supplied by YOKOGAWA. The main power plug must be plugged into an outlet with a protective earth terminal. Do not invalidate this protection by using an extension cord without protective earth grounding.

Protective Grounding

Make sure to connect the protective grounding to prevent electric shock before turning ON the power. The power cord that comes with the instrument is a three-pin type power cord. Connect the power cord to a properly grounded three-pin outlet.

Necessity of Protective Grounding

Never cut off the internal or external protective earth wire or disconnect the wiring of the protective earth terminal. Doing so poses a potential shock hazard.

Defect of Protective Grounding

Do not operate the instrument when the protective earth or the fuse might be defective. Also, make sure to check them before operation.

Do Not Operate in Explosive Atmosphere

Do not operate the instrument in the presence of flammable liquids or vapors. Operation in such environments is very dangerous.

Do Not Remove Covers

Some areas inside the instrument have high voltages. The cover should be removed by YOKOGAWA's qualified personnel only.

External Connection

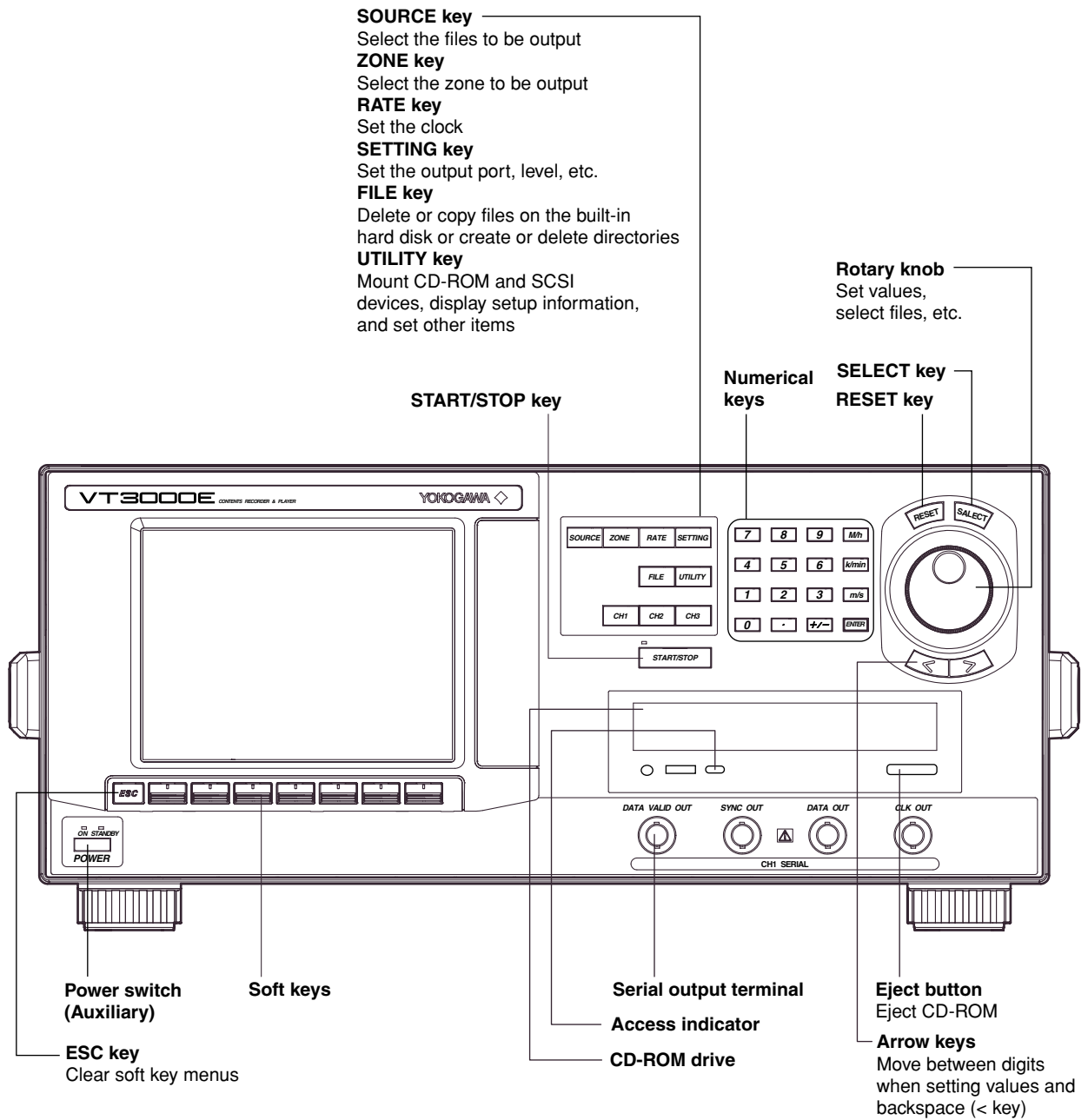
Connect the protective grounding before connecting to the item under measurement or to an external control unit.

Contents

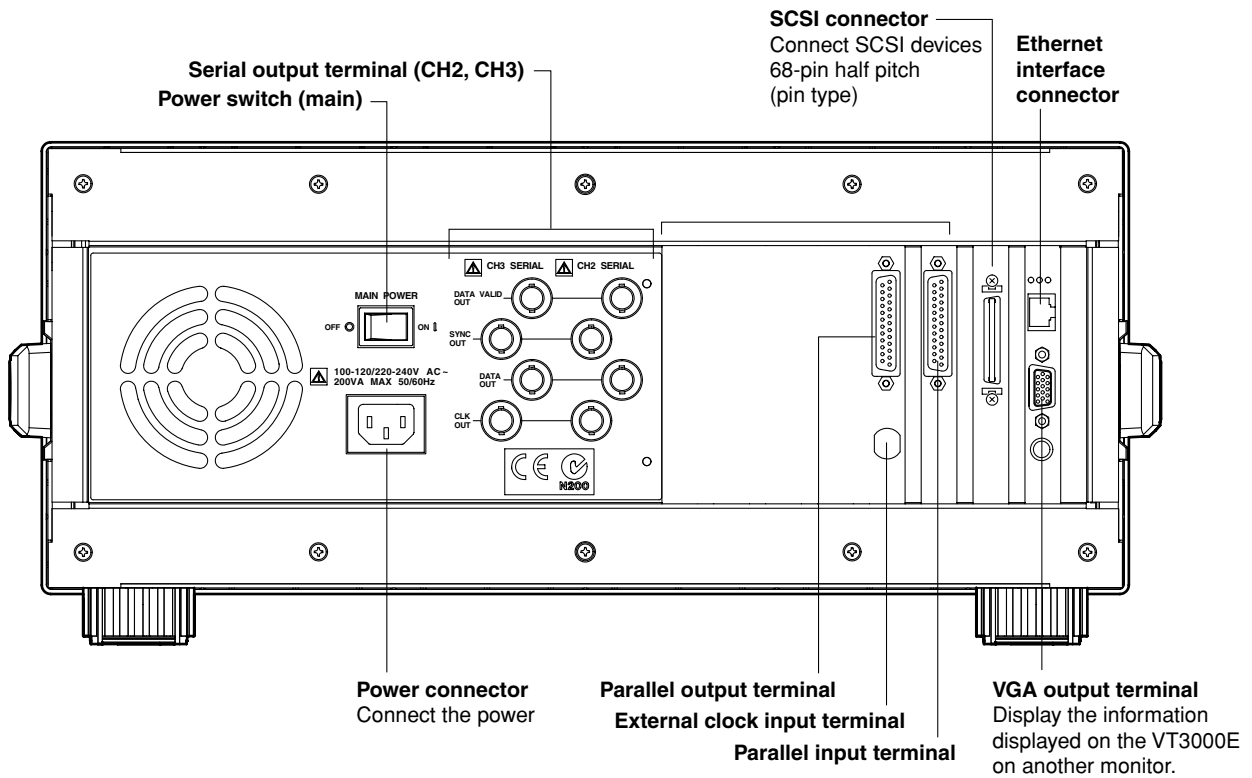
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1.1 Front Panel



1.2 Rear Panel



1.3 Functions

Overview

The VT3000E is a signal generator and recorder for testing transport stream (TS) complying with the MPEG2-System Standard. It can be used to evaluate or test set-top boxes (STB) for digital satellite broadcast, digital CATV, and digital ground-based broadcast and bit stream recording devices such as D-VHS and DVD.

MPEG2 Transport Stream (TS) Output Function

This function continuously outputs a TS complying with the ISO/IEC13818-1 MPEG-System from an arbitrary start address to an arbitrary end address at up to 56.61 Mbps. The three available output modes are listed below. The content that is output is created by the user.

Memory output

Transfers the TS from the built-in hard disk to the memory (DIMM) and then outputs the stream from the memory. Stable output is obtained, because it does not directly depend on the I/O throughput of the hard disk. Because this output mode does not depend on the size of the hard disk, you can output the stream for a long period of time. However, because the stream is transferred from the hard disk to the memory, delay occurs from the time the operation is initiated to the time the stream is actually output.

HDD output

Outputs the TS directly from the hard disk. You can output contents as large as the size of the hard disk without any delay. This places a heavy burden on the hard disk.

Quick output

The initial output comes from the hard disk. The TS is simultaneously transferred to the memory. Because the stream is output from the memory after the first time or when it is restarted, no delay is present and the output stream is relatively stable.

Seamless Process

Use this function when you need to output an unbroken stream such as when repetitively outputting the TS.

This function carries out time stamping and seamless processing of VIDEO and AUDIO data.

Remote Diagnoses

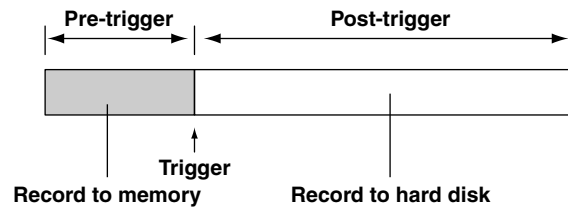
The VT3000E is provided with a browsing function that allows the content of the TS to be checked from a remote place. The recorded TS content and TMCC table, etc. can be referenced from anywhere if only a PC is available which has a network (Ethernet) environment and Web browser installed.

Recording Function

This function enables you to record contents from the DVB parallel terminal. The recorded contents are stored on the disk, and can be output. They can also be transmitted and saved to a SCSI device or to a PC via SCSI or Ethernet. In addition, you can start the recording operation by applying an external trigger signal. The following two recording modes are available:

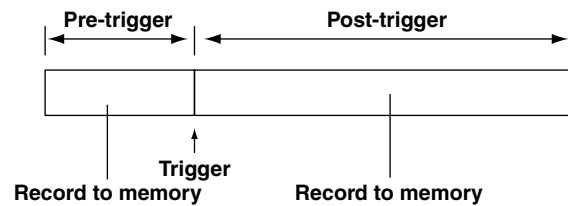
Hard disk recording mode

Stores the pretrigger section of data to the memory. After the posttrigger section is saved to the hard disk, it is merged with the pretrigger section recorded in memory and saved as one file. You can record a large amount of contents in this mode.



Memory recording mode

Records all contents to the memory. After the pretrigger and posttrigger data have been recorded, both sets of data are merged and saved as one file to the hard disk. Stable recording is achieved, because the hard disk is not used.



Multi-channel function

With the 2CH and 3CH models (706536 and 706537), it is possible to perform setting, recording and reproduction for each channel independently.

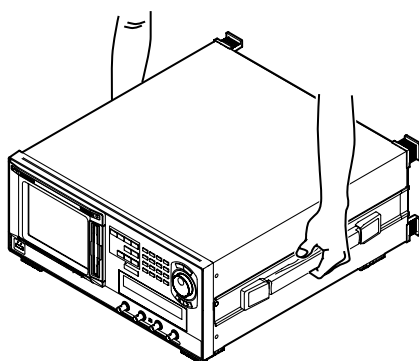
2.1 Usage Precautions on the Use of the Instrument

Safety Precautions

- If you are using this instrument for the first time, make sure to thoroughly read the “Safety Precautions” given on page iv.
- Do not remove the cover from the instrument. Some sections inside the instrument have high voltages that are extremely dangerous. For internal inspection or adjustment, contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Never continue to use the instrument if there are any symptoms of trouble such as strange odors or smoke coming from the instrument. In such cases, immediately turn OFF the power and unplug the power cord. Then, contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Nothing should be placed on top of the power cord. The power cord should also be kept away from any heat sources. When unplugging the power cord from the outlet, never pull by the cord itself. Always hold and pull by the plug. If the power cord is damaged, contact your dealer for replacement.

General Handling Precautions

- Never place any objects containing water on top of the instrument. A water spill can lead to malfunction of the instrument.
- Do not apply shock or vibration to the instrument. This can lead to malfunction. Take extra caution because the built-in hard disk is sensitive to vibration and shock. In addition, applying shock to the input terminal or the connected cable can cause electrical noise to enter the instrument.
- Do not bring charged objects near the input/output terminals. This can lead to malfunction.
- If you are not going to use the instrument for a long period of time, unplug the power cord from the outlet.
- When the instrument is not being used for an extended period of time, unplug the power cord from the outlet. The instrument weighs approximately 8 kg. To carry the instrument, use the handle as shown in the figure below, and move it with care.

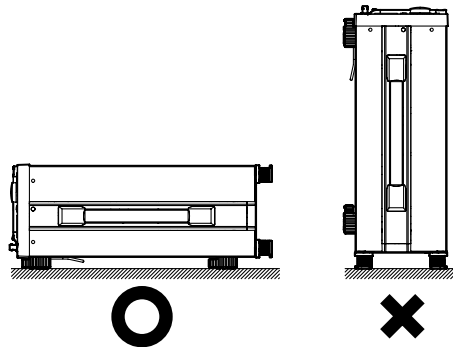


- Be careful not to scratch the surface of the LCD with sharp objects. This can lead to malfunction.
- When cleaning the case or the operation panel, first remove the power cord from the outlet. Then, wipe with a dry, soft cloth. Do not use volatile chemicals as this may cause discoloring and deformation.

2.2 Installing the Instrument

WARNING

To avoid the possibility of fire, never use the instrument with the rear side facing down, as the cooling vents will be obstructed. Placing the instrument with the rear side down can cause a fire when the instrument malfunctions. If you must use the instrument with the rear side down, place a metal plate or a flame-resistant barrier (grade UL94V-1 or higher) beneath the instrument.



Installation Condition

Install the instrument in a place that meets the following conditions:

Ambient temperature and humidity

Use the instrument in the following environment:

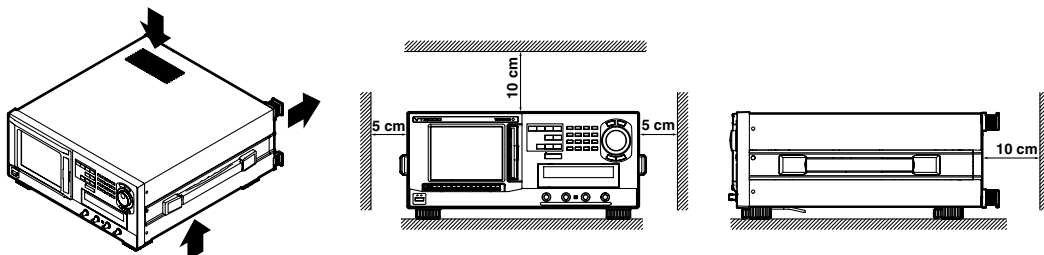
- Ambient temperature: 5 to 40°C
However, in order to obtain highly accurate measurements, operate the instrument in the $23 \pm 5^\circ\text{C}$ temperature range.
- Ambient humidity: 20 to 80% RH
No condensation should be present. However, in order to obtain highly accurate measurements, operate the instrument in the $55 \pm 10\%$ RH range.

Note

Condensation may occur if the instrument is moved to another place where the ambient temperature is higher, or if the temperature changes rapidly. In this case, let the instrument adjust to the new environment for at least an hour before using the instrument.

Well-ventilated location

Vent holes are located on the top and bottom of the instrument. In addition, vent holes for the cooling fan are located on the rear. To prevent internal overheating, allow for enough space around the instrument (see the figure below) and do not block the vent holes.



Do not install the instrument in the following places:

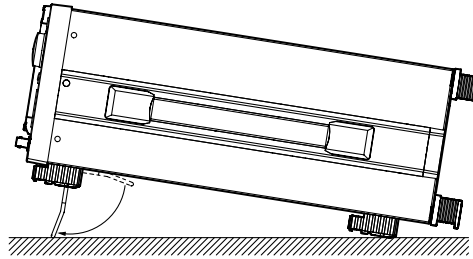
- In direct sunlight or near heat sources.
- Where an excessive amount of soot, steam, dust, or corrosive gases are present.
- Near strong magnetic field sources.
- Near high voltage equipment or power lines.
- Where the level of mechanical vibration is high.
- In an unstable location.

Installation Position

Place the instrument in a horizontal position or inclined position using the stand as shown in the figure below.

When using the stand, pull it forward until it locks (perpendicular to the bottom surface of the instrument). If you are installing the instrument on a slippery surface, attach the rubber feet (two pieces, included in the package) to the hind feet.

If you are not using the stand, return it to the original position while pressing the leg section of the stand inward.



2.3 Connecting the Power Supply

Before Connecting the Power Supply

Follow the warnings below when connecting the power supply. To prevent the possibility of electric shock and damaging the instrument, follow the warnings below.

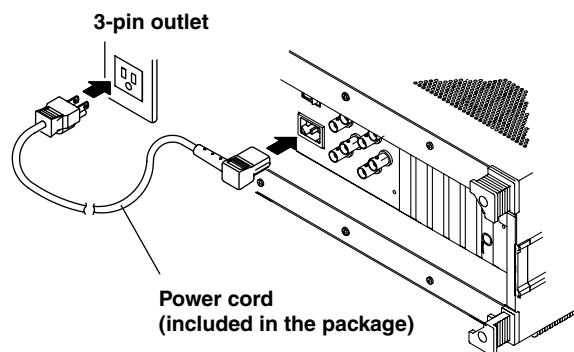
WARNING

- Ensure that the supply voltage matches the rated supply voltage of the instrument before connecting the power cable.
- Check that the power switch is turned OFF before connecting the power cord.
- To prevent the possibility of electric shock or fire, be sure to use the power cord supplied by YOKOGAWA.
- Make sure to perform protective earth grounding to prevent the possibility of electric shock. Connect the power cord to a properly grounded three-pin outlet.
- To minimize the possibility of electric shock, do not use an extension cord without a protective earth ground.

Connection Procedure

1. Check that the power switch on the rear panel is OFF.
2. Connect the power cord plug to the power connector on the rear panel. (Use the power cord that came with the package.)
3. Connect the plug on the other end of the power cord to the socket that meets the conditions below. The AC outlet must be of a three-pin type with a protective earth terminal.

Rated supply voltage:	100 to 120 VAC
Permitted supply voltage range:	90 to 132 VAC
Rated supply voltage frequency:	50/60 Hz
Permitted supply voltage frequency range:	48 to 63 Hz
Maximum power consumption:	200 VA
Power cord (included in the package)	



2.4 Turning ON/OFF the Power Switch

Things to Check before Turning ON the Power Switch

- The instrument is properly installed.
- The power cord is properly connected.

Location of the Power Switch and ON/OFF Operation

There are two power switches on the instrument.

- The main switch on the rear panel
- The sub switch at the lower left corner on the front panel

Turning ON the power

Turn ON the main switch on the rear panel and then the sub switch on the front panel to start up the VT3000E. The instrument will be ready approximately 90 s after you turn ON the sub switch.

CAUTION

Do not turn OFF the power until the instrument has finished the start-up cycle. Otherwise, the hard disk or the files on it may be damaged.

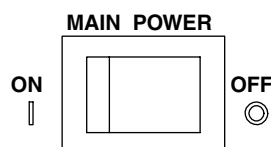
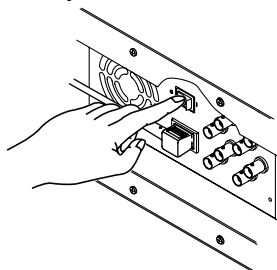
Turning OFF the power

To turn OFF the power, press the sub power switch on the front panel. Approximately 20 s later the STANBY LED will light, indicating that the instrument has gone into standby condition. Once the instrument has gone into standby condition, turn OFF the main power switch on the rear panel.

