Master Co., Ltd

Programmable Video Pattern Generator

User Manual

MSPG-8100S

HDMI 2.0 & DISPLAYPORT 1.2 with HDCP 2.2

2022.1.14

Edition 6 (Eng)

MSPG-8100S

1. Chapter One

Safety Notice

1.1 Foreword

1.2 Safety Precautions

1.3 Notice for Safe Usage

1.4 Accessories Packed with the MSPG-8100S

Chapter 1.Safety Notice

1.1 Foreword

- Thank you for purchasing the MSPG-8100S video signal generator.
- This manual provides details on how to operate the MSPG-8100S and the precautions to be needed when doing so.
- Take the time to read through this manual before attempting to operate the MSPG-8100S.
- After reading this manual, keep it in a safe place for your future reference.

1.2 Safety precautions

- Improper handling may lead to accidents.
- We recommended you to read through following warning, precaution and information's without fail before attempting to operate the MSPG-8100S.
- These instructions to ensure that you will operate the MSPG-8100S properly.
- Don't install signal generator in dusty environment.
- Attention before connect between video signal generator and display instrument.
  - ✓ Make sure to connect ground line to FG video signal generator.
  - ✓ Ground connection plays an important role in protecting internal IC's and elements of video signal generator.
  - ✓ Take special care when connecting the generator to display unit.
  - ✓ If these are not connect together, the generator may fail.
- Setup time for stable system
  - ✓ System needs about 5 minutes setup time for measuring precise data.
- Fuse re-placement: The fuse is a F3.15AL 250V "F" type.

1.3 Notice for safe usage

- If the equipment is used in a manner not specified by the manufacture, the protection provided by the equipment may be impaired.

1.3.1 AC Power

- ✓ Turn off power of signal generator when inserting a power plug in a socket.
- ✓ Don't use harmed power cable and loose socket.
- ✓ Separate power cable from a heating apparatus.
- ✓ Please, use power switch if you want to turn off signal generator.
- ✓ Use the three-wire power supply code.
- ✓ If you use unlicensed Cable, the video signal generator can cause electric

shock.

- ✓ Whenever the AC power line voltage dips below the minimum specified, this message is displayed and the generator's microprocessor is halted.
- ✓ If you see this message during normal operation, it probably indicates that a power sag or short duration dropout has occurred. To clear this condition, cycle the power going to the generator.
- ✓ If you still have a problem, you may also want to check to see that the line voltage selector(next to the power inlet) is set correctly for the power being fed into the generator.

1.3.2 The Power Cord

- ✓ Always take hold of the molded part of the plug when disconnecting the power cord.
- ✓ Use permissible AC Power and Connection Cable. If you use unlicensed Cable, the video signal generator can cause electric shock.
- ✓ Do not use force to bend the power cord or bunch it up for use. Doing so may cause fire.
- ✓ Do not place heavy objects on top of the power cord. Doing so may damage the cord causing a fire or electrical shock.

1.3.2 The Generator

- ✓ Do not place the video signal generator at the ferromagnetic body area. The generator can cause electric shock as irregular working.
- ✓ Do not subject the generator to impact or throw it. Doing so may cause the generator to malfunction, explode or generate abnormally high levels of heat, possibly resulting in a fire.
- ✓ If there is a thunderstorm while the generator is being used outdoors, immediately turn off its power, disconnect the power cable from the main unit, and move the generator to a safe place.
- ✓ Do not place the signal generator long time in a car on hot day. It is able to cause characteristic decrease, function inferiority and shape variation of outside parts. If you place the condition continuously, it can case electric shock and fire as short circuit or insulation.
- ✓ When you not using the video signal generator for a long time, disconnect AC Power plug from AC line outlet for safe consideration.
- ✓ Do clean the FAN regularly.
- ✓ Wipe the cabinet with a dry cloth to eliminate dust.
- ✓ Be clean with the cleaner. Do not use benzene. If you use the benzene, the

video signal generator is changed shape variation of outside parts and the works is erased.

- ✓ This generator contains some high-voltage parts. If you touch them, you may receive an electric shock and burn yourself so do not attempt to disassemble, repair or remodel the generator.
- ✓ When occurring the malfunction or breakdown, don't disassemble the video signal generator by yourself. Contact our company promptly.
- ✓ Set the video signal generator more 10cm from wall. It can obstruct the flowing of air. And it causes fire because high temperature.

1.3.3 Installation

- ✓ Install the generator in a stable location. Do not stand it on either of its side panels. Doing so may cause the generator's temperature to rise due to heat generation, possibly resulting in malfunctioning.
- ✓ Don't install signal generator vertically.
- ✓ Install signal generator at flat place.
- ✓ Do not spill liquids inside the generator or drop inflammable objects into it. Operating the generator under these conditions may cause a fire, electrical shock or malfunctioning.

1.3.4 International Electrical Symbols

~	AC : Alternating Current
⏚	Earth Grounding
CE	Conforms to European Union directives
HDMI	High Definition Multimedia Interface
DVI	Digital Visual Interface
RoHS	Directive on Restriction of the use of certain Hazardous Substances in EEE

In the unlikely event that trouble or malfunctioning should occur, first disconnect the power cable, and then contact your dealer or Master technical sales department.

Tel : + 82-55-297-8880 / Fax : + 82-55-256-7388

E-mail : webmaster@Ltdmaster.com

www.Ltdmaster.com

1.4 Accessories packed with the MSPG-8100S

- MSPG-8100S: Programmable Video Signal Generator

- User Manual x 1
- Cable(It can be change without notice)
  - ✓ Power Cord x 1
  - ✓ Displayport cable x 1
  - ✓ Analog cable(15P D-Sub) x 1
  - ✓ S Video cable x 1
  - ✓ RCA 3P cable x 1
  - ✓ HDMI cable x 1
  - ✓ DVI cable x 1
  - ✓ RCA gender x 3
  - ✓ RS-232 cable x 1

- MSRC-008L option.

CAUTION

MSPG-8100S have to use certified HDMI2.0 cable. Or use built-in cable.

MSPG-8100S

2. Chapter Two

Concerning the MSPG-8100S

2.1 MSPG-8100S Overview

2.2 MSPG-8100SFeatures

2.3 MSPG-8100S Specifications

2.4 Panel parts and their Functions

Chapter 2.Concerning the MSPG-8100S

2.1 MSPG-8100S Overview

- HDMI 2.0Ver 4Port : 4096x2160@60Hz(594Mhz)
- Displayport 1.2Ver 1Port : 4096x2160@60Hz(594Mhz)
- HDMI &Displayport HDCP 1.4 & 2.2 support
- Apply to Touch Screen.
- Easy updated with USB Memory Stick.
- CEC Function Support, Deep Color &xvYCC Support
- HDMI 3D Mode (Side By Side Half/Full, Frame Packing…ETC)
- TV Function (Teletext, V-Chip, Closed Caption)

MSPG-8100S (side)

MSPG-8100S (front)

MSPG-8100S (rear)

2.2 Feature

- HDMI 2.0Ver. 4K x 2K@60Hz & HDCP 2.2

- DISPLAYPORT 1.2Ver. 4K x 2K@60Hz& HDCP 2.2.

- Front Touch Screen.
  - ✓ All of function can be control with Touch Screen.

- Easy Update with USB Memory Stick.
  - ✓ Easy update with USB Memory Stick.
    (Image, Timing data, Pattern data, Function data, Scan data and Audio data)

- Possible to adjust and inspect of high-resolution monitors.
  - ✓ Analog Monitor: 8~300MHz Pixel Frequency
  - ✓ Digital Single Monitor: 25~165MHz Pixel Frequency
  - ✓ Digital Dual Monitor: 25~300MHz Pixel Frequency
  - ✓ Max Image :2048 X 2048 bit map size X 50 Page possible to save
    Standard loading time 0.3/sec(at 1080P/60Hz)

- Analog/Digital signal simultaneous output.
  - ✓ BNC, D15P D-SUB, DVI-I and HDMI simultaneous output.

- Certain abundant preset testing patterns and particular patterns.
  - ✓ MSPG-8100S has Initial patterns(Include Character, Color Bar, Cross Hatch, Grayscale, Combination so on, kinds of 500 pattern), and particular patterns(Include Image, Image Moving Pattern, so on) all of these patterns can be edit by user.

- Possible to make scan and function group with model and pattern.
  - ✓ Editing any model(timing) and pattern, using the function Group(1~99), and Scan Group(1~99)

- Digital Output.
  - ✓ It can output the Digital Single/Dual output , which includes HDCP(High-Bandwidth Digital Content Protection) function.

- D-TV Signal Output.
  - ✓ 1080p, 1080i, 720p, 483p, 480i, 576p, 576i, Etc. ATSCandDVBformat.

- NTSC, PAL, SECAM Output
  - ✓ NTSC-M, NTSC-J, NTSC-4.43
  - ✓ PAL-B/D/G/H/I, PAL-M, PAL-60
  - ✓ SECAM

- Internal Audio Output
  - ✓ Mono & Fix & Swap & Sweep & Up & Down Mode

- S/PDIF Input
  - ✓ Input the Digital Audio signal, and then output it through HDMI port.

- Optical Audio signal Input/Output
  - ✓ Input the Optical Audio signal, and then output it through HDMI port.

2.3 Specifications

Displayport	Display Size	4096 X 2160 / 60hz (594MHz)
	Pixel Clock	Max.600MHz
	Timing Format	VESA Displayport Standard Version 1.2a
	Output Format	RGB444, YCbCr444(8, 10, 12 bit) YCbCr422(8, 10, 12 bit)
	HDCP	Support HDCP 1.4 and 2.2 Version
	Compliant	Displayport 1.2a Version
	Audio	I2S, 48KHz, 2 Channels
Analog Output	Display Size	4096 X 4096
	Pixel Clock	8~300MHz
	Video Level	R, G, B (Load 75 ohms, 0~1.0V Programmable)
	Output Connector	15P D-Sub
	Separate Sync	HS, VS(3.0V~5.5Vp-p Programmable) Inherited Sync Level is 4.8Vp-p
DVIOutput	Pixel Clock	* Dual Link: 25~330MHz
	Transfer Type	* Single TMDS 24 Bit Input Mode
		* Dual TMDS 12 Bit Input Mode
	HDCP	Support Single & Dual
	Compliant	DVI 1.0 Support
	Video Signal Type	RGB
	Output Connector	DVI-D (DVI 1Ports, Single/Dual)
CVBS Output	Output Mode	* NTSC M,J (3.58MHz)
		* NTSC443 (4.4MHz)
		* PAL B, D, G, H, I (4.434MHz)
		* SECAM (For=4.406MHz / For=4.25MHz)
	Subcarrier Stability	25ppm (±25Hz / 1MHz)
	Video Output	Composite (BNC), S-Video
		* Signal: CVBS (Connector: BNC)
		* Signal: Y/C (Connector: 4Pin-Mini Din)
	Closed Caption (NTSC)	C1, C2, C3, C4 / T1, T2, T3,T4
	V-Chip	* MPAA Rating: G, PG, PG-13, R, NC-17, X
		* FCC Rating: TV-Y, TV-Y7, TV-G, TV-PG, TV-14, TV-MA
	Teletext (PAL)	Teletext System B Level 1, 1.5
D-TV Output	Signal	Y, Pb, Pr
	Connector	BNC
	Time	480i/p, 576i/p, 720p, 1080i/p for ATSC and DVB Format

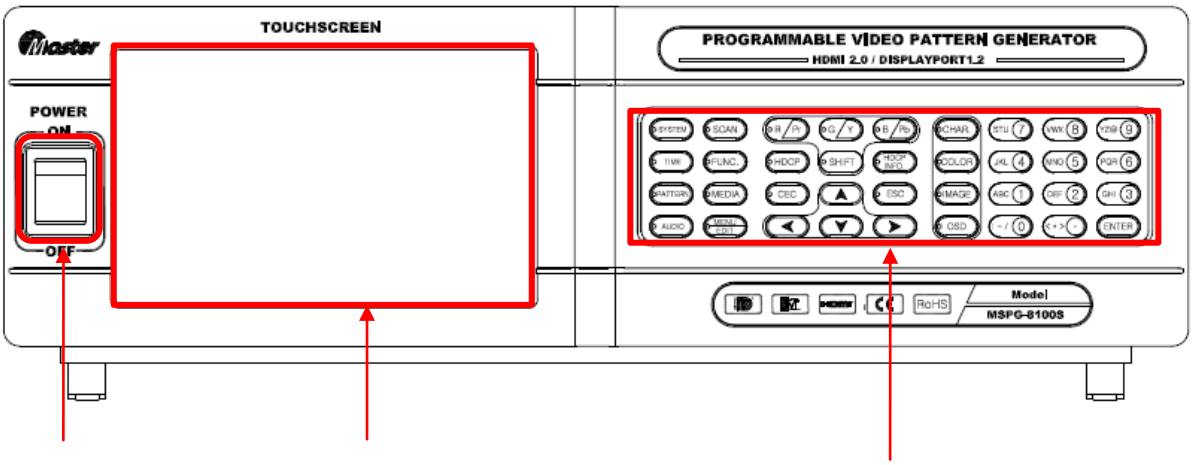
HDMI Video Output	Compliant	HDMI 2.0 Version
	Pixel Rate Range	25~165MHz (TMDS Clock : 25~225MHz) 4Kx2K @60Hz (Dot Clock : 594MHz)
	Standard Spec	EIA/CEA-861F
	Video Signal Type	RGB, YCbCr
	Pixel Encoding& Data bit of RGB &YCbCr	4K@30Hz_RGB444(8, 10, 12 bit), YCbCr444(8, 10, 12 bit), YCbCr422(8, 10, 12 bit)
		4K@60Hz_RGB444(8bit only), YCbCr444(8bit only), YCbCr422(8bit only)
	Color Space	RGB, BT.601, BT.709, BT.2020, xvYCC-601, xvYCC-709
	HDCP	Support HDCP 1.4 and 2.2 Version
	Output Connector	Type A, HDMI 4 Port (ARC 4Port, 4K x 2K @60Hz 4Port)
	Note	Audio Return Channel (ARC) 4Port, CEC Support
		3D Video Formats (Frame Packing, Side by Side, Top & Bottom, Field Alternative)
		4K x 2K @60Hz Video formats 4Port
SCART Output	Signal Mode	RF Input Mode, CVBS Mode, RGB Mode, Y/C Mode
	Connector	SCART 21Pin
Audio(Digital) Output	Sample Rate	32 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz
	Number of Channel	8 Channels
	Bit per Sample	24
	Waveform	Sine Wave
	Frequency Range	20Hz to 24KHz / 5Hz step
	Level Range	0dB to -110dB/ 0.5dB step
	External Audio Input	Optical, Coaxial
	Special Control Mode	Fix, Sweep, Swap, Optical, Mute
Audio (Analog) Output	Frequency Range	20Hz to 24KHz / 5Hz step
	Level Range	0mVrms to 900mVrms / 5mVrms, 0~18dB
	Waveform	Sine Wave
	Number of Channel	2 Channels
	Connector	RCA
	Special Control Mode	Fix, Sweep, Swap, Mute
Scan & Function Group	Scan Storage	99 Group (1 Group; 24 Step)
	Function Storage	99 Group (1 Group; 32 Step)
Standard Output	Standard Output Range	18.0dB (400mVrms)
Data Storage Device	Timing	999 Timing (User: 1~500, Default: 501~999)
	Pattern	999 Pattern (User: 1~500, Default: 501~999)

General Specification	Power Consumption	AC 100~240VAC, 50/60Hz Auto Switch
	Operating Conditions	* Temperature : 0~40℃
		* 80% Humidity, Non-condensing
	Dimension (WXDXH)	440 X 350 X 145mm, Weight: 6Kg
Others	Max Image	4096 X 4096 Bit Map Image Size
	User Interface	* Front Panel (6.4 inch / Graphic LCD) Key Pad
		* Possible to Timing Parameter Edit
		* USB, RS-232C

* All specifications are subject to change without any notice.

2.4 Panel parts and their functions

2.4.1Front panel of MSPG-8100S



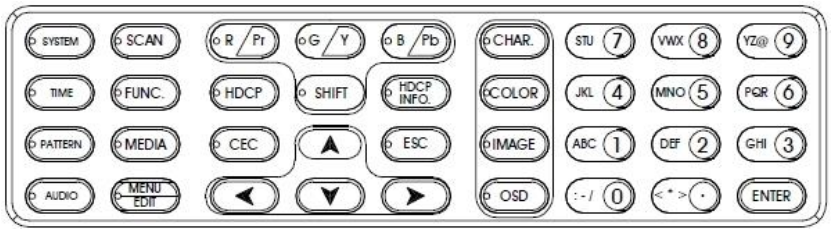
①Power Switch ②Display LED with Touch Screen ③Input Buttons

①Power Switch: Power On/Off switch.

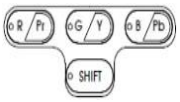
②Display LED with Touch Screen: Display all of data information with touchscreen.

③Input Buttons: Function and value input buttons.

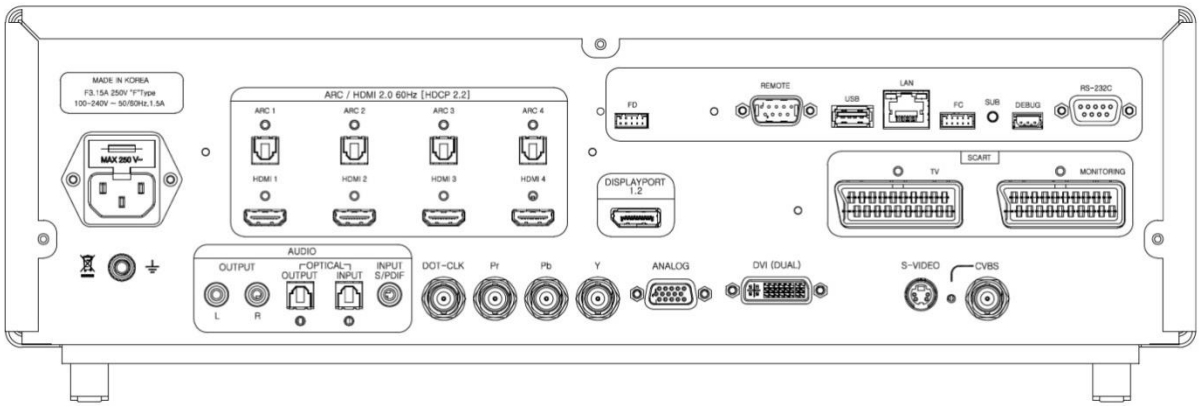
2.4.2 Input buttons of MSPG-8100S



SYSTEM	① Buzzer On/Off setting. ② EDID Check Option [Pass=0, Check=1] : EDID Check/Pass setting. ③ Sync Output Level Setting : 3000~5500mV / 100mV step setting. ④ UARTs Setting Port [0=PC, 1=Ext1, 2=Ext2] :UART'sport setting. ⑤ IP [Disable=0, Enable=1] : Default IP Setting for disable or enable. ⑥ Calibrate Configuration :setting for Touch Screen calibrate. ⑦ PassWD Input for NEW PASS WD :Change password setting. ⑧ PassWD Check [Once=0, Always=1, None=2] :Password confirm frequency setting. ⑨ Time Edit Change [None=0, Continue=1] : Time edit Enter key option. (None=no needs Enter key, Continue=needs Enter key) ⑩ Time Edit Reference [Freq.=0, Total=1] : Time edit reference value setting.(Frequency or Total) ⑪ Pattern Edit Reference [Ratio=0, Dot=1] : Pattern edit reference value setting.(Ratio or Dot) ⑫ Enter Key Option [Need=0, Auto=1] :When changing Time or Pattern, 'Need=0' is running with enter key, 'Auto=1' is running without enter key. ⑬ HDCP Display [Normal=0, SAM=1] : 'Normal=0' is HDCP pass OSD, 'SAM=1' is HDCP OK OSD ⑭ LG 3D Time Data [Normal=0, LG 3D=1] : Separate option specification
TIME	This key is to call all timing.
PATTERN	This key is to call all pattern.
AUDIO	This key is to call all audio pattern..
SCAN	This key can call the set Scan data (Timing & Pattern) to display auto-progression. Timing and Pattern will change automatically.
FUNC	This key can call Function Group(F1~F30) that is saved as edit the Function(Timing and Pattern).
MEDIA	Not Connected for MSPG-8100S. (Extra key for Multimedia oranother function)
MENU EDIT	Edit key for Pattern, Time or Audio.

	[LEVEL ADJUSTMENT] Level adjust for Brightness or Contrast. When you push ***each or together*** R(red), G(green) and B(blue) buttons, the R,G and B Level value will be change with up/down key.
	When HDCP LED on, running HDCP function. When HDCP LED button is on, you are not able to edit. If you need to edit, you should turn off the HDCP button.
	This key is for checking the result, after inspecting HDCP certificate. You can see the information about AKSv, BKSv, Ti, Ri and HDCP pass on the display. When you push this button it should change below procedure. 4Kx2K_1→4Kx2K_2→4Kx2K_3→4Kx2K_4→DVI→DISPLAYPORT→Non HDCP information Display
	This is only HDMI functionality.(Output only) If you On this button ready for HDMI, CEC connection, else disconnect the HDMI, CEC.
	Moving cursor in the LCD display(Touch screen) for selecting list(item), or moving the pattern in all direction.
	Moving and Flicker function key For Moving pattern ✓ All keys are 'On' condition, push the direction key, character, color, graphic and OSD will be moving or flicker. ✓ The moving function are working, when you off it and 'On' the each key with push direction key. For Flicker pattern ✓ Shift key 'On' condition, if you push 'On' each key, flicker function are operating. ✓ Setting flicker On time with Top/Bottom key or touch screen. ✓ Setting flicker Off time with Left/Right key or touch screen.
	The key for inputting number, character and special character. Or you can use same function as using touch screen's input keys.

2.4.3 Description of rear port.



HDMI ARC 1~4	***Audio Return Channel(ARC) support***
HDMI 4Kx2K 1~4	***4Kx2K @ 60Hz Video Formats support***
SPDIF INPUT	Audio input port for HDMI
OPTICAL INPUT/OUTPUT	Optical audio signal input/output port. (HDMI External Audio In/Output)
AUDIO L/R	Internal analog audio signal output port. ✓ R Frequency : 20Hz~20,000Hz ✓ L Frequency : 20Hz~20,000Hz
DISPLAYPORT	High-Speed interface signal, which is transmit Digital audio & video signal compliance with VESA standard.
DVI(DUAL)	Digital DVI(Dual) output.
ANALOG	15P D-Sub Connector. Output of Analog video signal R,G,B,Hs and Vs.
Y. Pb. Pr	Y, Pb, Pr signal output for D-TV
SCART	To check SCART Input / Output of PAL TV
DOT-CLK	Dot frequency port. Can be used for calibration and inspection
CVBS, S-VIDEO	CVBS(composite)/Y signal output port.
RS-232C	RS-232C communication interface port.
REMOTE	Remote controller port.(separate sale)
LAN,USB,DEBURG,FR,FC	All of main program, FPGA, USB and Etc. download port or de-burg port

MSPG-8100S

3. Chapter Three

Each signal parameter and output format

3.1 Timing parameters for each signal

3.2 A summary concept of TV signal

3.3 A summary concept of HDMI signal

3.4 A summary concept of DVI signal

3.5 A summary concept of D-TV signal

3.6 A summary concept of DISPLAYPORT signal

3.7 A summary concept of SCART signal

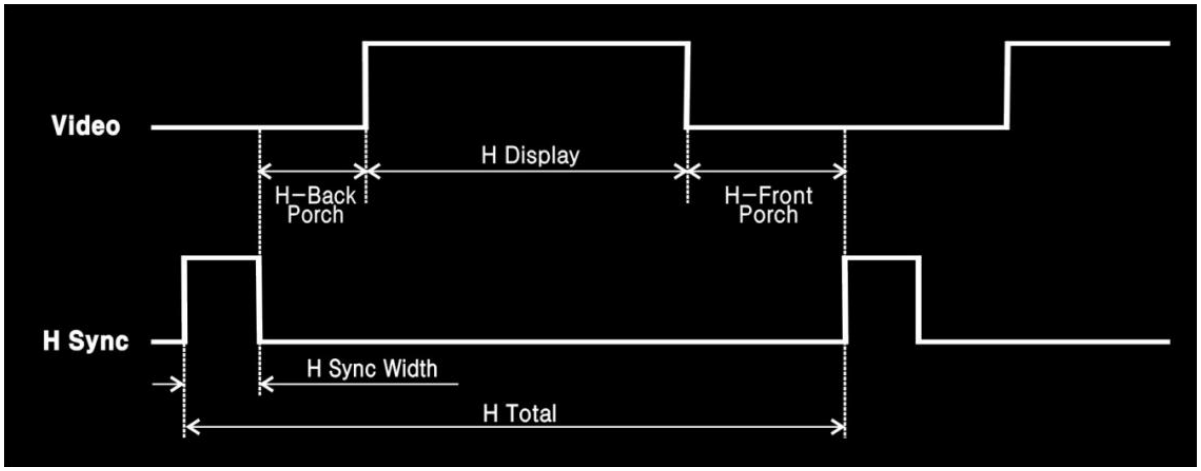
3.1 Timing Parameters for each signal

3.1.1 Dot Frequency

The screen is composed of column and row of small spots, and these small spots is called by pixels. Dot frequency means the scanning speed of a pixel, and it's Measurement unit is MHz.

3.1.2 Horizontal Parameter

When making changes with the horizontal timing data, the parameters, which can be set and the names of the parameters are indicated below.



1) H-Freq (horizontal frequency)
   The scanning speed of horizontal one line, and the unit is KHz.
2) Htd (horizontal total dot)
   Total Number of horizontal dots of horizontal one line.
3) Hdisp (horizontal display period)
   Total Number of horizontal dots in one horizontal line except horizontal front porch and back porch.
4) Hfp (horizontal front porch)
   Begin from Video off section to HS Width (Right side except picture area of horizontal total dot).
5) Hbp (horizontal front porch)
   Begin from HS Width to the end of Video on section (Left side except picture area of horizontal total dot).
6) Hsw (horizontal sync width)
   Horizontal recurrence Period.

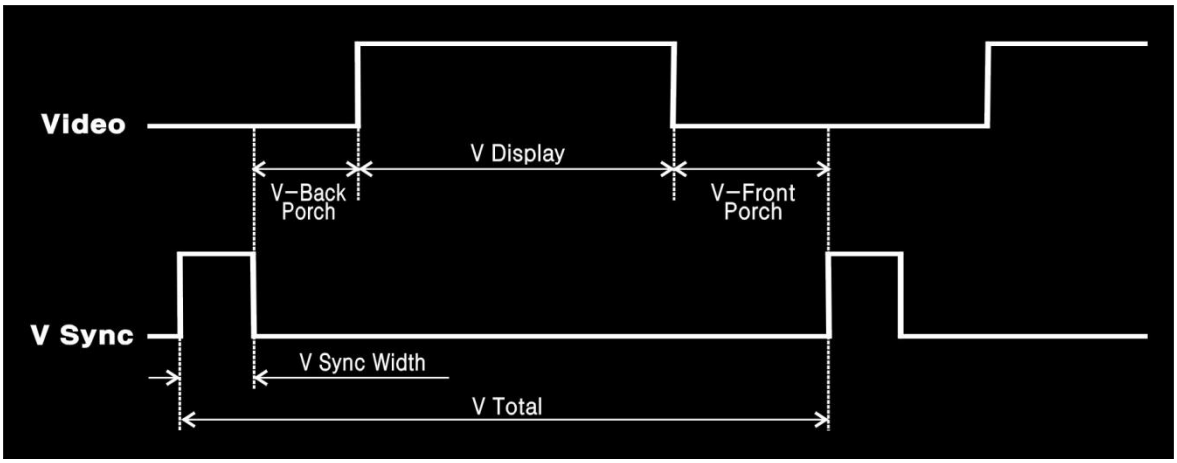
*** NOTICE ***

▪Hbp (horizontal back porch) is inputted automatically.

▪Hbp (Horizontal Back Porch) = Htd - Hdisp - Hfp–Hsw

3.1.3 Vertical Parameter

When making changes with the Vertical timing data, the parameters, which can be set and the names of the parameters are indicated below.



1) V-Freq(vertical frequency)
   The scanning speed of one frame, and the unit is hz.
2) Vtl (Vertical Total Line)
   Total Number of vertical dots of vertical one line.
3) Vdisp (vertical display period)
   Total Number of horizontal lines in one frame except vertical front porch and back porch.
4) Vfp (Vertical Front Porch)
   Begin from Video off section to VS Width (Bottom except picture area of one frame).
5) Vbp : (Vertical Back Porch)
   Begin from VS Width to the end of Video on section (Top except picture area of one frame).
6) Vsw (vertical sync width)
   Vertical recurrence period.

*** NOTICE ***

▪Vbp (vertical back porch) is inputted automatically.

▪Vbp (Vertical Back Porch) = Vtl - Vdisp - Vfp - Vsw

3.1.4 Timing parameters (EX : 1920x1080p@60Hz_EIA-861)

1) Dot F = Hdisp (Dot) ÷ Hdisp (Time/uS)
   ex) 1920 ÷ 12.929 = 148.500

2) Dot F = Htd × Hfreq(KHz)
   ex) 2200 × 67.500 = 148,500

3) Htd = Dot F ÷ Hfreq
   ex) 148.500Mhz ÷ 67.500Khz = 2200

4) Vtl = Hfreq ÷ Vfreq
   ex) 67.500KHz ÷ 60.000Hz = 1125

*** NOTICE ***

▪The parameter diagram depends on the value of dot frequency.

▪The vertical parameter diagram is the same as horizontal parameter diagram.

3.1.5 Data chart Ex)1920x1080 60Hz

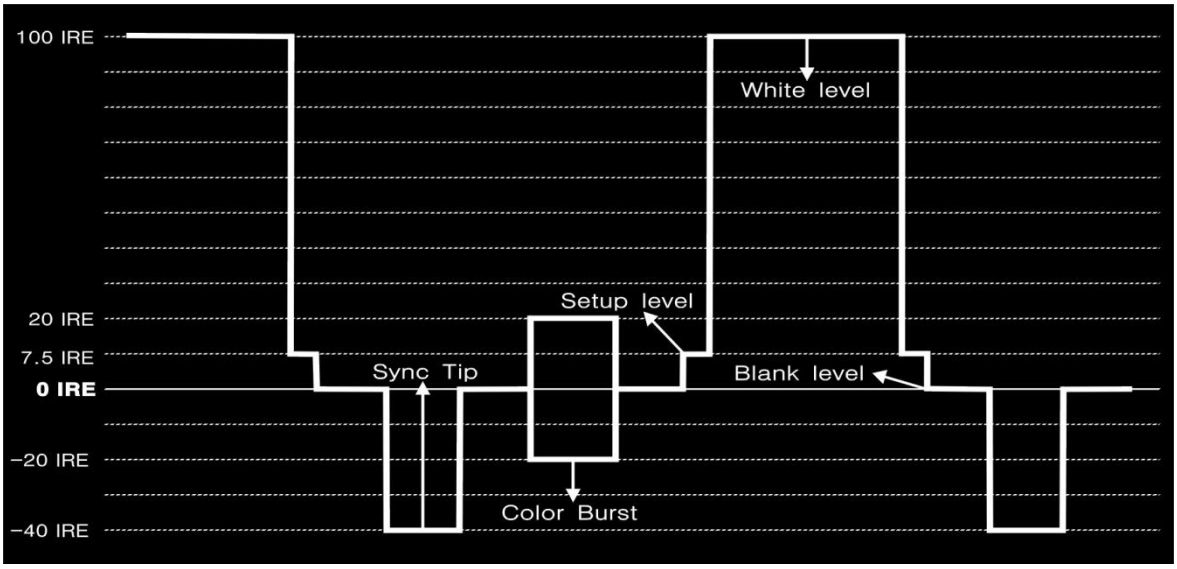
Timing List	Time	Dot & Line	Frequency
Dot - Frequency	-	-	148.500MHz
HS - Frequency	-	-	67.500KHz
VS - Frequency	-	-	60.000Hz
Htd	14.815	2200	-
Hdisp	12.929	1920	-
Hfp	0.593	88	-
Hsw	0.296	44	-
Vtl	16.667	1125	-
Vdisp	16.000	1080	-
Vfp	0.059	4	-
Vsw	0.074	5	-

3.2 A Summary concept of TV signal

1) CVBS (Composite) signal

▪TV signal has such as CVBS, Y and C signal, but in this content below it explains about CVBS signal of NTSC.

2) TV Signal



3) EIA RS-170A Standard timing

MODE	NTSC	PAL	SECAM
Scan lines (H)	525	625	625
Line frequency (KHz)	15.734	15.625	15.625
Field frequency (Hz)	59.94	50	50
Sync width (us)	4.7	44.7	44.7
VS Sync (H)	3	2.5	2.5
Blanking Time (us)	10.9	12.0	12.0
VS BI (H)	20	25	25
Equalizing pulse (us)	2.3	2.35	2.35
HS Front Porch (us)	1.5	1.5	1.5
VS Front Porch (H)	3	2.5	2.5
Color Burst (us)	2.5 (9 cycle)	2.25 (10 cycle)	
Color burst frequency(MHz)	3.579545	4.433618	For=4.40625 Fob=4.25

3.3A Summary concept of HDMI signal

1) Definition

▪HDMI(High Definition Multimedia Interface) is new upgrade interface to support a single cable, as well as signal information, too.

▪It can operate as TMDS protocol.

▪It supports audio and video(both).

2) Features

▪Pixel Bandwidth : 25~594MHz(4K x 2K)

▪Connector Type : HDMI Type A

▪Video Signal Type : RGB &YCbCr

▪Video Sampling Mode :RGB 444,YCbCr(444/ 422 /420)

▪Video Output Data Bit : 8,10,12 Bit (RGB &YCbCr & xvYCC)

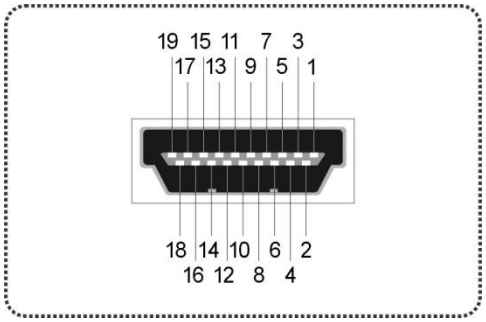
▪Audio Frequency Range : Sweep & Swap & Mute

▪Audio Sampling Frequency:32KHz, 44.1KHz, 48KHz, 88.2KHz,96KHz,176.4KHz,192KHz

▪HDMI 2.0 Version(4Kx2K@60Hz)

▪HDCP/CEC/xvYCC/3D mode support

3) HDMI Connector specification



Pin No.	Pin Name
1	TMDS Data 2+
2	TMDS Data Shield
3	TMDS Data 2-
4	TMDS Data 1+
5	TMDS Data 1 Shield
6	TMDS Data 1-
7	TMDS Data 0+
8	TMDS Data 0 Shield
9	TMDS Data 0-
10	TMDS Clock+
11	TMDS Clock Shield
12	TMDS Clock-
13	CEC
14	Utility(SiI9334:Support ARC, SiI9136-3:Not Support ARC)
15	SCL
16	SDA
17	DDC/CEC ground
18	+5V Power
19	Hot Plug Detect

3.4A Summary concept of DVI signal

1) Definition

▪DVI(Digital Video Interface) is a new video interface technology for flat panel of LCD monitor, high display device and high graphic card to make great display resolution, but it can just support video signal, no audio signal as HDMI.

▪DVI output connectors are provided on the PC analog unit and DVI unit.

2) Features

▪Pixel Bandwidth : 25MHz~165MHz(Single), 25MHz~330MHz(Dual)

▪Connector Type : DVI-I

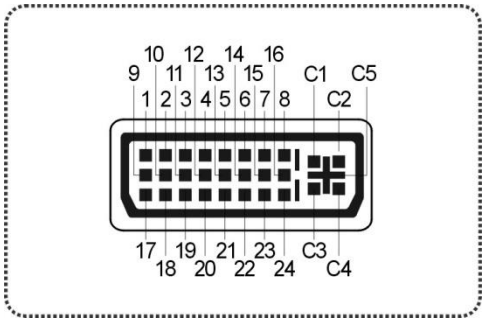
▪Video Signal Type : RGB

▪Support EDID, DDC, DMT

▪Support HPD (Hot Plug Detect)

▪Support HDCP

3) DVI Connector specification



Pin No.	Pin Name	Pin No.	Pin Name
1	TMDS Data 2-	C1	Analog Red
2	TMDS Data 2+	C2	Analog Green
3	TMDS Data 2/4 Shield	C3	Analog Blue
4	TMDS Data 4-	C4	Analog H-Sync
5	TMDS Data 4+	C5	Analog Ground
6	DDC Clock		
7	DDC Data		
8	Analog V-Sync		
9	TMDS Data 1-		
10	TMDS Data 1+		
11	TMDS Data 1/3 Shield		
12	TMDS Data 3-		
13	TMDS Data 3+		
14	+5V Power		
15	Ground		
16	Hot Plug Detect		
17	TMDS Data 0-		
18	TMDS Data 0+		
19	TMDS Data 0/5 Shield		
20	TMDS Data 5-		
21	TMDS Data 5+		
22	TMDS Clock Shield		
23	TMDS Clock+		
24	TMDS Clock-		

3.5A Summary concept of D-TV signal

1) Definition

▪It can make Y, Pb, Pr signal through each independent cable, which is more clear display than S-video. It can show you great scan display of progressive by DVD player.

▪In Japan, some TV have D3/D4/D5 format, instead of D-TV format.

2) D-TV Signal

* A : Low sync width
* B : High sync width
* C : Start of line to start active video
* D : Start of line to end active video
* E : Rising edge of sync to start of broad pulse.

3.6A Summary concept of Displayport

1) Definition

▪Displayport(D/P) is a high-speed interface which is transmit Digital Video & Audio signal compliance with VESA standard.

