ASTRO

SCAN CONVERTER

SC-2041

Operating Manual

Ver.1.04

SCAN CONVERTER

SC-2041

Operating Manual

2005.10

Ver.1.04

ASTRODESIGN,Inc

Table of Contents

Introduction

Thank you very much for selecting the SCAN CONVERTER SC-2041.
This manual explains the functions of the SCAN CONVERTER SC-2041 and provides operating and safety instructions that should be followed when using it.
In order to avoid improper handling that may result in a safety hazard, please be sure to read this manual thoroughly before using the SC-2041 to learn the proper method of operation.
After reading this manual, please keep it in a safe place for future reference so that it will no be lost.

Safety Introduction

⚠ WARNING

Power Cord

- When unplugging the power cord from the main power, be sure to grasp the plug of the power cord.
- Do not forcefully bend the power cord or bundle it while in use. Doing so may result in a fire.
- Do not place heavy items on the power cord. Doing so may damage the cord and result in a fire or an electric shock.

Foreign Matter

- Do not allow any liquid to be spilled on or any flammable or metal objects to be dropped inside the equipment. Using the equipment under such conditions may result in damage to the equipment, fire, or an electric shock.

Disassembly of Product

- Do not disassemble the equipment. If a customer tries to open the enclosure or to remove or replace internal boards, it may cause an electric shock, personal injury or malfunction of the equipment.

⚠ CAUTION

Power Supply and Grounding

Use this equipment with a power supply of AC100V-120V or AC200-240V. This equipment is grounded using a 3-line type power cord with a ground line. For safe use, please make sure to plug the power cord into a power outlet that has a protective ground terminal.

Where to Install and Use the Equipment

No special care is necessary for use in a normal room. Avoid installing and using the equipment in the places or areas listed below, because doing so may result in damage to the equipment, or other safety hazards:

- Where ambient temperature does not fall within the range, 5 to 40℃.
- Where ambient humidity does not fall within the range, 30 to 80%RH.
- Near an air-conditioning vent where rapid changes in temperature or condensation can occur.
- Where corrosive gas or heavy dust exists.
- Where the equipment may be exposed to direct sunlight.
- Where sprays or drops of water, oil, and/or chemicals can reach the equipment.
- Where the floor is subject to vibration.
- Where stable installation of the equipment cannot be achieved.
- Where the ventilation holes on the sides of the equipment may be covered, preventing proper airflow. These holes are provided to avoid an excessive internal temperature increase in the equipment. Be sure to avoid covering these holes. Doing so may result in damage to the equipment.

Jolting the Equipment

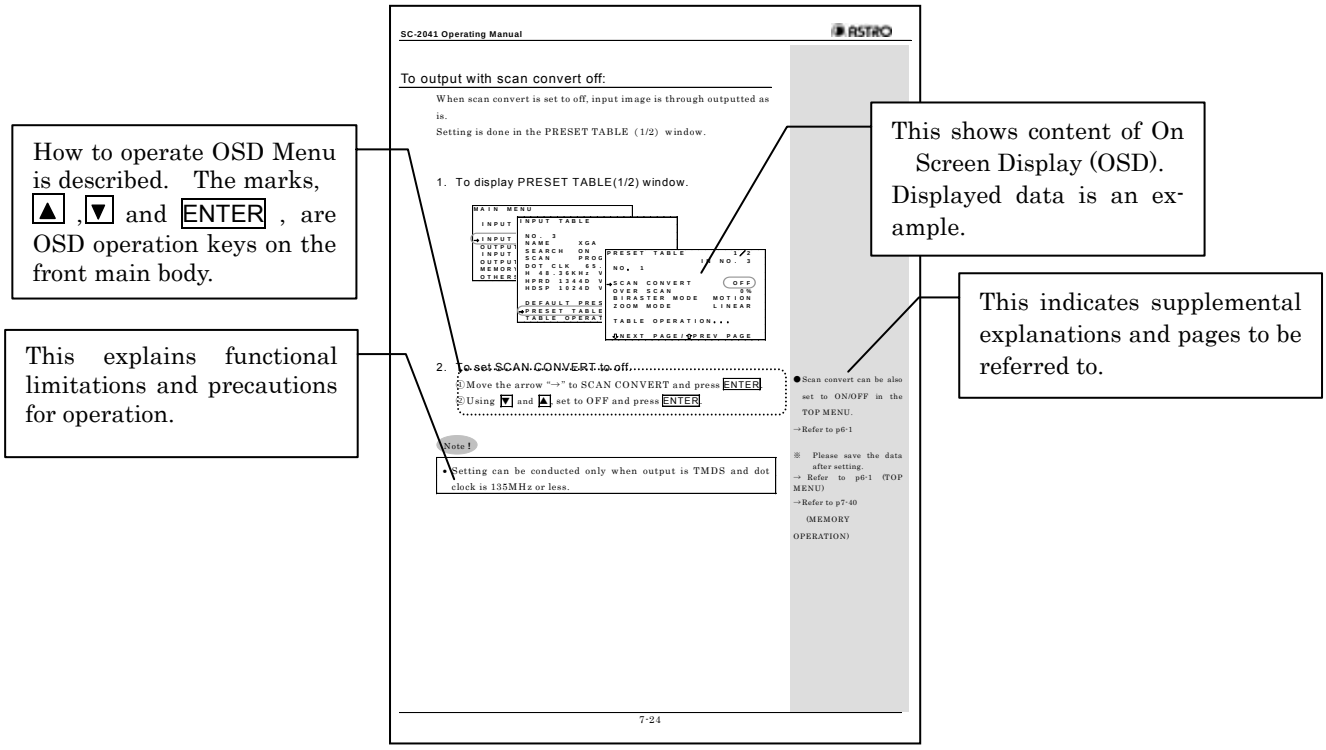
- This product is a precision instrument. Exerting sudden jolts to it may result in a malfunction or damage to the equipment. Be sure to take care when moving it.

In Case of an Error or Malfunction

- If an error or malfunction occurs, turn off the power switch and unplug the power cord, and contact your dealer or the Astrodesign, Inc. Sales Group.

Notation in This Manual

Notation on the Page of Operational Explanation



1 SC-2041

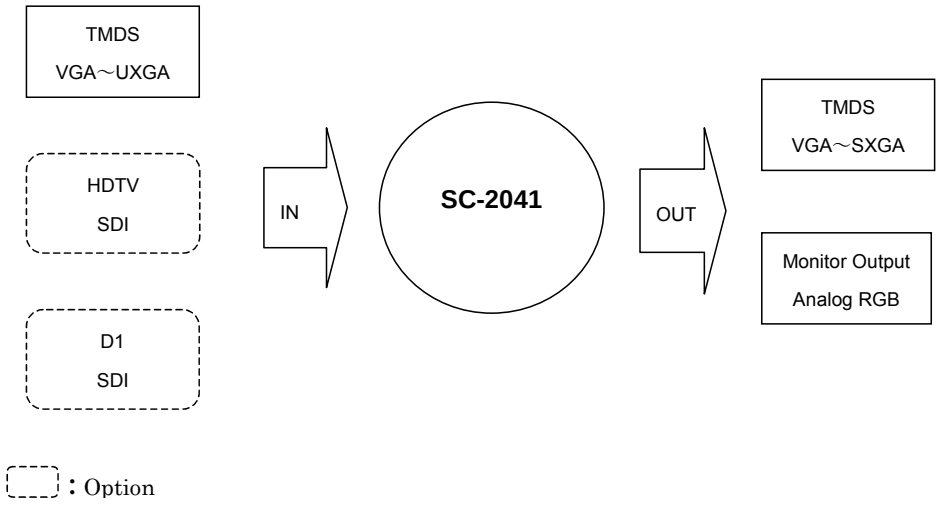
1.1 General

SC-2041 is a scan converter that can be used for digital signal input-output.

It also can support HD-SDI input and D1-SDI input as options in addition to TMDS input.

It holds a maximum of 3 system digital inputs.

This product is compact and low price, but a high performance digital scan converter.



1.2 Features

SC-2041 provides the following features.

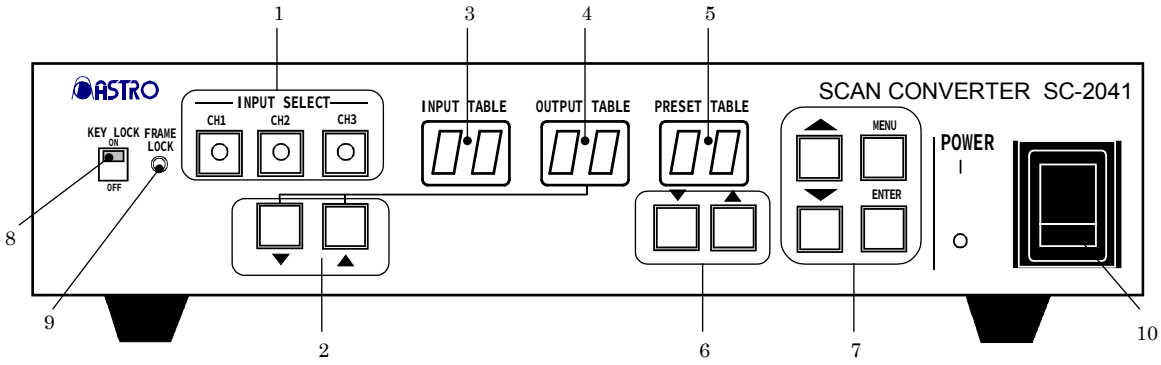
- Small size and low price. Its conversion covers the wide range of input-output rates.
- One system of input-output by TMDS is equipped as standard.
- It can easily switch a maximum of 3 input signal systems.
- It covers a wide range of input-output from VGA to SXGA.
- TMDS input, HD SDI input, and D1 SDI input can be added as options.
- Light weight and compact size.

1.3 Major Functions

Automatic Search	It is capable of automatically tracking for changes of input signals, at a high speed and with a high accuracy, and automatically justifying the display against a specified image outline. *In case of HD-SDI input, when switching synchronization, no sync signal status is required for 20ns or more.
Timing Forecast	Even though a video signal other than a register timing video signal is inputted during TMDS input, timing is automatically measured and scan convert is performed.
Zoom	Without spoiling the image of original picture, it realizes high picture quality zoom processing. It can zoom from 25% min. to 400% max.
I/P Conversion	Double-speed conversion processing is implemented for optional HD-SDI and D1-SDI interlaced input. You can set 2 conversion methods, "moving image mode"/ "2:2 pull down mode."
Frame Lock	Frame lock, which synchronizes input and output frame, is available.
Test Pattern Output	It can generate color bar, ramp, and convergence test patterns.
Picture Quality Adjustment	Picture quality such as contrast, brightness, hue*, color* can be adjusted. Optionally, gamma correction can be done depending on monitor's features. Furthermore, enhance, which emphasizes outline in horizontal direction, can be set at 9 different levels. *Hue and color can be adjusted only for HD-SDI input and D1-SD1 input.
Preset	Every timing, various settings such as image capture position, display position, etc. can be preset-registered. (More than one pattern can be registered.) Registered preset can be switched using the front key.
OSD	Various settings and adjustments can be done in the On Screen Display Menu.
Remote Control	By connecting PC with RS-232C port, remote control is available by communication command.
Special Serial Bus Ready	More than one or individual equipment can be controlled by a special serial bus.

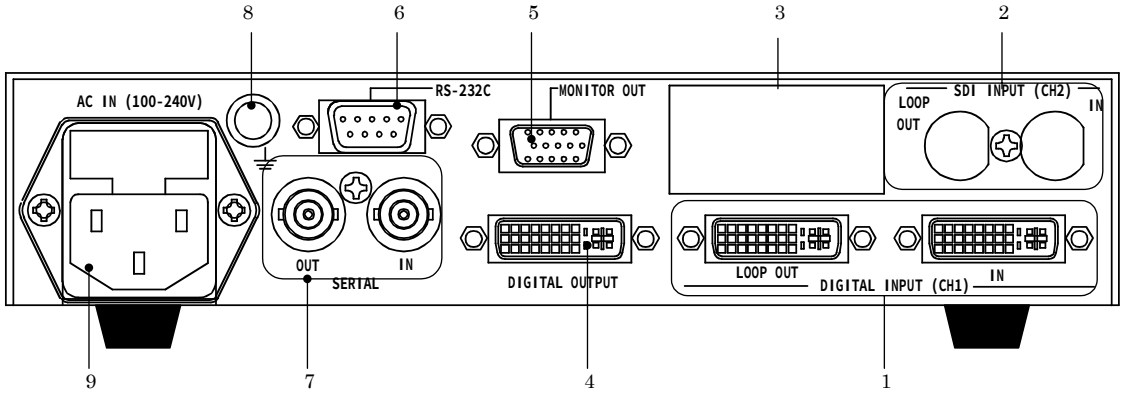
1.4 Name and Function of Each Part

Front Side of Main Body



№	Name	Explanation	Refer to
1	INPUT SELECT CH1,CH2,CH3	Select an input port. If there is no error in input signal, key LED of the selected port illuminates. If there is an input signal error, LED flashes.	3-1
2	▲,▼ (OUTPUT TABLE)	Output Table No. is changed.	3-3
3	INPUT TABLE	Input Table No. of the currently entered timing is indicated.	3-2
4	OUTPUT TABLE	Timing Output Table No. of the currently set to output is indicated.	3-3
5	PRESET TABLE	Preset No. of the currently used for output is indicated.	3-5
6	▲,▼ (PRESET)	Preset No. is changed.	
7	MENU	On Screen Display (OSD) Menu is displayed on the output window. It can be used for moving a menu window or canceling setting items.	5-8
	ENTER	Used for moving OSD Menu window as well as confirming and registering setting items.	
	▲,▼ (OSD)	Used for moving a cursor or changing values of setting items on the OSD Menu window.	
8	KEY LOCK	All keys except POWER switch are locked. When the lock is ON, key LED illuminates. It also illuminates during command communication.	—
9	FRAME LOCK LED	Status of frame lock is indicated with LED illuminating or flashing.	7-12
10	POWER	Power switch.	—

Back Side of Main Body



№	Name		Explanation	Refer to
1	DIGITAL INPUT(CH1)	IN	TMDS video signal is inputted.(DVI-I29pin)*	2-1
		LOOP OUT	TMDS video input is through-outputted. (DVI-I29pin)*	
2	SDI INPUT(CH2) (Option)	IN	When SDI option is installed, SDI video signal is inputted.	
		LOOP OUT	When SDI option is installed, SDI video input is through-outputted.	
3	TMDS/HD-SDI/D1-SDI INPUT(CH3) (Option)	IN	Either TMDS input, HD-SDI input, or D1-SDI input can be optionally added. When there is no option added, the area is covered with a blank cover panel.	
		LOOP OUT		
4	DIGITAL OUTPUT		TMDS video signal is outputted.(DVI-I29pin)*	
5	MONITOR OUT		Analog monitor output. (D-SUB15pin)	
6	RS-232C		Connector for external control. (D-SUB9pin)	7-37
7	SERIAL	OUT	Connect with IN terminal of our equipment, which utilizes a serial bus.	7-38
		IN	Connect with OUT terminal of our equipment that utilizes a serial bus.	
8	FG Terminal		Frame ground. Please make sure to ground it before use.	—
9	AC Power Source		Connect with the enclosed power cord.	—

* Mating and unmating cycles: 100 cycles

2 Installation and Connection

2.1 Input Connection

Connect a video source with SC-2041 video input.

CH1(TMDS Standard)

Connect TMDS input with DVI cable.

CH2(Only when either HD-SDI input or D1-SDI input is optionally installed.)

Connect HD-SDI input or D1-SDI input with BNC cable.

CH3(Only when either HD-SDI input, D1-SDI input, or TMDS input is optionally installed.)

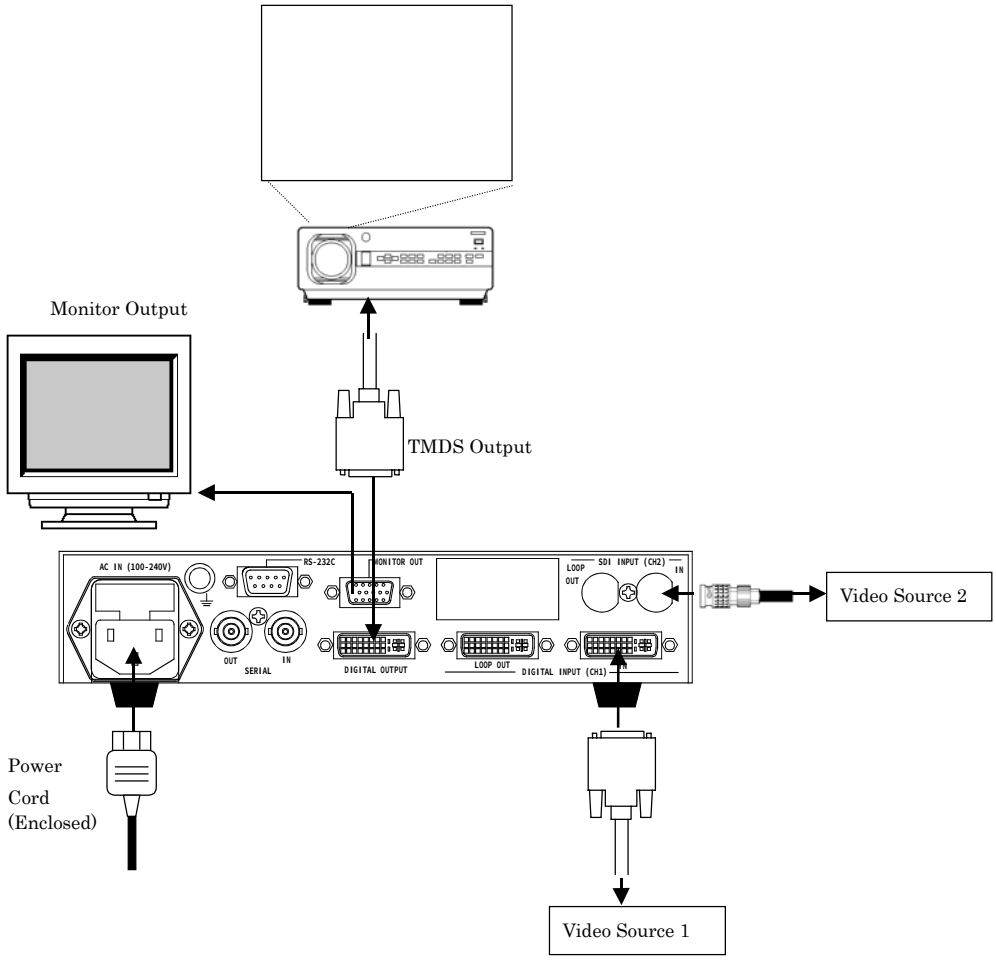
In case of TMDS input, connect with DVI cable.

In case of HD-SDI input or D1-SDI input, connect with BNC cable.

2.2 Output Connection

Connect SC-2041 video output with video input of display equipment using DVI cable.

Example of Connection



3 Setting Procedure

Basic setting procedure is described below. Please refer to "7 How to Set Various Functions" for details of various settings.

3.1 Preparation

Please check all connections of SC-2041 to equipment.

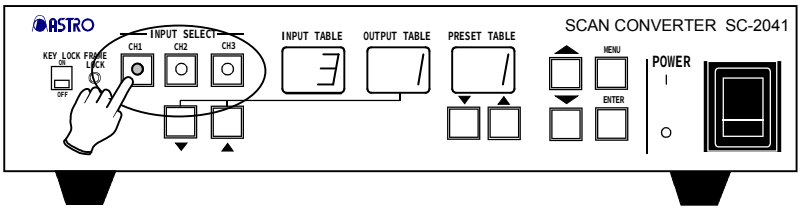
After checking connections, turn on the power of SC-2041, video source, and display equipment.