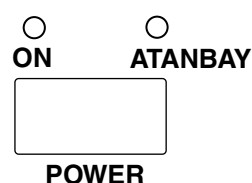
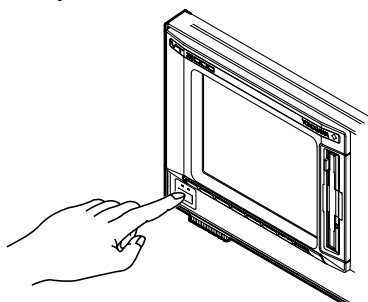
CAUTION

Do not turn OFF the main power switch until the instrument is in the standby condition after pressing the sub switch. Otherwise, the hard disk or the files on it may be damaged.

Main power switch



Sub power switch



2.4 Turning ON/OFF the Power Switch

Power Up Operation

When the power switch is turned ON, BIOS and LINUX startup messages are displayed. Front panel key operations are disabled during this period.

Note

- If the VT3000E does not start up even if you turn ON the main switch, turn OFF the main switch and check the following points:

- Is the power cord securely connected?
- Is the correct voltage coming from the power outlet?

If the instrument still fails to power up after checking these points, it is probably a malfunction. Please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual for repairs.

- If the voltage level of the lithium battery used to store information falls below a minimum level, the VT3000E will fail to operate properly such as inaccurate display of date and time and inability to save or recall setup data. If these symptoms appear, you must quickly replace the lithium battery. The user cannot replace the battery. For battery replacement, contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
-

Operation when Sub Switch is OFF

Turning OFF the sub switch shows a BIOS and LINUX shutdown message.

Note

The following message may appear in the shutdown message.

Shutting down SMB services: [FAILED (red characters)]

This is the message for when the SMB (Samba) server is shut down and the Samba server is started when the client sends a request. Therefore, this message appears if there is no access to the Samba server after the VT3000E is started until the shutdown, but this is not an error.

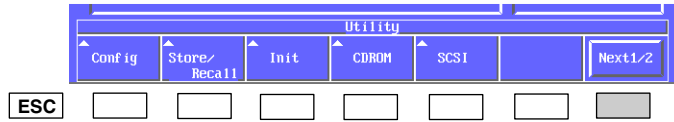
Warm Up

In the installation condition indicated in section 2.2, allow the instrument to warm up for at least 30 minutes after the power switch is turned ON

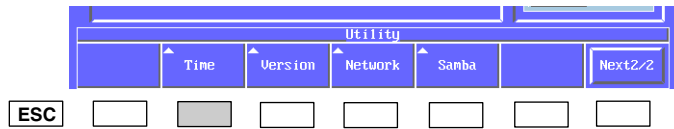
2.5 Setting the Date and Time

Procedure

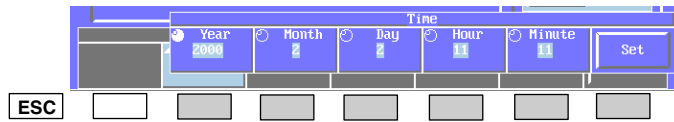
1. Press the UTILITY key to display the Utility menu.
2. Press the [Next1/2] soft key to display the next menu.



3. Press the [Time] soft key to display the Time menu.



4. Press the [Year], [Month], [Day], [Hour], and [Minute] soft keys and set the date and time using the rotary knob.
5. Press the [Set] soft key to confirm the changes.



2.5 Setting the Date and Time

Explanation

Setting the date

Set the Year/Month/Day.

- Year
Range: 1999 to 20037
- Month
Range: 1 to 12
- Day
Range: 1 to 31

Setting the time

Set the Hour/Minute.

- Hour
Range: 0 to 23
- Minute
Range: 0 to 59
Seconds will be set to 00 when you press the [Set] soft key.

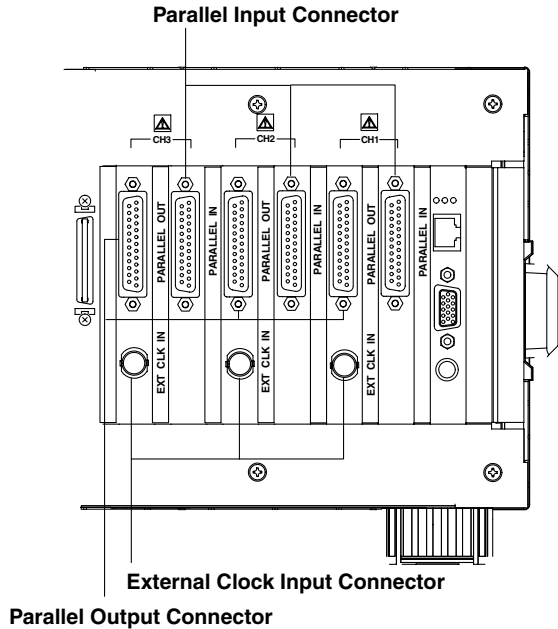
Display position of date and time

The date and time are displayed in the upper right corner of the screen.

3.1 Connecting the Cable to the Parallel Output Connector

Position of the Output Terminal

The output terminal is located on the rear panel. Connect a Dsub25-pin cable to the connector of the channel to be output.



Parallel Output Specifications

Output level: LVDS (DVB-A010), RS422
 Connector: Dsub25

Connection

Pin No.	Signal Name	Pin No.	Signal Name
1	CLKA	14	CLKB
2	SYS GND	15	SYS GND
3	DATA7 A	16	DATA7 B
4	DATA6 A	17	DATA6 B
5	DATA5 A	18	DATA5 B
6	DATA4 A	19	DATA4 B
7	DATA3 A	20	DATA3 B
8	DATA2 A	21	DATA2 B
9	DATA1 A	22	DATA1 B
10	DATA0 A	23	DATA0 B
11	DATA VALID A	24	DATA VALID B
12	SYNC A	25	SYNC B
13	NC		

3.1 Connecting the Cable to the Parallel Output Connector

Parallel Output Timing

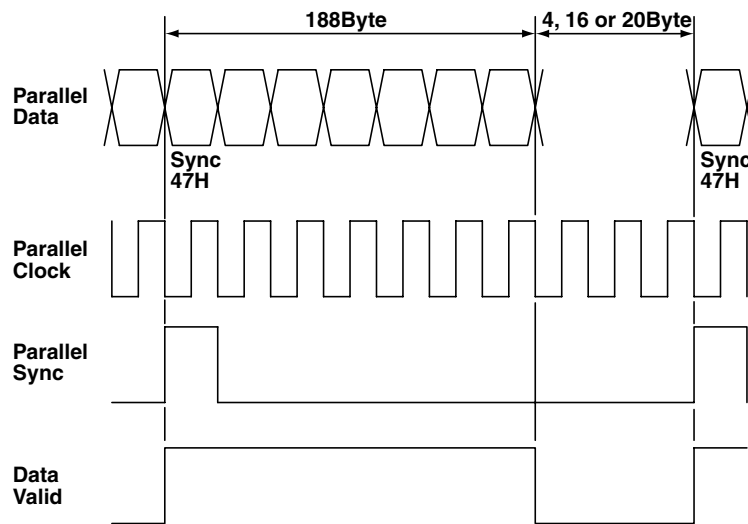
The figure below indicates the parallel output timing. You can specify Dummy Out only on packets that are 188 bytes in length. You can select Dummy Out from 4, 16, and 20. Dummy Out data will be all 0s.

If DataValid is set to A, Valid during Dummy Out data range or 4, 16, or 20 bytes after the 188th byte of a 192-, 204-, or 208-byte packet will be Low.

If DataValid is set to B, Valid will be High during the above period.

If Slope is switched using Setting Output, the phases of Parallel Data and Parallel Clock change. (The slope of the example below is ↓.)

If Out Type is set to Inverse ON, Parallel Sync and Data Valid are inverted. (OFF in the example below)



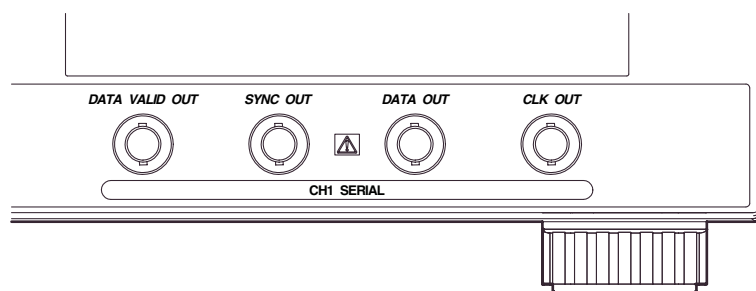
Note

If you select "Super Frame Synchronizing Output" as the synchronizing signal output, the Super Frame synchronizing signal is output from pins 12 (Sync A) and 25 (Sync B) of the parallel output connector.

3.2 Connecting the Cable to the Serial Output Connector

Position of the Output Terminal

The CH1 serial output connector is located on the front panel. The CH2 and CH3 serial output connectors are provided on the rear panel. Connect a cable with a BNC connector.



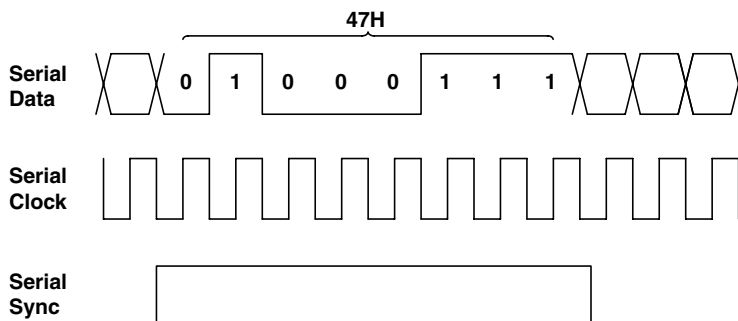
Serial Output Specifications

Item	Specifications
Serial data output	Output level : TTL (50 Ω) ECL (50 Ω Unbalanced) can be switched Output connector : BNC
Serial clock input/output	Output level : TTL (50 Ω) ECL (50 Ω Unbalanced) can be switched Output timing : Rising and falling can be switched Output connector : BNC
SYNC output	Output level : TTL (50 Ω) ECL (50 Ω Unbalanced) can be switched Output connector : BNC

Serial Output Timing

The figure below shows the timing between the serial data, clock, and SYNC. SYNC output is HIGH only for the synchronizing signal section 47H at the beginning of the packet. For a 188-byte packet, the data of length equal to the number of Dummy bytes that come after the 188th byte (from the beginning of the packet) are all 0s. If Slope is switched using Rate Setting, the phases of Serial Data and Serial Clock change. (The slope of the example below is \downarrow .)

If Out Type is set to Inverse ON, Serial Sync and Serial Valid are inverted. (OFF in the example below)



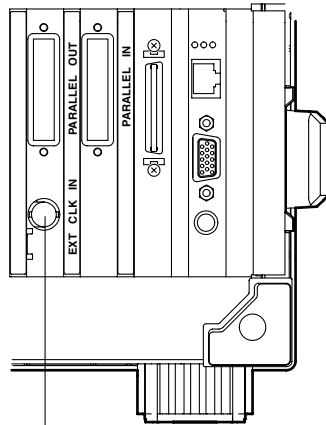
Note

If Super Frame synchronizing output is turned ON in section 3.8, "Setting Packet Parameters," the SYNC output terminal outputs a signal that is synchronized to slot, Frame, or Super Frame.

3.3 Connecting the Cable to the External Clock Input Connector

Position of the Input Terminal

An external clock input connector is provided on the rear panel for each channel. Connect a cable with a BNC connector.



External Clock Input Connector

External Clock Specifications

Item	Specifications
External clock	Input level : TTL (50 Ω) input ECL (50 Ω Unbalanced) can be switched Input timing : Rising and falling can be switched Connector : BNC Format : Serial/Parallel (Inputs a clock obtained by frequency dividing the serial clock by eight)

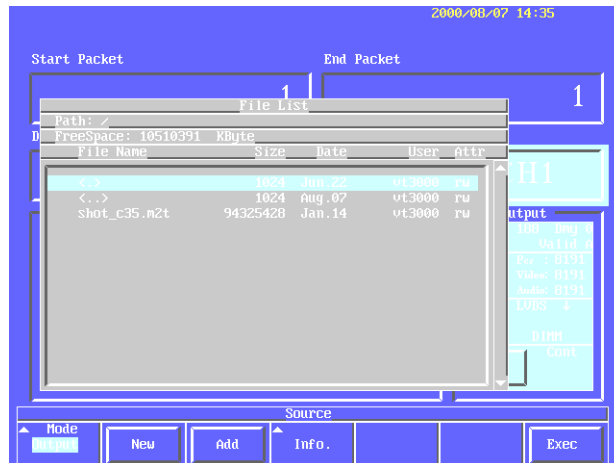
Note

The external clock input connector is common to serial and parallel. Normally, you will set Ext Clock under the Rate menu to Serial if you set Output Type to Serial, and Ext Clock under the Rate menu to Parallel if you set Output Type to Parallel. This will cause data that are synchronized to the clock to be output. If you set Output Type to Parallel, and Ext Clock under Rate to Serial, data will be output every eight cycles of the clock. (This function is useful depending on the modulator.)

3.4 Selecting the Contents to Be Output

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SOURCE key to display the Source menu.
3. Press the [Mode] soft key and select Output.



Selecting the Directory

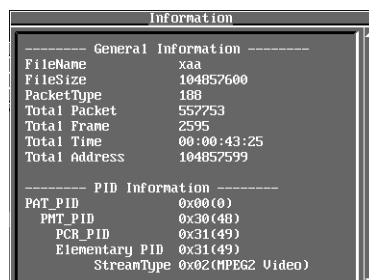
4. Highlight the directory with the rotary knob and press the SELECT key. Select <..> to move up a directory.

Selecting the contents

5. Highlight the content that you wish to output first with the rotary knob and press the [New] soft key. A [0*] mark is placed by the content indicating that it is selected. You can place up to eight [0*] marks. To add a new content, select the desired content with the rotary knob and press the [Add] soft key. A [1*] mark is placed by the content. Every time you press the [Add] soft key the number indicating the output order is displayed in a similar fashion.
6. Press the [Exec] soft key to confirm the contents to be output. At this point, the menus and file list disappear and the selected contents are displayed under File Name.

Viewing the contents information

7. Press the [Info] soft key to view the information about the file that is highlighted in the file list.



3.4 Selecting the Contents to Be Output

Note

- When the content is 2 GB or greater, divide the content into portions and write them into the HDD and reconnect them by pressing [Add] when selecting them. At this time, the content can be divided at any point (there is no restriction such as division by TS packet).
 - Regarding the order of the selected contents, the order from the 9th content onward is a, b, c, d, e, f.
 - If a discontinuous TS is connected to PCR, PTS or DTS, etc., the output rate may not be set correctly or images or voice, etc. may not be reproduced during reproduction.
 - While the content is being output, it is not possible to operate the Source menu by pressing the SOURCE key.
 - If the selected file is not a TS file, a warning is displayed.
 - Can be set for each channel.
 - When more than one file is selected, those files must exist in the same directory.
-

Explanation

Selecting the Contents

You can continuously output contents by selecting multiple contents. If you saved a large content by dividing it into multiple contents, you can select the divided contents and output them as though they were a single continuous content.

Contents information

Contents information includes the following items:

TS file

File Name	: File name of the content
File Size	: Size
Packet Type	: TS packet type
Total Packet	: Total number of packets
Total Frame	: Total number of frames
Total Time	: Playback time
Total Address	: Total number of addresses

-----PID Information-----

PAT PID	: PID of the PAT included in the TS
NIT PID	: PID of the NIT included in the TS
PMT PID	: PID of the PMT packet included in the TS
PCR PID	: PID of the PCR packet included in the TS
Elementary PID	: PID of the Elementary packet included in the TS
Stream Type	: Stream type
Elementary PID	: PID of the Elementary packet included in the TS

-----Video Information-----

Video PID	: PID of the Video packet included in the TS
Frame Size	: Frame size of this video
Picture Rate	: Frame rate
Video Bit Rate	: Data rate
Aspect Ratio	: Aspect ratio
Buffer Size	: Buffer size

-----Audio Information-----

Audio PID : PID of the Audio packet included in the TS
 Layer : Layer
 Sampling Rate : Sampling rate
 Audio Bit Rate : Data rate
 Audio Mode : Mode

BS file

File Name : File name of the content
 File Size : Size
 Packet Type : TS packet type
 Total SuperFrame : Total number of super frames

Note

- If more than one content is selected in the DIMM mode or DIMM/HDD mode and the total size of the selected contents exceeds the capacity of the DIMM, an error results.
- If more than one content is selected and the packet types of the selected contents are different, the contents will be identified as No TS (not a TS file) even if the individual content is a TS file.
- In judgment of a BS file (ARIB-STD-B20), a maximum of 10 MB of data is searched from the beginning and from the last and each portion of data is judged to have at least five consecutive Super Frame signals.
- In judgment of a TS file, a maximum of 10 MB of data of a non-BS file is searched from the beginning and from the last and each portion of data is judged to have at least five consecutive synchronizing signals.
- In the case of a BS file, you can view detailed information using TS Viewer.
- Video and Audio Information each display the first detected information. Furthermore, you can view complete information of Video and Audio using TS Viewer.
- If Audio is MPEG2-Audio AAC, no detailed information is displayed. However, you can view detailed information using TS Viewer.
- If Audio is AC3, you cannot view detailed information.

3.5 Setting the Zone

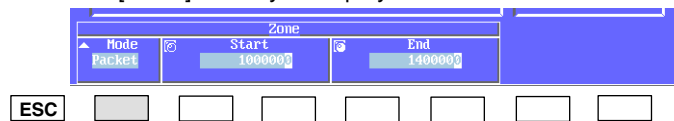
In addition to playing the entire content, the VT3000E can also output a section of the content that is specified by the user. This range is called a zone and is specified by Start and End points.

Procedure

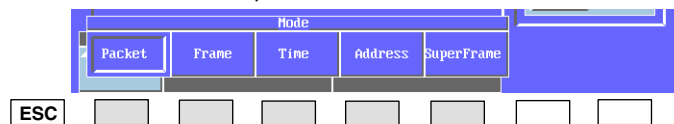
1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the ZONE key to display the Zone menu.

Setting the Mode

3. Press the [Mode] soft key to display the Mode menu.

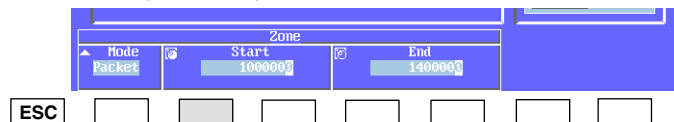


4. Using the soft key, select the unit of the output range (zone) from Packet, Frame, Time, Address, and SuperFrame.



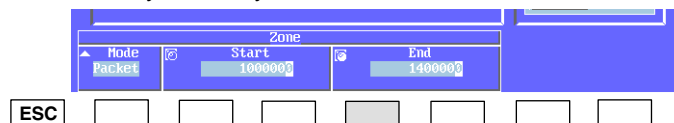
Setting the Start position of the content to be output

5. Press the [Start] soft key and set the start position of the content to be output using numerical keys or rotary knob.



Setting the End position of the content to be output

6. Press the [End] soft key and set the end position of the content to be output using numerical keys or rotary knob.



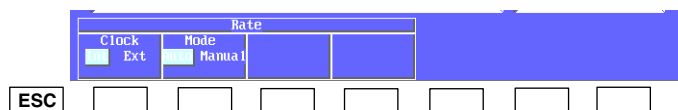
Note

- You cannot change the Start and End positions if the file to be output is not selected.
- The range of Start and End positions is automatically determined from the TS information of the selected file.
- If the mode is set to Frame or Time, the Start and End positions are computed based on the output rate. If you manually change the output rate, the Start and End positions are recomputed. If the output rate is Auto or Ext, the Start and End positions are computed with the Auto value of the output rate.
- If the mode is set to Packet, the Start and End positions are set to 188, 192, 204, or 208 bytes (the unit of packets) according to the Packet setting in section 3.8, "Setting Packet Parameters."
- If the mode is set to SuperFrame, the Start and End positions are set to values in unit of super frames.
- To output a file that has been identified as a non-TS file, set the Mode to Address.
- You cannot operate the Zone menu while contents are being output.
- Can be set for each channel.

3.6 Setting the Output Rate

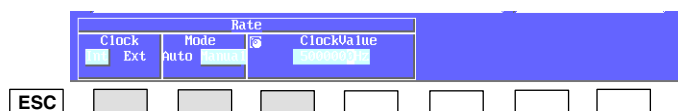
Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the RATE key to display the Rate menu.



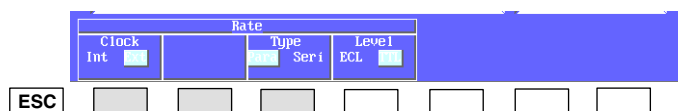
Selecting the internal clock

3. Press the [Clock] soft key to select [Int].
4. Press the [Mode] soft key to select [Auto] or [Manual].
5. If "manual" is selected, set the clock frequency using numerical keys or rotary knob. The range is from 1000 Hz to 57000000 Hz.