▪It is composed Main Link for Stream transmission and AUX CH to access DPCD(Display Port Configuration Data), EDID(Extended Display Identification Data) and support MCCS(Monitor Control Command Set).

▪Main Link is composed 1, 2, 4(Lane), every Lane available 1.62Gbps, 2.7Gbps and 5.4Gbps support maximum up to 17Gbps.

2) Features

▪Pixel Bandwidth : 25MHz~600MHz

▪Video Signal Type : RGB &YCbCr

▪Video Sampling Mode : 4:4:4, 4:2:2

▪Video Output Data Bit : 8,10,12(only 4:2:2) Bit

▪Audio Sampling Frequency : 48KHz

▪Max Lane Count Control (1,2,4 Lane select)

▪Max Lane rate Control (1.62, 2.7, 5.4Gbps select)

▪EDID Checking

▪HDCP1.4 / 2.2Ver.

3.7A Summary concept of SCART

1) Definition

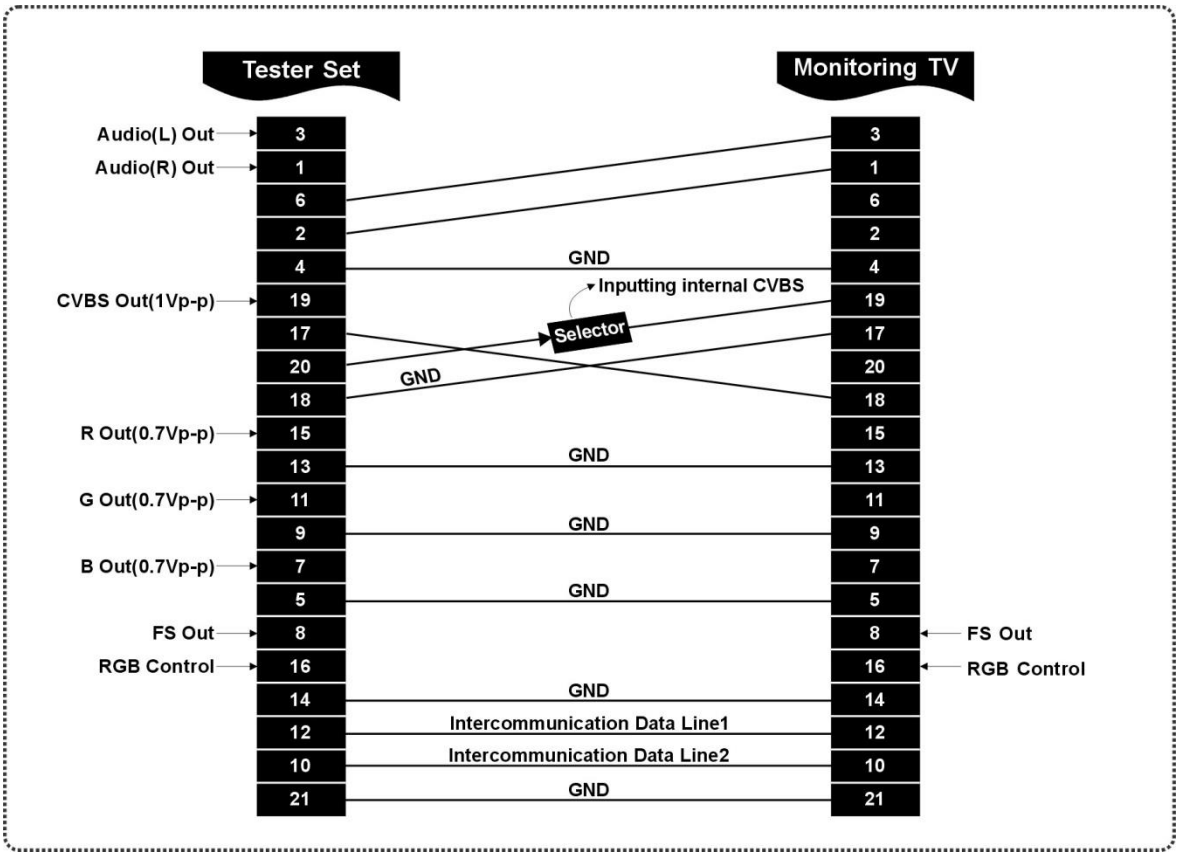
▪This video format using Euro, a 21pin SCART connector, which are RGB/S-video, CVBS and audio signal using a single cable.

▪It should be CVBS signal Continuously, also can be supported RGB signal on CVBS basis.

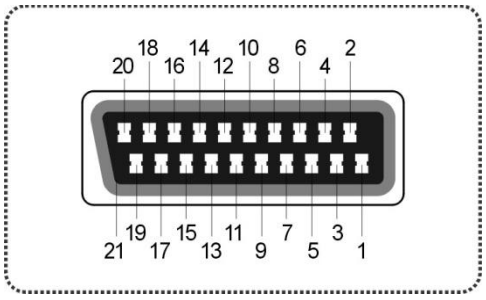
▪This RGB signal doesn't include sync and Pedestal Level.

▪If checking all SCART output of PAL TV, it can be checked through composite video, Audio(R,L), Video(R,G,B) and Y/C's In/Out part.

2) SCART Connector pin map



3) SCART Connector specification



Pin No.	Function	Signal Level	Impedance	Inter Connection Pin No.
1	Audio right out	0.5V rms	<1K ohm	2
2	Audio right in	0.5V rms	>10K ohm	1
3	Audio left out	0.5V rms	<1K ohm	6
4	Ground for pins 1,2,3,6			4
5	Ground for pin 7			5
6	Audio left in	0.5V rms	>10K ohm	3
7	Blue video in/out	0.7V (or 0.3V burst)	75 ohms	7
8	Status and aspect ratio in/out	9.5V~12V = 4:3 source 4.5V~7V = 16:9 source 0V~2V = inactive	>10K ohm	8
9	Ground for pin 11			9
10	Data 2			10
11	Green video in/out	0.7Vp-p	75 ohms	11
12	Data 1			12
13	Ground for pin 15			13
14	Ground for pin 16			14
15	Red (or C) video in/out	0.7V (or 0.3V burst)	75 ohms	15
16	RGB control in/out	1V~3V = RGB 0V~0.4V = composite	75 ohms	16
17	Ground for pin 19			18
18	Ground for pin 20			17
19	Composite (or Y) video out	1Vp-p	75 ohms	20
20	Composite (or Y) video in	1Vp-p	75 ohms	19
21	Ground for pins 8,10,12,shild			21

* "MONITORING" is the returning output.

MSPG-8100S

4. Chapter Four

MSPG-8100S Main Operation

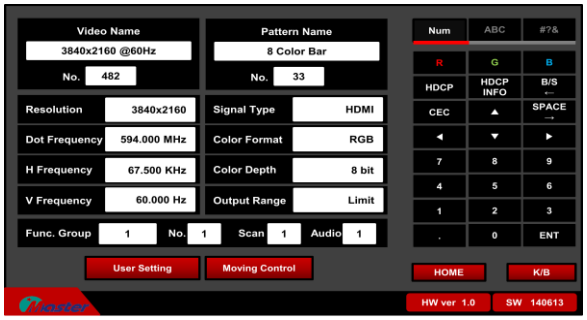
4.1 Front panel interface

4.2 Front panel button key interface

4.3 How to use the detailed features

Chapter 4.MSPG-8100S Main Operation

4.1 Front Touch Screen Interface



1) Video Name: Current displayed timing name and timing number.
2) Pattern Name: Current displayed pattern name and pattern number.
3) Resolution: Current displayed timing's resolution.
4) Dot Frequency: Current displayed timing's Dot Frequency.
5) H-Frequency: Current displayed timing's Horizontal Frequency.
6) V-Frequency: Current displayed timing's Vertical Frequency.
7) Signal Type: Current displayed timing's Video Type.
8) Color Format: Current displayed timing's Color Format.
9) Color Depth: Current displayed timing's Color Depth.
10) Output Range: Current displayed timing's Output Range.
11) Func. Group: Current setting Function Group and Function Number.
12) Scan: Current setting Scan Number.
13) Audio: Current setting Audio Number.
14) User Setting: User can be changed H/V Frequency, H/V Display, H/V Front Poch, H/V Sync Width and H/V Total.
    (In this section, changed value can't be saved-temporary)
15) Moving Control: User can be setting RGB value, Character, Color, Image, OSD, Reverse and Flicker.
    (In this section, changed value can't be saved-temporary)
16) Num, ABC, #?&
    - ✓ Num: Can be input as RGB, HDCP, HDCP Info, Back Space, CEC, arrow keys and number key
    - ✓ ABC: Can be input as Alphabet.
    - ✓ #?&: Can be input as Special Characters.
17) Home: Return to Home section from K/B mode.
18) K/B: Key input mode and Edit mode select key.
19) HW, SW: Hard ware version and Soft ware version.

4.2 Front Keypad Interface

1) SYSTEM: This key is showing MSPG-8100S's system option value or can be changed option value.
2) TIME: This key is select **Timing** number.
3) PATTERN: This key is select **Pattern** number.
4) AUDIO: This key is select **Audio** number.
5) SCAN: This key is select **Scan** number.
6) FUNC: This key is select **Function** number.
7) MEDIA: This key is not working with MSPG-8100S(Media or Another function extra key)
8) R,G,B: RED, GREEN and BLUE level adjustment key.
9) HDCP: HDCP(High-bandwidth Digital Content Protection) On/Off key.
10) HDCP INFO: HDMI1~3(ARC), HDMI 4~5(4K x 2K), DVI and DISPLAYPORT's HDCP information displayed.
11) CEC: CEC On/Off button for when you selected HDMI mode.
12) ESC: This key is not working with MSPG-8100S(Media function or Another function extra key)
13) Arrow key: Cursor moving or pattern moving key.
14) Char, Color, Image, OSD: Pattern's Character, Color, Image and OSD select key.
15) Number key: All of number input keys.
16) ENTER: All of changed setting value running key.

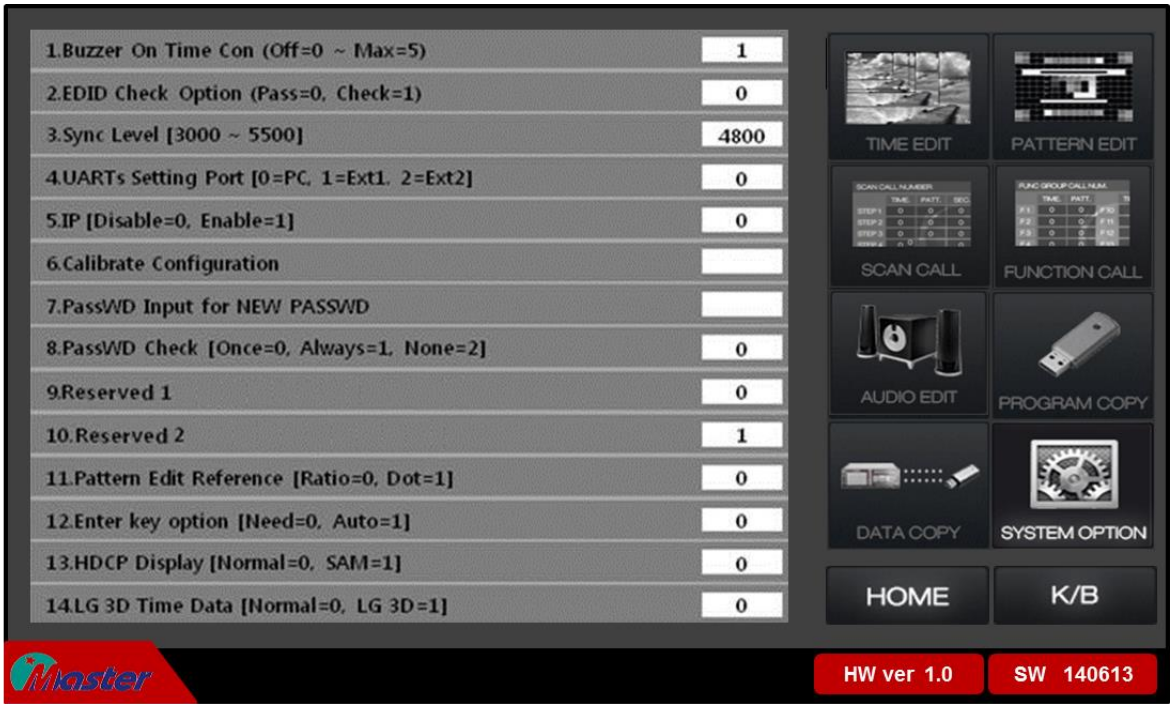
4.3 How to Use Detailed Features

4.3.1 System Option

In this section, you can edit MSPG-8100S's system option.

Push the K/B button and then push the System Option button using by touch screen.

(Or you can use same function using by push the SYSTEM button on the front of keypad)



- ✓ At first time, MSPG-8100S will be asking to Password. Password is "8880"
- ✓ Use the arrow key and number key at the keypad, you can change all of setting value at the list.

① Buzzer On Time Con (Off:0~Max:5)
Setting the length of buzzer.
0=Buzzer off
1~5=Buzzer length setting 1 to 5

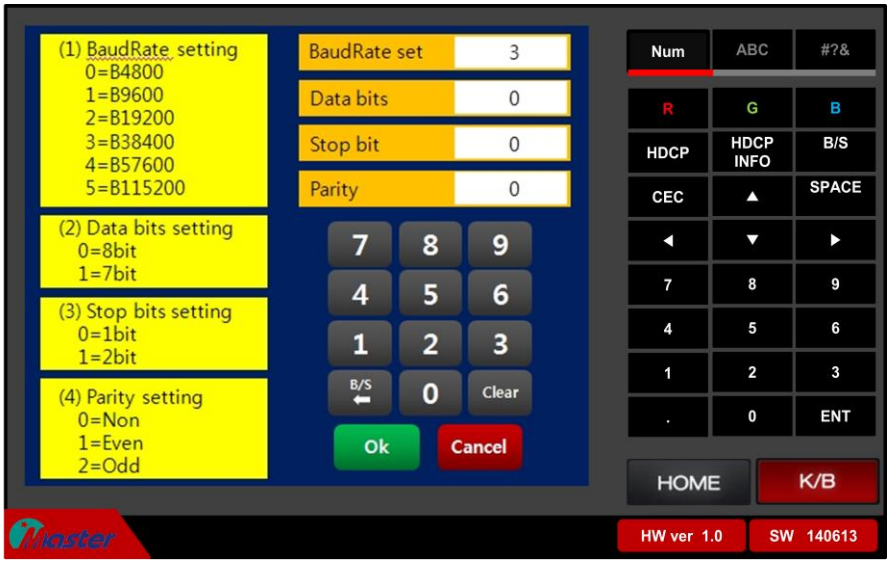
② EDID Check Option (Pass=0, Check=1)
Setting the EDID Check Pass/Check.

③ Sync Level [3000~5500]
Setting the Sync level from 3000 to 5500.

④ UARTs Setting Port [0=PC, 1=Ext1, 2=Ext2]

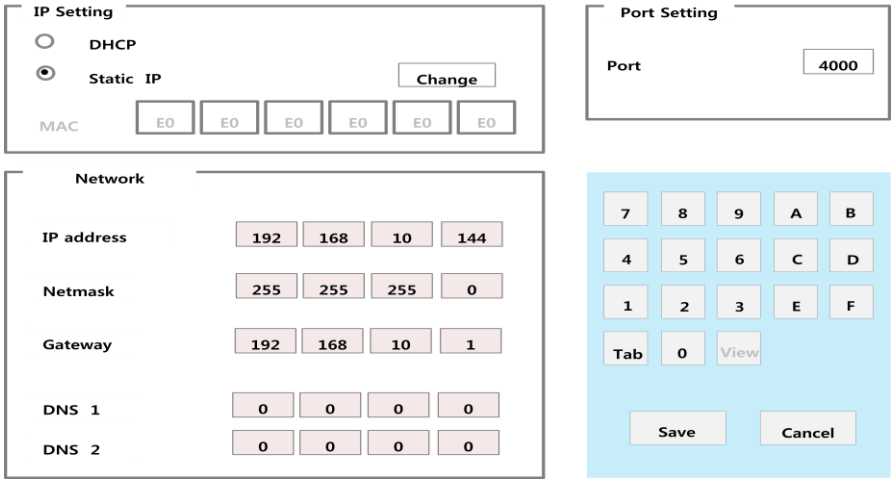
It set information of external communication port.

Connect PC to MSPG-8100S's RS-232 Port Via RS-232(Cross type) cable. Set up to Baud rate, data bits, stop bits and parity same as PC and Uarts setting.



⑤ IP [Disable=0, Enable=1]

Setting LAN port.



This is spare option.

⑥ Calibrate Configuration

It can control proper location of touch screen in main LCD window.

⑦ PassWD Input for NEW PASSWD

You can change new pass word.

⑧ PassWD Check [Once=0, Always=1, None=2]

If user reserved data value of Time/Pattern, it can setup question frequency of pass word.

⑨ Reserved 1

⑩ Reserved 2.

⑪ Pattern Edit Reference [Ratio=0, Dot=1]

- ✓ 0=Input level value of pattern edit as %.
- ✓ 1=Input level value of pattern edit as 8bit(0-255)

⑫ Enter Key Option [Need=0, Auto=1]

- ✓ 0=When 3 character pattern or timing number call, it needs enter key.
- ✓ 1=When 3 character pattern or timing number call, it doesn't needs enter key.

⑬ HDCP Display [Normal=0, SAM=1]

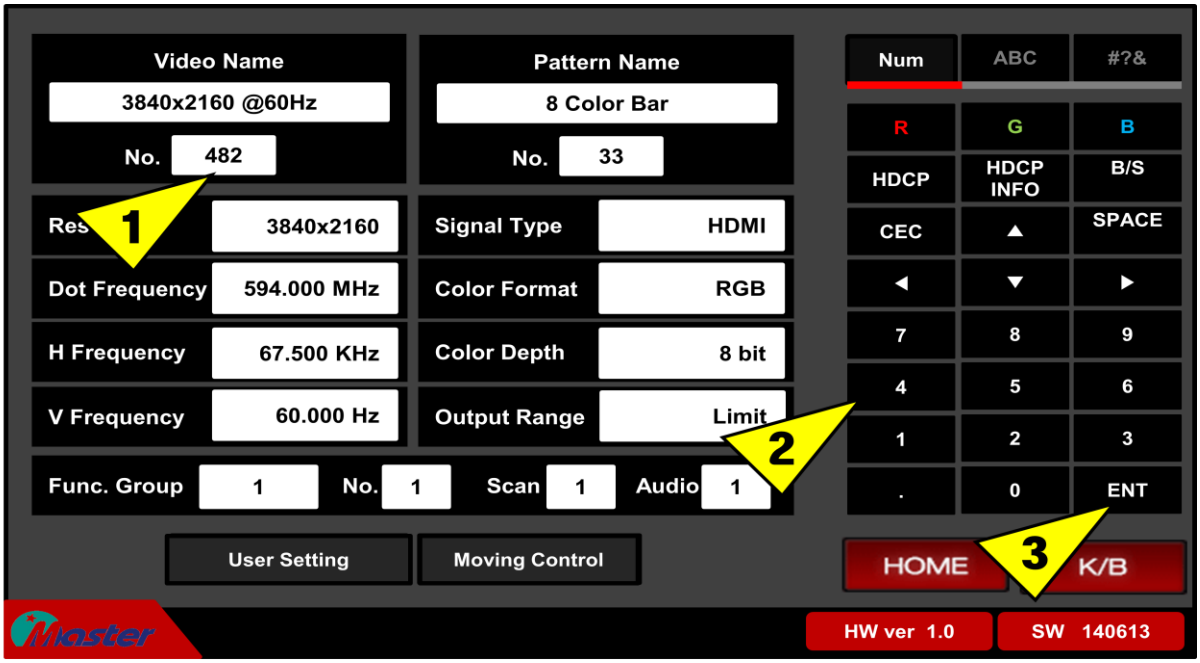
This is spare option.

⑭ LG 3D Time Data [Normal=0, LG 3D=1]

Refer to Manual Page 85~105

4.3.2 Time Function

1) Timing change using the Touch Screen.

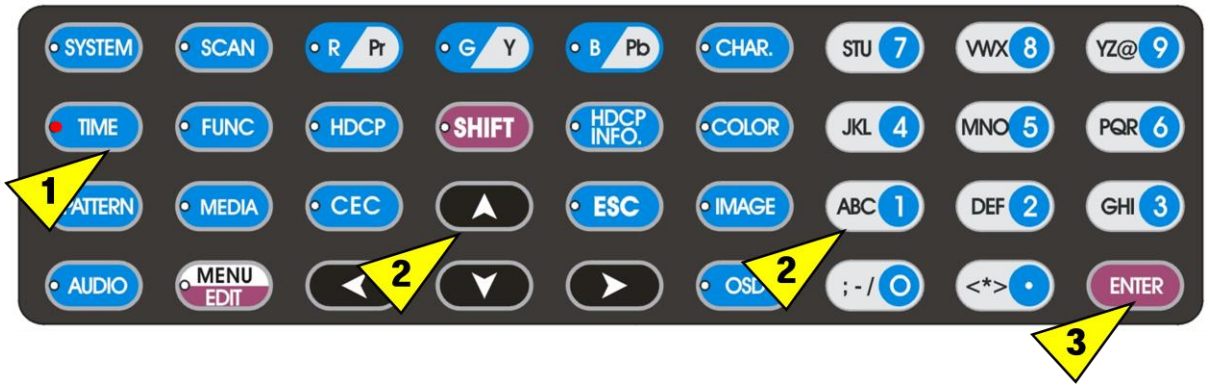


① Select the Video name No. to activate timing setting.

② Push the arrow key or number key for selecting wanted timing.

③ Push the ENT key for running setting.

2) Timing change using the Keypad.



① Select the TIME key to activate timing setting.

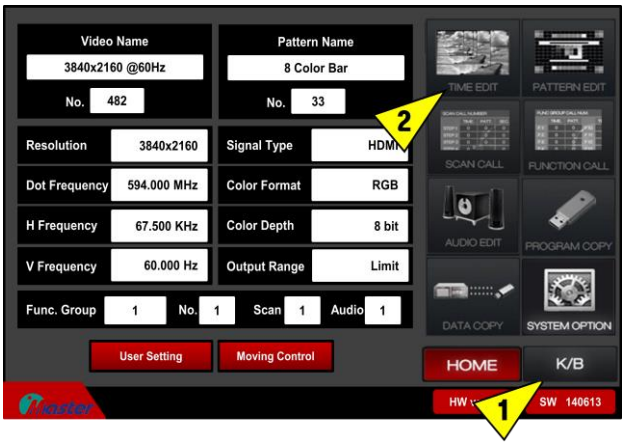
② Push the arrow key or number key for selecting wanted timing.

③ Push the ENTER key for running setting.

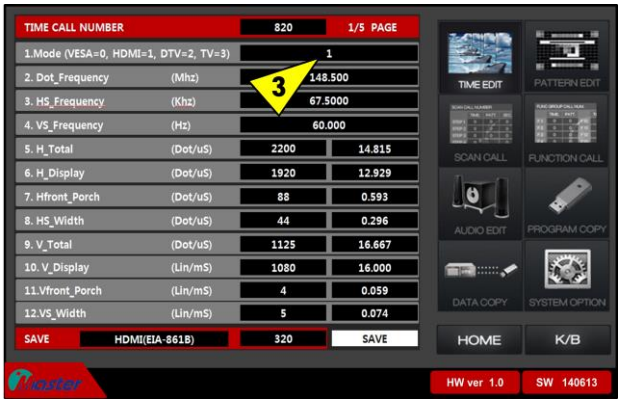
3) TIMING Edit.

① Push the K/B key to activate edit list.

② Push the TIME EDIT key to activate Timing edit setting.

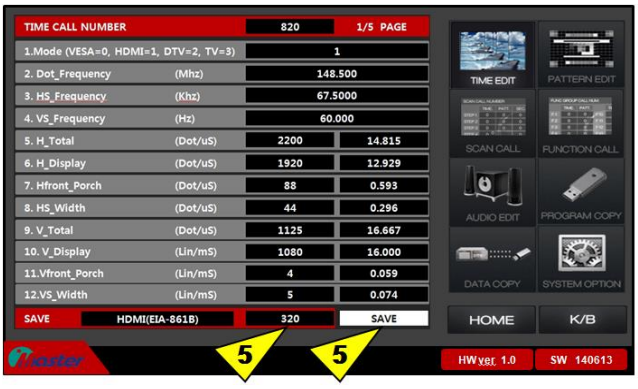


③ Below edit list will be showing.
Push the arrow key or number key to change setting value.



④ If you want move to next page, then move cursor to any list section and push the right(or left) key at the key pad.

⑤ When you changed setting value, then move to cursor at SAVE blank section and insert save number(1~500). Push the Enter key for running setting.



Push the TIME key on the key pad, the same function can be performed.

4) TIMINGEdit LIST.

Common Option				
MODE	NO.	LIST	DESCRIPTION	SETTING
COMMON OPTION	1	Mode	VESA, HDMI, DTV or TV Mode setting.	VESA=0 HDMI=1 DTV=2 TV=3
	2	Dot_Frequency(MHz)	Input the Dot Frequency as MHz.	Number
	3	HS_Frequency(KHz)	Input the Horizontal Frequency as KHz.	Number
	4	VS_Frequency (Hz)	Input the Vertical Frequency as Hz.	Number
	5	H_Total (Dot/Us)	Input the data as Dot or Time for whole pixels of marking Horizontal 1 line.	Number
	6	H_Display (Dot/uS)	Input the data as Dot or Time for available pixelsof marking Horizontal 1 line.	Number
	7	Hfront_Porch (Dot/uS)	Input the data as Dot or Time for one of the line that is not display from the right side of screen.	Number
	8	HS_Width (Dot/uS)	Input the data as Dot or Time for Horizontal returning section.	Number
	9	V_Total (Lim/mS)	Input the data as line or time for whole line of one frame.	Number
	10	V_Display (Lim/mS)	All of Vertical display line frame except vertical front porch and back porch.	Number
	11	Vfront_Porch(Lim/mS)	No video section of one frame at the bottom.	Number
	12	VS_Width (Lim/mS)	Vertical recurrence period.	Number
	13	HS_Polarity	Select the Polarity of Horizontal sync	Negative=0 Positive=1
	14	VS_Polarity	Select the Polarity of Vertical sync	Negative=0 Positive=1
	15	Serration On of (DTV&CS)	Select the nothing or being or serration pulse.(DTV&CS)	No=0 Yes=1
	16	Serration Pulse	Select the space of serration pulse.	HS/2=0 HS=1
	17	Interlace	Interlace None setting(No=0) Interlace setting with Video Signal(S&V=1) Interlace setting without Video Signal(S=2)	No=0 S&V=1 S=2
	18	Resolution Display	Current resolution display on the monitor or not.	No=0 Yes=1

	19	Model Name Display	Current model name display on the monitor or not.	No=0 Yes=1
	20	Number of EQP Pulse (Front EA)	Select the number of EQP pulse in Vertical front porch.	Number
	21	Number of EQP Pulse (Back EA)	Select the number of EQP pulse in Vertical back porch.	Number
	22	Audio Pattern Number	Select audio pattern format	Number
	23	Video Pattern Number	Select video pattern format.	Number
	24	Video Level (mV)	Set the default level of video output	Number

PC MODE				
MODE	NO	LIST	DESCRIPTION	SETTING
PC MODE	25	Sync On Green	Set up the G(Green) Video added horizontal, vertical sync frequency or not	No=0 Yes=1
	26	HS Out Terminal <= CS	Set the Horizontal Sync port, with adding Vertical Sync or not	No=0 Yes=1
	27	VS Out Terminal Off	Set the Vertical Sync port, with adding Vertical Sync or not.	No=0 Yes=1
	28	DPMS Video	Selecting the video signal output or not, when the DPMS is operating	On=0 Off=1
	29	DPMS_Hsync	DPMS is a mode for power saving at the monitor	On=0 L_Off=1 H_Off=2
	30	DPMS_Vsync	DPMS is a mode for power saving at the monitor	On=0 L_Off=1 H_Off=2
	31	DVI Out	Selecting the DVI output signal	D&A=0 Digital=1 Analog=2
	32	DVI Range	Setting of the Digital output signal to Full/Limit Range	Full=0 Limit=1 RBLev.240=2
	33	Sync Off	H/V/H&V Sync Off setting	H-Sync=1 V-Sync=2 H&V-Sync=3

HDMI MODE				
MODE	NO	LIST	DESCRIPTION	SETTING
HDMI MODE	25	Aspect Ratio	Setting of info frame data, 4:3 or 16:9	4:3=0 16:9=1 21:9=2
	26	HDCP On	The function of HDCP On/Off, and set up the HDCP Info OSD.	Off=0 On=1 Info On=2
	27	Color Space	Set of color Matrix Format.	RGB=0 601=1 709=2 2020=3
	28	RGB444=0, YCbCr444=1, Ycbcr422=2 YCbcr420=3	Set of output Data Format. - RGB444=0 : This signal is incarnate by only RGB Data without Y - Ycbcr444=1: The express method as base on the Y, Cb, Cr - Ycbcr422=2: The express method as base on the Y, Cb, Cr - Ycbcr420=3: The express method as base on the Y, Cb, Cr	RGB444=0 YCbCr444=1 YCbCr422=2 YCbCr420=3
	29	Out Data Bit	Set of Data Bit of Data Format.	8=0 10=1 12=2
	30	HDMI Range	Set of Full/Limit Range to the Digital signal.	Full=0 Limit=1 xvYCC=2
	31	Audio	Set of HDMI Audio output signal. (internal/external).	Int=0 Optical=1 Spdif=2
	32	Audio Format	Set of HDMI Audio output Format.	Spdif=0 I2S=1
	33	Audio Sample Rate	Set of HDMI Audio output Frequency. (Option 0~7)	Mute=0 32Khz=1 44.1Khz=2 48Khz=3 88.2Khz=4 96Khz=5 176.4Khz=6 192Khz=7
	34	ARC Setting	ARC(Audio Return Chanel) Ch setting	Off=0 Ch1=1

<table>
<tr><td rowspan="10">H
D
M
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M
O
D
E</td><td></td><td></td><td colspan="3">ARC OFF=0 / ARC CH1 ON=1 / ARC CH2 ON=2 / ARC CH3 ON=4 / ARC CH4 ON=8 / ARC ALL CH ON=15➔ BCD Code setting</td><td>Ch2=2
Ch1,2=3
Ch3=4
Ch1,3=5
Ch2,3=6
Ch1,2,3=7
Ch4=8
Ch1,4=9
Ch2,4=10
Ch1,2,4=11
Ch3,4=12
Ch1,3,4=13
Ch2,3,4=14
All Ch=15</td></tr>
<tr><td>35</td><td>(i)RGB444=1,
(i)YCbCr444=2,
(i)YCbCr422=3
(i)YCbCr420=4</td><td colspan="3">Set of Data Format Info-Frame information.</td><td>RGB444=1
YCbCr444=2
YCbCr422=3
YCbCr=4</td></tr>
<tr><td>36</td><td>Sync Off</td><td colspan="3">H-Sync/V-Sync/H&V-Sync off</td><td>H-Sync=1
V-Sync=2
H&V-Sync=3</td></tr>
<tr><td>37</td><td>DVI Range</td><td colspan="3">Range setting to DVI output signal.</td><td>Full=0
Limit=1
RBLev240=2</td></tr>
<tr><td>38</td><td>HDMI Video Format</td><td colspan="3">Non dot clock over to 330Mhz or non 3D formats set to normal=0
Over dot clock to 330Mhz set to 4Kx2K=1
3D formats set to 3D=2</td><td>4Kx2K=1
3D=2</td></tr>
<tr><td>39</td><td>3D Structure</td><td colspan="4"><table>
<tr><th>SETTING</th><th>3D Data</th><th colspan="2">DESCRIPTION</th></tr>
<tr><td>0</td><td>0000</td><td colspan="2">Frame Packing</td></tr>
<tr><td>1</td><td>0001</td><td colspan="2">Field Alternative</td></tr>
<tr><td>2</td><td>0010</td><td colspan="2">Line Alternative</td></tr>
<tr><td>3</td><td>0011</td><td colspan="2">Side-by-Side(Full)</td></tr>
<tr><td>4</td><td>0100</td><td colspan="2">L+Depth</td></tr>
<tr><td>5</td><td>0101</td><td colspan="2">L+Depth+Graphics+Graphics-Depth</td></tr>
<tr><td>6</td><td>0110~0111</td><td colspan="2">Reserved for Future Use</td></tr>
<tr><td>8</td><td>1000</td><td colspan="2">Side-by-Side(Half)</td></tr>
</table></td><td></td></tr>
<tr><td>40</td><td>3D Ext Data</td><td colspan="4"><table>
<tr><th>SETTING</th><th>3D Data</th><th colspan="2">DESCRIPTION</th></tr>
<tr><td>0</td><td>0000</td><td rowspan="2">Horizontal sub-</td><td>Odd/Left picture, Odd/Right picture</td></tr>
<tr><td>1</td><td>0001</td><td>Odd/Left picture, Even/Right picture</td></tr>
</table></td><td></td></tr>
</table>

H D M I M O D E			2	0010	sampling	Even/Left picture, Odd/Right picture
			3	0011	Quincunx matrix	Even/Left picture, Even/Right picture
			4	0100		Odd/Left picture, Odd/Right picture
			5	0101		Odd/Left picture, Even/Right picture
			6	0110		Even/Left picture, Odd/Right picture
			7	0111		Even/Left picture, Even/Right picture
	41	Frame Packing Interlace	3D Frame packing interlace setting			Y=0 N=1
	42	3D Vact_Space/Vblank 3(Line)	3D V Active Space setting			Line Number
	43	Field Alternative V3 DE Disable	DE(Display Enable) Enable or Disable			Enable=0 Disable=1
	44	HDMI 2.0 MODE	Over DOT clock to 330Mhz			N=0 Y=1
	45	HDR	HDMI 2.0 High Dynamic Range setting			OFF=0 HDR10=1 HLG=2
	46	HDCP 2.2 On	HDCP 1.4 or 2.2 setting			HDCP 1.4 = 0 HDCP 2.2 = 1
	47	Reserved				
	48	Reserved				

DISPLAYPORT				
MODE	NO	LIST	DESCRIPTION	SETTING
DISPLAYPORT	1	Link Rate	Signal Generator connected with the DP display device has a unique value of DPCD to check the entry of the "Link Rate" for the automatic output mode.	Auto=0
			This output mode that DP display unit has to ignore the value of DPCD and output by link rate fixed to 1.62GB	1.62G=1
			This output mode that DP display unit has to ignore the value of DPCD and output by link rate fixed to 2.7GB	2.7G=2
			This output mode that DP display unit has to ignore the value of DPCD and output by link rate fixed to 5.4GB	5.4G=3
	2	Lane Count	DP Display device has a unique value of the DPCD to check the entry of the "Lane Count" for the automatic output mode.	Auto=0
			The mode, using the 1Lane of DP display to output data.	1Lane=1
			The mode, using the 2Lane of DP display to output data	2Lane=2
			The mode, using the 4Lane of DP display to output data	4Lane=3

D-TV MODE				
MODE	NO	LIST	DESCRIPTION	SETTING
D TV MODE	25	Sync On(Pb&Pr) With Y	Selecting the sync signal with Pb&Pr.	Yes=1
			Y: Pb&Pr with sync signal, N: No Pb&PR with sync signal	No=0
	26	(Pb&Pr) Out Level	Set of Pb&Pr signal level.	0~100%
	27	D-TV Sync Level	Set the sync level (Default: 300Mv)	50~400mV
	28	Sync Set	0=Tri Level: Output with antagonism sync	Tri Lev=0
			1=Bi Level: Output with general sync	Bi Lev=1
	29	DVI Range	Set of Digital output signal to Full/Limit Range.	Full=0 Limit=1 RBLv240=2
	30	Data Format	Set of color Matrix Format. [0=RGB, 1=601, 2=709]	RGB=0 601=1 709=2 2020=3
	31	Sync Off	H/V/HV Sync Off	None=0
			H_Sync Off	HS=1
			V-Sync Off	VS=2
			H/V-Sync Off	H/VS=3

TV MODE

MODE	No.	LIST	DESCRIPTION	SETTING
TV MODE	25	TV Time Mode	TV Time Mode Setting NTSC-M=1/NTSC-J=2/NTSC-0.43=3/PAL-BDGH=4/PAL-M=5/PAL-N=6/PAL-60=7/SECAM=8	1~8
	26	SCART	Set of SCART output mode.	RF=0 CVBS=1 RGB=2 Y/C=3
	27	SCART Aspect Ratio	Set of display rate when SCART are displaying	4:3=0 16:9=1
	28	S-V Ratio	Set of display rate when S-Video are displaying.	4:3=0 4:3(L)=1 16:9=2
	29	Video Filter	Function of reduce the Video signal noise.	0~7
	30	Video Black Level	Set of Video Black level.	Default=0 7.5IRE=1 0IRE_S=2 0IRE=3
	31	Teletext	Set of Teletext on/off when PAL is displaying.	0~15
	32	Closed Caption	Set of Closed Caption on/off when NTSC is displaying.	1~255
		▶CC1=Roll-UP	Characters are displayed by Roll-up style, from 4Rows to 2Rows.	CC1=1
		▶CC2=Pop-On	Characters are displayed by Pop-On Style, Up, Middle, Down.	CC2=2
		▶T1=Roll-Up(Default)	Characters are displayed complete sentences.	T1=4
		▶T2=Roll-Up(Default)	Displayed by one sentence's character	T2=8
		▶CC3=Paint-On	Font's background color changed and displaying by paint-on style.	CC3=16
		▶CC4=Roll-Up	Simplify, Displaying by 2Row Roll-up style.	CC4=32
		▶T3=Roll-Up(Default)	It does display character as T1, But The Character of each row is displayed as different color.	T3=64
		▶T4=Roll=Up(default)	It does display character as T2. But The Character of each row is displayed as different color.	T4=128
		▶Full On	All Closed Caption functions are on.	FULL=255
	33	V-Chip	Set of V-Chip on/off when NTSC is displaying.	