When you use DDC(Display Data Channel) function, turn on the power of SC-2041 and start your PC with the connected port selected.

● Connection of Input-output
→Refer to p2-1

Select an input port of video source via CH1 , CH2 or CH3.

Input Port Selection



When an input sync signal is present, scan convert immediately starts and a scan convert video is outputted to the display equipment. Key LED of the selected CH key illuminates.

Next, set SC-2041 input and output.
Please note that set data is not saved when you turn the power off, so make sure to save the data after the setting.

● How to save data
→Refer to p7-40

When there is an input signal error:

When there is no synchronization at selected input port or an input signal error occurs, the key LED of selected CH key flashes and a blue background is displayed on the output window. Please check input signal.

INPUT TABLE indication area on the front side displays "-" when there is no synchronization, and "E1" or "E2" when an input signal error occurs.

● When there is no input sync signal, setting of display action can be changed.
→Refer to p7-6

● Indication of Front Side
→Refer to p9-1

3.2 Input Setting

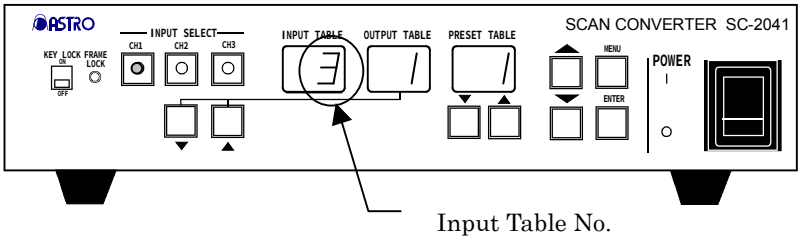
Conduct an input setting.

SC-2041 automatically distinguishes register timing from input video signal and performs a scan convert. (Automatic search) Input timing information is registered in a table called "Input Table" and when an input sync signal changes, then one that matches the input signal is located from this register timing. Result of automatic search is displayed in the indication area of INPUT TABLE as input table No.

- You can set input fixed not using automatic search.
→Refer to p7-5

- Input Table
→Refer to p4-1

If a number of 1 or greater is displayed in the INPUT TABLE indication area:

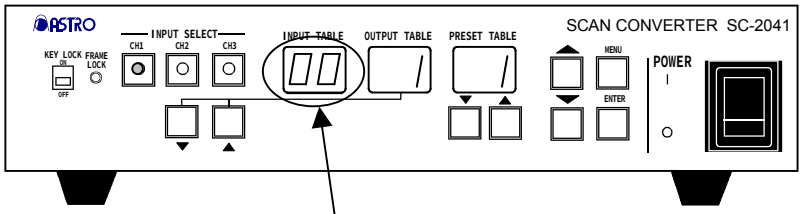


Input Table No.

It means that inputted video signal timing meets this number's timing data in the Input Table. Scan convert performs based on the registered timing data, and a special input setting is not necessary.

- TMDS registered timing can be edited as necessary.
→Refer to p7-3

If 00 is displayed in the INPUT TABLE indication area (only TMDS Input):



It means that inputted timing is not registered.

It means that a timing that has not registered in the Input Table has been inputted.

When unregistered timing is inputted, SC-2041 automatically measures the input signal, generates timing data, and performs scan convert.

However, this automatically generated timing is temporary data, and the parameter cannot be edited. Also, display position and size, and others cannot be registered.

To edit data and set other functions, generated data needs to be registered in the Input Table.

After registering data, it automatically tracks this data and a converted image is displayed.

● To register inputted timing to Input Table
→Refer to p7-1

3.3 Output Setting

After confirming Input Table, conduct an output setting.

First, set output timing of SC-2041.

Select an output timing that meets with specifications of the display equipment among the registration of "Output Table."

There are 3 ways for setting as described below.

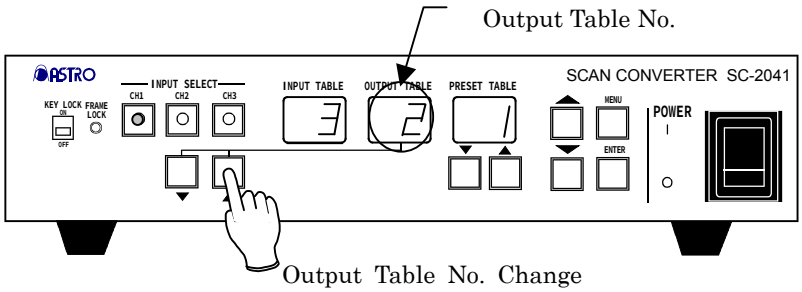
(1) Set with the front key on the main body.

(2) Set in the TOP MENU.

(3) Set in the setting menu (OUTPUT SETTING).

● Change Output Table No. in the TOP MENU.
→Refer to p6-1

● Change Output Table No. by OUTPUT SETTING.
→Refer to p7-7



Set output timing is displayed in the OUTPUT TABLE indication area by a table No.

After setting output timing, perform an adjustment on the display equipment so that scan convert image is displayed fully on the screen. If an adjustment on the display equipment is difficult, adjust on the SC-2041.

● To edit output timing data.
→Refer to p7-9

If a desired timing is not found in the registered timing, you need to register timing data in the Output Table and perform a setting.

● How to register new timing data.
→Refer to p7-11

Setting for the Other Output

■ External Synchronization

This function is to sync-output one channel of inputted 3 channels as a reference input. Please select a port and lock mode in the menu window. You can adjust H/V lock phase.

● Setting external sync function.
→Refer to p7-12

● Switching ON/OFF of lock mode can be done in the TOP MENU.
→Refer to p6-1

■ Picture Quality Adjustment

Color*, contrast, brightness, hue*, enhance, and gamma correction can be adjusted.

You can adjust picture quality by displaying a brief test pattern (3 types, color bar, ramp, and convergence, are available).

*Color and hue can be adjusted only for HD-SDI input and D1-SDI input.

● Picture Quality Adjustment
→Refer to p7-26

● Test Pattern Output
→Refer to p7-14

■ TMDS Analog Output ON/OFF

■ TMDS Digital Output ON/OFF

TMDS analog output and digital output can be turned on and off individually.

● TMDS Analog/Digital Output ON/OFF
→Refer to p7-15

■ Switching Polarity of TMDS SYNC

TMDS SYNC polarity, NEGA/POSI, can be switched.

● Switching Polarity of TMDS SYNC
→Refer to p7-16

■ OSD Menu Display ON/OFF When TMDS is outputted

When TMDS is outputted, On Screen Menu display can be turned off. On Screen Menu is displayed only on the analog monitor output.

● TMDS Output OSD ON/OFF
→Refer to p7-35

This is an end of input/output setting. Now, you can set image outline and picture quality.
When you change the setting, please save the data before you turn off the power or the data setting will be erased (not saved).

● To save data in the TOP MENU.
→Refer to p6-1

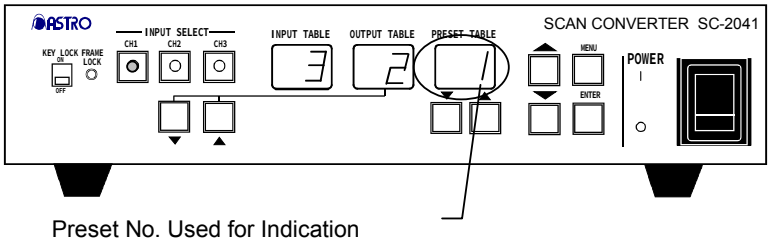
● To save data by MEMORY OPERATION.
→Refer to p7-40

3.4 Setting of Various Functions (Preset Item)

After finishing input-output setting, conduct setting of various functions.

The setting is registered in the Preset Table that is made per input timing.

Preset Table No. used for indication is displayed in the PRESET TABLE indication area.



Preset No. Used for Indication

The following functions are preset-registered. Please make a setting as necessary.

- Scan Convert ON/OFF

  By turning off, input video is through-outputted.

- Over Scan Setting

  This function is to capture inside the input video by n%. (n is between 0 and 10%.)

- Biraster Mode

  Setting of double-speed moving picture mode/2:2 pull down mode.

- Setting a Position to Capture Input Video

  A portion of input video can be cut and brought out.

- Setting an Input Video Display Position

  Output video display position is optionally set.

NOTE

Preset is registered per input timing. Please be aware that you need to register preset every time you have a different input timing.

● Preset Table
→Refer to p4-1

● Scan Convert ON/OFF
→Refer to p7-24

● Over Scan Setting
→Refer to p7-25

● Scan convert ON/OFF and over scan ON/OFF can be set in the TOP MENU.
→Refer to p6-1

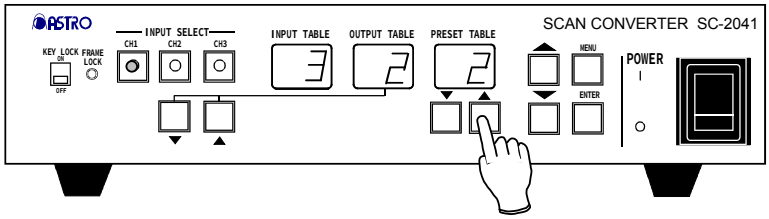
● Biraster Mode
→Refer to p7-27

● Setting a Position to Capture Input Video
→Refer to p7-20

● Setting an Input Video Display Position
→Refer to p7-22

Registration and Switch of Plural Preset

You can preset-register plural setting patterns for one input timing. Since the front key on the main body can change registered preset, display setting can be called easily.



Switching Registered Preset

● Preset registration
→Refer to p7-30

● To switch preset in the PRESET TABLE.
→Refer to p7-31

● To switch preset in the TOP MENU.
→Refer to p6-1

Default Preset Registration

In case that you registered plural presets, you can register the preset (default preset), which is first used when input timing is switched. You can change the default preset at any time, you can register the any setting that you desire to use with precedence.

● Default Preset Registration
→Refer to p7-30

3.5 Saving Setting Data

After you finish necessary settings, please save the data.

Please be aware that if you turn off the power of SC-2041 without saving data, all edited data is erased.

When you turn on the power next time, you can use the saved setting.

● To save data in the TOP MENU.
→Refer to p6-1

● To save data by the MEMORY OPERATION.
→Refer to p7-40

4 Table

SC-2041 registers input-output video timing information in the "Input Table" and "Output Table" respectively. Setting information of image outline adjustment and picture quality adjustment are registered in the "Preset Table" which is made per input table.

4.1 Registered Content of Each Table

Input Table

It is made each for TMDS input, HD-SDI input*, and D1-SDI input*. Various timing data is registered. When automatically searching, data that meets input signal is searched among this registered timing.

Data can be edited for a timing table of TMDS input.

*Only when HD-SDI input option and D1-SDI input option are added.

Preset Table

It is made per input table and various setting data such as image outline adjustment is registered. Plural preset tables can be made for one input table.

Output Table

Timing data for output is registered.

4.2 Table Number Limitation

When this product is shipped from the factory, general data is registered in "Input Tables" and "Output Tables." There are 3 types of Input Tables, which are for TMDS input, HD-SDI input*, and DI-SDI input*. 5 data for TMDS input, 12 for HD-SDI input, and 2 for DI-SDI input are registered in advance. 4 timing data are registered in "Output Table." One "Preset Table" data exists per each data of "Input Table".

You can register up to 99 data in each table, but 200 data in total for all tables. Within this limitation, you can freely design the number of tables corresponding to your needs in using SC-2041 considering the number of input ports, timing registration, and preset registration.

● Content of Factory-shipped Registered Data
→Refer to p9-6

*Only when HD-SDI input option and D1-SDI input option are added.

Example 1)

A pattern of one input port and many input-output timing registrations.

Input Table (CH1)	50	
Preset Table	100	2 per Input
Output Table	50	
Total	200	

Example 2)

A pattern to take a lot of preset registration data with one input port.

Input Table (CH1)	5	
Preset Table	190	38 per Input
Output Table	5	
Total	200	

Example 3)

A pattern to assign the number of table mainly on CH1 and CH2 with 3 input ports.

Input Table (CH1)	10	
Preset Table (CH1)	80	8 per Input
Input Table (CH2)	10	
Preset Table (CH2)	80	8 per Input
Input Table (CH3)	5	
Preset Table (CH3)	5	2 per Input
Output Table	10	
Total	200	

● One Preset Table is always made per one Input Table.

4.3 How to Make New Table

Only registered data is shown in the editing window of Input Table, Output Table and Preset Table.

To register new data in each table, first copy the existing data to the unregistered table on the TABLE OPERATION window of each table, and change the copied data to necessary value.

4.4 Operation of Other Tables

In addition to copy, various operations such as initialization, deletion, and swapping of data registered in each table can be performed.

Table operation is done on the TABLE OPERATION window of each table. The following operations are available.

● Function and Operation of TABLE OPERATION
→Refer to p7-32

Screen / Display	TABLE OPERATION			Function
	INPUT	OUTPUT	PRESET	
COPY	○	○	○	Registered data is copied to unregistered table.
SWAP	○	×	×	Specified data of 2 tables are swapped.
INIT	○	○	×	Factory-shipped data is copied to unregistered table.
DELETE	○	○	○	Unwanted data in the table is deleted.

○: Can be executed. ×: Cannot be executed.

5 Menu Window

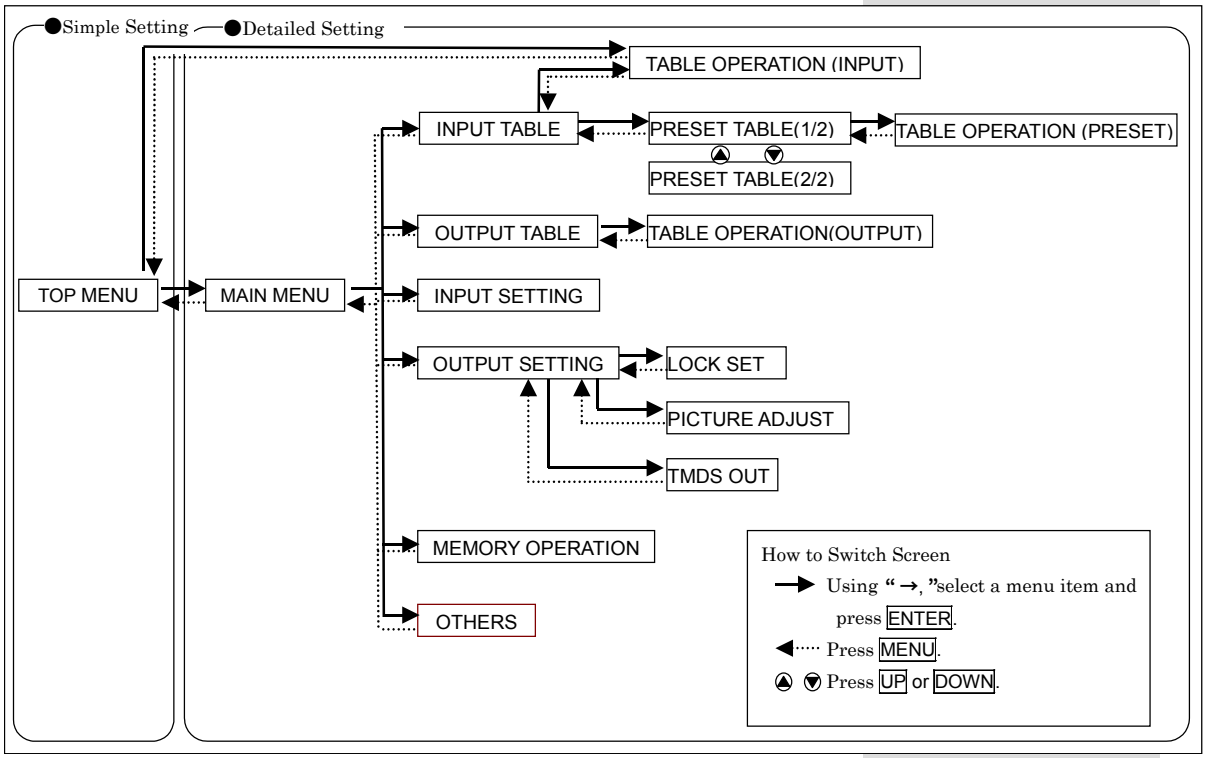
Setting of each function of SC-2041 is conducted following the menu displayed as On Screen Display (OSD).
Menu window configuration and how to operate menu using a front key are explained in this section.

5.1 Menu Window Configuration

When pressing MENU, a menu window is displayed on the display
screen. The menu is made of the hierarchy structure as shown below.

TOP MENU : The most used functional setting during the normal operation is picked on the screen at the top of the hierarchy. Setting can be changed by easy operation.

MAIN MENU: Consists of main menu and sub menus. Detailed setting can be realized for various functions.



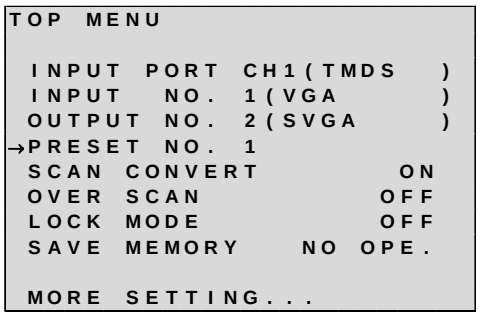
● For details how to operate menu window
→Refer to p5-8

5.2 Explanation of Each Window

How to set each window is described below.

(1) TOP MENU

This is the menu window displayed first.



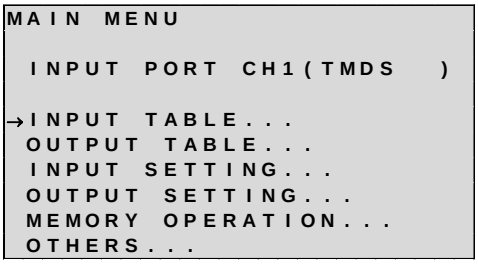
This is a simple setting menu often used during normal operation.

You can change setting easily in this TOP MENU without going into the menu hierarchy.

When you perform a detailed setting, select MORE SETTING and go into the MAIN MENU.

● How to operate TOP MENU.
→Refer to p6-1

(2) MAIN MENU

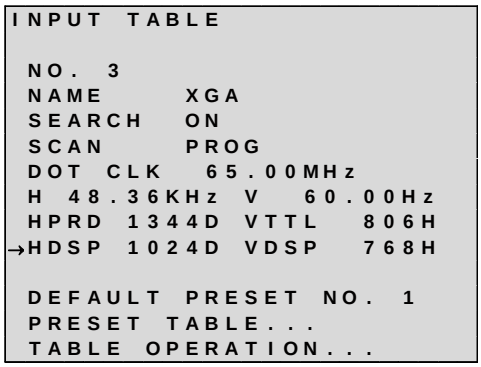


When performing detailed setting of various functions, select a sub menu from this MAIN MENU.

You can change input port in this window.

● Input port can be changed by pressing CH key on the front panel of main body.

