

OPERATION MANUAL

MV-410HS

Multi Viewer

MV-410HS Command

MV-410HS Layout Editor

MV-410HS Live Viewer

MV-410HS Web Browser

Layout Editor Tutorial

4th Edition

Operation Manuals

1.	MV-410HS	• • • • • • • • • •	37 pages
2.	MV-410HS Command	• • • • • • • • • •	29 pages
3.	MV-410HS Layout Editor	• • • • • • • • • •	37 pages
4.	MV-410HS Live Viewer	• • • • • • • • • •	14 pages
5.	MV-410HS Web Browser	• • • • • • • • • •	8 pages
6.	Layout Editor Tutorial	• • • • • • • • • •	15 pages

MV-410HS Command, Layout Editor, Live Viewer, and Web Browser operation manuals, and Layout Editor Tutorial are supplied in the attached CD-ROM.

Precautions

Important Safety Warnings

[Power]

 Caution	Operate unit only on the specified supply voltage.
	Disconnect power cord by connector only. Do not pull on cable portion.
 Stop	Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.

[Grounding]

 Caution	Ensure unit is properly grounded at all times to prevent electrical shock hazard.
 Hazard	Do not ground the unit to gas lines, units, or fixtures of an explosive or dangerous nature.
 Caution	Ensure power cord is firmly plugged into AC outlet.

[Operation]

 Hazard	Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.
 Hazard	Do not allow liquids, metal pieces, or other foreign materials to enter the unit. Doing so could result in fire, other hazards, or unit malfunction.
	If foreign material does enter the unit, turn power off and disconnect power cord immediately . Remove material and contact authorized service representative if damage has occurred.

[Transportation]

 Caution	Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials or alternate adequate packing.
--	--

[Circuitry Access]

 A black circle with a white lightning bolt and a plug symbol, with a diagonal slash through it, indicating no power.	<p>Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.</p>
 A black circle with a white hand symbol, with a diagonal slash through it, indicating no touch.	<p>Do not touch any parts / circuitry with a high heat factor. Capacitors can retain enough electric charge to cause mild to serious shock, even after power is disconnected. Capacitors associated with the power supply are especially hazardous. Avoid contact with any capacitors.</p>
 A black triangle with a white flame symbol inside, indicating a fire hazard.	<p>Unit should not be operated or stored with cover, panels, and / or casing removed. Operating unit with circuitry exposed could result in electric shock / fire hazards or unit malfunction.</p>

[Potential Hazards]

 A black triangle with a white lightning bolt symbol inside, indicating a caution.	<p>If abnormal smells or noises are noticed coming from the unit, turn power off immediately and disconnect power cord to avoid potentially hazardous conditions. If problems similar to above occur, contact authorized service representative before attempting to again operate unit.</p>
--	---

[Consumables]

 A black triangle with a white exclamation mark symbol inside, indicating a caution.	<p>The consumables used in unit must be replaced periodically. For further details on which parts are consumables and when they should be replaced, refer to the specifications at the end of the Operation Manual. Since the service life of the consumables varies greatly depending on the environment in which they are used, they should be replaced at an early date. For details on replacing the consumables, contact your dealer.</p>
--	--

[Rubber Feet]

 A black circle with a white exclamation mark symbol inside, indicating a caution.	<p>If this product has come with rubber feet attached by screws, do not insert the screws again without rubber feet after removing the rubber feet and screws. It may cause damage to the internal circuits or components of the unit. To install the rubber feet again to the unit, do not use other than the supplied rubber feet and screws.</p>
--	---

Upon Receipt

Unpacking

MV-410HS units and their accessories are fully inspected and adjusted prior to shipment. Operation can be performed immediately upon completing all required connections and operational settings.

Check your received items against the packing lists below.

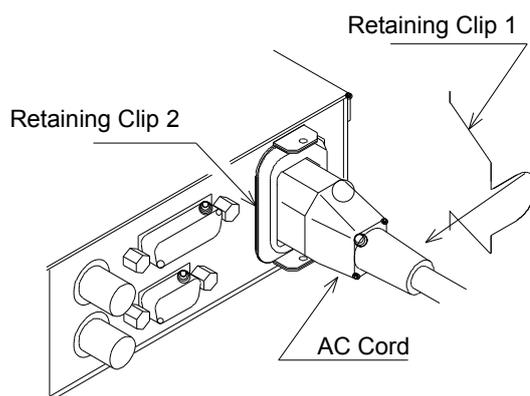
ITEM	QTY	REMARKS
MV-410HS	1	
AC Cord	1 set	One AC cord, and one AC cord retaining clip
Rack Mount Brackets	1 set	EIA standard type
Operation Manual	1	This manual (Layout Editor, Command, Live Viewer, and Web Browser Operation Manuals, and Layout Editor Tutorial are included in the attached CD-ROM.)
Layout Editor / Dedicated Viewer Software	1	CD-ROM

Check

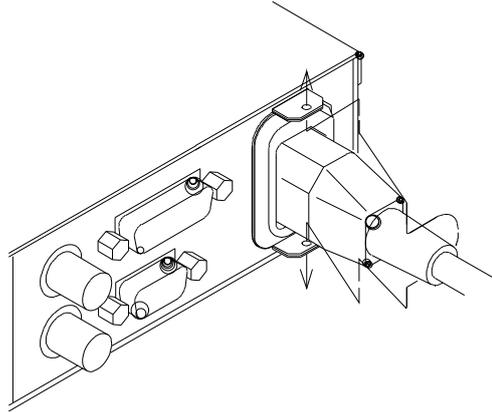
Check to ensure no damage has occurred during shipment. If damage has occurred, or items are missing, inform your supplier immediately.

Installing AC Cord Retaining Clip

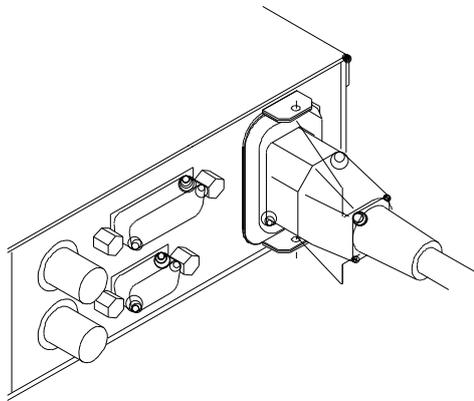
- 1) Securely plug the AC cord into the AC inlet
- 2) Attach Retaining Clip 1 onto the the AC cord.



3) Insert the both ends of Retaining Clip 1 into the holes of Retaining Clip 2.



The installation is now complete.



Font

The font used in this product is the Ricoh Vector Font designed by Ricoh Company Limited.

Table of Contents

1. Prior to Starting	1
1-1. Welcome	1
1-2. About MV-410HS	1
1-3. About This Manual	2
2. Quick Start	3
2-1. Connection.....	3
2-2. Displaying Image on DVI / RGB Monitor	4
2-3. Connecting MV-410HS and PC over LAN.....	6
2-3-1. PC Network Settings.....	6
2-3-2. Installing MV-410HS Layout Editor	7
2-3-3. Starting MV-410HS Layout Editor	8
3. Panel Descriptions	9
3-1. Front Panel	9
3-2. Rear Panel.....	10
4. Connection.....	11
4-1. System with DVI Output.....	11
4-2. System with Video Transmission	11
4-2-1. Network Mode.....	12
4-2-1-1. UNICAST Mode	12
4-2-1-2. MULTICAST Mode.....	12
5. Operations	13
5-1. Operation at Startup.....	13
5-2. Data Initialization.....	13
5-3. Displaying Full Screen	13
5-4. Displaying Split Screens	14
5-5. REMOTE/TALLY	15
5-5-1. Control using REMOTE Connector	16
5-5-2. ADJ_IN (External Time Adjustment Input).....	16
5-5-3. ADJ_OUT (External Time Adjustment Output)	16
6. Screen Display.....	17
6-1. Full Screen.....	17
6-2. Split Screen.....	18
6-3. Crop	20
6-4. Audio Level Meter	21
7. Menu Operations	22

7-1. Main Menu Screen	22
7-2. SYSTEM	24
7-2-1. INPUT FORMAT	25
7-3. LAN	26
7-4. SERIAL	27
7-5. VERSION	28
8. Output Size Test Mode	29
9. RS-232C/422/485 Interface.....	30
9-1. Changing RS-422/RS-485 or Termination	30
9-2. RS-232C/422/485 Connector	32
9-3. RS-232C Connection Example.....	33
10. Troubleshooting.....	34
11. Specifications and Dimensions	35
11-1. Specifications.....	35
11-2. Dimensions	37
Index	38

1. Prior to Starting

1-1. Welcome

Congratulations! By purchasing MV-410HS Multi Viewer you have entered the world of FOR-A and its many innovative products. Thank you for your patronage and we hope you will turn to FOR-A products again and again to satisfy your video and audio needs.

FOR-A provides a wide range of products, from basic support units to complex system controllers, which have been increasingly joined by products for computer video based systems. Whatever your needs, talk to your FOR-A representative. We will do our best to be of continuing service to you.

1-2. About MV-410HS

The MV-410HS Multi Viewer is a four split-screen multi viewer that accepts four inputs (of HD-SDI, SD-SDI, and Analog Composite signals) , resizes the images and display on a single screen. The audio level meter display of embedded audios of each SDI inputs is provided for monitoring the presence of audio signals. Supported video transmission over a network also enables to remotely monitor output images. The provided layout editor allows user to freely arrange the viewer screen layout. The MV-410HS is most suitable for monitoring the system with mixed input of HD-SDI, SD-SDI and analog composite signals.

- Support for mixed input of HD-SDI, SD-SDI, and Analog composite signals
- Audio level meter display for HD/SD-SDI embedded audio signals (8ch display)
- DVI connector for high definition image output
- Video loss detection function
- Analog clock and Digital clock display
- Border display of two selectable colors (red and green) on each channel frame by external tally input
- Title display of up to 16 characters for each input (alphanumeric and symbol)
- Remote control: Contact inputs, RS-232C/422/485 interface and LAN interface
- Includes layout editor for enabling users to make any changes to split-screen patterns from a computer
- Redundant power supply option for ensuring the system reliability
- Video transfer at the maximum frame rate of 60fps (By the dedicated viewer software MV-410HS Live Viewer)
The maximum frame rate may not be obtained due to the various factors, such as size of transmitted image, JPEG compression rate, connected PC or network environment.

1-3. About This Manual

This manual is intended to help the user easily operate this product and make full use of its functions during operations. Before connecting or operating your unit, read this operation manual thoroughly to ensure you understand the product. After reading, it is important to keep this manual in a safe place and available for reference.

Font Conventions

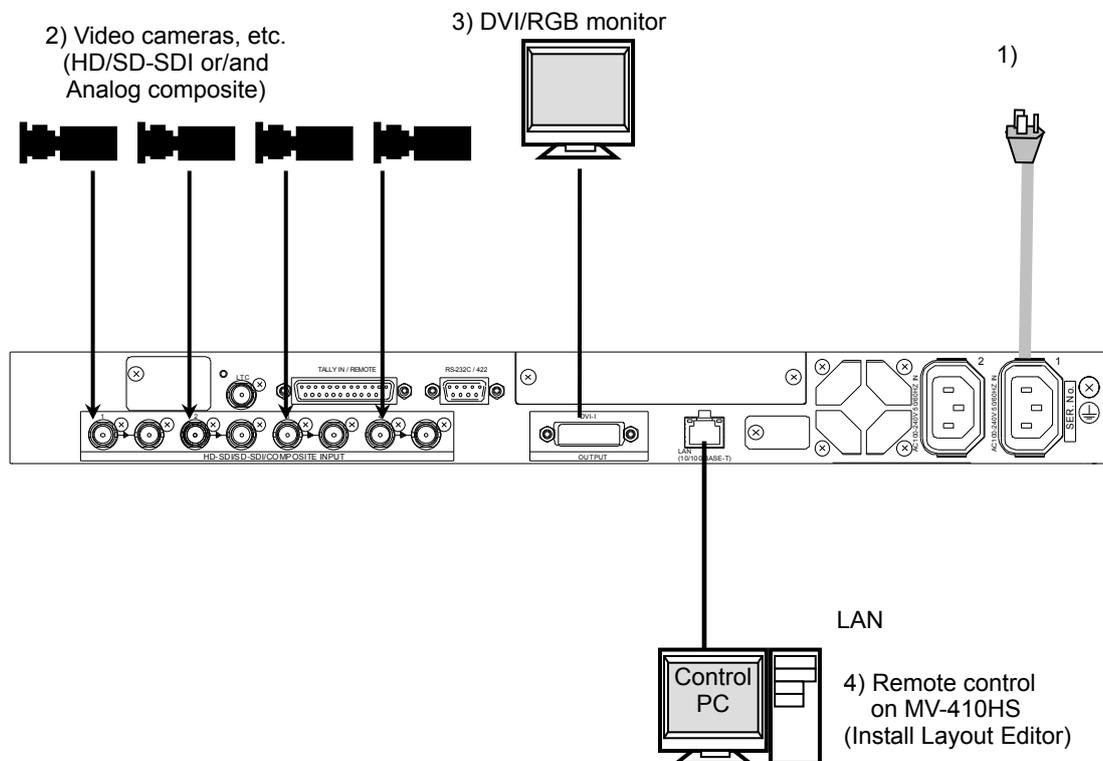
The following conventions are used throughout this manual:

- Text enclosed by a square (such as `MATT`) indicates software **buttons**.
- Text enclosed by square brackets (such as `[Ctrl]`) indicates the **keyboard**.
- Shaded text (such as `OFF`) indicates the setting **parameters** or **values** in the menu.

2. Quick Start

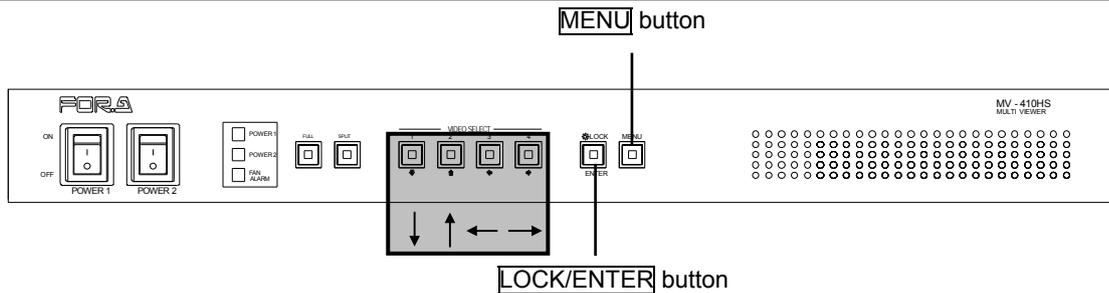
This chapter describes the basic operations to set up the system for your MV-410HS multi viewer. Refer to the section given for each operation you may need more details, if necessary.

2-1. Connection



- 1) Connect the MV-410HS to an AC power source using the supplied accessory cord.
- 2) Connect the signal source device(s) to the left connector(s) of each set of 1 to 4 HD-SDI/SD-SDI/COMPOSITE INPUT connectors to supply input signal(s). The right connectors are for active through outputs which we are not using now.
- 3) Connect a DVI monitor or an analog RGB monitor. (You need an adaptor to connect an analog RGB monitor.)
- 4) Connect a PC which you are going to use to edit layout by installing the supplied Layout Editor. In the figure above the shown connection is for the LAN interface that you need for Layout Editor operation.
The system requirements for the PC is shown in section 1-2. "System Requirements" in the MV-410HS Layout Editor Operation Manual.

2-2. Displaying Image on DVI / RGB Monitor



1) Checking Monitor Display of Output Image

Turn on the power switch on the MV-410HS front panel. When power switch is turned on, the output image is displayed on the DVI/RGB monitor. Is the image displayed on the monitor? Follow the steps given for each case.

* The output screen size is set to 1920 x 1200 in 60Hz at the factory.

If your case is a) or b), perform the next 2) "Adjusting Display using Output Size Test Mode".

a) No display or incorrect display (flickers, distorted, inverted color, etc.)

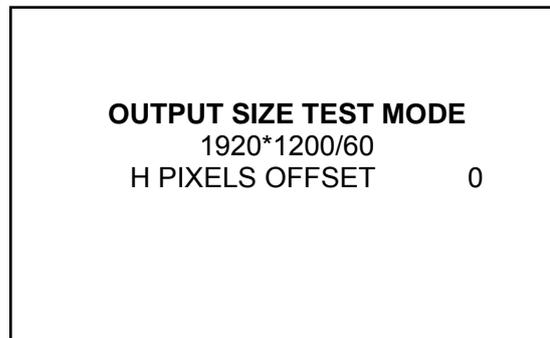
b) You want to check other formats on the monitor display.

c) If display is correct, no need to give any adjustments. Go to the next section 2-3. "Connecting MV-410HS and PC over LAN."

2) Adjusting Display using Output Size Test Mode

Power off the MV-410HS, and then hold down the **LOCK** and turn the power switch on. The blue test screen as shown below appears. The format used before the last powering off is employed. (The factory default is set to 1920x1200/60.) The LEDs of 1) to 4), **LOCK**, **MENU**, **FULL**, and **SPLIT** on the front panel indicate the currently employed format as shown in the following table 'Front Panel LED Indication and Setting Value Order'.

Output Screen



◆ No Display or Incorrect Display

If the test screen is not displayed on the DVI/RGB monitor, or it is displayed but flickers, distorted, or its color is reversed, then, adjust the H PIXELS OFFSET value using Buttons on the front panel.

* The factory default is set to 0 PIXEL for every format.

IMPORTANT

Use this "H PIXELS OFFSET" setting for testing the monitor display. Set H PIXELS OFFSET to 0 pixel for operating the MV-410HS.

Press the  button to change the H PIXELS OFFSET value backwards, or press the  button to change the value forward (Minimum -4 pixels to maximum 4 pixels). It may be difficult to know the H PIXELS OFFSET value which is currently selected when there is no display on the monitor. In this case, press both arrow buttons one at a time consecutively 8 times and see if the image is displayed correctly. If you still cannot get the correct display, the monitor may not support any of those formats. Check the supported formats on the specifications of the DVI/RGB monitor.

◆ **Checking other formats (Not necessary if you do not need to change the format.)**

a) Checking other output screen sizes

Change the output screen size using  and  buttons on the front panel. The output screen size is changed in the order shown in the following 'Output Screen Size' table. If the image is not properly displayed, adjust the display by the procedure described in the previous 'No display or Incorrect Display', and see if you can get a correct display.

b) Checking other output frequencies

Press the **ENTER** button on the front panel to change output frequencies. The output frequency is changed in the order shown in the following 'Output Frequency' table by every press on the ENTER button. If the image is not properly displayed, adjust the display by the procedure described in the previous 'No display or Incorrect Display' or 'Checking other output screen sizes', and see if you can get a correct display.

* Pressing the **MENU** button will start up the MV-410HS and also store the adjustments.

3) After completing all adjustments

Press the **MENU** button to resume the MV-410HS start up.

* The settings made for the H PIXELS OFFSET and output frequency are stored. However, the settings made for the output size are not stored. To change the output sizes, change the output size settings in the Layout Editor.

Front Panel LED Indication and Setting Value Order

(1) Output Screen Size

Order	Screen size	3	4	LOCK	MENU
1	1280 x 1024	Flash	Flash	Flash	Flash
2	1360 x 768	Flash	Flash	Flash	Lit
3	1600 x 1200	Flash	Flash	Lit	Flash
4	1920 x 1200	Flash	Flash	Lit	Lit
5	1440 x 900	Flash	Lit	Flash	Flash
6	1680 x 1050	Flash	Lit	Flash	Lit
7	1920 x 1080	Flash	Lit	Lit	Flash
8	1280 x 720	Flash	Lit	Lit	Lit

(2) Output Frequency

Order	Frequency	FULL	SPLIT	1	2
1	60Hz	Flash	Flash	Flash	Flash
2	59.94Hz	Flash	Flash	Flash	Lit
3	50Hz	Flash	Flash	Lit	Flash

2-3. Connecting MV-410HS and PC over LAN

Connect the MV-410HS and a PC (on which you are going to install the Layout Editor) over a LAN interface. This setting example shows the case when connecting to the MV-410HS with the default settings. The MV-410HS default settings are shown below.