Canadian Ratings(**English**)			Canadian Rating(**French**)	
1.Exempt	20		1.E	30
2.C	21		2.G	31

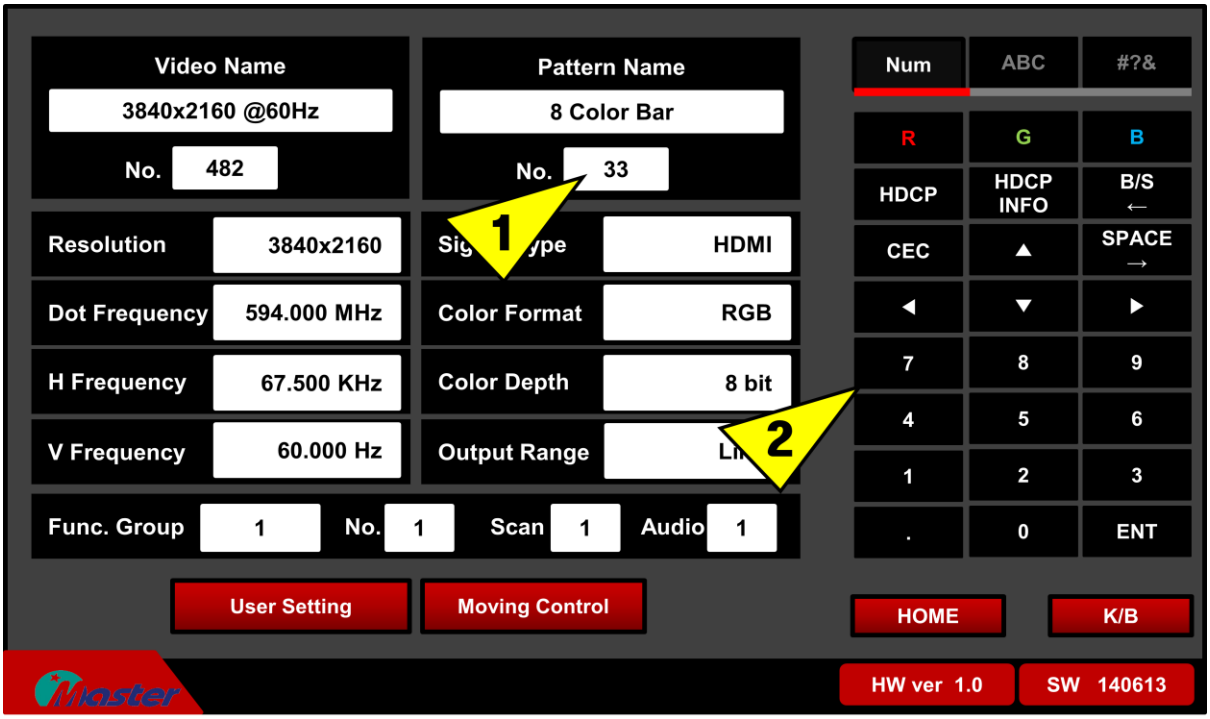
TV MODE		3.C	22		3.8+	32	
		4.G	23		4.13+	33	
		5.PG	24		5.16+	34	
		6.14+	25		6.18+	35	
		7.18+	26				

USA(Movie)		USA Rating		USA(TV) Sub Rating	
1.G	1	1.A	10X	1.TV-Y	USA Rating+1
2.PG	2	2.D(Suggestive Dialogue)	11X	2.TV-Y7	USA Rating+2
3.PG-13	3	3.L(Coarse Language)	12X	3.TV-G	USA Rating+3
4.R	4	4.S(Sexual Content)	13X	4.TV-PG	USA Rating+4
5.NC-17	5	5.V(Violence)	14X	5.TV-14	USA Rating+5
6.X	6			6.TV-MA	USA Rating+6
7.NR	7	Ex.)"Coarse Language" + "TV-G" = 123 // "Violence" + "TV-Y" = 141			

34	Sync Amplitude	Sync Amplitude	1~318mV
35	SCART Monitoring	Output the same signal except RF mode by TV&Monitoring port.	Same=0
		TV port for normal signal and Monitoring port for returning signal output	Return=1
36	WSS Aspect Ration Control	Wide Screen Signaling	Non setting

4.3.3 Pattern Function

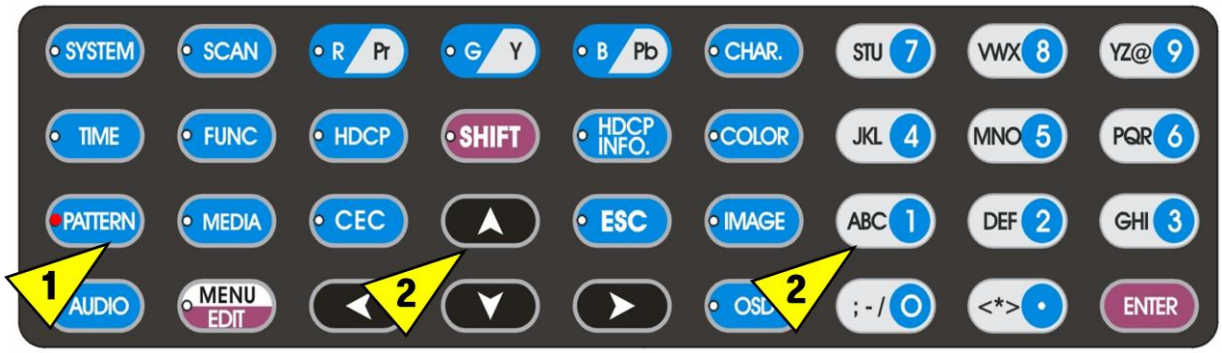
1) Pattern Change using the Touch Screen.



① Select the Pattern name No. to activate timing setting.

② Push the arrow key or number key for selecting wanted timing.

2) Pattern change using the Keypad.



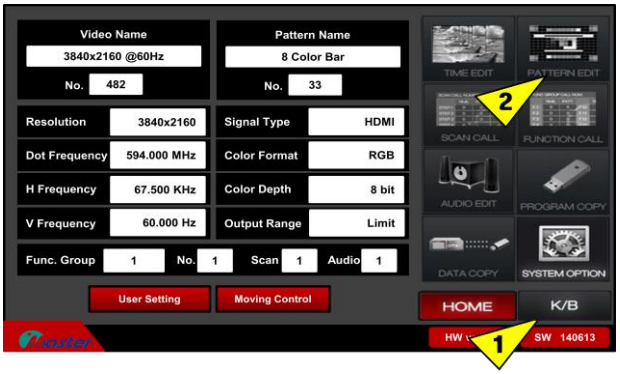
① Select the PATTERN key to activate pattern setting.

② Push the arrow key or number key for selecting wanted timing.

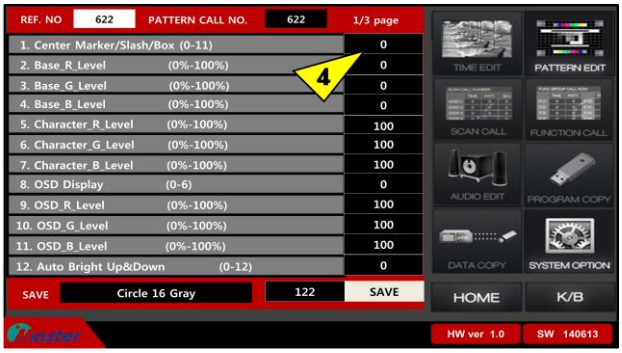
3) PATTERN Edit.

① Push the K/B key to activate edit list.

② Push the PATTERN EDIT key to activate Pattern edit setting.

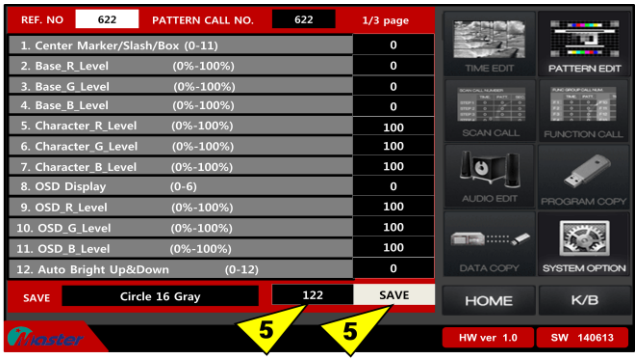


③ Below edit list will be showing.
Push the arrow key or number key to change setting value.



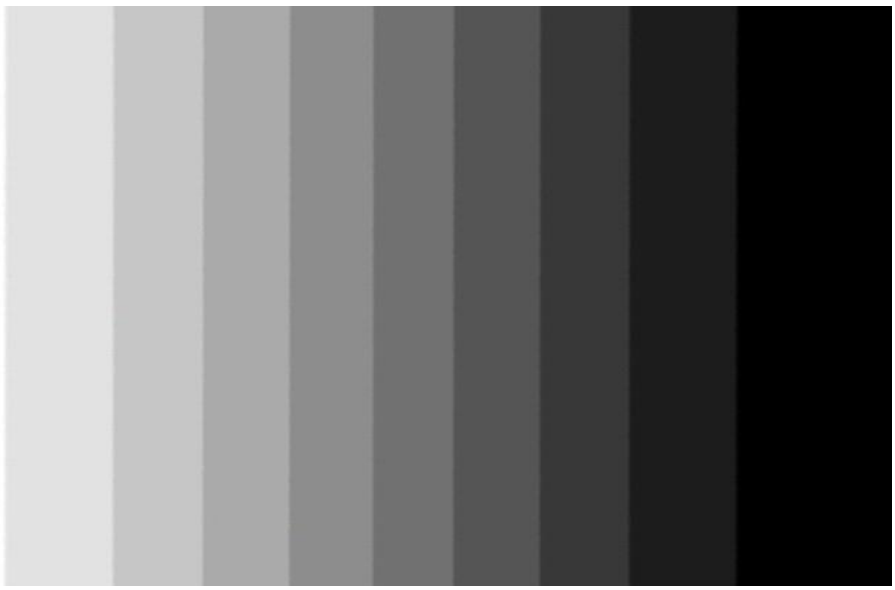
④ If you want move to next page, then move cursor to any list section and push the right(or left) key at the key pad.

⑤ When you changed setting value, then move to cursor at SAVE blank section and insert save number(1~500)
Push the Enter key for running setting.

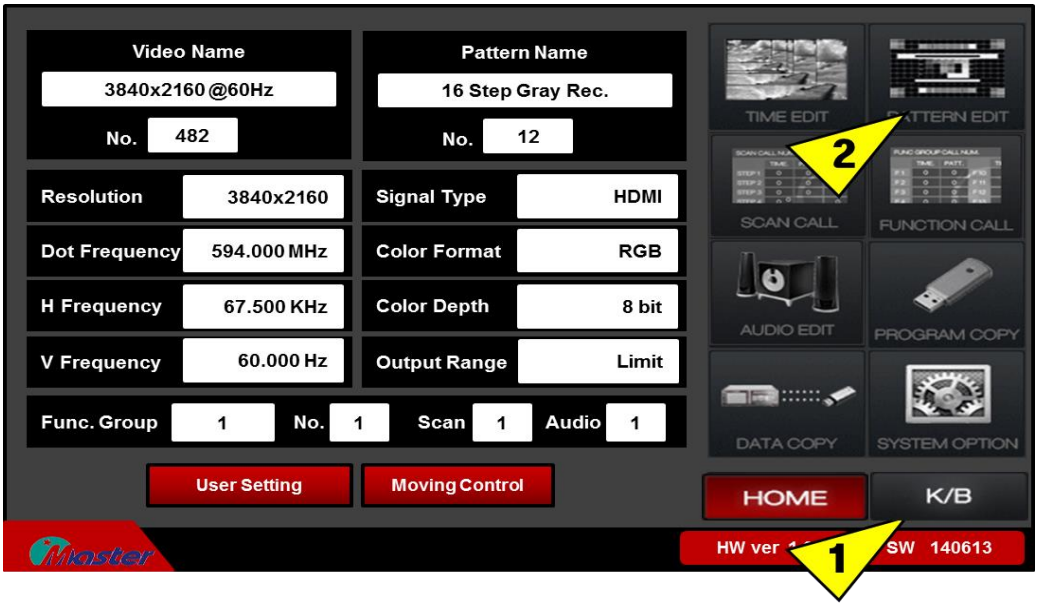


Push the PATTERN key on the keypad, the same function can be performed.

4) Gray scale patterns

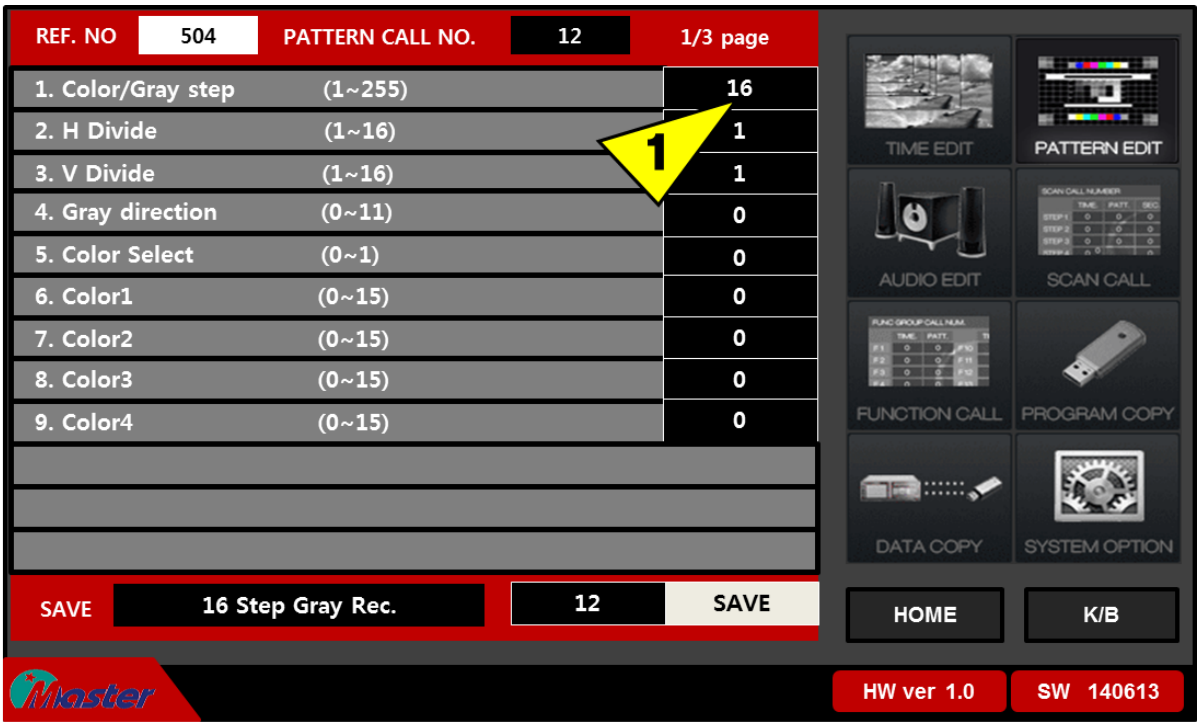


① User settings as much as 1~255 Gray Steps users wants.



② Press the K/Bbutton and then choose PATTERN EDIT on the touch panel.
Or press pattern key and then choose MENU/EDIT key on the key pad.

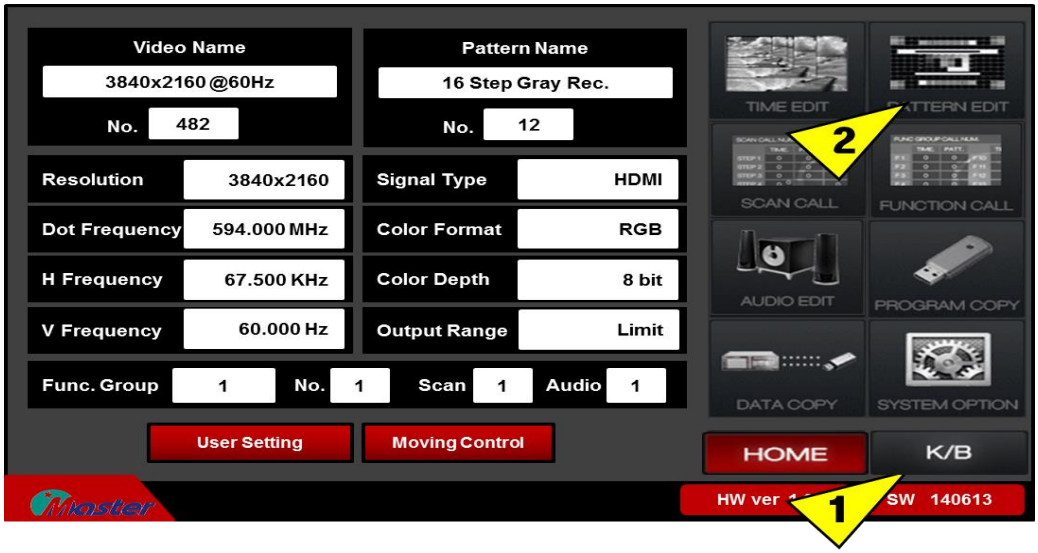
③ Below picture is setting screen.



④ User settings as much as 1~255 Gray Steps users wants in the [1. Color/Gray step] section.

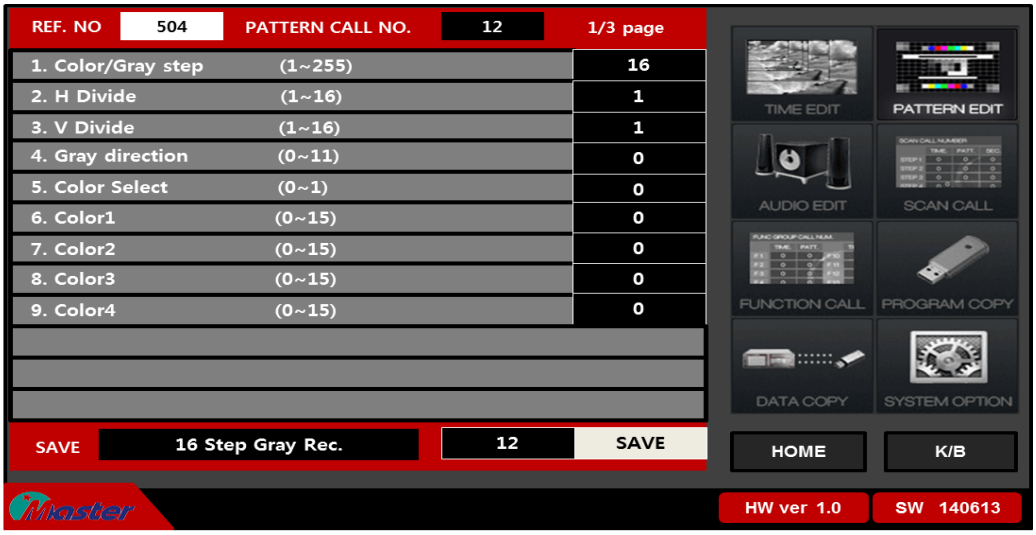
5) Pattern Moving Function

① MSPG-8100S can Moving, Character, OSD, Color and Graphic.

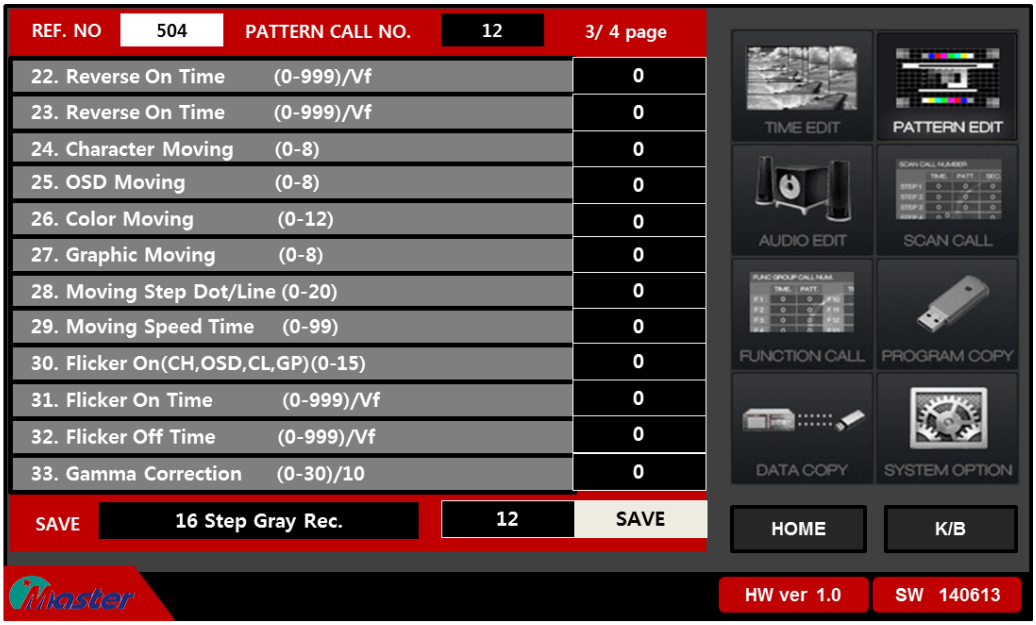


② Select the K/BbuttonandthenchoosePATTERN EDIT on the touch screen.
OrPress the pattern key and then choose MENU/EDIT key on the key pad.

③ Users can find like below display.



④ In the below screen, press ↓key once and then press →key twice on the .screen



No. 24-27 controls Character, OSD, Color and Graphic Moving.

Besides users can control Moving Step, Speed in the No. 28 and No. 29.

- Character, OSD, Graphic Moving and Color Moving

  No.0: Stop the moving (Default)

  No.1: Right ->Left

  No.2: Left ->Right

  No.3:Bottom ->Top

  No.4:Top->Bottom

  No.5:Upper left ->Lower right

  No.6:Upper right ->Lower left

  No.7:Lower left ->Upper right

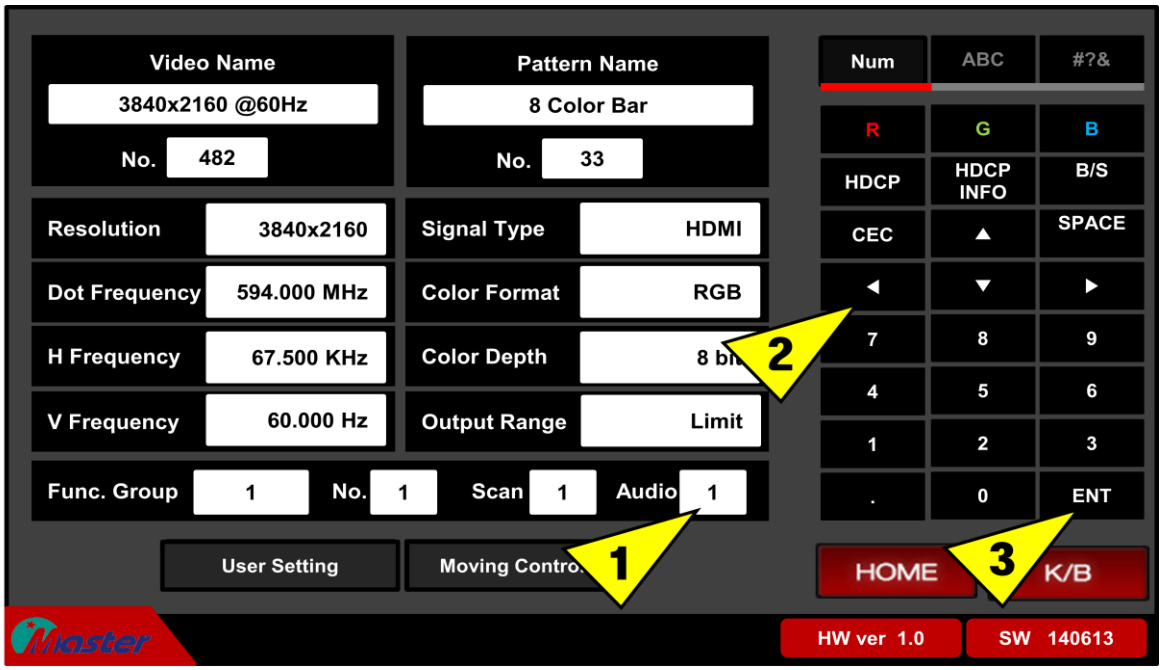
  No.8:Lower right ->Upper left

- Color Moving

  Only 12: Color Rolling pattern at full white pattern

4.3.4 Audio Function

1) Audio Change using the Touch Screen.

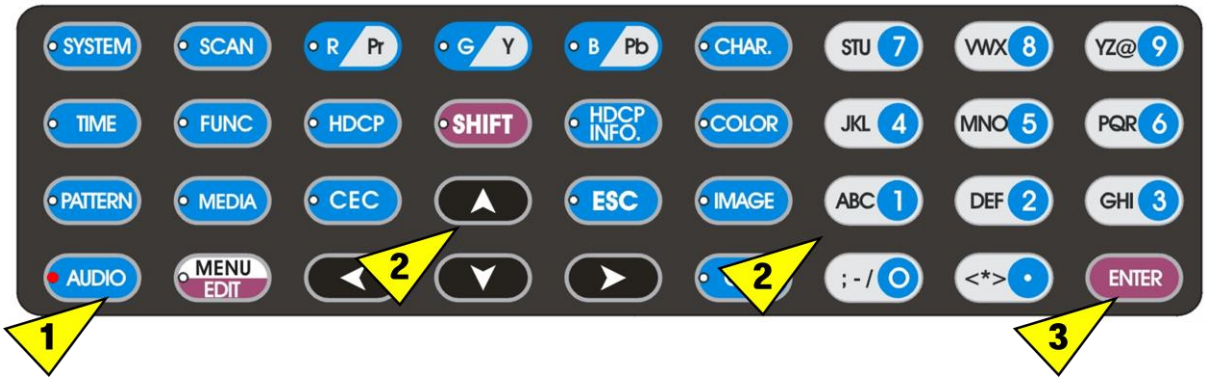


① Select the Audio to activate audio setting,

② Push the arrow key or number key for selecting wanted Audio(1~20)

③ Push the ENT key for running setting.

2) Audio change using the Keypad.



① Select the AUDIO key to activate audio setting.

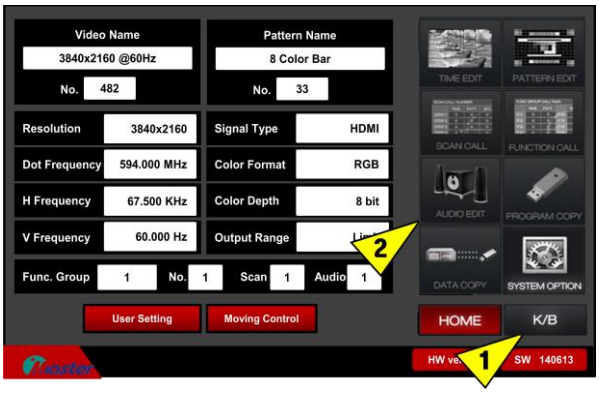
② Push the arrow key or number key for selecting wanted audio.

③ Push the ENTER key for running setting.

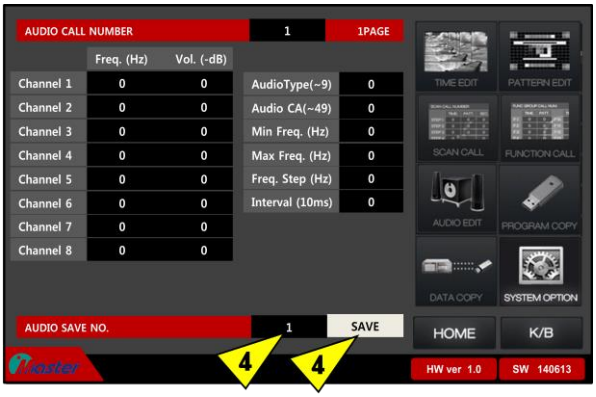
3) AUDIO Edit.

① Push the K/B key to activate edit list.

② Push the AUDIO EDIT key to activate Audio edit setting.



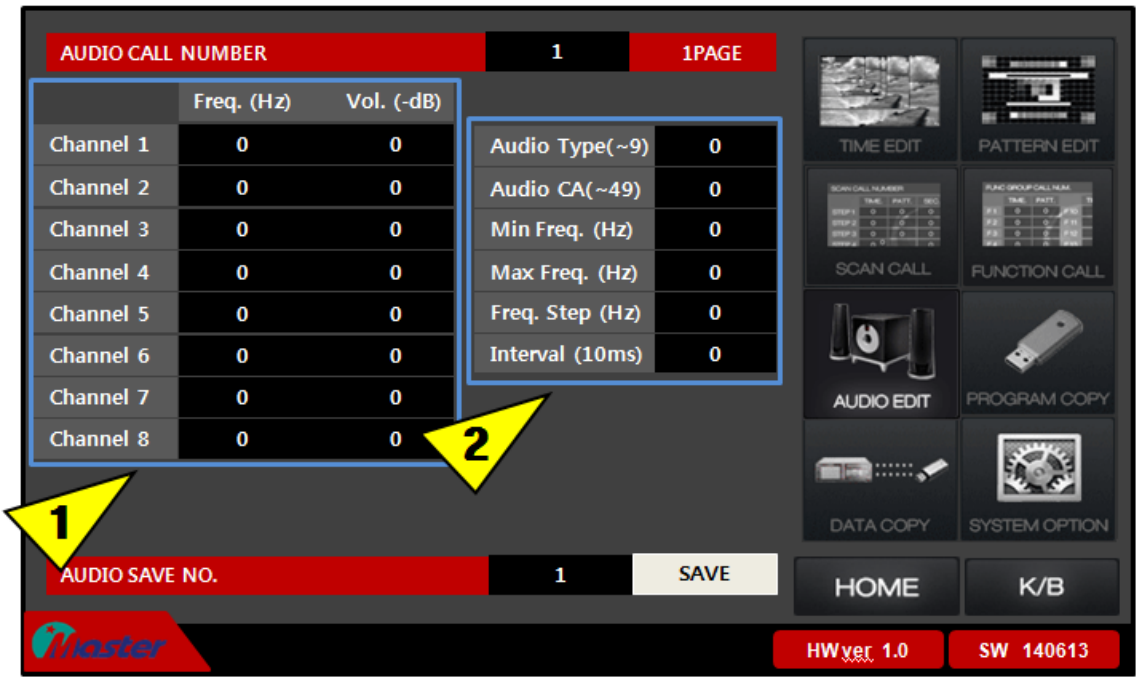
③ Below edit list will be showing.



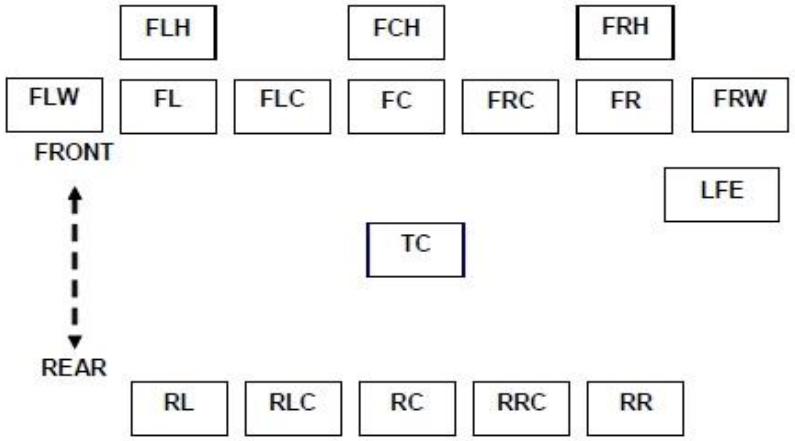
④ When you change setting value, put the new audio value and insert your save number (1~20).

Push the AUDIO key on the keypad, the same function can be performed.

4) AUDIO Edit LIST.



① Understanding about speaker placement.



Label	Location
FL	Front Left
FC	Front Center
FR	Front Right
FLC	Front Left Center
FRC	Front Right Center
RL	Rear Left
RC	Rear Center
RR	Rear Right
RLC	Rear Left Center
RRC	Rear Right Center
LFE	Low Frequency Effect
FLW	Front Left Wide
FRW	Front Right Wide
FLH	Front Left High
FCH	Front Center High
FRH	Front Right High
TC	Top Center

② Change to audio Frequency (Hz) and Volume (-dB) from Audio Ch1 to Ch8.

Edit Audio No(1-20) : 1		
Channel No.	Frequency	Volume
1CH (FL)	400Hz	(-) 18.0dB
2CH (FR)	1000Hz	(-) 18.0dB
3CH (LFE)	400Hz	(-) 18.0dB
4CH (FC)	1000Hz	(-) 18.0dB
5CH (RL/RC)	400Hz	(-) 18.0dB
6CH (RR)	1000Hz	(-) 18.0dB
7CH (RLC/RC)	400Hz	(-) 18.0dB
8CH (RRC/TC)	1000Hz	(-) 18.0dB
F : Front L : Left R : Right C : Center		
R : Rear W : Wide H : High T : Top		
LFE : Low Frequency Effect		

③ Setting the Audio Type(~9).

Audio No.	Format	Description
1	Static	L,R Fix mode
2	Winker	L,R same time On/Off mode
3	Alternate Winker	L,R individual On/Off mode
4	Random	5Khz ⇒6Khz ⇒4Khz ⇒2.5Khz ⇒6.5Khz Rotation
5	L/R Different Random	L,R individual (1Khz ⇒2Khz ⇒3Khz ⇒4Khz ⇒5Khz Rotation)
6	Frequency Up	300Hz to 20Khz / step to100Hz
7	Frequency Down	20Khz to 300Hz / step to 100Hz
8	Continue Up	20Hz to 1Khz / step to 1Hz
9	Continue Down	1Khz to 20Hz / step to 1Hz

④ Audio settings according to the Audio infoFrame Data Byte 4

CA (binary)								CA (hex)	Channel Number							
7	6	5	4	3	2	1	0		8	7	6	5	4	3	2	1
0	0	0	0	0	0	0	0	0x00	-	-	-	-	-	-	FR	FL
0	0	0	0	0	0	0	1	0x01	-	-	-	-	-	LFE	FR	FL
0	0	0	0	0	0	1	0	0x02	-	-	-	-	FC	-	FR	FL
0	0	0	0	0	0	1	1	0x03	-	-	-	-	FC	LFE	FR	FL
0	0	0	0	0	1	0	0	0x04	-	-	-	RC	-	-	FR	FL
0	0	0	0	0	1	0	1	0x05	-	-	-	RC	-	LFE	FR	FL
0	0	0	0	0	1	1	0	0x06	-	-	-	RC	FC	-	FR	FL
0	0	0	0	0	1	1	1	0x07	-	-	-	RC	FC	LFE	FR	FL
0	0	0	0	1	0	0	0	0x08	-	-	RR	RL	-	-	FR	FL
0	0	0	0	1	0	0	1	0x09	-	-	RR	RL	-	LFE	FR	FL
0	0	0	0	1	0	1	0	0x0A	-	-	RR	RL	FC	-	FR	FL
0	0	0	0	1	0	1	1	0x0B	-	-	RR	RL	FC	LFE	FR	FL
0	0	0	0	1	1	0	0	0x0C	-	RC	RR	RL	-	-	FR	FL
0	0	0	0	1	1	0	1	0x0D	-	RC	RR	RL	-	LFE	FR	FL
0	0	0	0	1	1	1	0	0x0E	-	RC	RR	RL	FC	-	FR	FL
0	0	0	0	1	1	1	1	0x0F	-	RC	RR	RL	FC	LFE	FR	FL
0	0	0	1	0	0	0	0	0x10	RRC	RLC	RR	RL	-	-	FR	FL
0	0	0	1	0	0	0	1	0x11	RRC	RLC	RR	RL	-	LFE	FR	FL
0	0	0	1	0	0	1	0	0x12	RRC	RLC	RR	RL	FC	-	FR	FL
0	0	0	1	0	0	1	1	0x13	RRC	RLC	RR	RL	FC	LFE	FR	FL
0	0	0	1	0	1	0	0	0x14	FRC	FLC	-	-	-	-	FR	FL
0	0	0	1	0	1	0	1	0x15	FRC	FLC	-	-	-	LFE	FR	FL
0	0	0	1	0	1	1	0	0x16	FRC	FLC	-	-	FC	-	FR	FL
0	0	0	1	0	1	1	1	0x17	FRC	FLC	-	-	FC	LFE	FR	FL
0	0	0	1	1	0	0	0	0x18	FRC	FLC	-	RC	-	-	FR	FL
0	0	0	1	1	0	0	1	0x19	FRC	FLC	-	RC	-	LFE	FR	FL
0	0	0	1	1	0	1	0	0x1A	FRC	FLC	-	RC	FC	-	FR	FL
0	0	0	1	1	0	1	1	0x1B	FRC	FLC	-	RC	FC	LFE	FR	FL
0	0	0	1	1	1	0	0	0x1C	FRC	FLC	RR	RL	-	-	FR	FL
0	0	0	1	1	1	0	1	0x1D	FRC	FLC	RR	RL	-	LFE	FR	FL
0	0	0	1	1	1	1	0	0x1E	FRC	FLC	RR	RL	FC	-	FR	FL
0	0	0	1	1	1	1	1	0x1F	FRC	FLC	RR	RL	FC	LFE	FR	FL
0	0	1	0	0	0	0	0	0x20	-	FCH	RR	RL	FC	-	FR	FL
0	0	1	0	0	0	0	1	0x21	-	FCH	RR	RL	FC	LFE	FR	FL
0	0	1	0	0	0	1	0	0x22	TC	-	RR	RL	FC	-	FR	FL
0	0	1	0	0	0	1	1	0x23	TC	-	RR	RL	FC	LFE	FR	FL
0	0	1	0	0	1	0	0	0x24	FRH	FLH	RR	RL	-	-	FR	FL
0	0	1	0	0	1	0	1	0x25	FRH	FLH	RR	RL	-	LFE	FR	FL
0	0	1	0	0	1	1	0	0x26	FRW	FLW	RR	RL	-	-	FR	FL
0	0	1	0	0	1	1	1	0x27	FRW	FLW	RR	RL	-	LFE	FR	FL
0	0	1	0	1	0	0	0	0x28	TC	RC	RR	RL	FC	-	FR	FL
0	0	1	0	1	0	0	1	0x29	TC	RC	RR	RL	FC	LFE	FR	FL
0	0	1	0	1	0	1	0	0x2A	FCH	RC	RR	RL	FC	-	FR	FL
0	0	1	0	1	0	1	1	0x2B	FCH	RC	RR	RL	FC	LFE	FR	FL
0	0	1	0	1	1	0	0	0x2C	TC	FCH	RR	RL	FC	-	FR	FL
0	0	1	0	1	1	0	1	0x2D	TC	FCH	RR	RL	FC	LFE	FR	FL
0	0	1	0	1	1	1	0	0x2E	FRH	FLH	RR	RL	FC	-	FR	FL
0	0	1	0	1	1	1	1	0x2F	FRH	FLH	RR	RL	FC	LFE	FR	FL
0	0	1	1	0	0	0	0	0x30	FRW	FLW	RR	RL	FC	-	FR	FL
0	0	1	1	0	0	0	1	0x31	FRW	FLW	RR	RL	FC	LFE	FR	FL
0	0	1	1	0	0	1	0	0x32	Reserved							
...																
1	1	1	1	1	1	1	1	0xFF								

⑤ Setting Audio CA(~49).