(3) INPUT TABLE

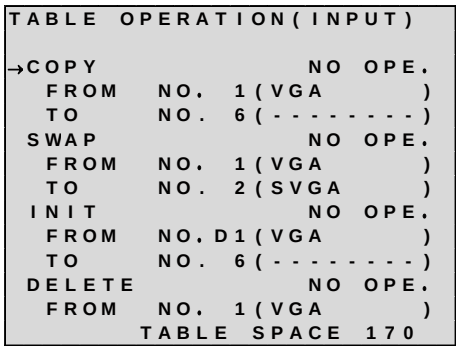


Input timing data that are registered in the Input Table such as dot clock, display period, search target, etc. can be edited.
When plural preset data are registered, the primary preset (default preset) can be selected among them.
Each screen of PRESET TABLE and TABLE OPERATION (INPUT) is called.

● Input Timing Editing
→Refer to p7-3

● Default Preset Registration
→Refer to p7-30

(4) TABLE OPERATION(INPUT)



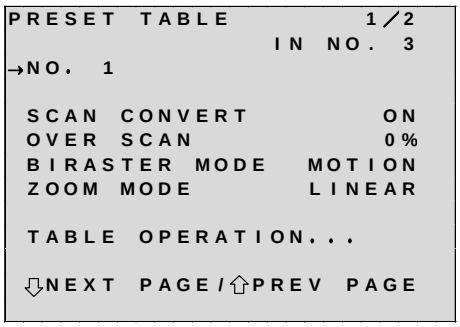
Copy, swapping, initialization and deletion of input table can be executed.

● How to operate TABLE OPERATION.
→Refer to p7-32

(5) PRESET TABLE

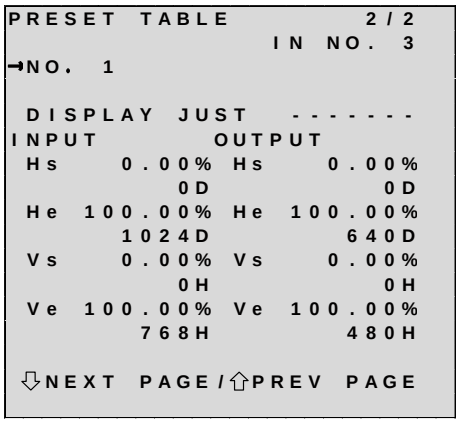
PRESET TABLE window consists of 2 pages, and on each page, the following items can be set.

<Page 1>



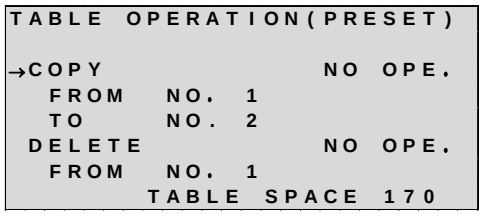
On this page, you can set scan convert ON/OFF, over scan, biraster mode, and zoom mode. TABLE OPERATION (PRESET) window is called.

<Page 2>



On this page, you can set input video capture position and size as well as output video display position and size.

(6) TABLE OPERATION(PRESET)



Copy and deletion of Preset Table can be executed.

● Scan Convert ON/OFF
→Refer to p7-24

● Over Scan Setting
→Refer to p7-25

● Biraster Mode
→Refer to p7-27

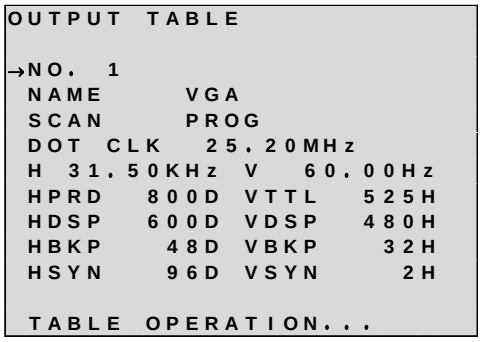
● Zoom Mode
→Refer to p7-28

● Input Video Capture Position
→Refer to p7-20

● Output Video Display Position
→Refer to p7-22

● How to operate TABLE OPERATION
→Refer to p7-32

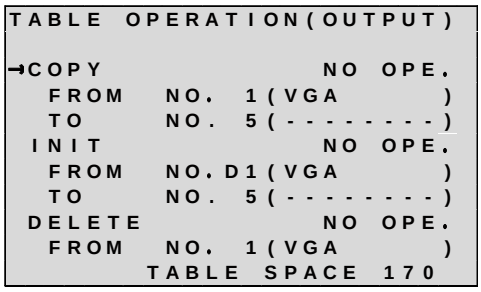
(7) OUTPUT TABLE



Output timing data registered in the Output Table such as dot clock, display period, synchronization width, etc. can be edited. TABLE OPERATION (OUTPUT) window is called.

● Output Timing Editing
→Refer to p7-9

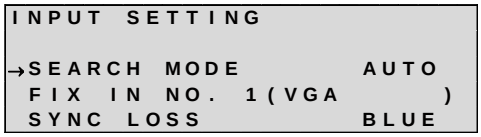
(8) TABLE OPERATION(OUTPUT)



Copy, initialization, and deletion of Output Table can be executed.

● How to operate TABLE OPERATION
→Refer to p7-32

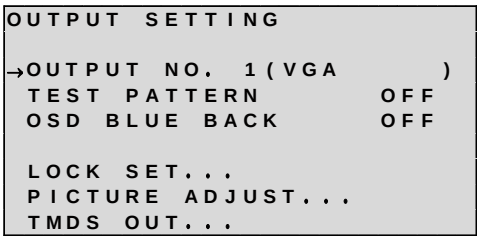
(9) INPUT SETTING



Setting related to input such as input search mode, input timing setting with input timing fixed, and action with no input sync signal can be executed.

● Search Mode Setting
→Refer to p7-5
● Setting action with no input sync signal.
→Refer to p7-6

(10) OUTPUT SETTING



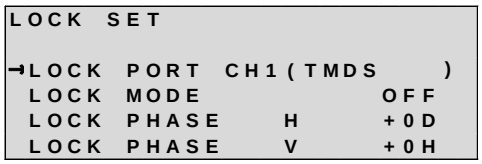
Setting related to output such as output timing No. selection, output test pattern selection, a setting for OSD display can be done in this window. LOCK SET window, PICTURE ADJUST window, and TMDS OUT window are called from here.

● Output Timing No. Selection
→Refer to p7-7

● Test Pattern Output
→Refer to p7-14

● OSD Setting
→Refer to p7-35

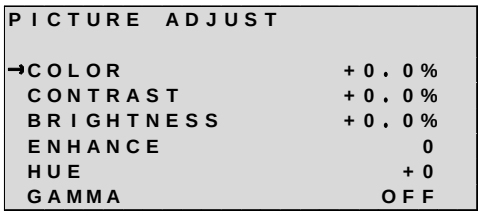
(11) LOCK SET



Lock port setting, lock mode setting, and lock phase adjustment can be done in this window.

● Setting of External Synchronization Function
→Refer to p7-12

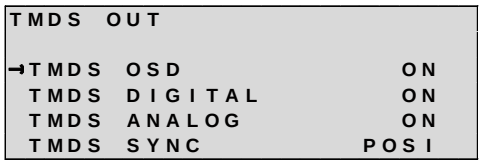
(12) PICTURE ADJUST



By setting items of color, contrast, brightness, hue, enhance, and gamma correction, color quality can be adjusted here.

● Picture Quality Adjustment
→Refer to p7-26

(13) TMDS OUT

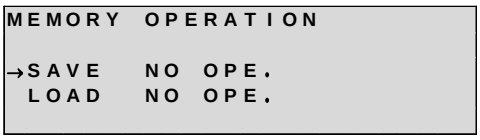


TMDS analog/digital ON/OFF, TMDS SYNC polarity change, TMDS OSD display ON/OFF can be set here.

● TMDS Analog/Digital Output ON/OFF
→Refer to p7-15

● TMDS SYNC Polarity Change
→Refer to p7-16

(14) MEMORY OPERATION

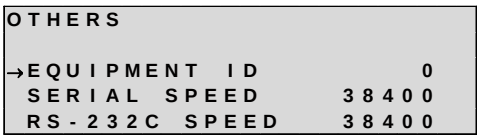


All settings can be saved. Saved settings can be called from here.

● OSD Setting
→Refer to p7-35 to p7-40

● How to save and call data
→Refer to p7-40

(15) OTHERS



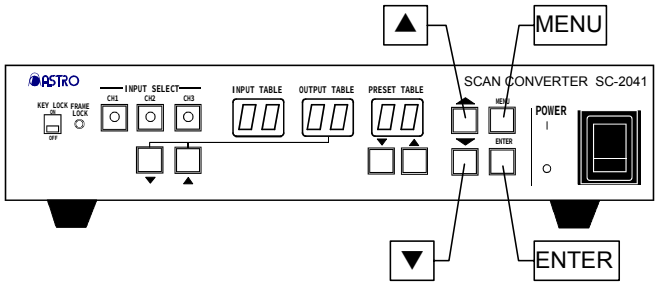
Settings of communication which controls SC-2041 using communication commands can be set here such as serial bus ID and communication speed.

● Remote Control
→Refer to p7-37

5.3 How to Operate Menu

This section describes how to operate OSD menu using operation keys on the main body.

To operate, use 4 keys, MENU, ENTER, ▲, and ▼.



To display Menu window:

When pressing MENU, TOP MENU appears on the output video.

When you press MENU again, the menu window disappears.

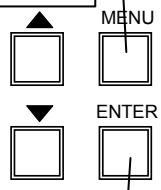
```
TOP MENU

 INPUT PORT CH1(TMDS   )
 INPUT  NO. 1(VGA      )
 OUTPUT NO. 2(SVGA     )
→PRESET NO. 1
 SCAN CONVERT        ON
 OVER SCAN          OFF
 LOCK MODE          OFF
 SAVE MEMORY    NO OPE.

 MORE SETTING...
```

To change Menu window:

(1) Using ▼ and ▲ move "→" to select a menu.

```
TOP MENU

 INPUT PORT CH1(TMDS   )
 INPUT  NO. 1(VGA      )
 OUTPUT NO. 2(SVGA     )
 PRESET NO. 1
 SCAN CONVERT        ON
 OVER SCAN          OFF
 LOCK MODE          OFF
 SAVE MEMORY    NO OPE.

→MORE SETTING...
```

(3) When pressing MENU, the previous window appears.



(2) The window selected by ENTER is displayed.

ENTER ↓ ↑ MENU

```
MAIN MENU

 INPUT PORT CH1(TMDS   )

→INPUT TABLE...
 OUTPUT TABLE...
 INPUT SETTING
```

● The portion "..." of MORE SETTING ... means that the next hierarchy window exists.

● A line with "→" is displayed in cyan color.
→Refer to p5-11

● When changing menu, the first data displayed is the one used for the current video output.

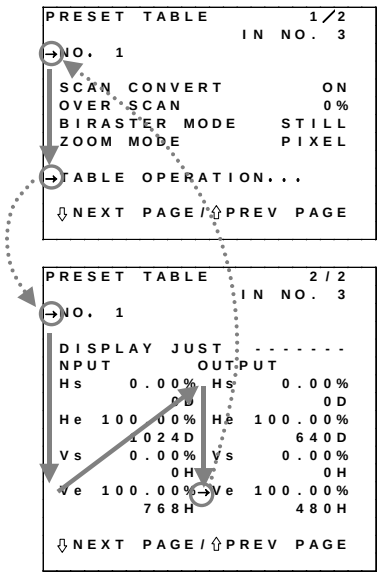
To turn pages of PRESET TABLE window:

There are 2 pages in total of PRESET TABLE window.

Use ▼ and ▲ keys to turn to another page.

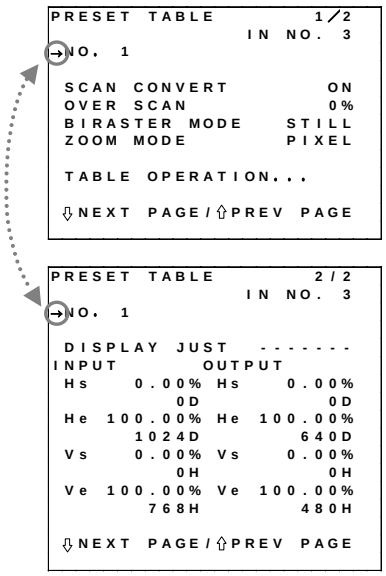
To display the next page:

When the " → " is on the bottom of the page, press ▼ and the page is turned to the another page.(1→2→1…)



To display the previous page:

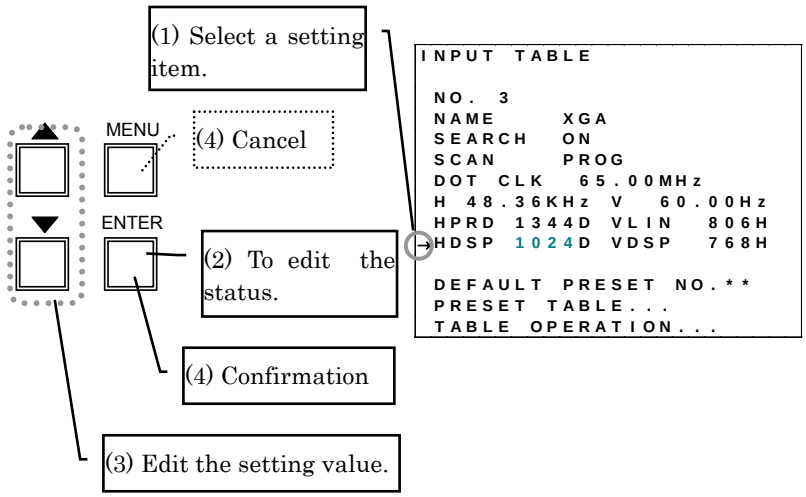
When the" → "is on the top of the page, press ▲ and the page is turned to the previous page.(2→1→2…)



To change a setting value:

When you select a menu and a setting window appears, you can change a setting value following the procedure below.

(1) Using ▼ and ▲, move the arrow " →" to the item you wish to change.
(2) Press ENTER. Color of the setting value changes to green.
(3) Using ▼ and ▲, change the setting value.
(4) Confirm the setting value by pressing ENTER. You can cancel the change by pressing MENU.



To change timing name:

In each window of INPUT TABLE and OUTPUT TABLE, you can name input/output registration timing in order to distinguish data.

You can use up to 8 digits. The below table shows all digits you can use.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z * ! # % ' ( ) + , - . / 0 1 2 3 4 5 6 7 8 9 : = ?

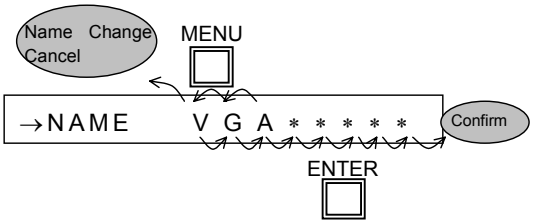
Please follow the procedure below to set a timing name.

(1) Using ▼ and ▲, move the arrow "→" to NAME.
(2) When pressing ENTER, one digit of the name turns to green color.
(3) Using ▼ and ▲, change digit type. (Refer to the above table for digits you can use.)

● Color of OSD Digits
→Refer to p5-11

● Color of OSD Digits
→Refer to p5-11

(4)When pressing ENTER, edited digit is confirmed, and editing digit moves one to the right. By pressing MENU, the digit is confirmed, and the editing digit moves one to the left. (You cannot cancel the edited digit.)



(5)In the same way, edit a digit one by one.

(6)After confirming the 8th digit by pressing ENTER, editing name is finished.

(7)If you press MENU at the first digit, all digits you were editing are cancelled.

The Color of Digits Displayed by OSD(Reference)

The colors of digits mean the following:

Digit Color	Meaning
White	Normal display
Cyan	Item selected by "→".
Green	Edit mode
Grey	Item which cannot be set
Red	Error

Note !

- Only when OSD display on TMDS output is turned off and the display is only on analog monitor output, red color, which shows error, and gray color, which shows the item cannot be set, are not indicated.

● TMDS OSD ON/OFF
→Refer to p7-35

6 Simple Setting by TOP MENU

In TOP MENU which is displayed first, during normal operation, you can change output timing No, preset No, and scan convert ON/OFF without entering the menu hierarchy.

6.1 Item to Be Set in TOP MENU

The following display items can be set in the TOP MENU.

```
TOP MENU

 INPUT PORT CH1(TMDS   )
 INPUT  NO. 1(VGA      )
 OUTPUT NO. 2(SVGA     )
→PRESET NO. 1
 SCAN CONVERT        ON
 OVER SCAN          OFF
 LOCK MODE          OFF
 SAVE MEMORY    NO OPE.

 MORE SETTING...
```

Item	Content of Setting
INPUT PORT	Input port can be selected. Same action as the same item of MAIN MENU.
INPUT NO.	When search mode is fixed, fixed input timing can be set. When search mode is AUTO (automatic search), it cannot be changed.
OUTPUT NO.	Output table No. is changed. Same as OUTPUT NO. of OUTPUT SETTING window.
PRESET NO.	Preset table No. is changed. Numbers are same as those of PRESET TABLE (1/2) window.
SCAN CONVERT	Scan convert ON/OFF is changed. Same as SCAN COVERT of PRESET TABLE (1/2) window.
OVER SCAN	Set either ON which validates over scan value set in each preset data or OFF which invalidates the over scan value. This is a set for the entire system. Over scan value setting is done in each PRESET TABLE (1/2).
LOCK MODE	External lock function is turned ON/OFF. Input port selection of external reference and H/V phase adjustment are done in the LOCK SET window. It is same as LOCK MODE of LOCK SET window.
SAVE MEMORY	All setting data is saved. Same action as SAVE of MEMORY OPERATION.

- Input port can be changed by CH key on the front panel of main body.
- Setting of Search Mode and Fixed Input Timing →Refer to p7-5
- Output Table No. Change →Refer to p7-7
- Output table No. can be changed by front key.
- Preset No. Change →Refer to p7-31
- Preset No. can be changed by front key.
- Scan Convert →Refer to p7-24
- Over Scan →Refer to p7-25
- External Lock Mode →Refer to p7-12
- MEMORY OPERATION →Refer to p7-40

6.2 How to Operate TOP MENU

● How to Operate OSD
→Refer to p5-8

1. To change a setting value of each item, follow the procedure below.
   (1) Using ▼ and ▲, move the arrow "→" to the setting item and press ENTER.
   (2) Using ▼ and ▲, select a setting value and press ENTER.

＜Setting Conditions＞

Item	Content of Setting
INPUT PORT	Only installed channel is displayed out of CH1/CH2/CH3.
INPUT NO.	Only registered timing is displayed. It cannot be set when the search mode is AUTO.
OUTPUT NO.	Only registered timing is displayed.
PRESET NO.	Only registered preset is displayed. It cannot be changed during unregistered timing input.
SCAN CONVERT	After confirming ON/OFF by pressing ENTER, it is reflected on the display. It cannot be changed during unregistered timing input.
OVER SCAN	After confirming ON/OFF by pressing ENTER, it is reflected on the display. All preset over scan is turned ON/OFF.

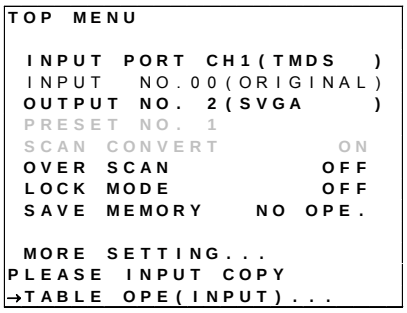
Note !

- SCAN CONVERT and OVER SCAN are reflected on the display after those setting values are confirmed by pressing ENTER.
- INPUT PORT, INPUT NO., OUTPUT NO., and PRESET NO. are displayed in the same way as the front display area of main body.
- When input signal search mode is AUTO (automatic search) and input timing is not registered, "00" is displayed in the INPUT NO. At this time PRESET NO. and SCAN CONVERT cannot be set.