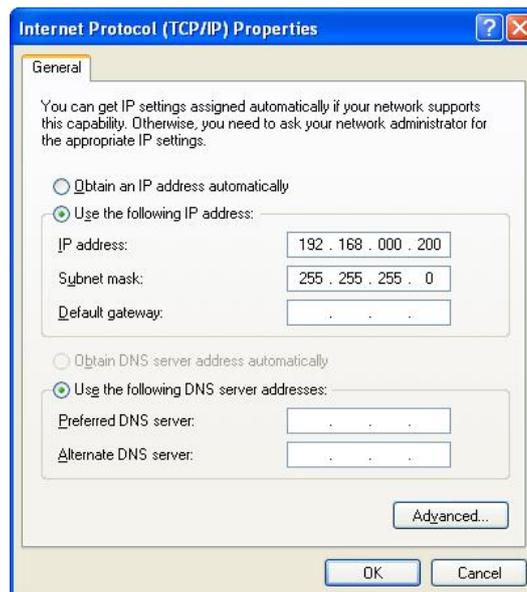
ID	ROOT
PASSWORD	00000
IP address	192. 168. 0.1
Subnet mask length	24
Gateway	0.0.0.0

2-3-1. PC Network Settings

The PC network settings need to match that of the MV-410HS. The procedure for making the network settings at the PC vary depending on the OS, so refer to the OS manual for details.

1) Setting in Windows XP with the default Start menu setting

Click **Start** on the taskbar, open [**Control Panel**], and double-click "**Network Connections**". Right-click "**Local Area Connection**" icon to open [**Properties**] window. Double-clicking "**Internet Protocol (TCP/IP)**" under the [**General**] tab opens the [**Internet Protocol (TCP/IP) Properties**] window. Make the settings as shown in the example below. Make a note of the settings before changing them in case you need to return the IP address to its original settings later.



IP address for PC	192.168.0.yyy (yyy is any number from 2 to 254 except for the number set for the MV-410HS unit and the gateway number. In this example, the setting is yyy=200.)
Subnet mask	Set to 255.255.255.0.

2) Setting in Windows XP with the Start menu setting changed to Classic

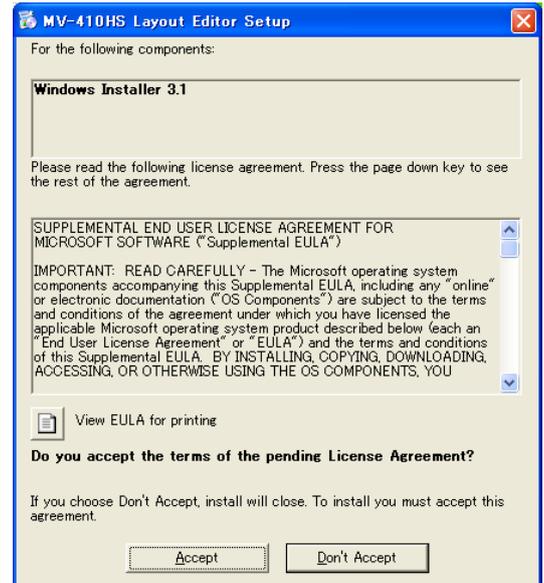
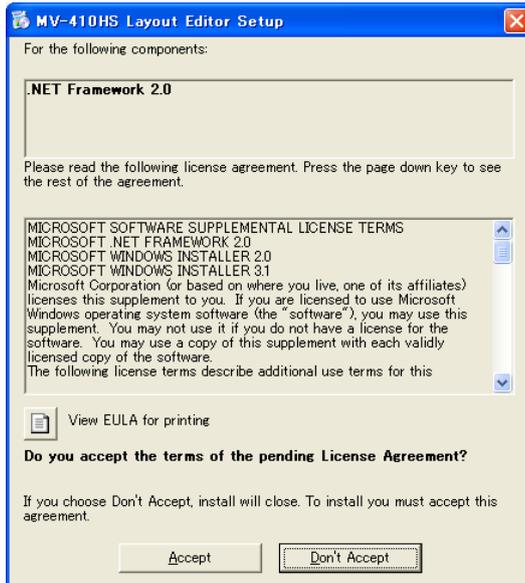
Click **Start** on the taskbar, select "**Settings**" → "**Network Connections**" and then right-click the "**Local Area Connection**" icon to open [**Properties**] window. Double-clicking "**Internet Protocol (TCP/IP)**" under the [**General**] tab opens the [**Internet Protocol (TCP/IP) Properties**] window. The settings are then made in the same way as 1) above.

When the settings are completed, click **OK**, and then close all setting windows.

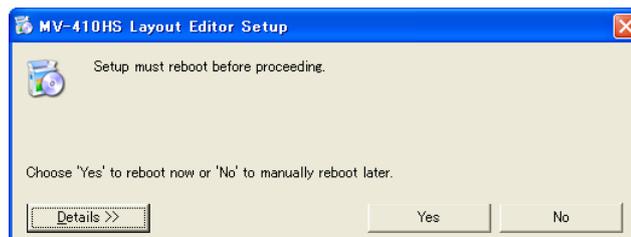
2-3-2. Installing MV-410HS Layout Editor

Install the MV-410HS Layout Editor on the PC using the supplied CD-ROM. In this section a rough instruction for the installation is given. For more details see section 1-4. "Installing MV-410HS Layout Editor" in the MV-410HS Layout Editor Operation Manual.

- 1) Load the supplied Installation CD-ROM into the PC, and open the CD-ROM drive. Run the file "**setup.exe**" to start the setup wizard.
- 2) If [.NET Framework 2.0] or [Windows Installer 3.1] is not installed on your PC, one of the screens shown below is displayed. Click **Accept**. If either one is already installed on your PC, any of these screen is not displayed.



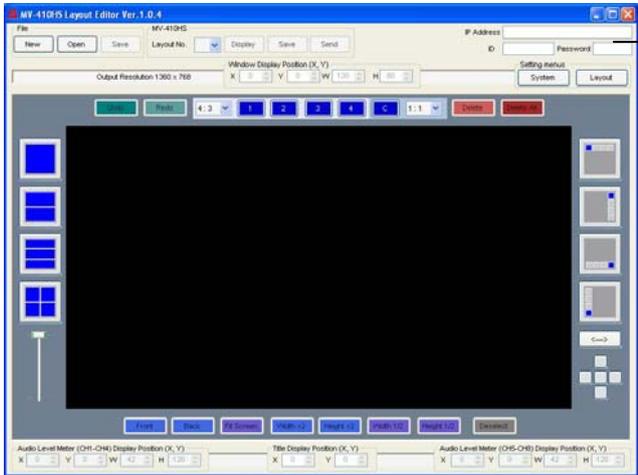
- 3) When installation of [.NET Framework 2.0] is complete, the screen shown below is displayed requiring a reboot. Click **Yes** to reboot your PC.



- 4) After the setup wizard is restarted, follow the guide to complete the installation.

2-3-3. Starting MV-410HS Layout Editor

- 1) To start MV-410HS Layout Editor, go to **Start > Programs > FOR.A** and select **"MV-410HS Layout Editor"**.
- 2) After the application is started the screen shown below is displayed.



MV-410HS ID boxes

- 3) Enter the IP address, ID and password of the MV-410HS that you wish to connect in the MV-410HS ID boxes at the top-right of the main screen. (The factory default of the MV-410HS is as below.)

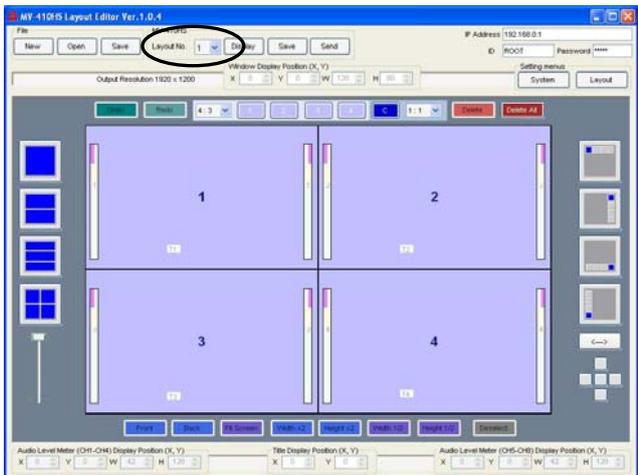
IP address: 192.168.0.1
 ID: ROOT
 Password: 00000

IP Address
 ID Password

If the entered IP address, ID, or password is not correct, the error message as shown to the right will be displayed. Correct the error.

IP Address
 ID Password
 Setting menus
 Communication error

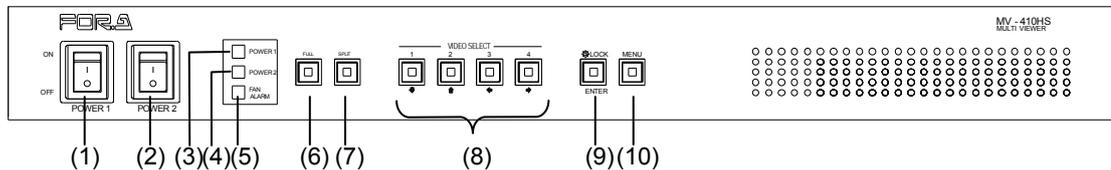
- 4) Select the layout number as shown below. The selected layout is loaded and displayed in the layout editing area, and the connection is established. Clicking the Display button next to the Layout No. box will display the same layout on the monitor screen. You can edit the layout watching the display on the monitor screen.



- 5) If you are going to edit the layout, see section 4-3. "Editing Layouts" in the MV-410HS Layout Editor Operation Manual for details.

3. Panel Descriptions

3-1. Front Panel



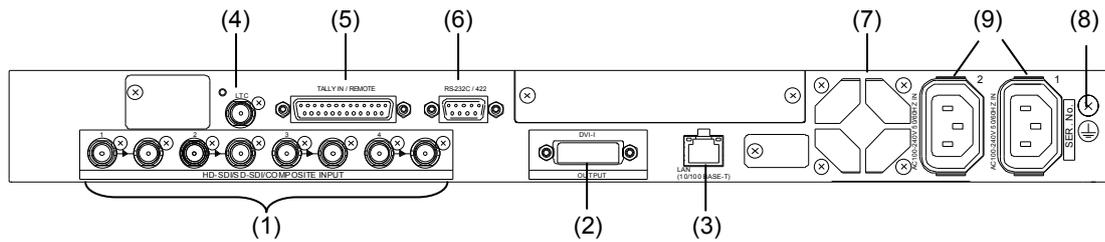
- (1) POWER1 switch
Used to turn the power unit 1 On/Off. Pressing " | " side turns power on.
- (2) POWER2 switch
Used to turn the power unit 2 On/Off. Pressing " | " side turns power on.
* Available when the redundant power option is installed.
- (3) POWER1 indicator
Indicator for the power unit 1.
- (4) POWER2 indicator
Indicator for the power unit 2.
- (5) Fan Alarm LED
Lights in the event of fan failure.

IMPORTANT

Illuminating Fan alarm LED is indicating a fan failure. Turn the power off of the unit and contact your dealer immediately.

- (6) FULL (Full screen display button)
Used to set the display in full screen mode.
- (7) SPLIT (Split screen display button)
Used to set the display in split screen mode.
- (8) VIDEO SELECT 1 - 4 (Input switches)
In the full screen mode, these buttons are used to select inputs to be displayed.
In the split screen mode, these buttons are used to select the screen layout designed using the Layout Editor. All four buttons are set to display standard 4-split screen at the factory shipment.
While displaying menus, these buttons are used to navigate menu screens.
- (9) LOCK (Operation lock button)
Used to disable or enable the operation from the front panel buttons.
* To unlock the operation, press and hold down the button at least 2 seconds.
While displaying menus, this button is used to confirm the settings for each menu item.
- (10) MENU (Menu button)
Used to open Main menu. While displaying menus, used to return to Main menu or submenu, or exit Main menu.
* To open Main menu, press and hold down the button at least 2 seconds.

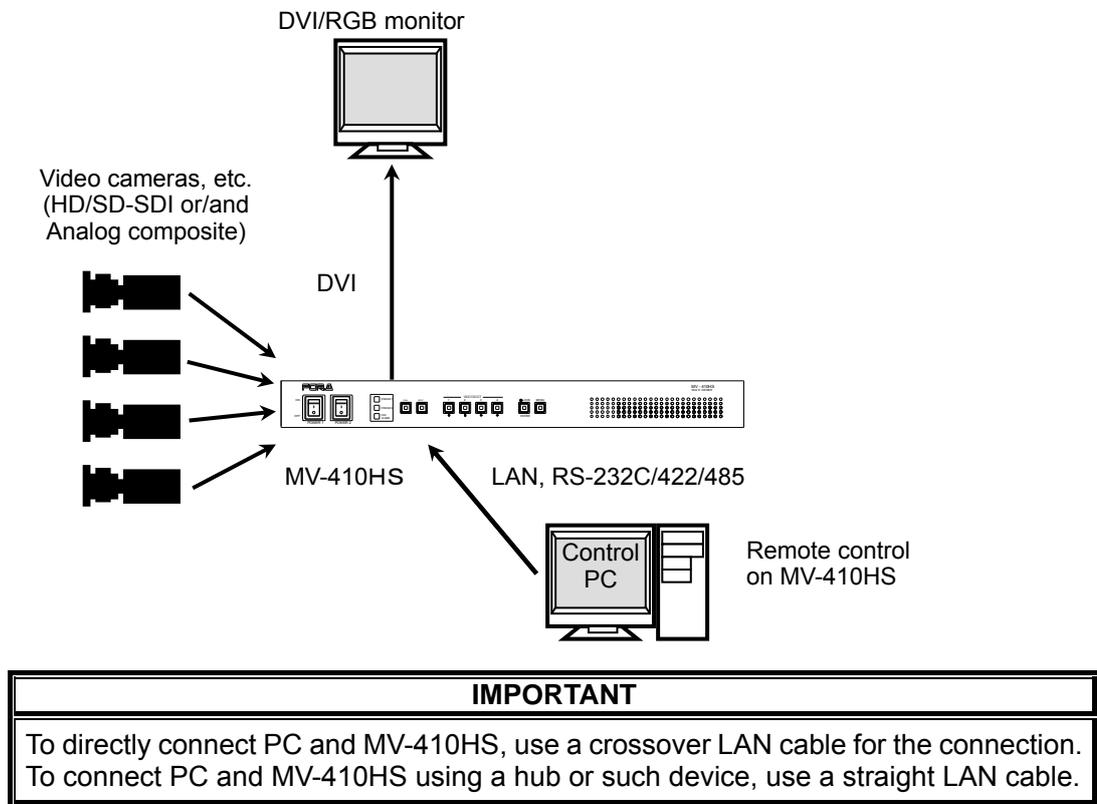
3-2. Rear Panel



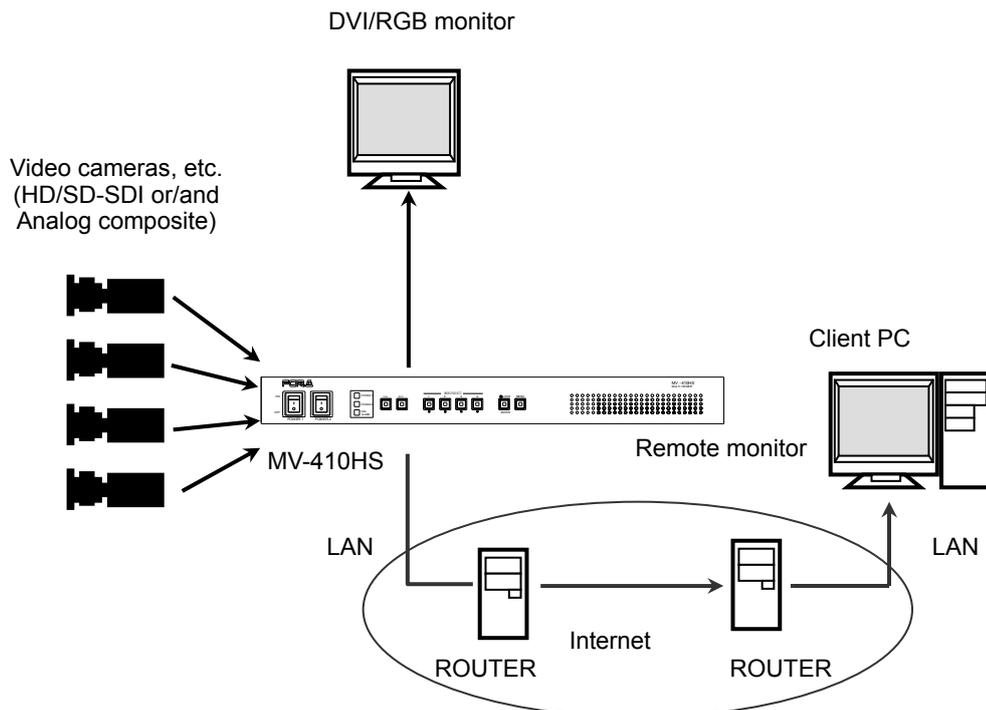
- (1) HD-SDI/SD-SDI/COMPOSITE INPUT 1 - 4
Used to input HD/SD-SDI or analog composite signals (Automatic recognition supported)
The respective right connectors are active through output connectors to output signals from left connectors to monitors.
* Active through output (for monitors) is available for HD-SDI and SD-SDI.
* No jitter correction. The existing jitter will be carried to the active through output. The total jitter may exceed the jitter limit of signal standard.
- (2) DVI OUT
Used to connect a DVI monitor. An analog RGB monitor can also be connected with separate purchase of an adaptor.
* No frame rate conversion. The frame rate difference between inputs and outputs appears as drop or repeat frame.
- (3) LAN(10/100BASE-T)
Used to control unit or arrange layouts from a PC over a LAN (Ethernet) interface. Transmitting video to a PC is also possible.
- (4) LTC
Used to input time code to synchronize the analog or digital clock display. (Hour, minute and second only)
- (5) TALLY/REMOTE
Used for Tally input to add red or green borders to each channel frame, or remote control on selecting screen layout by GPI inputs.
- (6) RS-232C/422/485
Used to connect a PC for remote control on menu operation.
- (7) Fan
Used to air cool unit to prevent overheating. Do not block the ventilation with other equipment or objects.
- (8) Grounding Terminal
Used to ground the unit to protect operators against static electricity and electrical shock.
- (9) AC IN (100-240VAC 50/60Hz)
Used for connecting to an AC power source using the supplied accessory cord.
Use AC IN1 when using a single power unit.

4. Connection

4-1. System with DVI Output



4-2. System with Video Transmission



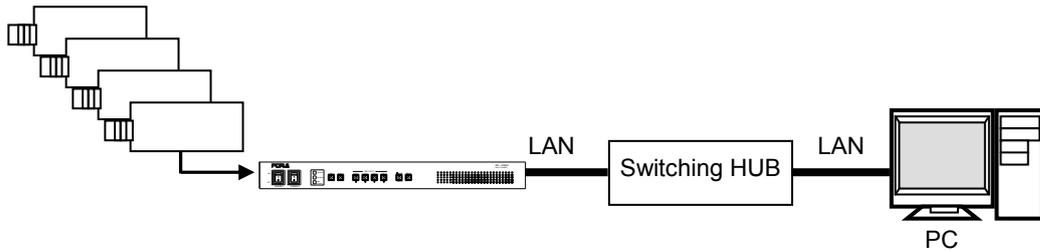
4-2-1. Network Mode

The system with video transmission has two different network modes such as 'Unicast mode' and 'Multicast mode'. For the mode settings, see section 7-2. "SYSTEM" and 7-3. "LAN".

4-2-1-1. UNICAST Mode

The UNICAST mode using TCP/IP protocol supports the system that can provide video output to one monitor by MV-410HS Live Viewer.