No.	Description
2 CH = 0	Set 1 & 2 Channel among the Audio 8 Channel
2.1 CH = 1	Set 1 ~3 Channel among the Audio 8 Channel
4 CH = 8	Set 1 ~4 Channel among the Audio 8 Channel
5.1 CH = 11	Set 1 ~6 Channel among the Audio 8 Channel
7.1 CH = 19/31/41/43/45/47/49	Set 1 ~8 Channel among the Audio 8 Channel

⑥ Setting Minimum Frequency(Hz).

: SWEEP MODE of minimum Frequency setting.

⑦ Setting Maximum Frequency(Hz).

: SWEEP MODE of maximum Frequency setting.

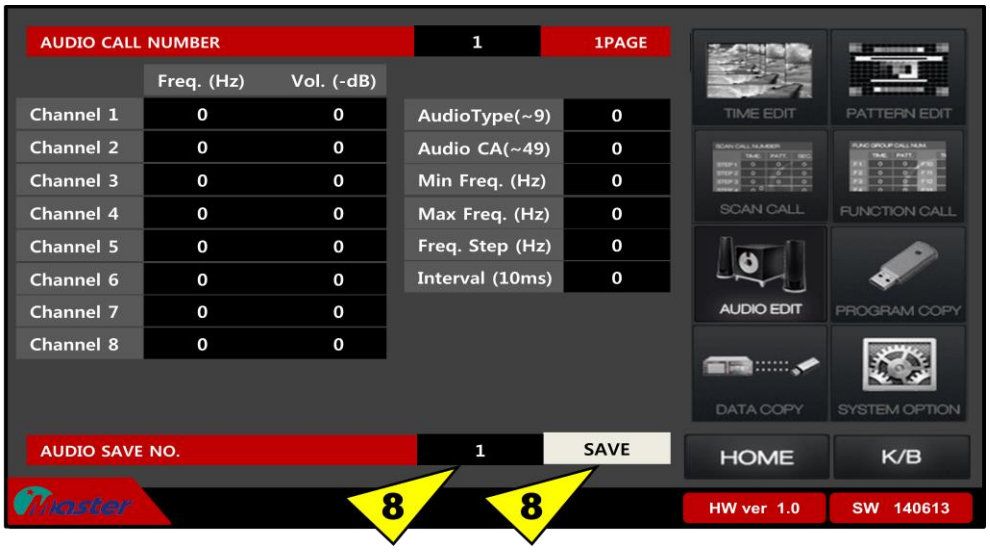
⑧ Setting Frequency Step(Hz).

: SWEEP MODE of maximum Frequency setting.

⑨ Setting the Audio output Interval(10ms)_(***except Static***)

No.	Format
Static	L,R Fix Mode
Winker	L,R Together On/Off
Alternate Winker	L,R Separately On/Off
Random	5Khz ⇒6Khz ⇒4Khz ⇒2.5Khz ⇒6.5Khz Rotation
LR Different Random	S,R Separately(1Khz ⇒2Khz ⇒3Khz ⇒4Khz ⇒5Khz
Frequency Up	Rotation from 300Hz to 20Khz in 100Hz Step
Frequency Down	Rotation from 20Khz to 300Hz in 100Hz Step
Continue Up	Rotation from 20Hz to 1Khz in 1Hz Step
Continue Down	Rotation from 1Khz to 20Hz in 1Hz Step

⑩ When you changed setting value, then move to cursor at SAVE blank section and insert save number(1~20).Push the Enter key for running setting.



5) MSPG-8100SS's Audio Setting

Reference Audio Value Settings in the 180dB 400mVrms.

400mVrms = $\sqrt[2]{2}X400$ = 1130mV

Left Audio : Digital Audio Output Convers to Analog Audio data.

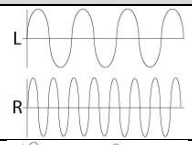
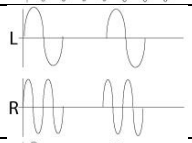
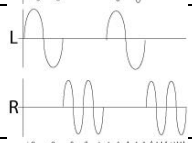
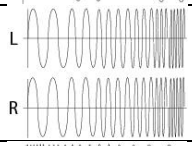
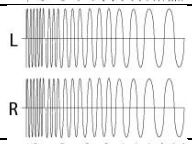
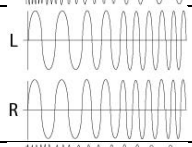
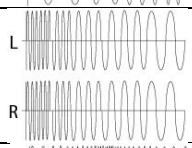
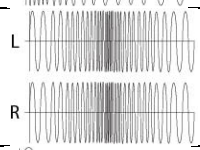
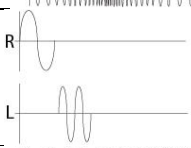
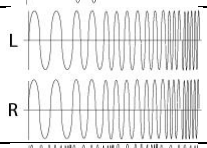
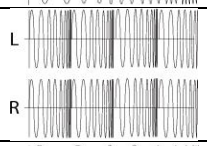
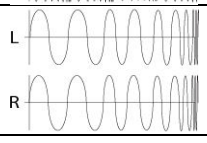
dB(decibel)	Output(mv)400Hz	1000Hz	2000Hz	4000	8000	10000	Reference Value(mV)	
480	37	36	36	36	37	37	36	
420	71	71	71	71	71	72	71	
360	141	141	141	141	141	141	142	
300	285	285	285	285	285	285	285	
240	566	569	566	566	566	566	570	
180(standard)	**1136**	**1133**	**1133**	**1133**	**1133**	**1132**	**1140**	**400mVrms**
120	2278	2278	2278	2277	2275	2270	2280	
60	4452	4454	4454	4453	4450	4444	4560	
0	5615						9120	

Right Audio : Digital Audio Output Convers to Analog Audio data.

dB(decibel)	Output(mv)400Hz	1000Hz	2000Hz	4000	8000	10000	Reference Value(mV)	
480	36	36	36	36	36	36	36	
420	70	71	70	71	70	70	71	
360	141	141	141	141	141	141	142	
300	283	284	284	285	283	28283	285	
240	565	566	566	566	564	562	570	
180(standard)	**1128**	**1132**	**1132**	**1134**	**1132**	**1129**	**1140**	**400mVrms**
120	2258	2268	2269	2270	2270	2268	2280	
60	4445	4450	4450	4450	4447	4440	4560	
0	5563						9120	

※ If you set at a low level then 60dB, Audio output come out distortion.

6) Default Mode: (21~32)

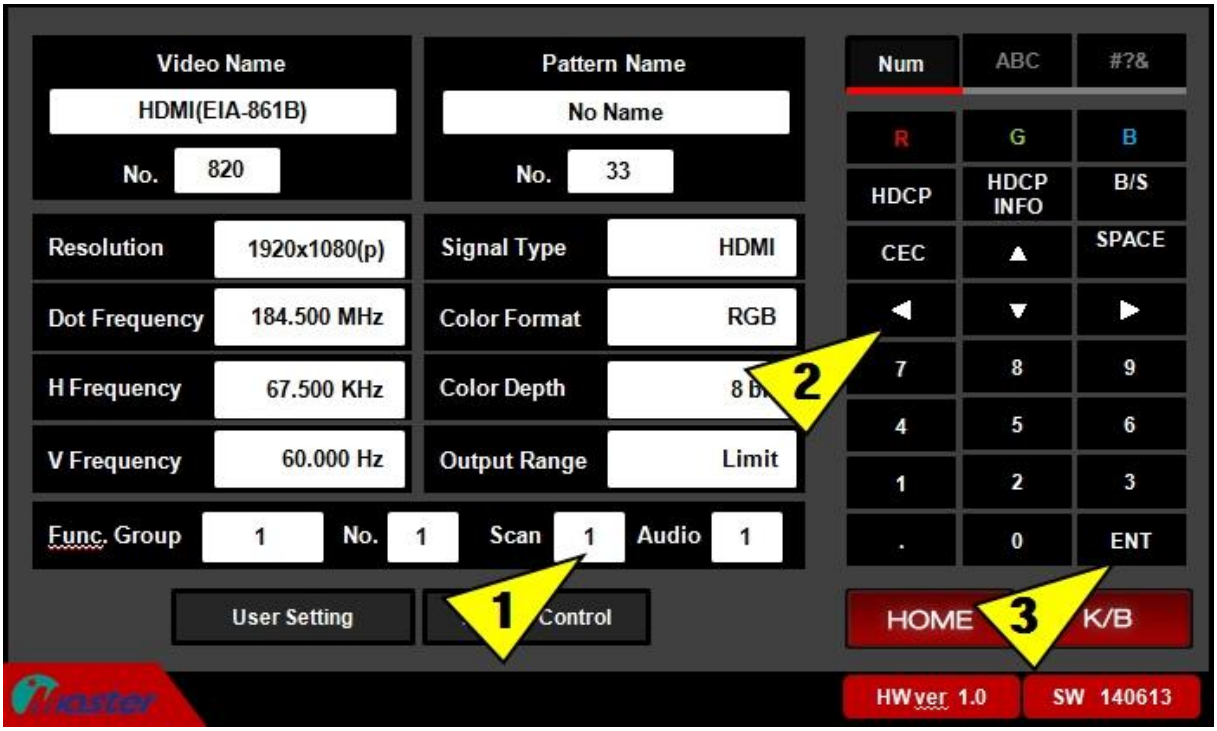
Name	Waveform	Setting Value	
Audio Pattern 21		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	1 0 0 0 0 0
Audio Pattern 22		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	4 0 0 0 0 100
Audio Pattern 23		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	5 0 0 0 0 100
Audio Pattern 24		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	7 0 200 3000 400 100
Audio Pattern 25		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	8 0 200 3000 400 100
Audio Pattern 26		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	7 0 200 3000 40 800
Audio Pattern 27		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	8 0 200 3000 40 100
Audio Pattern 28		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	9 0 200 3000 40 100
Audio Pattern 29		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	6 0 200 3000 40 100
Audio Pattern 30		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	7 0 300 750 1 1
Audio Pattern 31		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	7 0 610 690 1 20
Audio Pattern 32		Audio Type (~9) Audio CA(~49) Min Freq.(Hz) Max Freq.(Hz) Freq. Step(Hz) Interval (10ms)	7 0 30 750 1 10

*** Programmable Mode: (1~20)**

4.3.5 Scan Function

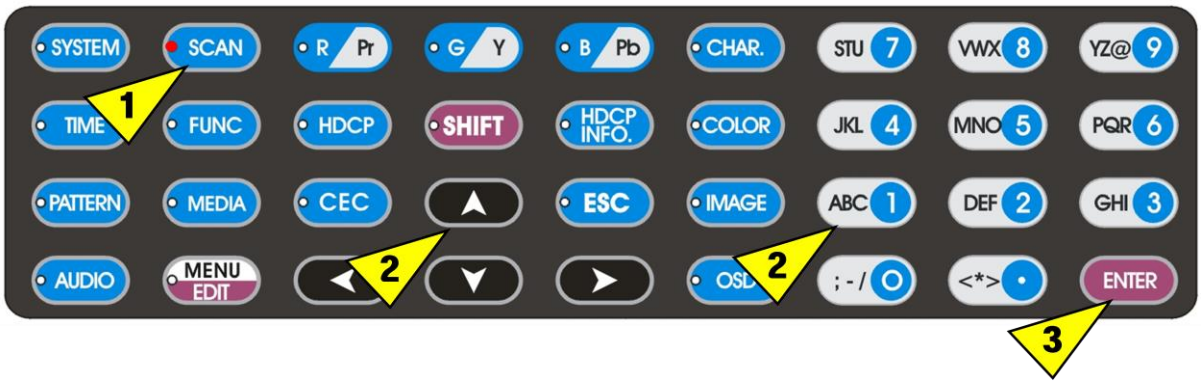
Scan function has been displayed progressively by coupled arbitrary pattern and timing during the fixed time. If you want to stop scan, push any key of front panel.

1) Scan change using the Touch Screen.



① Select the Scan number to activate scan setting.
② Push the arrow key or number key for selecting wanted scan(1~99).
③ Push the Enter key for running setting.

2) SCAN change using the Keypad.

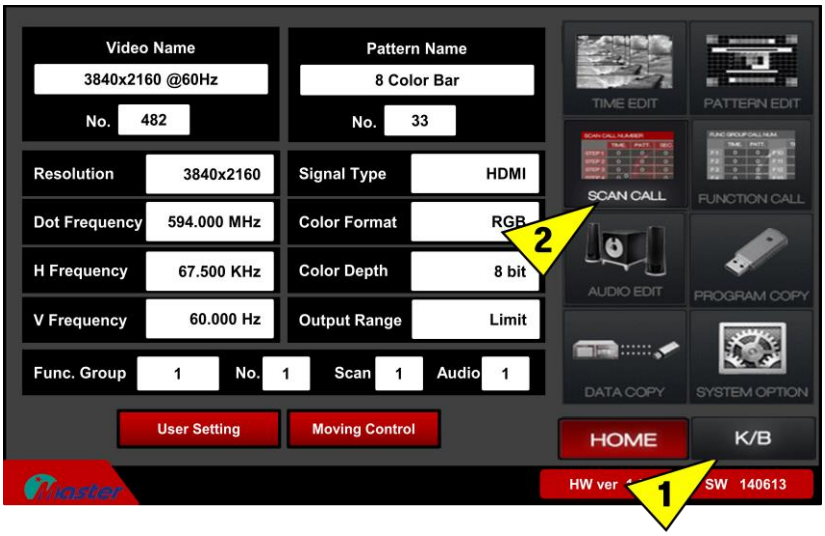


① Select the SCAN key to activate scan setting.
② Push the arrow key or number key for selecting wanted scan number.
③ Push the ENTER key for running setting.

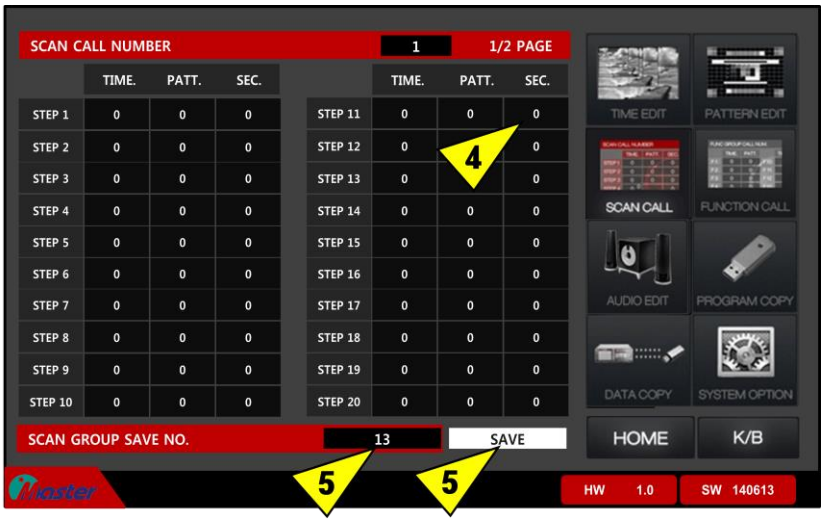
3) SCAN Edit.

① Push the K/B key to activate edit list.

② Push the SCAN CALL key to activate Scan edit setting.



③ Below Scan edit list will be showing.
Push the arrow key or number key to change setting value.

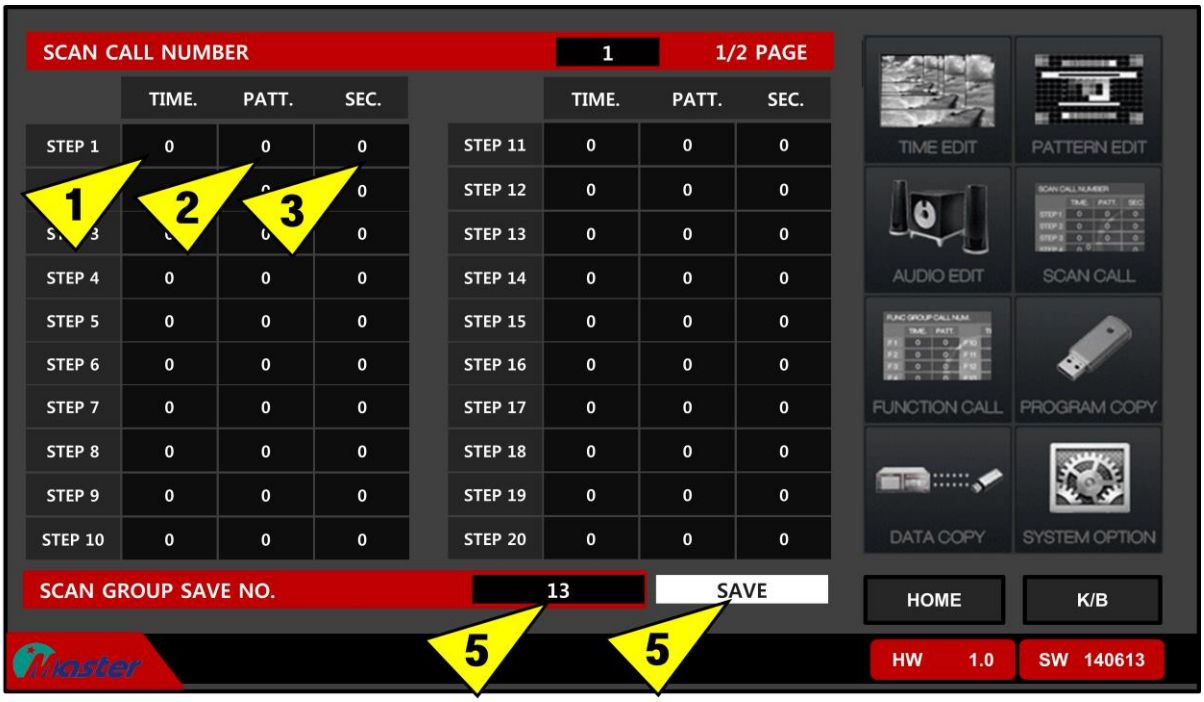


④ If you want move to next page, then move cursor to any list section and push the right(or left) key at the key pad.

⑤ When you change setting value, put the new Scan information and insert your save number (1~99).

Push the SCAN key on the keypad, the same function can be performed..

4) SCAN edit list.



① TIME.: Insert timing number(1~999).

② PATT.: Insert pattern number(1~999).

③ SEC.: Set up the Sec(1~9999).

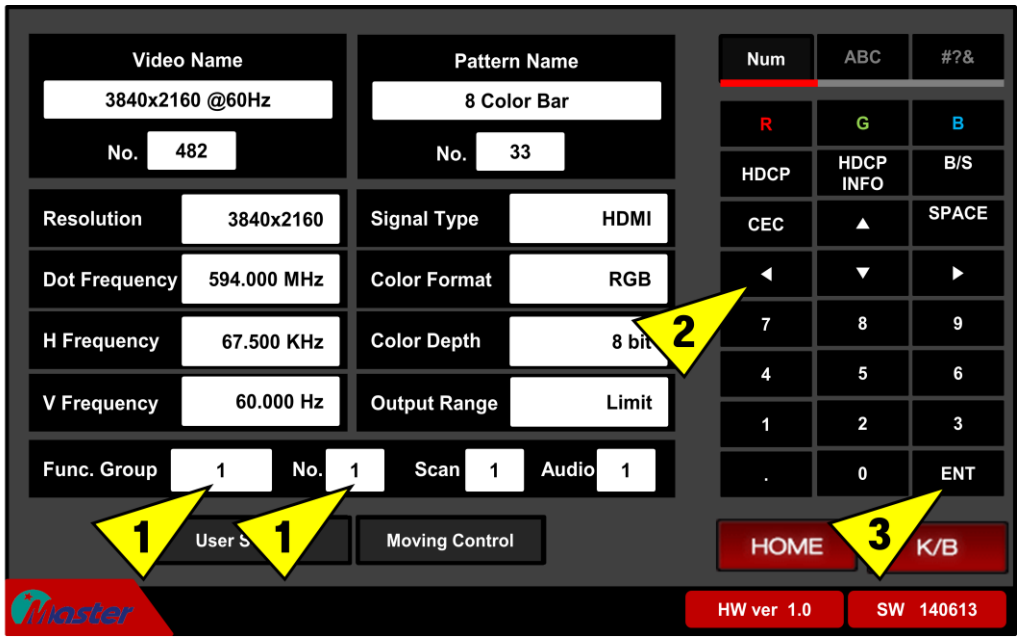
④ Please repeat above 1~3 step and you can edit total step 40.

⑤ When you change setting value, put the save number(1~99) and push the “SAVE” key to finish setting value.

4.3.6 Function

Function means that arbitrary pattern and timing have been coupled and then it can be called at once.

1) Function change using the Touch Screen.



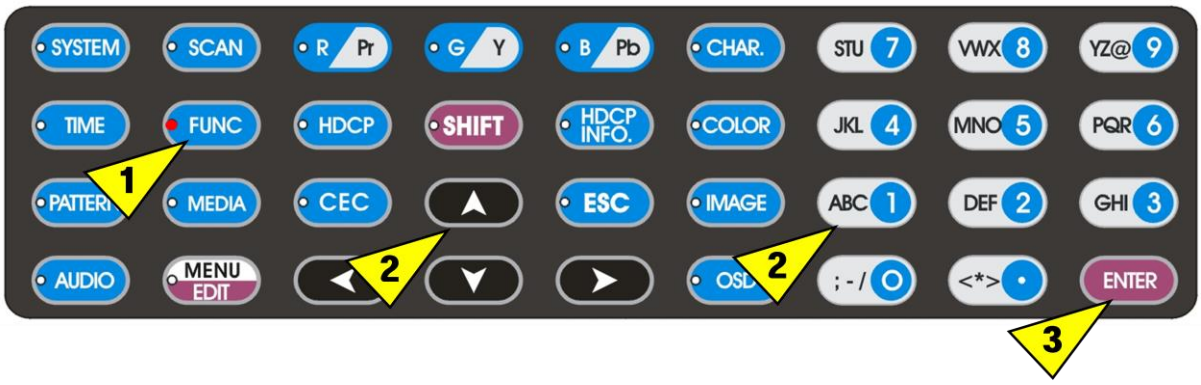
① Select the Func.Group to activate Function Group setting.

② Push the arrow key or number key for selecting wanted Function group.

- ✓ Function Group : 1~99
- ✓ Function Number : F1~F30

③ Push the ENTER key for running setting.

2) FUNCTION change using the Keypad.



① Select the FUNC key to activate function setting.

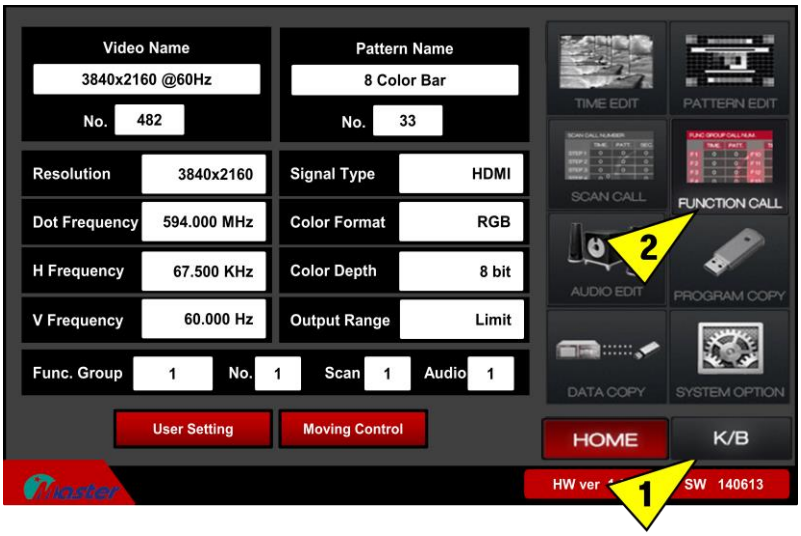
② Push the arrow key or number key for selecting wanted function.

③ Push the ENTER key for running setting.

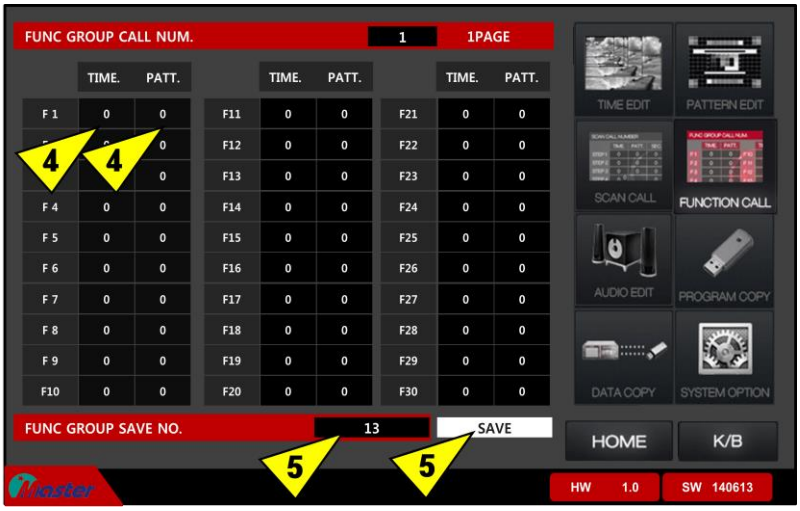
3) FUNCTION edit list.

① Push the K/B key to activate edit list.

② Push the FUNCTION CALL key to activate Function edit list.



③ Below edit list will be showing.
Push the arrow key or number key to change setting value.



④ You can edit total 30 of timing with pattern at one group(1~99Group).

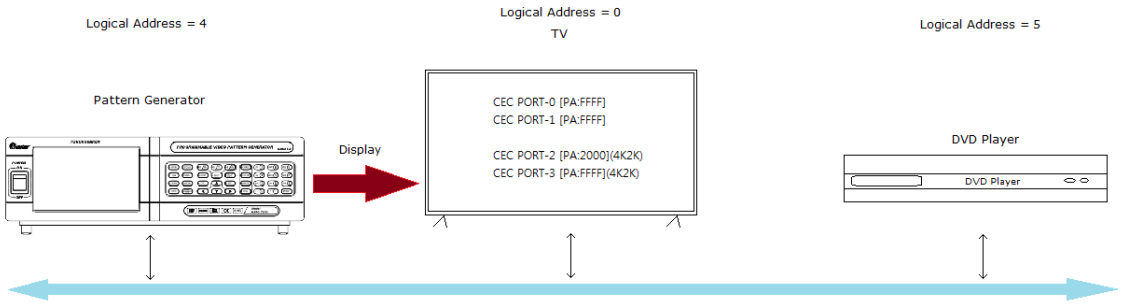
⑤ When you change setting value, put the save number(1~99) and push the "SAVE" key to finish setting value.

Push the "FUNC" key on the key pad, the same function can be performed.

4.3.7 CEC Function

HDMI signal controls CEC command code. And users control by only one input source to various devices.

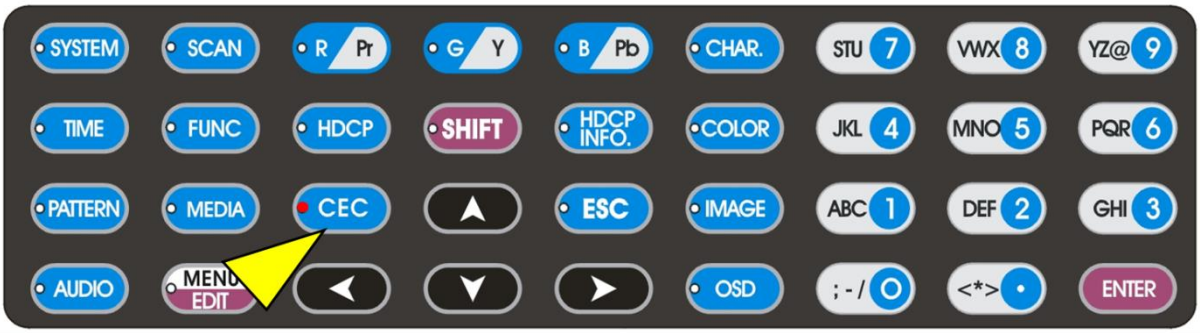
※(ex.)Refer to the below picture _Local address may get changed.



When you connect signal generator and TV set via CEC function, you can see like upper picture. (Physical address and connected HDMI port displayed on the TV set)

※Before using CEC function, turn on the display's CEC function.

Ex) Samsung-Anynet+, LG-Simple Link etc.



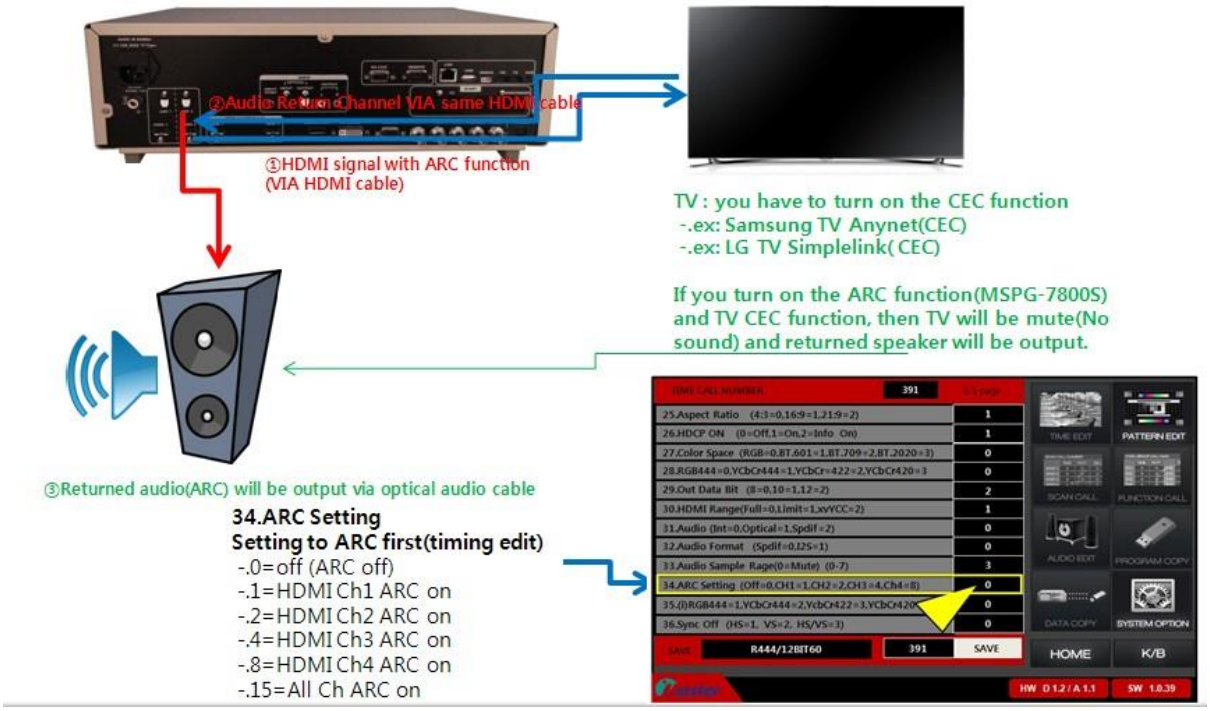
Turn on the CEC function.

1) TV Remote controller controls like below functions
   - Play = Pattern Moving
   - Pause = Moving Stop
   - Next = Next Pattern
   - Back = Previous Pattern

2) CEC Power On

   If the TV is turned off while it is connected to the CEC function, you can turn on the TV by pressing the Generator's CEC button

3) ARC setting



*Caution

- Please use HDMI timing and turn on the CEC button at MSPG's front panel.
- Check TV's CEC function turned on before using ARC function
- Confirm whether your TV set support ARC function or not
- When you turn on the ARC function, It will outputs to the connected speaker
  Check you speaker's power and connection

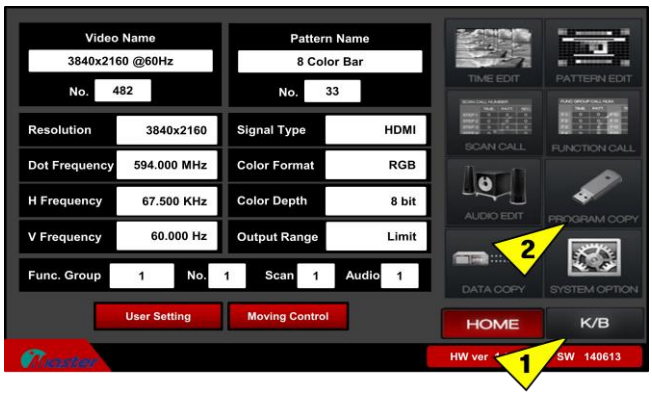
4.3.8 Program Copy (Image Pattern or Firmware Update)

You can use USB memory stick to copy/update (or read/back up) Image or update main program.

1) Program Copy list

① Push the K/B key to activate edit list.

② Push the PROGRAM COPY key to activate program copy window.



③ Below program copy window will be showing.

④ Insert your USB Memory Stick at MSPG-8100S's rear panel.

⑤ Push the button to find USB memory stick.

USB0_1 file list will be showing at LCD screen.

⑥ Push the Folder on the LCD then press Enter key, you can see the contents inside.

- ✓ MEMORY: Image save space.(1~40)
- ✓ Add: User can copy and delete file.
- ✓ Copy: User can copy file.
- ✓ Delete: User can delete file from the folder.
- ✓ File Info: User can see file size stored in folder.
- ✓ View: User can preview image on the LCD.

2) Firmware Update

MSPG-8100S can be easy update to main program using the USB memory stick.

① Please get Firmware data from Master Co.,Ltd and save to USB memory stick.

A. XXXXXX_all_in_one.mspg8100: Firmware, FPGA, Hardware, Kernel, Safety.

B. XXXXXX_fpga_firmware.mspg8100: Firmware, FPGA, Hardware.

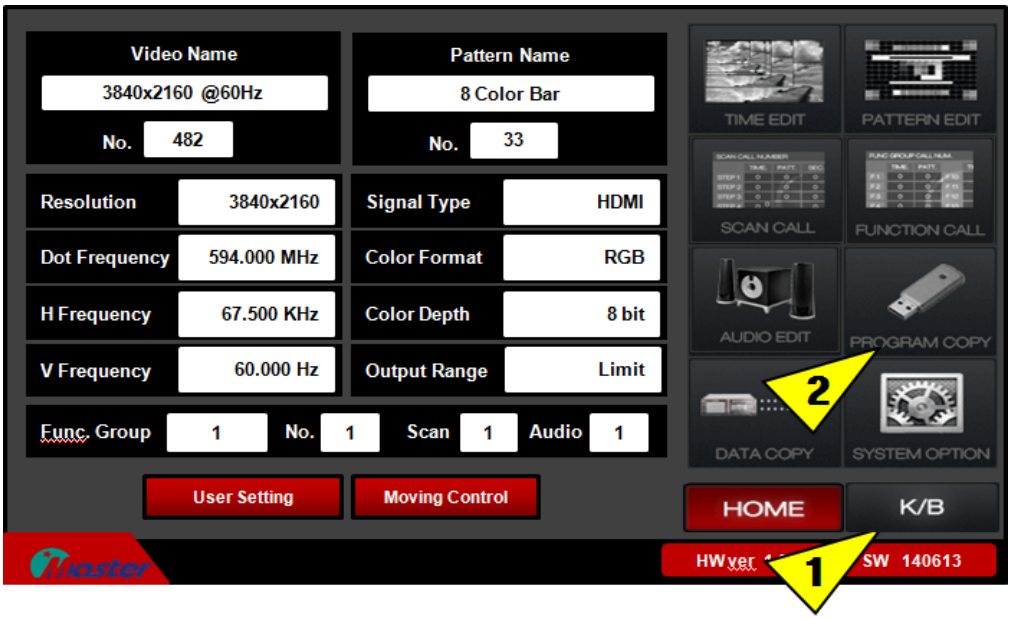
C. XXXXXX_firmware_only.MSPG-8100: Firmware

*XXXXXX is Year XX, Month XX and Date XX.

② Connect to the USB memory stick with MSPG-8100Srear panel as below.

③ Push the K/B key to activate edit list.

④ Push the PROGRAM COPY key to activate program copy window.



⑤ Make sure "USB0_1" is created or not on the list.

(Press key if you can't find "USB0_1" on the list after connection.)