● Front Display
→Refer to p9-1

2. For unregistered timing input, register the Input Table.

When input signal search mode is AUTO (automatic search) and input timing is not registered (INPUT NO. 00), a message lets you know to register the Input Table at the bottom of the window.



When selecting TABLE OPE (INPUT), TABLE OPERATION (INPUT) window is displayed, then perform a timing registration in the Input Table.

(1) Select TABLE OPE(INPUT) to display TABLE OPERATION (INPUT) window.

(2) Copy automatic generated timing (No.00) to unregistered table.

● How to register table during unregistered timing input?
→Refer to p7-1

3. Save data by SAVE MEMORY.

(1) Using ▼ and ▲, move the arrow "→" to SAVE MEMORY and press ENTER.

(2) Using ▼ and ▲, change NO OPE. to OPE. and press ENTER.

7 How to Set Various Functions

In this section how to set various function using detailed setting menu is described.

7.1 Settings Related to Input

When unregistered timing is inputted (Input Table Registration):

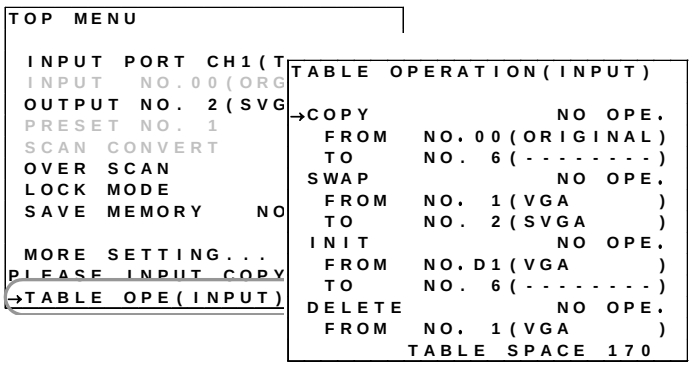
When input signal is TMDS and unregistered (not applicable) timing signal is inputted in Input Table, SC-2041 automatically generates timing data and performs scan convert. At this time, "00" is displayed in the display area of the INPUT TABLE on the front body.

On the other hand, under this condition as described above, display position to be registered in the Preset Table cannot be set.

The automatically generated timing data needs to be registered in the Input Table following the procedure below.

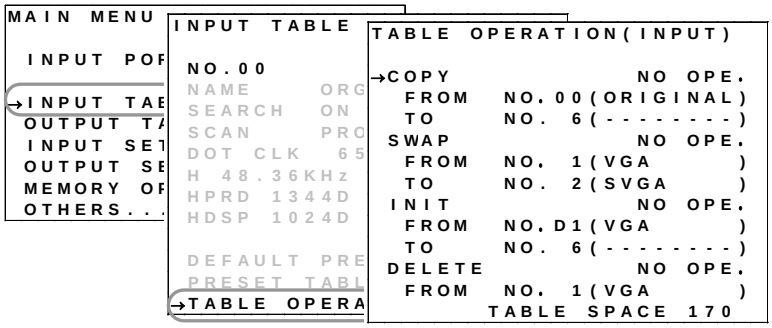
1. To display TABLE OPERATION(INPUT)window.

(1) Call from the TOP MENU.



Only when inputting unregistered timing, a menu to call the TABLE OPERATION (INPUT) window is displayed at the bottom of the TOP MENU.

(2) Call from the INPUT TABLE.

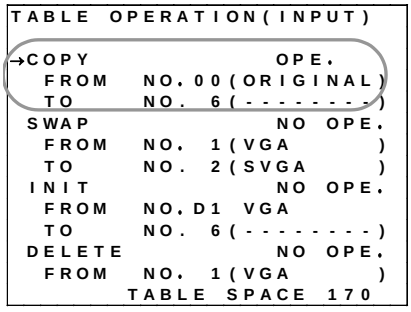


Automatically generated data is displayed in the INPUT TABLE, but data cannot be changed.
PRESET TABLE window cannot be displayed either.

2. To copy data.

Copy data from the FROM NO. "00" to unregistered table.

When pressing MENU, the previous window (a window from which the TABLE OPERATION was called) appears.

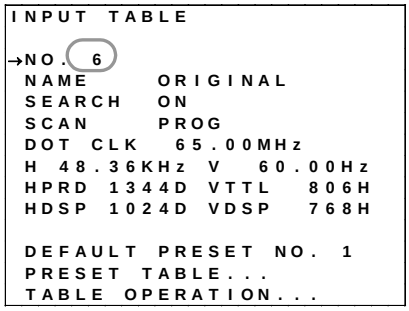


● How to operate TABLE OPERATION
→Refer to p7-32

3. Timing data edit is done in the INPUT TABLE window.

Call the INPUT TABLE window and change the NO. to the one which you made a copy to.

Edit the timing data so that the whole input video is displayed.



● Input Timing Editing
→Refer to p7-3

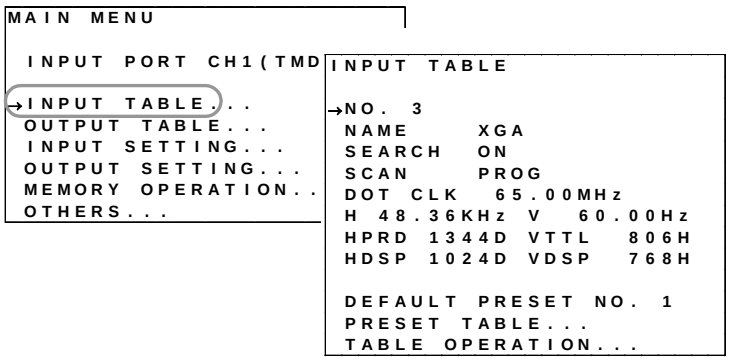
*Please save the data after setting.
→Refer to p6-1
→Refer to p7-40

After registering the Input Table, you can set display position and other functions in the PRESET TABLE window.

To edit input timing data:

Parameter of the Input Table can be edited in the INPUT TABLE window.

1. To display INPUT TABLE window.



First, the timing data that was currently inputted is displayed.

2. To select an itme and edit parameter.

In case of TMDS input, all items can be edited.

In the case of HD-SDI input and D1-SDI input, only SEARCH can be changed.

Setting range of each item is as follows.

Display	Content of Setting	Setting Range
NO.	Input Table No.	1 to 99
NAME	Table Name	8 digits
SEARCH	Search Target	ON/OFF
SCAN	Scanning System (Only display)	PROG/INTER
DOT CLK	Dot Clock	20 to 160MHz
HPRD*	Horizontal Period	500 to 2500 dot
HDSP*	Horizontal Display Period	400 to 1920 dot
VTTL**	Vertical Line	400 to 2000 lines
VDSP**	Vertical Display Period	300 to 1500 lines

* Setting is every 2 dot, HPRD - HDSP ≥ 24

** Setting is every line, VTTL – VDSP ≥ 4

● How to change table name.

→Refer to p5-10

● What is search target?

→Refer to p7-4

How to change a setting value:

(1) Move the arrow "→" to the item you wish to change and press ENTER.

(2) Using ▼ and ▲, change the setting value and press ENTER.

(3) If there is no error in the set data, data is registered in the Input Table and reflected in the video display. If there is an error, it is displayed in red and the data is not registered in the table. In that case, please correct the data.

● For detailed operation, →Refer to p5-10

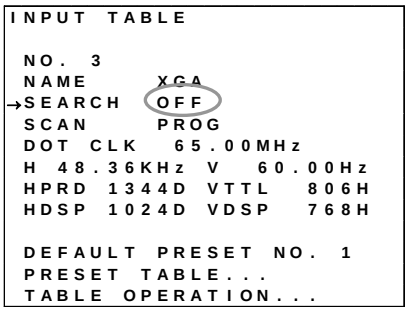
*Please save the data after setting.
→Refer to p6-1
→Refer to p7-40

Note !

- Only registered input timing data is displayed.
- If you edit the timing data that is used for the current display, it is reflected to the video display.
- When there is an error (red) in the set parameter, if you change the timing No. to call a different timing or make the different window displayed, edited content is canceled.

To exclude a certain Input Table from the automatic search target:

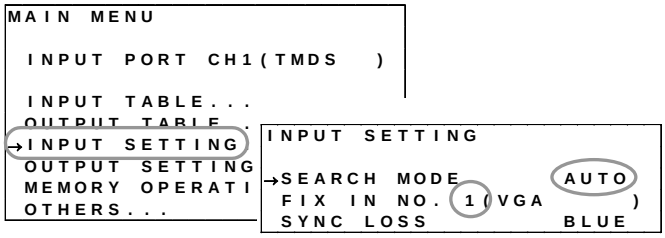
When input timing is distinguished from registered timings, only the search is set to ON in the Input Table is targeted. When the timing is erroneously searched by automatic search, you can avoid the wrong operation by setting the table as search OFF.



To fix the input timing (Setting of fixed input timing):

When an automatic search erroneously starts due to an unstable input video signal or you know that there is only one type input timing in advance, you can set the input timing in advance without using the automatic search.

1. To display INPUT SETTING window.



2. To set SEARCH MODE to FIX.

(1) Move the arrow "→" to SEARCH MODE and press ENTER.

(2) Using ▼ and ▲, change to FIX and press ENTER.

SEARCH MODE	Description
FIX	Input timing is fixed.
AUTO	Input signal is automatically searched.

3. To set FIX IN NO.

(1) Move the arrow "→" to FIX IN NO. and press ENTER.

(2) Using ▼ and ▲, set the fixed input timing No. and press ENTER.

Select one among registered timings.

● Input timing No. setting in the fixed input mode can be changed in the TOP MENU.
→Refer to p6-1

Note **!**

- If a different timing video is inputted from the timing that was set as a fixed input timing, the video may not be displayed correctly.

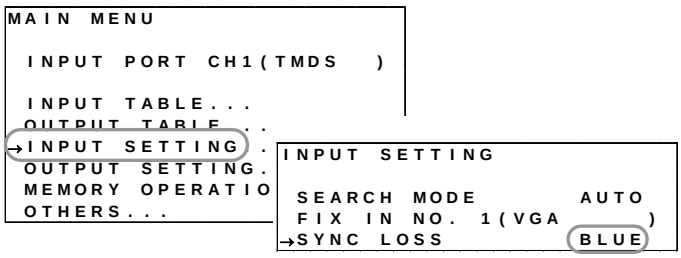
*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

To set an action when there is no input sync signal:

As an action when there is no input sync signal, you can set either blue back, black back, or no signal.

At the time that sync signal is detected, normal scan convert is performed.

1. To display INPUT SETTING window.



2. To set SYNC LOSS.

(1) Move the arrow "→" to SYNC LOSS and press ENTER.

(2) Using ▼ and ▲, change the setting value and press ENTER.

SYNC LOSS	Description
BLUE	Blue Back Display
BLACK	Black Back Display
NO SIGNAL	No Signal

*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

7.2 Settings Related to Output

To change output timing No.:

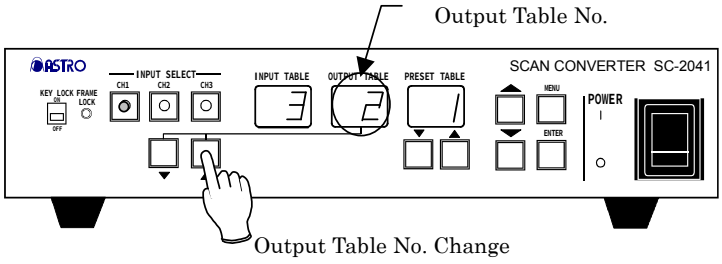
There are 3 ways to change output timing No.

(1) Change by front key.

(2) Change in the TOP MENU.

(3) Change in the OUTPUT SETTING window.

(1) Change by Front Key



Output timing changes immediately.

(2) Change in the TOP MENU

● How to operate TOP MENU.
→Refer to p6-1

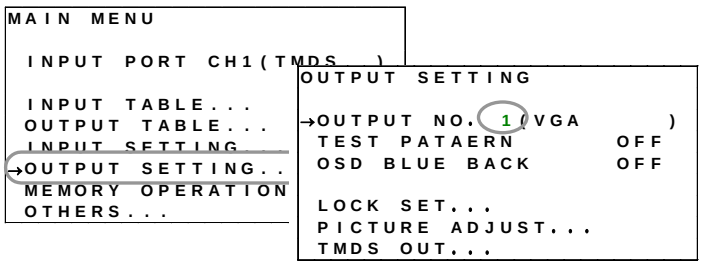
```
TOP MENU

 INPUT PORT  CH1(TMDS   )
 INPUT  NO.  3(XGA      )
→OUTPUT NO.  2(SVGA     )
 PRESET NO.  1
 SCAN CONVERT        ON
 OVER SCAN          OFF
```

Change the value of OUTPUT NO.

Output timing changes immediately.

(3) Change in the OUTPUT SETTING Window

1. To display OUTPUT SETTING window.



2. To change Output Table No.

(1) Move the arrow "→" to OUTPUT NO. and press ENTER.

(2) Using ▼ and ▲, change Output Table No. and press ENTER.

Output timing changes immediately.

Note !

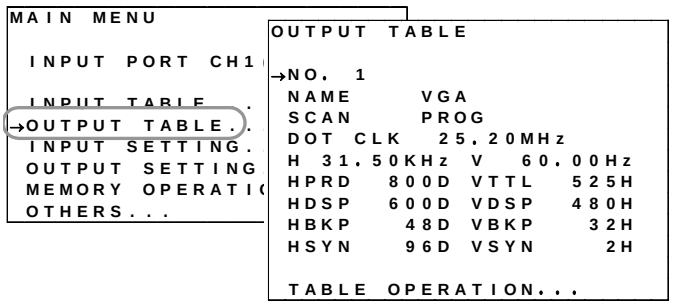
- Only registered output timing No. is displayed.
- To output by unregistered output timing, new data needs to be registered in the Output Table.
- When you change the output timing in the OSD menu and a video cannot be displayed or OSD menu is not operatable, operate the front key to change the output timing.

● How to register Output Table.
→Refer to p7-11

To edit timing data of Output Table:

Changing parameter of output table is done in the OUTPUT TABLE window.

1. To display OUTPUT TABLE window.



First, the current output timing data is displayed.

2. To select an item and edit parameter.

Setting range of each item is as follows.

Display	Content of Setting	Setting Range
NO.	Output Table №	1 to 99
NAME	Table Name	8 digits
SCAN	Scanning System (Only Display)	PROG/INTER
DOT CLK	Dot Clock	20 to 135MHz (50kHz step)
HPRD*	Horizontal Period	500 to 2000 dots
HDSP*	Horizontal Display Period	400 to 1400 dots
HBKP*	Horizontal Back Porch	40 to 1000 dots
HSYNC*	Horizontal Sync Width	4 to 500 dots
VTTL**	Vertical Line	400 to 1500 lines
VDSP**	Vertical Display Period	300 to 1080 lines
VBKP**	Vertical Back Porch	2 to 1000 lines
VSYNC**	Vertical Sync Width	2 to 500 dots

* HPRD ≥ HDSP + HBKP + HSYNC
When dot clock is 80MHz or less, setting is every 2 dots.
When dot clock is 80MHz or more, setting is every 4 dots.
** VTTL ≥ VDSP + VBKP + VSYNC

How to Change the Setting Value:

(1) Move the arrow "→" to the itme you wish to change and press ENTER.

(2) Using ▼ and ▲, change the setting value and press ENTER.

(3) If there is no error in the set value, the data is registered in the Output Table and reflected to the video display. If there is an error in the set data, it is displayed in red. In that case, please correct the data.

● For detailed operation,
→Refer to p5-10

*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

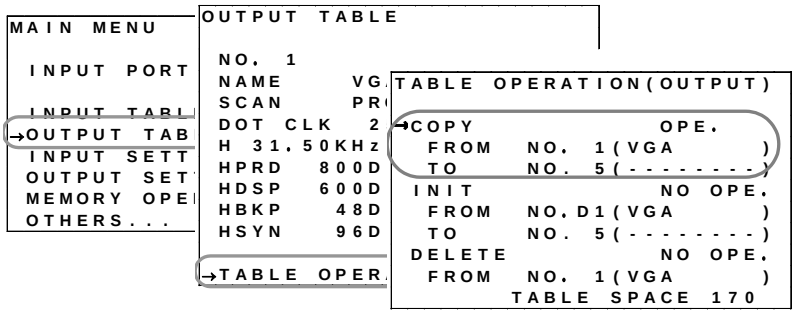
Note !

- Only registered output timing data is displayed.
- When the timing, which is used for the current display (= registered in the preset used for the display), is edited, it is reflected in the video display.
- When there is an error (red) in the set parameter, if you change the timing No. to call a different timing or make a different menu window displayed, the change is canceled.

To output by unregistered output timing:

To output by unregistered output timing, you need to register new timing in the Output Table.

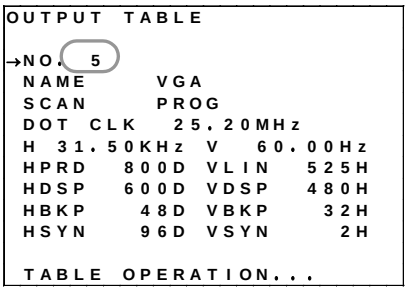
1. To display TABLE OPERATION(OUTPUT)window and copy data to the new table.



Copy the existing data to unregistered table. After copying, return to the OUTPUT TABLE window by pressing MENU.

2. To edit parameter of the copied table.

Change the NO. to the one which you copied to.
Change the parameter as necessary.



● Output Table Editing
→Refer to p7-9

This is an end of Output Table registration.
Next, change timing for output to registered table No.

3. To change Output Table No.

Change the output timing No. to newly registered table No. by either front key, TOP MENU, or OUTPUT SETTING.

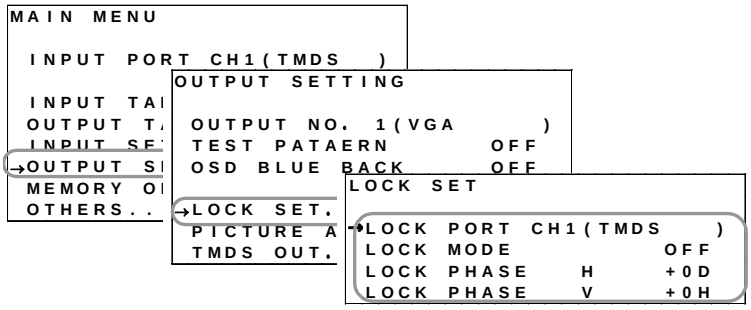
● Output Table No. Change
→Refer to p7-7
*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

Immediately the newly registered output timing outputs a video.

To use an external sync function:

One channel out of input three channels is used for reference input. Connect a reference signal, select a lock port in the LOCK SET window, and set the lock mode.
H/V phase can be adjusted in the lock mode.

1. To display LOCK SET window.



2. To select a port for reference input.

(1) Move the arrow "→" to LOCK PORT and press ENTER.
(2) Using ▼ and ▲, select CH1/CH2/CH3 and press ENTER.

3. To select the lock mode.

(1) Move the arrow "→" to LOCK MODE and press ENTER.
(2) Using ▼ and ▲, select ON and press ENTER.

LOCK MODE	Description
OFF	Internal Sync
ON	External Sync

Immediately it is outputted by synchronizing with reference input.

● Lock mode can be changed in the TOP MENU.
→Refer to p6-1

4. To adjust H/V phase of output video.

(1) Move the arrow "→" to LOCK PHASE H and press ENTER.