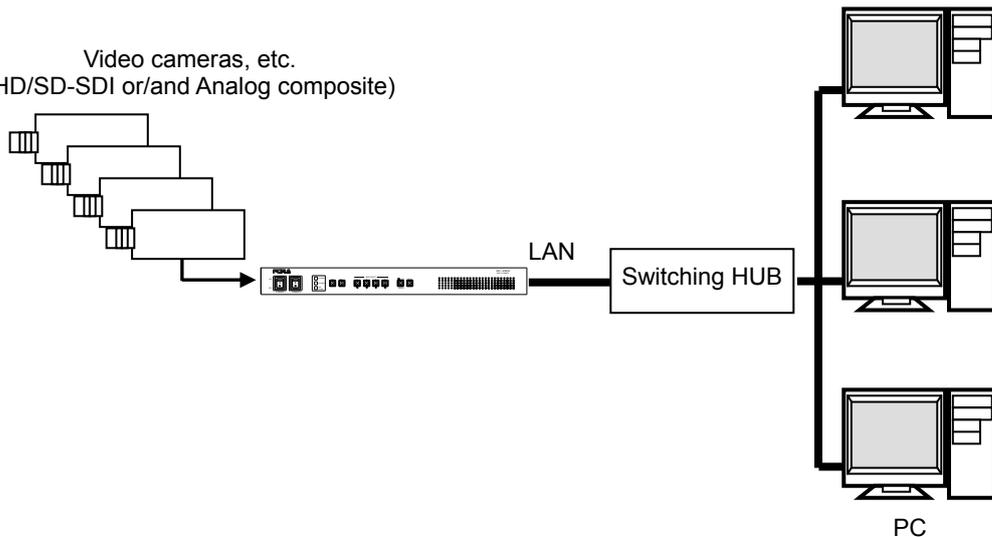
Video cameras, etc.
(HD/SD-SDI or/and Analog composite)



4-2-1-2. MULTICAST Mode

The MULTICAST mode using IP multicast supports the system that can provide video outputs to multiple monitors through the MV-410HS as shown below.

Video cameras, etc.
(HD/SD-SDI or/and Analog composite)



IMPORTANT

Due to the UDP protocol used in MULTICAST mode, the video output may not be updated at the packet loss which occurs under the unstable network condition.

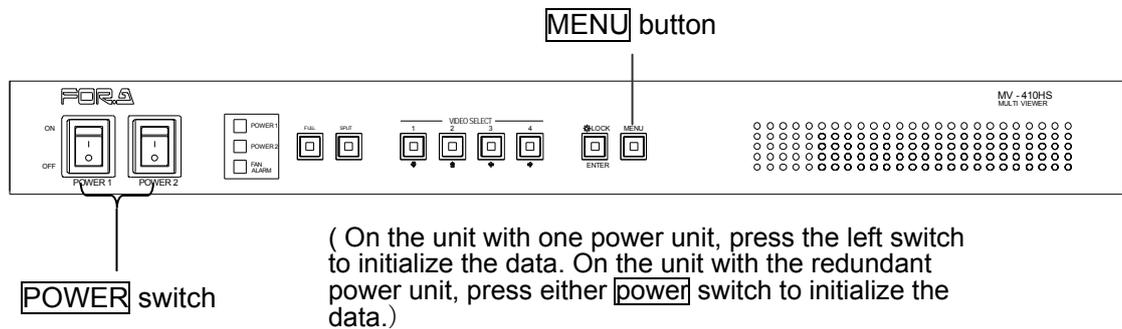
5. Operations

5-1. Operation at Startup

After the power is turned on, operation resumes from the last screen before the power was turned off. If a menu screen was displayed when the unit was turned off, operation resumes from the status before the menu screen.

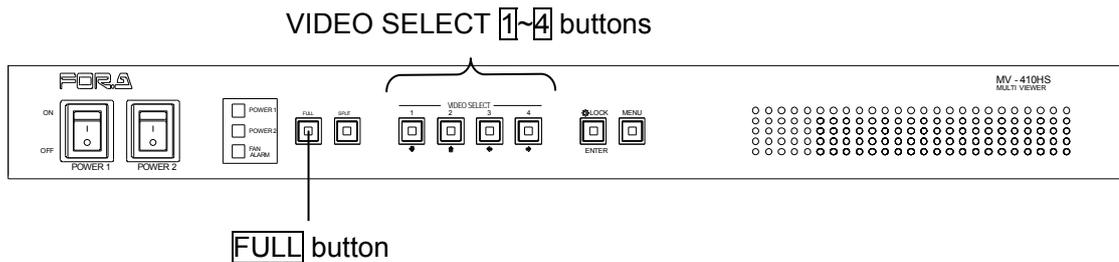
5-2. Data Initialization

Although initialization is normally not required, you can restore the MV-410HS factory settings by the data initialization when the previous data is no longer needed such as after relocation or system modification. Turn on the power while holding down the **MENU** button. "MEMORY CLEAR" appears on the monitor screen and the setting data will be initialized.



5-3. Displaying Full Screen

To display your desired channel in full screen, press the **FULL** button and then press the VIDEO SELECT **1** to **4** buttons. For instance, to view channel 3 in full screen, press the **FULL** button and then press the SELECT **3** button.



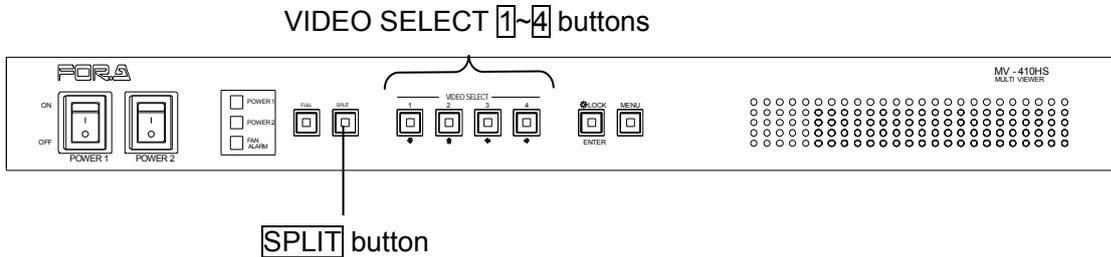
IMPORTANT

The image distortion occurs while switching layouts. A black screen is shown for channels with no input signals.

5-4. Displaying Split Screens

To display split screens, press the **SPLIT** button.

Pressing a VIDEO SELECT button while displaying split screen will change the displayed split screen layout to another layout.

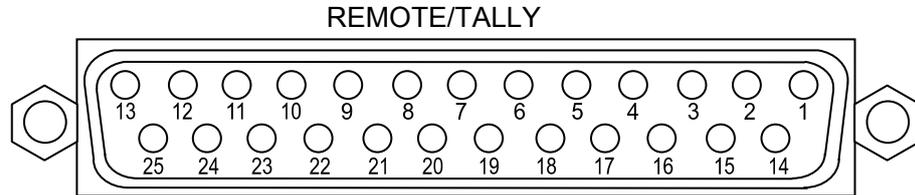


IMPORTANT

The image distortion occurs while switching layouts. A black screen is shown for channels with no input signals.

5-5. REMOTE/TALLY

MV-410HS can be remotely controlled using contact inputs to the TALLY IN/REMOTE connector on the rear panel. The connector is also provided with pins for external tally inputs that enables to display two color borders on video frames.



Connector pin assignments (25-pin, D-sub female) Inch screws

Pin no.	Function	Description
1	IN1 TALLY (Red)	INPUT1 TALLY border (Red) display
2	IN2 TALLY (Red)	INPUT2 TALLY border (Red) display
3	IN3 TALLY (Red)	INPUT3 TALLY border (Red) display
4	IN4 TALLY (Red)	INPUT4 TALLY border (Red) display
5	IN1 TALLY (Green)	INPUT1 TALLY border (Green) display
6	IN2 TALLY (Green)	INPUT2 TALLY border (Green) display
7	IN3 TALLY (Green)	INPUT3 TALLY border (Green) display
8	IN4 TALLY (Green)	INPUT4 TALLY border (Green) display
9	FULL 1	INPUT1 Full screen display
10	FULL 2	INPUT2 Full screen display
11	FULL 3	INPUT3 Full screen display
12	FULL 4	INPUT4 Full screen display
13	+5V	+5V output (maximum 200mA DC)
14	GND	GND
15	USER1	Preset layout 1
16	USER2	Preset layout 2
17	USER3	Preset layout 3
18	USER4	Preset layout 4
19	ADJ_IN	Time adjustment input
20	ADJ_OUT	Time adjustment output
21	FAN_ALARM	Fan alarm output
22	NC	Do not use.
23	NC	Do not use.
24	NC	Do not use.
25	NC	Do not use.

Compatible connector: DB-25PF-N(JAE)

Cover: DB-C4-J11-S1(JAE)

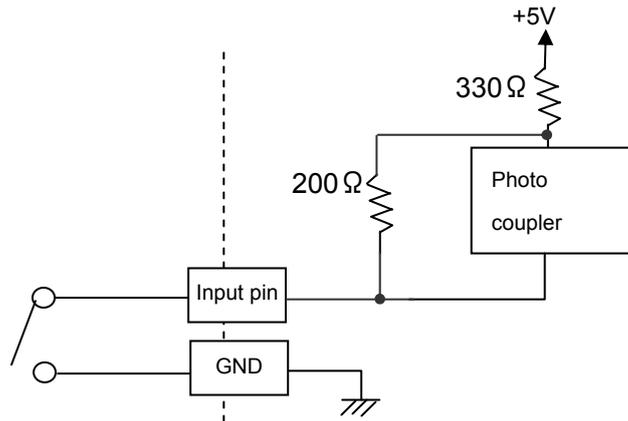
Signal standard: Make contact, TTL level negative logic pulse

IMPORTANT

The input signal pulse width should be 100ms or more. The input that is received while the screen layout is being changed is not effective. If you change the screen layout, wait for the change on the screen to be completed before inputting signals.

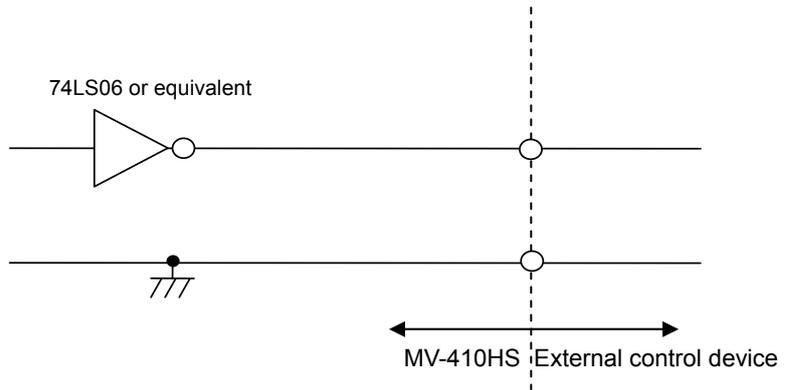
[Input Connector]

The figure at right depicts the MV-410HS



[Output Connector]

The figure at right depicts the MV-410HS circuit for each output pin. Outputs 5V TTL level alarm signal.



5-5-1. Control using REMOTE Connector

Control via REMOTE connector operates the same as control from front panel buttons. Commands from both REMOTE connector and front panel buttons are accepted at the same time.

5-5-2. ADJ_IN (External Time Adjustment Input)

Time adjustment made by the falling edge of the external pulse input (pulse width 100ms or more) is shown below.

- 1) When second digit displays 1 to 29 → Correct to 0 second
- 2) When second digit displays 30 to 59 → Correct to 0 second and add 1 minute

5-5-3. ADJ_OUT (External Time Adjustment Output)

Outputs a pulse signal (500ms) at the interval set at the ADJUST in the [SYSTEM].

IMPORTANT
ADJ_OUT pin outputs a pulse signal at the set interval triggered by the internal clock.
ADJ_IN pin does not supply buffered output.

6. Screen Display

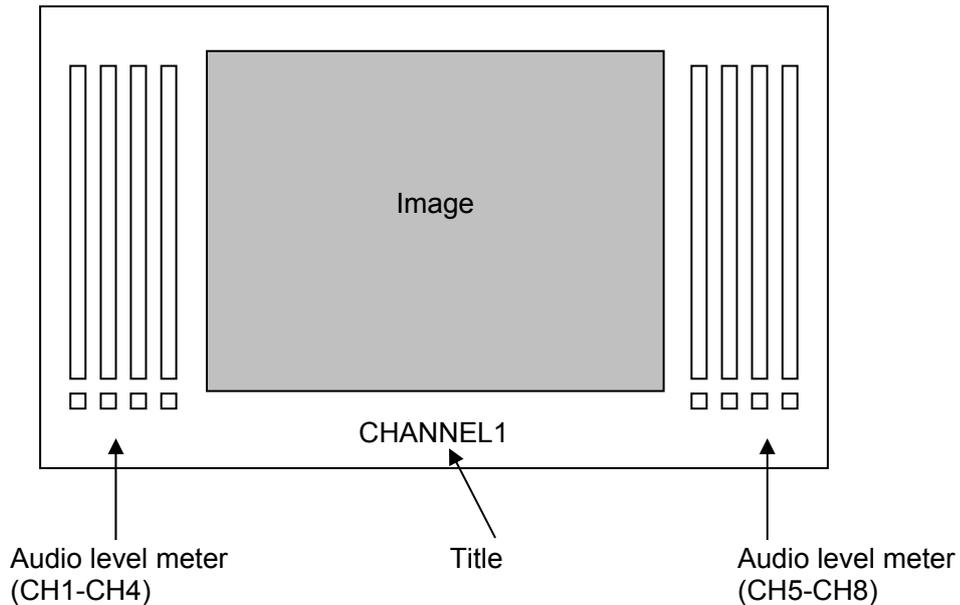
6-1. Full Screen

The display mode can be selected from three options. See section 3-2-1. "System" in the MV-410HS Layout Editor Operation Manual for details on setting display mode.

MODE1

Displays the title and audio level meters without overlapping on the video image. The aspect ratio of the input signal is retained.

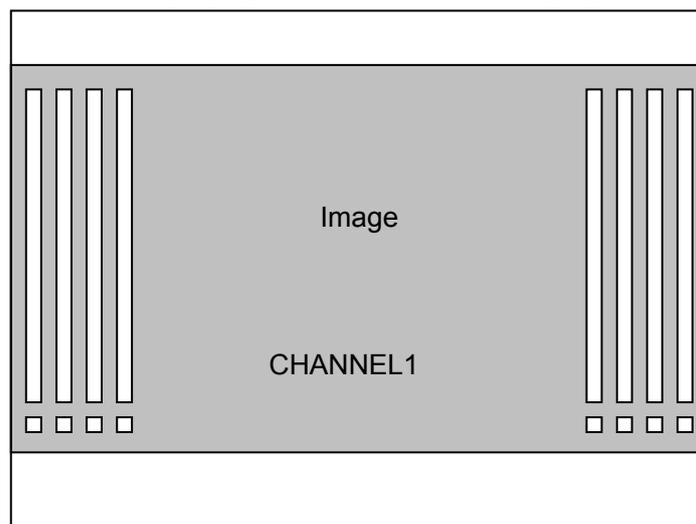
The example below is displaying 4:3 material in 16:9 display mode.



MODE2

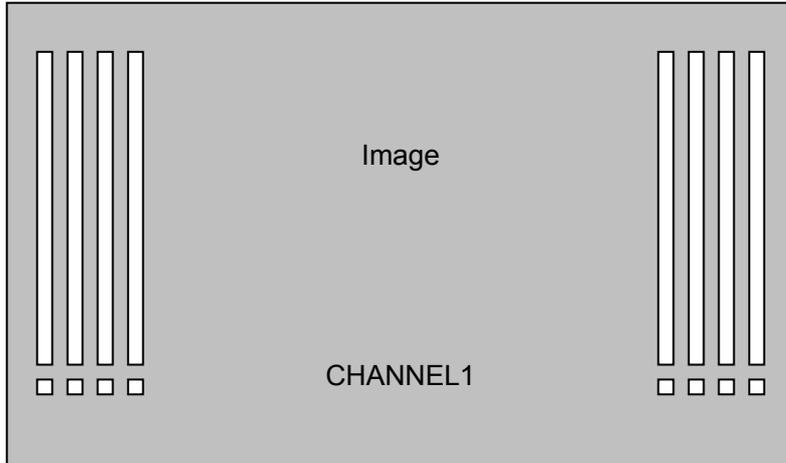
Overlaps the title and audio level meters on the video image. The aspect ratio of the input signal is retained.

The example below is displaying 16:9 material in 4:3 display mode.



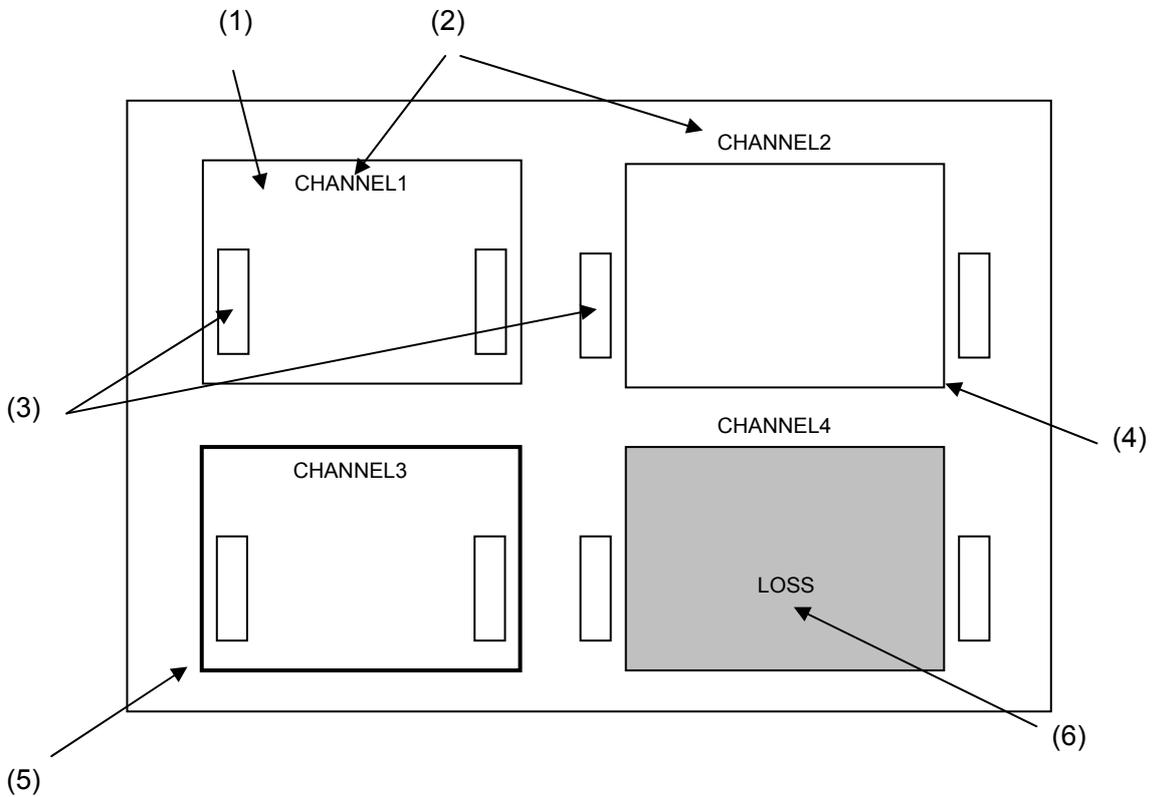
MODE3

Overlaps the title and audio level meters on the video image. The aspect ratio of the input signal is not retained, and the image is displayed to fill the selected display mode screen.



6-2. Split Screen

The split screen layout can be freely arranged using the supplied Layout Editor.