Selecting the external clock

6. Press the [Clock] soft key to select [Ext].
7. Press the [Type] soft key to select [Para] or [Seri].
8. Press the [Level] soft key to select [ECL] or [TTL].



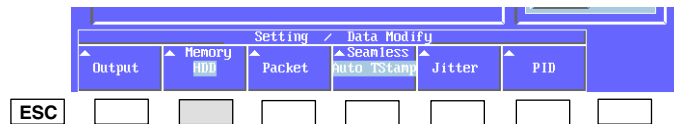
Note

- If the internal clock or external clock is Para in the memory output mode, DVB parallel can be output at a rate of up to 80 MHz, but the performance specification is 57 MHz.
- When the Clock is set to Auto, if the selected file is a TS file, the Clock value (data rate) calculated from the TS file is displayed. However, when more than one file is selected the Clock value may not be correct. When more than one file is selected, it is recommended to output them with the Clock set to Manual.
When the selected content is not TS (displayed as "No TS"), "0.001000 Mbit/s (1000 Hz) is displayed.
- With the TS without PCR, no correct clock value is set even if the clock is set to Auto.
- In the case of PCR, 3 MB data is searched from the beginning and from the last and the clock value is calculated from the respective first-detected PCR values.
- When the output rate is set to an external clock, set the external clock to be input to a continuous clock. No burst signal can be used as the clock signal. Furthermore, if an external clock is stopped during output, this equipment may not operate correctly.
- Can be set for each channel.
- When an internal clock is used, do not input any signal to the external clock input terminal (EXT CLK IN). This may cause the equipment to fail to operate correctly.

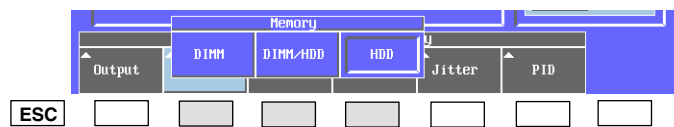
3.7 Setting the Output Mode

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.



3. Press the [Memory] soft key.
4. Select [DIMM] (memory output mode), [HDD&DIMM] (quick output mode), or [HDD] (HDD output mode).



Explanation

Select from the following output modes:

- Memory output mode: Transfers the contents from the built-in hard disk to the memory and then outputs the contents. The contents in the hard disk can be accurately output.
- Quick output mode: Outputs the contents directly from the hard disk the first time. Outputs from the memory subsequently.
- HDD output mode: Outputs the contents directly from the hard disk. Large contents that exceed the available memory can be output.

Note

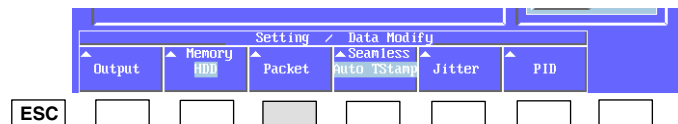
- In the quick output mode, the initial output may not be accurate depending on the internal state of the hard disk or CD-ROM drive. The output will be accurate after the first time.
- In the HDD output mode, the possibility of a hard disk crash is higher because the contents are directly output from the hard disk. Avoid outputting the contents using this mode for an extended period of time.
- During output in the HDD output mode or quick output mode, if FIFO OVER FLOW occurs, red characters "FIFO" are displayed at the top left of the screen. The data at this time may not be correct.
- The OutData indicator is red while contents are being output from the built-in hard disk or CD-ROM drive or while contents are being transferred from the built-in hard disk or CD-ROM drive to the memory. The OutData indicator is green while contents are being output from the memory. Furthermore, while the contents are being transferred to the memory in the memory output mode (the indicator is red), the data is not output from the output terminal.
- If the same content (same zone) is already transferred to the memory, the content is not transferred again.
- Can be set for each channel.

When the HDD output mode is selected, it is possible to reproduce the TS directly from the CD-ROM, but FIFO OVER FLOW may occur depending on the data rate, preventing the TS from being reproduced correctly (use 20 Mbps or less as a standard). If FIFO OVER FLOW occurs, output the contents in the memory output mode or copy the contents from the CD-ROM to the HDD, and then output them in the HDD output mode.

3.8 Setting Packet Parameters

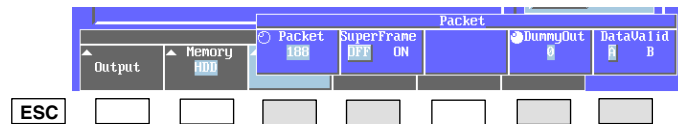
Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Packet] soft key.



Setting the packet length

4. Press the [Packet] soft key.
5. Set the packet length using the rotary knob. Select the packet length from [188], [192], [204], or [208].



Selecting the Super Frame Synchronizing Output

6. Press the [SuperFrame] soft key to select [OFF] or [ON].
7. If you turned ON the SuperFrame, press the [Sync] soft key and select [SuperFrame], [Frame], or [Slot] using the rotary knob.

Setting a dummy packet (when the packet length is set to 188)

8. Press the [DummyOut] soft key.
9. Set the number of bytes of the dummy packet to be attached to the TS using the rotary knob. Select the number of bytes of the dummy packet from [0], [4], [16], or [20].

Selecting Data Valid

10. Press the [DataValid] soft key to select [A] or [B].

Note

- You cannot operate the Packet menu while contents are being output.
- If a dummy packet is attached and the output rate is AUTO, the output rate is recomputed.
- Can be set for each channel.

3.8 Setting Packet Parameters

Explanation

Packet length

Set the packet length of the TS to be output.

Super Frame

Super Frame	Specifications
OFF	Turn this OFF when outputting normal TS complying with ISO/IEC13818-1.
ON	Turn this ON to attach a TMCC signal complying with ARIB STD-20 and output the Super Frame synchronizing signal from multiple TS synthesis signals that have been aligned into frames.

Note

- During parallel output, the Super Frame synchronizing signal is output from pins 12 (Sync A) and 25 (Sync B) of the 25-pin Dsub connector.
- When Super Frame is ON, specify the Zone in bytes in the "Address" mode. Set the difference between Start and End to units of Super Frames (204*48*8 bytes or 188*48*8 bytes). Otherwise, the TMCC signal will not be output correctly when repeatedly outputting the TS.
- If you specify Packet, Time, or Frame for the Zone setting, the display may show incorrect values.

If Super Frame is turned ON, you can select the synchronizing signal from Super Frame, Frame, and Slot.

Selecting the attachment of dummy packets

You can attach dummy packets when the packet length of the TS of the content is 188 bytes. You can select 4, 16, or 20 for the dummy packet. After 188 bytes are output, 4, 16, or 20 bytes of all-zero data are output as dummies.

Data Valid

Data Valid	Specifications
A	If the packet length of the TS is 188 bytes, Data Valid will be Low during the attached dummy packet. If the packet length of the TS is 192, 204, or 208 bytes, Data Valid will be Low for 4, 16, or 20 bytes, respectively, from the end of the TS.
B	Data Valid will be High over the entire duration.

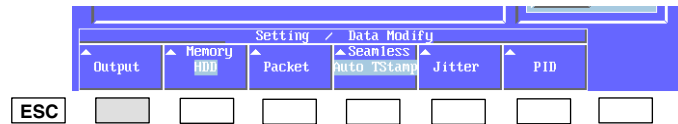
Note

- If the packet length is not 188 bytes, the DummyOut menu is not displayed.
- If the selected file is identified as a TS file, the menu will change according to the packet length that is automatically detected. If the selected file is not identified as a TS file, the packet length will be 188 bytes.
- If you attempt to change the packet length that is automatically detected from the TS file, a warning is displayed.

3.9 Setting Other Parameters Related to the Output

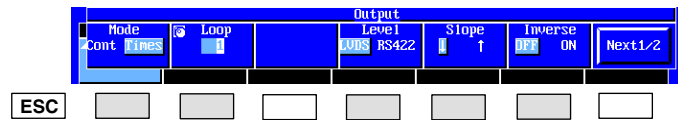
Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Output] soft key.



Setting the repetition count of the output

4. Press the [Mode] soft key to select [Cont] or [Times].
5. If you select [Times], set the repetition count using numerical keys or the rotary knob. The range is from 1 to 256.



Selecting the Level

6. Press the [Level] soft key to select [LVDS] or [RS422] during Parallel output or [TTL] or [ECL] during Serial output.

Selecting the Slope

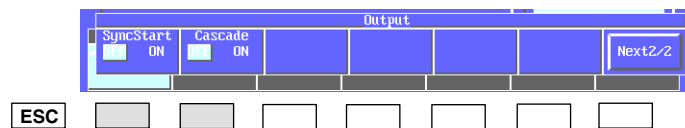
7. Press the [Slope] soft key to select [↓] or [↑].

Selecting the output logic

8. Press the [Inverse] soft key to select [OFF] or [ON].

Select sync output mode (2CH, 3CH model)

9. Press the [Next1/2] soft key.



10. Press the [Sync Start] soft key and select [ON].

Select cascading mode (2CH, 3CH model).

11. Press the [Cascade] soft key and select [ON].

Note

- You cannot operate [Output]-[Mode] and [Output]-[Loop] while contents are being output.
- Can be set for each channel.

Explanation

Setting the repetition count of the output

If you select Cont, output will repeat indefinitely from the Start position to the End position specified for Zone. If you select Times, output will repeat the specified number of counts and stop at the End position. If you select one for the count, the content will be output once. If the content is extremely short, the output count may not be correct.

Selecting the Level

If you select LVDS, the content is output using the voltage levels standardized by TIA/EIA-644 and IEEE1596.3 SCI LVDS.

If you select RS422, the content is output using the voltage levels standardized by TIA/EIA-422.

Selecting the output logic

If turned ON, the DATA VALID and SYNC signals are inverted (negative logic).

Sync output mode (2CH, 3CH model)

This is the mode in which channel outputs are started simultaneously. Output methods and output settings of clock, etc. of the channels can vary from one channel to another.

Cascading mode (2CH, 3CH model)

Two or more channels can be operated at the same clock.

A clock supplied from a modulator, etc. can be shared by the channels.

When using cascade output mode, connect the channel clock inputs and clock output connectors as shown below. Use a 50 Ω coaxial cables with a BNC connector as the cables for connection.

- **When using internal clock**

Connect the CH3 serial clock output and CH2 serial clock input.

Connect the CH2 serial clock output and CH1 serial clock input.

Set the CH3 clock.

- **When using external clock**

Input an external clock to the CH3 serial clock input.

Connect the CH3 serial clock output and CH2 serial clock input.

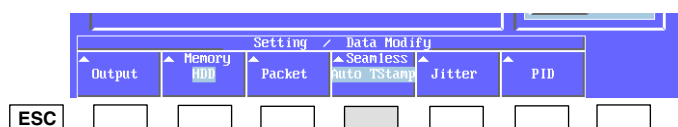
Connect the CH2 serial clock output and CH1 serial clock input.

Set an external clock for the CH3.

3.10 Making Seamless TS Packets

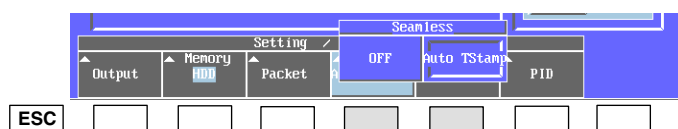
Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Seamless] soft key.



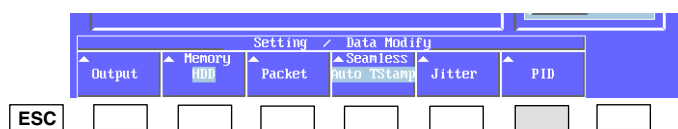
Setting Seamless

4. Select [AUTO Tstamp] or [OFF].

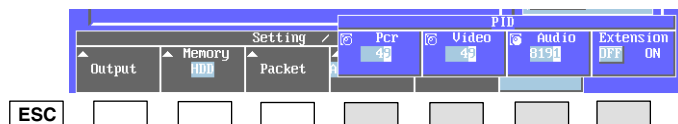


Set the PCR (PID)

5. Press the [PID] soft key to display the PID menu.



6. Press the [PCR] soft key and select the PCR (PID) using numerical keys or the rotary knob. The range is from 0 to 8191.



Setting the Video (PID)

7. Press the [Video] soft key and select the Video (PID) using numerical keys or the rotary knob. The range is from 0 to 8191.

Setting the Audio (PID)

8. Press the [Audio] soft key and select the Audio (PID) using numerical keys or the rotary knob. The range is from 0 to 8191.

Setting the Extension

9. Press the [Extension] soft key to select [OFF] or [ON].

Note

- The seamless function cannot be used on the playback of contents that have been placed in frames that are compatible with the BS digital broadcast (ARIB STD-B20).
- If the selected file is identified as a TS file, the detected PID is used for each PID. If the selected file is not identified as a TS file, PCR (PID), Video (PID), and Audio (PID) will be 8191. In addition, the Audio (PID) is 8191 if there are no Audio data.
- You cannot operate the Seamless and PID menus while contents are being output.
- Can be set for each channel.

Explanation

Making seamless packets

The following two types of seamless processes are available:

- Auto Time Stamp
- Splicing

Auto Time Stamp

Automatically updates time stamps to maintain continuity of PTS, DTS, and PCR (included in audio and video data) when repetitively outputting contents according to the ISO/IEC-13818 standard.

When Extension is turned ON, time stamps of all PTS, DTS, and PCR are updated.

Time stamping method (method to compute the summed value)

The cycle period derived from the bit rate and data length are added to the PTS, DTS, and PCR.

Splicing

To maintain the continuity of video, you must process the start point and end point (repeat point) of the TS file in addition to updating the time stamp. The function that carries out this process is called Splicing.

Splicing is based on the method described below. In some cases, depending on the decoder, the continuity of video cannot be maintained even if Splicing is used.

Method used to detect the position of the seamless process

Detecting the start position

Start position is the beginning of the sequence header, GOP, or I frame. The start position of the seamless process is searched in the area that comes after the specified address (time axis direction in which the values get larger, where address indicates PACKET, FRAME, and TIME).

The search is performed in the following order: sequence header, GOP, and I frame. The search range is 6 Mbytes from the specified address.

Searching the end position

The end position is before the sequence header, the end of GOP, or the I or P picture. The end position is searched sequentially in the area before the specified address (time axis direction in which the values get smaller). The search range is 6 Mbytes from the specified address.

Seamless process of VIDEO data

Processing the start point of the packet that is to be made seamless

- The TS packet before the GOP header data is deleted.
- PES header that includes DTS or PTS of an I frame is placed at the beginning of the TS packet.
- If there is space left after inserting the GOP header, it is filled with stuffing bytes using the adaptation field of the TS.
- If there is no space for the PES header before the GOP header, another TS packet is inserted before it.

Processing the end point of the packet that is to be made seamless

- If DTP and PTS are included in the PES header immediately after the end point, the time stamp inside the PES header goes through a stuffing process. (This is because the time stamp inside the PES header is indicating the playback time of the P picture that was deleted.)
- The remainder of the last TS packet is filled with stuffing bytes.

Broken link flag

The broken link flag of the first GOP that has gone through seamless processing is set to ON.

Seamless process of AUDIO data

- The extraction of both the start and end points are based on the SYNC signal that contains PTS.
- Based on the PTS of the VIDEO data, the AUDIO data are made into NULL packets so that
Start VIDEO PTS < AUDIO PTS
Stop VIDEO PTS > AUDIO PTS
are satisfied.

Time stamping method (method to compute the summed value)

The time stamp of PCR is processed in the same fashion as the Auto Time Stamp. If the content includes Video, the cycle period derived from the DTS of the Video is added.

If the content only includes Audio, the cycle period derived from the PTS of the Audio is added.

Note

-
- The continuity of the Continuity Counter is secured only for the set PCR PID, Video PID and Audio PID.
 - When Audio is AC3, no splicing is performed on the Audio data.
-

3.11 Function for Adding Jitter

Procedure

1. On 2-CH and 3-CH models, press the CH1 to CH3 key to select a channel.
2. Press the SETTING key to display the Setting menu.
3. Press the [Jitter] soft key.

Setting / Data Modify						
Output	Memory DIMM	Packet	Seamless OFF	Jitter	PID	

Selecting the Jitter Mode

4. Press the [Mode] soft key to select the mode from Pulse, Burst, Interval, Random, and Scramble.

Jitter						
Mode						
Off						

When Jitter Mode is set to Pulse

Jitter (1/27MHz)						
Mode	PCR A	PCR B	Period	Duty		
Pulse	0	0	0	0		

5. Press the [PCR A] soft key and set PCR A using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.
6. Press the [PCR B] soft key and set PCR B using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.
7. Press the [Period] soft key and set Period using numeric keys or rotary knob. The selectable range is 0 to 255.
8. Press the [Duty] soft key and set Duty using numeric keys or rotary knob. The selectable range is 0 to 255.

When Jitter Mode is set to Burst

Jitter (1/27MHz)						
Mode	PCR A	PCR B	Period	Duty		
Burst	0	0	0	0		

9. Press the [PCR A] soft key and set PCR A using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.
10. Press the [PCR B] soft key and set PCR B using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.
11. Press the [Period] soft key and set the period using numeric keys or rotary knob. The selectable range is 0 to 255.
12. Press the [Duty] soft key and set the duty using numeric keys or rotary knob. The selectable range is 0 to 255.

When Jitter Mode is set to Random

Jitter (1/27MHz)						
Mode	PCR A	PCR B				
Random	0	0				

13. Press the [PCR A] soft key and set PCR A using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.
14. Press the [PCR B] soft key and set PCR B using numeric keys or rotary knob. The selectable range is -19660799 to 19660799.

When Jitter Mode is set to Interval

Jitter (1/27MHz)						
Mode			Period	Duty		
Interval			0	0		

15. Press the [Period] soft key and set the period using numeric keys or rotary knob. The selectable range is 0 to 255.
16. Press the [Duty] soft key and set the duty using numeric keys or rotary knob. The selectable range is 0 to 255.

When Jitter Mode is set to Scramble

Jitter (300/27MHz)						
Jitter	PCR(+)	PCR(-)	PTS(+)	PTS(-)	DTS(+)	DTS(-)
Scramble	0	0	0	0	0	0

17. Press the [PCR(+)] soft key and set PCR(+) using numeric keys or rotary knob. The selectable range is 0 to 65535.
18. Press the [PCR(-)] soft key and set PCR(-) using numeric keys or rotary knob. The selectable range is 0 to 65535.
19. Press the [PTS(+)] soft key and set PTS(+) using numeric keys or rotary knob. The selectable range is 0 to 65535.
20. Press the [PTS(-)] soft key and set PTS(-) using numeric keys or rotary knob. The selectable range is 0 to 65535.
21. Press the [DTS(+)] soft key and set DTS(+) using numeric keys or rotary knob. The selectable range is 0 to 65535.
22. Press the [DTS(-)] soft key and set DTS(-) using numeric keys or rotary knob. The selectable range is 0 to 65535.

Note**When Jitter Mode is set to Pulse or Burst**

- The period is determined from the number of PCRs.
- Duty is the number of PCRs of PCR A or PCR B jitter to be added. The jitter of the above amount is added alternately.

When Jitter Mode is set to Random

- The parameters are set to the values shown in the above figure (Burst).
- When PCR A is less than PCR B, the jitter is generated randomly in the range expressed by PCR A < jitter value < PCRB.
- When PCR A is greater than PCR B, the jitter is generated randomly in the range expressed by PCR A > jitter value > PCRB.

When Jitter Mode is set to Interval

- Period indicates the time for which PCR is enabled or disabled.
- Duty is the number of PCRs that is disabled within that period.
- If Period = 2 and Duty = 1, for example, PCR is enabled alternately. PCRs are generated twice the conventional period in this case.
- You cannot shorten the PCR period.

Disabling the PCR means forcibly setting the following flag in the adaptation field defined by an IEC-13818 system to 0.

```

discontinuity_indicator
random_access_indicator
elementary_stream_priority_indicator
PCR_flag
OPCR_flag
splicing_point_flag
transport_private_data_flag
adaptation_field_extention_flag

```

3.11 Function for Adding Jitter

Explanation

By setting the PID, you can add jitter against a specified PCR according to the procedure below.

1 Setting the Sum Width

Resolution: 1/27 MHz

Width: $(-19660799 \text{ to } 19660799) \times 1/27 \text{ MHz}$

2 Procedure for Adding Jitter

Method: Select one of three types, Pulse, Burst, or Random.