(2) Using ▼ and ▲, change an adjust value and press ENTER.

Adjust LOCK PHASE V in the same way as above.

Display	Setting Range
LOCK PHASE H	±1500 D
LOCK PHASE V	±1000 H

Lock status can be checked by the FRAME LOCK LED on the front panel.

LOCK MODE and LED Display

LOCK MODE	Sync System	Lock Status	FRAME LOCK LED
OFF	Internal Sync		Off
ON	External Sync	External reference is locked.	On
		External reference is not locked.	Flashing

Note !

- For reference, the same, a half, or double frame frequency timing as output needs to be inputted.
- H phase adjustment is set every 4 dots.
- When changing lock port/lock mode or adjusting phase, the image may be temporarily distorted.

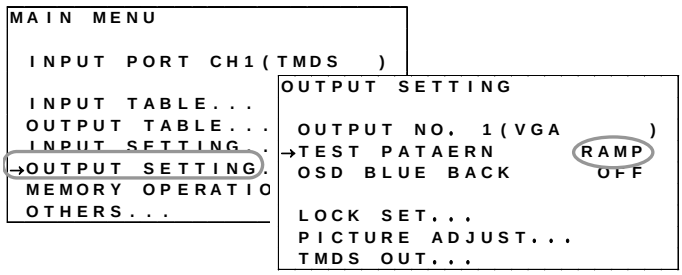
*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

To output test patterns:

SC-2041 can output test patterns.

Setting is done in the OUTPUT SETTING window.

1. To display OUTPUT SETTING window.



2. To select a test pattern.

(1) Move the arrow "→" to TEST PATTERN and press ENTER.

(2) Using ▼ and ▲, select a test pattern and press ENTER.

The selected test pattern is outputted immediately.

TEST PATTERN	Description
OFF	No test pattern is outputted.
COLOR	Color bar is outputted.
RAMP	Ramp is outputted.
CONVER	Convergence is outputted.

Note !

- While a test pattern is displayed, only picture quality can be adjusted.
  (Color and hue cannot be adjusted.)
- If you change input, output, or preset, the test pattern display automatically turns off.
- It takes a while to display convergence. For your reference, a count down to the pattern display is indicated on the menu window.
- When the power is on, the test pattern turns off.
- While a test pattern is displayed, automatic measurement of input is not conducted.
- Setting of image outline is reset when a test pattern is displayed.(Due to hardware limitations)

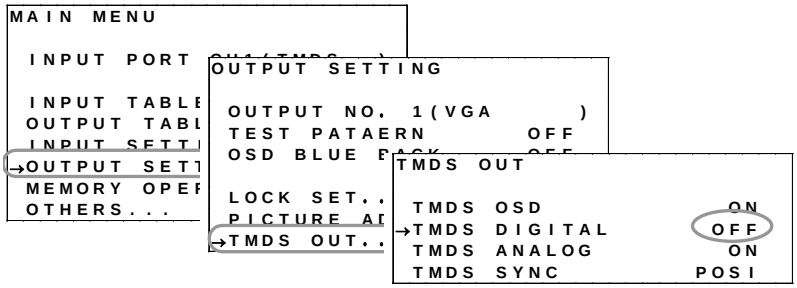
● Picture Quality Adjustment
→Refer to p7-26

To turn off TMDS digital output:

TMDS digital output can be turned off.

Setting is done in the TMDS OUT window.

1. To display TMDS OUT window.



2. To change TMDS DIGITAL setting to OFF.

(1) Move the arrow "→" to TMDS DIGITAL and press ENTER.

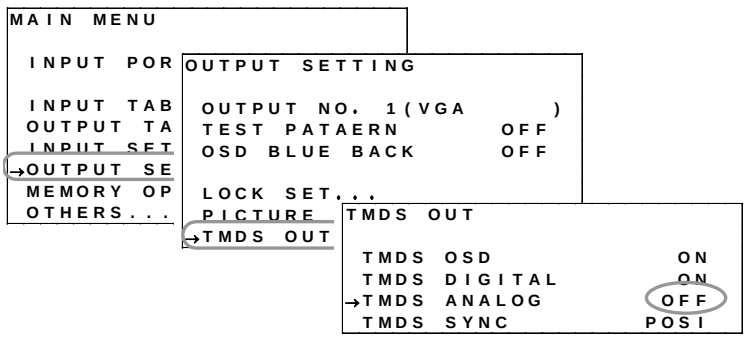
(2) Using ▼ and ▲, select OFF and press ENTER.

To turn off TMDS analog output:

TMDS analog output can be turned off.

Setting is done in the TMDS OUT window.

1. To display TMDS OUT window.



2. To change TMDS ANALOG setting to OFF.

(1) Move the arrow "→" to TMDS ANALOG and press ENTER.

(2) Using ▼ and ▲, select OFF and press ENTER.

*Please save the data after setting.

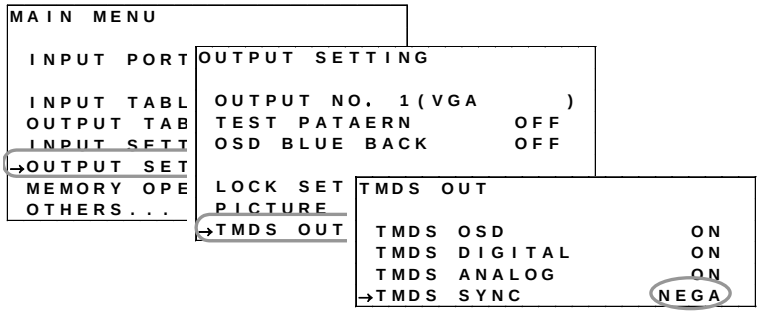
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

To change TMDS SYNC polarity:

TMDS SYNC polarity can be changed.

Setting is done in the TMDS OUT window.

1. To display TMDS OUT window.



2. To select TMDS SYNC setting.

(1) Move the arrow "→" to TMDS SYNC and press ENTER.

(2) Using ▼ and ▲, select NEGA/POSI and press ENTER.

TMDS SYNC	Description
POSI	Positive Polarity
NEGA	Negative Polarity

*Please save the data after setting.

→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

7.3 Settings Related to Display Position

To display in “just” size:

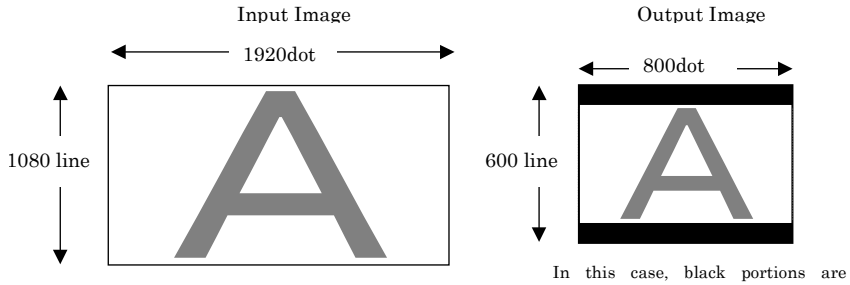
Display “just” is a function to display an image in the full screen display mode. There are 3 types of display; “H just display” which displays an image in full screen in horizontal direction or output screen, “V just display” which displays an image in full screen in vertical direction, and “HV just display” which displays all input video in full size of output screen.

Example of Display “Just”

(1) H Just Display

Input horizontal display period is fully displayed in the output horizontal display period. Vertical direction is displayed in the same zoom ratio as horizontal direction.

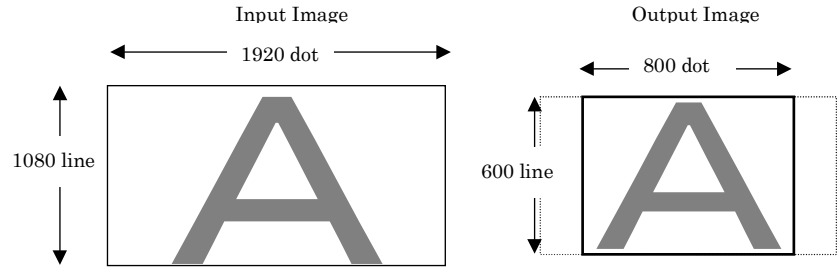
The ratio which is got from the formula, (output dot size)/(input dot size) is called zoom ratio. When 1 dot, 1line of input is displayed by 1 dot, 1line of output, a zoom ratio becomes 100%.



In this case, black portions are displayed at top and bottom
Zoom Ratio 800 / 1920 = 41.7%

(2) V Just Display

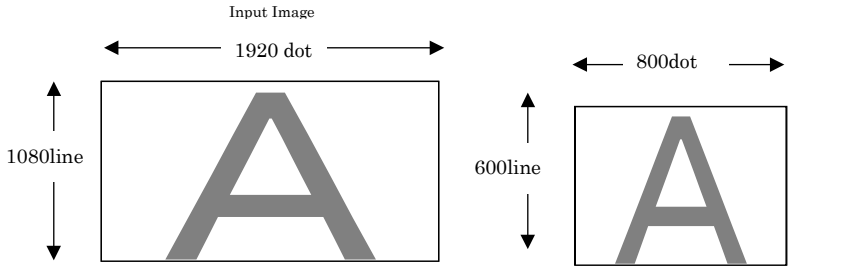
Input vertical display period is displayed in full size of output vertical display period. Horizontal direction is displayed in the same zoom ratio as vertical direction.



In this case, left and right sides of the image are cut off.
Zoom ratio is 600/1080=55.6%.

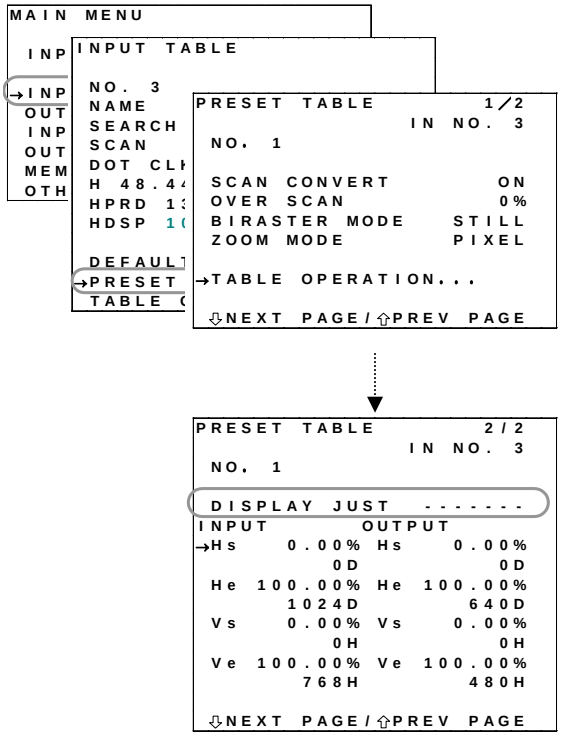
(3) HV Just Display

Whole input video is fully displayed on the output display screen. When aspect ratio between input and output differs, horizontal direction is displayed in a different zoom ratio from vertical direction.



Horizontal zoom ratio is 800/1920=41.7%.
Vertical zoom ratio is 600/1080=55.6%.

1. To display PRESET TABLE(2/2).



● PRESET TABLE menu consists of 2 pages. To turn to another page, use ▲ and ▼.

→Refer to p 5-9

2. To excute display just setting.

(1) Move the arrow "→" to DISPLAY JUST and press ENTER.

(2) Using ▼ and ▲, select a display just setting and press ENTER.

DISPLAY JUST	Description
- - - - - - -	No change. (Normal display)
H JUST	H just display.
V JUST	V just display.
HV JUST	HV just display.

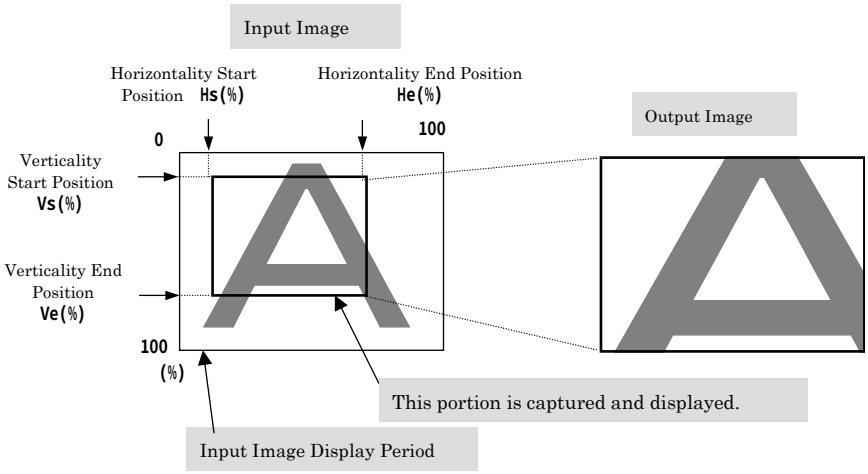
Every time you change the display just setting using ▼ and▲, the image display condition is also changed. Setting values of INPUT (input capture position) and OUTPUT (output display position) are automatically changed. If you execute a display just setting by pressing ENTER, menu display returns to "……." and setting values of INPUT and OUTPUT are confirmed.

● INPUT (Input Capture Position)
→Refer to p7-20
● OUTPUT(Output Display Position)
→Refer to p7-22

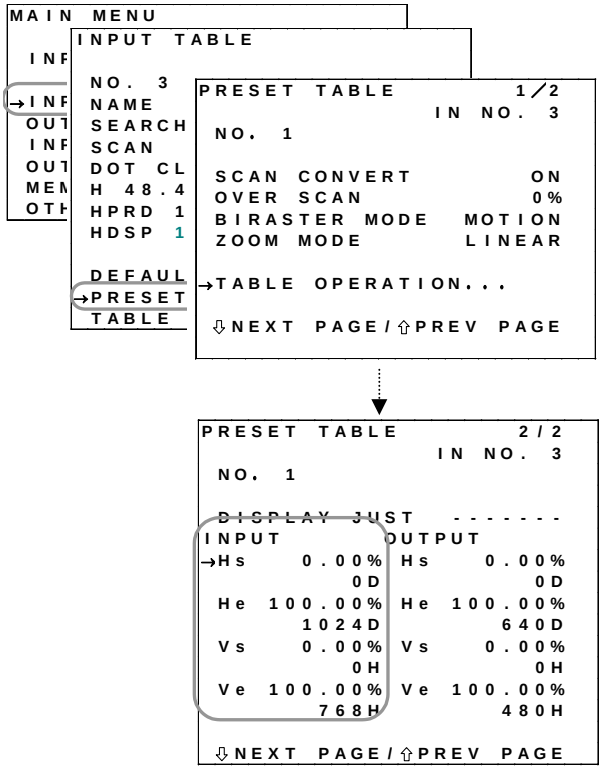
Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

To cut out a portion of input image and display it:

A portion of input image can be cut out and be displayed.
There are 2 ways of setting. One is to set by ratio against input video display period. Another is to set by the number of dot/line.



1. To display PRESET TABLE(2/2) menu.



● PRESET TABLE consists of 2 pages. To turn to another page, use ▲ and ▼.
→Refer to p 5-9

2. To set a capture video (INPUT) coordinate.

Set each coordinate for start/end in horizontal direction and start/end in vertical direction by a ratio or the number of dot/line of.

When setting by a ratio:

Set in a line where % is indicated.

Based on the set ratio, values converted into dot/line are indicated in the lower line.

Display	Content of Setting	Setting Range
INPUT Hs	Input start coordinate in horizontal direction	0.00 to 100.00%
He	Input end coordinate in horizontal direction	0.00 to 100.00%
Vs	Input start coordinate in vertical direction	0.00 to 100.00%
Ve	Input end coordinate in vertical direction	0.00 to 100.00%

Setting Condition : Start ≤ End
Horizontal direction is set every 2 dot, and vertical direction is set every line (2 lines for interlaced).

When setting by dot/line:

Set in a line where D/H is indicated.

Values converted to percentage are indicated in upper line.

Display	Content of Setting	Setting Range
INPUT Hs	Input start coordinate in horizontal direction	0 to Hdisp dot
He	Input end coordinate in horizontal direction	0 to Hdisp dot
Vs	Input start coordinate in vertical direction	0 to Vdisp line
Ve	Input end coordinate in vertical direction	0 to Vdisp line

Setting Condition : Start ≤ End
Horizontal direction is set every 2 dot, and vertical direction is set every line (2 lines for interlaced).

Note !

- If you set display just, input capture position is automatically changed.

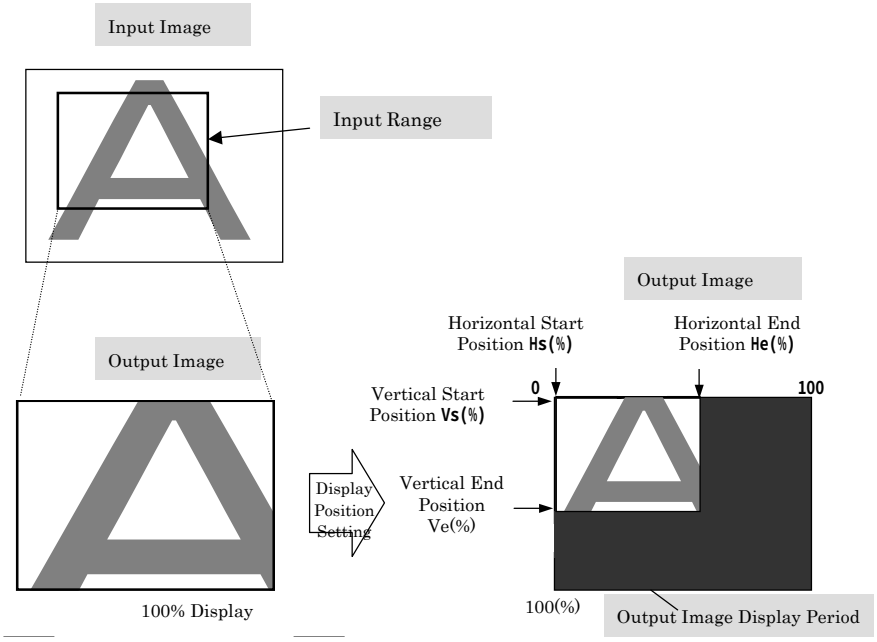
*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

● Display Just
→Refer to p 7-17

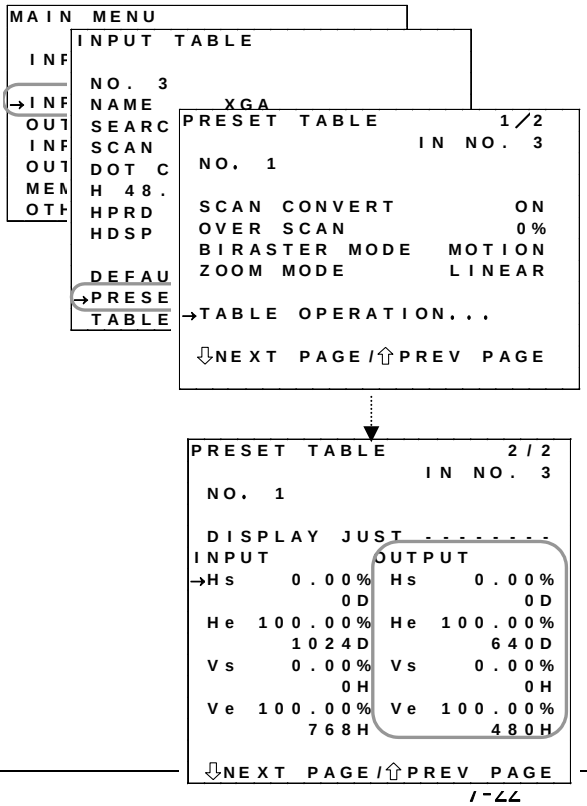
To change output image display positoin:

Output image display position can be changed.