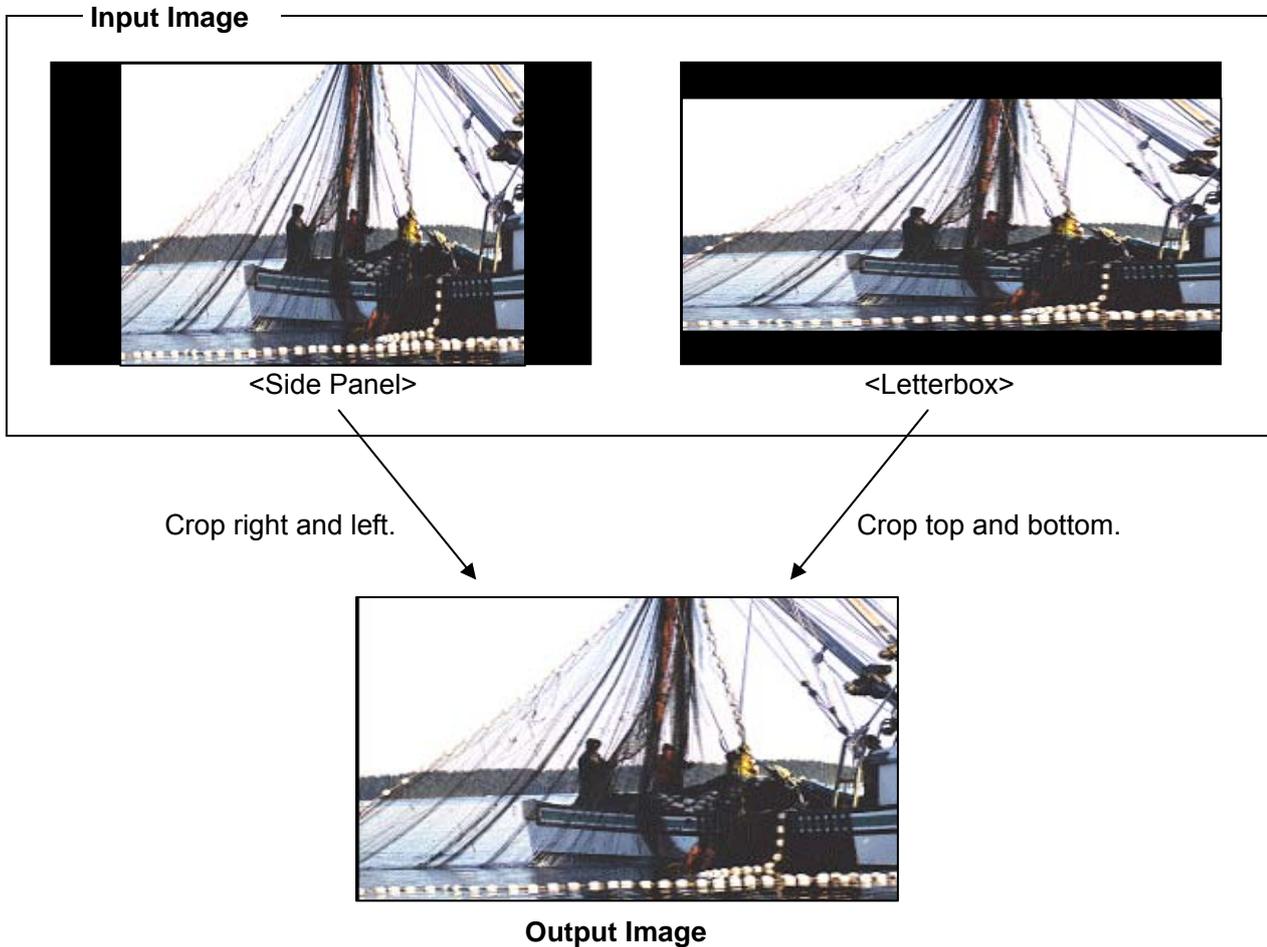


- (1) Image Display Window
Windows to display each channel input. Display mode within the windows varies depending on the settings of display mode. See section 3-2-1. "System" in the MV-410HS Layout Editor Operation Manual for details.

If MODE1 or MODE2 is selected
Maximizes the image to best fit the window while retaining the aspect ratio.
If MODE3 is selected
Maximizes the image to best fit the window without retaining the aspect ratio.
- (2) Title display
Titles of each channel input. Titles can be displayed either within or outside the windows.
- (3) Audio Level Meter display
Audio level meters of each channel input. Audio level meters can be displayed either within or outside the windows.
- (4) Border display
Border display is available on each window frame. Line width of border can be changed using Layout Editor. See section 3-3-1. "Border" in the MV-410HS Layout Editor Operation Manual for details.
- (5) Tally display
Two tally inputs (red and green) are available for each channel input. Tally is displayed outside the border. Tally display color for simultaneous inputs of red tally and green tally can be selected from red or orange. See section 3-2-3. "Tally" in the MV-410HS Layout Editor Operation Manual for details.
- (6) Video loss display
The video loss alarm is displayed when video signal is lost. The display time length for the alarm can be changed using Layout Editor. See section 3-2-4. "Video Loss" in the MV-410HS Layout Editor Operation Manual for details.

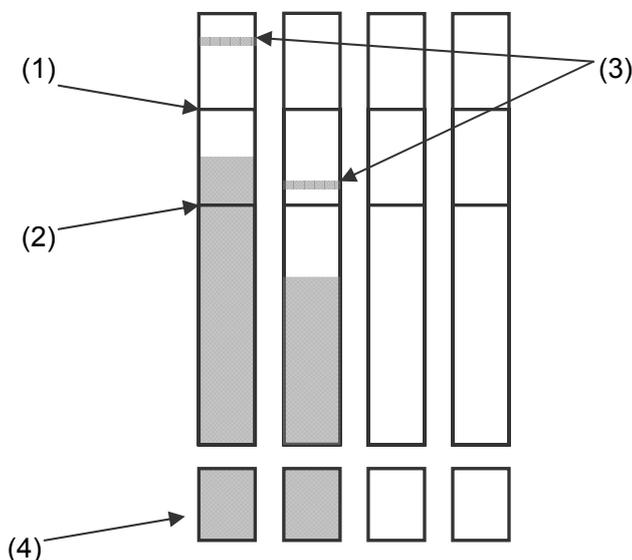
6-3. Crop

The effective pixel area (where picture exists) of the input display can be set. The black area produced by converting images to 4:3 or 16:9 can be reduced or eliminated, and the images can be enlarged and displayed to best fit the output screen. See section 3-2-6. "Crop" in the MV-410HS Layout Editor Operation Manual for details on crop settings.



6-4. Audio Level Meter

Audio level meter for up to 8 channels can be displayed for each HD-SDI and SD-SDI input. For the details on audio level meter settings, see section 4-3-8. "Changing Display Position of Audio Level Meters" in the MV-410HS Layout Editor Operation Manual.



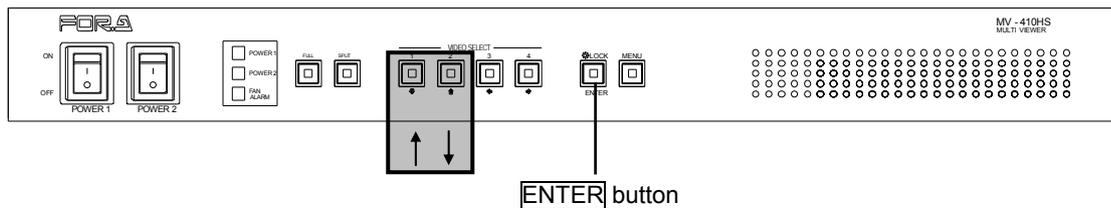
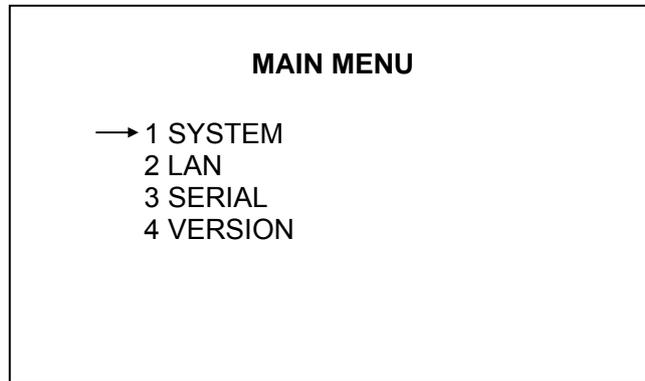
- (1) Peak Level
Peak level can be set in the range of -30dBFS to 0dBFS.
The level bar rises above the peak level, the exceeded part is displayed in red.
- (2) Reference Level
Reference level can be set in the range of -60dBFS to -1dBFS.
The level bar rises above the reference level, the exceeded part is displayed in yellow.
The bar below the reference level is displayed in green.
- (3) Peak Hold
Shows the maximum level reached in the set length of the time.
If the higher peak is reached, the display changes to indicate the higher peak. When the peak hold time is elapsed without reaching to any higher peak, it displays the current audio level. If the peak hold time is set to 0 sec, no peak hold display is provided.
- (4) Audio data indicator
Indicates the presence of audio data.
When there is an audio input, it is displayed in green. When there is no audio input, it is displayed in black.
HD-SDI: Detects active audio data, and indicates the presence or absence of audio data.
SD-SDI: Detects active audio data or audio data of above -60dBFS, and indicates the presence or absence of the data.

7. Menu Operations

Submenus can be accessed from the main menu for completing various settings.

7-1. Main Menu Screen

Press and hold down the **MENU** button for at least two seconds to display the MAIN MENU.



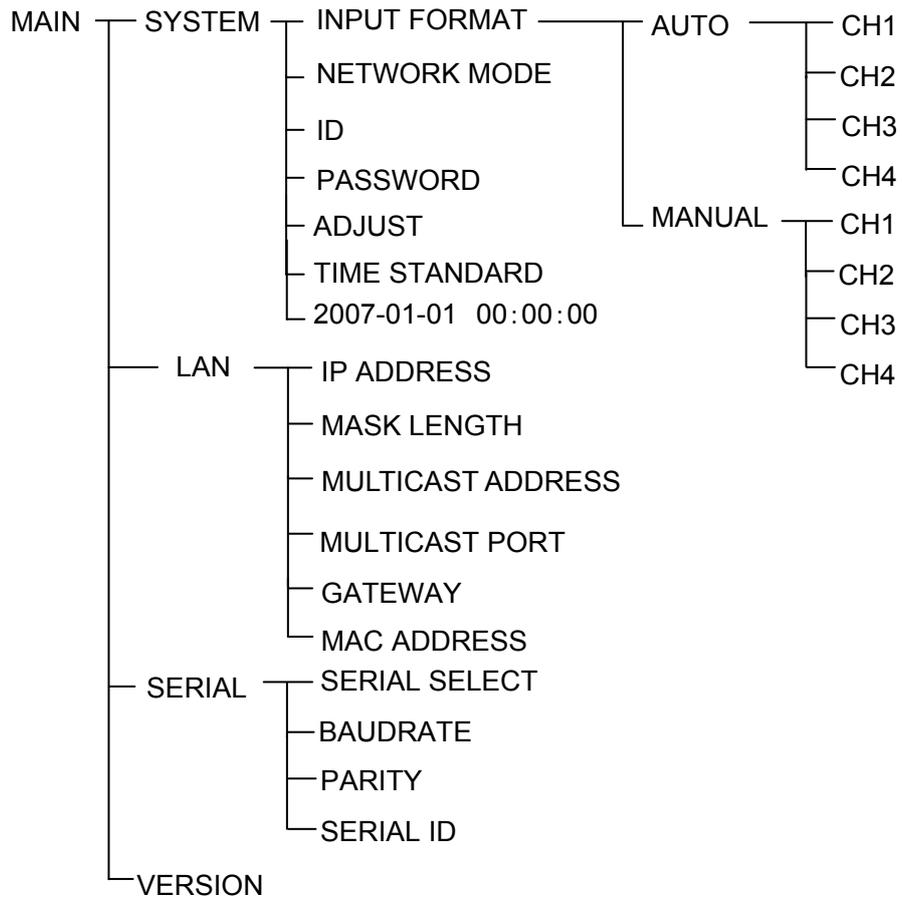
◆ Operating Procedure

Button	Action
↑	Moves the cursor up.
↓	Moves the cursor down.
ENTER	Accesses the submenu of the selected item.

◆ Setting items

Item	Setting details	Reference
1 SYSTEM	Input signal format settings	7-2.SYSTEM
	Network mode settings	
	ID and Password settings	
	Date and time settings	
2 LAN	Network settings	7-3.LAN
3 SERIAL	Serial interface settings	7-4.SERIAL
4 VERSION	Version display	7-5.VERSION

◆ **Menu Diagram**



7-2. SYSTEM

On the MAIN MENU, move the cursor to [SYSTEM] and press the **ENTER** button. The SYSTEM screen is displayed as shown below.

SYSTEM	
INPUT FORMAT	AUTO
NETWORK MODE	UNICAST
ID	ROOT
PASSWORD	00000
ADJUST	1/MINUTE
TIME STANDARD	INTERNAL
2007-01-01	00:00:00

*The settings in the figure above are the factory defaults.

◆ Operating Procedure

Button	Action
↑	Moves the cursor up.
↓	Moves the cursor down.
←	Changes the setting item value. (Reverse)
→	Changes the setting item value. (Forward)
MENU	Returns from SYSTEM menu to MAIN MENU, or from ID, PASSWORD, or Time setting mode to SYSTEM menu.
ENTER	Accesses INPUT FORMAT submenu or enter input mode for ID, PASSWORD, or Time when the cursor is on those items. Returns from ID, PASSWORD, or Time input mode to SYSTEM menu.

◆ Settin Items

Item	Setting range	Setting details
INPUT FORMAT	AUTO	Automatically recognizes input signal formats.
	MANUAL	Accepts manually set signal formats only.
NETWORK MODE	MULTICAST	Sets to Multicast mode.
	UNICAST	Sets to Unicast mode.
ID	8 alphanumeric characters	Used to set ID for the connection with PC over a LAN. ID of 8 space characters is not authenticated.
PASSWORD	00000 - 99999	Used to set Password for the connection with PC over a LAN.
ADJUST	MINUTE/HOUR/DAY	Sets the interval of time adjustment pulse output that is output from TALLY/REMOTE connector pin 20. (every minute/hour/day)
TIME STANDARD	INTERNAL	Uses internal clock signal.
	LTC	Uses LTC time code signal.
Date and Time	Year: 2000 - 2099 Month: 01 - 12 Day: 01 - 31 Time: 00 - 23 Minute: 00 - 59 Second: 00 - 59	Used to set the current time.

7-2-1. INPUT FORMAT

On the SYSTEM screen, move the cursor to [INPUT FORMAT] and press the **ENTER** button. The INPUT FORMAT screen is displayed as shown below. On the INPUT FORMAT screen, formats of input signals can be seen and set.

INPUT FORMAT	
CH1	1080/59.94i
CH2	720/59.94p
CH3	525/60
CH4	PAL

◆ Operating Procedure

Button	Action
↑	Moves the cursor up. (Only in manual mode)
↓	Moves the cursor down. (Only in manual mode)
←	Changes the setting item value. (Reverse) (Only in manual mode)
→	Changes the setting item value. (Forward) (Only in manual mode)
MENU	Returns to SYSTEM menu.

◆ Setting Items

Item	Setting range	Setting details
CH1 - 4	1080/59.94i, 1080/50i 720/59.94p, 720/50p 525/60, 625/50 NTSC, PAL	AUTO mode: Displays input signal format MANUAL mode: Used to select input signal format. *525/60, and 625/50 represent SD-SDI signals. NTSC, and PAL represent analog composite signals.

7-3. LAN

On the MAIN MENU screen, move the cursor to [LAN] and press the **ENTER** button. The LAN screen is displayed as shown below. On the LAN screen network setting can be seen and changed.

LAN	
IP ADDRESS	192.168.0.1
MASK LENGTH	24BIT
MULTICAST ADDRESS	239.255.0.0
MULTICAST PORT	2100
GATEWAY	0.0.0.0
MAC ADDRESS	00-10-B1-02-6x-xx

*The settings in the figure above are the factory defaults.

◆ Operating Procedure

Button	Action
↑	Moves the cursor up.
↓	Moves the cursor down.
←	Changes the setting item value. (Reverse)
→	Changes the setting item value. (Forward)
ENTER	Entering value while pressing down ENTER will change the value of the tens digit. (For MULTICAST PORT, changes the value of the thousands digit.) (Except MASK LENGTH)
MENU	Returns to MAIN menu.

IMPORTANT

If the MENU button is pressed when the entered value is invalid, an error message will be displayed. Press ↓ or ↑ button to clear the error and correct the invalid value.

◆ Setting Items

Item	Setting range	Setting details
IP ADDRESS	0.0.0.0 - 255.255.255.255 (except 0.0.0.0, and 1.0.0.0)	Used to set IP ADDRESS. This setting is necessary for the communication over a LAN interface. Please consult with your system administrator if using in your existing network.
MASK LENGTH	0 - 31	Used to set subnet mask length for the device.
MULTICAST ADDRESS	224.0.0.0 - 239.255.255.255 (except 224.0.0.0 - 224.0.0.255)	Used to set multicast address to use in multicast mode.
MULTICAST PORT	1024 - 65535	Used to set multicast port for the connection in multicast mode. *This setting is not required for the connection in unicast mode.
GATEWAY	0.0.0.0 - 255.255.255.255	If your using network does not have a gateway, this setting is not required.
MAC ADDRESS	Do not change	Displays the MAC addresses of the device. The value cannot be changed.

IMPORTANT

If you change the value for the items other than MULTICAST ADDRESS and MULTICAST PORT, a warning message appears to require the restart of the unit. Whenever you have changed these settings, power off the MV-410HS once and power on again.

7-4. SERIAL

On the MAIN MENU screen, move the cursor to [SERIAL] and press the **ENTER** button. The SERIAL screen is displayed as shown below.

SERIAL	
SERIAL SELECT	RS-232C
BAUDRATE	9600
PARITY	NONE
SERIAL ID	0

◆ Operating Procedure

Button	Action
↑	Moves the cursor up.
↓	Moves the cursor down.
←	Changes the setting item value. (Reverse)
→	Changes the setting item value. (Forward)
MENU	Returns to MAIN menu.

◆ Setting Items

Item	Setting range	Setting details
SERIAL SELECT	RS-232C/RS-422/RS-485	Selects interface to be used.
BAUDRATE	9600/19200/38400	Sets baud rate.
PARITY	NONE/ODD/EVEN	Sets parity.
SERIAL ID	0 - 31	Sets serial ID for the device.

IMPORTANT

If you are using RS-422 or RS-485, you must adjust jumper switch settings on MV-410HS main unit. See section 9. "RS-232C/422/485 Interface" for details on adjusting switches.

7-5. VERSION

On the MAIN MENU screen, move the cursor to [VERSION] and press the **ENTER** button. The VERSION screen is displayed as shown below. On the VERSION screen, the version information of MV-410HS can be seen.

VERSION	
SOFT	01.00
HARD1	01.00
HARD2	01.00
HARD3	01.00

◆ Operating Procedure

Button	Action
MENU	Returns to MAIN menu.

8. Output Size Test Mode

This mode is used to verify that the connected monitor can display the output image in the format set on the MV-410HS.

Turn the power on while pressing the **LOCK** button, the screen shown below will be displayed in the format used last time the power was turned off. The LEDs on the front panel are also turned on according to the format selected for the output. The LED indication details are shown in the table below. * The factory default is set to 1920x1200/60.

OUTPUT SIZE TEST MODE 1920*1200/60 H PIXELS OFFSET 0

◆ Operating Procedure

Button	Action
↓	Changes the output resolution. (Reverse)
↑	Changes the output resolution. (Forward)
←	Changes the value of H PIXELS OFFSET. (Reverse) *Minimum -4 pixels
→	Changes the value of H PIXELS OFFSET. (Forward) *Maximum 4 pixels
ENTER	Changes the output frequency.
MENU	Resumes start-up of the MV-410HS. (The setting of the output frequency is stored.)

◆ Assessing Status

If the connected monitor does not display the image in the format set on the MV-410HS, verify the format actually output by the LEDs on the front panel. See the table below for the verification. If you need to change the format for the display according to the test result, change the format using the Layout Editor.

(1) Output resolution

Setting order	Resolution	3	4	LOCK	MENU
1	1280 x 1024	Flash	Flash	Flash	Flash
2	1360 x 768	Flash	Flash	Flash	Lit
3	1600 x 1200	Flash	Flash	Lit	Flash
4	1920 x 1200	Flash	Flash	Lit	Lit
5	1440 x 900	Flash	Lit	Flash	Flash
6	1680 x 1050	Flash	Lit	Flash	Lit
7	1920 x 1080	Flash	Lit	Lit	Flash
8	1280 x 720	Flash	Lit	Lit	Lit

(2) Output Frequency

Setting order	Frequency	FULL	SPLIT	1	2
1	60Hz	Flash	Flash	Flash	Flash
2	59.94Hz	Flash	Flash	Flash	Lit
3	50Hz	Flash	Flash	Lit	Flash

IMPORTANT

If the image of your desired format is not properly displayed, change the "H PIXELS OFFSET" value and check if the monitor can display the image. Normally set H PIXELS OFFSET to 0 for operating the MV-410HS.

9. RS-232C/422/485 Interface

The factory default is set to RS-232C interface. To change the interface from RS-232C to RS-422 or RS-485, or to change the termination ON/OFF setting, change the settings at [SERIAL SELECT] in the SERIAL menu and the jumper switches in the main unit. See sections 7-4. "SERIAL" and 9-1. "Changing RS-422/RS-485 or Termination". Once the setting are changed to RS-422 or RS-485, the same adjustments are required to return to RS-232C again. The command format for the RS-422 interface and RS-485 interface is common.