⑥ Select "USB0_1" then press enter key.

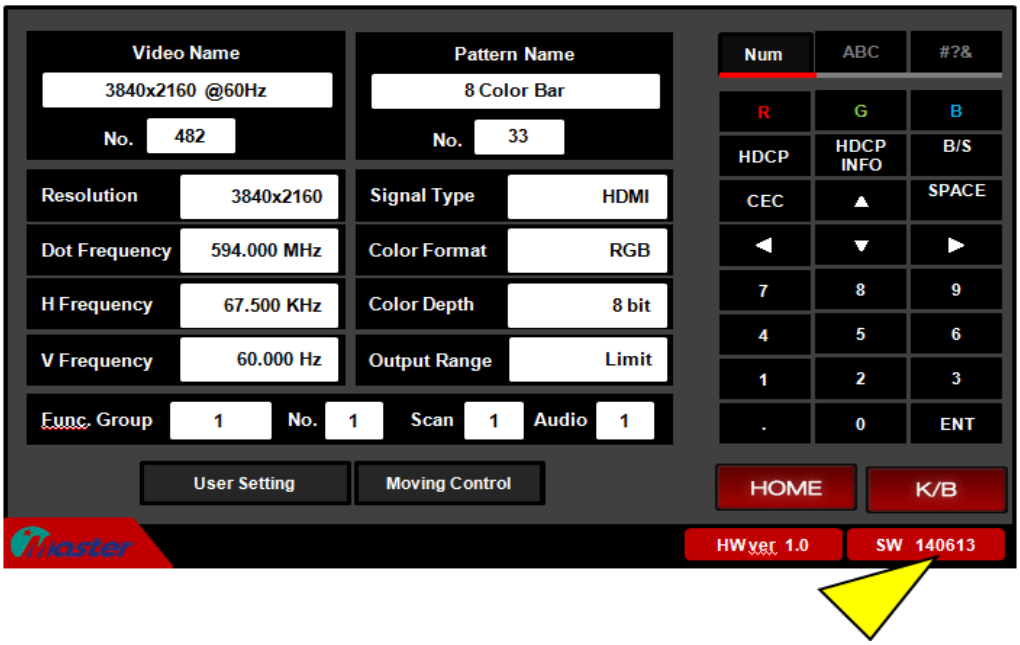
⑦ Select program file and press enter key for programupdate.

(Password is set up to "8880")

⑧ Update will begin to “File System Erase Start” on the LCD screen.

⑨ Finally, “Please Power turn OFF and then ON!!” will be showing on the LCD screen. Please turn off MSPG-8100S and re-start MSPG-8100S

⑩ Please check HW and SW(Soft Ware) version as below.



If you having trouble with update, then please follow below step for into the ***SAFETY MODE*.**

A. Connect to USB memory stick to MSPG-8100S

B. Keep pushing the SUB button at MSPG-8100S’ rear panel, then turn on the power button.

C. LCD screen will be showing “SAFETY”, and now is working to safety mode.

D. Please re-try above step 2)Firmware Update at ③~⑩.

3)Image Save to MSPG-8100S

MSPG-8100S can be easy up-load to image file using the USB memory stick.

① Save to ***BMP*** image(24bit BMP only) to USB Memory Stick

② Connect to the USB memory stick with MSPG-8100S rear panel as below.

③ Push the K/B key to activate edit list.

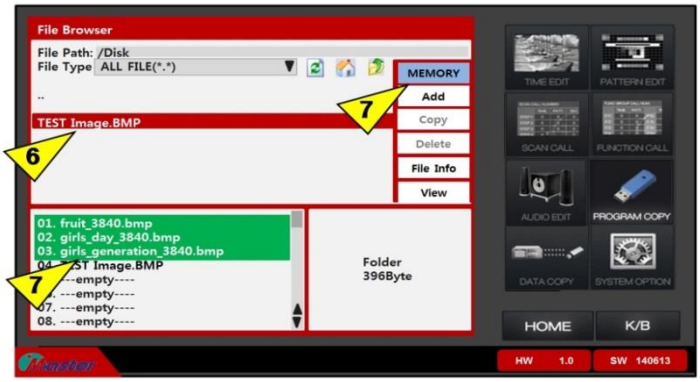
④ Push the 

key to activate program copy window.

⑤ Make sure "USB0_1" is created or not on the list and push the USB0_1.
(Press key if you can't find "USB0_1" on the list after connection.).

⑥ Saved to USB memory image files (also other files) will be showing.

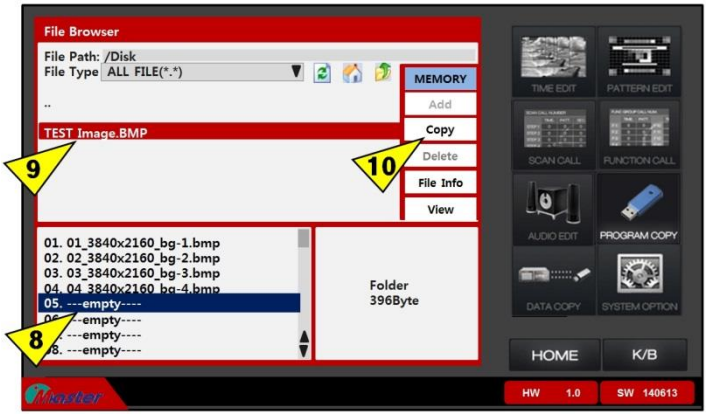
⑦ Push the MEMORY button, then1~40 image spaces will be showing.
(No1~6 already have saved Image, it will be showing pattern number at No701~706)



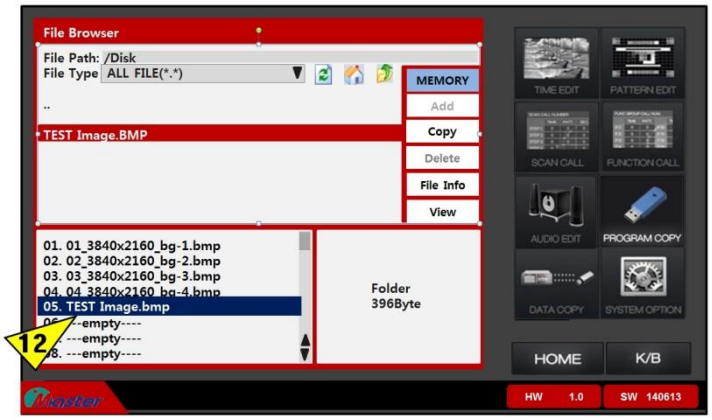
⑧ Please select empty image space first.
07.---empty--- : It will be saved pattern No. 707
15.---empty--- : It will be saved pattern No. 715
(1~40 : Pattern No. 701~740)

⑨ Please select the upload image.(TEST Image.BMP)

⑩ Push the Copy key for write.(Existing image will be deleted)
(Pass word set up to 8880)



⑪ "NAND Copy Please wait" will be showing on the LCD screen, after copy the image name will be showing as below.



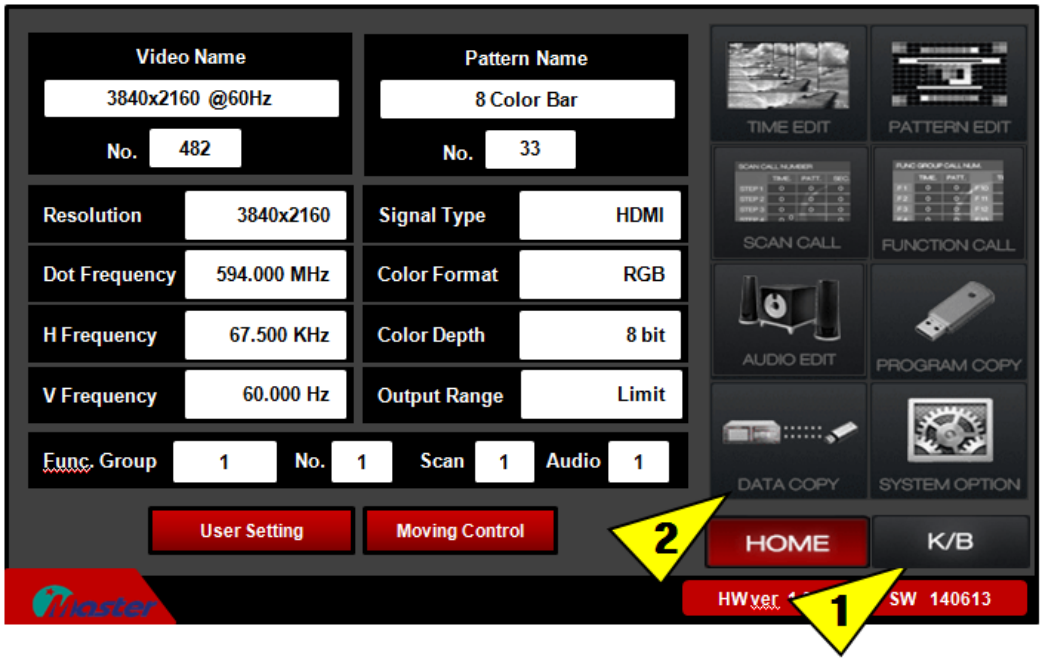
⑫ Saved image pattern can be displayed at pattern number701~740.

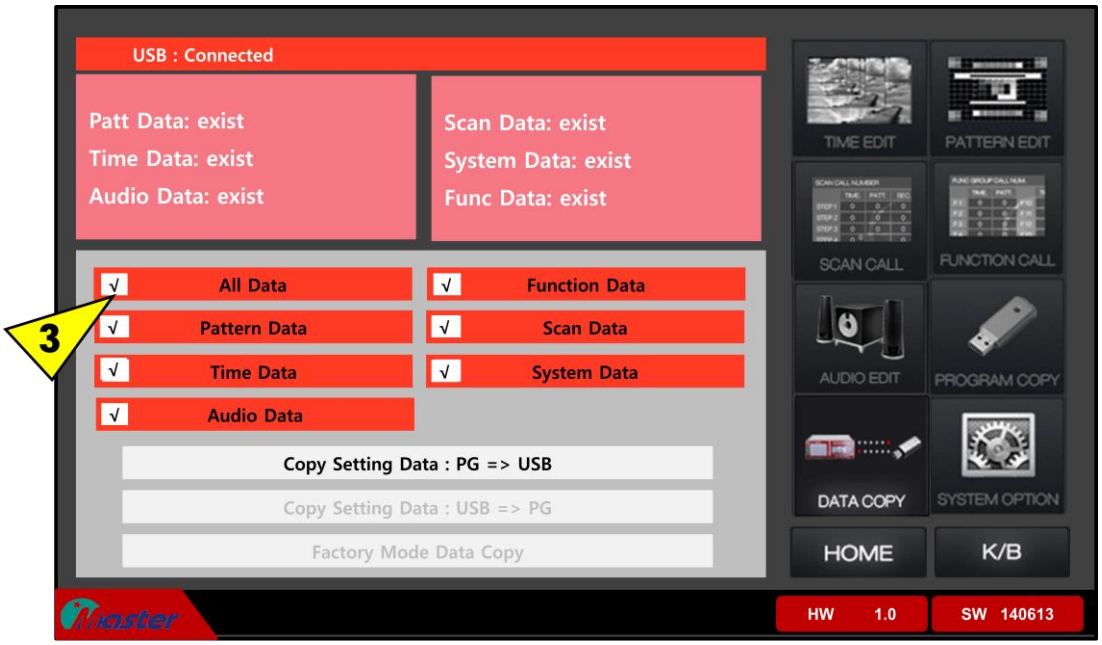
4.3.9 Data Copy

MSPG-8100S can be easy update to Pattern & Timing, Scan, Function and Audio update just using the USB memory stick.

① Push the K/B key to activate edit list.

② Push the DATA COPY key to activate data copy window.





③ All Data: All of data include Function, Pattern, Scan, Time and Audio data. If you want to update for all of data, then please push the “All Data” for check.

④ Function Data: Only Function data select. If you want to update for Function data, then please push the “Function Data” for check.

⑤ Pattern Data: Only Pattern data select. If you want to update for Pattern data, then please push the “Pattern Data” for check.

⑥ Scan Data: Only Scan data select. If you want to update for Scan data, then please push the “Scan Data” for check.

⑦ Time Data: Only Timing data select. If you want to update for Timing data, then please push the “Time Data” for check.

⑧ Audio Data: Only Audio data select. If you want to update for Audio data, then please push the “Audio Data” for check.

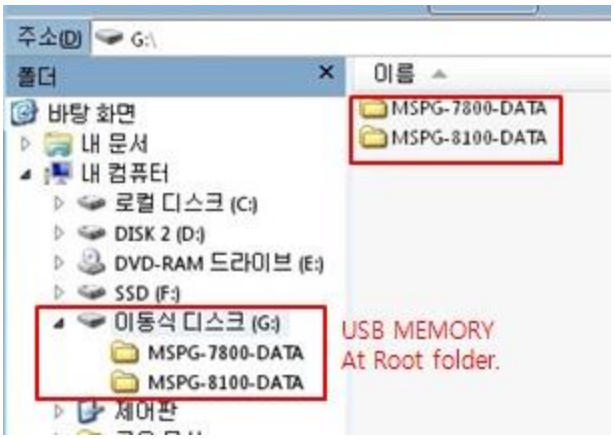
⑨ Copy Setting Data: PG =>USB: Selected Data file will be update from MSPG-8100S to USB Memory Stick. Password is set up to “8880”.
(**Automatically USB memory stick will be updated selected data file atnewlycreatedfolder name with “MSPG-8100-DATA)

⑩ Copy Setting Data: USB => PG: Selected DATA file will be update from USB Memory stick to MSPG-8100S. Password is set up to “8880”. Enter the password and it will be finish update within four second, with “Data Copy from Storage!! Power Off =>On ” display.

(**Before update, please make new folder name to “MSPG-8100-DATA” in USB memory stick with each file data.” If there is no folder name to “MSPG-8100-DATA”, then MSPG-8100S can’t find(recognize) data.)

A. Please prepare “MSPG-8100-DATA.ZIP” file from Master Co., Ltd.

B. Please un-zip and saved to USB memory stick at *Root folder*.



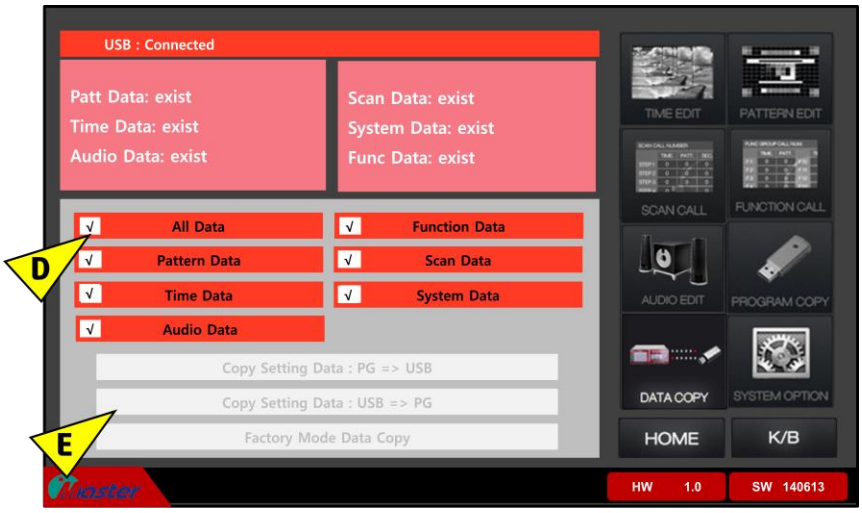
C. Connect USB memory stick to MSPG-8100S’s USB port. Push the K/B and push the Data Copy.

D. Check the All Data.

E. Push the “Copy Setting Data: USB => PG”.

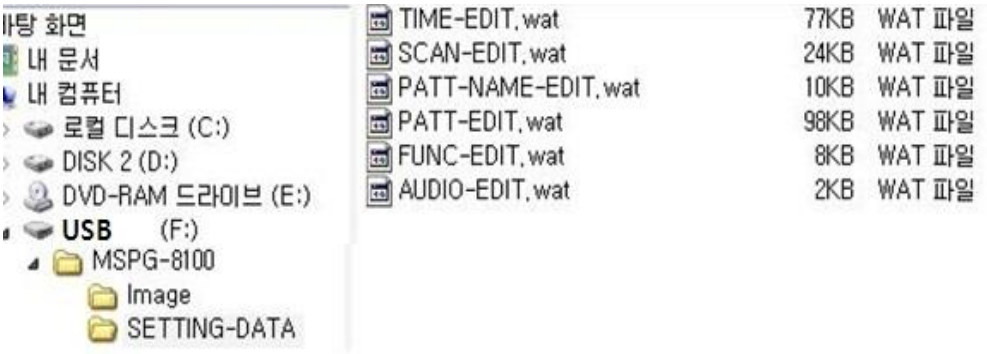
F. Pass word set up to “8880” and push the OK.

G. Update will be finish within 3~4 seconds with “Data Copy from Storage!! Power Off =>On”, please turn off and on for finish update.(Existed 1~500Timing Data, 1~500Pattern Data, 1~99 Function Data, 1~99 Scan Data and 1~20 Audio data will be overwrite)



⑪ Factory Mode Data Copy: Using the USB Memory Stick and can be update to ***Image file, Pattern, Timing, Scan, Function and Audio data*** at once.

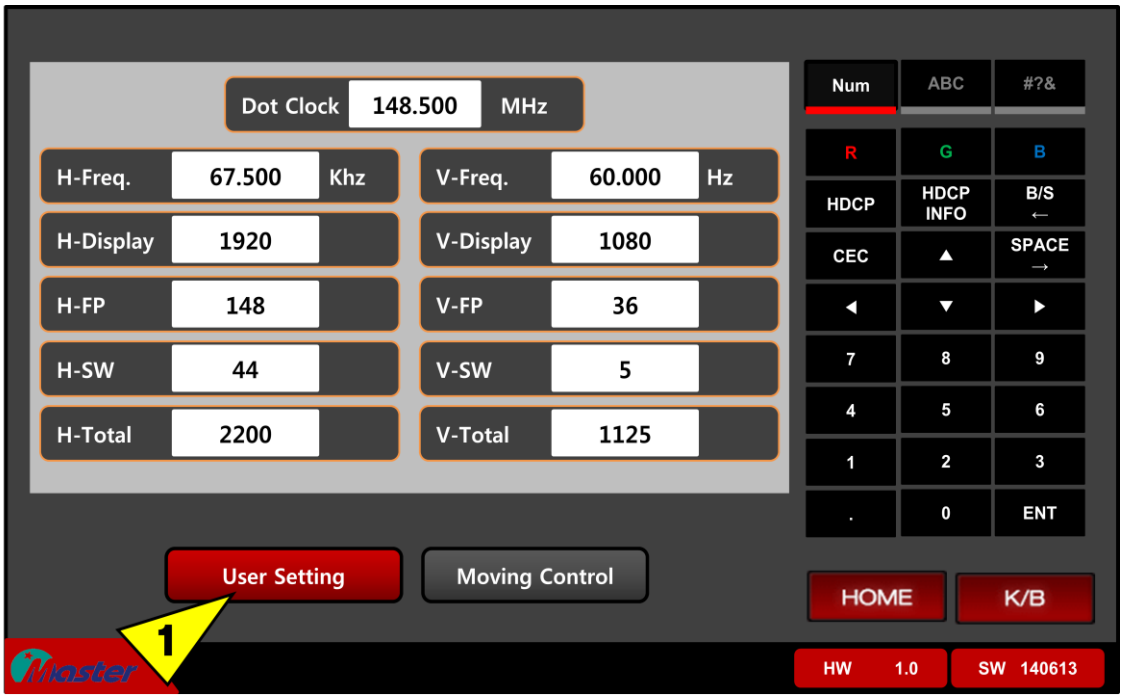
A. Make folder in USB memory stick, the folder name is MSPG-8100S.
B. Make "Image" folder in the"MSPG-8100S". Save image that is download.
C. Make "SETTING-DATA" folder in the "MSPG-8100S". Save all data file that is down load.



D. Connect USB Memory Stick to rear panel of MSPG-8100S and push the "Factory Mode Data COPY"
E. Input the pass word(8880) and update will be begin.

4.3.10 User Setting

User Setting is called from the main screen can be checked in detail. And option value can be change to test.



Note)Changed timing value is not saved at this function.

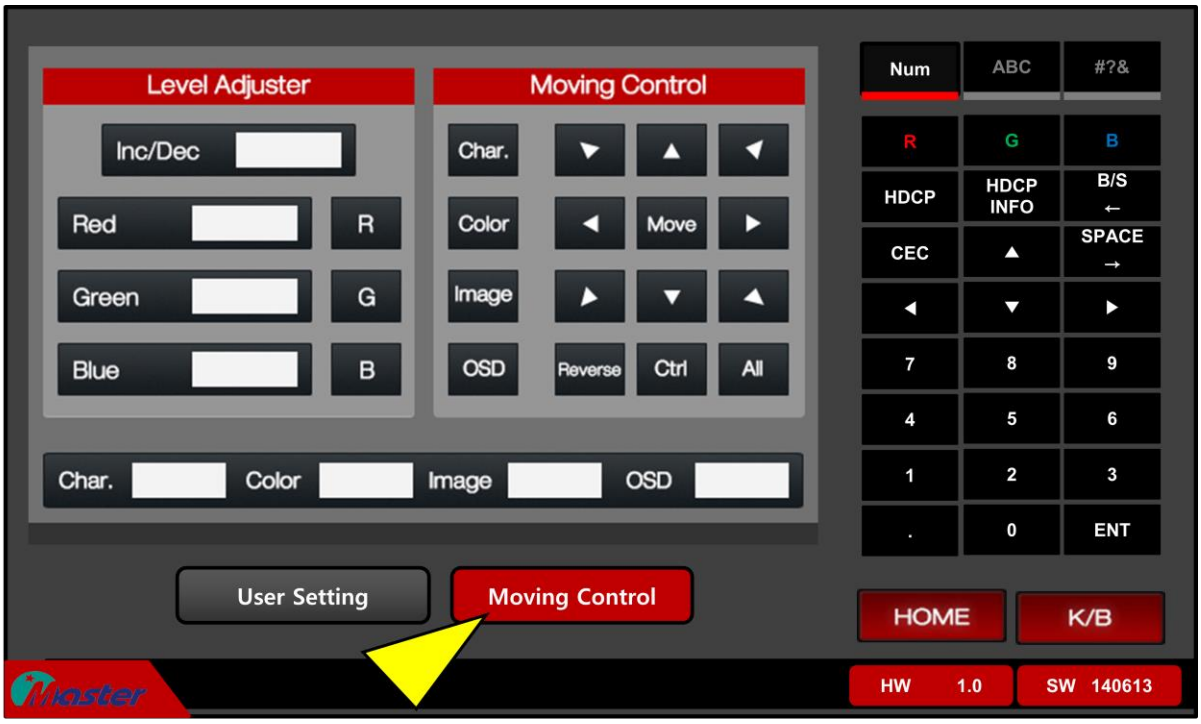
1) User detail Setting List.

① Dot Clock: Dot Clock to MHz step.
② H-Freq/V-Freq: Horizontal/Vertical frequency.
③ H-FP/V-FP: Horizontal/Vertical Front Poch.
④ H-SW/V-SW: Horizontal/Vertical Sync Width.
⑤ H-Total/V-Total: Horizontal/Vertical Total.

2) Moving Control

Level Adjuster is each Red, Green and Blue level can be adjustment from -255 to +255.

Moving Control each pattern of character, color, image and OSD can be moving to all of direction.



- ✓ Inc/Dec: Level can be adjustment from step one to next step….
- ✓ Red: Red level can be adjustment from-255 to +255. (Select "R" first)
- ✓ Green: Green level can be adjustment from -255 to +255. (Select "G" first)
- ✓ Blue: Blue level can be adjustment from -255 to +255. (Select "B" first)
- ✓ R, G, B: Select R, G and B for change level adjustment.
- ✓ Char.: Character select for moving control.
  - ➢ Select Char. key, and push the direction key at the LCD screen.
  - ➢ If you want to increase or decrease of Character moving speed, then please push the up/down key at keypad.
- ✓ Color: Color select for moving control.
  - ➢ Select Color. key, and push the direction key at the LCD screen.
  - ➢ If you want to increase or decrease of Color moving speed, then please push the up/down key at keypad.
- ✓ Image: Image select for moving control.
  - ➢ Select Image key, and push the direction key at the LCD screen.
  - ➢ If you want to increase or decrease of Image moving speed, then please push the up/down key at keypad.
- ✓ OSD: Select OSD key for moving control.
  - ➢ Select OSD key, and push the direction key at the LCD screen.

- If you want to increase or decrease of OSD moving speed, then please push the up/down key at keypad.

- ✓ MOVE(Flicker): Push the "Move" key then displayed output will change to Flicker function.
- ✓ Reverse: Reverse key for pattern.
- ✓ Ctrl: Each control of Window Pattern, MPRT Pattern, G to G Pattern.(Will be updated.)
- ✓ All: Select to Character, Color, Image and OSD at once.(Will be updated.)
- ✓ Interval: Pattern's Interval time setting at Hz step.(Will be updated.)
- ✓ Step: Pattern's step time setting at Pixel step.(Will be updated.)
- ✓ H-Pixel: Horizontal width change to pixel step of Window Pattern and MPRT Pattern.(Will be updated.)
- ✓ V-Pixel: Vertical width change to pixel step of Window Pattern, MPRT Pattern.(Will be updated.)

MSPG-8100S

5. Chapter Five

RS-232C Communication Interface

5.1 RS-232C Communication Interface.

Chapter 5.RS-232C Interface

5.1RS-232C Communication Interface

1) Definition of RS-232C interface

RS-232C port can be connected to remote controller, PC and that accomplished controlling device.

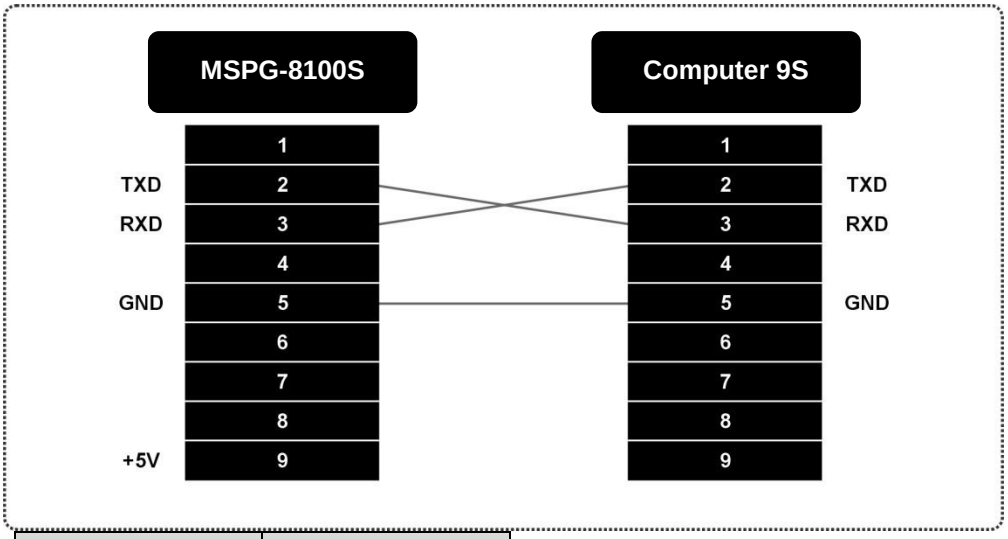
It should be the same setting both band rate protocol during the RS-232 communication.

Please find setting method from page 18, SYSTEM button.

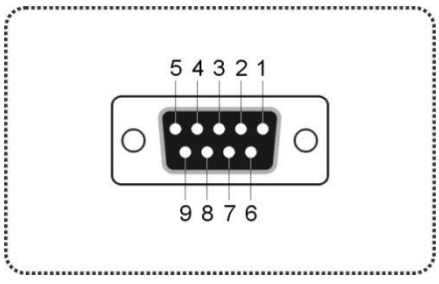
RS-232C can improve the productivity of labor from automatic line and equipment(White balance, Pattern controlling equipment) by Calling/Editing function of MSPG-8100S through PC and other devices.

RS-232C cable is no problem as communicating cable, but beware, because 9th pin of MSPG-8100S is connected to +5V.

2) RS-232C Cable Connection



Pin No.	Pin Name
1	N.C
2	RXD
3	TXD
4	N.C
5	GND
6	N.C
7	N.C
8	N.C
9	+5V (For Remote)



3) RS-232C UARTs Setting

① Connect RS-232C cable (Cross type) to PC between MSPG-8100S's RS-232 port.

② Push the "SYSTEM" button on the MSPG-8100S's keypad.

③ Move cursor to system list at 4.UARTs setting Port [0=PC, 1=Ext1, 2=Ext2] 0 and push "ENTER" button.(Default password is "8880")

④ Check the value on the MSPG-8100S

(1)Baud Rate setting

(2)Data bits setting

(3)Stop bits setting

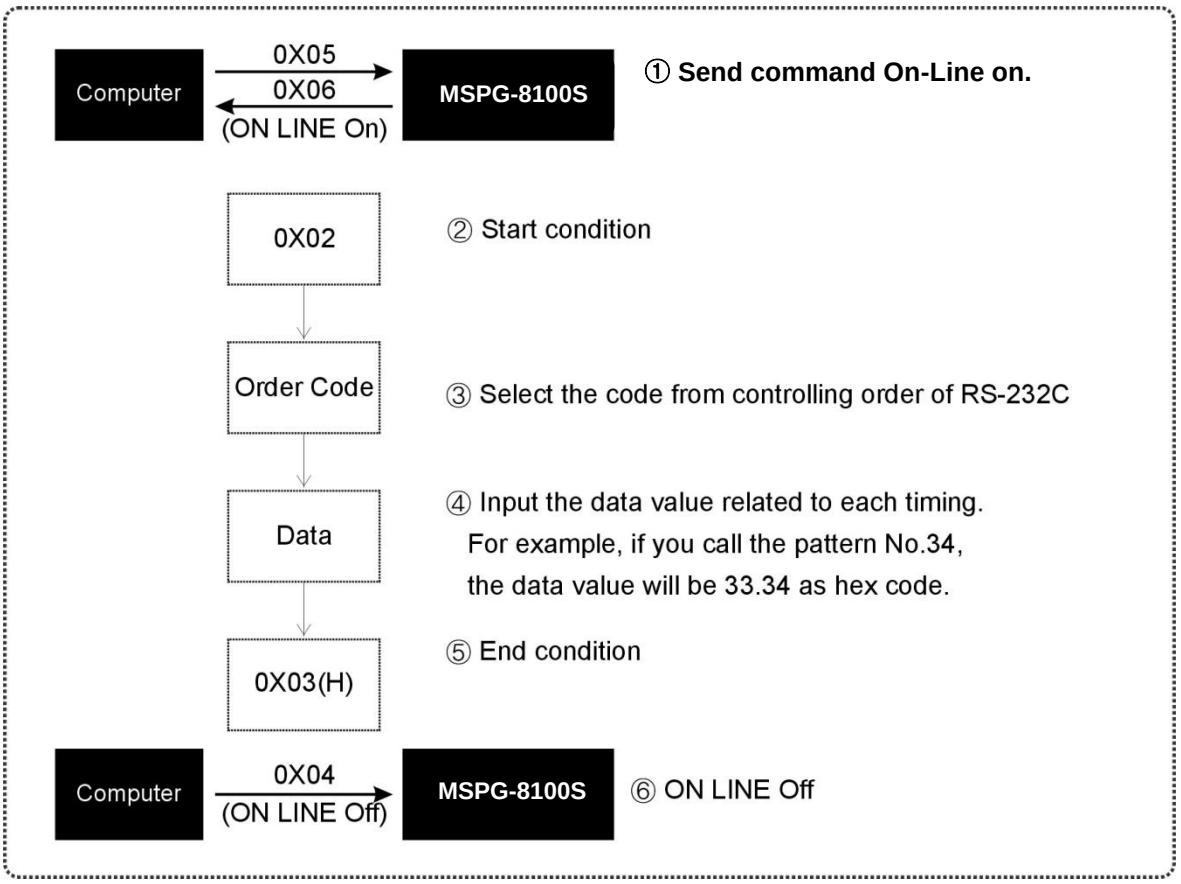
(4)Parity setting

and set up the value to equal between MSPG-8100S and communication program

⑤ Send to On-Line command as 0x05 to complete communication connection.

*When you success to communication connection then MSPG-8100S's LCD touch screen and keypad will be not working.

4) The operating method of RS-232C



5) RS-232C Communication Command and Method

No.	Hex Code	Function
No.1	0x02	Start Transmitting
No.2	0x03	End Transmitting
No.3	0x04	On-Line Off (Interface Off)
No.4	0x05	On-Line On (Interface On)
No.5	0x06	ACK(Positive Response)
No.6	0x07	Time select
No.7	0x08	Pattern select
No.8	0x09	Time and Pattern select
No.9	0x0A	Video Color adjust
No.10	0x0B	H-Sync On/Off select
No.11	0x0C	V-Sync On/Off select
	0x0D	Reserved
	0x0E	Reserved
No.12	0x0F	Back Ground Color adjust
No.13	0x10	Box Color adjust
No.14	0x11	Box Size adjust
No.15	0x12	HDCP On/Off select
No.16	0x13	Audio function
No.17	0x14	CEC On/Off select
No.18	0x15	HDCP 1.4/2.2 select
No.19	0x16	HDR adjust

6) RS-232C command code example.