There are 2 ways to set display position. One is to set by a ratio against output video display period. Another is to set by the number of dot/line.



1. To display PRESET TABLE(2/2) menu.



● PRESET TABLE consists of 2 pages. To turn to another page, use ▲ and ▼.
→Refer to p 5-9

2. To set a display position (OUTPUT) coordinate.

Set each coordinate of start/end in horizontal direction and start/end in vertical direction by a ratio or the number of dot/line.

When setting by a ratio:

Set in a line where percentage % is indicated.

Values converted to dot/line are indicated in a lower line.

Display	Content of Setting	Setting Range
OUTPUT Hs	Output start coordinate in horizontal direction.	0.00 to 100.00%
He	Output end coordinate in horizontal direction.	0.00 to 100.00%
Vs	Output start coordinate in vertical direction.	0.00 to 100.00%
Ve	Output end coordinate in vertical direction.	0.00 to 100.00%

Setting Condition : Start ≤ End
Horizontal direction is set every 2 dot, and vertical direction is set every line (2 lines for interlaced).

When setting by dot/line:

Set in a line where D/H is indicated.

Values converted to percentage are indicated in an upper line.

Display	Content of Setting	Setting Range
OUTPUT Hs	Output start coordinate in horizontal direction.	0 to Hdisp dot
He	Output end coordinate in horizontal direction.	0 to Hdisp dot
Vs	Output start coordinate in vertical direction.	0 to Vdisp line
Ve	Output end coordinate in vertical direction.	0 to Vdisp line

Setting Condition : Start ≤ End
Horizontal direction is set every 2 dot, and vertical direction is set every line (2 lines for interlaced).

*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

Note !

- Data of indicated coordinate is controlled by the percentage. When output timing is changed, setting of dot/line is rewritten in accordance with the new output timing.
- When display just is set, setting of output display position is automatically changed.

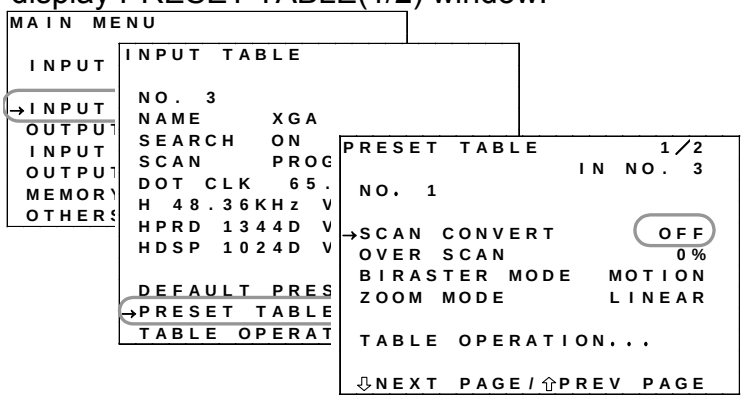
● Display Just
→Refer to p 7-17

To output with scan convert off:

When scan convert is set to off, input video/sync signal is through outputted without scan conversion.

Setting is done in the PRESET TABLE(1/2)window.

1. To display PRESET TABLE(1/2) window.



2. To set SCAN CONVERT to off.

(1) Move the arrow "→" to SCAN CONVERT and press ENTER.

(2) Using ▼ and ▲, set to OFF and press ENTER.

Note !

- Setting can be conducted only when output is TMDS and dot clock is 135MHz or less.

- Scan convert can be also set to ON/OFF in the TOP MENU.
→Refer to p6-1

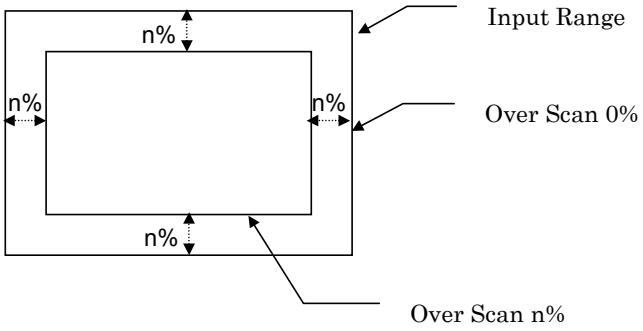
*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

To set over scan:

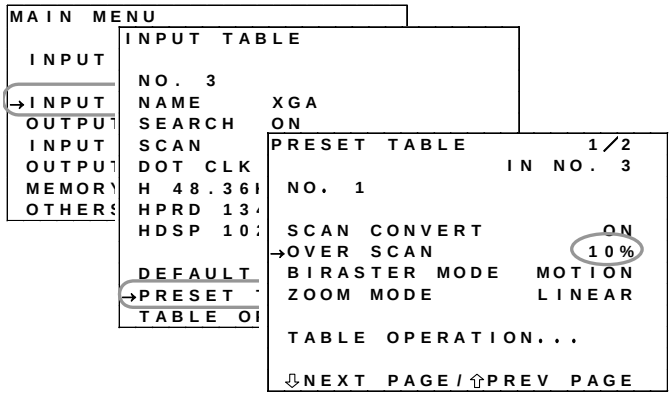
Over scan is a function to capture input video smaller by n%.

"n" can be set within the range, 0 to 10%.

Setting is done in the PRESET TABLE(1/2) window.



1. To display PRESET TABLE(1/2) window.



2. To set a value of OVER SCAN.

(1) Move the arrow "→" to OVER SCAN and press ENTER.

(2) Using ▼ and ▲, set a value and press ENTER.

●Over scan can be also set to ON/OFF in the TOP MENU.
→Refer to p6-1

*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

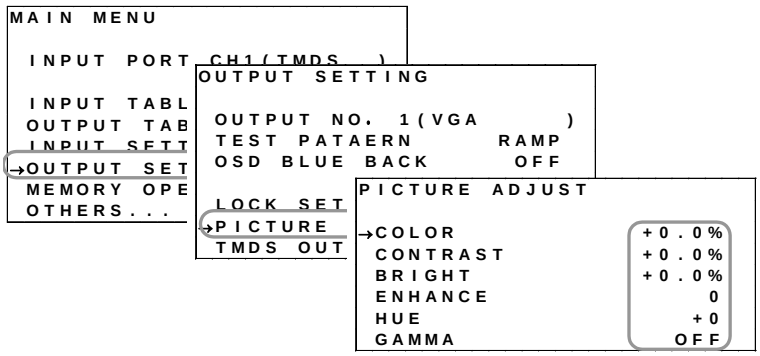
7.4 Settings Related to Picture Quality

To adjust picture quality:

Each adjustment of color, contrast, brightness, enhance and hue as well as setting of gamma correction can be done.

However, adjustment of color and hue are available only for optional HD-SDI and D1-SDI input.

1. To display PICTURE ADJUST window.



2. To adjust picture quality checking the displayed image.

The following table shows setting ranges for each item.

Display	Content of Setting	Setting Range
COLOR	Color adjustment	-50.0 to +50.0%(Every 0.1%)
CONTRAST	Contrast adjustment	-30.0 to +30.0%(Every 0.1%)
BRIGHT	Brightness ajustment	-30.0 to +30.0%(Every 0.1%)
ENHANCE	Enhance adjustment*	0 to 9 Step
HUE	Hue adjustment	±180°
GAMMA	Gamma correction mode	OFF (=1.0) 2.0, 2.1, 2.2,--------2.9, 3.0 1/2.0, 1/2.1, 1/2.2,--------1/2.9, 1/3.0 SMPTE240M, 1/SMPTE240M SMPTE274M, 1/SMPTE274M SMPTE170M, 1/ SMPTE170M USER1,2(Can be set by command)

* Enhance adjustment emphasizes the outline/contour in the horizontal direction in 9 gradations.

● For detailed operation,
→Refer to p5-10

How to change a setting value:

(1) Move the arrow "→" to each adjustment item and press ENTER.

(2) Using ▼ and ▲, change the adjustment value and press ENTER.

*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

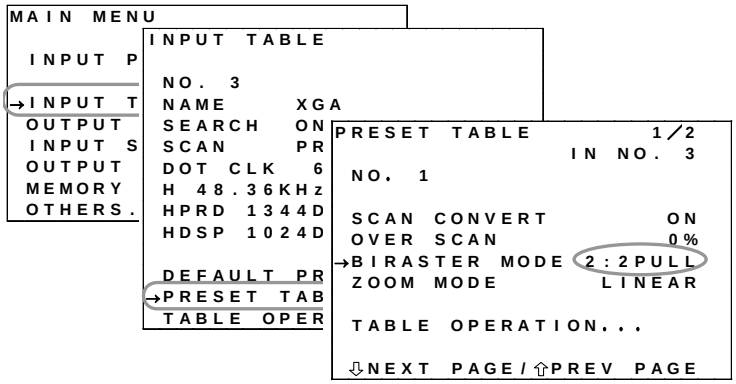
When inputting interlaced static image:

Interlaced input of HD-SDI and D1-SDI(options) are processed at double-speed.

There are 2 modes for double-speed conversion. One is "2:2 pull down mode" which consists of 1 frame (progressive) in 2 fields of the same frame (interlaced). Another mode is "moving image mode" which consists of 1 frame (progressive) by doubling lines in the current field.

When input is interlaced and static image, you can get a high-resolution clear output image by setting the biraster mode to "2:2 pull down mode."

1. To display PRESET TABLE(1/2)menu.



2. To set BIRASTER MODE to 2:2 PULL.

(1) Move the arrow "→" to BIRASTER MODE and press ENTER.

(2) Using ▼ and ▲, set to 2:2PULL and press ENTER.

BIRASTER MODE	Content of Setting
2:2PULL	2:2 pull down mode. (Consists of 1 frame (progressive) from 2 fields in the same frame (interlaced).)
MOTION	Moving image mode. (Doubles lines in the current field.)

Note !

- When the BIRASTER MODE is "2:2 pull down mode" and a moving image is inputted, the image blurs. Please set a conversion mode that fits the video source.

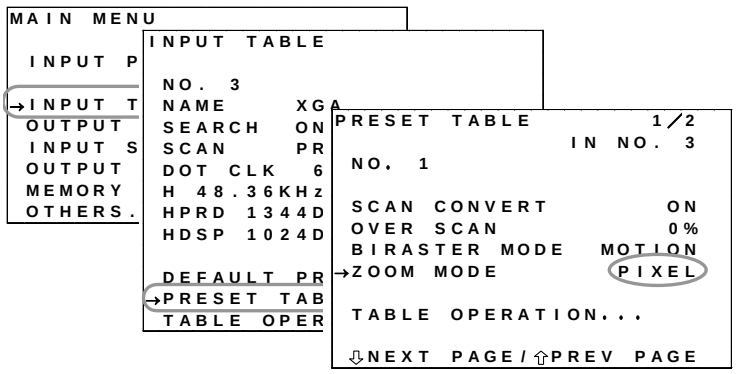
*Please save the data after setting.

→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

To change zoom mode:

Depending on input video, suitable zoom algorithms differ.
Please select a zoom mode suitable for the video. For examples, select PIXEL for computer graphic videos to realize sharp image, and set LINEAR that interpolates picture elements smoothly in nature videos.

1. To display PRESET TABLE(1/2) menu.



2. To set ZOOM MODE.

(1) Move the arrow "→" to ZOOM MODE and press ENTER.

(2) Using ▼ and ▲, change the setting value and press ENTER.

ZOOM MODE	Content of Setting
PIXEL	Zoom computer graphic videos more sharply.
LINER	Zoom nature videos smoothly.
N-LINER	Emphasize outline of video. Suitable for fine videos such as computer graphics.

*Please save the data after setting.

→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

7.5 Registration and Change of Preset

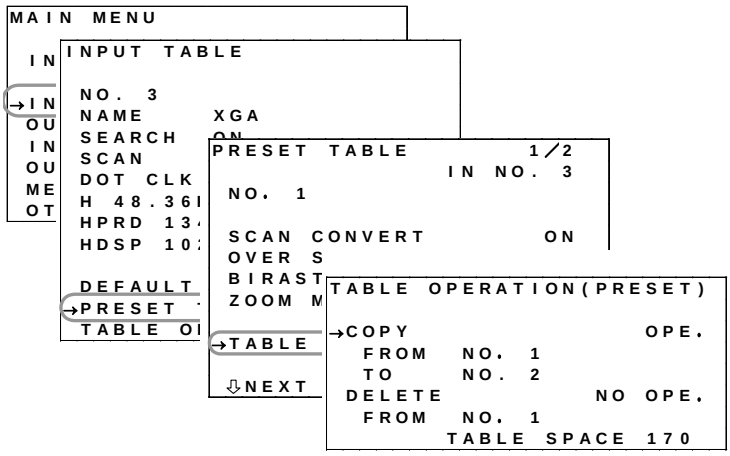
Adjustment of image outline and picture quality is registered in the Preset Table that is made during every input timing. One Preset Table is always made for one Input Table. More than one Preset Table can be registered.

When plural Preset Tables are registered, you can freely change preset using ▼ and ▲ (PRESET) on the main body and call data of setting and adjustment freely.

The following procedure is to register preset.

To register a new preset:

1. To copy a Preset Table.



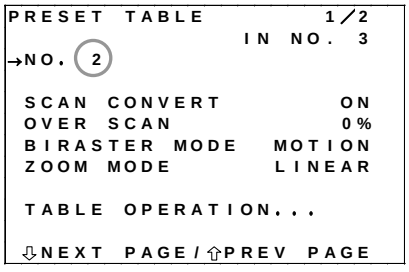
Copy an existing preset to unregistered table in the TABLE OPERATION(PRESET) window.

● How to operate TABLE OERATION.
→Refer to p7-32

2. To change output preset.

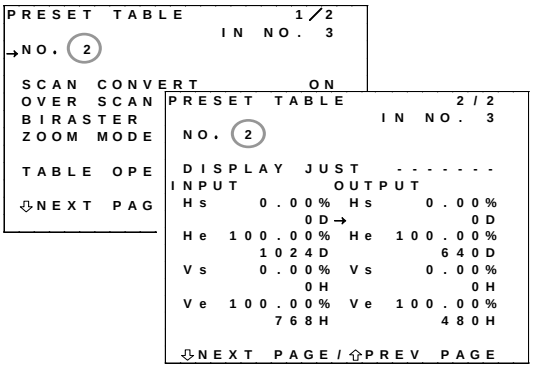
By pressing MENU, return to PRESET TABLE (1/2) window.

Change the setting to the preset that you copied preset No. to.



3. To set and adjust checking output video status.

Perform various adjustments and settings in the PRESET TABLE
window. (Page 1 to 2)



● PRESET TABLE consists of 2 pages. To turn to another page, use ▲ and ▼.
→Refer to p 5-9

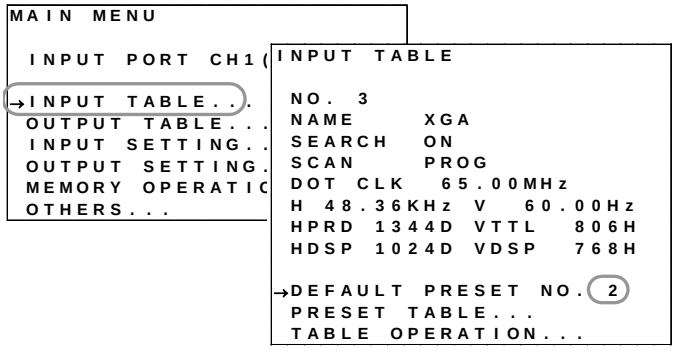
This is the end of new preset registration.
To make this preset default preset of input timing, register this preset in the INPUT TABLE window.

*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

To register default preset:

When more than one preset is registered to one input timing, you can register in advance that which preset is used first when input timing is being changed.

1. To display INPUT TABLE menu.



2. To change DEFAULT PRESET NO.

(1) Move the arrow "→" to DEFAULT PRESET NO. and press ENTER.

(2) Using ▼ and ▲, change preset No. and press ENTER.

Now scan convert video is displayed by registered default preset data when this timing is inputted.

*Please save the data after setting.
→Refer to p6-1
(TOP MENU)
→Refer to p7-40
(MEMORY OPERATION)

To change preset:

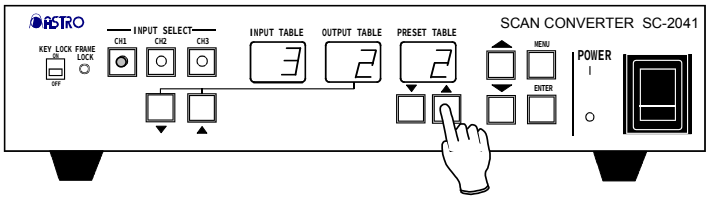
There are 3 ways to change registered preset.

(1) Change by front key.

(2) Change in the TOP MENU.

(3) Change in the PRESET TABLE (1/2) window.

(1) Change by Front Key



Registered Preset Change

● How to operate TOP MENU.
→Refer to p6-1

(2) Change in the TOP MENU.

```
TOP MENU

 INPUT PORT  CH1(TMDS   )
 INPUT   NO.  1(VGA     )
 OUTPUT NO.  2(SVGA     )
→PRESET NO.  (2)
 SCAN CONVERT          ON
 OVER SCAN            OFF
```

(3) Change in the PRESET TABLE (1/2) Window.

```
MAIN MENU
 INPUT
→INPUT
 OUTPUT
 INPUT
 OUTPUT
 MEMORY
 OTHERS

INPUT TABLE

 NO. 3
 NAME      XG
 SEARCH    ON
 SCAN      PR
 DOT CLK   6
 H 48.36KHz
 HPRD 1344D
 HDSP 1024D

 DEFAULT PR
→PRESET TAB
 TABLE OPER

PRESET TABLE          1/2
                 IN NO. 3
→NO. (2)

 SCAN CONVERT          ON
 OVER SCAN             0%
 BIRASTER MODE    MOTION
 ZOOM MODE        LINEAR

 TABLE OPERATION...

 ⇩NEXT PAGE/⇧PREV PAGE
```

7.6 How to Operate TABLE OPERATION

Functions and operations of each TABLE OPERATION window for Input Table, Output Table, and Preset Table are described in this section.

Functions of TABLE OPERATION(INPUT)

Display	Content of Setting	Setting Range
COPY	Copy registered data to unregistered table.	
FROM NO.	Input Table №(1 to 99)	Registered Table No.
TO NO.	Input Table No. (1 to 99)	Registered Table No.
SWAP*	Swap 2 specified data.	
FROM NO.	Input Table No.(1 to 99)	Registered Table No.
TO NO.	Input Table No. (1 to 99)	Registered Table No.
INIT**	Copy factory-shipped data to unregistered table.	
FROM NO.	ROM Input Table № (1 to 5)	
TO NO.	Input Table No. (1 to 99)	Unregistered Table No.
DELETE**	Delete table data.	
FROM NO.	Input Table No. (1 to 99)	Registered Table No.

* SWAP: Currently used table No. for display becomes an error.
** INIT: Currently used table No. for display becomes an error.
*** DELETE: Table No. used for current display or table No. used for fixed input table becomes an error.