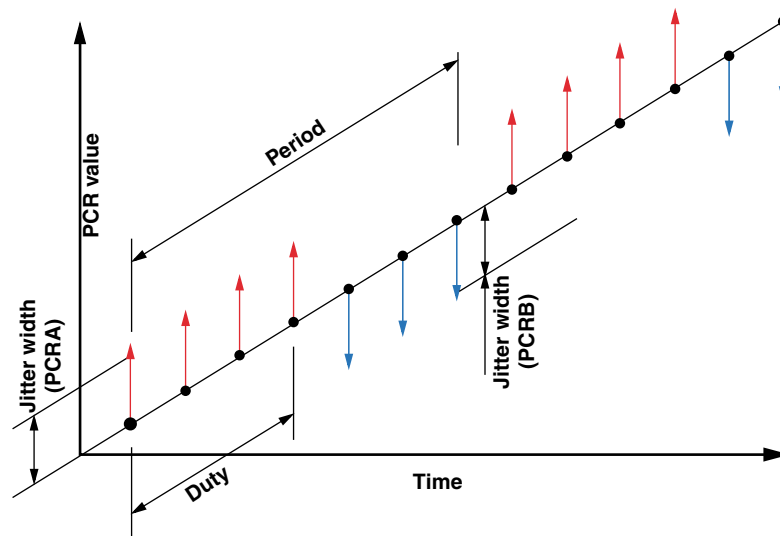
Period setting: Set using the number of PCRs.

Duty setting: Set using the number of PCRs from the start of the period.

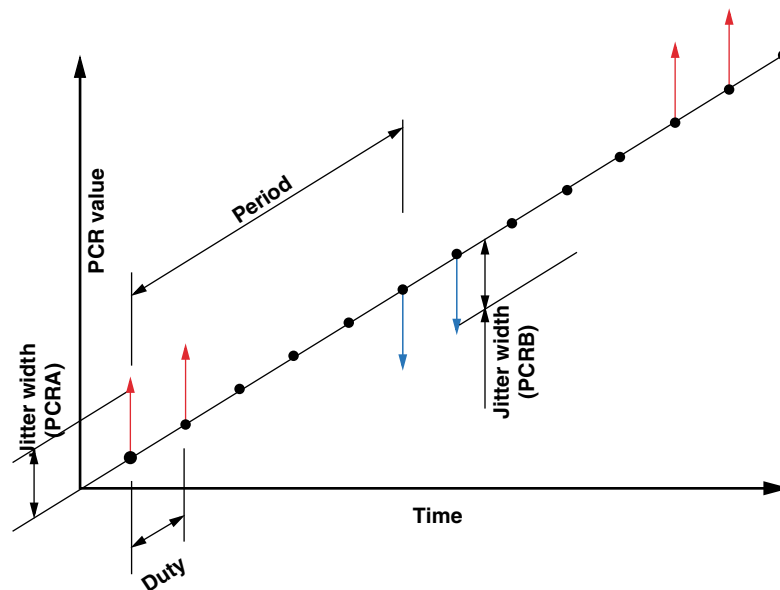
Other: You can add jitter to PTS and DTS by selecting Scramble.

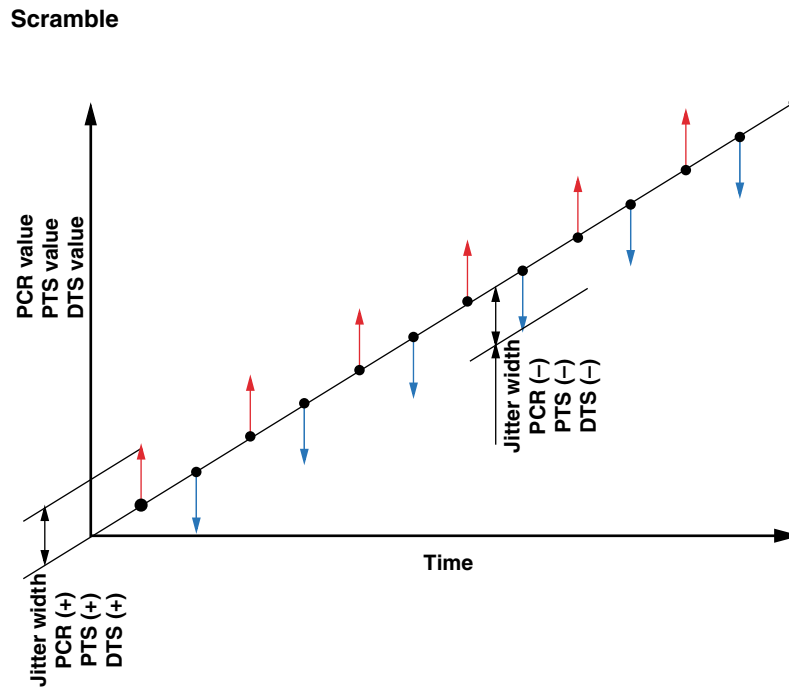
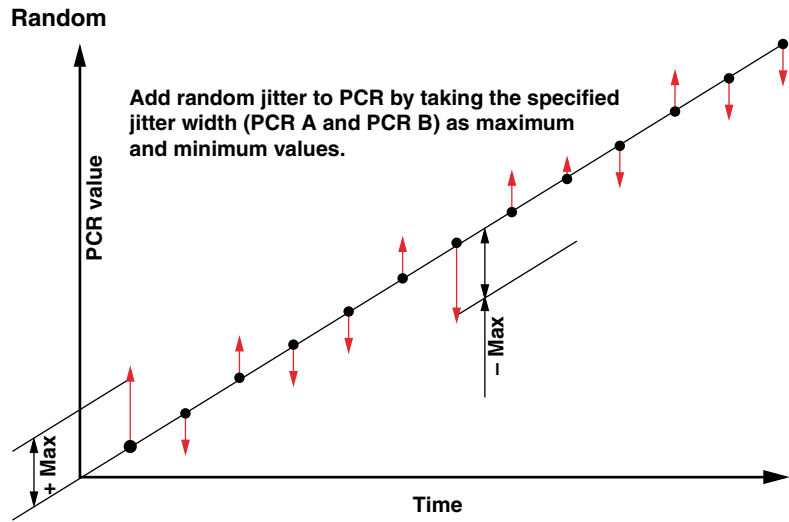
You can also change the PCR interval by selecting Interval.

Pulse



Burst

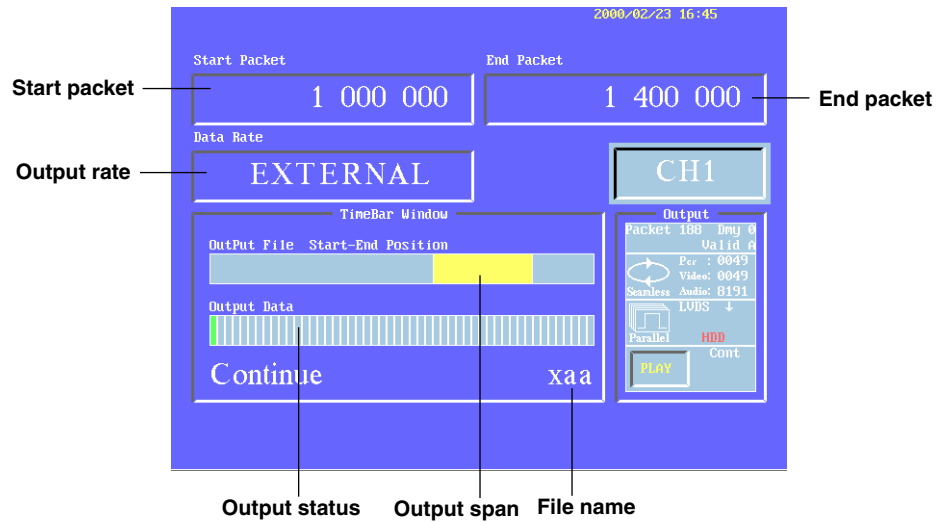




3.12 Outputting the Contents

Procedure

1. Press the START/STOP key to output the contents over the range specified by zone. The menu that was displayed is cleared. Press the START/STOP key to stop the output.



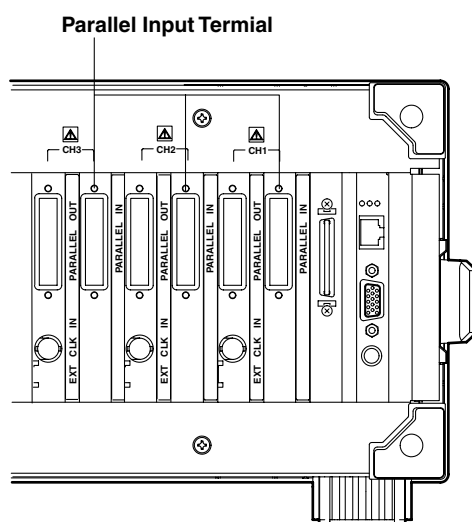
Explanation

- If you specified the output count, the output automatically stops after outputting the contents the specified number of times.
- The screen displays the Start and End Positions of the output buffer and the contents to be output. (Output File Start-End Position)
- The screen displays the current output position within the output span (from the Start position to the End position). (Output Data)

4.1 Connecting the Cable to the Parallel Input Terminal

Position of the Input Terminal

The parallel input terminal is located for each channel on the rear panel. On 1-channel models, a parallel input terminal conforming to the ARIB standard is located at the position of the DVB parallel input terminal for CH2, and on 2-channel models one is located at the position of the DVB parallel input terminal for CH3.



Parallel Input Specifications

Output level: Switch between LVDS (DVB-A010) and RS422

Connector: Dsub25

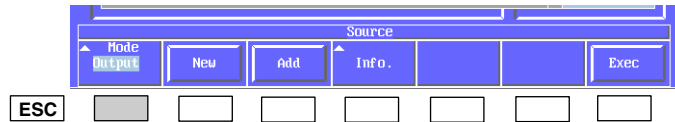
Connection

Pin No.	Signal Name	Pin No.	Signal Name
1	CLKA	14	CLKB
2	SYS GND	15	SYS GND
3	DATA7 A	16	DATA7 B
4	DATA6 A	17	DATA6 B
5	DATA5 A	18	DATA5 B
6	DATA4 A	19	DATA4 B
7	DATA3 A	20	DATA3 B
8	DATA2 A	21	DATA2 B
9	DATA1 A	22	DATA1 B
10	DATA0 A	23	DATA0 B
11	DATA VALID A	24	DATA VALID B
12	TRIGGER A	25	TRIGGER B
13	NC		

4.2 Setting the VT3000E in the Record Mode and Setting the File Name

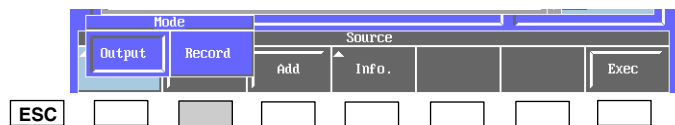
Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SOURCE key to display the Source menu.



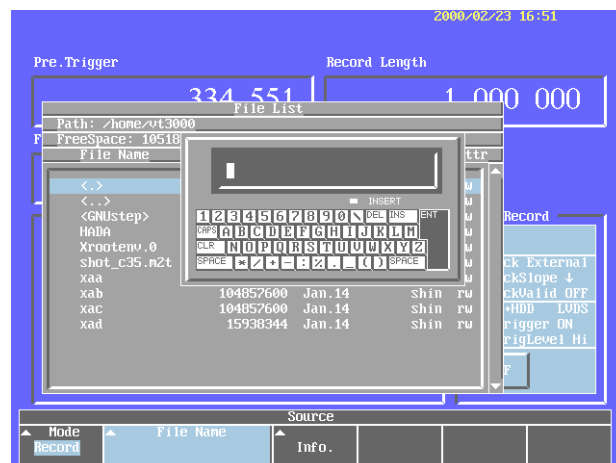
Setting the mode

3. Press the [Mode] soft key and select Record.



Setting the save destination

4. Highlight the destination directory with the rotary knob and press the SELECT key. Select <.> to move up a directory. When you change the directory, the file name that is entered is cleared.



Setting the file name

5. Press the [File Name] soft key to display a keyboard screen.
6. Enter the file name using up to 24 characters on the keyboard.

Viewing the file information

7. Press the [Info] soft key to view the information about the file that is highlighted.

Explanation

Save destination

The file is saved to the Path of the file list that is currently displayed.

File name

You can enter up to 24 characters for the file name, but the VT3000E can only display 15 characters in the file list.

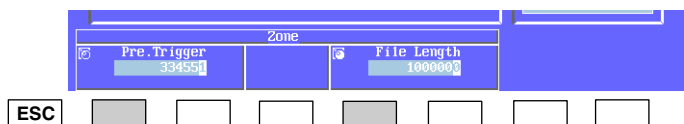
Note

- You cannot operate the Source menu while recording is in progress.
- Can be set for each channel.

4.3 Setting the Pre-trigger and Data Length

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the [ZONE] key to display the Zone menu.
3. Press the [Pre. Trigger] soft key and select the pre-trigger using numerical keys or rotary knob. If you set the pre-trigger to 0, data before the trigger point will not be recorded.



4. Press the [File Length] soft key and select the length of the data to be recorded using numerical keys or rotary knob.

Explanation

Pre-trigger range

The pre-trigger range is 0 MB to the DIMM size × 3/4 MB.

Data length range

The data length range varies depending on the [Memory] setting in section 4.6, “Setting the Record Mode” as follows:

When the Memory setting is DIMM

0 MB to the DIMM size × 3/4

When the Memory setting is DIMM/HDD

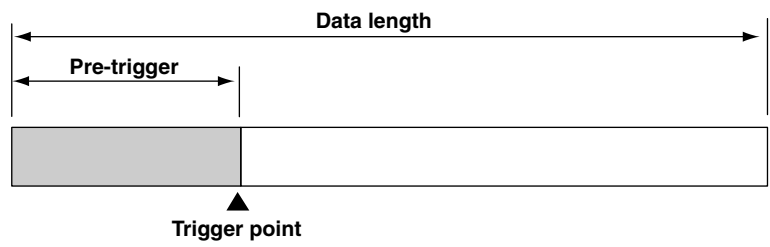
0 MB to the free space on the built-in hard disk (100 GB maximum = 102400 MB)

Note

- If you abort the recording before reaching the data length, data up to that point are recorded.
- If the free space on the hard disk is insufficient, data are recorded until the hard disk is full.
- Can be set for each channel.

Relationship between the pre-trigger and data length

The relationship between the pre-trigger and data length is as follows:



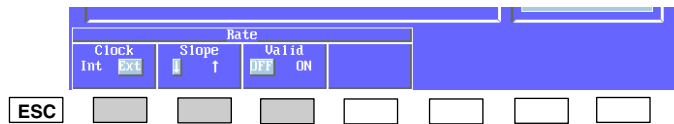
Note

- If you set the pre-trigger larger than the data length, an error occurs.
- You cannot operate the Zone menu while recording is in progress.

4.4 Setting the Clock

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the RATE key to display the Rate menu.
3. Press the [Clock] soft key to select [INT] or [EXT].



4. Press the [Slope] soft key to select rising [↑] or falling [↓].
5. If you select external clock, press the [Valid] soft key to select [ON] or [OFF].

Explanation

Clock

You can set the sampling to the internal clock or the external clock.

Internal clock

0 Hz to 57000000 Hz

External clock

Clock signal applied to the external clock terminal

Up to 7.5 MHz

Slope

Sampling is carried out on the rising or falling edge of the clock signal.

Note

- If the rate is set to external clock, input a continuous clock for the external clock. Burst signals cannot be used as clock signals. In addition, if you stop the external clock while recording, the VT3000E may not operate properly.
- You cannot operate the Rate menu while recording is in progress.
- If Valid is ON, the external clock is masked when Valid is at the "L" level.
- Can be set for each channel.

4.5 Setting the Input Level

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Level] soft key to select [LVDS] or [RS422].



Explanation

If you select LVDS, recording is carried out using the voltage levels standardized by TIA/EIA-644 and IEEE1596.3 SCI LVDS.

If you select RS422, recording is carried out using the voltage levels standardized by TIA/EIA-422 (positive voltage levels only).

Note

- You cannot operate the Setting menu while recording is in progress.
- If you set the input level to RS422, do not apply a negative voltage.
- Can be set for each channel.

4.6 Setting the Recording Mode

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Memory] soft key to display the Memory menu.



4. Select [DIMM] or [DIMM/HDD].



Explanation

Recording mode

The following two recording modes are available:

- **DIMM**
The entire data are recorded to memory. After recording is finished, the data residing in the memory is saved to the hard disk.
- **DIMM/HDD**
Stores the pre-trigger section of data to the memory. Stores the post-trigger section of data (after the trigger point) to the built-in hard disk. After recording is finished, the data residing in the memory is saved to the hard disk.
This is useful when recording large quantities of data.

Note

- In the DIMM/HDD mode, you can record data that exceed the size of the memory. However, the disk write speed may be insufficient to keep up with the input data stream, if, for example, the VT3000E's HD is busy due to external access via Ethernet using Samba or FTP. In such case, recording is aborted. We recommend that you turn OFF the network function when recording using the DIMM/HDD mode.
- If you abort the recording while recording in the DIMM mode, a file with 0 size is created and a TS file is not recorded.
- Can be set for each channel.

4.7 Setting the External Trigger

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. Press the SETTING key to display the Setting menu.
3. Press the [Ext. Trigger] soft key to select [ON] or [OFF].



4. If the external trigger is turned ON, press the [Trig. Level] soft key to select [High] or [Low].

Explanation

With the external trigger ON and the VT3000E in the trigger-wait state, recording will start when you press the START/STOP key, even before the external trigger is input. Subsequently, when a trigger signal is input, the VT3000E will start recording. If the external trigger is turned OFF, the VT3000E will enter the trigger-wait state when you press the START/STOP key. When you press the START/STOP key again, the VT3000E will start recording.

The external trigger signal is input through the parallel input connector. The High or Low period of the external trigger signal must be at least 100 ns long.

Note

Can be set for each channel.

4.8 Starting the Recording Operation

Procedure

1. In the case of the 2CH and 3CH models, a channel to be set is selected using the CH1 to CH3 keys.
2. When you press the START/STOP key, the VT3000E enters the trigger-wait state. If the external trigger is OFF, recording starts when you press the START/STOP key again. If the external trigger is ON, recording starts when a trigger signal is input.
If you press the START/STOP key while recording is in progress, recording stops.

Explanation

After you press the START/STOP key, recording stops when the specified length of data is recorded.

Note

- Even if the external trigger is ON and the VT3000E is in the trigger-wait state, recording will start when you press the START/STOP key.
 - If the recording mode is DIMM and you abort the recording, a file with 0 size is created.
 - If the recording mode is DIMM/HDD and you abort the recording, data up to that point are recorded.
 - In the trigger-wait state, if the specified pre-trigger length of data are not recorded, the Pre.Trig indicator appears at the upper left corner of the screen. If you start recording while this indicator is displayed (pre-trigger length of data are not recorded), a file is created which has no content recorded at the beg of the record file.
 - If the record file exceeds 2 GB, recording is carried out by segmenting the file every 2 GB. For the segment file name, an index number is attached to the end of the specified file name. For example, if you record a 6-GB file to the file name "TEST," the file is divided into three files, "TEST.1," "TEST.2," and "TEST.3."
-

5.1 Overview

The VT3000E is provided with a Web browsing function to support remote diagnosis. The contents of the recorded TS and TMCC table information, etc. can be referenced from a PC connected to a network using a Web browser such as Internet Explorer. The VT3000E adopts a link structure taking advantage of features of the Web browser and can thereby immediately access information you want to see. It also allows more than one user to access and develop work efficiently.

The transport stream (TS) analysis function includes the following three functions.

PACKET View

Provides binary display, header display, table display for every 1 packet of a TS file and a search function according to various conditions.

TS Information

Displays information of a TS file. Also displays information of an elementary stream such as Video and Audio.

PID Information

Displays all PID information included in the TS.

<Analyzable transport stream>

Transport stream

- Transport stream compliant with ISO/IEC-13818-1: Systems
- Transport stream with multiple ARIB STD-B20-compliant TSs multiplexed and with TMCC information added

Elementary stream

- MPEG-1Video compliant with ISO/IEC-11172-2: Video
- MPEG-2Video compliant with ISO/IEC-13818-2: Video
- MPEG-1Audio Layer I, II, III compliant with ISO/IEC-11172-3: Audio
- MPEG-2Audio compliant with ISO/IEC-13818-2: Audio
- MPEG-2AAC Audio compliant with ISO/IEC-13818-7: Audio

<Recommended browser>

It is recommended to use Internet Explorer version 5.00 or later.