No.1 Start Transmission → 0x02

No2. End Transmission → 0x03

No.3 Start Communication → 0x05

On Line Code
0x05

No.4 End Communication → 0x04

Off Line Code
0x04

No.5 Response(ACK) → 0x05 (Response value)

No.6 Timing Change → 0x07

Ex. Change to Timing No. 120

Start Code	Model Change	Timing No.120	End Code
0x02	0x07	0x31 0x32 0x30	0x03

Ex. Change to Timing No. 5

Start Code	Model Change	Timing No.5	End Code
0x02	0x07	0x30 0x30 0x35	0x03

No.7 Pattern Change → 0x08

Ex. Change to Pattern No. 345

Start Code	Pattern Change	Pattern No.345	End Code
0x02	0x08	0x33 0x34 0x35	0x03

No.8 Timing and Pattern Change at once → 0x09

Ex. Change to Timing No.145 and Pattern No.34

Start Code	Model and Pattern Change	Timing No.145	Pattern No.34	End Code
0x02	0x09	0x31 0x34 0x35	0x30 0x33 0x34	0x03

No.9 Video Color Change → 0x0A

Start Code	Color Change	1 figure	End Code
0x02	0x0A	0x30 (White)	0x03
		0x31 (Cyan)	
		0x32 (Magenta)	
		0x33 (Blue)	
		0x34 (Yellow)	
		0x35 (Green)	
		0x36 (Red)	
		0x37 (Black)	

No.10 Horizontal Frequency On/Off → 0x0B

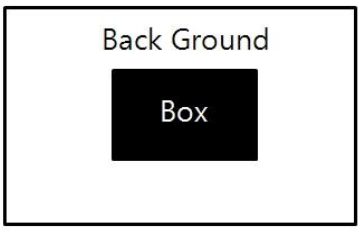
Start Code	Horizontal Freq. Select	1 figure	End Code
0x02	0x0B	0x30 (Horizontal Freq. On)	0x03
0x02	0x0B	0x31 (Horizontal Freq. Off)	0x03

No.11 Vertical Frequency On/Off → 0x0C

Start Code	Vertical Freq. Select	1 figure	End Code
0x02	0x0C	0x30 (Vertical Freq. On)	0x03
0x02	0x0C	0x31 (Vertical Freq. Off)	0x03

No.12~14

<Ex. Window Box Pattern change>



No.12 Window Box Pattern: <u>Back Ground</u> Color Change→ 0x0F

Ex. Red, Green and Blue change to 239Level(8Bit set up, 0~255)

Start Code	Level Change	4 figure (RED Level 239)	4 figure (GREEN Level 239)	4 figure (BLUE Level 239)	End Code
0x02	0x0F	0x30 0x32 0x33 0x39	0x30 0x32 0x33 0x39	0x30 0x32 0x33 0x39	0x03

Ex. Red, Green and Blue change to 5, 200 and 1025 Level (10Bit set up, 0~1023)

Start Code	Level Change	4 figure (RED Level 005)	4 figure (GREEN Level 200)	4 figure (BLUE Level 1023)	End Code
0x02	0x0F	0x30 0x300x30 0x35	0x30 0x32 0x30 0x30	0x31 0x30 0x32 0x33	0x03

Ex. Red, Green and Blue change to 10, 300 and 4095 Level (12Bit set up, 0~4095)

Start Code	Level Change	4 figure (RED Level 10)	4 figure (GREEN Level 300)	4 figure (BLUE Level 4095)	End Code
0x02	0x0F	0x30 0x30 0x31 0x30	0x30 0x33 0x30 0x30	0x34 0x30 0x39 0x35	0x03

No.13 Window Box Pattern: Box Color Change → 0x10

Ex. Red, Green and Blue change to 200 Level

Start Code	Level Change	4 figure (RED Level 239)	4 figure (GREEN Level 239)	4 figure (BLUE Level 239)	End Code
0x02	0x10	0x30 0x32 0x33 0x39	0x30 0x32 0x33 0x39	0x30 0x32 0x33 0x39	0x03

No.14 Window Box Pattern: Box Size Change → Code 0x11

Ex. Box Size change to H(100%) and V(30%)

Start Code	Box Size Change	3 Figure (Horizontal Size100%)	3 Figure (Vertical Size 10%)	End Code
0x02	0x11	0x31 0x30 0x30	0x30 0x31 0x30	0x03

No.15 HDCP On/Off → Code 0x12

Start Code	HDCP	1 figure	End Code
0x02	0x12	0x30 (HDCP Off)	0x03
0x02	0x12	0x31 (HDCP On)	0x03

No.16 Audio Function → Code 0x13

Start Code	AUDIO	Audio Number Select	2 figure	End Code
0x02	0x13	0x31	0x30 0x30 (Audio Number1~32)	0x03

Start Code	AUDIO	Audio On/Off Select	1 figure	End Code
0x02	0x13	0x32	0x30 (Audio Off)	0x03
0x02	0x13	0x32	0x31 (Audio On)	0x03

No.17 CEC ON/OFF Change → Code 0x14

Start Code	CEC	1 figure	End Code
0x02	0x14	0x30 (CEC Off)	0x03
0x02	0x14	0x31 (CEC On)	0x03

No.18 HDCP 1.4 or 2.2 select→ Code 0x15

Start Code	HDCP	1 figure	1 figure	End Code
0x02	0x15	0x30 (HDCP Off)	0x30 (HDCP 1.4)	0x03
0x02	0x15	0x31 (HDCP On)	0x31 (HDCP 2.2)	0x03

No.19 HDR10 Value Code 0x16

Start Code	HDR Select	EOTF	Select EOTF		End Code
0x02	0x16	0x04	0x30	SDR Range(Reserved)	0x03
			0x31	HDR Range(Reserved)	
			0x32	SMPTE ST2048(HDR10)	
			0x33	HLG	

<Set Display Primaries X0>

Start Code	HDR Set	Set Display Primaries X[0]	0~50000	End Code	*Set Value (0~1.00000)*
0x02	0x16	0x06	0x33 0x35 0x30 0x30 0x30 (35000)	0x03	*0.7000 (35000/50000=)*

<Set Display Primaries Y0>

Start Code	HDR Set	Set Display Primaries Y[0]	0~50000	End Code	*Set Value (0~1.00000)*
0x02	0x16	0x07	0x31 0x35 0x30 0x30 0x30 (15000)	0x03	*0.3000 (15000/50000=)*

<Set Display Primaries X1>

Start Code	HDR Set	Set Display Primaries X[1]	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x08	0x30 0x37 0x35 0x30 0x30 (7500)	0x03	*0.1500 (7500/50000=)*

<Set Display Primaries Y1>

Start Code	HDR Set	Set Display Primaries Y[1]	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x09	0x34 0x30 0x30 0x30 0x30 (40000)	0x03	*0.8000 (40000/50000=)*

<Set Display Primaries X2>

Start Code	HDR Set	Set Display Primaries X[2]	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x10	0x30 0x37 0x30 0x30 0x30	0x03	*0.1400*

			(7000)		*(7000/50000=)*

<Set Display Primaries Y2>

Start Code	HDR Set	Set Display Primaries Y[2]	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x11	0x30 0x32 0x35 0x30 0x30 (2500)	0x03	*0.0500 (2500/50000=)*

<Set White Point X>

Start Code	HDR Set	Set White Point X	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x12	0x31 0x33 0x35 0x35 0x30 (13550)	0x03	*0.2710 (13550/50000=)*

<Set White Point Y>

Start Code	HDR Set	Set White Point Y	0~50000	End Code	*Set Value (0~1.0000)*
0x02	0x16	0x13	0x31 0x33 0x35 0x30 0x30 (13500)	0x03	*0.2700 (13500/50000=)*

<Set Max Disp Mastering Luminance>

Start Code	HDR Set	Set Max Display Mastering Luminance	0~65535 (10000)	End Code	*Set Value (1~65535)*
0x02	0x16	0x14	0x31 0x30 0x30 0x30 0x30	0x03	*10000cd/㎡*

<Set Min Disp Mastering Luminance>

Start Code	HDR Set	Set Min Display Mastering Luminance	0~65535 (70)	End Code	*Set Value (0~6.5535)*
0x02	0x16	0x15	0x30 0x30 0x30 0x37 0x30	0x03	*0.007cd/㎡ (70/10000=)*

<Set Content Light Level/MaxCLL>

Start Code	HDR Set	Set Maximum Content Light Level	0~65535 (10000)	End Code	*Set Value (0~65535)*
0x02	0x16	0x16	0x30 0x31 0x30 0x30 0x30	0x03	*10000cd/㎡*

<Set Frame-ave Light Level/MaxFALL>

Start Code	HDR Set	Set Maximum Frame-Average Light Level	0~65535 (400)	End Code	*Set Value (0~65535)*
0x02	16	0x16	0x30 0x30 0x34 0x30 0x30	0x03	400cd/㎡

MSPG-8100S

6. Chapter Six

Default Timing list

Chapter 6.Time list

6.1 Timing Data List (Default) Number(2015.01.26)

MSPG-8100S's has two of default timing. Please follow below step for default setting.

① Push the SYSTEM 

button at the front panel.

② 1~14 list will be showing.

③ Using down arrow button and positioning at list No.14. At the list No.14 "14.LG 3D Time Data [Normal=0, LG 3D=1]" setting to *"0"→ Normal Time Number 501~999* OR*"1"→ 3D Time Number 501~999*.

A. Setting to "0"

1)VESA Standard Timing 501~550

2) VESA Standard Proposed Timing 551~700

3) EIA-861B Timing 701~798

4) EIA-861B(HDMI) Timing 801~847

5) EIA-861D(HDMI) Timing 848~899

6) SMPTE Timing 901~958

B. Setting to "1"

1) 3D Timing 501~891

2) 3D Frame Packing Timing 963~974

3) 3D Top & Bottom Timing 975~984

4) 3D Side By Side(Half) Timing 985~992

5) 3D Field Alternative Timing 992~993

6) 3D Line Alternative Timing 995~996

7) 3D Side By Side(Full) Timing 997~999

④ Press password for "8880" and press enter.

⑤ Please turn off and turn on the MSPG-8100S for complete setting.

[System ➔ List No14's setting value to "0"]

1) VESA Standard

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
501	37.861	85.081	31.500	640x350	Prog	+	--	VESA Standard
502	37.861	85.081	31.500	640x400	Prog	--	+	VESA Standard
503	37.927	85.038	35.500	720x400	Prog	--	+	VESA Standard
504	31.469	59.941	25.175	640x480	Prog	--	--	VESA Standard
505	37.861	72.810	31.500	640x480	Prog	--	--	VESA Standard
506	37.500	75.000	31.500	640x480	Prog	--	--	VESA Standard
507	43.269	85.008	36.000	640x480	Prog	--	--	VESA Standard
508	35.156	56.251	36.000	800x600	Prog	+	+	VESA Guidelines
509	37.879	60.317	40.000	800x600	Prog	+	+	VESA Guidelines
510	48.770	73.228	50.721	800x600	Prog	+	+	VESA Standard
511	46.875	75.000	49.500	800x600	Prog	+	+	VESA Standard
512	53.674	85.062	56.250	800x600	Prog	+	+	VESA Standard
513	31.016	59.992	33.748	848x480	Prog	+	+	VESA Guidelines
514	35.522	43.479	44.900	1024x768	Prog	--	--	VESA Standard
515	48.363	60.004	65.000	1024x768	Prog	--	--	VESA Standard
516	70.069	56.476	75.000	1024x768	Prog	--	--	VESA Standard
517	60.019	75.024	78.745	1024x768	Prog	+	+	VESA Standard
518	68.677	84.996	94.500	1024x768	Prog	+	+	VESA Standard
519	67.500	75.000	108.000	1152x864	Prog	+	+	VESA Standard
520	47.396	59.995	68.250	1280x768	Prog	+	--	VESA Standard
521	47.776	59.870	79.499	1280x768	Prog	--	+	VESA Standard
522	60.289	74.893	102.250	1280x768	Prog	--	+	VESA Standard
523	68.633	84.837	117.500	1280x768	Prog	--	+	VESA Standard
524	60.000	60.000	108.000	1280x960	Prog	+	+	VESA Standard
525	85.938	85.003	148.501	1280x960	Prog	+	+	VESA Standard
526	63.981	60.020	108.000	1280x1024	Prog	+	+	VESA Standard
527	79.976	75.024	134.999	1280x1024	Prog	+	+	VESA Standard
528	91.146	85.024	157.500	1280x1024	Prog	+	+	VESA Standard
529	47.712	60.015	85.500	1360x768	Prog	+	+	VESA Standard
530	64.744	59.948	101.001	1400x1050	Prog	+	--	VESA Standard
531	65.317	59.979	121.751	1400x1050	Prog	--	+	VESA Standard
532	82.278	74.866	155.999	1400x1050	Prog	--	+	VESA Standard
533	93.881	84.960	179.500	1400x1050	Prog	--	+	VESA Standard
534	55.469	59.902	88.750	1400x900	Prog	+	--	VESA Standard
535	55.935	59.888	106.500	1400x900	Prog	--	+	VESA Standard
536	70.635	74.984	136.749	1400x900	Prog	--	+	VESA Standard
537	80.430	84.842	156.999	1400x900	Prog	--	+	VESA Standard
538	75.000	60.000	162.000	1600x1200	Prog	+	+	VESA Standard
539	81.250	65.000	175.500	1600x1200	Prog	+	+	VESA Standard
540	87.500	70.000	189.000	1600x1200	Prog	+	+	VESA Standard
541	93.750	75.000	202.500	1600x1200	Prog	+	+	VESA Standard
542	106.250	85.000	229.500	1600x1200	Prog	+	+	VESA Standard
543	64.674	59.883	119.000	1680x1050	Prog	+	--	VESA Standard
544	65.290	59.954	146.250	1680x1050	Prog	--	+	VESA Standard
545	82.306	74.892	186.999	1680x1050	Prog	--	+	VESA Standard
546	93.859	84.940	214.749	1680x1050	Prog	--	+	VESA Standard
547	83.640	60.000	204.751	1792x1344	Prog	--	+	VESA Standard
548	106.270	74.996	260.999	1792x1344	Prog	--	+	VESA Standard
549	86.333	59.995	218.250	1856x1392	Prog	--	+	VESA Standard
550	112.500	75.000	288.000	1856x1392	Prog	--	+	VESA Standard

2) VESA Standard Proposed

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
551	74.038	59.950	153.999	1920x1200	Prog	+	--	VESA Standard
552	74.556	59.884	193.249	1920x1200	Prog	--	+	VESA Standard
553	94.038	74.931	245.251	1920x1200	Prog	--	+	VESA Standard
554	107.184	84.932	281.251	1920x1200	Prog	--	+	VESA Standard
555	90.000	60.000	234.000	1920x1440	Prog	--	+	VESA Standard
556	112.500	75.000	297.000	1920x1440	Prog	--	+	VESA Standard
557	106.250	59.994	330.013	2560x1600	Prog	--	+	VESA Standard
558	99.458	59.987	348.501	2560x1600	Prog	--	+	VESA Standard
559	31.469	59.941	34.238	853x480	Prog	--	--	VESA Standard
560	47.396	59.995	68.250	1280x768	Prog	+	--	CVT
561	37.531	74.763	30.625	640x480	Prog	--	+	CVT
562	24.668	49.834	19.734	640x480	Prog	--	+	CVT
563	29.844	60.048	23.875	640x480	Prog	--	+	CVT
564	29.531	59.779	23.625	640x480	Prog	--	+	CVT
565	42.819	84.790	35.625	640x480	Prog	--	+	CVT
566	30.878	49.964	31.125	800x600	Prog	--	+	CVT
567	37.231	59.857	38.125	800x600	Prog	--	+	CVT
568	46.995	74.952	48.875	800x600	Prog	--	+	CVT
569	53.504	84.927	56.500	800x600	Prog	--	+	CVT
570	36.979	59.837	35.500	800x600	Prog	+	--	CVT
571	39.444	49.866	51.751	1024x768	Prog	--	+	CVT
572	47.712	60.015	64.125	1024x768	Prog	--	+	CVT
573	60.110	74.950	81.750	1024x768	Prog	--	+	CVT
574	68.496	84.877	94.250	1024x768	Prog	--	+	CVT
575	47.297	59.870	56.000	1024x768	Prog	+	--	CVT
576	49.405	50.005	83.000	1280x960	Prog	--	+	CVT
577	59.579	59.939	101.999	1280x960	Prog	--	+	CVT
578	75.159	75.009	129.875	1280x960	Prog	--	+	CVT
579	85.651	84.971	149.375	1280x960	Prog	--	+	CVT
580	59.201	59.920	85.249	1280x960	Prog	+	--	CVT
581	53.977	49.932	99.749	1400x1050	Prog	--	+	CVT
582	65.160	59.945	122.501	1400x1050	Prog	--	+	CVT
583	82.213	75.012	155.876	1400x1050	Prog	--	+	CVT
584	93.685	84.937	179.126	1400x1050	Prog	--	+	CVT
585	64.744	59.948	101.001	1400x1050	Prog	+	--	CVT
586	61.742	49.994	132.375	1600x1200	Prog	--	+	CVT
587	74.479	59.967	160.875	1600x1200	Prog	--	+	CVT
588	93.921	74.957	205.875	1600x1200	Prog	--	+	CVT
589	107.031	84.945	234.612	1600x1200	Prog	--	+	CVT
590	74.007	59.925	130.252	1600x1200	Prog	+	--	CVT
591	74.060	49.973	191.964	1920x1440	Prog	--	+	CVT
592	89.367	59.978	233.499	1920x1440	Prog	--	+	CVT
593	112.689	74.976	297.499	1920x1440	Prog	--	+	CVT
594	128.483	84.976	341.251	1920x1440	Prog	--	+	CVT
595	88.822	59.974	184.750	1920x1440	Prog	+	--	CVT
596	78.983	49.989	218.625	2048x1536	Prog	--	+	CVT
597	95.357	60.011	267.000	2048x1536	Prog	--	+	CVT

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
598	120.233	75.005	340.500	2048x1536	Prog	--	+	CVT
599	137.040	85.012	388.097	2048x1536	Prog	--	+	CVT
600	209.250	132.437	462.024	2048x1536	Prog	+	--	CVT
601	24.621	49.739	26.000	848x480	Prog	--	+	CVT
602	29.830	60.020	31.500	848x480	Prog	--	+	CVT
603	37.569	74.839	40.875	848x480	Prog	--	+	CVT
604	42.799	84.750	47.250	848x480	Prog	--	+	CVT
605	29.638	59.996	29.875	848x480	Prog	+	--	CVT
606	30.876	49.961	41.250	1064x600	Prog	--	+	CVT
607	37.281	59.937	51.000	1064x600	Prog	--	+	CVT
608	46.964	74.903	65.750	1064x600	Prog	--	+	CVT
609	53.571	85.033	74.999	1064x600	Prog	--	+	CVT
610	37.057	59.963	45.358	1064x600	Prog	+	--	CVT
611	36.994	49.924	60.374	1280x720	Prog	--	+	CVT
612	44.697	59.916	74.376	1280x720	Prog	--	+	CVT
613	56.383	74.977	95.626	1280x720	Prog	--	+	CVT
614	64.252	84.989	109.999	1280x720	Prog	--	+	CVT
615	44.444	59.978	63.999	1280x720	Prog	+	--	CVT
616	39.489	49.923	69.501	1360x768	Prog	--	+	CVT
617	47.649	59.936	84.625	1360x768	Prog	--	+	CVT
618	60.149	74.999	108.749	1360x768	Prog	--	+	CVT
619	68.531	84.921	125.001	1360x768	Prog	--	+	CVT
620	72.000	91.139	109.440	1360x768	Prog	+	--	CVT
621	49.395	49.995	110.250	1704x960	Prog	--	+	CVT
622	59.574	59.934	134.876	1704x960	Prog	--	+	CVT
623	75.131	74.981	172.501	1704x960	Prog	--	+	CVT
624	85.640	84.960	198.000	1704x960	Prog	--	+	CVT
625	59.214	59.933	110.375	1704x960	Prog	+	--	CVT
626	54.005	49.958	133.500	1864x1050	Prog	--	+	CVT
627	65.196	59.978	163.251	1864x1050	Prog	--	+	CVT
628	82.216	75.015	208.500	1864x1050	Prog	--	+	CVT
629	93.701	84.951	239.125	1864x1050	Prog	--	+	CVT
630	64.785	59.986	131.125	1864x1050	Prog	+	--	CVT
631	55.572	49.975	141.375	1920x1080	Prog	--	+	CVT
632	67.049	59.972	172.718	1920x1080	Prog	--	+	CVT
633	84.548	74.954	220.501	1920x1080	Prog	--	+	CVT
634	96.370	84.982	252.875	1920x1080	Prog	--	+	CVT
635	66.647	59.988	138.626	1920x1080	Prog	+	--	CVT
636	61.710	49.968	175.750	2128x1200	Prog	--	+	CVT
637	74.479	59.967	214.499	2128x1200	Prog	--	+	CVT
638	93.922	74.958	273.501	2128x1200	Prog	--	+	CVT
639	107.070	84.976	313.501	2128x1200	Prog	--	+	CVT
640	74.082	59.985	169.500	2128x1200	Prog	+	--	CVT
641	74.060	49.973	255.951	2560x1440	Prog	--	+	CVT
642	89.378	59.985	311.750	2560x1440	Prog	--	+	CVT
643	88.833	59.982	241.626	2560x1440	Prog	+	--	CVT
644	79.002	50.001	292.623	2728x1536	Prog	--	+	CVT

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
645	24.609	49.715	23.626	768x480	Prog	--	+	VESA Standard
646	29.818	59.996	28.625	768x480	Prog	--	+	VESA Standard
647	37.550	74.801	37.250	768x480	Prog	--	+	VESA Standard
648	42.843	84.838	42.500	768x480	Prog	--	+	VESA Standard
649	29.634	59.988	27.500	768x480	Prog	+	--	CVT
650	30.833	49.892	37.000	960x600	Prog	--	+	CVT
651	37.236	59.865	45.875	960x600	Prog	--	+	CVT
652	46.974	74.919	59.375	960x600	Prog	--	+	CVT
653	53.501	84.922	67.625	960x600	Prog	--	+	VESA Standard
654	37.044	59.942	41.489	960x600	Prog	+	--	VESA Standard
655	37.020	49.960	54.493	1152x720	Prog	--	+	VESA Standard
656	44.714	59.938	67.250	1152x720	Prog	--	+	VESA Standard
657	56.396	74.995	86.624	1152x720	Prog	--	+	VESA Standard
658	64.290	85.040	98.749	1152x720	Prog	--	+	VESA Standard
659	44.398	59.916	58.250	1152x720	Prog	+	--	VESA Standard
660	39.499	49.936	62.250	1224x768	Prog	--	+	VESA Standard
661	47.652	59.940	76.624	1224x768	Prog	--	+	VESA Standard
662	60.137	74.984	98.625	1224x768	Prog	--	+	VESA Standard
663	68.521	84.908	112.374	1224x768	Prog	--	+	VESA Standard
664	47.327	59.908	65.501	1224x768	Prog	+	--	VESA Standard
665	49.355	49.954	99.500	1536x960	Prog	--	+	VESA Standard
666	59.570	59.930	121.999	1536x960	Prog	--	+	VESA Standard
667	75.120	74.970	156.250	1536x960	Prog	--	+	VESA Standard
668	85.639	84.959	179.499	1536x960	Prog	--	+	VESA Standard
669	59.257	59.977	100.500	1536x960	Prog	+	--	VESA Standard
670	54.011	49.964	120.120	1680x1050	Prog	--	+	VESA Standard
671	65.160	59.945	147.001	1680x1050	Prog	--	+	VESA Standard
672	82.168	74.971	188.000	1680x1050	Prog	--	+	VESA Standard
673	93.695	84.946	214.374	1680x1050	Prog	--	+	VESA Standard
674	64.742	59.946	119.125	1680x1050	Prog	+	--	VESA Standard
675	55.562	49.966	127.126	1728x1080	Prog	--	+	VESA Standard
676	67.022	59.948	155.491	1728x1080	Prog	--	+	VESA Standard
677	84.556	74.961	198.876	1728x1080	Prog	--	+	VESA Standard
678	96.389	84.999	228.249	1728x1080	Prog	--	+	VESA Standard
679	66.605	59.950	125.750	1728x1080	Prog	+	--	VESA Standard
680	61.719	49.975	158.001	1920x1200	Prog	--	+	VESA Standard
681	74.508	59.990	193.125	1920x1200	Prog	--	+	VESA Standard
682	93.941	74.973	246.501	1920x1200	Prog	--	+	VESA Standard
683	107.045	84.554	282.599	1920x1200	Prog	--	+	VESA Standard
684	74.099	59.999	154.126	1920x1200	Prog	+	--	VESA Standard
685	74.058	49.972	229.876	2304x1440	Prog	--	+	VESA Standard
686	89.405	60.003	280.374	2304x1440	Prog	--	+	VESA Standard
687	88.829	59.979	218.875	2304x1440	Prog	+	--	VESA Standard
688	78.987	49.992	263.501	2456x1536	Prog	--	+	VESA Standard
689	95.354	60.009	319.627	2456x1536	Prog	--	+	VESA Standard
690	94.753	59.970	247.874	2456x1536	Prog	+	--	VESA Standard
691	52.698	49.998	89.376	1280x1024	Prog	--	+	VESA Standard
692	63.595	59.995	108.875	1280x1024	Prog	--	+	VESA Standard
693	80.150	74.997	138.499	1280x1024	Prog	--	+	VESA Standard
694	91.385	85.009	159.375	1280x1024	Prog	--	+	VESA Standard
695	63.194	59.956	90.999	1280x1024	Prog	+	--	VESA Standard
696	39.518	49.960	65.126	1280x768	Prog	--	+	VESA Standard
697	47.693	59.991	80.124	1280x768	Prog	--	+	VESA Standard
698	60.091	74.926	102.876	1280x768	Prog	--	+	VESA Standard
699	68.504	84.887	118.375	1280x768	Prog	--	+	VESA Standard
700	98.713	59.971	268.499	2560x1600	Prog	--	--	DUAL

3) EIA-861B

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
701	31.469	59.941	25.175	640x480	Prog	--	--	EIA-861B
702	31.500	60.000	25.200	640x480	Prog	--	--	EIA-861B
703	31.469	59.941	27.000	720x480	Prog	--	--	EIA-861B
704	31.500	60.000	27.027	720x480	Prog	--	--	EIA-861B
705	44.955	59.940	74.176	1280x720	Prog	+	+	EIA-861B
706	45.000	60.000	74.250	1280x720	Prog	+	+	EIA-861B
707	37.500	50.000	74.250	1280x720	Prog	+	+	EIA-861B
708	33.716	59.940	74.175	1920x1080	Int	+	+	EIA-861B
709	33.750	60.000	74.250	1920x1080	Int	+	+	EIA-861B
710	28.125	50.000	74.250	1920x1080	Int	+	+	EIA-861B
711	15.734	59.939	13.500	720x480	Int	--	--	EIA-861B
712	15.750	60.000	13.514	720x480	Int	--	--	EIA-861B
713	15.734	59.825	13.500	720x240	Prog	--	--	EIA-861B
714	15.750	60.115	13.514	720x240	Prog	--	--	EIA-861B
715	15.734	59.825	27.000	1440x240	Prog	--	--	EIA-861B
716	15.750	60.115	27.027	1440x240	Prog	--	--	EIA-861B
717	31.469	59.940	54.000	1440x480	Prog	--	--	EIA-861B
718	31.500	60.000	54.054	1440x480	Prog	--	--	EIA-861B
719	67.432	59.940	148.350	1920x1080	Prog	+	+	EIA-861B
720	67.500	60.000	148.500	1920x1080	Prog	+	+	EIA-861B
721	31.250	50.000	27.000	720x576	Prog	--	--	EIA-861B
722	15.625	50.000	13.500	720x576	Int	--	--	EIA-861B
723	15.625	50.080	13.500	720x288	Prog	--	--	EIA-861B
724	15.625	49.920	13.500	720x288	Prog	--	--	EIA-861B
725	15.625	49.761	13.500	720x288	Prog	--	--	EIA-861B
726	15.625	50.000	27.000	1440x576	Int	+	+	EIA-861B
727	56.250	50.000	148.500	1920x1080	Prog	+	+	EIA-861B
728	26.973	23.976	74.176	1920x1080	Prog	+	+	EIA-861B
729	27.000	24.000	74.250	1920x1080	Prog	+	+	EIA-861B
730	28.125	25.000	74.250	1920x1080	Prog	+	+	EIA-861B
731	33.716	29.970	74.175	1920x1080	Prog	+	+	EIA-861B
732	33.750	30.000	74.250	1920x1080	Prog	+	+	EIA-861B
733	15.625	50.000	54.000	2880x576	Int	--	--	EIA-861B
734	15.625	50.080	54.000	2880x288	Prog	--	--	EIA-861B
735	15.625	49.920	54.000	2880x288	Prog	--	--	EIA-861B
736	15.625	49.761	54.000	2880x288	Prog	--	--	EIA-861B
737	15.734	59.940	53.999	2880x480	Int	--	--	EIA-861B
738	15.750	60.000	54.054	2880x480	Int	--	--	EIA-861B
739	31.250	50.000	54.000	1440x576	Prog	--	+	EIA-861B
740	31.250	50.000	72.000	1920x1080	Int	+	--	EIA-861B
741	56.250	100.000	148.500	1920x1080	Int	+	+	EIA-861B
742	75.000	100.000	148.500	1280x720	Prog	+	+	EIA-861B
743	62.500	100.000	54.000	720x576	Prog	--	--	EIA-861B
744	31.250	100.000	54.000	1440x576	Int	--	--	EIA-861B
745	67.432	119.879	148.350	1920x1080	Int	+	+	EIA-861B
746	67.500	120.000	148.500	1920x1080	Int	+	+	EIA-861B
747	89.909	119.879	148.350	1280x720	Prog	+	+	EIA-861B
748	90.000	120.000	148.500	1280x720	Prog	+	+	EIA-861B
749	62.937	119.880	54.000	720X480	Prog	--	--	EIA-861B
750	63.000	120.000	54.054	720X480	Prog	--	--	EIA-861B
751	31.469	119.882	54.000	1440X480	Int	--	--	EIA-861B
752	31.500	120.000	54.054	1440X480	Int	--	--	EIA-861B
753	125.000	200.000	108.000	720X576	Prog	--	--	EIA-861B
754	62.500	200.000	108.000	1440X576	Int	--	--	EIA-861B
755	125.874	201.398	108.000	720X480	Prog	--	--	EIA-861B
756	126.000	201.600	108.108	720X480	Prog	--	--	EIA-861B
757	62.937	239.760	108.000	1440X480	Int	--	--	EIA-861B
758	63.000	240.000	108.108	1440X480	Int	--	--	EIA-861B

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
759	18.000	24.000	59.400	1280x720	Prog	+	+	EIA-861B
760	32.000	32.000	32.000	640x480	Prog	--	--	Calibration
761	64.000	64.000	64.000	640x480	Prog	--	--	Calibration
762	120.000	120.000	120.000	640x480	Prog	--	--	Calibration
763	150.000	150.000	150.000	640x480	Prog	--	--	Calibration
764	200.000	200.000	200.000	640x480	Prog	--	--	Calibration
765	250.000	250.000	250.000	640x480	Prog	--	--	Calibration
766	300.000	300.000	300.000	640x480	Prog	--	--	Calibration
767	50.000	50.000	50.000	640x480	Prog	--	--	Calibration
768	100.000	100.000	100.000	640x480	Prog	--	--	Calibration
769	150.000	150.000	150.000	640x480	Prog	--	--	Calibration
770	200.000	200.000	200.000	640x480	Prog	--	--	Calibration
771	15.734	59.940	13.500	710x484	Int	--	--	Calibration_NTSC-J
772	15.625	50.000	13.500	702x576	Int	--	--	Calibration_PAL
773	75.000	60.000	162.000	1600x1200	Prog	+	+	Calibration_VESA
774	45.000	60.000	74.250	1280x720	Prog	+	+	Calibration_SMPTE-296M
775	31.469	59.941	26.969	720x483	Prog	+	+	Calibration_SMPTE-293M
776								
777								
778								
779								
780								
781	53.946	23.976	296.703	3840x2160	Prog	+	+	HDMI 4Kx2K
782	54.000	24.000	297.000	3840x2160	Prog	+	+	HDMI 4Kx2K
783	56.250	25.000	297.000	3840x2160	Prog	+	+	HDMI 4Kx2K
784	67.432	29.970	296.701	3840x2160	Prog	+	+	HDMI 4Kx2K
785	67.500	30.000	297.000	3840x2160	Prog	+	+	HDMI 4Kx2K
786	112.500	50.000	594.000	3840x2160	Prog	+	+	HDMI 4Kx2K
787	134.865	59.940	593.406	3840x2160	Prog	+	+	HDMI 4Kx2K
788	135.000	60.000	594.000	3840x2160	Prog	+	+	HDMI 4Kx2K
789								
790								
791	53.946	23.976	296.703	4096x2160	Prog	+	+	HDMI 4Kx2K
792	54.000	24.000	297.000	4096x2160	Prog	+	+	HDMI 4Kx2K
793	56.250	25.000	297.000	4096x2160	Prog	+	+	HDMI 4Kx2K
794	67.432	29.970	296.701	4096x2160	Prog	+	+	HDMI 4Kx2K
795	67.500	30.000	297.000	4096x2160	Prog	+	+	HDMI 4Kx2K
796	112.500	50.000	594.000	4096x2160	Prog	+	+	HDMI 4Kx2K
797	134.865	59.940	593.406	4096x2160	Prog	+	+	HDMI 4Kx2K
798	135.000	60.000	594.000	4096x2160	Prog	+	+	HDMI 4Kx2K

4) EIA-861B(HDMI)

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
801	31.469	59.941	25.175	640x480	Prog	--	--	HDMI(EIA-861B)
802	31.500	60.000	25.200	640x480	Prog	--	--	HDMI(EIA-861B)
803	31.469	59.941	27.000	720x480	Prog	--	--	HDMI(EIA-861B)
804	31.500	60.000	27.027	720x480	Prog	--	--	HDMI(EIA-861B)
805	44.955	59.940	74.176	1280x720	Prog	+	+	HDMI(EIA-861B)
806	45.000	60.000	74.250	1280x720	Prog	+	+	HDMI(EIA-861B)
807	37.500	50.000	74.250	1280x720	Prog	+	+	HDMI(EIA-861B)
808	33.716	59.940	74.175	1920x1080	Int	+	+	HDMI(EIA-861B)
809	33.750	60.000	74.250	1920x1080	Int	+	+	HDMI(EIA-861B)
810	28.125	50.000	74.250	1920x1080	Int	+	+	HDMI(EIA-861B)
811	15.734	59.939	13.500	720x480	Int	--	--	HDMI(EIA-861B)
812	15.750	60.000	13.514	720x480	Int	--	--	HDMI(EIA-861B)
813	15.734	59.825	13.500	720x240	Prog	--	--	HDMI(EIA-861B)
814	15.750	60.115	13.514	720x240	Prog	--	--	HDMI(EIA-861B)
815	15.734	59.825	27.000	1440x240	Prog	--	--	HDMI(EIA-861B)
816	15.734	60.054	27.000	1440x240	Prog	--	--	HDMI(EIA-861B)
817	31.469	59.941	54.000	1440x480	Prog	--	--	HDMI(EIA-861B)
818	31.500	60.000	54.054	1440x480	Prog	--	--	HDMI(EIA-861B)
819	67.432	59.940	148.350	1920x1080	Prog	+	+	HDMI(EIA-861B)
820	67.500	60.000	148.500	1920x1080	Prog	+	+	HDMI(EIA-861B)
821	31.250	50.000	27.000	720x576	Prog	--	--	HDMI(EIA-861B)
822	15.625	50.000	13.500	720x576	Int	--	--	HDMI(EIA-861B)
823	15.625	50.000	13.500	720x288	Prog	--	--	HDMI(EIA-861B)
824	15.625	49.920	13.500	720x288	Prog	--	--	HDMI(EIA-861B)
825	15.625	49.761	13.500	720x288	Prog	--	--	HDMI(EIA-861B)
826	15.625	50.000	27.000	1440x576	Prog	+	+	HDMI(EIA-861B)
827	56.250	50.000	148.500	1920x1080	Prog	+	+	HDMI(EIA-861B)
828	26.973	23.976	74.176	1920x1081	Prog	+	+	HDMI(EIA-861B)
829	27.000	24.000	74.250	1920x1082	Prog	+	+	HDMI(EIA-861B)
830	28.125	25.000	74.250	1920x1083	Prog	+	+	HDMI(EIA-861B)
831	33.716	29.970	74.175	1920x1084	Prog	+	+	HDMI(EIA-861B)
832	33.750	30.000	74.250	1920x1080	Prog	+	+	HDMI(EIA-861B)
833	15.625	50.000	54.000	2880x576	Int	--	--	HDMI(EIA-861B)
834	15.625	50.080	54.000	2880x288	Prog	--	--	HDMI(EIA-861B)
835	15.625	49.920	54.000	2880x288	Prog	--	--	HDMI(EIA-861B)
836	15.625	49.761	54.000	2880x288	Prog	--	--	HDMI(EIA-861B)
837	15.734	59.939	53.999	2880x480	Int	+	+	HDMI(EIA-861B)
838	15.750	60.000	54.054	2880x480	Int	+	+	HDMI(EIA-861B)
839	31.250	50.000	54.000	1440x576	Prog	+	+	HDMI(EIA-861B)
840	31.250	50.000	72.000	1920x1080	Int	+	--	HDMI(EIA-861D)
841	56.250	100.000	148.500	1920x1080	Int	+	+	HDMI(EIA-862D)
842	75.000	100.000	148.500	1280x720	Prog	+	+	HDMI(EIA-863D)
843	62.500	100.000	54.000	720x576	Prog	--	--	HDMI(EIA-864D)
844	31.250	100.000	54.000	1440x576	Int	--	--	HDMI(EIA-865D)
845	67.432	119.879	148.350	1920x1080	Int	+	+	HDMI(EIA-866D)
846	67.500	120.000	148.500	1920x1080	Int	+	+	HDMI(EIA-867D)
847	89.909	119.879	148.350	1280x720	Prog	+	+	HDMI(EIA-868D)

5) EIA-861D (HDMI)

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
848	89.909	120.000	148.500	1280X720	Prog	+	+	HDMI(EIA-861D)
849	62.937	119.880	54.000	720X480	Prog	--	--	HDMI(EIA-861D)
850	63.000	120.000	54.054	720X480	Prog	--	--	HDMI(EIA-861D)
851	31.500	119.880	54.000	1440X480	Int	--	--	HDMI(EIA-861D)
852	31.500	120.000	54.054	1440X480	Int	--	--	HDMI(EIA-861D)
853	125.000	200.000	108.000	720X576	Prog	--	--	HDMI(EIA-861D)
854	62.500	200.000	108.000	1440X576	Int	--	--	HDMI(EIA-861D)
855	125.874	239.760	108.000	720X480	Prog	--	--	HDMI(EIA-861D)
856	126.000	240.000	108.108	720X480	Prog	--	--	HDMI(EIA-861D)
857	62.937	239.760	108.000	1440X480	Int	--	--	HDMI(EIA-861D)
858	63.000	240.000	108.108	1440X480	Int	--	--	HDMI(EIA-861E)
859	18.000	24.000	59.400	1280X720	Prog	+	+	HDMI(EIA-861E)
860	18.750	25.000	74.250	1280X720	Prog	+	+	HDMI(EIA-861E)
861	22.500	30.000	74.250	1280X720	Prog	+	+	HDMI(EIA-861E)
862	-	-	-	-	-	-	-	-
863	36.000	24.000	118.800	1280X720	Prog	+	+	Frame packing
864	45.000	30.000	148.500	1280X720	Prog	+	+	Frame packing
865	89.910	59.940	148.351	1280X720	Prog	+	+	Frame packing
866	90.000	60.000	148.500	1280X720	Prog	+	+	Frame packing
867	75.000	50.000	148.500	1280X720	Prog	+	+	Frame packing
868	67.432	29.970	148.350	1920X1080	Prog	+	+	Frame packing
869	67.500	30.000	148.500	1920X1080	Prog	+	+	Frame packing
870	56.250	25.000	148.500	1920X1080	Prog	+	+	Frame packing
871	53.946	23.976	148.351	1920X1080	Prog	+	+	Frame packing
872	54.000	24.000	148.500	1920X1080	Prog	+	+	Frame packing
873	67.432	29.970	148.350	1920X1080	Prog	+	+	Frame packing
874	67.500	30.000	148.500	1920X1080	Prog	+	+	Frame packing
875	44.955	59.940	74.176	1280X720	Prog	+	+	Top and Bottom
876	45.000	60.000	74.250	1280X720	Prog	+	+	Top and Bottom
877	37.500	50.000	74.250	1280X720	Prog	+	+	Top and Bottom
878	26.973	23.976	74.176	1920X1080	Prog	+	+	Top and Bottom
879	27.000	24.000	74.250	1920X1080	Prog	+	+	Top and Bottom
880	33.716	29.970	74.175	1920X1080	Prog	+	+	Top and Bottom
881	33.750	30.000	74.250	1920X1080	Prog	+	+	Top and Bottom
882	67.432	59.940	148.350	1920X1080	Prog	+	+	Top and Bottom
883	67.500	60.000	148.500	1920X1080	Prog	+	+	Top and Bottom
884	56.250	50.000	148.500	1920X1080	Prog	+	+	Top and Bottom
885	44.955	59.940	74.176	1280X720	Prog	+	+	Side by Side(half)
886	45.000	60.000	74.250	1280X720	Prog	+	+	Side by Side(half)
887	37.500	50.000	74.250	1280X720	Prog	+	+	Side by Side(half)
888	67.432	59.940	148.350	1920X1080	Prog	+	+	Side by Side(half)
889	67.500	60.000	148.500	1920X1080	Prog	+	+	Side by Side(half)
890	56.250	50.000	148.500	1920X1080	Prog	+	+	Side by Side(half)
891	26.973	23.976	74.167	1920X1080	Prog	+	+	Side by Side(half)
892	27.000	24.000	74.250	1920X1080	Prog	+	+	Side by Side(half)
893	67.500	60.000	148.500	1920X1080	Int	+	+	Field alternative
894	56.250	50.000	148.500	1920X1080	Int	+	+	Field alternative
895	53.946	23.976	148.351	1920X1080	Prog	+	+	Line alternative
896	54.000	24.000	148.500	1920X1080	Prog	+	+	Line alternative
897	33.716	59.940	74.175	1920X1080	Int	+	+	Side by Side(Full)
898	33.750	60.000	74.250	1920X1080	Int	+	+	Side by Side(Full)
899	33.750	50.000	74.250	1920X1080	Int	+	+	Side by Side(Full)