Functions of TABLE OPERATION(OUTPUT)

Display	Content of Setting	Setting Range
COPY	Copy registered data to unregistered table.	
FROM NO.	Output Table No. (1 to 99)	Registered Table No.
TO NO.	Output Table No. (1 to 99)	Unregistered Table No.
INIT*	Copy factory-shipped data to unregistered table.	
FROM NO.	ROM Output Table No. (1 to 4)	
TO NO.	Output Table No. (1 to 99)	Unregistered Table No.
DELETE**	Delete data of table.	
FROM NO.	Output Table No. (1 to 99)	Registered Table No.

* INIT: Table No. used for the current display becomes an error.
** DELETE: Table No. used for the current display becomes an error.

Functions of TABLE OPERATION(PRESET)

Display	Content of Setting	Setting Range
COPY	Copy registered data to unregistered table.	
FROM NO.	Output Table No. (1 to 99)	Registered Table No.
TO NO.	Output Table No. (1 to 99)	Unregistered Table No.
DELETE*	Delete data of table.	
FROM NO.	Output Table No. (1 to 99)	Registered Table No.

* DELETE: Table No. registered default preset becomes an error.

Note!

- Table that is used for display or registered for display cannot be deleted or swapped.
- When executing COPY or INIT, you cannot overwrite-copy data on the registered table. When you wish to copy to the registered table, check if it can be deleted or not and delete the data before executing COPY.

How to operate TABLE OPERATION window:

The same operation is applied to each table.

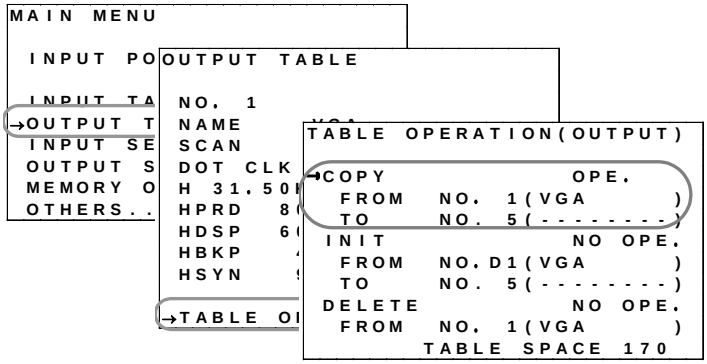
(1) First, call TABLE OPERATION window.

(2) Set table no. which you wish to operate.

(3) Change NO OPE. to OPE. and press ENTER.

For example, output timing table is copied as described below.

1. To display TABLE OPERATION (OUTPUT) window.



2. To set table No. where copy from and where copy to.

(1) Move the arrow "→" to FROM and press ENTER.

(2) Using ▼ and ▲, set registered timing No. and press ENTER.

(3) Move the arrow "→" to TO and press ENTER.

(4) Using ▼ and ▲, set unregistered timing No. and press ENTER.

3. To change NO OPE. to OPE. and execute COPY.

(1) Move the arrow " →" to COPY and press ENTER.

(2) Using ▼ and ▲, change NO OPE. to OPE. and press ENTER.

COPY is executed.

Note!

- When an error occurs in registered table No., it is displayed in red.
- The number of empty tables is indicated in TABLE SPACE. If the number of table is short to execute the selected function, it is indicated in red. Unnecessary tables need to be deleted.
- On error, "NO OPE." cannot be changed to "OPE."

*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

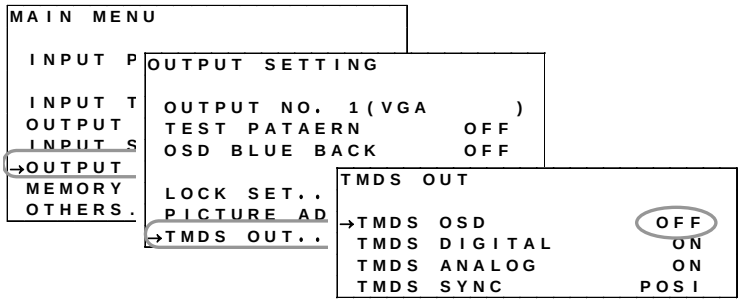
● Limitation of the number of table.
→Refer to p4-1

7.7 Settings Related to OSD Menu

To make OSD menu on TMDS output not dispalyed:

OSD menu on TMDS output is not displayed, and the menu is displayed only on the analog monitor output.
Setting is done in the TMDS OUT window.

1. To display TMDS OUT window.



2. To set TMDS OSD to OFF.

(1) Move the arrow "→" to TMDS OSD and press ENTER.
(2) Using ▼ and ▲, select OFF and press ENTER.

*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

Note !

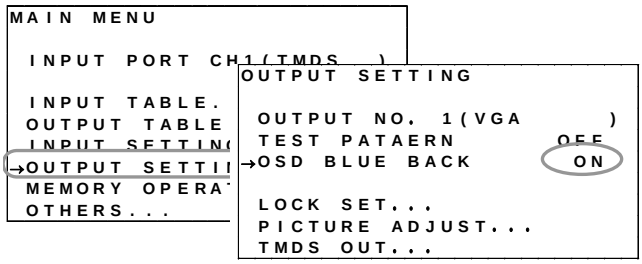
- When output is only TMDS and analog monitor is not used, if TMDS OSD is turned off, On Screen Display Menu is not displayed and no more operations can be done.
  In that case, turn the power off and turn on the power again.
  Be aware that unsaved edited data will be erased.
- Please be sure that red, which means an error, and gray, which means setting cannot be executed, are not displayed on OSD of analog monitor output.

To display blue back in the OSD menu:

Sometimes letters on OSD menu are difficult to see depending on the video. In that case, by displaying blue back in OSD menu, letters will be easier to see.

Setting is done in the OUTPUT SETTING window.

1. To display OUTPUT SETTING window.



2. To set OSD BLUE BACK to ON.

(1) Move the arrow "→" to OSD BLUE BACK and press ENTER.

(2) Using ▼ and ▲, select ON and press ENTER.

*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

Note !

- If OSD menu is turned off, blue back disappears and the screen returns to the normal display.

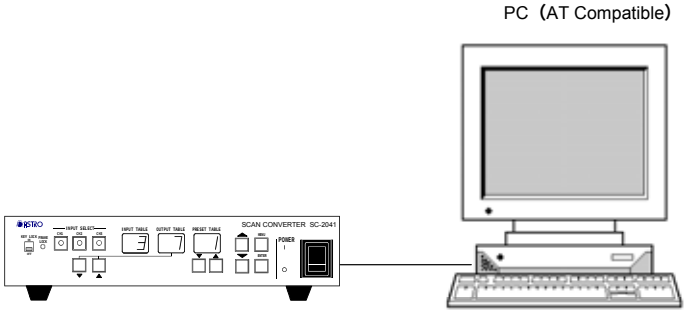
7.8 Remote Control

To remote control from PC:

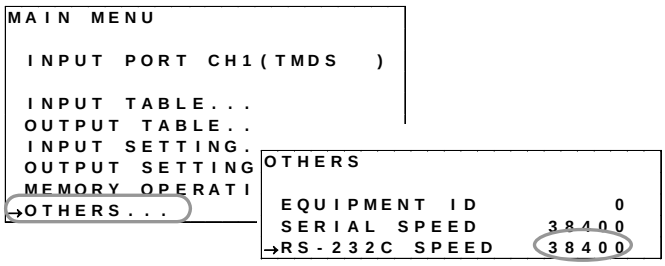
When your PC is connected to RS-2332C port of this product, you can control using your PC by commands.
Please refer to "SC-2041 Command Manual" for detailed communication commands.

1. To connect with PC.

Connect your PC with RS-232C port of this product.



2. To set RS-232C communication speed in the OTHERS window.



(1) Move the arrow "→" to RS-232C SPEED and press ENTER.
(2) Using ▼ and ▲, set RS-232C communication speed among 9600/19200/38400(bps) and press ENTER.

Note !

- During communication, LED of KEY LOCK key illuminates and front key becomes invalid.

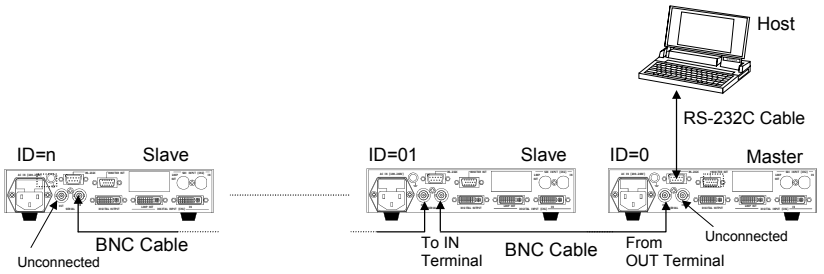
*Please save the data after setting.
→Refer to p6-1 (TOP MENU)
→Refer to p7-40 (MEMORY OPERATION)

To remote control more than one equipment:

Using serial bus, you can control more than one equipment with one RS-232C port. Host computer can control all or individual equipment connected to serial bus at the same time via master equipment.

1. To connect serial bus.

Using BNC cable, connect SERIAL IN terminal to OUT terminal, which you wish to control at the same time.



Note !

- Serial bus consists of daisy chains, and the starting point ("Master" in the above figure" and end point ("Slave n" in the above figure) should be termination.
  Automatic termination circuit is built in the connector of serial bus, and when a cable is connected to both connectors of IN and OUT, termination resistance is cut off, and it becomes high impedance.
  When making this machine a starting point of bus as "master":
  Connect a cable only to OUT of serial bus. IN is unconnected.
  When making this machine an end point of bus as "slave n":
  Connect a cable only to IN of serial bus. OUT is unconnected.
- To perform a normal communication, both equipment on starting point and end point of bus must have their power on.

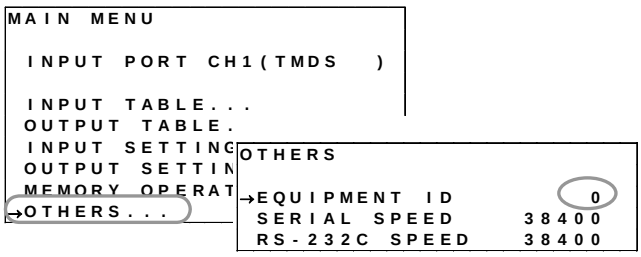
2. To set serial bus ID.

For all equipment, which is connected to serial bus, ID, which is not same as others in the bus, should be set. Communications partner equipment appoints this ID and sends or receives commands.

Equipment connected to Host at RS-232C port is called master, and ID is 0 (zero).

Other equipment are called slaves, and ID (1 to 99), which should be unique for each equipment, is set. ID number does not need to be consecutive numbers as the order of connection.

Setting is done in the OTHERS window.



(1) Move the arrow "→" to EQUIPMENT ID and press ENTER.

(2) Using ▼ and▲, set serial bus ID (0 to 99) and press ENTER.

(3) Move the arrow "→" to SERIAL SPEED and press ENTER.

(4) Using ▼ and ▲, set serial bus communication speed among 9600/19200/38400 (bps) and press ENTER.

*Please save the data after setting.

→Refer to p6-1 (TOP MENU)

→Refer to p7-40 (MEMORY OPERATION)

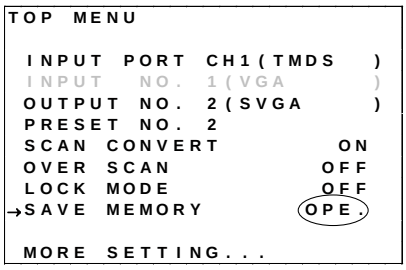
7.9 To Save and Load Settings

Please save the data after setting. Please be aware that if you turn off the power of this product without saving the data, all newly added or changed data will not be saved.

You can save the data in the TOP MENU. In the MEMORY OPERATION window, you can save the data and call saved user's data.

To save all data:

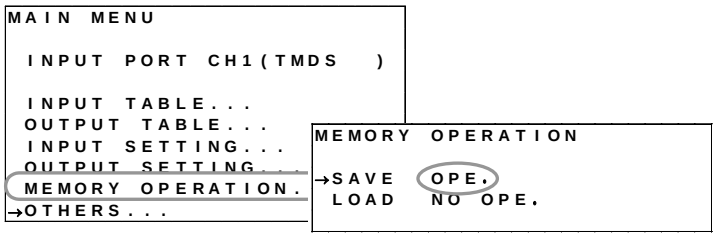
Save in the TOP MENU.



(1) Move the arrow "→" to SAVE MEMORY and press ENTER.

(2) Using ▼ and ▲, change NO OPE. to OPE. and press ENTER.

Save in the MEMORY OPERATION window.



(1) Move the arrow "→" to SAVE and press ENTER.

(2) Using ▼ and ▲, change NO OPE. to OPE. and press ENTER.

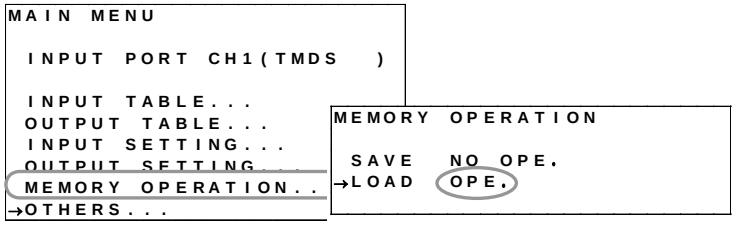
Note !

- All data is overwritten and saved.

● How to operate TOP MENU.
→Refer to p6-1

To load saved data:

Execute LOAD in the MEMORY OPERATION window.



(1) Move the arrow "→" to LOAD and press ENTER.

(2) Using ▼ and ▲, change NO OPE. to OPE. and press ENTER.

Note !

- By executing LOAD, editing data is replaced with saved data.

8 Troubleshooting

The following cases may not be malfunctions. Please check the table below before asking for repairs.

Condition	Cause	Countermeasure	Refer to
Power does not turn on.	• Power cord is not plugged.	• Plug in the power cord correctly.	—
Keys cannot be operated.	• Key is locked. • During command communication	• Set KEY LOCK key to OFF. • Keys cannot be operated during communication command control.	— p7-37
Blue (black) screen is displayed.	• Connection error. • Wrong input port is selected. • No input sync signal.	• Check connections of input and output. • Check selection of input port. • Check input signal.	— p3-1
Video is distorted.	• In fixed input mode, timing other than the setting timing was inputted.	• Check settings of search mode and fixed input timing.	p7-5
All inputted video is not displayed.	• Input timing parameter differs. • Input capture position is set.	• Register automatically generated timing to Input Table and adjust display period. • Check preset capture position used for display.	p7-1 p7-20
Video display position is off.	• Output timing parameter is different. • Output display position is set.	• Edit parameter of Output Table. • Check preset display position used for display.	p7-9 p7-22
Video colors are not right.	• Maladjustment	• Adjust picture quality in preset used for display.	p7-26
Not search registered timing.	• Search target OFF	• Set search target in the Input Table to be searched to ON.	p7-4
Even though preset setting is changed, the change does not reflect to screen display.	• Preset is wrong.	• Edit Preset Table used for displayed.	p7-31

Condition	Cause	Countermeasure	Refer to
OSD menu is not displayed.	• Due to output timing setting, video itself is not displayed.	• Change output timing by front key.	p7-7
	• OSD on TMDS output is off.	• Check TMDS OSD setting.	p7-35
	• Due to background video color.	• When the menu is difficult to see, display blue back.	p7-36
Remote control is not available at RS-232C.	• Connection error. • Communication speed setting.	• Check the connection with PC. • Check communication speed setting.	p7-37
Cannot control with serial bus.	• Connection error.	• Check the connection between equipment.	p7-38
	• Communication speed setting.	• Check communication speed setting.	p7-39
	• Duplicate IDs were used.	• Same serial bus ID should not be set in the system.	

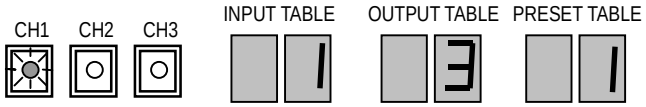
【TABLE OPERATION Related】

Condition	Cause	Countermeasure	Refer to
Table cannot be copied. (Input, Output, Preset)	• The number of table exceeds the designated number.	• Up to 200 tables can be made as a whole.	p4-1
	• Table, which you copy from, is not registered. • Table, which you copy to, is registered.	• Select a registered table for a table copy from. • You cannot copy by overwriting. Delete the table after checking and make a copy.	p7-32 p7-32
Table cannot be deleted. (Input, Output, Preset)	• Unregistered table	• A table where no data is registered cannot be deleted.	p7-32
	• Input timing • (Input Table)	• The timing currently inputted cannot be deleted.	
	• Fixed input timing • (Input Table)	• The timing registered to fixed input cannot be deleted.	
	• Output timing • (Output Table)	• The timing currently outputted cannot be deleted.	
	• Currently outputted preset (Preset Table)	• The Preset Table currently outputted cannot be deleted.	
	• Default table (Preset Table)	• The preset, which is set to Default Table, cannot be deleted.	
Table cannot be initialized. (Input, Output)	• The number of table exceeds designated number.	• Up to 200 tables can be made as a whole.	p4-1
	• Table, which you copy to, is registered.	• You cannot copy by overwriting. Delete the table after checking and make a copy.	p7-32
Tables cannot be swapped. (Input)	• Table is not registered. • Input timing • Fixed input timing	• Select a registered table for swapping. • The timing currently inputted cannot be swapped. • The timing registered to fixed input cannot be swapped.	p7-32

9 Reference

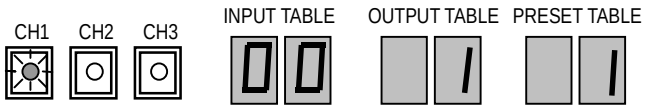
9.1 Front Panel Display

During Normal Operation:



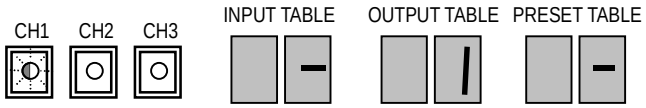
Display	Content of Display
CH Key	LED illuminates.
INPUT TABLE	In automatic search: Automatically search corresponding to input signal change and registered timing No. is displayed. In fixed input mode: Fixed input timing No. which was already set is displayed.
OUPUT TABLE	Current output timing No. is displayed.
PRESET TABLE	Currently selected Preset Table No. is displayed. When more than one is registered, you can change it using ▼ and ▲. (Only registered numbers are displayed.)

During Unregistered Timing Input (Automatic Search Mode):



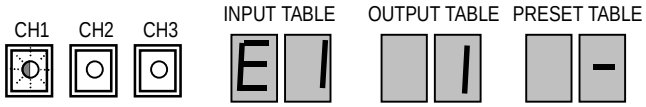
Display	Content of Display	Action
CH Key	LED illuminates.	Register timing in Input Table. (Refer to p7-1)
INPUT TABLE	"00" is displayed.	
OUPUT TABLE	Output timing No. before search is displayed.	
PRESET TABLE	Preset Table No. before search is displayed.	

During No Input Sync Signal:



Display	Content of Display	Action
CH Key	LED flashes.	Check input signal.
INPUT TABLE	"-" is displayed.	
OUPUT TABLE	Output timing No. before search is displayed.	
PRESET TABLE	"-" is displayed.	