Note

- The analysis result may vary depending on the monitoring condition.
- Since the above browser verifies the operation, data may not be displayed correctly if other browsers are used.
- Depending on the virus monitoring software, the operation may deteriorate drastically due to functions such as Web trap. When a PC is connected locally, it is a normal state that the next packet immediately appears when PACKET View - Next is selected.

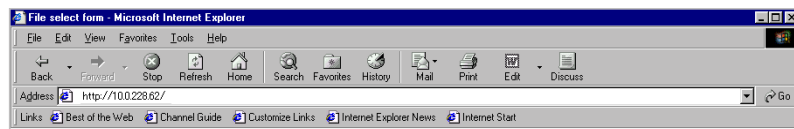
5.2 Connection Method

VT3000E configuring

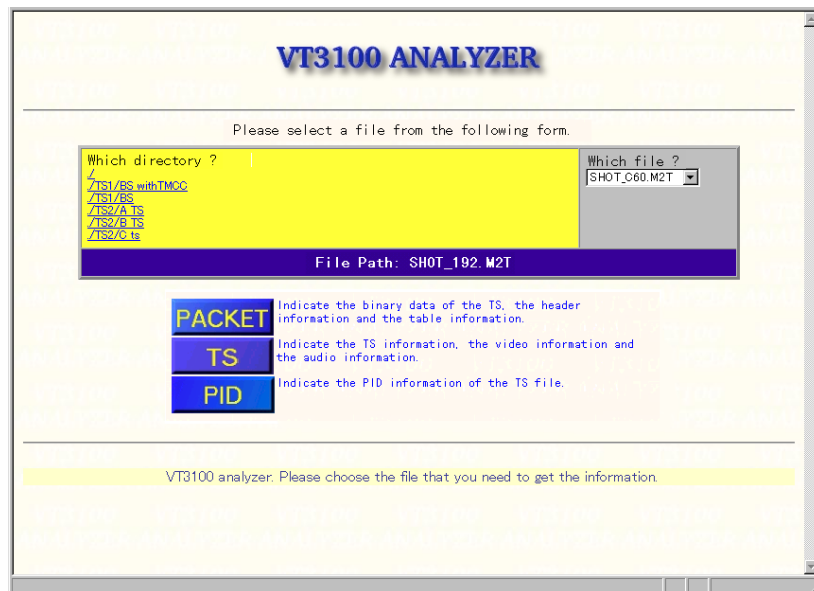
1. Configure the network according to the network configuring in “6.3 Configuring the Network and SAMBA”.
2. Connect the network to the Ethernet interface connector on the rear panel.

PC configuring

3. Start a recommended Web browser from a PC connected to a network.
4. Enter the http: host name or IP Address/ in the address field of the Web browser.



5. The following screen appears. To show a Japanese display, click on the characters “Japanese”.



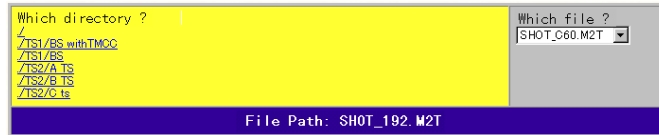
Note

- It is possible to analyze the TS from more than one Web browser simultaneously.
- When load increases during connection with the network, the output from the HDD of the VT3000E and record performance may deteriorate.

5.3 Selecting File and Selecting Function

Selecting File

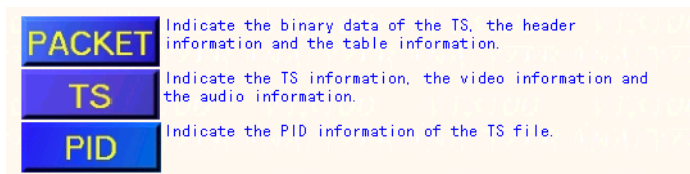
1. On the left side, all directories containing files are displayed. Click on the letter of the directory containing the file to be analyzed.



2. Select the file to be analyzed from the pull-down menu.



3. Click on the button and select the function.



Note

The directory display section does not have a hierarchical structure. Directories with no files are not displayed.

5.4 Packet View Display

After selecting the file to be analyzed, click on the PACKET button from the function selection menu. The following screen appears.

The screenshot shows the 'Packet View' interface with the following sections:

- TS Information:**
 - File Name: /home/vt3000/vt3000/SHOT_C35.M2T
 - File Size: 94325428
 - Packet Type: 188
 - Packet Total: 501731
 - PID(HEX): 0x0000
 - Address(HEX): 0x0 [Go]
- Binary Dump:**

Address	00010203	04050607	08090A0B	0C0D0E0F
0x00000000	47400011	0000B00D	0084C100	000001E0
0x00000010	44CD15DD	3CFEFFFF	FFFFFFF	FFFFFFF
0x00000020	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000030	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000040	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000050	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000060	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000070	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000080	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000090	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x000000A0	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x000000B0	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
- Header Info:**
 - PID(HEX) [0]
 - Adaptation field control [1]
 - Continuity Counter(HEX) [1]
 - Transport Error Indicator [0]
 - Payload Unit Start Indicator [1]
 - Transport Priority [0]
 - Transport Scrambling Control [0]
- Time Stamp:**
 - PCR: HEX [X(base)], Time [X(text)]
 - PTS: HEX [X], Time [X]
 - DTS: HEX [X], Time [X]

Navigation buttons: SEARCH INFO, << search, prev, next, search >>

Footer: YOKOGAWA, TOP, TS SELECT, TMCC, PACKET VIEW, TABLE VIEW, TS, PID

TS Information

Displays basic information of the TS.

File Name:

File name

File Size:

Shows the file size in bytes.

Packet Type:

Automatically determines 188, 192, 204 or 208.

Packet Total:

Total number of packets

PID(HEX):

PID of packet displayed

Address(HEX):

Shows the start address of the packet displayed in bytes. Entering Address and clicking on the Go button moves to the nearest address.

Close-up of the TS Information section:

TS Information			
File Name	/home/vt3000/vt3000/SHOT_C35.M2T	Packet Total	501731
File Size	94325428	PID(HEX)	0x0000
Packet Type	188	Address(HEX)	0x0 [Go]

Binary Dump

Shows packets in binary notation. When the packet type is 188, shows data for every 188 bytes. Clicking on the letter “next” shows the next packet.

Binary Dump				
Address	0010203	0405067	08090AB	0C0D0E0F
0x00000000	4740011	0000B0D	0064C100	00001E0
0x00000010	44CD15DD	3CFFFFFF	FFFFFFF	FFFFFFF
0x00000020	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000030	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000040	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000050	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000060	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000070	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000080	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x00000090	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x000000A0	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF
0x000000B0	FFFFFFF	FFFFFFF	FFFFFFF	FFFFFFF

Header Info

Shows 4-byte header information of a transport stream packet.

Header Info	
<input type="checkbox"/> PID(HEX)	0
<input type="checkbox"/> Adaptation field control	1
<input type="checkbox"/> Continuity Counter(HEX)	1
<input type="checkbox"/> Transport Error Indicator	0
<input type="checkbox"/> Payload Unit Start Indicator	1
<input type="checkbox"/> Transport Priority	0
<input type="checkbox"/> Transport Scrambling Control	0

PID:

13-bit long. Shows packet ID of a transport stream.

According to the ISO/IEC-13818-1, PID is assigned as follows.

PID value	Description
0X0000	PAT
0X0001	CAT
0X0002 to 0X000F	Reserved
0X0010 to 0X1FFE	Assigned to NIT, PMT, Elementary_PID, etc.
0X1FFF	NULL packet

Adaptation field control:

2-bit long. Shows adaptation control information.

Value	Description
00	Reserved
01	Payload only
10	Adaptation only
11	Payload next to adaptation

Continuity Counter:

4-bit long. Incremented for every packet with the same PID. Not incremented when adaptation field control is 00 or 10. Can be set discontinuous when discontinuity_indicator is 1.

Transport Error Indicator:

1-bit long. “1” indicates that the packet contains some error.

Payload Unit Start Indicator:

1-bit long. “1” indicates that the packet includes the start 1st byte of the PES and PSI.

Transport Priority:

1-bit long. “1” indicates that this packet has higher priority than other packets.

Transport Scrambling Control:

2-bit long. Shows scramble information.

Value	Description
00	No scramble
01	User-defined
10	User-defined
11	User-defined

Checking the check button of each item of Header Info and clicking on the Search button allows the next (previous) packet to be searched under the same condition as that of the checked item. If more than one item is checked, a search is performed under an AND condition. When both the Head Info item and Time Stamp item are checked, a search is also performed under an AND condition.

Hint

Conducting check/search with Transport Error Indicator set to 1

Allows a packet containing a transport stream error to be searched.

Conducting check/search with PID set to XXX and Payload Unit Start Indicator set to 1

Allows the start of an elementary stream whose PID is XXX to be searched.

Time Stamp

Displayed in HEX and time if the transport stream packet contains information on PCR, PTS and DTS.

Time Stamp			
<input type="checkbox"/>	PCR	HEX	FFFF3915(base) 120(ext)
		Time	26 H 30 M 43 S 151.88844 ms
<input type="checkbox"/>	PTS	HEX	X
		Time	X
<input type="checkbox"/>	DTS	HEX	X
		Time	X

PCR:

A 42-bit value included in Adaptation field. Used to synchronize the system clock (27 MHz) of the decoder with the encoder by PLL. Configured in higher 33 bits (base) and lower 9 bits (ext) and the lower bits operate 0 to 299 at 27 MHz with a counter, while the higher bits operate at 90 kHz = 27 MHz/300.

PTS:

A 33-bit value at PES header. Indicates the time for outputting the content of the PES packet. This value indicates higher 33 bits of the PCR.

DTS:

A 33-bit value at PES header. Indicates the time for outputting the content of the PES packet. This value indicates higher 33 bits of the PCR. Used when the output sequence is different from the decoding sequence as in the case of MPEG Video.

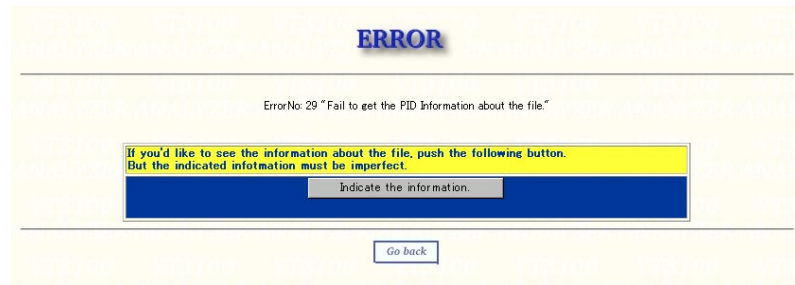
Checking the check button of each item of Time Stamp and clicking on the Search button allows packets including the checked items to be searched. If more than one item is checked, a search is performed under an AND condition. When both the Head Info item and Time Stamp item are checked, a search is also performed under an AND condition.

Hint**Conducting check/search of PID, PCR with PID set to XXX**

Allows the PCR jitter to be measured from Address and the PCR value.

Note

If the packet is not a complete transport stream packet, the following error may be displayed. Clicking on the Indicate the information button allows items other than the error content to be displayed correctly.



5.5 Table View Display

After selecting a file to be analyzed, select PACKET from the function selection menu and further click on the Table View button. The following screen appears.

The screenshot displays the 'Table View' interface with the following sections:

- TS Information:** File Name: /home/vt3000/vt3000/SHOT_C35.M2T, File Size: 94325428, Packet Type: 188, Packet Total: 501731, PID(HEX): 0x0085, Address(HEX): 0x1a06fc.
- Binary Dump:** A table of hex addresses and their corresponding data. The address 0x001A074C contains the value '62CB800' in red.
- Table Info:** Table Type: ---, Video&Audio: Sequence Header.
- Table Details:** Table Type: Picture Header, Table Offset: 74, Table Length: 10, More Info: [Info](#).
- Header Info:** PID(HEX): 0x0085.
- SEARCH INFO:** Search controls with fields for search, prev, next, and search >>.
- Navigation Bar:** YOKOGAWA, TOP, TS SELECT, TMCC, PACKET VIEW, TABLE VIEW, TS, PID.

Table Info (Table Type)

Specifies the four Program Specific Information (PSI) tables (PAT, PMT, CAT, NIT) defined in the ISO/IEC-13818-1 and six Service Information (SI) tables (BAT, SDT, EIT, RST, TDT, TOT) defined in DVB and ARIB. The search result is color-coded (red) in Binary Dump and displayed in Table Details. Detailed information can also be displayed by a hyper link.

The close-up shows the 'Table Info' dropdown menu with the following options: PAT, PMT, CAT, NIT, SDT, BAT, EIT, RST, TDT, and TOT. The 'PAT' option is currently selected.

Table View

TS Information

File Name: /home/vt3000/vt3000/SHOT_C35.M2T
 File Size: 94325428
 Packet Type: 188
 Packet Total: 501731
 PID(HEX): 0x0044
 Address(HEX): 0x0bc [Go]

Binary Dump

Address	00018203	00050803	00090A08	0000E0FE
0x000000BC	47404411	0002B01F	0001C100	00E085F0
0x000000CC	0002E085	F0050203	2448F003	E086F003
0x000000DC	030187C8	E2098FFF	FFFFFFFF	FFFFFFFF
0x000000EC	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x000000FC	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000010C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000011C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000012C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000013C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000014C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000015C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF
0x0000016C	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF

Table Info

Table Type: PMT
 Video&Audio: ---

Table Details

Table Type	Table Offset	Table Length	More Info
PMT	5	34	Info

Header Info

PID(HEX): 0x0044

Table Details - Microsoft Internet Explorer

File Edit View Favorites Tools Help

PMT	
Table Items	
table_id	0x2
section_syntax_indicator	0x1
section_length	0x1F
program_number	0x1
version_number	0x0
current_next_indicator	0x1 (Enable)
section_number	0x0
last_section_number	0x0
PCR_PID	0x85
elementary_PID	0x85
stream_type	0x2 (MPEG2 Video)
elementary_PID	0x86
stream_type	0x3 (MPEG1 Audio)

close

Explanation

More Info displays the following information.

PAT

table_id
 section_syntax_indicator
 section_length
 transport_stream_id
 version_number
 current_next_indicator
 section_number
 last_section_number
 program_number network_PID
 program_number program_map_PID (display more than one)

PMT

table_id
 section_syntax_indicator
 section_length
 program_number
 version_number
 current_next_indicator
 section_number
 last_section_number
 PCR_PID
 elementary_PID stream_type (display more than one)

Others

table_id
 section_syntax_indicator
 section_length

5.5 Table View Display

Table Info (Video & Audio)

Specifies the Sequence Header, GOP Header, Picture Header, Sequence Extension defined in the ISO/IEC-13818-2 (MPEG2-Video) and Audio Sync Header defined in the ISO/IEC-11172-3 (MPEG1-Audio), 13818-3 (MPEG2-Audio) and 13818-7 (MPEG2-Audio AAC). The search result is color-coded in Binary Dump and displayed in Table Details. If there is more than one result, they are color-coded red, blue, green and orange, in order of Table Details. Detailed information can also be displayed by a hyper link.

The screenshot displays the 'Table View' interface. At the top, there are tabs for 'Packet View' and 'Table View', with 'Table View' selected. Below this is the 'TS Information' section, which includes fields for File Name, File Size, Packet Type, Packet Total, PID(HEX), and Address(HEX). A search box is also present.

The 'Binary Dump' section shows a list of memory addresses and their corresponding hexadecimal values. Several values are highlighted in different colors: red, blue, green, and orange. A green arrow points from the 'Table Info' section to the 'Table Details' section.

The 'Table Info' section shows the 'Table Type' as 'Sequence Header' and the 'Video&Audio' as 'Sequence Header'. Below this is the 'Table Details' section, which is a table with columns for 'Table Type', 'Table Offset', 'Table Length', and 'More Info'. The rows are:

Table Type	Table Offset	Table Length	More Info
Sequence Header	34	76	Info
Sequence Extension	110	10	Info
GOP	138	8	Info
Picture Header	146	10	Info

The 'Header Info' section is also visible at the bottom of the 'Table Info' area.

The 'Table Details - Microsoft Internet Explorer' window is open, showing the 'SequenceHeader' table items. The table has columns for 'Table Items' and 'Value'. The items are:

Table Items	Value
horizontal_size_value	1440
vertical_size_value	1080
aspect_ratio_information	3 (16 : 9)
frame_rate_code	4 (30.0 [frames/s])
bit_rate_value	60000
vbv_buffer_size	897
load_intra_quantiser_matrix	0x0
load_non_intra_quantiser_matrix	0x1
non_intra_quantiser_matrix	0x10, 0x11, 0x11, 0x12, 0x12, 0x12, 0x12, 0x13, 0x13, 0x13, 0x13, 0x14, 0x14, 0x14, 0x14, 0x14, 0x15, 0x15, 0x15, 0x15, 0x15, 0x16, 0x16, 0x16, 0x16, 0x16, 0x16, 0x17, 0x17, 0x17, 0x17, 0x17, 0x17, 0x17, 0x17, 0x17, 0x17, 0x18, 0x18, 0x18, 0x18, 0x18, 0x18, 0x18, 0x18, 0x19, 0x19, 0x19, 0x19, 0x1A, 0x1A, 0x1A, 0x1A, 0x1A, 0x1A, 0x1B, 0x1B, 0x1B, 0x1B, 0x1B, 0x1B, 0x1C, 0x1C, 0x1C, 0x1C, 0x1C, 0x1E, 0x1E, 0x1E, 0x1F, 0x1F, 0x21.

This close-up shows the 'Table Info' section with the 'Table Type' dropdown set to 'Sequence Header' and the 'Video&Audio' dropdown set to 'Sequence Header'. Below this is the 'Table Details' section, which is a table with columns for 'Table Type', 'Table Offset', 'Table Length', and 'More Info'. The rows are:

Table Type	Table Offset	Table Length	More Info
Sequence Header	34	76	Info
GOP Header	110	10	Info
Picture Header	138	8	Info
Sequence Extension	146	10	Info
Audio Sync Header(Audio)			

At the bottom, there is a search box with 'PID(HEX)' and the value '0x0085'.

Explanation

More Info shows the following information.

Sequence Header

horizontal_size_value
vertical_size_value
aspect_ratio_information
frame_rate_code
bit_rate_valu
vbv_buffer_size
load_intra_quantiser_matrix
load_non_intra_quantiser_matrix
non_intra_quantiser_matris

Sequence Extention

extension_start_code_identifier
profile_and_level_indication
progressive_sequence
chroma_format
horizontal_size_extension
vertical_size_extension
bit_rate_extension
vbv_buffer_size_extension
low_delay
frame_rate_extension_n
frame_rate_extension_d

GOP Header

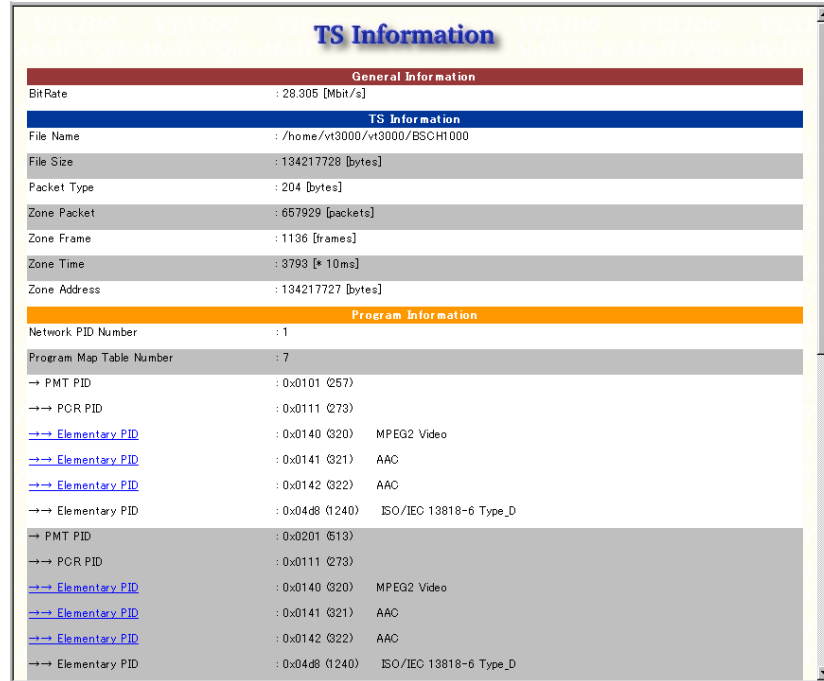
time_code
closed_gop
broken_link

Picture Header

temporal_reference
picture_coding_type
vbv_delay

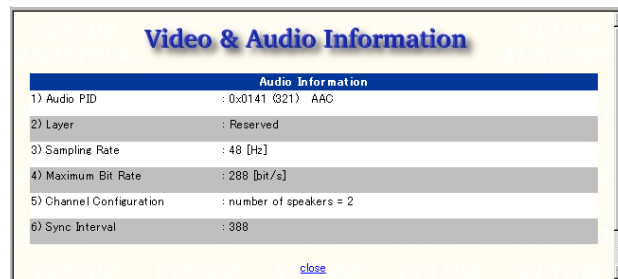
5.6 TS Information Display

After selecting the file to be analyzed, clicking on the TS button from the function selection menu displays the following.