Item to change		Adjustments made for	
Original	Change to	Menu setting at SERIAL SELECT	Jumper switches
RS-232C	RS-485	Required	Required
	RS-422	Required	Required
RS-485	RS-232C	Required	Not required
	RS-422	Required	Required
RS-422	RS-232C	Required	Not required
	RS-485	Required	Required

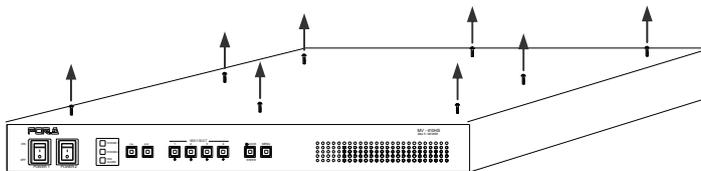
CAUTION

Do not access internal cards or make connections with the unit powered ON. Always power OFF all connected units / disconnect power cords prior to accessing interior. The repair or adjustment that requires to open the unit should only be done by qualified technical personnel.

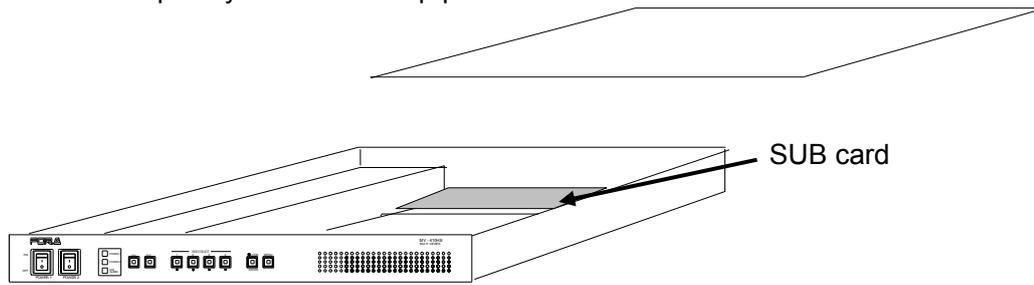
9-1. Changing RS-422/RS-485 or Termination

To change the interface from/to RS-422/RS-485 or to change the termination ON/OFF setting, remove the main unit top panel, and adjust the jumper switch settings on the SUB card inside.

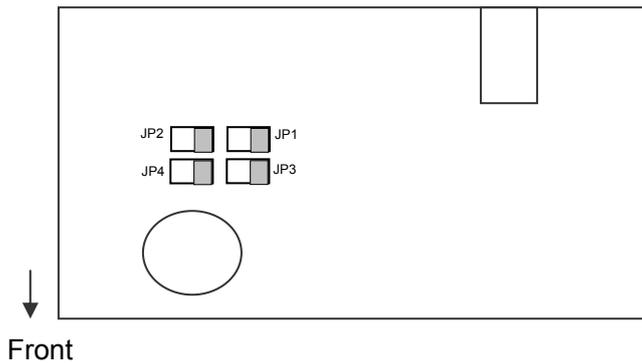
- 1) Remove 8 screws from the top panel of the main unit.



- 2) Lift and completely remove the top panel.



- 3) Change the settings at JP3 and JP4 to switch interface to RS-422 or RS-485. To change the termination ON/OFF setting, change the settings at JP1 and JP2.



Interface to use	JP3	JP4
RS-422	1-2	1-2
RS-485	2-3	2-3

Termination	JP1	JP2
ON	1-2	1-2
OFF	2-3	2-3

- 4) Return the top panel in place and secure with screws.
- 5) Power on the MV-410HS. Open [SERIAL] Menu screen, and select RS-422 or RS-485 at [SERIAL SELECT].

IMPORTANT

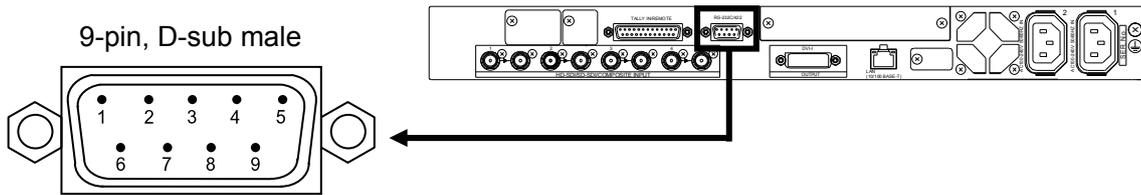
Before performing the above operation to change interface selection, disconnect the serial cable from the connector on the rear panel. The operations as an example below may cause unit a malfunction.

E.g.) Switching from RS-232C to RS-485 or RS-422 while a cable is connected for RS-232C on the rear panel.



To return to RS-232C interface from RS-422 or RS-485 interface, only the menu setting for SERIAL SELECT must be changed to RS-232C. No need to change the jumper switch settings at JP1 - JP4 on SUB card.

9-2. RS-232C/422/485 Connector



RS-232C connector pin assignment (9-pin, D-sub male)

Pin no.	Signal	In/Out	Description
1	-		Unassigned
2	TXD	Output	Transmit data
3	RXD	Input	Receive data
4	DSR	Input	Data set ready
5	GND		Signal ground
6	DTR	Output	Data terminal ready
7	CTS	Input	Clear to send
8	RTS	Output	Request to send
9	-		Unassigned

RS-422 connector pin assignment (9-pin, D-sub male)

Pin no.	Signal	In/Out	Description
1	-		Unassigned
2	RX+	Input	Receive data
3	TX-	Output	Transmit data
4	-		Unassigned
5	GND		Signal ground
6	-		Unassigned
7	RX-	Input	Receive data
8	TX+	Output	Transmit data
9	-		Unassigned

RS-485 connector pin assignment (9-pin, D-sub male)

Pin no.	Signal	In/Out	Description
1	NC		Unassigned
2	TX/RX+	In/Out	Transmit/Receive data
3	NC		Unassigned
4	NC		Unassigned
5	GND		Signal ground
6	NC		Unassigned
7	TX/RX-	In/Out	Transmit/Receive data
8	NC		Unassigned
9	NC		Unassigned

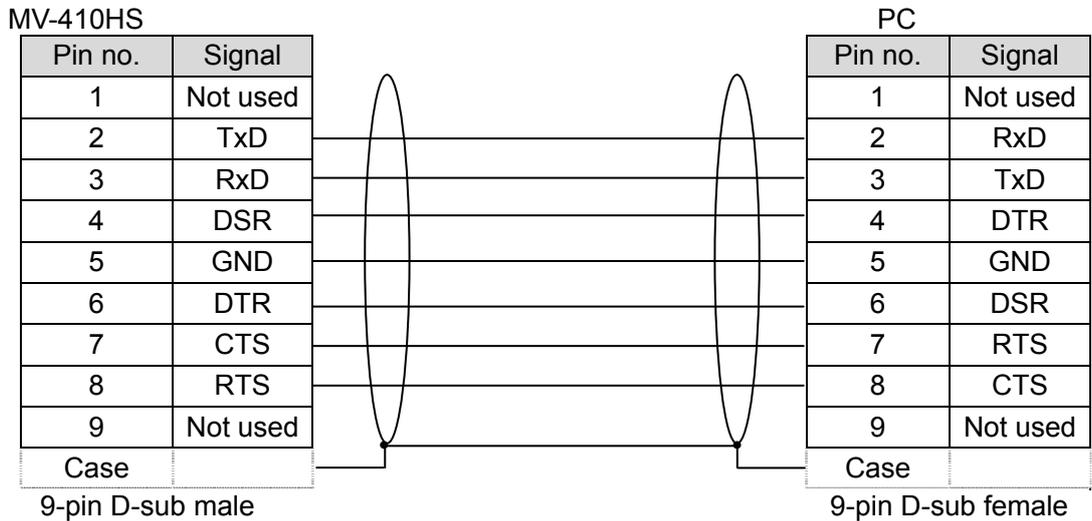
Serial communication standard

Transmission mode	Asynchronous, Full-duplex (RS-232C, RS-422), Half-duplex (RS-485)
Baud rate	Select from 9600, 19200, or 38400[bps]
Data length	8 [bit]
Stop bit	1 [bit]
Parity	Select from NONE, ODD, or EVEN
Flow control	None

IMPORTANT

DSR/DTR and RTS/CTS are looped back in the MV-410HS
 Use a RS-232C straight cable or 422 straight cable to connect another device such as a PC.

9-3. RS-232C Connection Example



IMPORTANT

Use straight cables. (The wiring and connector depend on the type of computer.)
 DSR/DTR and RTS/CTS are looped back in the MV-410HS.

10. Troubleshooting

If any of the following problems occur during operation of the MV-410HS, before assuming a unit malfunction has occurred, follow the troubleshooting procedures below to see if the problem can be corrected.

IMPORTANT

If the problem is not corrected by performing the procedures below, turn the unit off and then on again. If this still does not correct the problem, contact your dealer.

Problem	Check	Action
Front panel FAN ALARM indicator is lit or flashing.	Check that no objects are blocking the fan vent on the rear panel.	Remove any objects blocking the fan vent. If there are no objects in the way, the fan may need to be replaced. Contact your dealer for assistance.
No information is displayed on the screen.	Are all information display settings in the Parameter page set to ON?	Check the display settings by the Layout Editor
Unable to operate front panel buttons.	Is the LOCK button flashing?	Front panel operation is locked. Cancel the switch lock by pressing the LOCK button for at least 2 seconds.
I want to restore the default settings.		Turn the unit power on while pressing and holding down the MENU button.
Image is not properly displayed.	Is the used monitor compatible with the format set on the MV-410HS?	If not, change the format of the MV-410HS output . If the monitor is compatible, change the H PIXELS OFFSET value using the OUTPUT SIZE TEST MODE (See section 8. "Output Size Test Mode") and verify the output image can be displayed.
Image noise appears.	Is the output frequency (vertical frequency) set to 50Hz?	Check that the monitor is compatible with 50Hz. If not compatible, change the monitor to the 50Hz compatible monitor.
	Does the noise appear only on DVI-D output?	The low performance DVI cable may cause image noise. Change the cable to the one with high performance.

11. Specifications and Dimensions

11-1. Specifications

TV Standard	HD: 1080/60i, 1080/59.94i, 1080/50i, 720/60p, 720/59.94p, 720/50p SD: 525/60 (NTSC), 625/50 (PAL)
Video Input	4 inputs of any inputs below (Mix input, asynchronous acceptable) HD-SDI: 1.485Gbps or 1.485/1.001Gbps 75Ω BNC SD-SDI: 270Mbps 75Ω BNC Analog composite: 1.0V(p-p) 75Ω BNC
LTC Input	1 input SMPTE time code appr. 1.0Vp-p within ±6dB
Video Output	DVI output (Outputs Digital and Analog outputs at the same time.) DVI-I connector 1 output Resolution: 1920x1200, 1600x1200, 1280x1024, 1360x768 1440x900, 1680x1050, 1920x1080, 1280x720 Frequency: Refer to the table below. *No input/output frame rate converter. Frame rate difference between input and output results the repeat frame or drop frame.

DVI / Analog RGB output frequency chart (When H PIXEL OFFSET is set to 0.)

	1920x1200			1600x1200			1280x1024			1360x768		
Mode Hz	60	59.94	50	60	59.94	50	60	59.94	50	60	59.94	50
H(Horizontal) kHz	74.06	74.05	61.90	75	74.93	61.91	63.98	63.91	52.87	47.71	47.66	39.66
V(Vertical) Hz	59.96	59.95	50.00	60	59.94	50.01	60.02	59.95	50.02	60.02	59.95	50.01

	1440x900			1680x1050			1920x1080			1280x720		
Mode Hz	60	59.94	50	60	59.94	50	60	59.94	50	60	59.94	50
H(Horizontal) kHz	55.96	56.02	46.47	65.26	65.26	54.15	67.5	67.44	56.25	45	44.95	37.5
V(Vertical) Hz	59.91	59.97	50.03	59.93	59.93	50.01	60	59.95	50	60	59.93	50

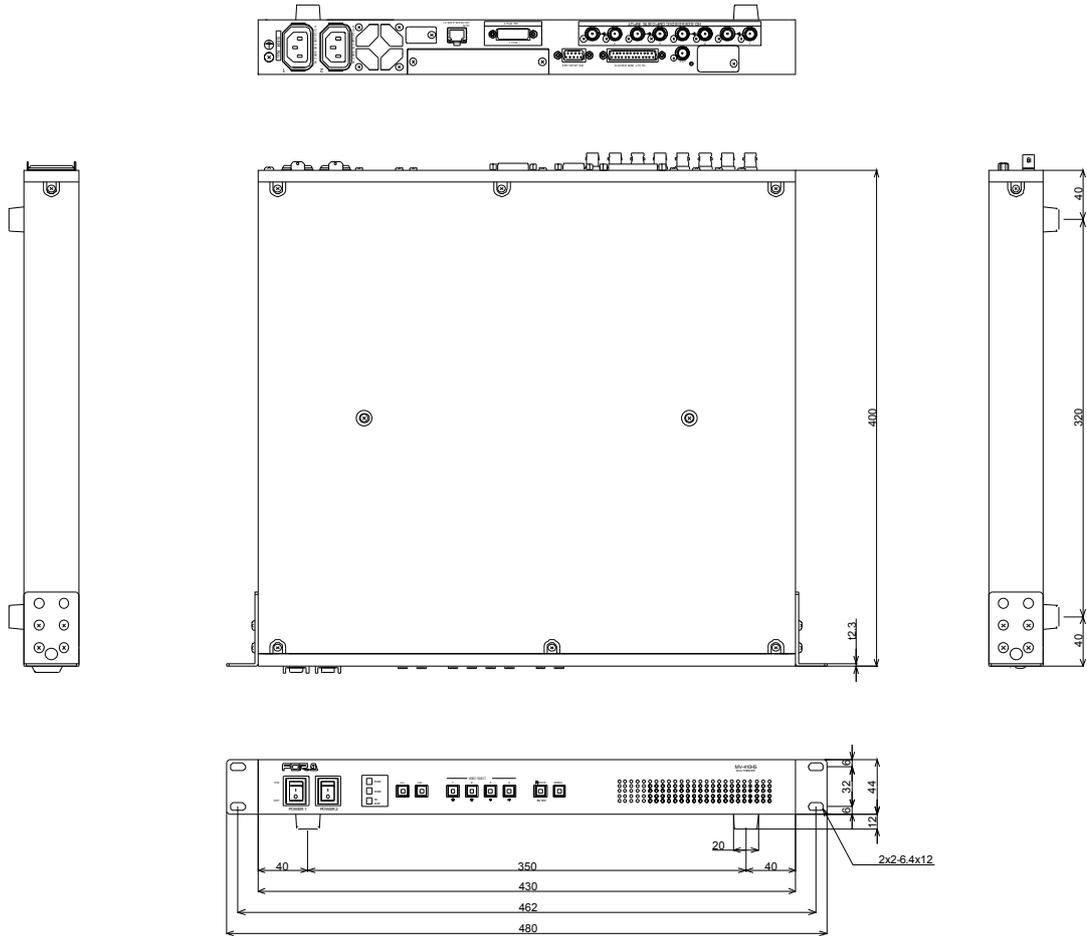
*60Hz mode is most similar to the VESA standard.

Active loop through output (for a monitor)	HD-SDI: 1.485Gbps or 1.485/1.001Gbps SD-SDI: 270Mbps 75Ω BNC * Available only when input is either HD-SDI or SD-SDI. * No jitter correction. The jitter in the input will be carried to the active loop through output. The total jitter may exceed the jitter limit of signal standard.
Quantization	8 bit
I/O Delay	1 - 2 frames
Screen Display Types	Full screen, User customized layout
Title display	Character capacity: Max. 16 characters x 1 line for each input channel Character types: Alphanumeric characters and symbols
Tally Indication	Frame: Red or Green per input. (Red or Umber selectable for the display at the simultaneous inputs of red and green tallies.)
Audio Level Meters	8 embedded audio channels per input * Embedded audio signals are not passed through.

Time Display	Real-time display (provided with the internal clock) *Accuracy within ± 10 seconds per month (at 25°C)
Interfaces	RS-232C/RS-422/RS-485: 9-pin D-sub male, 1 port Baud rate: 9,600/19, 200/38, 400bps, data length 8bit, stop bit 1bit, parity NONE/ODD/EVEN TALLY IN: 25-pin D-sub female *Shared use with REMOTE IN 4 inputs x 2colors (red or green border display) TTL negative logic pulse level or Make contact REMOTE IN: 25-pin D-sub female *Shared use with TALLY IN Control over switching channels or display modes of full screen or split screen TTL negative logic pulse level or Make contact LAN: 10Base-T/100Base-TX, RJ-45 (Category 5), 1 port Video transmission: Compress and transmit DVI/Analog RGB output and image, JPEG compression
Layout Editor	Edit size and position of windows in split screen
Data Backup	Stores the setting data to the memory (Rewrite capacity: approx. one hundred thousand times) *Frequent changes of display settings may result in being unable to retain data.
Temperature/Humidity	0°C - 40°C, 30% - 90% (no condensation)
Backup battery	Internal lithium battery (to maintain time)
Consumption	43VA (42W) at 100VAC 53VA (40W) at 200VAC
Power	100VAC - 240VAC $\pm 10\%$, 50Hz/60Hz
Weight	5.5kg (with redundant power supply option installed)
Dimensions	430 (W) x 44 (H) x 400 (D)mm, EIA1RU
Accessories	Operation Manual, AC cord, Rack mount brackets, CD-R (Layout Editor, Live Viewer)
Option	Redundant power supply
Consumables	Battery: Replace every 4 years (at room temperature) Fan: P1399 (front and rear) Replace every 5 years (at room temperature)

11-2. Dimensions

(All dimensions in mm)



Index

A	
ADJ_IN.....	16
ADJ_OUT.....	16
Adjusting Display using Output Size Test Mode 4	
Audio data indicator.....	21
Audio Level Meter.....	21
C	
Changing interfaces	30
Connecting over LAN	
Quick Start	6
Connection	
Quick Start	3
Connections	11
Connector pin assignments	
Remote/Tally.....	15
Crop	20
D	
Data Initialization	
MV-410HS main unit.....	13
Dimensions	37
Display modes.....	17
Displaying Image on DVI/RGB Monitors.....	4
E	
External Time Adjustment Input.....	16
External Time Adjustment Output	16
F	
Font Conventions	2
Front Panel description	9
Full Screen display	
MV-410HS main unit.....	13
I	
Input Format menu (main unit).....	25
Installing Layout Editor	
Quick Start	7
L	
Lan menu (main unit).....	26
LED indication	29
M	
Main Menu (main unit).....	22
Menu Diagram (main unit).....	23
Menu Operations	
MV-410HS main unit.....	22
MULTICAST Mode	12
N	
Network Mode	12
Network Settings	
Quick Start	6
O	
Operations	
MV-410HS main unit.....	13
Output size test mode menu (main unit)	29
P	
Panel Descriptions.....	9
Peak Hold.....	21
Peak Level.....	21
Q	
Quick Start	3
R	
Rear Panel description.....	10
Reference Level	21
REMOTE/TALLY connector	15
RS-232C Connection Example	33
RS-232C/422/485 Connector	32

RS-232C/422/485 Interface		System menu (main unit).....	24
MV-410HS main unit.....	30	T	
S		Termination.....	30
Screen Display		Troubleshooting	
Full Screen.....	17	MV-410HS main unit.....	34
Split Screen.....	18	U	
Serial menu (main unit).....	27	UNICAST Mode.....	12
Specifications.....	35	V	
Split Screens display		Version menu (main unit).....	28
MV-410HS main unit.....	14		
Starting Layout Editor			
Quick Start.....	8		

Warning

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



FOR-A COMPANY LIMITED

Head Office 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Overseas Division Phone: +81(0)3-3446-3936, Fax: +81(0)3-3446-1470
Japan Branch Offices Osaka/Okinawa/Fukuoka/Hiroshima/Nagoya/Sendai/Sapporo
R&D/Production Sakura Center/Sapporo Center

FOR-A America Corporate Office

11155 Knott Ave., Suite G&H, Cypress, CA 90630, USA
Phone: +1-714-894-3311 Fax: +1-714-894-5399

FOR-A America East Coast Office

2 Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee, NJ 07024, USA
Phone: +1-201-944-1120 Fax : +1-201-944-1132

FOR-A America Distribution & Service Center

2400 N.E. Waldo Road, Gainesville, FL 32609, USA
Phone: +1-352-371-1505 Fax: +1-352-378-5320

FOR-A Corporation of Canada

346A Queen Street West, Toronto, Ontario M5V 2A2, Canada
Phone: +1-416-977-0343 Fax: +1-416-977-0657

FOR-A Latin America & the Caribbean

5200 Blue Lagoon Drive, Suite 760, Miami, FL 33126, USA
Phone: +1-305-931-1700 Fax: +1-305-264-7890

FOR-A UK Limited

UNIT C71, Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, UK
Phone: +44(0)20-8391-7979 Fax: +44(0)20-8391-7978

FOR-A Italia S.r.l.