6) SMPTE

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
901	15.734	59.939	13.500	710x484	Int	--	--	ITU-R-BT601
902	15.625	50.000	13.500	702x576	Int	--	--	ITU-R-BT601
903	31.468	59.939	27.000	720x483	Prog	--	--	SMPTE-293M
904	31.469	59.941	27.000	720x483	Prog	--	--	SMPTE-293M
905	31.250	50.000	27.000	720x576	Prog	--	--	ITU-R-BT1358
906	45.000	60.000	74.250	1280x720	Prog	Tri	Tri	SMPTE-296M
907	44.955	59.940	74.176	1280x720	Prog	Tri	Tri	SMPTE-296M
908	37.500	50.000	74.250	1280x720	Prog	Tri	Tri	SMPTE-296M
909	22.500	30.000	74.250	1280x720	Prog	Tri	Tri	SMPTE-296M
910	22.477	29.969	74.174	1280x720	Prog	Tri	Tri	SMPTE-296M
911	18.750	25.000	74.250	1280x720	Prog	Tri	Tri	SMPTE-296M
912	18.000	24.000	74.250	1280x720	Prog	Tri	Tri	SMPTE-296M
913	17.982	23.976	74.176	1280x720	Prog	Tri	Tri	SMPTE-296M
914	33.750	60.000	74.250	1920x1080	Int	Tri	Tri	SMPTE-274M
915	33.716	59.940	74.175	1920x1080	Int	Tri	Tri	SMPTE-274M
916	28.125	50.000	74.250	1920x1080	Int	Tri	Tri	SMPTE-274M
917	33.750	60.000	74.250	1920x1035	Int	Tri	Tri	SMPTE-240M
918	33.716	59.940	74.175	1920x1035	Int	Tri	Tri	SMPTE-240M
919	67.500	60.000	148.500	1920x1080	Prog	Tri	Tri	SMPTE-274M
920	67.432	59.940	148.350	1920x1080	Prog	Tri	Tri	SMPTE-274M
921	56.250	50.000	148.500	1920x1080	Prog	Tri	Tri	SMPTE-274M
922	33.750	30.000	74.250	1920x1080	Prog	Tri	Tri	SMPTE-274M
923	33.716	29.970	74.175	1920x1080	Prog	Tri	Tri	SMPTE-274M
924	28.125	25.000	74.250	1920x1080	Prog	Tri	Tri	SMPTE-274M
925	27.000	24.000	74.250	1920x1080	Prog	Tri	Tri	SMPTE-274M
926	26.973	23.976	74.176	1920x1080	Prog	Tri	Tri	SMPTE-274M
927	-	-	-	-	-	-	-	-
928	-	-	-	-	-	-	-	-
929	-	-	-	-	-	-	-	-
930	-	-	-	-	-	-	-	-
931	15.734	59.939	13.500	720x480	Int	--	--	SDI ITU-R-BT601
932	15.625	50.000	13.500	720x576	Int	--	--	SDI ITU-R-BT656
933	45.000	60.000	74.250	1280x720	Prog	+	+	HD-SDI CEA-861
934	37.500	50.000	74.250	1280x720	Prog	+	+	HD-SDI CEA-861
935	33.750	60.000	74.250	1920x1080	Int	+	+	HD-SDI CEA-861
936	28.125	50.000	74.250	1920x1080	Int	+	+	HD-SDI CEA-861
937	67.500	60.000	148.500	1920x1080	Prog	+	+	3G-SDI CEA-861
938	56.250	50.000	148.500	1920x1080	Prog	+	+	3G-SDI CEA-861
939	26.973	23.976	74.176	1920x1080	Prog	+	+	HD-SDI CEA-861
940	27.000	24.000	74.250	1920x1080	Prog	+	+	HD-SDI CEA-861
941	28.125	25.000	74.250	1920x1080	Prog	+	+	HD-SDI CEA-861
942	33.716	29.970	74.175	1920x1080	Prog	+	+	HD-SDI CEA-861
943	33.750	30.000	74.250	1920x1080	Prog	+	+	HD-SDI CEA-861

7) TV

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
951	15.734	59.939	13.500	710x484	Int	--	--	NTSC-M
952	15.734	59.939	13.500	710x484	Int	--	--	NTSC-J
953	15.734	59.939	13.500	710x484	Int	--	--	PAL
954	15.625	50.000	13.500	710x576	Int	--	--	PAL-M
955	15.734	59.939	13.500	710x484	Int	--	--	PAL-N
956	15.625	50.000	13.500	710x576	Int	--	--	PAL-60
957	15.734	59.939	13.500	710x484	Int	--	--	PAL
958	15.625	50.000	13.500	710x576	Int	--	--	SECAM

6.2 3D Timing Data List (Default) Number(2015.02.26)

[System ➔ List No14's setting value to "1"]

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Spec.
						H	V	
501	18.000	24.000	59.400	1280*720p	Prog	+	+	TBH720p/R4/8
502	67.500	30.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/8
503	15.734	60.053	54.000	1440*240p	Prog	--	--	SSF240p/Y2/10
504	53.946	23.976	148.351	1920*1080p	Prog	+	+	FP1080p/R4/10
505	44.955	59.940	148.351	1280*720p	Prog	+	+	SSF720p/Y4/8
506	27.000	24.000	74.250	1920*1080p	Prog	+	+	TBH1080p/R4/10
507	31.468	60.053	107.998	2880*240p	Prog	--	--	LA240p/Y4/10
508	56.250	50.000	148.500	1920*1080i	Int	+	+	FA1080i/Y2/8
509	67.432	29.970	148.350	1920*1080p	Prog	+	+	LA1080p/R4/8
510	62.500	50.000	144.000	1920*1080i	Int	+	--	FP1080i/Y2/8
511	31.250	50.000	54.000	1440*576p	Prog	+	+	SSH576p/Y2/10xv
512	67.432	59.940	148.350	1920*1080p	Prog	+	+	TBH1080p/Y4/10
513	15.734	59.939	27.000	1440*480i	Int	--	--	TBH480i/Y2/12
514	28.125	25.000	74.250	1920*1080p	Prog	+	+	TBH1080p/R4/10
515	33.750	60.000	74.250	1920*1080i	Int	+	+	TBH1080i/Y4/8
516	56.250	25.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/10
517	27.000	24.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y4/12
518	31.250	50.000	54.000	1440*576i	Int	+	+	FA576i/R4/10
519	28.125	25.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y4/12
520	15.625	50.000	54.000	2880*576i	Int	--	--	TBH576i/Y2/10
521	33.716	29.970	74.175	1920*1080p	Prog	+	+	SSH1080p/Y4/12
522	45.000	60.000	148.500	1280*720p	Prog	+	+	SSF720p/R4/8
523	36.000	24.000	118.800	1280*720p	Prog	+	+	LA720p/Y4/10
524	28.125	25.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y4/8
525	67.432	59.940	148.350	1920*1080p	Prog	+	+	SSH1080p/Y4/8
526	31.469	59.941	25.175	640*480p	Prog	--	--	SSH480p/R4/10
527	67.432	59.940	148.350	1920*1080i	Int	+	+	FP1080i/R4/8
528	31.500	60.000	108.108	1440*480p	Prog	--	--	SSF480p/Y4/8
529	45.000	30.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/12
530	33.716	59.940	74.175	1920*1080i	Int	+	+	TBH1080i/Y4/10
531	15.625	50.080	54.000	2880*288p	Prog	--	--	SSH288p/R4/10
532	15.734	60.053	54.000	2880*240p	Prog	--	--	SSH240p/R4/8
533	22.500	30.000	74.250	1280*720p	Prog	+	+	SSH720p/Y4/10
534	62.500	50.000	144.000	1920*1080i	Int	+	--	FP1080i/Y4/10
535	67.432	59.940	148.350	1920*1080p	Prog	+	+	TBH1080p/R4/12
536	67.432	59.940	148.350	1920*1080i	Int	+	+	FP1080i/R4/12
537	33.750	60.000	74.250	1920*1080i	Int	+	+	SSH1080i/Y2/10
538	44.955	59.940	74.176	1280*720p	Prog	+	+	TBH720p/Y2/12
539	36.000	24.000	118.800	1280*720p	Prog	+	+	FP720p/Y2/12
540	33.750	30.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y4/8
541	62.500	50.000	144.000	1920*1080i	Int	+	--	FA1080i/Y2/10
542	18.000	24.000	118.800	1280*720p	Prog	+	+	SSF720p/Y2/10
543	15.625	50.000	27.000	1440*576i	Int	--	--	SSH576i/Y2/10
544	31.500	60.000	54.054	1440*480i	Int	--	--	FP480i/Y4/10xv
545	22.500	30.000	74.250	1280*720p	Prog	+	+	SSH720p/Y2/10
546	75.000	50.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/8
547	33.750	30.000	74.250	1920*1080p	Prog	+	+	TBH1080p/R4/12
548	15.734	59.939	54.000	1440*480i	Int	--	--	SSF480i/R4/8
549	33.716	29.970	148.350	1920*1080p	Prog	+	+	SSF1080p/Y4/12
550	56.25	50.000	148.5	1920*1080i	Int	+	+	FA1080i/Y2/12

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
551	22.500	30.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/10
552	56.250	50.000	148.500	1920*1080p	Prog	+	+	TBH1080p/Y2/8
553	33.716	29.970	148.350	1920*1080p	Prog	+	+	SSF1080p/Y4/8
554	26.973	23.976	148.351	1920*1080p	Prog	+	+	SSF1080p/Y4/12
555	62.500	50.000	144.000	1920*1080i	Int	+	+	FA1080I/R4/12
556	89.910	59.940	148.351	1280*720p	Prog	+	--	LA720p/R4/10
557	56.250	25.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y4/12
558	54.000	24.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y4/8
559	33.716	29.970	74.175	1920*1080p	Prog	+	+	SSH1080p/R4/12
560	89.910	59.940	148.351	1280*720p	Prog	+	+	LA720p/Y4/12
561	90.000	60.000	148.500	1280*720p	Prog	+	+	FP720p/R4/8
562	22.500	30.000	148.500	1280*720p	Prog	+	+	SSF720p/Y2/12
563	15.734	59.825	54.000	1440*240p	Prog	--	--	SSF240p/Y4/8
564	75.000	50.000	148.500	1280*720p	Prog	+	+	FP720p/R4/12
565	31.500	60.000	27.027	720*480p	Prog	--	--	SSH480p/R4/12
566	62.938	59.941	108.002	1440*480p	Prog	--	--	FP480p/Y2/8
567	56.250	50.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y4/8
568	31.469	59.941	25.175	640*480p	Prog	--	--	TBH480p/Y2/8
569	56.250	25.000	148.500	1920*1080p	Prog	+	+	FP1080p/R4/12
570	28.125	25.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y2/12
571	31.250	50.000	72.000	1920*1080i	Int	+	--	SSH1080i/Y2/8
572	28.125	50.000	74.250	1920*1080i	Int	+	+	TBH1080i/Y2/12
573	67.432	29.970	148.350	1920*1080p	Prog	+	+	LA1080p/Y2/10
574	45.000	30.000	148.500	1280*720p	Prog	+	+	FP720p/Y4/10
575	56.250	50.000	148.500	1920*1080p	Prog	+	+	TBH1080p/R4/8
576	37.500	50.000	74.250	1280*720p	Prog	+	+	SSH720p/Y4/12
577	45.000	30.000	148.500	1280*720p	Prog	+	+	FP720p/Y4/8
578	33.716	59.940	74.175	1920*1080i	Int	+	+	SSH1080i/R4/10
579	56.250	25.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/12
580	28.125	50.000	148.500	1920*1080i	Int	+	+	SSF1080i/R4/8
581	37.500	50.000	148.500	1280*720p	Prog	+	+	SSF720p/Y2/10
582	36.000	24.000	118.800	1280*720p	Prog	+	+	FP720p/R4/8
583	27.000	24.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y4/10
584	15.625	50.080	54.000	2880*288p	Prog	--	--	TBH288p/Y4/8
585	63.000	60.000	54.054	720*480p	Prog	--	--	LA480p/R4/8
586	31.250	50.000	108.000	1440*576p	Prog	+	+	SSF576p/Y4/12xv
587	90.000	60.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/10
588	89.910	59.940	148.351	1280*720p	Prog	+	+	FP720p/Y2/8
589	67.432	59.940	148.350	1920*1080p	Prog	+	+	SSH1080p/R4/12
590	33.716	59.940	148.350	1920*1080i	Int	+	+	SSF1080i/Y2/12
591	18.750	25.000	74.250	1280*720p	Prog	+	+	SSH720p/R4/10
592	27.000	24.000	74.250	1920*1080p	Prog	+	+	SSH1080p/R4/8
593	26.973	23.976	74.176	1920*1080p	Prog	+	+	SSH1080p/R4/12
594	31.500	42.000	54.054	720*480p	Prog	--	--	SSF480p/R4/8
595	33.750	30.000	148.500	1920*1080p	Prog	+	+	SSF1080p/R4/8
596	31.500	60.000	108.108	2880*480i	Int	+	+	FA480i/R4/10
597	90.000	60.000	148.500	1280*720p	Prog	+	+	FP720p/Y2/12
598	31.500	60.000	108.108	2880*480i	Int	--	--	FP480i/Y2/12
599	33.716	59.940	148.350	1920*1080i	Int	+	+	SSF1080I/Y2/8
600	67.432	59.940	148.350	1920*1080p	Prog	+	+	TBH1080p/Y2/12

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
601	31.469	59.941	108.002	2880*480p	Prog	--	--	TBH480p/R4/12
602	75.000	50.000	148.500	1280*720p	Int	+	+	FP720p/R4/10
603	31.250	50.000	27.000	720*576p	Prog	--	--	SSH576p/R4/12
604	62.938	59.941	54.001	720*480p	Prog	--	--	FP480p/R4/12
605	67.500	60.000	148.500	1920*1080i	Int	+	+	FA1080i/Y2/8
606	62.500	50.000	54.000	720*576p	Prog	--	--	LA576p/Y2/10
607	37.500	50.000	74.250	1280*720p	Prog	+	+	SSH720p/Y2/12
608	31.500	60.115	108.108	2880*240p	Prog	--	--	FP240p/Y4/12
609	15.734	59.825	54.000	2880*240p	Prog	--	--	TBH240p/R4/10
610	31.469	59.941	54.001	720*480p	Prog	--	--	SSF480p/Y2/10
611	31.250	50.000	72.000	1920*1080i	Int	+	--	SSH1080i/Y4/8
612	33.750	30.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y2/8
613	31.469	59.941	27.000	720*480p	Prog	--	--	SSH480p/R4/10
614	28.125	50.000	74.250	1920*1080i	Int	+	+	TBH1080i/Y2/10x
615	31.250	50.000	27.000	720*576p	Prog	--	--	TBH576p/Y2/8
616	36.000	24.000	118.800	1280*720p	Prog	+	+	LA720p/Y4/12xv
617	53.946	23.976	148.351	1920*1080p	Prog	+	+	LA1080p/Y4/12
618	36.000	24.000	118.800	1280*720p	Prog	+	+	FP720p/Y2/10xv
619	33.750	60.000	74.250	1920*1080i	Int	+	+	SSH1080i/R4/8
620	67.432	29.970	148.350	1920*1080p	Prog	+	+	LA1080p/Y4/10
621	62.938	59.941	108.002	1440*480p	Prog	--	--	LA480p/Y2/8
622	37.500	25.000	148.500	1280*720p	Prog	+	+	LA720p/Y4/8
623	62.500	50.000	108.000	1440*576p	Prog	--	--	LA576p/Y4/8
624	18.000	24.000	118.800	1280*720p	Prog	+	+	SSF720p/R4/10
625	33.750	60.000	74.250	1920*1080i	Int	+	+	TBH1080i/Y2/12
626	67.432	59.940	148.350	1920*1080p	Prog	+	+	TBH1080p/Y2/8
627	26.973	23.976	74.176	1920*1080p	Prog	+	+	TBH1080p/Y4/10
628	37.500	25.000	148.500	1280*720p	Prog	+	+	FP720p/R4/8
629	15.625	49.920	27.000	1440*288p	Prog	--	--	SSH288p/R4/10
630	62.938	59.941	50.350	640*480p	Prog	--	--	FP480p/R4/8
631	33.750	60.000	148.500	1920*1080i	Int	+	+	SSF1080i/R4/12
632	15.750	60.000	54.054	1440*480i	Int	--	--	SSF480i/Y4/12
633	67.500	60.000	148.500	1920*1080p	Prog	+	+	SSH1080p/R4/10
634	33.750	30.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y2/8
635	28.125	25.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y4/8
636	26.973	23.976	74.176	1920*1080p	Prog	+	+	SSH1080p/Y2/10
637	26.973	23.976	74.176	1920*1080p	Prog	+	+	SSH1080p/Y2/12
638	67.432	59.940	148.350	1920*1080i	Int	+	+	FP1080i/Y4/10
639	33.716	29.970	148.350	1920*1080p	Prog	+	+	SSF1080p/Y2/12x
640	15.750	60.000	54.054	2880*480i	Int	--	--	TBH480i/Y2/12
641	31.250	50.000	108.000	2880*576p	Prog	--	--	TBH576p/R4/8
642	26.973	23.976	74.176	1920*1080p	Prog	+	+	SSH1080p/Y4/8
643	67.500	60.000	148.500	1920*1080i	Prog	+	+	FA1080i/Y4/8
644	67.500	60.000	148.500	1920*1080p	Prog	+	+	TBH1080p/Y4/12x
645	15.734	59.825	27.000	1440*240p	Prog	+	+	TBH240p/R4/8
646	56.250	25.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/12
647	75.000	50.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/10
648	63.000	60.000	108.108	1440*480p	Prog	+	+	FP480p/Y2/10
649	33.750	30.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y4/12
650	62.500	50.000	144.000	1920*1080i	Int	+	+	Fa1080i/Y2/12

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
651	15.750	60.000	27.027	1440*480i	Int	--	--	TBH480i/Y4/8
652	56.250	50.000	148.500	1920*1080p	Prog	+	+	TBH1080p/R4/10
653	45.000	60.000	74.250	1280*720p	Prog	+	+	SSH720p/Y4/12
654	56.250	25.000	148.500	1920*1080p	Prog	+	+	LA1080p/R4/12
655	31.500	60.000	54.054	1440*480i	Int	--	--	FA480i/Y2/12
656	37.500	25.000	148.500	1280*720p	Prog	+	+	LA720p/R4/12
657	33.750	60.000	74.250	1920*1080i	Int	+	+	SSH1080i/Y2/12
658	22.500	30.000	148.500	1280*720p	Prog	+	+	SSF720p/R4/12
659	67.500	60.000	148.500	1920*1080i	Int	+	+	FA1080i/Y2/12
660	45.000	60.000	148.500	1280*720p	Prog	+	+	SSF720p/Y2/12xv
661	44.955	59.940	148.351	1280*720p	Prog	+	+	SSF720p/Y4/12
662	62.500	50.000	144.000	1920*1080i	Int	+	--	FP1080i/R4/10
663	15.734	59.939	54.000	2880*480i	Int	--	--	TBH480i/Y4/12
664	67.432	29.970	148.350	1920*1080p	Prog	+	+	LA1080p/R4/10
665	22.500	30.000	148.500	1280*720p	Prog	+	+	SSF720p/R4/10
666	26.973	23.976	74.176	1920*1080p	Prog	+	+	TBH1080p/R4/12
667	31.468	60.053	54.000	1440*240p	Prog	--	--	LA240p/Y2/10
668	33.716	59.940	74.175	1920*1080i	Int	+	+	SSH1080i/Y4/10
669	31.250	50.000	54.000	720*576p	Prog	--	--	SSF576p/Y2/8
670	28.125	50.000	74.250	1920*1080i	Int	+	+	SSH1080i/R4/12
671	31.250	50.000	144.000	1920*1080i	Int	+	--	SSF1080i/Y4/12
672	67.432	59.940	148.350	1920*1080i	Int	+	+	FA1080i/Y4/12
673	28.125	25.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y2/8
674	26.973	23.976	148.351	1920*1080p	Prog	+	+	SSF1080p/Y4/8
675	67.500	60.000	148.500	1920*1080i	Int	+	+	FP1080i/Y4/8
676	18.000	24.000	59.400	1280*720p	Prog	+	+	SSH720p/R4/10
677	18.750	25.000	74.250	1280*720p	Prog	+	+	SSH720p/R4/8
678	33.716	59.940	148.350	1920*1080i	Int	+	+	SSF1080i/Y4/10
679	44.955	59.940	74.176	1280*720p	Prog	+	+	SSH720p/R4/12
680	67.432	29.970	148.350	1920*1080p	Prog	+	+	FP1080p/R4/10
681	31.469	59.941	108.002	2880*480p	Prog	--	--	SSH480p/Y2/12
682	31.250	50.080	108.000	2880*288p	Prog	--	--	FP288p/Y4/10
683	15.625	50.000	54.000	1440*576i	Int	--	--	SSF576i/Y2/12
684	45.000	30.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/8
685	54.000	24.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/8
686	89.910	59.940	148.351	1280*720p	Prog	+	+	FP720p/Y4/10xv
687	26.973	23.976	74.176	1920*1080p	Prog	+	+	TBH1080p/Y2/8
688	90.000	60.000	148.500	1280*720p	Prog	+	+	LA720p/Y4/10
689	33.750	60.000	148.500	1920*1080i	Int	+	+	SSF1080i/Y4/12
690	28.125	50.000	74.250	1920*1080i	Int	+	+	TBH1080i/R4/10
691	33.716	29.970	74.175	1920*1080p	Prog	+	+	SSH1080p/Y4/10
692	67.432	29.970	148.350	1920*1080p	Prog	+	+	FP1080p/Y2/8
693	45.000	60.000	148.500	1280*720p	Prog	+	+	SSF720p/R4/10
694	33.716	29.970	74.175	1920*1080p	Prog	+	+	TBH1080p/R4/8
695	45.000	60.000	74.250	1280*720p	Prog	+	+	SSH720p/Y4/8
696	28.125	50.000	148.500	1920*1080i	Int	+	+	SSF1080i/Y4/8
697	15.625	50.000	54.000	2880*576i	Int	--	--	SSH576i/Y4/12
698	67.500	30.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y4/8
699	53.946	23.976	148.351	1920*1080p	Prog	+	+	LA1080p/R4/10
700	27.000	24.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y2/10

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
701	63.000	60.000	50.400	640*480p	Prog	--	--	LA480p/R4/8
702	33.750	30.000	74.250	1920*1080p	Prog	+	+	SSH1080p/R4/10
703	18.750	25.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/8
704	67.432	59.940	148.350	1920*1080i	Int	+	+	FA1080i/R4/12
705	26.973	23.976	148.351	1920*1080p	Prog	+	+	SSF1080p/Y2/12
706	27.000	24.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y2/8
707	45.000	60.000	74.250	1280*720p	Prog	+	+	TBH720p/R4/8
708	67.500	30.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y4/12
709	31.250	50.000	108.000	2880*576i	Int	--	--	FP576i/Y4/12
710	31.500	60.000	54.054	1440*480p	Prog	--	--	SSH480p/Y4/8
711	31.250	50.000	72.000	1920*1080i	Int	+	--	TBH1080i/R4/8
712	54.000	24.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y4/10
713	28.125	25.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y2/10
714	31.468	60.053	54.000	1440*240p	Prog	--	--	FP240p/Y4/10
715	37.500	50.000	148.500	1280*720p	Prog	+	+	SSF720p/R4/10
716	18.750	25.000	74.250	1280*720p	Prog	+	+	SSH720p/R4/12
717	45.000	30.000	148.500	1280*720p	Prog	+	+	LA720p/R4/8
718	28.125	25.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y4/12
719	44.955	59.940	74.176	1280*720p	Prog	+	+	SSH720p/Y2/10
720	33.716	29.970	148.350	1920*1080p	Prog	+	+	SSF1080p/Y2/10
721	26.973	23.976	74.176	1920*1080p	Prog	+	+	TBH1080p/Y4/8
722	31.250	50.000	54.000	1440*526i	Int	--	--	FP526i/Y2/12
723	67.500	30.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/10xv
724	89.910	59.940	148.351	1280*720p	Prog	+	+	LA720p/Y4/8
725	31.250	50.000	144.000	1920*1080i	Int	+	--	SSF1080i/Y2/12
726	37.500	50.000	74.250	1280*720p	Prog	+	+	TBH720p/R4/12
727	33.750	60.000	148.500	1920*1080i	Int	+	+	SSF1080i/R4/10
728	67.500	60.000	148.500	1920*1080p	Prog	+	+	TBH1080p/Y2/10
729	45.000	30.000	148.500	1280*720p	Prog	+	+	FP720p/Y2/10
730	56.250	50.000	148.500	1920*1080i	Int	+	+	FP1080i/Y2/12
731	31.468	59.825	54.000	1440*240p	Prog	--	--	FP240p/Y2/12
732	28.125	50.000	74.250	1920*1080i	Int	+	+	SSH1080i/R4/10
733	44.955	59.940	74.176	1280*720p	Prog	+	+	TBH720p/Y4/10
734	53.946	23.976	148.351	1920*1080p	Prog	+	+	FP1080p/R4/8
735	18.000	24.000	59.400	1280*720p	Prog	+	+	TBH720p/Y2/8
736	28.125	50.000	74.250	1920*1080i	Int	+	+	SSH1080i/Y2/10
737	33.716	59.940	148.350	1920*1080i	Int	+	+	SSF1080i/R4/8
738	62.500	50.000	54.000	720*576p	Prog	--	--	FP576p/Y4/8
739	31.500	60.000	25.200	640*480p	Prog	--	--	TBH480p/R4/12
740	67.432	59.940	148.350	1920*1080i	Int	+	+	FA1080i/Y4/10xv
741	31.500	60.000	27.027	720*480p	Prog	--	--	TBH480p/Y4/8
742	31.468	59.825	107.998	2880*240p	Prog	--	--	FP240p/R4/8
743	56.250	25.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/10
744	53.946	23.976	148.351	1920*1080p	Prog	+	+	FP1080p/R4/12
745	44.955	59.940	148.351	1280*720p	Prog	+	+	SSF720p/R4/12
746	31.250	50.000	72.000	1920*1080i	Int	+	--	SSH1080i/R4/12
747	62.938	59.941	54.001	720*480p	Prog	--	--	LA480p/Y2/12xv
748	90.000	60.000	148.500	1280*720p	Prog	+	+	LA720p/R4/12
749	33.716	59.940	74.175	1920*1080i	Int	+	+	TBH1080i/Y4/10
750	22.500	30.000	74.250	1280*720p	Prog	+	+	SSH720p/Y2/8

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
751	67.500	60.000	148.500	1920*1080i	Int	+	+	FA1080i/Y2/10
752	62.500	50.000	144.000	1920*1080i	Int	+	--	FP1080i/Y4/12
753	53.946	23.976	148.351	1920*1080p	Prog	+	+	LA1080p/R4/12
754	67.432	59.940	148.350	1920*1080p	Prog	+	+	SSH1080p/R4/8
755	18.000	24.000	118.800	1280*720p	Prog	+	+	SSF720p/R4/12
756	33.750	60.000	74.250	1920*1080i	Int	+	+	SSH1080i/Y4/12
757	28.125	25.000	74.250	1920*1080p	Prog	+	+	SSH1080p/R4/8
758	67.432	29.970	148.350	1920*1080p	Prog	+	+	FP1080p/R4/12
759	33.716	29.970	74.175	1920*1080p	Prog	+	+	TBH1080p/Y4/10
760	56.250	50.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y2/10
761	67.500	60.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y2/10x
762	67.500	30.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/12
763	31.500	60.000	108.108	1440*480p	Prog	--	--	SSF480p/Y4/10
764	15.734	59.825	27.000	1440*240p	Prog	--	--	SSH240p/R4/10
765	33.750	60.000	74.250	1920*1080i	Int	+	+	TBH1080i/R4/10
766	31.250	50.000	108.000	2880*576p	Prog	--	--	SSH576p/Y4/10
767	44.955	59.940	74.176	1280*720p	Prog	+	+	SSH720p/Y2/12xv
768	67.500	60.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y2/12x
769	75.000	50.000	148.500	1280*720p	Prog	+	+	FP720p/Y2/12
770	31.468	59.939	54.000	1440*480i	Int	--	--	FA480i/Y4/8
771	28.125	25.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y2/12
772	33.716	29.970	74.175	1920*1080p	Prog	+	+	TBH1080p/Y2/10
773	27.000	24.000	148.500	1920*1080p	Prog	+	+	SSF1080p/R4/8
774	15.750	60.000	27.027	1440*480i	Int	--	--	SSH480i/Y2/8
775	56.250	25.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/8
776	27.000	24.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y2/8
777	67.500	30.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/12
778	33.716	59.940	74.175	1920*1080i	Int	+	+	TBH1080i/Y2/10
779	31.250	50.080	54.000	1440*288p	Prog	--	--	FP288p/Y2/8
780	31.468	59.940	54.000	1440*480i	Int	--	--	FP480i/R4/10
781	31.469	59.941	108.002	2880*480p	Prog	--	--	TBH480p/Y4/8
782	15.734	59.939	27.000	1440*480i	Int	--	--	SSH480i/R4/8
783	31.250	50.000	144.000	1920*1080i	Int	+	--	SSF1080i/Y2/10
784	15.625	50.080	54.000	1440*288p	Prog	--	--	SSF288p/Y4/8
785	31.250	50.000	144.000	1920*1080i	Int	+	--	SSF1080i/R4/10
786	33.750	30.000	148.500	1920*1080p	Prog	+	+	SSF1080p/R4/10
787	22.500	30.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/8
788	31.250	50.000	72.000	1920*1080i	Int	+	--	TBH1080i/Y2/10
789	56.250	50.000	148.500	1920*1080i	Int	+	+	FA1080i/R4/12
790	27.000	24.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y4/10
791	15.734	60.053	27.000	1440*240p	Prog	--	--	TBH240p/Y2/8
792	67.500	60.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y4/10x
793	90.000	60.000	148.500	1280*720p	Prog	+	+	FP720p/Y2/10
794	26.973	23.976	148.351	1920*1080p	Prog	+	+	SSF1080p/R4/12
795	54.000	24.000	148.500	1920*1080p	Prog	+	+	LA1080p/R4/8
796	54.000	24.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y4/12
797	28.125	50.000	74.250	1920*1080i	Int	+	+	TBH1080i/Y4/10
798	67.432	29.970	148.350	1920*1080p	Prog	+	+	FP1080p/Y4/10
799	56.250	50.000	148.500	1920*1080p	Prog	+	+	TBH1080p/Y4/8
800	53.946	23.976	148.351	1920*1080p	Prog	+	+	LA1080p/Y2/12

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
801	31.469	59.941	54.001	1440*480p	Prog	--	--	TBH480p/Y2/12
802	67.500	60.000	148.500	1920*1080i	Int	+	+	FP1080i/Y4/12
803	31.250	50.000	108.000	2880*576i	Int	--	--	FA576i/Y2/10xv
804	18.000	24.000	59.400	1280*720p	Prog	+	+	SSH720p/Y2/8
805	89.910	59.940	148.351	1280*720p	Prog	+	+	FP720p/R4/10
806	18.750	25.000	74.250	1280*720p	Prog	+	+	TBH720p/Y2/8
807	28.125	50.000	74.250	1920*1080i	Int	+	+	SSH1080i/Y4/12
808	31.468	59.825	54.000	1440*240p	Prog	--	--	LA240p/R4/10
809	33.750	30.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y4/10
810	15.625	50.080	27.000	1440*288p	Prog	--	--	TBH288p/R4/10
811	33.750	30.000	74.250	1920*1080p	Prog	+	+	SSH1080p/R4/8
812	22.500	30.000	74.250	1280*720p	Prog	+	+	TBH720p/Y2/8
813	15.734	60.053	54.000	2880*240p	Prog	--	--	TBH240p/Y2/8
814	31.250	50.080	108.000	2880*288p	Prog	--	--	LA288p/R4/10
815	56.250	50.000	148.500	1920*1080i	Int	+	+	FP1080i/Y4/10
816	15.734	59.939	54.000	2880*480i	Int	--	--	SSH480i/Y4/12
817	62.500	50.000	144.000	1920*1080i	Int	+	--	FA1080i/R4/8
818	27.000	24.000	74.250	1920*1080p	Prog	+	+	SSH1080p/Y4/12
819	31.468	59.940	107.998	2880*480i	Int	--	--	FP480i/Y2/8
820	63.000	60.000	108.108	1440*480p	Prog	--	--	LA480p/Y2/10
821	28.125	50.000	148.500	1920*1080i	Int	+	+	SSF1080i/Y4/12
822	31.250	50.000	72.000	1920*1080i	Int	+	--	TBH1080i/Y4/10
823	37.500	50.000	74.250	1280*720p	Prog	+	+	TBH720p/R4/10
824	37.500	50.000	148.500	1280*720p	Prog	+	+	SSF720p/Y4/8
825	33.750	30.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y2/8
826	67.500	60.000	148.500	1920*1080i	Int	+	+	FP1080i/Y2/10
827	28.125	25.000	148.500	1920*1080p	Prog	+	+	SSF1080p/R4/8
828	31.500	60.000	50.400	640*480p	Prog	--	--	SSF480p/Y2/12
829	56.250	50.000	148.500	1920*1080p	Prog	+	+	SSH1080p/Y4/10x
830	63.000	60.000	54.054	720*480p	Prog	--	--	FP480p/R4/10
831	45.000	60.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/12
832	54.000	24.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/12
833	62.938	59.941	50.350	640*480p	Prog	--	--	LA480p/Y4/12
834	33.716	29.970	74.175	1920*1080p	Prog	+	+	SSH1080p/Y2/12
835	75.000	50.000	148.500	1280*720p	Prog	+	+	LA720p/Y4/8
836	31.469	59.941	50.350	640*480p	Prog	--	--	SSF480p/Y4/8
837	67.500	30.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y4/12
838	33.716	59.940	74.175	1920*1080i	Int	+	+	TBH1080i/Y2/8
839	31.500	60.000	25.200	640*480p	Prog	--	--	SSH480p/R4/12
840	56.250	50.000	148.500	1920*1080p	Prog	+	+	SSH1080p/R4/8
841	31.250	50.000	54.000	1440*576p	Prog	--	--	TBH576p/Y2/12xv
842	67.500	60.000	148.500	1920*1080p	Prog	+	+	TBH1080p/Y4/8
843	37.500	50.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/12
844	31.469	59.941	54.001	1440*480p	Prog	--	--	SSH480p/Y2/12
845	62.500	50.000	108.000	1440*576p	Prog	--	--	FP576p/R4/8
846	67.500	30.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y4/8
847	15.734	60.053	27.000	1440*240p	Prog	--	--	SSH240p/Y4/8
848	54.000	24.000	148.500	1920*1080p	Prog	+	+	FP1080p/Y2/10
849	18.000	24.000	59.400	1280*720p	Prog	+	+	TBH720p/Y2/10xv
850	44.955	59.940	74.176	1280*720p	Prog	+	+	TBH720p/Y4/8

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
851	15.625	50.000	27.000	1440*576i	Int	+	+	TBH576i/Y4/12xv
852	31.250	50.000	72.000	1920*1080i	Int	+	+	SSH1080i/R4/8
853	15.734	59.939	54.000	2880*480i	Int	--	--	SSH480i/Y2/10
854	33.750	30.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y2/12
855	31.468	59.825	107.998	2880*240p	Prog	--	--	LA240p/R4/12
856	31.468	59.939	107.998	2880*480i	Int	+	+	FA480i/R4/8
857	63.000	60.000	50.400	640*480p	Prog	--	--	FP480p/Y4/12
858	18.000	24.000	59.400	1280*720p	Prog	+	+	SSH720p/Y4/8
859	54.000	24.000	148.500	1920*1080p	Prog	+	+	LA1080p/Y2/10
860	33.750	60.000	148.500	1920*1080i	Int	+	+	SSF1080/Y2/10
861	33.716	59.940	74.175	1920*1080i	Int	+	+	SSH1080i/R4/12
862	67.500	60.000	148.500	1920*1080p	Prog	+	+	TBH1080p/R4/8
863	33.716	29.970	74.175	1920*1080p	Prog	+	+	TBH1080p/R4/10
864	67.432	59.940	148.350	1920*1080p	Prog	+	+	SSH1080p/Y4/12
865	28.125	50.000	148.500	1920*1080i	Int	+	+	SSF1080i/Y2/10
866	31.250	50.000	72.000	1920*1080i	Int	+	--	TBH1080i/Y2/12
867	67.432	59.940	148.350	1920*1080i	Int	+	+	FA1080i/R4/8
868	67.500	60.000	148.500	1920*1080i	Int	+	+	FP1080i/R4/10
869	45.000	60.000	74.250	1280*720p	Prog	+	+	SSH720p/R4/8
870	33.750	60.000	74.250	1920*1080i	Int	+	+	TBH1080i/R4/8
871	37.500	25.000	148.500	1280*720p	Prog	+	+	LA720p/Y2/10
872	31.469	59.941	27.000	720*480p	Prog	--	--	TBH480p/R4/10
873	31.500	60.000	108.108	2880*480p	Prog	--	--	SSH480p/Y4/10
874	37.500	25.000	148.500	1280*720p	Prog	+	+	FP720p/R4/10
875	37.500	25.000	148.500	1280*720p	Prog	+	+	FP720p/Y2/8
876	56.250	50.000	148.500	1920*1080i	Int	+	+	FP1080i/Y4/12xv
877	27.000	24.000	148.500	1920*1080p	Prog	+	+	SSF1080p/Y2/8
878	33.716	59.940	74.175	1920*1080i	Int	+	+	SSH1080i/Y2/8
879	28.125	25.000	74.250	1920*1080p	Prog	+	+	TBH1080p/R4/8
880	27.000	24.000	74.250	1920*1080p	Prog	+	+	TBH1080p/Y2/12
881	15.734	60.053	54.000	2880*240p	Prog	--	--	SSH240p/R4/12
882	31.250	50.080	54.000	1440*288p	Prog	--	--	LA288p/R4/12
883	45.000	60.000	74.250	1280*720p	Prog	+	+	TBH720p/R4/12
884	31.500	60.000	54.054	1440*480p	Prog	--	--	TBH480p/R4/12
885	56.250	50.000	148.500	1920*1080i	Int	+	+	FA1080i/R4/8
886	56.250	50.000	148.500	1920*1080i	Int	+	+	FP1080i/Y2/10
887	18.750	25.000	74.250	1280*720p	Prog	+	+	TBH720p/Y4/10
888	67.432	59.940	148.350	1920*1080i	Int	+	+	FP1080i/Y2/8
889	37.500	50.000	74.250	1280*720p	Prog	+	+	SSH720p/R4/10
890	36.000	24.000	118.800	1280*720p	Prog	+	+	LA720p/R4/12
891	53.946	23.976	148.351	1920*1080p	Prog	+	+	FP1080p/Y2/8