General Information		
BitRate	: 28.305 [Mbit/s]	
TS Information		
File Name	: /home/vt3000/vt3000/BSCHE000	
File Size	: 134217728 [bytes]	
Packet Type	: 204 [bytes]	
Zone Packet	: 657929 [packets]	
Zone Frame	: 1136 [frames]	
Zone Time	: 3793 [* 10ms]	
Zone Address	: 134217727 [bytes]	
Program Information		
Network PID Number	: 1	
Program Map Table Number	: 7	
→ PMT PID	: 0x0101 (257)	
→→ PCR PID	: 0x0111 (273)	
→→ Elementary PID	: 0x0140 (320) MPEG2 Video	
→→ Elementary PID	: 0x0141 (321) AAC	
→→ Elementary PID	: 0x0142 (322) AAC	
→→ Elementary PID	: 0x04d8 (1240) ISO/IEC 13818-6 Type_D	
→ PMT PID	: 0x0201 (513)	
→→ PCR PID	: 0x0111 (273)	
→→ Elementary PID	: 0x0140 (320) MPEG2 Video	
→→ Elementary PID	: 0x0141 (321) AAC	
→→ Elementary PID	: 0x0142 (322) AAC	
→→ Elementary PID	: 0x04d8 (1240) ISO/IEC 13818-6 Type_D	

Clicking on the Elementary PID displays the following. (Video)



Audio Information	
1) Audio PID	: 0x0141 (321) AAC
2) Layer	: Reserved
3) Sampling Rate	: 48 [Hz]
4) Maximum Bit Rate	: 288 [bit/s]
5) Channel Configuration	: number of speakers = 2
6) Sync Interval	: 388

[close](#)

Clicking on the Elementary PID displays the following. (Audio)

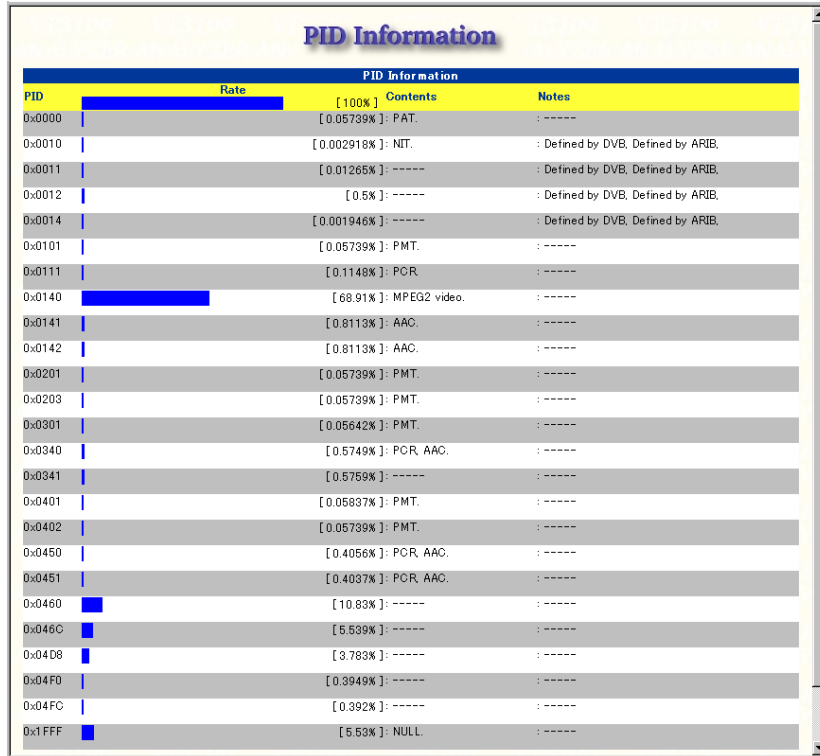


Video Information	
1) Video PID	: 0x0140 (320) MPEG2 Video
2) Frame Size	: Horizontal(1440) * Vertical(1080)
3) Picture Rate	: 29.97
4) Video Bit Rate	: 24000000 [bit/s]
5) Aspect Ratio	: 16 : 9
6) Buffer Size	: 9781248 [byte]

[close](#)

5.7 PID Information Display

Clicking on the PID button from the file or function selection menu displays PIDs and rates of all packets including packets not described in the PMT as follows.



The screenshot shows a window titled "PID Information" with a table listing various PIDs and their associated data. The table has four columns: PID, Rate, Contents, and Notes. The PID 0x0140 is highlighted in blue.

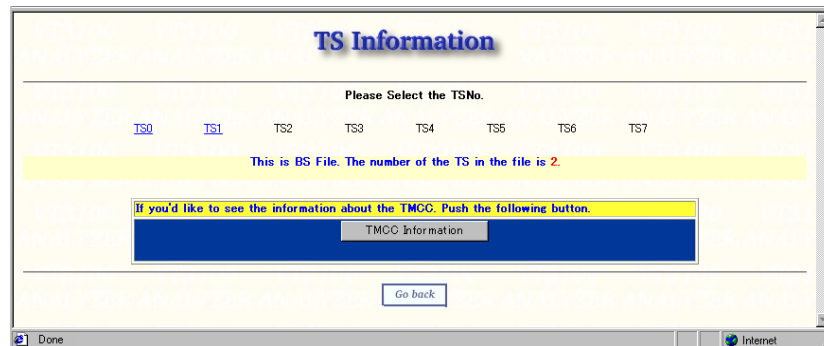
PID	Rate	Contents	Notes
0x0000	[100%]	[0.05739%] : PAT.	: -----
0x0010	[0.002918%]	: NIT.	: Defined by DVB, Defined by ARIB.
0x0011	[0.01265%]	: -----	: Defined by DVB, Defined by ARIB.
0x0012	[0.5%]	: -----	: Defined by DVB, Defined by ARIB.
0x0014	[0.001946%]	: -----	: Defined by DVB, Defined by ARIB.
0x0101	[0.05739%]	: PMT.	: -----
0x0111	[0.1148%]	: PCR.	: -----
0x0140	[68.91%]	: MPEG2 video.	: -----
0x0141	[0.8113%]	: AAC.	: -----
0x0142	[0.8113%]	: AAC.	: -----
0x0201	[0.05739%]	: PMT.	: -----
0x0203	[0.05739%]	: PMT.	: -----
0x0301	[0.05642%]	: PMT.	: -----
0x0340	[0.5749%]	: PCR, AAC.	: -----
0x0341	[0.5759%]	: -----	: -----
0x0401	[0.05837%]	: PMT.	: -----
0x0402	[0.05739%]	: PMT.	: -----
0x0450	[0.4056%]	: PCR, AAC.	: -----
0x0451	[0.4037%]	: PCR, AAC.	: -----
0x0460	[10.83%]	: -----	: -----
0x046C	[5.539%]	: -----	: -----
0x04D8	[3.783%]	: -----	: -----
0x04F0	[0.3949%]	: -----	: -----
0x04FC	[0.392%]	: -----	: -----
0x1FFF	[5.53%]	: NULL.	: -----

5.8 BS Digital Broadcasting TS Display

Since multiple BS digital broadcasting transport streams (TS) compliant with the ARIB STD-B20 are multiplexed and further provided with a TMCC signal, these TSs cannot be analyzed by a normal TS analyzer. The VT3000E can separate the TMCC signal and demultiplex multiple TSs and analyze in the same way as for a normal TS.

TS Information Display

Selecting the BS digital broadcasting TS and clicking on the TS button displays the following.



The characters displayed in blue are the multiplexed TSs; clicking on them display the TS Information. Clicking on the TMCC Information button shows TMCC information as follows.

TMCC Information

TMCC Version : 19

Transport Mode/Slot Information

mode1: 7:TC6PSK(2/3) : 48
mode2: 15 : 0
mode3: 15 : 0
mode4: 15 : 0

TS No/Slot Information										
	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1

TS No/TS ID Table							
TS No	ID	TS No	ID	TS No	ID	TS No	ID
0	16400	1	16401	2	-	3	-
4	-	5	-	6	-	7	-

Transport Control Information

Starting control signal : 0

YOKOGAWA TOP TS SELECT TMCC PACKET VIEW TABLE VIEW TS PID

Explanation**TMCC Version:**

Indicates the version of the TMCC information.

TransportMode/Slot Information:

The ARIB STD-B20 adopts a hierarchic transfer system whereby a transfer is performed with modulation systems of up to 4 types. This indicates the modulation system and the number of slots.

TS No/Slot Information:

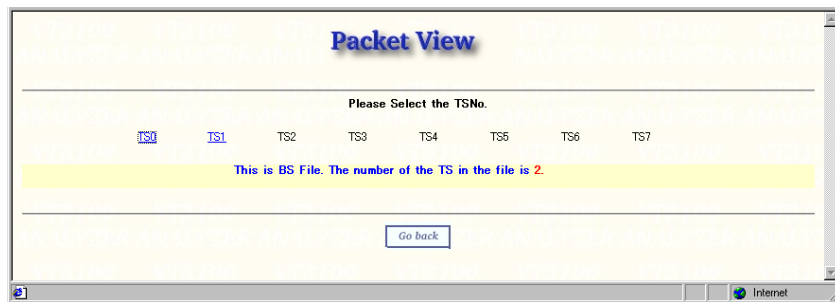
The ARIB STD-B20 arranges TSs in 48 slots and assigns a relative TS No (maximum 8) for every slot. TS No/Slot Information displays relative TS No for every slot.

TS No/TS ID Table:

Shows a relative slot and the corresponding ID.

Packet View Display

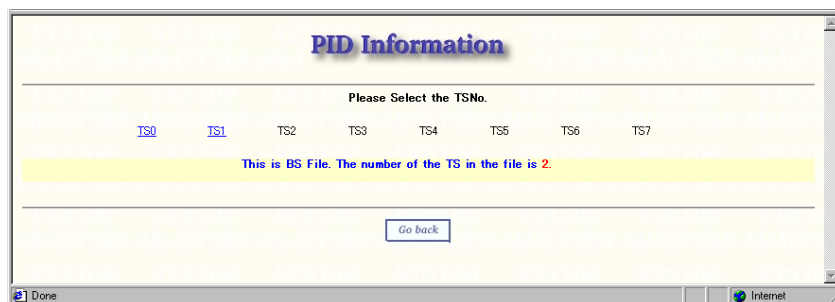
Selecting a BS digital broadcasting TS and clicking on the TS button displays the following.



The characters displayed in blue are the multiplexed TSs. Clicking on them display the Packet View.

PID View Display

Selecting a BS digital broadcasting TS and clicking on the TS button displays the following.



The characters displayed in blue are the multiplexed TSs. Clicking on them display the PID View.

6.1 Connecting a SCSI Device

You can connect an external hard disk to the VT3000E and copy or move contents from the external hard disk to the built-in hard disk of the VT3000E.

The hard disk performance significantly affects the performance such as the speed of outputting from the external SCSI hard disk and recording into the external SCSI hard disk, etc.

SCSI Specifications

Item	Specifications
Interface standard	SCSI (Small Computer System Interface), ANSI X3.131-1986
Connector type	68-pin Ultra Wide SCSI (pin type)

Items Necessary for Connection

Cable

Use a commercially sold cable that is 3 m or less in length, that has a ferrite core on each end of the cable, and that has a characteristic impedance between 90 and 132 Ω .

Terminator

Be sure to attach a terminator to the last external SCSI device.

Connection Procedure

1. Connect the SCSI cable to the SCSI connector on the rear panel of the instrument.
2. After turning on the SCSI device, turn ON the VT3000E. To format the hard disk, follow the procedure described in the next section, "Formatting the Disk."

Hard Disks that Can Be Connected

You can connect a single-partition hard disk that has been formatted in the expanded region of the FAT system using fdisk. You cannot connect a hard disk that has been formatted in the primary region using fdisk.

For general handling precautions for the connected hard disk, see the instruction manual that is provided with the hard disk.

Note

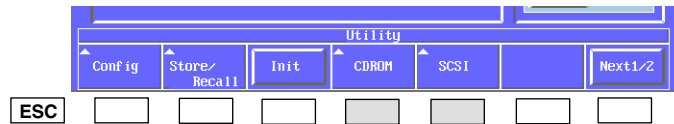
- A maximum of 7 SCSI devices can be connected to this equipment.
- Make sure all SCSI devices connected have unique ID numbers.
- The speed of outputting or recording may vary depending on the performance of the external SCSI hard disk connected.

6.2 Mounting a Internal CD-ROM Drive or External SCSI Device

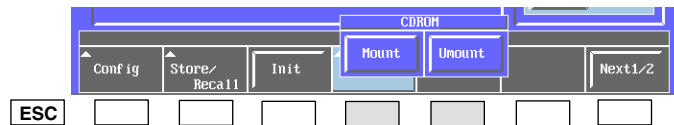
Procedure

Mount/Unmount the Internal CD-ROM drive

1. Press the UTILITY key to display the Utility menu.
2. Press the [CDROM] soft key.

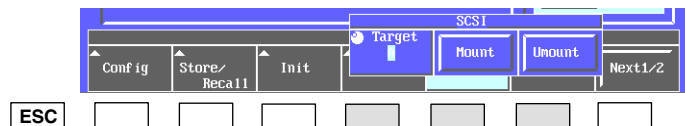


3. Press the [Mount] or [Unmount] soft key.



Mount/Unmount the External SCSI Device

1. Press the UTILITY key to display the Utility menu.
2. Press the [SCSI] soft key.



3. Press the [Target] soft key and select the target using rotary knob.
4. Press the [Mount] or [Unmount] soft key.

Explanation

You must mount the CD-ROM or SCSI device in order for the VT3000E to recognize it. To unload the CD-ROM, unmount it.

When a SCSI device with more than one partition is mounted, only the first area can be mounted.

CAUTION

Do not turn OFF the SCSI device or remove the SCSI cable while mounting the device. This can damage the SCSI device or files on the SCSI device.

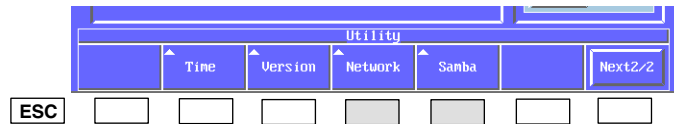
Note

- SCSI devices which can be connected to the instrument are hard disks, PD, JAS, and Zip disk with EXT2 formatting.
- The <SCSI> and <cdrom> directories in the home directory are mount points for the SCSI and CD-ROM. Do not remove these directories.
- Do not place files or create directories under the <SCSI> and <cdrom> directories if they are not mounted.
- Use the VT3000E to format the SCSI device.
- If the current directory is below the <cdrom> directory, you cannot unmount the CD-ROM. Move to the current directory above the <cdrom> directory.
- If you try to mount a device that is already mounted, an error occurs.
- When directly outputting the contents from the CD-ROM in the HDD mode and the output rate is slower than the transfer rate from the CD-ROM (varies depending on the writing format of the CD-ROM), the contents may not be output correctly. If the output mode is DIMM/HDD, the contents may not be output correctly until the contents are transferred to the DIMM.
- While the CD-ROM drive or SCSI device directory (<cdrom>, <scsiA to scsiG>) are selected in the SOURCE menu or FILE menu, unmounting the CD-ROM causes a message "Device is busy" to appear and it is impossible to unmount the CD-ROM. In this case, select any drive other than the CD-ROM drive or any directory other than the directories of the SCSI devices and then unmount the CD-ROM.
- Target numbers are assigned to SCSI devices in ascending order of ID numbers. For example, if SCSI devices with ID numbers 2, 5, and 6 are connected, target numbers A, B, and C are assigned in that order.

6.3 Configuring the Network and SAMBA

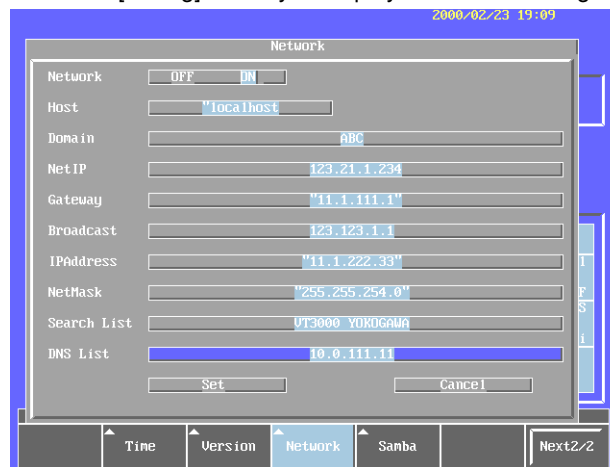
Procedure

1. Press the UTILITY key to display the Utility menu.
2. Press the [Next1/2] soft key.



Configuring the network

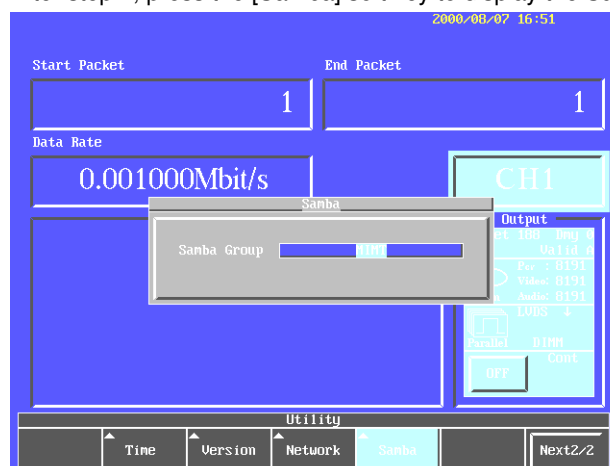
3. Press the [Network] soft key.
4. Press the [Config] soft key to display the Network configuration screen.



5. Highlight Network using the rotary knob.
6. Select [ON] or [OFF] using the SELECT key.
7. If you select ON, set the Host, Domain, Net IP, Gateway, Broadcast, IPAddress, NetMask, Search List, and DNS List. To set the Host, Domain, Net IP, Gateway, Broadcast, IPAddress, NetMask, Search List, and DNS List, press the SELECT key to display the keyboard. Enter up to 20 characters for the Host, up to 15 characters for the NetIP, Gateway, Broadcast, IPAddress, and NetMask, and up to 50 characters for the others.
8. Highlight [Set] or [Cancel] using the rotary knob and press the SELECT key.

Configuring SAMBA

9. After step 1, press the [Samba] soft key to display the Samba configuration screen.



10. Press the SELECT key to display the keyboard. Enter the work group name of Samba using up to 20 characters. It takes some time for the samba configuration to take effect.

Explanation

Network

You can connect to the network via Ethernet. Using ftp, you can exchange contents with a PC on the network.

If you put a file to the VT3000E using ftp, it is placed in the VT3000E directory. The file that has been put appears in the list when the file list is closed and opened once again.

Host

Enter the host name of the VT3000E.

Domain

Set the network domain name that the VT3000E belongs to.

Net IP

Set the network address used to exchange data over the network.

Gateway

Set the IP address of the gateway (router, switch, etc.) used to communicate with other networks. Set the gateway according to the system or network to which the VT3000E belongs. You may not need to set the gateway.

Broadcast

The IP address with the host section set to all 1s in binary notation is called a broadcast address. This address is used to transmit the same packet to all hosts on the network to which the VT3000E is connected.

IP Address

Set the IP address to assign to the VT3000E. The IP address is used to uniquely identify a device on the network when using TCP/IP.

NetMask

Set the mask value used when determining the subnet network address from the IP address. Set the netmask according to the system or network to which the VT3000E belongs. You may not need to set the netmask.

Search List

Set the domain name of the network to be searched. To set multiple domains, enter a space as a delimiter between the domain names.

DNS List

Set the DNS server address. To set multiple addresses, enter a space as a delimiter between the addresses.

Anonymous ftp

The VT3000E supports anonymous ftp. The user name of the file that is put to the VT3000E using anonymous ftp is automatically set to "VT3000E."