Via Volturmo 37, 20047 Brugherio MB, Italy
Phone: +39-039-881-086/103 Fax: +39-039-878-140

FOR-A Corporation of Korea

Rm. 1007 InnoPlex, 13 Yangpyeong-dong 3-ga, Yeongdeungpo-gu, Seoul 150-103, Korea
Phone: +82(0)2-2637-0761 Fax: +82(0)2-2637-0760

FOR-A China Limited

708B Huateng Bldg., No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Phone: +86(0)10-8721-6023 Fax: +86(0)10-8721-6033

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

Tutorial

MV-410HS Layout Editor (Ver.2.0-higher)

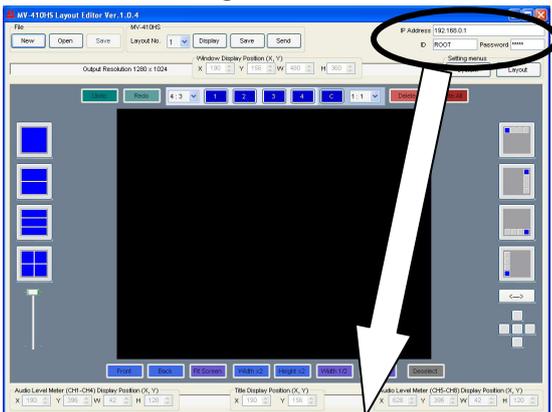
1.	Before Starting	2
2.	Loading Layout from MV-410HS.....	2
3.	Adding/Deleting Windows	2
	Adding Windows.....	2
	Deleting Windows.....	3
4.	Changing Window Size and Layer Order...	4
	Changing Window Sizes	4
	Changing Layer Order of Windows	4
5.	Moving Window	5
6.	Changing Assigned Channel of Window....	5
7.	Adding Border	5
8.	Audio Level Meter	6
	Adding Audio Level Meter	6
	Moving Audio Level Meter.....	6
9.	Titles	7
	Adding Titles.....	7
	Moving Titles	7
10.	Clock / Display Mode.....	8
11.	Other Settings in System Dialog Box.....	9
	Audio Level Meter Setting	9
	Tally Setting.....	9
	Video Loss Setting	10
	Full Screen Setting	10
	Crop Setting.....	11
12.	Saving Layout.....	11
	Saving to MV-410HS.....	11
	Saving to PC	11
13.	Creating New Layout.....	11
14.	Using Preset Patterns	12
15.	Making Layouts	12
	4 Same Size Windows (with Title, Border and out-of-window Level meters).....	12
	1+3 Split Screen (with Title, Border and Level meters).....	13

1. Before Starting

There are different ways to start editing output screen layout using the MV-410HS Layout Editor. Loading an installed layout from the MV-410HS. Creating a new layout with the MV-410HS layout Editor in offline mode. Or you can recall the patterns installed in the MV-410HS Layout Editor. You can also store the edited layout to MV-410HS memory or PC to use or edit repeatedly. Let's start with loading a layout from MV-410HS.

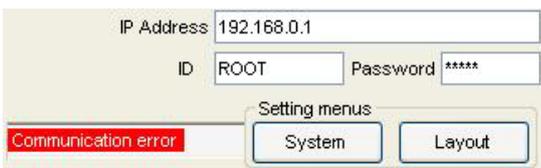
2. Loading Layout from MV-410HS

- 1) Complete the system setup and start the MV-410HS Layout Editor. After the application is started, the main screen is displayed. Enter the IP address, ID, and password. The default settings are as below.

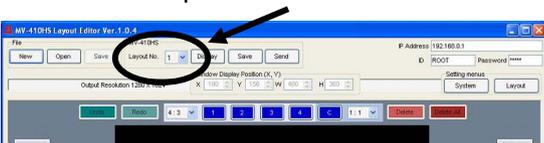


IP Address: 192.168.0.1
 ID: ROOT Password: *****
 Password: 00000

If the entered IP address, ID or password is not correct, the error indication appears as below. Correct the error.

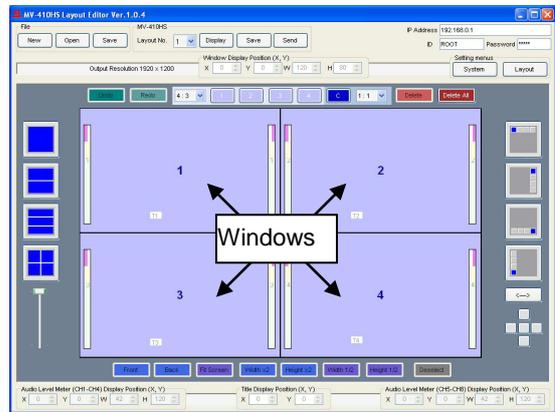


- 2) Select a layout number in the drop-down menu at the top of the main screen.



Layout numbers 1 to 4 are available. Each number displays a different layout in the layout editing area.

Choose number 1 and go to the next step. The screen appears as below.



- 3) Click **Display** at the right of the **Layout No.** box to display the monitor screen in the same layout.



3. Adding/Deleting Windows

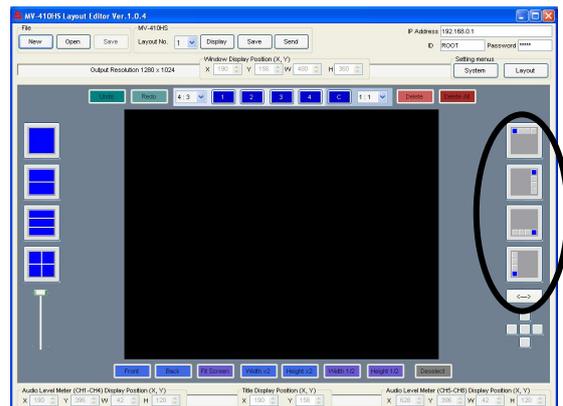
Adding Windows

There are two different ways to add windows.

1. Using 1, 2, 3, 4 and C buttons above the layout editing area.



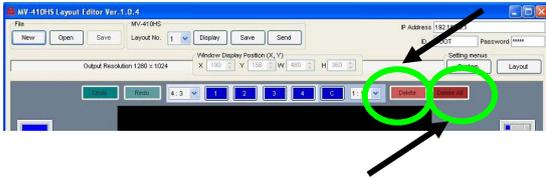
2. Using the icons at the right side of the layout editing area to add four 1/16 size windows.



Deleting Windows

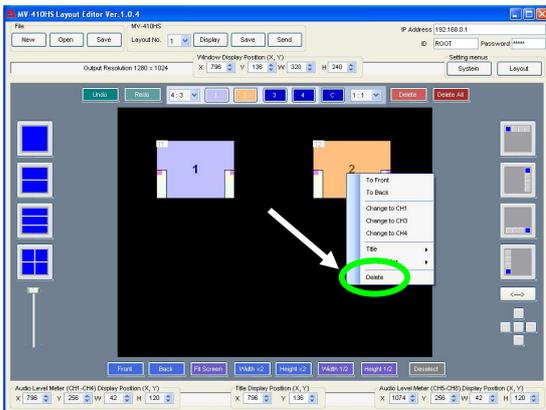
There are three different ways to delete windows.

1. Selecting the window to delete and clicking **Delete** next to the **1**, **2**, **3**, **4** and **C** buttons.



2. Clicking **Delete All** next to the **Delete** to delete all windows.

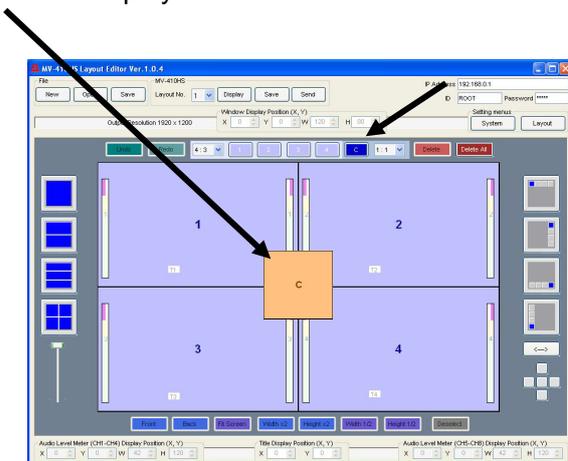
3. Choosing **Delete** from the right-click menu of the selected window.



Let's add and delete windows.

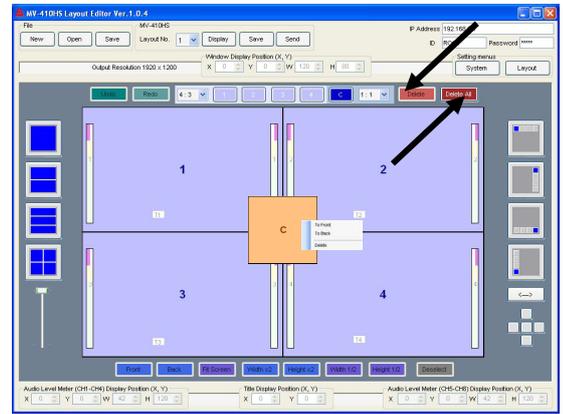
At first, add the clock window.

Click the **C** among the **1**, **2**, **3**, **4** and **C** buttons right above the layout editing area. The clock window is displayed.



Now, delete the clock window.

Move the pointer to the clock window, and click **Delete** next to the **C**, or select **Delete** from the right-click menu.



Let's click **Delete All** next to **Delete**. All windows are deleted.

Click **1**, **2**, **3**, and **4** one by one to display four windows again.



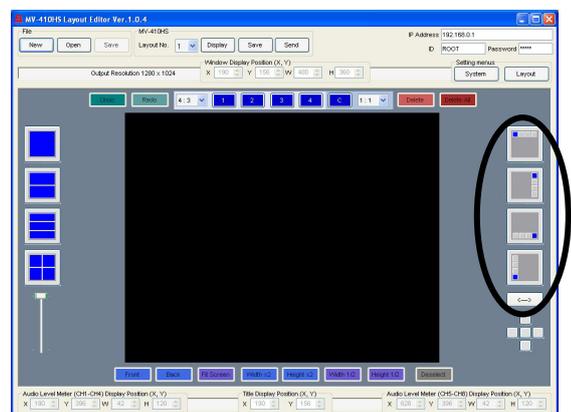
Click **Delete all** again. All windows are disappeared.

Now, click **Undo**. The last operation is cancelled and all windows appear again.

Now, click **Redo**. The cancelled operation is reapplied and all windows disappear again.

Let's add windows using the icons at the right of the layout editing area. Clicking these icons will add four 1/16 size windows. In each icon there is one window in different color. The different color is indicating where the windows are lined up from. The arrow button under the icons reverses the direction.

Now, click any one of the icons to display four windows.

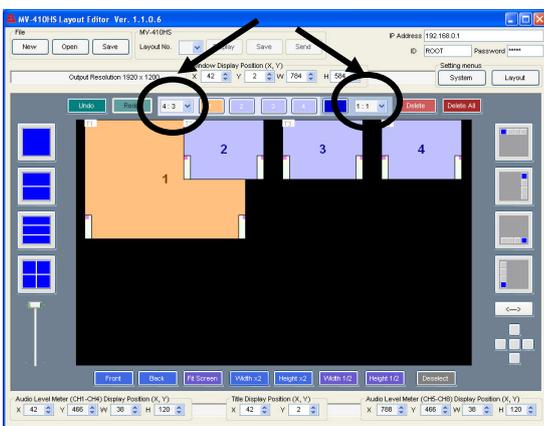


4. Changing Window Size and Layer Order

Changing Window Sizes

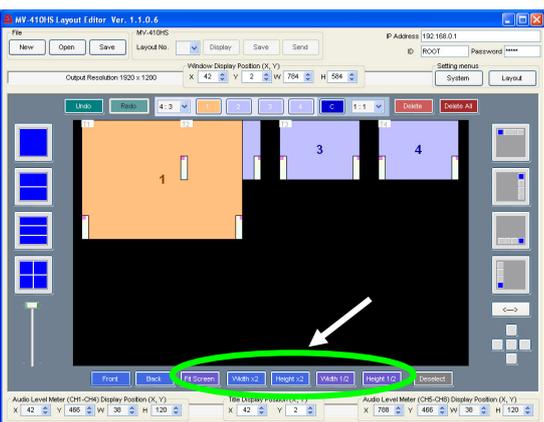
There are three different ways to change window sizes.

1. Dragging the edge of the window to the desired window size and releasing the mouse button. If **Aspect Ratio** is set to **Free** in the drop-down list at the left of the window buttons, the window size is freely changed regardless of the aspect ratio. If you want to retain the aspect ratio, set as below according to the used format.

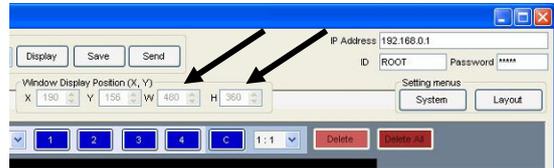


16:9	HD signal
4:3	SD signal
1:1	Clock window (Set in the box at the right of window buttons)
Free	Free of aspect ratio

2. Using the **Fit Screen**, **Double Width**, **Double Height**, **Half Width**, and **Half Height** buttons under the layout editing area. To do this, select the window to change size first, and then click the suitable button.



3. Changing the numeric values in **W** and **H** above the window buttons. To do this, select the window first, and change the value. Clicking the spin button arrows in the box will change the value by 8 pixels. Changing by 8 pixels may slightly affect the aspect ratio.



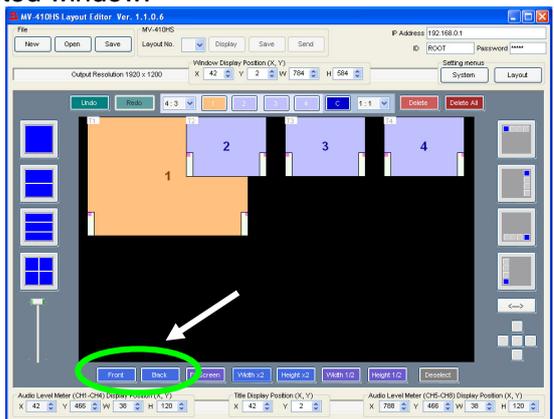
Let's enlarge the window 1 (the window number is indicated in the window) and other windows .

- The minimum window size is 120 (W) x 80 (H). However, due to the minimum video display area requirement of 96 (W) x 56 (H), the border width will be automatically reduced to obtain the display area.
 - Video display in **Split Screen Display Mode** differs depending on the **Display Mode** in **System Setting**.
- If MODE1 or MODE2 is selected:**
- Detects aspect ratio of the input video signal and maximizes the image to best fit the window while retaining the aspect ratio.
- If MODE3 is selected:**
- Maximizes the image to best fit the window. The aspect ratio of the input signal is not retained.

Changing Layer Order of Windows

The enlarged windows are now overlapped. Let's change the layer order for the windows.

First select a window to change the layer order, then click **Front** to bring the window to the front, or click **Back** to send the window to the back. You can also change the layer order by selecting **Front** or **Back** from the right-click menu of the selected window.



Now, reduce the size of all windows to about the previous 1/16 size to go to the next step "Moving Window".

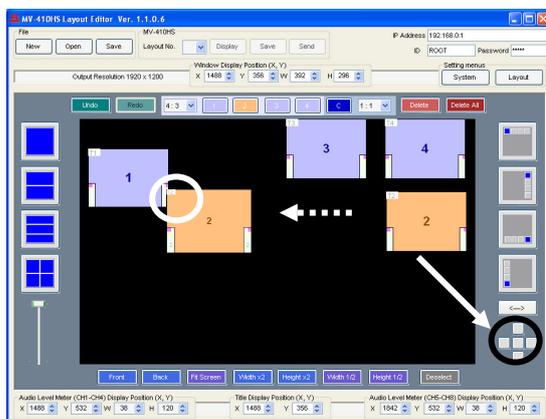
5. Moving Window

There are three ways to move windows.

1. Drag and Drop by the mouse.
Drag the window to the desired position and release the mouse button.
2. Changing the numeric values in **X** and **Y** at the top of the layout editing window.
X is the horizontal coordinate. The base point is the left edge of the window.
Y is the vertical coordinate. The base point is the top edge of the window.
Each increment/decrement of **X** or **Y** value moves the position by two pixels.

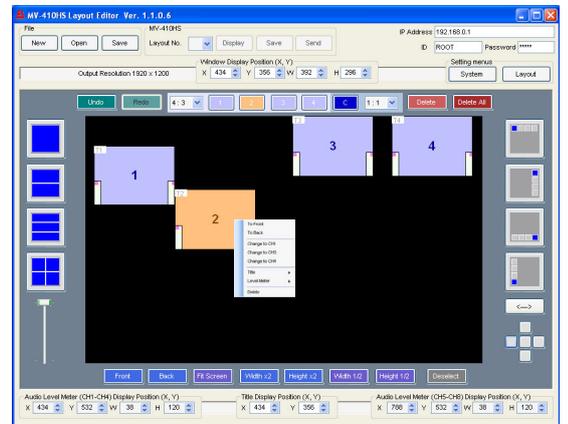


3. Using the five buttons placed in a cross shape under the icons at the right of the layout editing area.
Each button instantly moves a window right next to the other window in each direction. If there is no window in the direction, the window is moved to the edge of the layout editing area. The center button positions a window at the center.
(The figure below is showing the case when the window2 is moved to right next to the window1.)



6. Changing Assigned Channel of Window

Let's change a channel displayed in a window. First, select a window to change its channel, then select the desired channel from the right-click menu.



If the channel already assigned to other window is chosen, the window (channel) numbers will be exchanged. You cannot display the same channel in multiple windows.

7. Adding Border

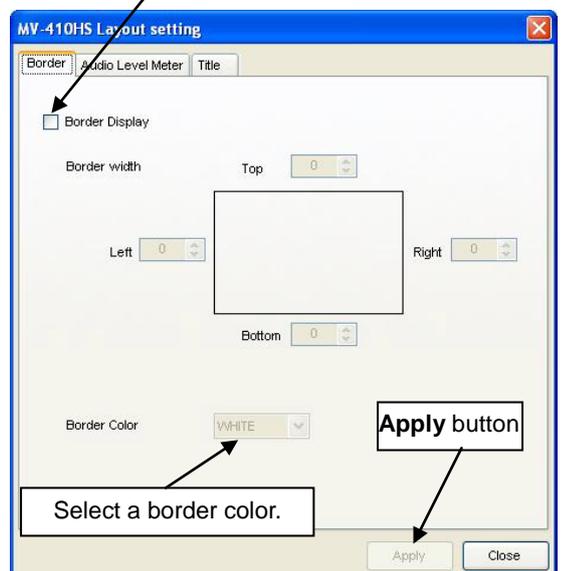
The settings for border display can be made in the **Border** page of **Layout Setting** dialog box.

- 1) Click **Layout Setting** in the main screen to display the **Layout Setting** dialog box.



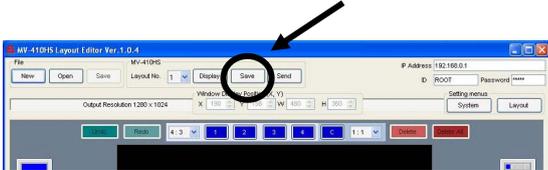
- 2) Open the **Border** page.

Put a check to display a border.



Select a border color.

- 3) Set width for each border line in the range from 0 to 50. One unit of the value in the setting box changes the width by 2 lines or 2 pixels.
- 4) Click **Apply** to apply the settings.
- 5) Save the settings in MV-410HS to avoid the settings to be lost when the MV-410HS is powered off. To do this, click **Close** to go back to the main screen. Then click **Save** shown below. (It is recommended to do this after completing all other settings.)