When Input Signal Error:



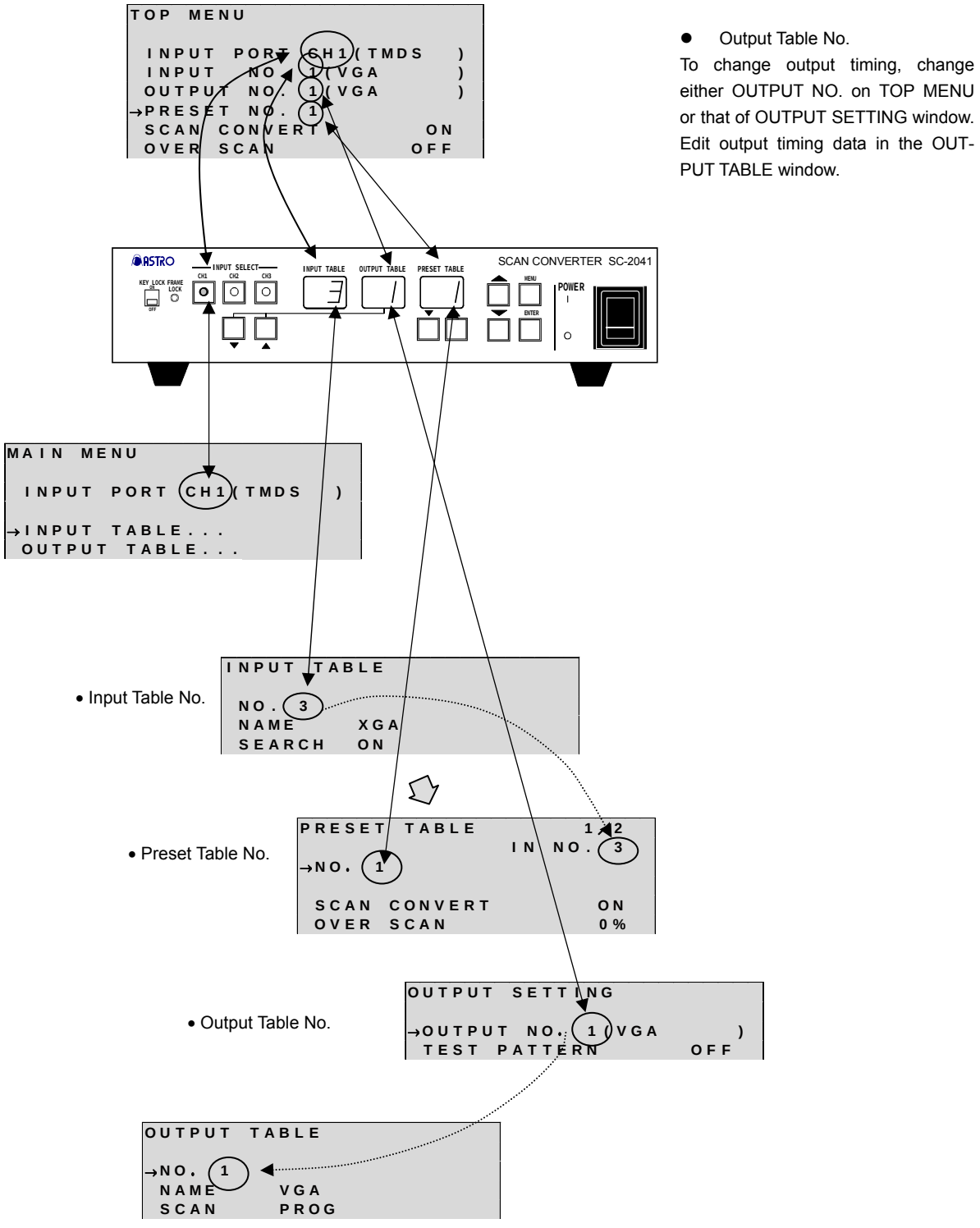
Display	Content of Display	Action
CH Key	LED flashes.	Check input signal.
INPUT TABLE	"E1" or "E2" is displayed.	
OUPUT TABLE	Output timing No. before search is displayed.	
PRESET TABLE	"-" is displayed.	

* " E1": Displayed for input signal outside the range.
"E2": Displayed for unstable input signal.

9.2 Relation between Front Display and Menu Display

SC-2041 controls all setting data by table No.

The relation between table No. on the body front panel and that on Menu is explained below.



- Output Table No.

To change output timing, change either OUTPUT NO. on TOP MENU or that of OUTPUT SETTING window. Edit output timing data in the OUTPUT TABLE window.

9.3 List of Setting Items

Abbreviation: Hori.= horizontal, Vert.=vertical

Window	Item	Content	Setting Value	Remarks	Refer to
INPUT TABLE	NO.	Input table no.	1 to 99	Only registered input timing no.	p7-3
	NAME	Table name	8 digits		
	SEARCH	Search target	ON/OFF		
	SCAN	Scan system	INTER/PROG	Interlaced/progressive (display only)	
	DOT CLK	Dot clock	20 to 160MHz		
	HPRD	Hori. period	500 to 2500 dot	Set every 2 dot. HPRD - HDSP ≥ 24	
	HDSP	Hori.display period	400 to 2000 dot		
	VTTL	No. of vert. line	400 to 2000 line	Set every line. VTTL – VDSP ≥ 4	
	VDSP	Vert. display period	300 to 1500 line		

Window	Item	Content	Setting Value	Remarks	Refer to
OUTPUT TABLE	NO.	Output table no.	1 to 99	Only registered output timing no.	p7-9
	NAME	Table name	8 digits		
	SCAN	Scan system	PROG	Progressive (display only)	
	DOT CLK	Dot clock	20 to 135MHz		
	HPRD	Hori.period	500 to 2000 dot	HPRD ≥ HDSP + HBKP + HSYNC HBKP + HSYNC ≥ 30	
	HDSP	Hori. Display period	400 to 1400 dot		
	HBKP	Hori. back porch	50 to 1000 dot		
	HSYN	Hori. sync width	2 to 500 dot		
	VTTL	No. of vert. line	400 to 1500 line	VTTL ≥ VDSP + VBKP + VSYNC VBKP + VSYNC ≥ 2	
	VDSP	Vert. display period	300 to 1200 line		
	VBKP	Vert. back porch	2 to 1000 line		
	VSYN	Vert. sync width	2 to 500 dot		

Window	Item	Content	Setting Value	Refer to
PRRESET TABLE (1/2)	NO.	Preset table no.	1 to 99(only registered no.)	p7-31
	SCAN CONVERT	Scan convert ON/OFF	ON/OFF	p7-24
	OVER SCAN	Over scan	0 to 10%	p7-25
	BIRASTER MODE	Double-speed processing mode	MOTION/2:2PULL	p7-27
	ZOOM MODE	Zoom mode	PIXEL/LINEAR/N-LINEAR	p7-28

Window	Item	Content	Setting Value	Remarks	Refer to
PRRESET TABLE (2/2)	DISPLAY JUST	Display just setting	HJUST/VJUST/HVJUST		p7-17
	INPUT Hs	Hori. direction input start coordinate	0.00 to100.00% 0 to Hdisp dot	Set by % or dot/line. All Start ≤ End	p7-20
	He	Hori. direction input end coordinate	0.00 to 100.00% 0 to Hdisp dot		
	Vs	Vert. direction input start coordinate.	0.00 to 100.00% 0 to Vdisp line		
	Ve	Vert. direction input end coordinate	0.00 to 100.00% 0 to Vdisp line		
	OUTPUT Hs	Hori. direction display start coordinate	0.00 to 100.00% 0 to Hdisp dot	Set by % or dot/line. All Start ≤ End	p7-22
	He	Hori. direction display end coordinate	0.00 to 100.00% 0 to Hdisp dot		
	Vs	Vert. direction display start coordinate	0.00 to 100.00% 0 to Vdisp line		
	Ve	Vert. direction display end coordinate	0.00 to 100.00% 0 to Vdisp line		

Window	Item	Content	Setting Value	Remarks	Refer to
INPUT SETTING	SEARCH MODE	Input search mode	AUTO/FIX		p7-5
	FIX IN NO.	Fixed input timing no.	1 to 99	Register timing	
	SYNC LOSS	Set when no sync signal	BLUE/BLACK/ NO SYNC		p7-6

Window	Item	Content	Setting Value	Remarks	Refer to
OUTPUT SETTING	OUTPUT NO.	Output timing no.	1 to 99	Register timing	p7-7
	TEST PATTERN	Test pattern display	OFF/COLOR/ RAMP/CONVER		p7-14
	OSD BLUE BLACK	OSD blue back	ON/OFF		p7-36

Window	Item	Content	Setting Value	Remarks	Refer to
LOCK SET	LOCK PORT	Lock port	CH1/CH2/CH3	Only built-in channels	p7-12
	LOCK MODE	Lock mode	ON/OFF		
	LOCK PHASE H	Lock H phase	±1500D		
	LOCK PHASE V	Lock V phase	±1000H		

Window	Item	Content	Setting Value	Remarks	Refer to
PICTURE ADJUST	COLOR	Color adjustment	-50.0 to +50.0%	Every 0.1%	p7-26
	CONTRAST	Contrast adjustment	-30.0 to +30.0%	Every 0.1%	
	BRIGHT	Brightness adjustment	-30.0 to +30.0%	Every 0.1%	
	ENHANCE	Enhance adjustment	0 to 9 Step	Only horizontal direction	
	HUE	Hue adjustment	±180°		
	GAMMA	Gamma correction mode	OFF (=1.0) 2.0, 2.1,-------2.9, 3.0 1/2.0, -----1/2.9, 1/3.0 SMPTE240M, 1/SMPTE240M SMPTE274M, 1/SMPTE274M SMPTE170M, 1/SMPTE170M USER1,2(Can be set by command)	Gamma correction coefficient	

Window	Item	Content	Setting Value	Remarks	Refer to
TMDS OUT	TMDS OSD	OSD output on TMDS	ON/OFF		p7-35
	TMDS ANALOG	TMDS analog output	ON/OFF		p7-15
	TMDS DIGITL	TMDS digital output	ON/OFF		p7-15
	TMDS SYNC	TMDS SYNC polarity	POSI/NEGA		p7-16

Window	Item	Content	Setting Value	Remarks	Refer to
MEMORY OPERATION	SAVE	All settings are saved.	OPE./NO OPE.		p7-40
	LOAD	All setting load.	OPE./NO OPE.		

Window	Item	Content	Setting Value	Remarks	Refer to
OTHERS	EQUIPMENTID	Serial bus ID	0 to 99	Master: 0 Slave: 1-99	p7-38
	SERIAL SPEED	Serial communication speed	9600/19200/38400	bps	
	RS-232C SPEED	RS-232C Communication speed	9600/19200/38400	bps	p7-37

9.4 List of Factory-shipped Registered Data

INPUT TABLE(TMDS)

NO.	NAME	SEARCH	SCAN	DOTCLK	HPRD	HDSP	VTTL	VDSP
1	VGA	ON	PROG	25.20	800	640	525	480
2	SVGA	ON	PROG	40.00	1056	800	628	600
3	XGA	ON	PROG	65.00	1344	1024	806	768
4	SXGA	ON	PROG	108.00	1688	1280	1066	1024
5	UXGA	ON	PROG	160.00	2144	1600	1245	1200

INPUT TABLE(HD-SDI Option)

NO.	NAME	SEARCH	SCAN	DOTCLK	HPRD	HDSP	VTTL	VDSP
1	1080i60	ON	INTER	74.25	2200	1920	1125	1080
2	1080i59	ON	INTER	74.18	2200	1920	1125	1080
3	1080i50	ON	INTER	74.25	2640	1920	1125	1080
4	1080p30	ON	PROG	74.25	2200	1920	1125	1080
5	1080p29	ON	PROG	74.18	2200	1920	1125	1080
6	1080p25	ON	PROG	74.25	2640	1920	1125	1080
7	1080p24	ON	PROG	74.25	2750	1920	1125	1080
8	1080p23	ON	PROG	74.18	2750	1920	1125	1080
9	1080sF24	ON	INTER	74.25	2750	1920	1125	1080
10	1080sF23	ON	INTER	74.18	2750	1920	1125	1080
11	720p60	ON	PROG	74.25	1650	1920	750	720
12	720p59	ON	PROG	74.18	1650	1920	750	720

INPUT TABLE(D1-SDI Option)

NO.	NAME	SEARCH	SCAN	DOTCLK	HPRD	HDSP	VTTL	VDSP
1	NTSC	ON	INTER	13.5	858	720	525	486
2	PAL	ON	INTER	13.5	864	720	625	576

OUTPUT TABLE(TMDS)

NO.	NAME	SCAN	DOT CLK	HPRD	HDSP	HBKP	HSYN	VTTL	VDSP	VBKP	VSYN
1	VGA	PROG	25.20	800	640	48	96	525	480	32	2
2	SVGA	PROG	40.00	1056	800	88	128	628	600	23	4
3	XGA	PROG	65.00	1344	1024	160	136	806	768	29	6
4	SXGA	PROG	108.00	1688	1280	248	112	1066	1024	38	3

PRESET TABLE (Common for All Input)

SCAN CONVERT		ON
OVER SCAN		5
BIRASTER MODE		MOTION
ZOOM MODE		LINEAR
INPUT	Hs	0.00
	He	100.00
	Vs	0.00
	Ve	100.00
OUTPUT	Hs	0.00
	He	100.00
	Vs	0.00
	Ve	100.00

INPUT SETTING

SEARCH MODE	AUTO
FIX IN NO.	1
SYNC LOSS	BLUE

OUTPUT SETTING

OUTPT NO.	CH1
TEST PATTERN	OFF
OSD BLUE BACK	OFF
LOCK PORT	Ch1
LOCK MODE	OFF
LOCK PHASE H	±0
LOCK PHASE V	±0
COLOR	0.0%
CONTRAST	0.0%
BRIGHTNESS	0.0%
ENHANCE	0
HUE	0°
GAMMA	OFF
TMDS OSD	ON
TMDS DIGITAL	ON
TMDS ANALOG	ON
TMDS SYNC	POSI

10 Major Specifications

10.1 Input Signal

■ TMDS Input (Standard)/TMDS Input (Option)	
Input Signal	TMDS Single Link
No. of Input	DVI-I x 1 (with loop through)
Dot Clock	160MHz (MAX)
No. of Picture Element	1600 x 1200 (MAX)
■ HD-SDI Input (Option)	
Input Signal	Conformed to SMPTE292M
No. of Input	BNC x 1 (with loop through)
Dot Clock	74.25MHz (MAX)
No. of Picture Element	1920 x 1080 (MAX)
■ D1-SDI Input (Option)	
Input Signal	Conformed to SMPTE259M
No. of Input	BNC x 1 (with loop through)
Dot Clock	13.5MHz
Video Signal	NTSC/PAL

10.2 Output Signal

■ TMDS Output	
Output Signal	TMDS Single Link
No. of Output	DVI-I x 1
Dot Clock	150MHz (MAX)
No. of Picture Element	1280 x 1024 (MAX)
■ Analog Output	
Output Signal	Analog RGB 700mV (75Ω)
No. of Output	DVI-I x 1 Mini DSub15 pin x 1
Output Sync Signal	HS/VS TTL level

10.3 Control

■ RS-232C	
Transmission Speed	9600 / 19200 / 38400bps
Communication System	All duplex communications
■ Exclusive Serial Bus	
Cascade connection using BNC cable. More than one equipment can be controlled individually or at the same time via RS-232C port.	

10.4 General Specification

Power	Active Power	30W MAX
	Apparent Power	55VA MAX
	Power Factor	0.6 TYP
Calorific Power		26kcal MAX
Power Source		AC100-240V (50/60Hz)
Operating Temperature Range		5 to 40℃ (No condensation allowed.)
Operating Humidity Range		30 to 80%RH (No condensation allowed.)
Outline Dimension		210(W) x 44(H) x 370(D)mm (1U half rack/projected portion excluded.)
Mass		Approximately 2 Kg

10.5 Items Included

AC Cable	1
Operating Manual (Main Body/Command)	1 copy

10.6 RS-232C Port

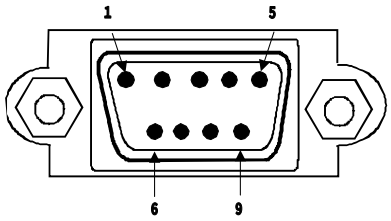
As a control interface with PC, RS-232C port is provided on rear side.

10.6.1 RS-232C Specification

Transfer Speed	9600/19200/38400bps
Communication System	All duplex communication
Type	DCE
Start Bit	1 bit
Data Length	8 bit
Stop Bit	1 bit

10.6.2 Specification of RS-232C Connector

Type Name : D-Sub9Pin(Male)



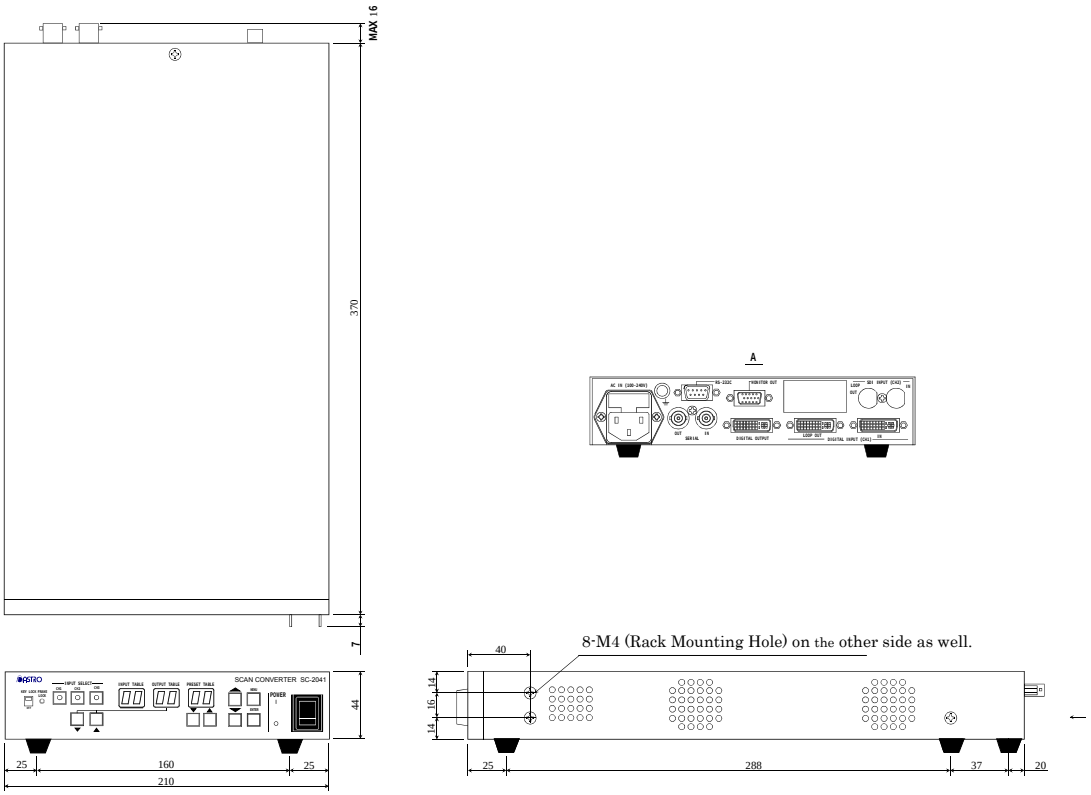
SC-2041 Layout

Pin	SC-2041 Signal Name		Computer Signal Name	Pin
2	SD	→	RD	2
3	RD	←	SD	3
5	FG	-	FG	5
8	RS	→	CS	8

* Pin numbers, which are not indicated here, are all unconnected. No.1, 4, and 6 are short-circuited inside, and No. 7 short-circuits No. 8.

Please refer to Command Manual for detailed communication protocol.

10.7 Outline Drawing



SC-2041 Operating Manual

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