Note

- Set the NetIP, Gateway, Broadcast, IPAddress, and NetMask by specifying four values between 0 and 255 delimited by a period ("xxx.xxx.xxx.xxx"). An error occurs if the values are specified using any other format.
- Because the VT3000E does not support DHCP, obtain a fixed IP address for the Host and IP Address.
For details, consult your network administrator.
- You cannot create directories below the VT3000E directory using ftp.
- You can only put files to the VT3000E directory using ftp.

6.3 Configuring the Network and SAMBA

SAMBA

Because the VT3000E uses Linux as its OS, SAMBA is used to connect to a PC running Windows on the network. Here, you will set the SAMBA work group. By setting the work group, the VT3000E is recognized as a SAMBA server from a PC running Windows. Then, you can exchange contents with the PC.

Note

When copying directories or files to the VT3000E (Samba server) from a PC running windows, use only alphanumeric characters for the directory and file names. Copying directories or files that use double-byte characters in their names will appear as garbled characters on the VT3000E file list.

6.4 Remotely Controlling VT3000E Using VNC

VNC is an abbreviation of "Virtual Network Computing" and is a GUI tool similar to an X window that displays the desktop of a remote machine on the desktop of a local machine. It is distributed as freeware and compatible with various platforms such as Linux, Windows and Macintosh. Furthermore, the VNC can also be displayed or remotely controlled from a Web browser without any viewer.

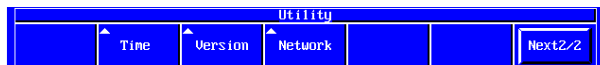
Note

- When the VT3000E is remotely controlled using the VNC, operations from the front panel are not possible.
- Note that to close the VNC, the VT3000E must be shut down.

Procedure

VT3000E configuring

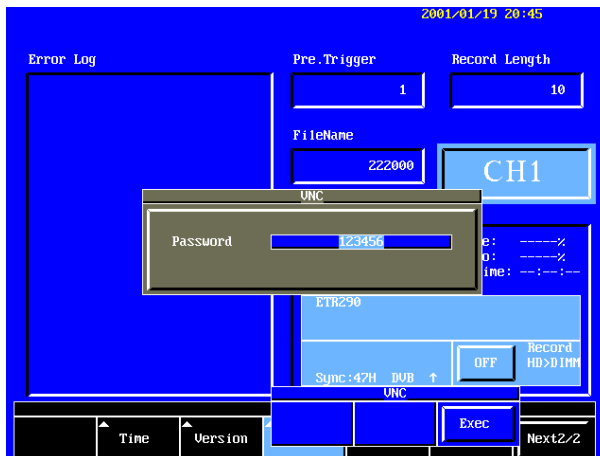
1. Press the UTILITY key to display a Utility menu.
2. Press the [Next1/2] soft key.



3. Press the [Network] soft key and select VNC.



4. Press the SELECT key to show a keyboard and set a password. Set the password in 6 to 8 alphabetic characters (upper and lower cases) and numerals.



5. Pressing the [Exec] soft key displays "VNC Executing!!" on a white screen.
6. To return from the remote control to local, disconnect the PC, press the sub switch on the front panel of the VT3000E to turn OFF power and then press the sub switch again to turn ON power.

Note

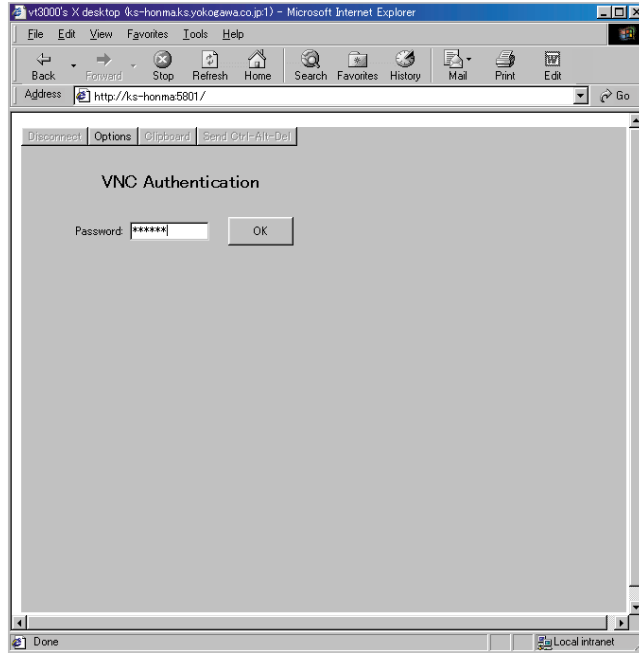
- Use the Web browser with Java enabled.
- Use by more than one user is not possible.
- A password is case-sensitive.
- Do not turn OFF the main switch after the sub switch is pressed until this equipment is set in a standby state. Failing to observe this may damage the hard disk or files in the hard disk.

6.4 Remotely Controlling VT300E Using VNC

PC configuring

An example of connection using a Web browser is shown. For connection using a VNC application, see other documents.

1. Start the Web browser on the PC connected to the network.
2. Enter the http: host name or IP Address:5801/ in the address field of the Web browser.
3. Enter the password entered in the VT300E.



Note

A password is case-sensitive in alphabetic characters, and therefore correctly distinguish upper and lower cases.

Remote control

The keys on the VT3000E panel are assigned to the following characters of the keyboard.

VT3000E	Keyboard
ESC	ESC
Soft key 1 (leftmost)	F1
Soft key 2	F2
Soft key 3	F3
Soft key 4	F4
Soft key 5	F5
Soft key 6	F6
Soft key 7 (rightmost)	F7
SOURCE	q
ZONE	q
RATE	e
SETTING	r
CH1	x
CH2	c
CH3	b
FILE	d
UTILITY	f
START/STOP	g
0	0
.	.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0
M/h	o
K/min	k
m/s	m
RESET	Delete
SELECT	End
Rotary knob (clockwise)	Page Up
Rotary knob (counterclockwise)	Page Down
<	←
>	→

Note

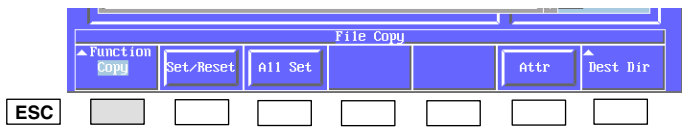
- The ten-key numeric pad cannot be used to enter numerals.
- Key input is not effective unless the mouse cursor is placed on the VT3000E screen of the Web browser.

7.1 Deleting Files

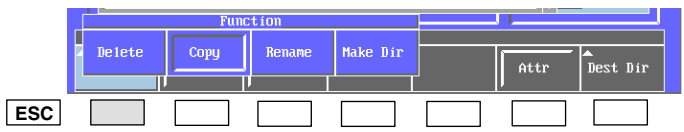
Procedure

Displaying the delete menu

1. Press the FILE key to display the File menu.
2. Press the [Function] soft key to display the Function menu.

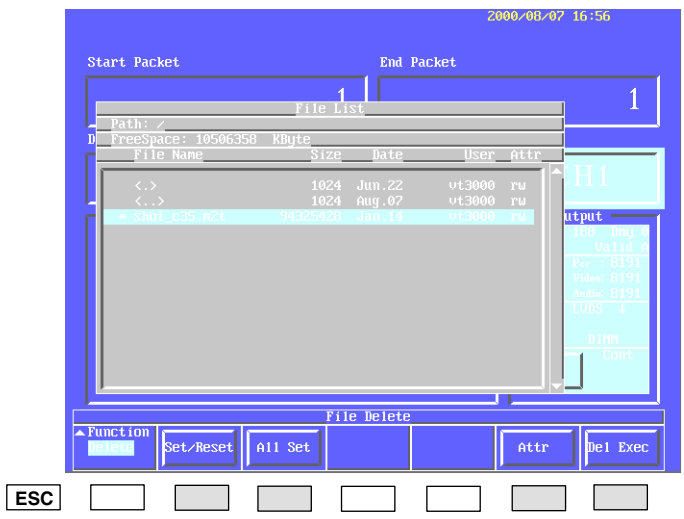


3. Press the [Delete] soft key to display the File List and Delete menus.



Changing the directory

4. Highlight the directory (displayed with <>) with the rotary knob and press the SELECT key. The file list of the selected directory is displayed. Select <..> and press the SELECT key to move up a directory.



Selecting the file to be deleted

5. Select the file to be deleted using the rotary knob and press the [Set/Reset] soft key. A [*] mark is placed by the file indicating that it is selected. Press the same soft key again to remove the [*] mark.

Selecting all files to be deleted

6. Press the [All Set] soft key (the name of the soft key changes to [All Reset]) to place [*] marks. Press the [All Reset] soft key (the name of the soft key changes to [All Set]) to remove [*] marks.

Executing the delete operation

7. Press the [Del Exec] soft key to delete all files that have [*] marks.

Setting the File Attributes

8. Select the file using the rotary knob and press the [Attr] soft key to select [R] or [R/W].

Explanation

Deletes files that have been saved to the built-in hard disk or external SCSI device.

Setting the file attribute (Attr)

You can set file attributes for each file. The two attributes you can select are as follows:

- R/W: Reading and writing of the file are possible
- R: Only reading of the file is possible

If you set the attribute to [R], the file cannot be deleted. Set the attribute to [R] for those files you do not wish to delete.

Selecting the files to be deleted

Deletes all files that have [*] marks.

If files exist in the directory you wish to delete, delete the files in the directory first. Then, delete the directory.

Note

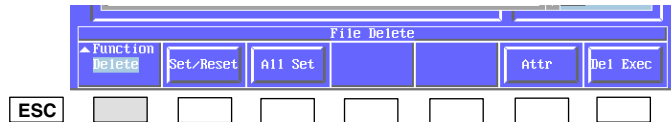
- You cannot delete files while stream output or recording is in progress. Press the START/STOP key to stop the output.
 - Data that are deleted cannot be recovered. Make sure you do not erase important files. You can delete directories if there are no files in them.
 - If an error occurs while deleting multiple files, the files after the error occurrence are not deleted.
 - You cannot delete files that have [R] attributes (read-only).
-

7.2 Copying Files

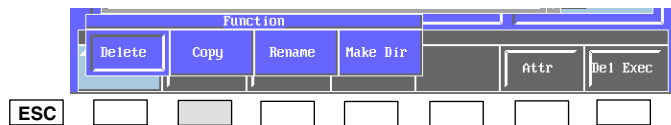
Procedure

Displaying the copy menu

1. Press the FILE key to display the File menu.
2. Press the [Function] soft key to display the Function menu.



3. Press the [Copy] soft key to display the File List and Copy menus.

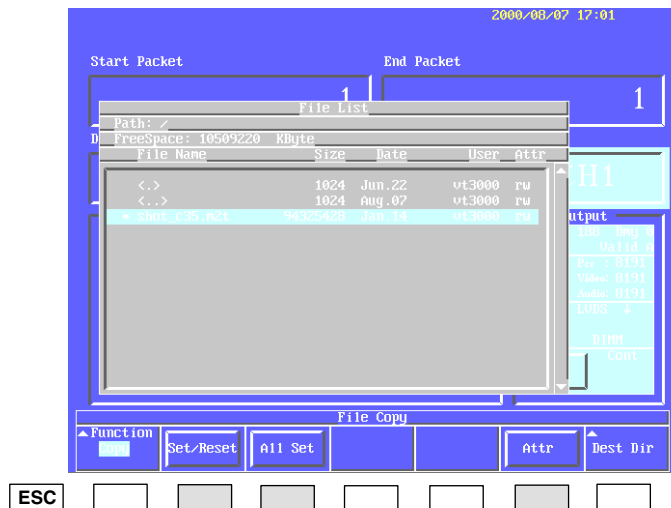


Changing the directory

4. Highlight the directory (displayed with <>) with the rotary knob and press the SELECT key. The file list of the selected directory is displayed. Select <..> and press the SELECT key to move up a directory.

Selecting the file to be copied

5. Highlight the file you wish to copy using the rotary knob and press the [Set/Reset] soft key. A [*] mark is placed by the file indicating that it is selected. Press the same soft key again to remove the [*] mark.



Selecting all files to be copied

6. Press the [All Set] soft key (the name of the soft key changes to [All Reset]) to place [*] marks. Press the [All Reset] soft key (the name of the soft key changes to [All Set]) to remove [*] marks.

Selecting the copy destination medium or directory

7. Press the [Dest Dir] soft key to display the File List and Copy menus.
8. Select the copy destination medium or directory.

Executing the copy operation

9. Press the [Copy Exec] soft key to execute the copy operation.



Setting the File Attributes

10. Highlight the file using the rotary knob and press the [Attr] soft key to select [R] or [R/W].

Explanation

Copies the files that are saved on the built-in hard disk or external SCSI device to the specified directory.

Setting the file attribute (Attr)

You can set file attributes for each file. The two attributes you can select are as follows:

- R/W: Reading and writing of the file are possible
- R: Only reading of the file is possible

Note

- You cannot copy files while stream output or recording is in progress. Press the START/STOP key to stop the output.
- If an error occurs while copying multiple files, the files after the error occurrence are not copied.
- If files with the same file name exist at the copy destination, they are overwritten.
- You cannot copy the same files to another directory after copying the files. Select the files to be copied again and copy them.
- An error occurs if the copy source and copy destination directories are the same.

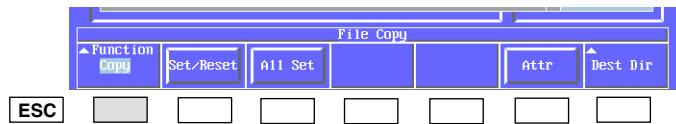
7.3 Renaming Files and Creating Directories

Procedure

Renaming a file

Displaying the Rename menu

1. Press the FILE key to display the File menu.
2. Press the [Function] soft key to display the Function menu.



3. Press the [Rename] soft key to display the File List and Rename menus.



Changing the directory

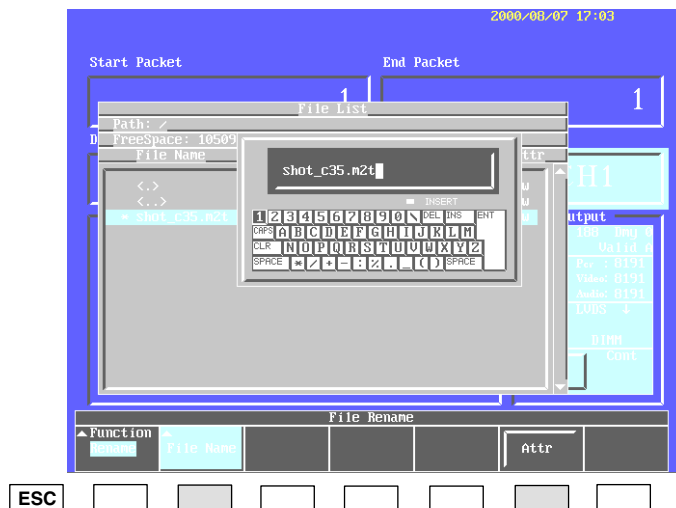
4. Highlight the directory (displayed with <>) with the rotary knob and press the SELECT key. The file list of the selected directory is displayed. Select <..> and press the SELECT key to move up a directory.

Selecting the files to be renamed

5. Highlight the files you wish to rename using the rotary knob.

Setting a new file name

6. Press the [File Name] soft key to display a keyboard screen. Enter the file name using up to 24 characters.



7.3 Renaming Files and Creating Directories

Creating a directory

Displaying the Make Dir menu

7. After step 2, press the [Make Dir] soft key to display the File List and Make Dir menus.

Selecting the directory

8. Highlight the directory (displayed with <>) with the rotary knob and press the SELECT key. The file list of the selected directory is displayed. Select <..> and press the SELECT key to move up a directory.

Setting the directory name

9. Press the [Dir Name] soft key to display a keyboard screen. Enter the directory name using up to 24 characters. Press the [ENTER] key to create the directory.

Explanation

Renaming files

You can rename files.

Creating directories

You can create directories on the floppy disk, built-in hard disk, or external SCSI device.

Note

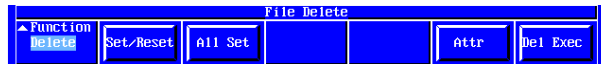
- You cannot create directories while stream output or recording is in progress. Press the START/STOP key to stop the output.
 - If a file with the same name exists in the same directory, it is overwritten.
 - If a directory with the same name already exists in the same directory, the directory cannot be created.
 - You can enter up to 24 characters for the file name and directory name. However, the VT3000E only displays the first 15 characters on the file list.
-

7.4 Operating Zip/UnZip (Compression/Expansion)

Procedure

Open Zip/UnZip menu

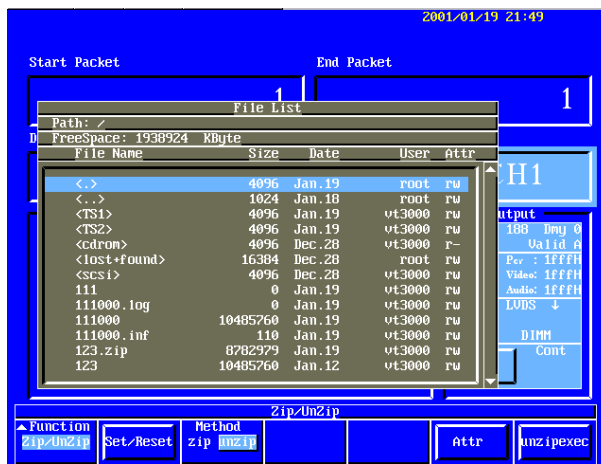
1. Press the FILE key to display the File menu.
2. Press the [Function] soft key to display the Function menu.



3. Press the [Zip] soft key to display the File and Zip menus.



4. Press the [Method] soft key and select [zip] or [unzip].



Change directory

5. Use the rotary knob to highlight the directory (displayed with <>) and press the SELECT key. A file list in the selected directory is shown. Select <..> and press the SELECT key to move to the directory one step superior.

Select file to be zipped

6. Use the rotary knob to select the file to be zipped and press the [Set/Reset] soft key. The file is marked [*] and becomes a zip target. Pressing the same soft key again erases the [*] mark. It is also possible to select more than one file and compress them into one file. The name of the compressed file is the first selected filename + .zip.

Select file to be unzipped

7. Use the rotary knob to select the file to be unzipped and press the [Set/Reset] soft key. The file is marked [*] and becomes an unzip target. Pressing the same soft key again erases the [*] mark. It is not possible to unzip more than one file simultaneously. If more than one file is selected, the first selected file is expanded.

7.4 Operating Zip/UnZip (Compression/Expansion)

Execution

8. Pressing the [zipexec] or [unzipexec] soft key will compress or expand all files marked [*].

Note

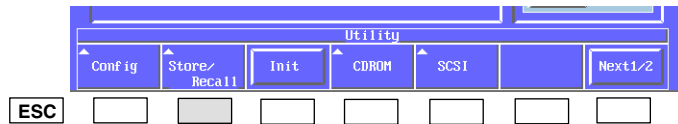
- The extension of a compressed (zipped) file is .zip.
 - It is not possible to compress or expand while stream outputting, recording or monitoring is in progress.
Press the START/STOP key to stop the output.
 - The operation of Zip/Unzip has been verified by the WinZip Ver7.0J, LHMELT Ver1.15b JapanZip Ver2.0.32.
-

8.1 Storing Setup Data in the Setup Data File

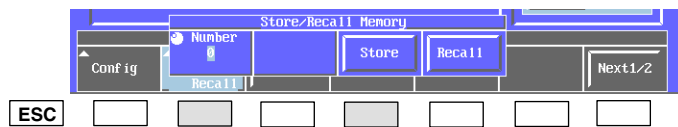
You can save and recall up to 32 sets of panel setup data and content name (file name) to the setup data file

Procedure

1. Press the UTILITY key to display the Utility menu.



2. Press the [Store/Recall] soft key to display the Store/Recall Memory menu.



Selecting the setup data number

3. Turn the rotary knob to set the setup data number.

Storing the data

4. Press the [Store] soft key.
5. A confirmation message appears. Select [OK] by turning the rotary knob and press the SELECT key to store the setup data.

Explanation

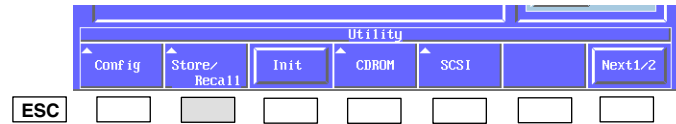
Setup data number

Select a value between 0 and 31. If setup data are already stored to the selected number, the previous data are overwritten.