- 3) Put a check for each channel you want to display audio level meter, and select how many audio channels to display in the **Display Channel** box at the right. You can choose from 2CH, 4CH, and 8CH. These settings are made for channels not for windows.
- 4) Click **Apply** to apply the settings.
- 5) Save the settings to MV-410HS to avoid the settings to be lost when the MV-410HS is powered off. To do this, click **Close** to go back to the main screen. Then click **Save** shown below. (It is recommended to do this after completing all other settings.)



8. Audio Level Meter

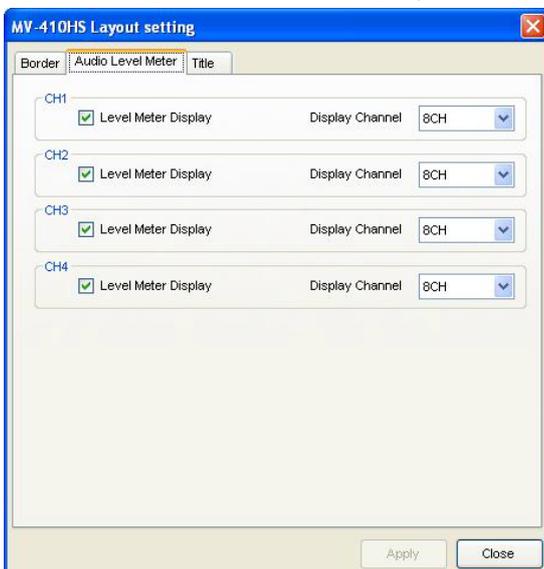
Adding Audio Level Meter

The settings for Audio Level Meter display can be made in the **Audio Level Meter** page of **Layout Setting** dialog box.

- 1) Click **Layout Setting** in the main screen to display the **Layout Setting** dialog box. (To make the audio level meter settings for full screen display, go to the **Full Screen** page of **System Setting** dialog box.)



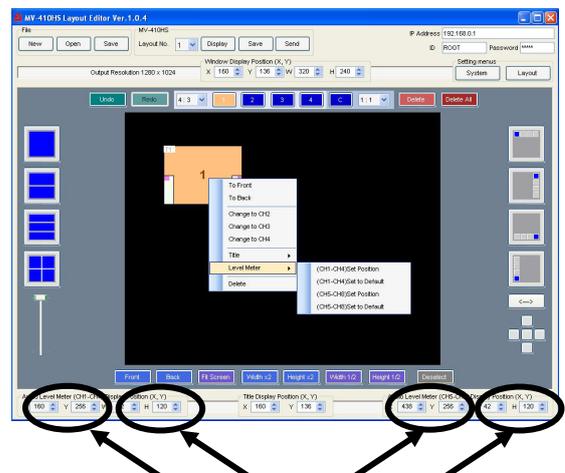
- 2) Open the **Audio Level Meter** page.



Moving Audio Level Meter

There are two ways to move audio level meter.

1. First, select the window to move the level meter of in the main screen, then choose **Level Meter > (CH1-CH4) or (CH5-CH8) Set Position** from the right-click menu. The audio level meters move along with the cursor as you drag the mouse. Move the cursor to the desired position and click the left mouse button.



2. Select the window to move the level meter of, and change the numeric values in **X** and **Y** of **Audio Level Meter (CH1-CH4) or (CH5-CH8)** at the bottom of the edit window.

9. Titles

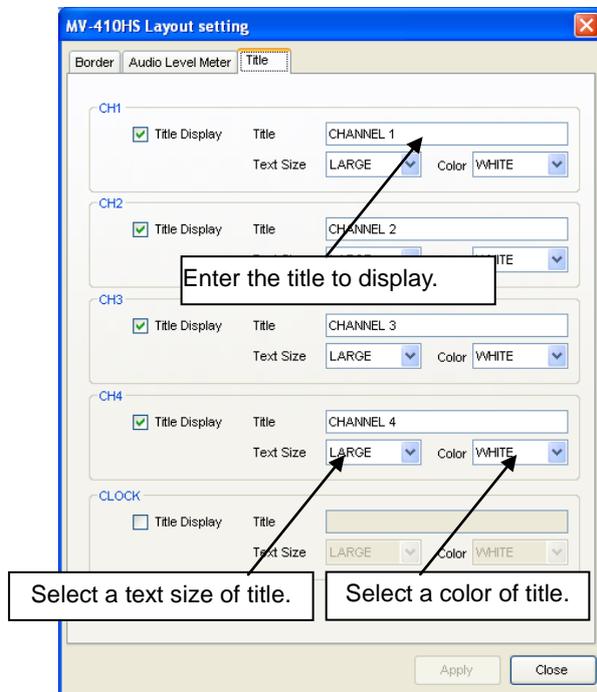
Adding Titles

The settings for Title display can be made in the **Title** page of **Layout Setting** dialog box.

- 1) Click **Layout Setting** in the main screen to display the **Layout Setting** dialog box. (To make the title display settings for full screen display, go to the **Full Screen** page of **System Setting** dialog box.)

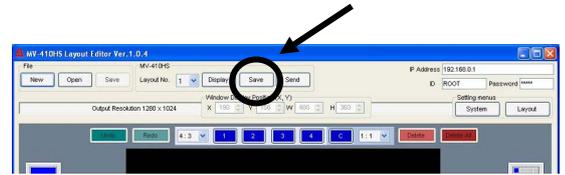


- 2) Open the **Title** page.



- 3) Put a check for each channel or the clock window you want to display a title. The channel numbers in this page represent channels not windows.
- 4) Enter the title to display (up to 16 characters), select a text size from **LARGE**, **MEDIUM**, and **SMALL**, and select a color for the title from **WHITE**, **YELLOW**, **GREEN**, **CYAN**, **RED**, **MAGENTA**, **BLUE**, **GRAY** and **BLACK**.
- 5) Click **Apply** to apply the settings.

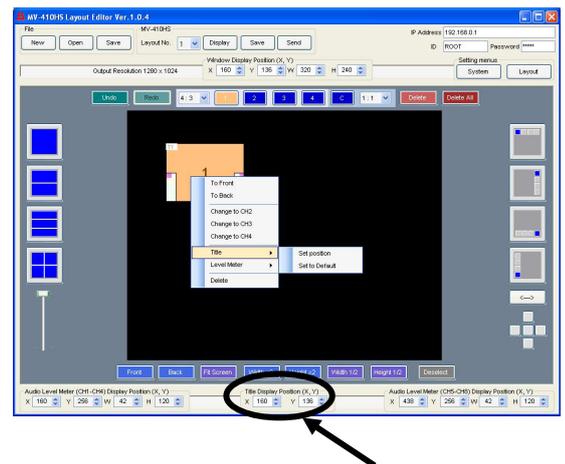
- 6) Save the settings to MV-410HS to avoid the settings to be lost when the MV-410HS is powered off. To do this, click **Close** to go back to the main screen. Then click **Save** shown below. (It is recommended to do this after completing all other settings.)



Moving Titles

There are two ways to move titles.

1. Select the window to move the title of in the main screen and choose **Title > Set Position** from the right-click menu. The title moves along with the cursor as you drag the mouse. Move the cursor to the desired position and click the left mouse button.



2. Select the window to move the title of, and change the numeric values in **X** and **Y** of **Title Display Position** at the bottom of the edit window.

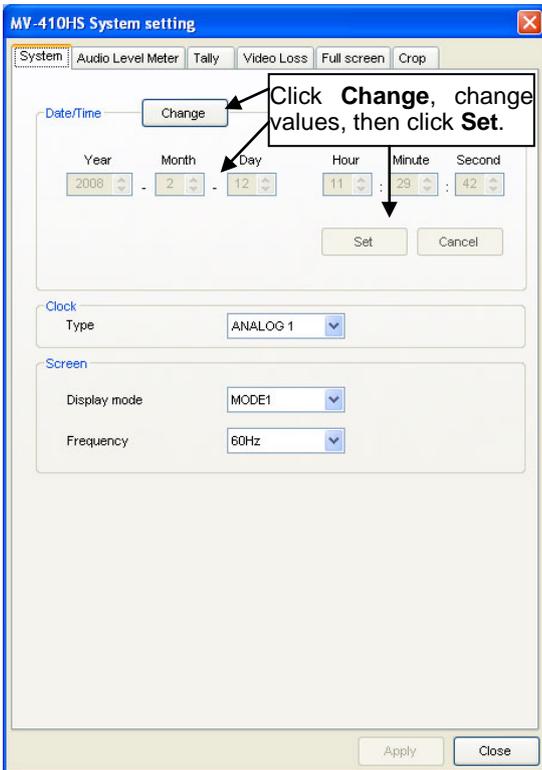
10. Clock / Display Mode

The settings for time adjustment, clock type of clock display and display mode regarding with aspect ratio can be made in the **System** page of **System Setting** dialog box.

- 1) Click **System Setting** in the main screen to display the **System Setting** dialog box.



- 2) Open the **System** page.

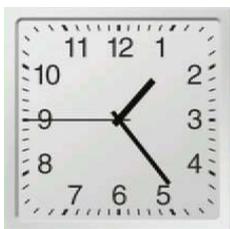


- 3) To adjust the date and time, in the Date/Time section, first, click **Change**, change the values, then click **Set**.
- 4) In the Clock section, select a clock type from **Analog1**, **Analog2**, **Digital1** and **Digital2**.

<Analog1>



<Analog2>



<Digital1>



<Digital2>



- 5) In the Screen section, select a display mode and a frequency.

Display Mode for

[Full Screen Display]

MODE1: Displays the title and audio level meters without overlapping on the video image while retaining the aspect ratio.

MODE2: Overlaps the title and audio level meters on the video image while retaining the aspect ratio.

MODE3: Maximizes the image to best fit the window. The aspect ratio of the input signal is not retained. The title and audio level meters are overlapped on the video image.

[Split Screen Display]

Titles and audio meters can be freely positioned.

In **MODE1** and **MODE2**, the aspect ratio of input signal is retained.

In **MODE3**, the images are maximized to best fit the window regardless of the original aspect ratio.

Output Frequency

Horizontal frequency can be selected from 60Hz, 59.94Hz or 50Hz for output.

E.g.) Selecting 50Hz for the 1080/50i input signal can reduce judder.

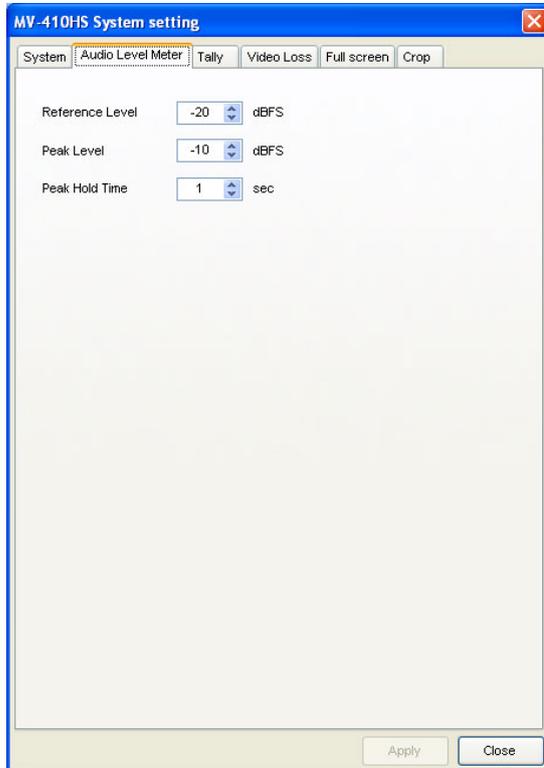
- 6) Click **Apply** to apply the settings.
- 7) Save the settings to MV-410HS to avoid the settings to be lost when the MV-410HS is powered off. To do this, click **Close** to go back to the main screen. Then click **Save** shown below. (It is recommended to do this after completing all other settings.)



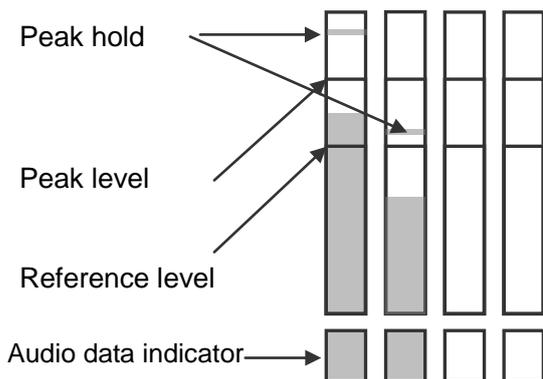
11. Other Settings in System Dialog Box

Audio Level Meter Setting

In the **Audio Level Meter** page, the reference level, peak level and peak hold time can be set to keep audio signals at the best level.



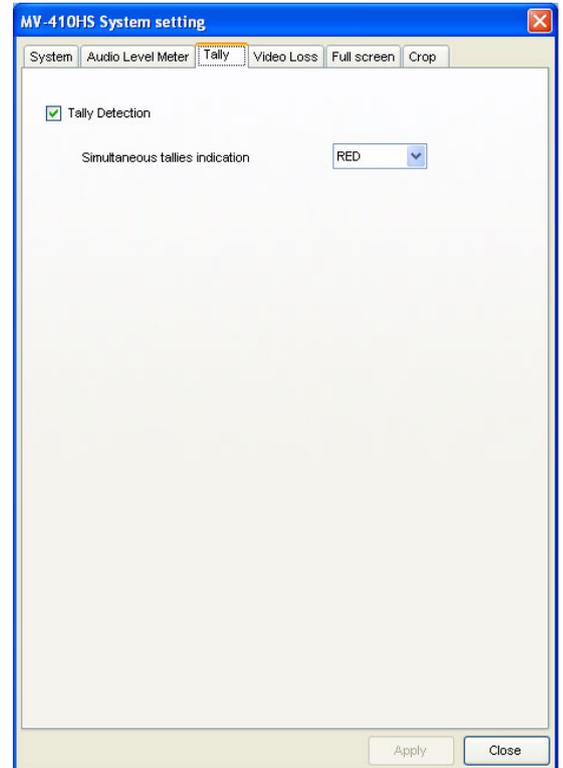
The audio level meter appears as below. The audio level above the reference level is displayed in yellow, and it of above the peak level is displayed in red.



Tally Setting

In the **Tally** page, the tally detection On or Off can be set, and also a tally color for the simultaneous receipt of red and green tally signals can be selected from red and umber.

To enable tally detection, set the tally signal input to the TALLY IN/REMOTE connector on the rear of MV-410HS.



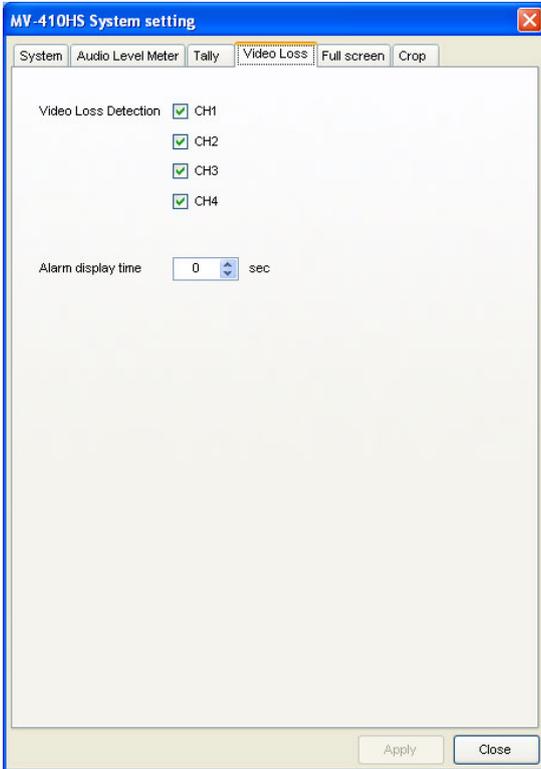
After completing the settings, click **Apply** to apply the settings to the layout.

Click **Close** to go back to the main screen, and then click **Save** to save the settings in MV-410HS to avoid the settings to be lost when the MV-410HS is powered off.

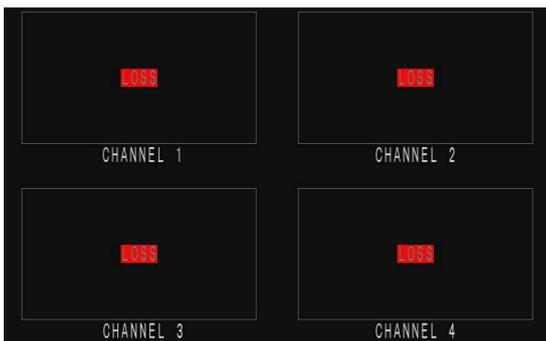
(It is recommended to do this after completing all other settings.)

Video Loss Setting

In the **Video Loss** page, there are check boxes for each channel. To enable the video loss detection, put a check in the box for each channel. There also is the Alarm display time setting box to set how long to display the alarm. The setting range is from 0 second to 100 seconds.



Alarm appears as below.



After completing the settings, click **Apply** to apply the settings to the layout. Click **Close** to go back to the main screen, and then click **Save** to save the settings in MV-410HS to avoid the settings to be lost when the MV-410HS is powered off. (It is recommended to do this after completing all other settings.)

Full Screen Setting

In the **Full Screen** page, Output resolution, level meter display and title display for full screen display can be set.

The output resolution can be selected from the following 8 options in the pull-down menu.

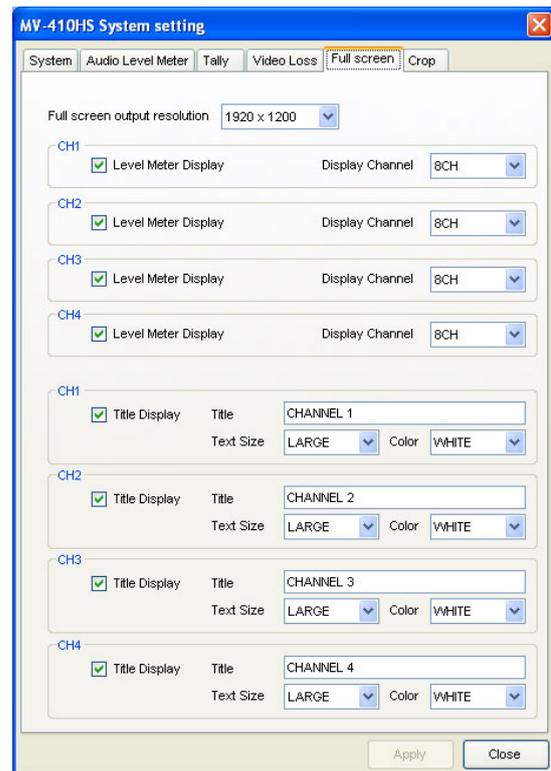
1280 x 1024, 1360 x 768, 1600 x 1200, 1920 x 1200, 1440 x 900, 1680 x 1050, 1920 x 1080, 1280 x 720

The audio level meter display and the title display can be set for each channel respectively.

The number of audio channels to display can be selected from 2CH, 4CH or 8CH.

Type the title in the **Title** setting box. Select the **Text size** from (Large, Medium, and Small).

Select the **Color** from (White, Yellow, Green, Cyan, Red, Magenta, Blue, Gray and Black).



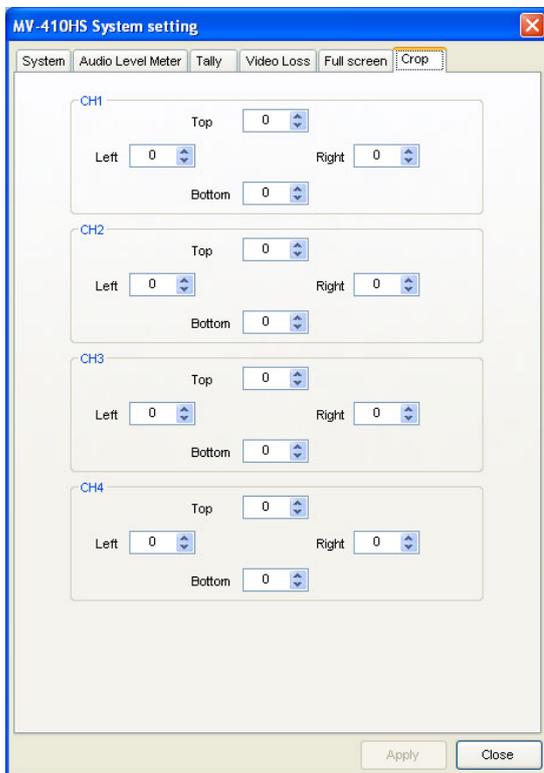
After completing the settings, click **Apply** to apply the settings to the layout.

Click **Close** to go back to the main screen, and then click **Save** to save the settings in MV-410HS to avoid the settings to be lost when the MV-410HS is powered off.

(It is recommended to do this after completing all other settings.)

Crop Setting

In the **Crop** page, the size to crop the image from each edge can be set. This is used to eliminate the black area produced by the 4:3 or 16:9 conversion to make the image to best fit the output screen without black area.



The value can be set for each side individually in the range of 0 to 120 by the unit of 4.

After completing the settings, click **Apply** to apply the settings to the layout.

Click **Close** to go back to the main screen, and then click **Save** to save the settings in MV-410HS to avoid the settings to be lost when the MV-410HS is powered off.

(It is recommended to do this after completing all other settings.)

12. Saving Layout

Saving to MV-410HS

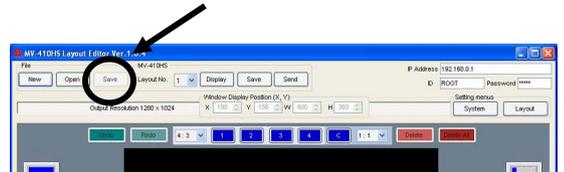
To save the edited layout to the MV-410HS to use again, click **Save** in the MV-410HS section at the top center of the main screen.



Four layouts can be saved to the MV-410HS. If you want to save more layouts, save them to PC as described in the next section.

Saving to PC

To save the edited layout to a PC, click **Save** in the File section at the top left of the main screen, name the file and save. The saved file can be recalled by the **Open** in the same section.

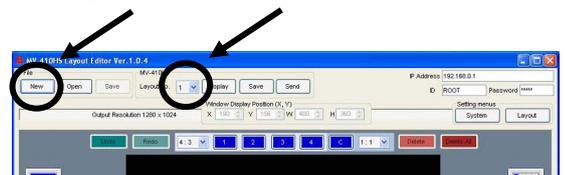


13. Creating New Layout

You can select output resolution for a new layout.

- 1) To create a new layout in offline mode, click **New** in **File** at the top of the main screen.

To create a new layout by monitoring the layout on the monitor, select a layout number from **1 to 4** and click **New** in **File** at the top of the main screen.



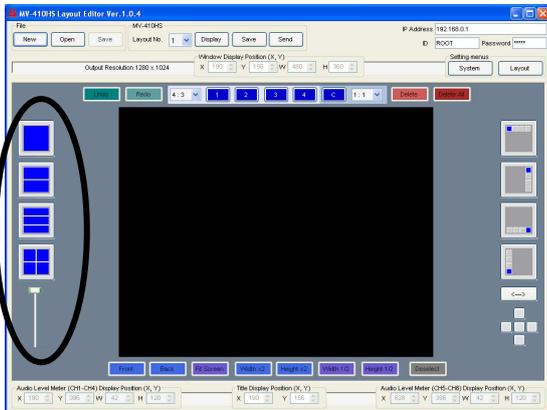
- 2) If a layout number is selected, the message "Do you want to save changes to the layout before closing?" appears. Click **No**. Then the layout is closed. If there is any layout opened when you click **New**, the same message appears. If you want to keep the layout, save it as described in the previous section.
- 3) **Output Resolution** dialog box appears. Select a value and click **OK**.



The editing procedures are the same as described in the previous sections. Save the layout as well.

14. Using Preset Patterns

MV-410HS Layout Editor has several preset patterns. The preset patterns can be easily recalled by the icons at the left of the layout editing area.



Clicking any one of full screen, two split screen, three split screen, and quad screen icons will display a layout in the layout editing area. Every screen icon except full screen icon has multiple patterns. Every click on the icon that has multiple patterns will show a different pattern. The displayed pattern can also be changed by the lever beneath the split screen icons. The number of installed patterns are as below;

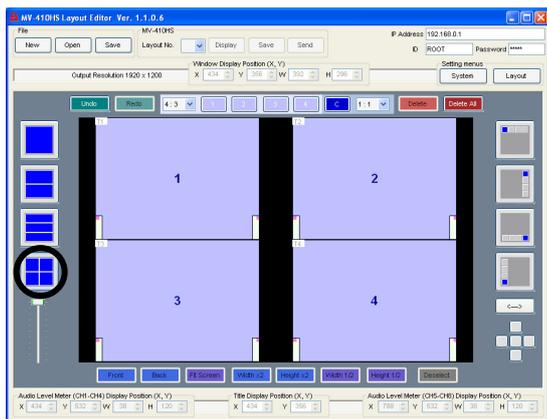
- 2 split screen: 2
- 3 split screen: 6
- Quad screen: 11

15. Making Layouts

4 Same Size Windows (with Title, Border and out-of-window Level meters)

Displaying four same size windows.

- 1) Click the **Select Preset Pattern** icon to display four same size windows.



- 2) Click **Display** at the right side of the **Layout No.** box to display the monitor screen in the same layout.

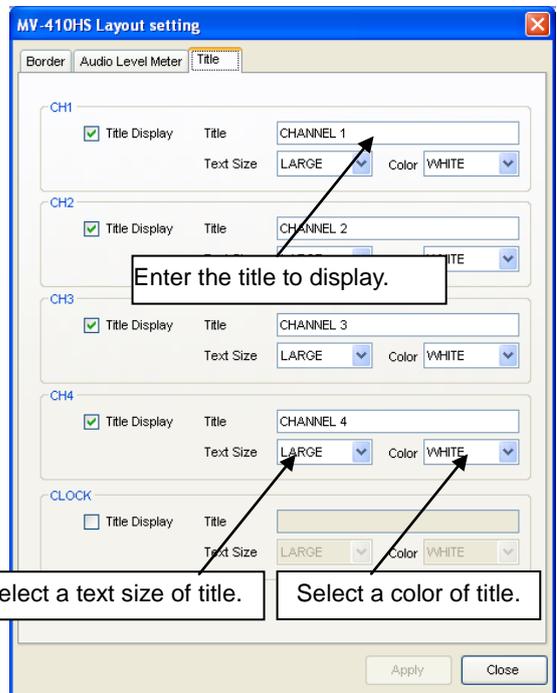


Displaying titles.

- 3) Click **Layout** at the top right of the main screen to open **Layout Setting** dialog box.



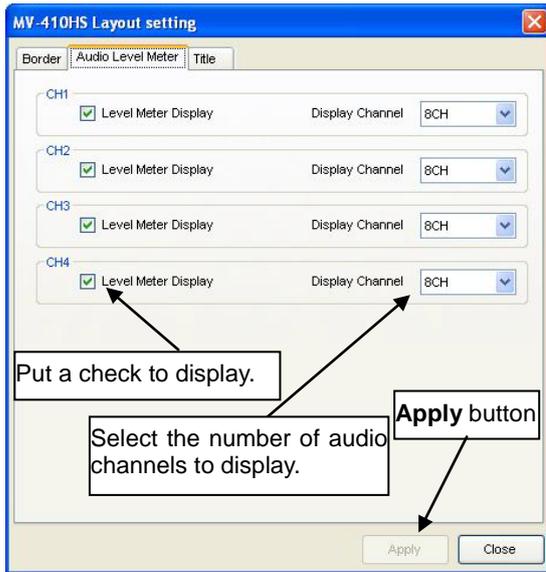
- 4) Open the **Title** page.



- 5) Select the **Title Display** check box, enter the title to display, and select the text size and color for each channel.
- 6) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.

Displaying Audio Level Meters.

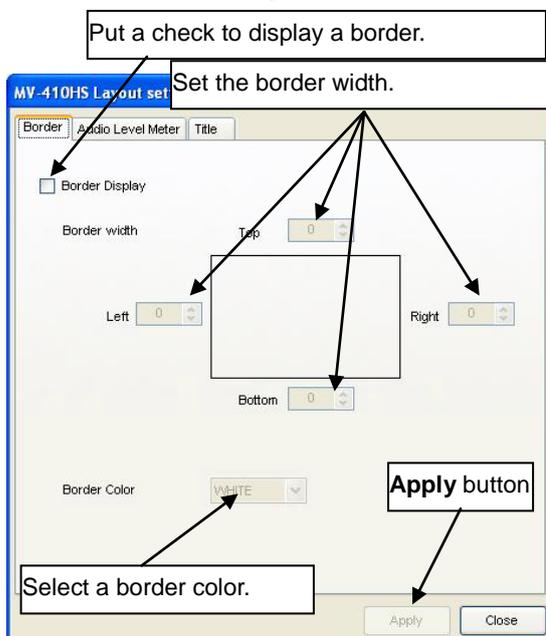
- 7) Open the **Audio Level Meter** page.



- 8) Select the **Level Meter Display** check box for each channel. Set the number of audio channels to display.
- 9) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.

Displaying Borders.

- 10) Open the **Border** page.



- 11) Select the **Border Display** check box, select a border color and set the width for each top, bottom, right and left border.
- 12) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.

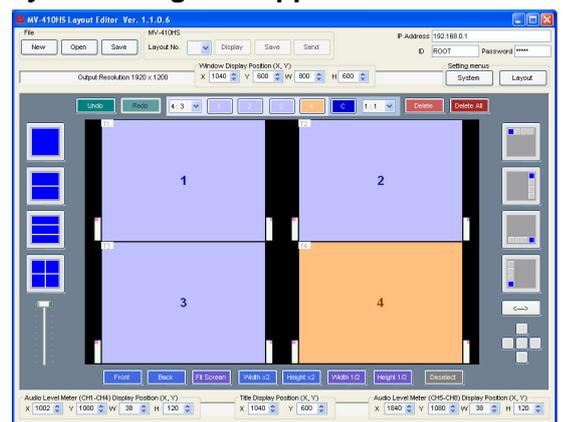
- 13) Click **Close** next to the **Apply** to return to the main screen.

Moving Audio Level Meters out of image area.

- 14) In the main screen select the window to move the audio level meter of by the mouse, and choose **Level Meter > (CH1-CH4) Set Position** from the right-click menu. The audio level meters move along with the cursor as you drag the mouse. Move the cursor to the desired position and click the left mouse button. Do the same for the **(CH5-CH8)**.
- 15) To finely adjust the position, use the spin button arrows (1004) in the **X** and **Y** box under the layout editing area.
- 16) Click **Save** to save the settings to the MV-410HS to avoid the settings to be lost when the MV-410HS is powered off.



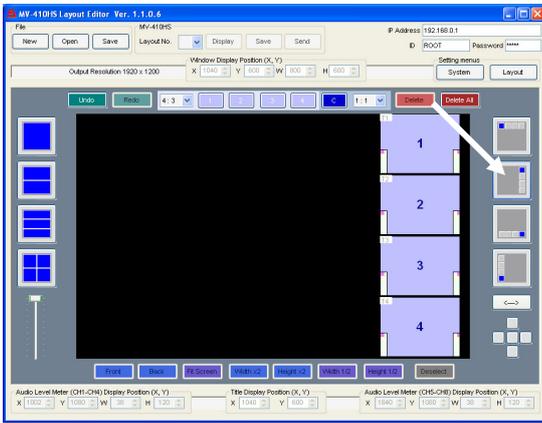
The layout editing area appears as below.



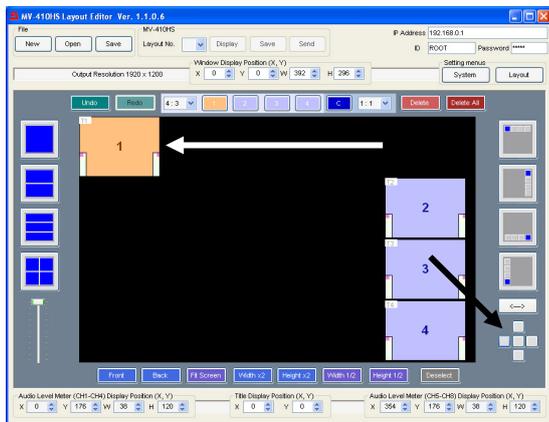
1+3 Split Screen (with Title, Border and Level meters)

Displaying four 1/16 size windows.

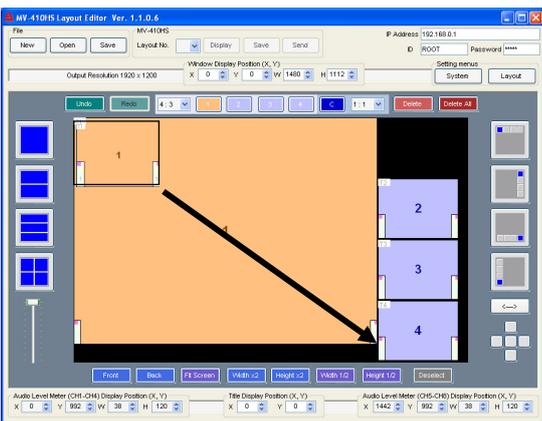
- 1) Click **Add 1/16 size window** icon at the right of the main screen four times.



- 2) Select the window1 by the mouse, and click the left button of 5 buttons under the Add 1/16 size windows icons.



- 3) Put the mouse cursor at the bottom right corner of the window1, and drag to enlarge the window to the desired size.

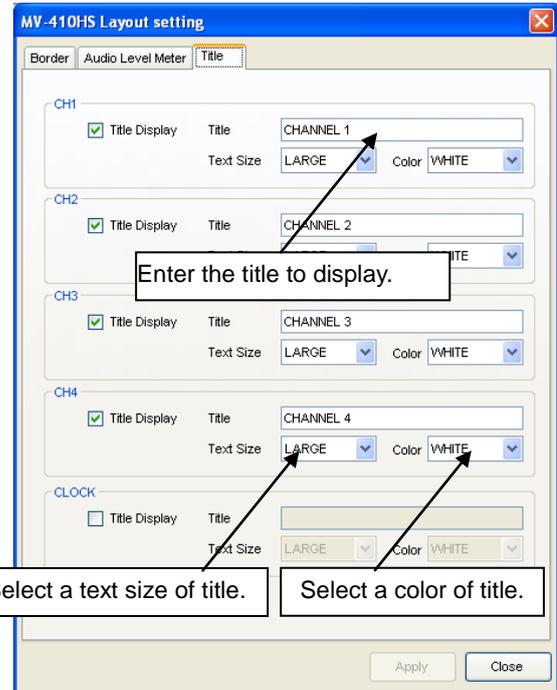


Displaying titles.

- 4) Click **Layout** at the top right of the main screen to open **Layout Setting** dialog box.



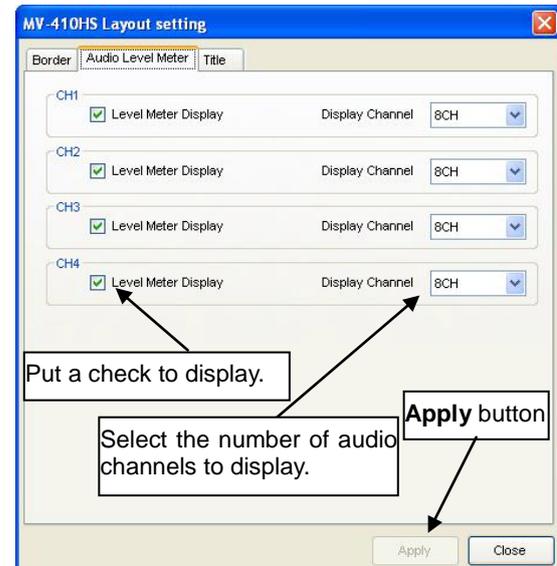
- 5) Open the **Title** page.



- 6) Select the **Title Display** check box, enter the title you wish to display, and select the text size and color for each channel.
- 7) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.

Displaying Audio Level Meters.

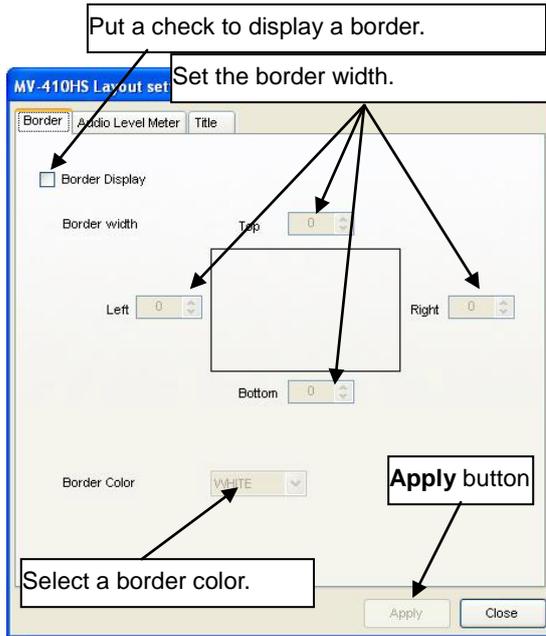
- 8) Open the **Audio Level Meter** page.



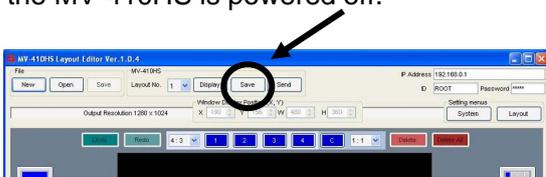
- 9) Select the **Level Meter Display** check box for each channel. Set the number of audio channels to display.
- 10) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.

Displaying Borders.

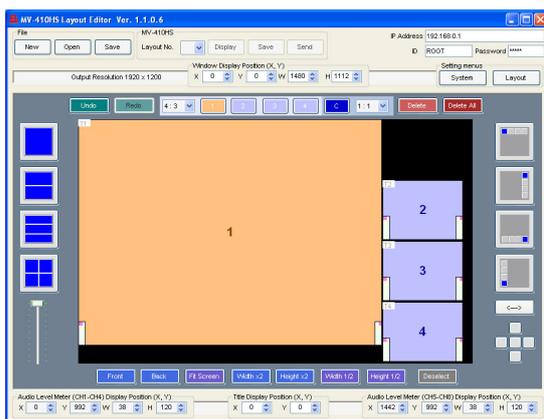
11) Open the **Border** page.



- 12) Select the **Border Display** check box, select a border color and set the width for each top, bottom, right and left border.
- 13) Click **Apply** at the bottom right of the dialog box to apply the settings to the layout.
- 14) Click **Close** next to the **Apply** to return to the main screen.
- 15) Click **Save** to save the settings to the MV-410HS to avoid the settings to be lost when the MV-410HS is powered off.



The layout editing area appears as below.





FOR-A COMPANY LIMITED

Head Office 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Overseas Division Phone: +81(0)3-3446-3936, Fax: +81(0)3-3446-1470
Japan Branch Offices Osaka/Okinawa/Fukuoka/Hiroshima/Nagoya/Sendai/Sapporo
R&D/Production Sakura Center/Sapporo Center

FOR-A America Corporate Office

11155 Knott Ave., Suite G&H, Cypress, CA 90630, USA
Phone: +1-714-894-3311 Fax: +1-714-894-5399

FOR-A America East Coast Office

2 Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee, NJ 07024, USA
Phone: +1-201-944-1120 Fax : +1-201-944-1132

FOR-A America Distribution & Service Center

2400 N.E. Waldo Road, Gainesville, FL 32609, USA
Phone: +1-352-371-1505 Fax: +1-352-378-5320

FOR-A Corporation of Canada

346A Queen Street West, Toronto, Ontario M5V 2A2, Canada
Phone: +1-416-977-0343 Fax: +1-416-977-0657

FOR-A Latin America & the Caribbean

5200 Blue Lagoon Drive, Suite 760, Miami, FL 33126, USA
Phone: +1-305-931-1700 Fax: +1-305-264-7890

FOR-A UK Limited

UNIT C71, Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, UK
Phone: +44(0)20-8391-7979 Fax: +44(0)20-8391-7978

FOR-A Italia S.r.l.

Via Volturmo 37, 20047 Brugherio MB, Italy
Phone: +39-039-881-086/103 Fax: +39-039-878-140

FOR-A Corporation of Korea

Rm. 1007 InnoPlex, 13 Yangpyeong-dong 3-ga, Yeongdeungpo-gu, Seoul 150-103, Korea
Phone: +82(0)2-2637-0761 Fax: +82(0)2-2637-0760

FOR-A China Limited

708B Huateng Bldg., No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Phone: +86(0)10-8721-6023 Fax: +86(0)10-8721-6033