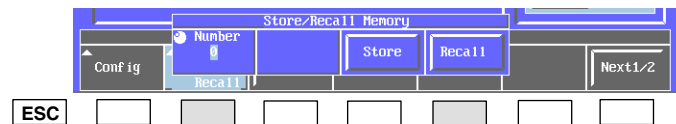
8.2 Recalling Setup Data from the Setup Data File

Procedure

1. Press the UTILITY key to display the Utility menu.



2. Press the [Store/Recall] soft key to display the Store/Recall Memory menu.



Selecting the setup data number

3. Turn the rotary knob to set the setup data number.

Recalling the data

4. Press the [Recall] soft key to recall the setup data.

Explanation

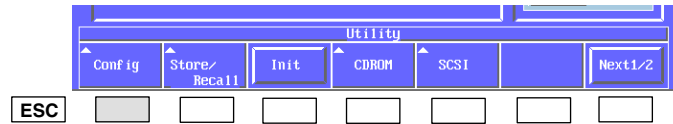
Setup data number

Select the setup data from a value between 0 and 31.

8.3 Turning ON/OFF the Alarm Sound and Screen Saver

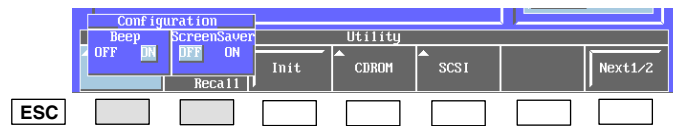
Procedure

1. Press the UTILITY key to display the Utility menu.
2. Press the [Config] soft key to display the Config menu.



Turning ON/OFF the alarm sound

3. Press the [Beep] soft key to select [ON] or [OFF].



Turning ON/OFF the screen saver

4. Press the [ScreenSaver] soft key to select [ON] or [OFF].

Explanation

Alarm sound

Selects whether or not to sound an alarm when you make a mistake in an operation and when errors and warnings are displayed. The initial value is ON.

Screen saver

If there is no key operation for approximately five minutes, the backlight of the display turns OFF. To exit the screen saver, press a key. The initial setting is OFF.

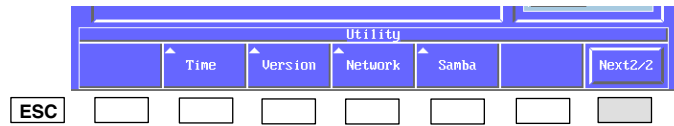
Note

The alarm sound and screen saver settings are reset to the initial values every time the power is turned OFF.

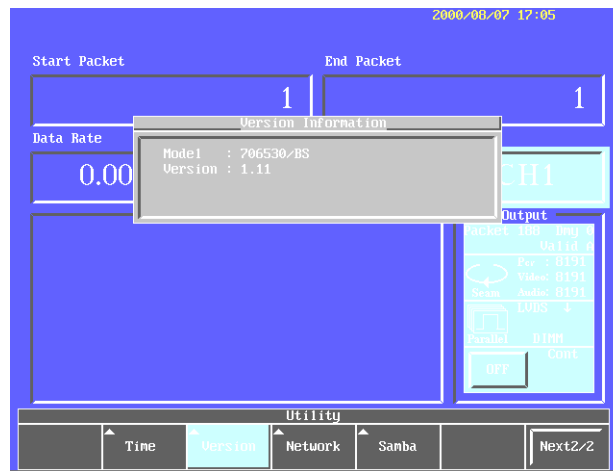
8.4 Displaying the Overview

Procedure

1. Press the UTILITY key to display the Utility menu.
2. Press the [Next1/2] soft key to display the next menu.



3. Press the [Version] soft key to display the version and model name.



8.5 Initializing the Settings

Procedure

1. Press the UTILITY key to display the Utility menu.
2. Press the [Init] soft key.



Initialization of setting information

3. Press the [Param] soft key. A confirmation message appears.
4. Select [OK] using the rotary knob and press the SELECT key.

Initialization of system information

3. Press the [System] soft key. A confirmation message appears.
4. Select [OK] using the rotary knob and press the SELECT key.

Initialization of built-in hard disk

3. Press the [Format] soft key. A confirmation message appears.
4. Select [OK] using the rotary knob and press the SELECT key.

Explanation

Initialization of setting information

The channel setting information is initialized to the factory setting. However, the network setting cannot be initialized.

Initialization of system information

The channel setting and VT3000E setting are initialized to the factory setting.

Initialization of built-in hard disk

Formats the hard disk and reconstructs the file system. When initialization is completed, power to the VT3000E is automatically turned off.

CAUTION

Initializing the built-in hard disk erases all data contents in the hard disk.

8.6 Creating BS Digital Broadcasting Stream (BS Option)

This function is used to convert a transport stream (TS) compliant with the ISO/IEC-13818-1 to a BS digital broadcasting transport stream compliant with the ARIB STD-B20 by inserting a dummy packet, multiplexing and adding a TMCC.

Procedure

TS setting

Before multiplexing more than one TS, set each TS to be multiplexed.

1. Press the FILE key to display the File menu.
2. Press the [Function] soft key to display the Function menu.



3. Press the [Convert] soft key to display the File and TS >BS menus.

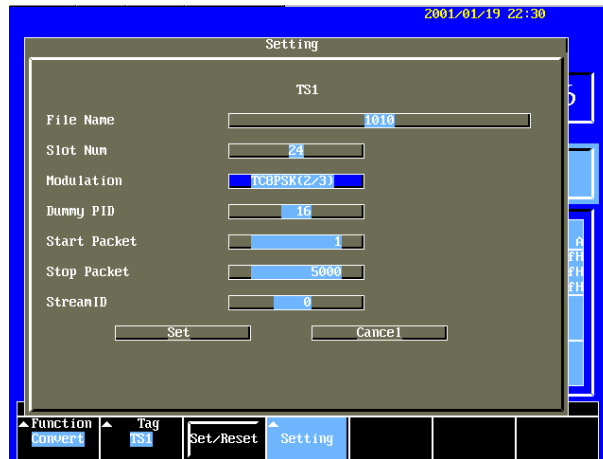


4. Press the [TS] soft key and select one of TS1 to TS8.



5. Use the rotary knob to highlight the directory (displayed with <>) and press the SELECT key. A list of files in the selected directory is displayed. Select <..> and press the SELECT key to move to the directory one step superior.
6. Use the rotary knob to select a file to be converted and press the [Set/Reset] soft key. The file is marked [*] and becomes a file to be multiplexed. Pressing the same soft key again erases the [*] mark.

- Press the [Setting] soft key to display the Setting menu.



- Use the rotary knob and SELECT key to set Slot Num, Modulation, Dummy PID, Start Packet, Stop Packet, StreamID and then press Set.
- Carry out the same procedure for all TSs to be multiplexed.

File Name:

Specifies a source file to be converted.

However, the prerequisite is that the file must be a TS file compliant with the ISO/IEC13818-1.

Slot Num:

Sets the number of slots according to the modulation system. The setting range is 1 to 48. The relationship between the modulation system and the number of slots is as shown in the table below.

Modulation:

Sets the modulation system. However, the setting of the number of slots varies depending on the modulation system. The relationship between the modulation system and the number of slots is as shown in the table below.

Modulation system	Minimum number of slots
BPSK(1/2)	4
QPSK (1/2)	2
QPSK (2/3)	3
QPSK (3/4)	4
QPSK (5/6)	6
QPSK (7/8)	8
TC8PSK (2/3)	1

The number of slots to be specified must be a multiple of the minimum number of slots. If the number of slots does not match the modulation system, an error results.

Dummy PID:

Specifies the PID of a dummy packet (TS header). The setting range is 0x0010 to 0x1FFF.

Start Packet:

Specifies the packet No. from which the conversion starts. The setting range is from 1 to the end packet of the selected MPEG file.

8.6 Creating BS Digital Broadcasting Stream (BS Option)

Stop Packet:

Specifies the packet No. at which the conversion ends. The setting range is from the start packet No. to the end packet of the selected MPEG file.

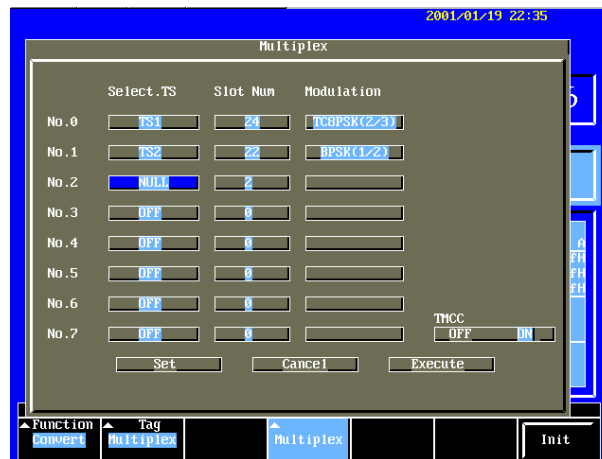
Stream ID:

An absolute TS number added to TMCC information. The setting range is 0x0010 to 0xFFFF. The relative TS number corresponds to No on the Multiplex setting screen.

TS multiplexing

Multiplexes the individually set TSs.

1. Press the [TS] soft key to select Multiplex.



2. Use the rotary knob and SELECT key to select Select.TS. When Select.TS. is selected, Slot Num and Modulation are automatically described from the individually set information. Only Slot Num can be changed from this menu.
3. If only multiplexing is required and TMCC information need not be added, set TMCC to OFF. Once all TSs to be multiplexed are set, use the rotary knob and SELECT key to perform Execute.

Slot Num:

Arrange the setting so that the total of the set Slot Num becomes 48.

TMCC:

Specifies whether TMCC is added to the start byte or not during multiplexing.

File after multiplexing:

The file name after multiplexing is conv.bscnv. Moreover, as a temporary file, a TS with a dummy packet added is created with a file name "tmp1.bscnv" to "tmp8.bscnv" for each TS.

Note

A BS stream is created according to the shortest one of TSs multiplexed.

9.1 Error Messages

Error Messages

A message may appear while you are using the VT3000E. This section describes the meanings of the messages and the corrective actions. If the corrective action indicates servicing, please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.

Error Messages

Code	Message	Cause Reference	Page
001	Status is local, then you cannot operate by remote.	Tried to display the remote menu while operating the local menu in the remote mode.	—
002	Status is remote, then you cannot operate by local.	Tried to display the local menu while operating the remote menu in the remote mode.	—
003	VT3000E is now playing.	Tried to carry out an operation that cannot be carried out while outputting contents.	Ch3
004	VT3000E is now recording.	Tried to carry out an operation that cannot be carried out while recording is in progress.	Ch4
005	FileName is too long.	The length of the file name exceeds the limit.	4-2
007	Permission denied.	Tried to delete a read-only file.	7-1
008	Same File is exist.	A file with the same file name exists.	4-2
009	Netwrok setting is wrong. Please input ***.***.***.*** 0<=***<=255	Network configuration is not correct.	6-3
1300	Not selected file	Tried to output without any file being selected.	3-5, 3-22
1302	Can't operate while running.	Operated the Mode or Loop in the SETTING-Output menu while outputting contents.	3-13
1304	Over DIMM size.	The total size of the multiple contents you selected exceeded the DIMM size.	3-7
2301	Status is local, then you cannot operate by remote.	This error occurs when a command from the remote side menu has been received in a condition for receiving a command from the local side menu.	—
2302	Status is remote, then you cannot operate by local.	This error occurs when a command from the local side menu has been received in a condition for receiving a command from the remote side menu.	—
2303	VT3000E is now playing or recording.	Tried to carry out an operation that cannot be carried out while outputting contents or while recording is in progress.	Ch3, Ch4
2304	You cannot change Rate in Running when zone mode is Frame or Time.	Tried to operate the RATE menu while outputting contents with zone set to Time or Frame.	3-8, 3-9
2305	Zone is Out of range.	The Time value when zone is set to Time exceeds the range.	3-8
2306	Start position is greater than stop position.	The Start time value is greater than the End time value when zone is set to Time.	3-8
2307	Pretrigger size is greater than file length.	Recorded while PreTrigger is greater than FileLength.	4-3
2308	Zone size is less than 4096 byte in HDD mode.	With the output mode set to HDD, you specified an output zone that is less than or equal to 4096 bytes and output the data.	3-8
2309	Cannot output when output type is Serial and external clock is Parallel.	Tried to output with Output set to Serial and external clock set to Para.	3-9
2310	No files are selected, then selected files are not change.	This error occurs when a file name is not entered when a file is selected.	3-5, 4-2
2311	Cannot change in that directory.	This error occurs during a directory shift when the user attempts to move to a directory to which the system does not allow the user to move.	—
2312	You cannot delete this directory.	Tried to delete the SCSI and CD-ROM directory which are mount points for SCSI and CD-ROM.	6-2
2313	No SMB group name are filled.	The Samba group is not specified.	6-4

9.1 Error Messages

Code	Message	Cause Reference	Page
2314	No data are stored in this number.	Recalled a setup data number that has not been stored.	8-3
2315	FPGA Selftest Failed.	This error occurs when an FPGA self test fails.	—
2316	DIMM Selftest Failed.	This error occurs when a DIMM self test fails.	—
2317	Cannot delete or rename directory, which is show in source key.	This error occurs when the directory list shown by the Source Key is deleted or its name is changed.	7-1
2318	You cannot delete or rename selected file on output mode.	Tried to delete or rename the file that you have selected as an output file.	7-5
2319	Device is busy.	Mounted SCSI (CD-ROM) while the file list is in the scsi (cdrom) directory.	6-2
2321	Cannot output when output memory is DIMM and output external trigger is enable.	This error occurs when OutputTrigger=ON and data is output in any mode other than DIMM mode.	—
2323	Cannot record to file which is selected in other channels.	This error occurs when a file, which is output and selected by one channel, is recorded by another channel.	—
2501	Setting packet length is different from TS File's.	This error occurs when a packet length is selected in Output mode and the packet length of the selected file is different from the packet length to be set.	3-8

Error Messages Related to LINUX

Code	Message	Cause Reference	Page
3101	No space left on device.	No space left on the built-in hard disk.	—
3101	*** and *** are the same file name.	Tried to copy to the same directory.	7-2
3105	*** exists but is not a directory.	The same file name existed, when Mkdir was executed.	7-3
3106	The kernel deos not recognize /dev/sda* as a block device.	Mounted the SCSI device without connecting the SCSI device.	6-1
3106	Wrong fs type, bad option, bad superblock on/dev/cdrom.	Mounted the CD-ROM without inserting a CD-ROM.	6-2
3106	According to mtab, /dev/*** is already mounted on ***.	Tried to mount a device that is already mounted.	6-2
3109	Directory not empty.	The directory you tried to delete contains files.	7-1
3111	Device is busy.	Unmounted the SCSI (CD-ROM) when the current directory is the scsi (cdrom) directory.	6-2

9.2 Recommended Replacement Parts

The one-year warranty applies only to the main unit of the instrument (starting from the day of delivery) and does not cover any other items or expendable items (items which wear out). The replacement period for expendable items may vary depending on the conditions of use. Refer to the table below as a general guideline. Contact your nearest YOKOGAWA dealer for replacement parts.

Parts Name	Replacement Period
LCD backlight	3 years
Built-in hard disk	One year after purchase (data are excluded)
Cooling fan	3 years
Backup battery (lithium battery)	3 years

10.1 Specifications

Output Signal

Item	Specifications
Output signal specifications	Complies with ISO/IEC-13818
Data rate	1 kbs to 80 Mbps ^{*1} (1 Hz resolution) Auto clock function included ^{*2}
Record length	Normal 256 MB Option 256 MB to 768 MB
Packet length	188, 192, 204, or 208 bytes
Data setting	Specify the start and stop position of playback with packet number, frame, or time, or address.
Writing to the memory	Able to write one or multiple data sets
Loop playback	Able to repetitively playback one channel of video and one channel of audio seamlessly. ^{*3}
Specification of number of times reproduced	1 to 256 or continuous

Data SYNC Signal Output, Clock Input/Output^{*4}

<Serial Output>

Item	Specifications
Data output	Level TTL (50 Ω) or ECL (50 Ω unbalanced) Connector BNC
Clock input/output	Level TTL (50 Ω) or ECL (50 Ω unbalanced) Timing Rise or Fall Connector BNC
SYNC output ^{*5}	Level TTL (50 Ω) or ECL (50 Ω unbalanced) Connector BNC
Data Valid ^{*6}	Level TTL (50 Ω) or ECL (50 Ω unbalanced) Connector BNC

<Parallel Output>

Item	Specifications
Data output ^{*3, *4}	Level LVDS (DVB-A010) or RS422 Connector 25-pin Dsub
Clock input	Level TTL (50 Ω) or ECL (50 Ω unbalanced) Timing Rise or Fall Connector BNC

Pin assign of parallel output

Signal Name	Pin No.	Signal Name	Pin No.
CLK A	1	CLK B	14
SYS GND	2	SYS GND	15
DATA7 A	3	DATA7 B	16
DATA6 A	4	DATA6 B	17
DATA5 A	5	DATA5 B	18
DATA4 A	6	DATA4 B	19
DATA3 A	7	DATA3 B	20
DATA2 A	8	DATA2 B1	21
DATA1 A	9	DATA1 B	22
DATA0 A	10	DATA0 B	23
DATA Valid A	11	DATA Valid b	24
SYNC A	12	SYNC B	25
NC	13		

10.1 Specifications

Jitter Addition Function^{*7}

Item	Specifications	
PCR jitter	Set resolution	1/27 MHz
	Set width	-19660799 to +19660799 steps
	Mode	Pulse, burst, random, interval
PCR, PTS, DTS jitter	Set resolution	300/27 MHz
	Set width	-19660799 to +19660799 steps
	Mode	scramble
Period and duty	Setting	Specify by number of PCRs

TS Record Function (Only for parallel input)

Item	Specifications	
Input	Level	LVDS (DVB-A010) or RS422
	Connector	25-pin Dsub
Sampling rate ^{*8}	Internal clock	0.1 Mbit/s to 57 Mbit/s
	External clock	0.1 Mbit/s to 57 Mbit/s
Record length	Pre-trigger	Up to the 3/4 of the maximum memory length
	Post-trigger	Up to the HDD size.

Pin assign of TS record input

Signal Name	Pin No.	Signal Name	Pin No.
CLK A	1	CLK B	14
SYS GND	2	SYS GND	15
DATA7 A	3	DATA7 B	16
DATA6 A	4	DATA6 B	17
DATA5 A	5	DATA5 B	18
DATA4 A	6	DATA4 B	19
DATA3 A	7	DATA3 B	20
DATA2 A	8	DATA2 B1	21
DATA1 A	9	DATA1 B	22
DATA0 A	10	DATA0 B	23
DATA Valid A	11	DATA Valid b	24
SYNC A	12	SYNC B	25
NC	13		

Storage Media and Communications

Item	Specifications	
Built-in HDD	Size	6.4 Gbytes (IBM format) 30 Gbytes (/HD1 option)
	Others	Can be mounted with Internet
Built-in CD-ROM	×40 speed	
SCSI	Standard Ultra Wide SCSI ^{*9}	
Communication	10/100Base-T Ethernet (TCP/IP)	

General Specifications

Item	Specifications
Standard operating condition	Ambient temperature 23 ± 5° Ambient humidity 55 ± 10% RH Supply voltage and frequency 1% of rating Warm-up At least 30 minutes
Storage conditions	Temperature -20 to 60°C Humidity 20 to 85% RH * no condensation
Operating conditions	Temperature 5 to 40°C Humidity 20 to 85% RH * no condensation
Rated supply voltage	100 to 1240 VAC
Permitted supply voltage range	90 to 264 VAC
Rated supply voltage frequency	50 Hz or 60 Hz
Permitted supply voltage frequency range	48 to 63 Hz
Maximum power consumption	200 VA
Withstanding voltage	1.5 kVAC for one minute
Insulation Resistance	10 MW or more (500 VDC)
External dimensions	Approx. 426(W) X 176(H) X 450(D) mm
Weight	Approx. 15 kg

*1: Memory output mode only. Up to 56.61 Mbps in HDD output, quick output mode.

*2: The auto clock function may not be available for some contents. In such a case, set the data rate manually.

*3: Performs seamless processing on one pair of video and voice specified by PID. The seamless processing does not always completely eliminate disturbance in video and voice at repetition points.

Seamless processing is not available for BS broadcasting digital framed TSs specified by the ARIB STD-B20.

*4: Selectable from setting menu.

*5: SF-Sync or Pkt-Sync selectable from menu.

*6: Low/High can be switched for the D_Valid signal of the last 4, 16 and 20-byte sections of 192, 240, 208-byte packets from the menu.

*7: Applicable to a set of PCR, PTS and DTS specified by PID.

*8: In memory recording mode

*9: Only HDD is connectable. Up to 7 units. The file system only supports Ext2. Ext2 formatting is available from the VT3000E menu.