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
901	31.469	59.947	25.175	640*480	Prog	--	--	RGB 444
902	31.500	60.000	25.200	640*480	Prog	--	--	RGB 444
903	31.469	59.941	27.000	720*480	Prog	--	--	RGB 444
904	31.500	60.000	27.027	720*480	Prog	--	--	RGB 444
905	44.955	59.940	74.176	1280*720	Prog	+	+	RGB 444
906	45.000	60.000	74.250	1280*720	Prog	+	+	RGB 444
907	37.500	50.000	74.250	1280*720	Prog	+	+	RGB 444
908	33.716	59.940	74.175	1920*1080	Int	+	+	RGB 444
909	33.750	60.000	74.250	1920*1080	Int	+	+	RGB 444
910	28.125	50.000	74.250	1920*1080	Int	+	+	RGB 444
911	15.734	59.939	13.500	720*480	Int	--	--	RGB 444
912	15.750	60.000	13.514	720*480	Int	--	--	RGB 444
913	15.734	59.825	13.500	720*240	Prog	--	--	RGB 444
914	15.750	60.115	13.514	720*240	Prog	--	--	RGB 444
915	15.734	59.825	27.000	1440*240	Prog	--	--	RGB 444
916	15.750	60.115	27.027	1440*240	Prog	--	--	RGB 444
917	31.469	59.940	54.000	1440*480	Prog	--	--	RGB 444
918	31.500	60.000	54.054	1440*480	Prog	--	--	RGB 444
919	67.432	59.940	148.350	1920*1080	Prog	+	+	RGB 444
920	67.500	60.000	148.500	1920*1080	Prog	+	+	RGB 444
921	31.250	50.000	27.000	720*576	Prog	--	--	RGB 444
922	15.625	50.000	13.500	720*576	Int	--	--	RGB 444
923	15.615	50.080	13.500	720*288	Prog	--	--	RGB 444
924	15.625	49.920	13.500	720*288	Prog	--	--	RGB 444
925	15.625	49.761	13.500	720*288	Prog	--	--	RGB 444
926	15.625	50.000	27.000	1440*576	Int	--	--	RGB 444
927	56.250	50.000	148.500	1920*1080	Prog	+	+	RGB 444
928	26.973	23.976	74.176	1920*1080	Prog	+	+	RGB 444
929	27.000	24.000	74.250	1920*1080	Prog	+	+	RGB 444
930	28.125	25.000	74.250	1920*1080	Prog	+	+	RGB 444
931	33.716	29.970	74.175	1920*1080	Prog	+	+	RGB 444
932	33.750	30.000	74.250	1920*1080	Prog	+	+	RGB 444
933	15.625	50.000	54.000	2880*576	Int	--	--	RGB 444
934	15.625	50.080	54.000	2880*288	Prog	--	--	RGB 444
935	15.625	49.920	54.000	2880*288	Prog	--	--	RGB 444
936	15.625	49.761	54.000	2880*288	Prog	--	--	RGB 444
937	15.734	59.940	53.999	2880*480	Int	--	--	RGB 444
938	15.750	60.000	54.054	2880*480	Int	--	--	RGB 444
939	31.250	50.000	54.000	1440*576	Prog	--	--	RGB 444
940	31.250	50.000	72.000	1920*1080	Int	+	--	RGB 444
941	56.250	100.000	148.500	1920*1080	Int	+	+	RGB 444
942	75.000	100.000	148.500	1280*720	Prog	+	+	RGB 444
943	62.500	100.000	54.000	720*576	Prog	--	--	RGB 444
944	31.250	100.000	54.000	1440*576	Int	--	--	RGB 444
945	67.432	119.879	148.350	1920*1080	Int	+	+	RGB 444
946	67.500	120.000	148.500	1920*1080	Int	+	+	RGB 444
947	89.909	119.879	148.350	1280*720	Prog	+	+	RGB 444
948	90.000	120.000	148.500	1280*720	Prog	+	+	RGB 444
949	62.937	119.880	54.000	720*480	Prog	--	--	RGB 444
950	63.000	120.000	54.054	720*480	Prog	--	--	RGB 444

NO	H-freq (KHz)	V-freq (Hz)	Dot Clock (Mhz)	Resolution (H X V)	Int/Prog	Sync Polarity		Timing Data Name
						H	V	
951	31.469	119.882	54.000	1440*480	Int	--	--	RGB 444
952	31.500	120.000	54.054	1440*480	Int	--	--	RGB 444
953	125.000	200.000	108.000	720*576	Prog	--	--	RGB 444
954	62.500	200.000	108.000	1440*576	Int	--	--	RGB 444
955	125.874	201.398	108.000	720*480	Prog	--	--	RGB 444
956	126.000	201.600	108.108	720*480	Prog	--	--	RGB 444
957	62.937	239.760	108.000	1440*480	Int	--	--	RGB 444
958	63.000	240.000	108.108	1440*480	Int	--	--	RGB 444
959	18.000	24.000	59.400	1280*720	Prog	+	+	RGB 444
960	18.750	25.000	74.250	1280*720	Prog	+	+	RGB 444
961	22.500	30.000	74.250	1280*720	Prog	+	+	RGB 444
962								
963	36.000	24.000	118.800	1280*720(p)	Prog	+	+	FRAME PACKING
964	45.000	30.000	148.500	1280*720(p)	Prog	+	+	FRAME PACKING
965	89.910	59.940	148.351	1280*720(p)	Prog	+	+	FRAME PACKING
966	90.000	60.000	148.500	1280*720(p)	Prog	+	+	FRAME PACKING
967	75.000	50.000	148.500	1280*720(p)	Prog	+	+	FRAME PACKING
968	67.432	59.940	148.350	1920*1080(i)	Int	+	+	FRAME PACKING
969	67.500	60.000	148.500	1920*1080(i)	Int	+	+	FRAME PACKING
970	56.250	50.000	148.500	1920*1080(i)	Int	+	+	FRAME PACKING
971	53.946	23.976	148.351	1920*1080(p)	Prog	+	+	FRAME PACKING
972	54.000	24.000	148.500	1920*1080(p)	Prog	+	+	FRAME PACKING
973	67.432	29.970	148.350	1920*1080(p)	Prog	+	+	FRAME PACKING
974	67.500	30.000	148.500	1920*1080(p)	Prog	+	+	FRAME PACKING
975	44.955	59.940	74.176	1280*720(p)	Prog	+	+	TOP & BOTTOM
976	45.000	60.000	74.250	1280*720(p)	Prog	+	+	TOP & BOTTOM
977	37.500	50.000	74.250	1280*720(p)	Prog	+	+	TOP & BOTTOM
978	26.973	23.976	74.176	1920*1080(p)	Prog	+	+	TOP & BOTTOM
979	27.000	24.000	74.250	1920*1080(p)	Prog	+	+	TOP & BOTTOM
980	33.716	29.970	74.175	1920*1080(p)	Prog	+	+	TOP & BOTTOM
981	33.750	30.000	74.250	1920*1080(p)	Prog	+	+	TOP & BOTTOM
982	67.432	59.940	148.350	1920*1080(p)	Prog	+	+	TOP & BOTTOM
983	67.500	60.000	148.500	1920*1080(p)	Prog	+	+	TOP & BOTTOM
984	56.250	50.000	148.500	1920*1080(p)	Prog	+	+	TOP & BOTTOM
985	44.955	59.940	74.176	1280*720(p)	Prog	+	+	SIDE BY SIDE(HALF)
986	45.000	60.000	74.250	1280*720(p)	Prog	+	+	SIDE BY SIDE(HALF)
987	37.500	50.000	74.250	1280*720(p)	Prog	+	+	SIDE BY SIDE(HALF)
988	67.432	59.940	148.350	1920*1080(p)	Prog	+	+	SIDE BY SIDE(HALF)
989	67.500	60.000	148.500	1920*1080(p)	Prog	+	+	SIDE BY SIDE(HALF)
990	56.250	50.000	148.500	1920*1080(p)	Prog	+	+	SIDE BY SIDE(HALF)
991	26.973	23.976	74.176	1920*1080(p)	Prog	+	+	SIDE BY SIDE(HALF)
992	27.000	24.000	74.250	1920*1080(p)	Prog	+	+	SIDE BY SIDE(HALF)
993	67.500	60.000	148.500	1920*1080(i)	Int	+	+	FIELD ALTERNATIVE
994	56.250	50.000	148.500	1920*1080(i)	Int	+	+	FIELD ALTERNATIVE
995	53.946	23.976	148.351	1920*1080(p)	Prog	+	+	LINE ALTERNATIVE
996	54.000	24.000	148.500	1920*1080(p)	Prog	+	+	LINE ALTERNATIVE
997	44.955	59.940	148.351	1280*720(p)	Prog	+	+	SIDE BY SIDE(FULL)
998	45.000	60.000	148.500	1280*720(p)	Prog	+	+	SIDE BY SIDE(FULL)
999	37.500	50.000	148.500	1280*720(p)	Prog	+	+	SIDE BY SIDE(FULL)

MSPG-8100S

7. Chapter Seven

Pattern List

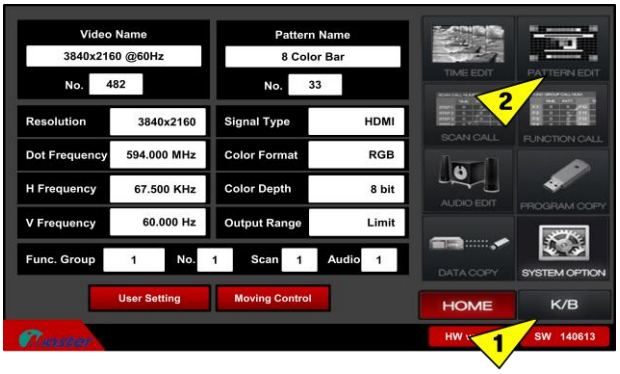
Chapter 7.Pattern List

7.1 Pattern edit

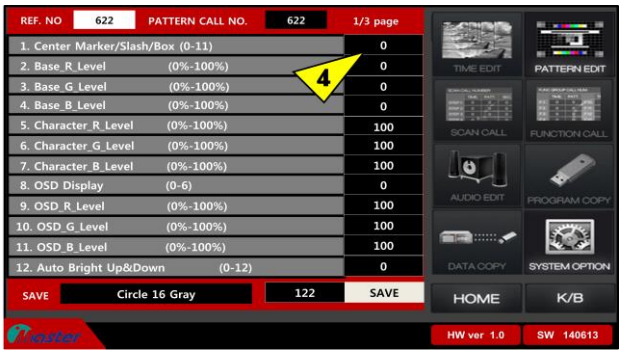
MSPG-8100S's Pattern edit.

① Push the K/B key to activate edit list.

② Push the PATTERN EDIT key to activate Pattern edit setting.



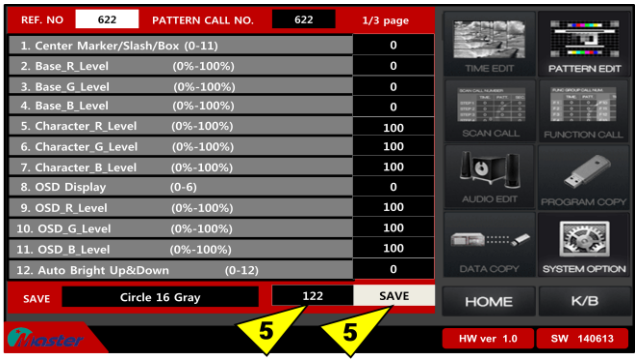
③ Below edit list will be showing.
Push the arrow key or number key to change setting value.



④ If you want move to next page, then move cursor to any list section and push the right(or left) key at the key pad.

⑤ When you changed setting value, then move to cursor at SAVE blank section and insert save number(1~500)

Push the Enter key for running setting.

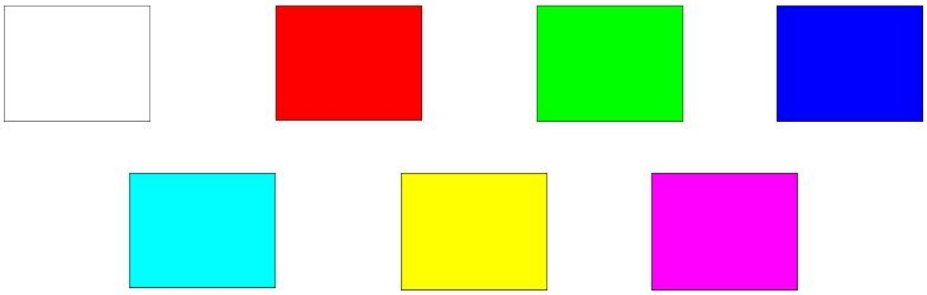


Push the PATTERN key on the keypad, the same function can be performed.

7.2 Pattern definition.

1. Purity Check Pattern / Color pattern

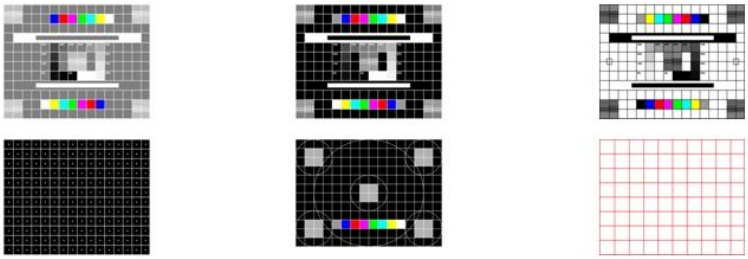
The Monitor is controlled by electromagnetism which is made at the monitor. If the magnetism is made from monitor, distortion condition can be appeared because monitor is controlled by electromagnetism. If there isn't any distortion condition, we say, that monitor has good condition related by the color purity. Electromagnetism can be removed by degaussing, and you can test the purity as using below patterns.



2. Linearity Check Pattern

The Linearity test is a fan-shape testing. The Linearity means that the rate between the input signal and output signal can be conveyed linearly, like y=ax+b.

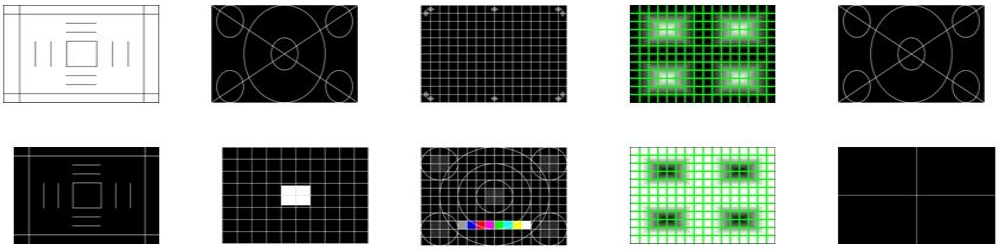
Going the system linearly, that means, easy to predict and control the result. In conclusion, The linearity means that the each signal goes separately without any interference. Making the linearity correctly can effect to its reliability of the quality. You can test the linearity by using below patterns.



3. Geometry Check Pattern

The Geometry test are checking the distortion of the monitor. When the vertical/horizontal line and the circle are displayed on the monitor, the distortion can be appeared as the curve or bend.

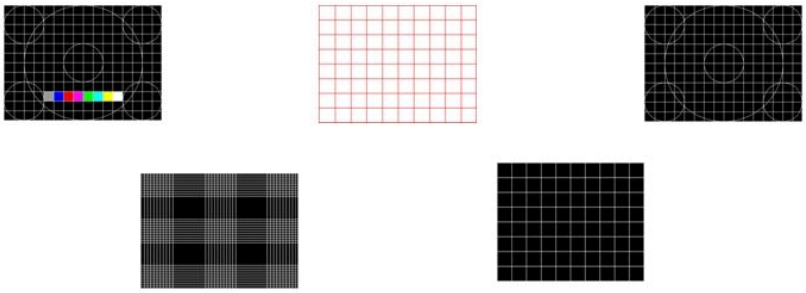
Generally, the distortion can be appeared at the normal monitor more than the flat panel like the LCD. So the geometry test can revise the incorrect horizontal/vertical line and circle. You can test the geometry by using below patterns.



4. Deflection Linearity Check Pattern

As meaning the horizontal/vertical movement of the scanning beam which is controlled by the electromagnetism, the deflection means horizontal angle to deflect the electron beam. It is called Short Neck. Almost of the monitors have the 90 degree horizontal angle, except the product reducing the length of the cathode-ray tube.

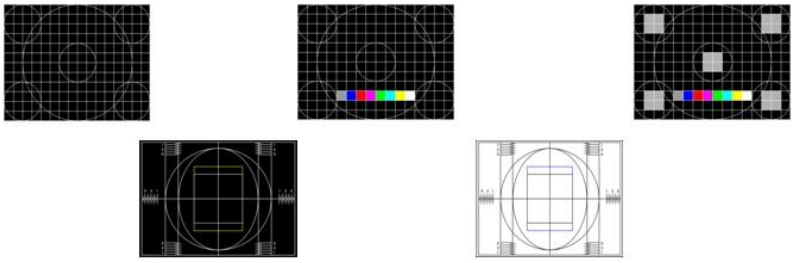
You can test the deflection linearity by using below patterns.



5. Aspect ration format 4:3, 16:9 Check Pattern

The Aspect ratio means the relation between the horizontal and vertical width on the computer graphic. Because all most of the monitors display aren't going regular square, the display picture's ratio is arranged according to the monitor's ratio. By means of scanning the 1125line and display the 16:9 aspect ratio, the HDTV(High Definition Television) is improved at the quintuple display precision from the SDTV(Standard Television).

You can test the aspect ratio format by using below patterns.

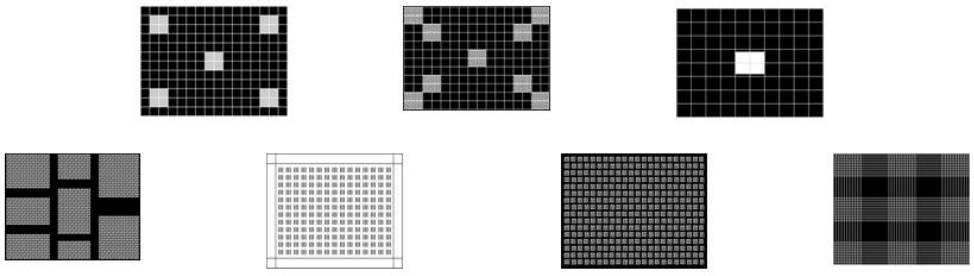


6. Focus Check Pattern

The Focus test means inspecting whether the monitor is good or bad at the focus. In case of the bad focus monitor, the scanning beam is scattered.

Especially, it is appeared at the corner of the monitor. There are other things which can affect the sharpness of the display except the focus. The other things are the convergence, blooming, video amplifier bandwidth & resolution.

The focus test pattern take the shape of the special pattern at the center or the corner of the display. You can test the focus by using below patterns.



7. Regulation Check pattern

The Regulation test pattern is to test the variation of the input(line) regulation and the output voltage which is caused by the input voltage's variation. The good line regulation means that the output variation is a little when compare to the input variation.

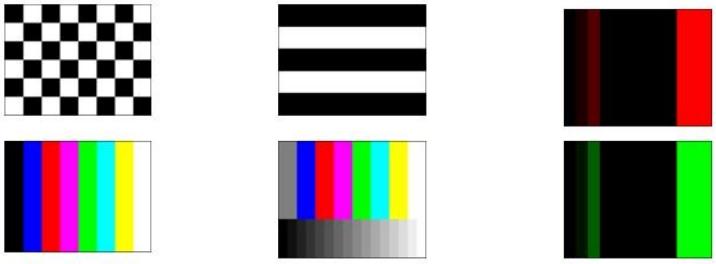
You can regulation test by using below pattern.

8. White Balance Check Pattern

Setting up white balance means work to appear the accurate color by means of reappearing the color with balanced each R, G, B color signal. The one picture can be made by several color. So by means of adjusting the white balance, we can make the picture the same with people's sense of sight. You can test the white balance by using below patterns.

9. Auto Color gain Adjustment Check Pattern

The Auto color gain test is for checking and fixing the whole colors. Through this test, it provide vivid color information. You can test the auto color gain by using below patterns.

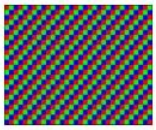
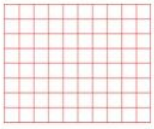
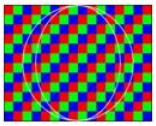


10. Auto Adjustment Check Pattern

The Auto adjustment can adjust monitor's clock, phase, position of the display to the ideal level automatically. You can test the Auto adjustment by using below patterns.

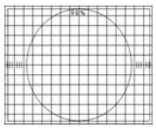
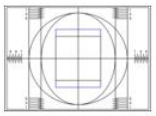
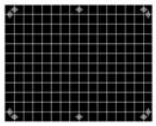
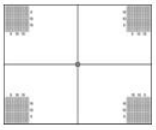
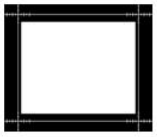
11. Convergence Adjustment Check Pattern

The Convergence is adjusted by the precision of the electron beam. You can test the convergence by using below patterns.

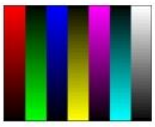
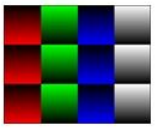
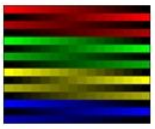
12. Over scan Check Pattern

The Over-scan means the hidden part of the edge of the display. You can test the over-scan by using below patterns.

13. Grayscale tracking , Linearity of video amplifier Brightness , Contrast Check Pattern

General form of color is from the gray to the black which are having each other darkness and white for 256 color, 256 grayscale. The Tracking adjustment means the ability to fix the head of the wrong route. You can test the grayscale tracking test and the contrast/brightness test by using below patterns.

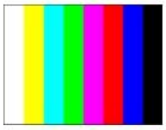





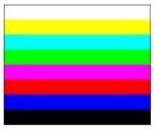


14. Color Matrix Check Pattern

The Color matrix test is to test the for fixed quantity of color. To sum up, test for R, G, B color chart.

You can test the color matrix by using below patterns.

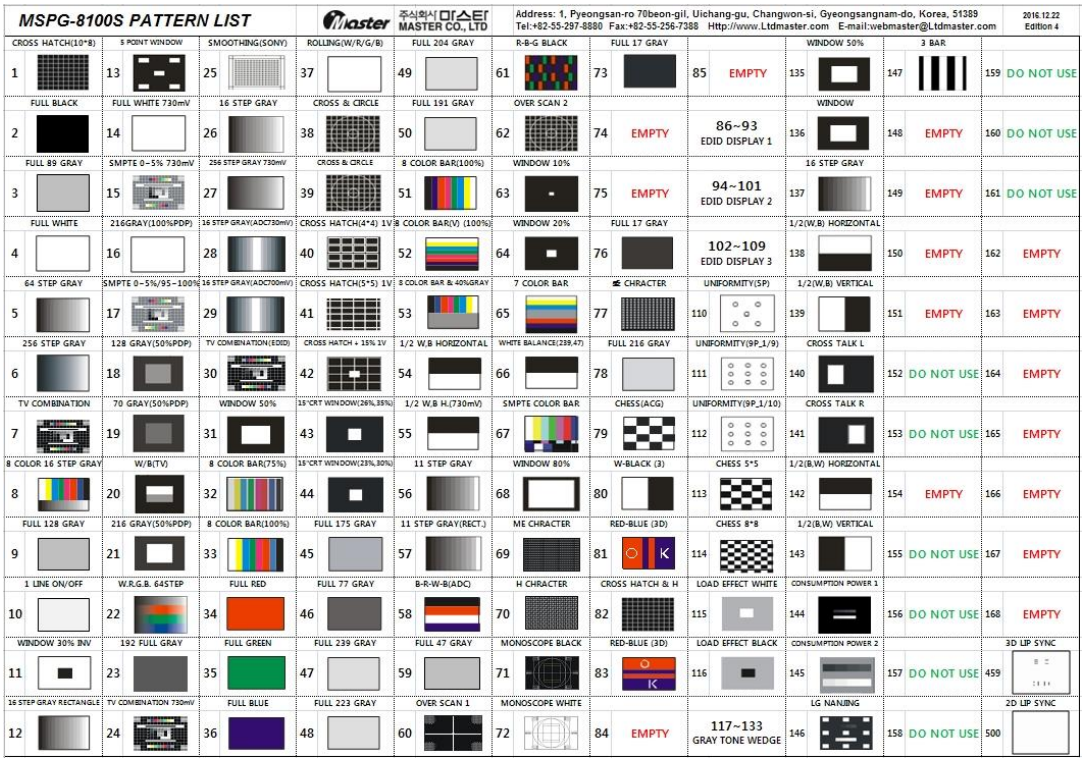




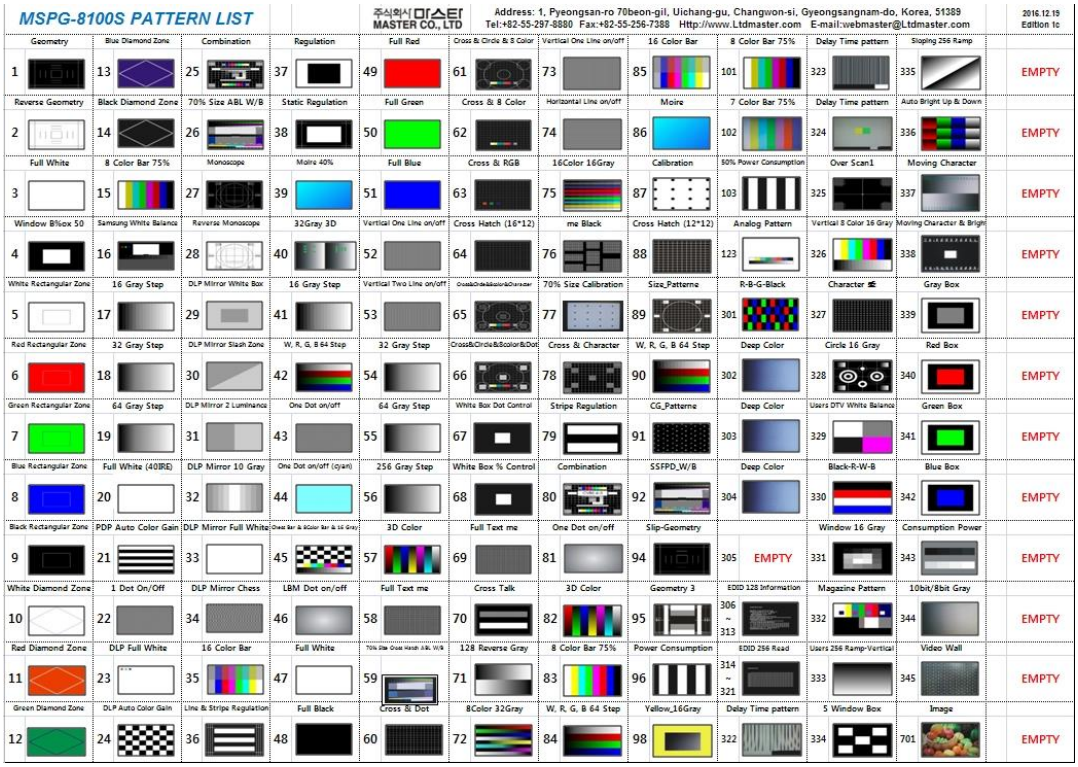
7.3 Default pattern and option list

7.3.1 Basically, MSPG-Series have two kinds pattern as below.

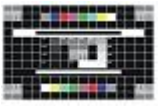
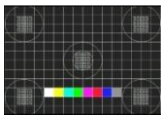
[A Type]

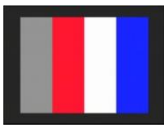
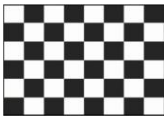
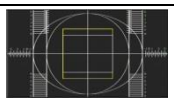


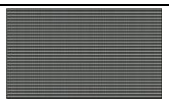
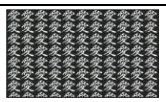
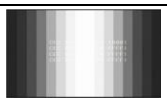
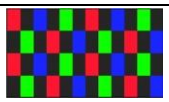
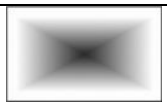
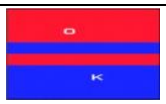
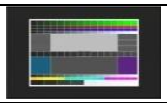
[B type]



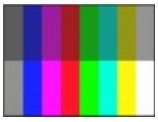
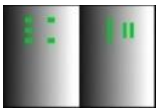
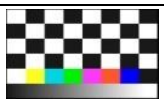
7.3.2 Default pattern and option list

Pattern name	Default No. A type time No. B type time No.	Pattern Image	Option List
2. Linearity check pattern	Default 501 7,15,17,24,30 25,80		1.Position Box (0=Off, 1=On): Position Box setting On/off 2.Final Char (0=Off, 1=On):Character pattern setting on/off 3.Final Color (0=Off, 1=On):Color pattern setting on/off 4.EDID Check (0=Off, 1=On) ▶HDMI/DVI EDID check pattern, if Display's EDID header and check sum value are correct → Video On(Display) if Display's EDID header and check sum value are wrong → Video Off(No Signal) 4 ~38 Common option
3. Geometry check pattern 4. Deflection linearity check pattern	Default 502 38,39,40,41, 62,82 60,61,62,63,64,65,66,78,88, 89		1.Cross Hatch H Divide (2~64): Horizontal line divide 2 to 64 2.Cross Hatch V Divide (2~48): Horizontal line divide 2 to 48 3.H Dot width (1~10): Horizontal line width setting 1 to 10 4.V Dot width (1~10): Vertical line width setting 1 to 10 5.Dot / Char Style (0~6): Dot or Character pattern style change 0 to 6 6.Small 5 Circle (0=off, 1=On): Small 5 circle line on/off 7.Small / Medium Circle (0=Off, 1=Medium, 2=Small): Center circle on/off 8.Large Circle (0=Off, 1=On): Large circle on/off 9.Large Circle size (0~100%): Large circle size setting 0 to 100% 10.Color Sel (0=Off, 1=3Col, 2=8Col) ▶0: Color Off ▶1: Red, Green and Blue On ▶2: White, Yellow, Cyan, Green, Magenta, Red, Blue and Gray On 11.Outer Line (0=Off, 1=On): Outer Line on/off 12~46 Common option
1. Color Pattern	Default 503 2,3,4,9,14,16, 23,34,35,36,37,45,46,47,48, 49,50,59,73,76,78,110,111,112,115,116 3,20,33,39,47, 48,49,50,51,86,338		1.Color Box H Start (0~100): Color Box Horizontal start setting 0 to 100 2.Color Box V Start (0~100): Color Box Vertical start setting 0 to 100 3.Color Box H Size (0~100): Color Box Horizontal size setting 0 to 100 4.Color Box V Size (0~100): Color Box Vertical size setting 0 to 100 5.Color Box R Level (0~255): Color Box Red level setting 0 to 255 6.Color Box G Level (0~255): Color Box Green level setting 0 to 255 7.Color Box B Level (0~255): Color Box Blue level setting 0 to 255 8.Background R Level (0~255): Background Red Level setting 0to 255 9.Background G Level (0~255): Background Green Level setting 0to 255 10.Background B Level (0~255): Background Blue Level setting 0to 255 11.Uniformity Position No. (5,9,10): Uniformity circle position setting ▶5: 5 uniformity point ▶9: 6 uniformity point ▶10: bigger 6 uniformity point 12.Uniformity Position Size (H Size/x) (0~100): Uniformity size setting 0 to100 13.Lip_Sync (on*100ms) (0 ~999): Video and audio On time setting 0 to 999 14.Lip_Sync (off*100ms) (0 ~999): Video and audio Off time setting 0 to 999 15~49 Common option
13.Gray/Color Scale Pattern	Default 504 12 32,71,335,336,337		1.Color/Gray Step (1~255): Gray Step setting 1 to 255 2.H Divide (1~16): Horizontal divide 1 to 16 3.V Divide (1~16): Vertical divide 1 to 16 4.Gray Direction (0~11): Gray Direction setting 0 to 11 5.Color Selector (0~1) ▶0: Gray Step ▶1: Color Step

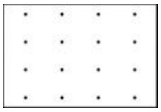
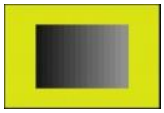
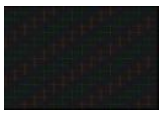
			6.Color 1 (0~15): Change color 1 0 to 15 7.Color 2 (0~15): Change color 1 0 to 15 8.Color 3 (0~15): Change color 1 0 to 15 9.Color 4 (0~15): Change color 1 0 to 15 10~44 Common option
Line On/Off Pattern	Default 505 10 22,43,44,46,52,53,73,74,81		1.On Size (0~100): H/V line on size setting 1 to 100 2.Off Size (0~100): H/V line of size setting 1 to 100 3.Color/Character select (0=color, 1=Char): Color or Character select 4.H/V Line, Dot Select (0=H, 1=V, 2=Dot) ▶0: Horizontal line type ▶1: Vertical line type ▶2: Dot type 5~7 Color On R,G,B Level (0~255): Color On R,G,B Level setting 0 to 255 8~10 Color Off R,G,B Level (0~255): Color Off R,G,B Level setting 0 to 255 11~45 Common option
1.Purity check pattern 14.Color matrix check pattern	Default 506 11,18,19,20,21,31,42,43,44,54,55,58,63,64,66,68,80 4,29,37,67,68,79,96,103,330		1.Color Window H Start (0~100%): Color window horizontal setting 0 to 100% 2.Color Window V Start (0~100%): Color window vertical setting 0 to 100% 3.Color Window H Size (0~100%): Color window horizontal size setting 0 to 100% 4.Color Window V Size (0~100%): Color window vertical size setting 0 to 100% 5.Color window divide (0~14): Color window divide 0 to 14 6.Color window H/V select (0~1): Color window select horizontal or vertical 7.Color 1 R level (0~255): Color 1 Red level setting 0 to 255 …. 48.Color 14 B level (0~255): Color 14 Blue level setting 0 to 255 49~83 Common option
9.Auto color gain adjustment check pattern	Default 507 79,113,114 24,34		1.H Divide (0~255): Horizontal divide 0 to 255 2.V Divide (0~255): Vertical divide 0 to 255 3.Divide / Pixel Select (0=Divide, 1=Pixel) ▶0: Divide by H and V ▶1: Pixel: Divide unit is pixel 4.Color On R Level (0~255): Color on Red level setting 0 to 255 …. 9.Color On B Level (0~255): Color off Blue level setting 0 to 255 10~44 Common option
14. Color matrix check pattern	Default 508 8,32,33,51,52,53,65 15,21,31,83,101,102,326		1.Color Bar H/V Divide (1~8): Color Bar H or V divide 1 to 8 2.H / V select (0=H, 1=V): Horizontal or Vertical select 3.Gray Size (0~90%): Gray step size select 0 to 90% 4.Gray Step by one color (0~16): Gray step select 0 to 16 depend on Color bar 5.Gray 1 Level: Reserved 6.Reserved 7.Color 1 R level (0~255); Color 1 Red level setting 0 to 255 … 30. Color 8 B level (0~255); Color 8 Blue level setting 0 to 255 31~65 Common option
3. Geometry check pattern 5. Aspect ration format check pattern 12.Over scan check pattern	Default 509 71,72 27,28		1~35 Common option

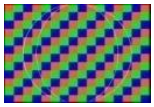
Character check pattern	Default 510 none none		1.Font Ascii Value (32~127): Font Ascii select 32 to 127 2.Font H Space (0~99): Font horizontal space setting 0 to 99 3.Font V Space (0~99): Font vertical space setting 0 to 99 4.Font Size or Code (1~7): Font size or code select 1 to 7 5~39 Common option
Character check pattern	Default 511 69 58,69,76		1.Me Style Select(0~4): "ME" Character style select 0 to 4 2.Pattern Select(0~1): Pattern type select 3~37 Common option
Character size check pattern	Default 512 none none		1.Character font size (1~8): Character font size setting 1 to 8 2~36 Common option
Chinese font check pattern	Default 513 77 327		1.Chinese Font select (0=Love, 1=Beautiful): Chinese Font select 愛 or 美 2~36 Common option
13. Color scale tracking check pattern	Default 514 22 42,84,90		1.Color Step (2~256): Color Step setting 2 to 256 2.H Divide (1~4): Horizontal divide 1 to 4 3~37 Common option
13. Gray scale tracking check pattern	Default 515 28,29 none		1.Color Windows H Divide (0~20): Horizontal color windows divide 0 to 20 2.Color Windows V Divide (0~20): Vertical color windows divide 0 to 20 3.Color Windows H Size (0~100%): Horizontal color windows divide 0 to 100% 4.Color Windows V Size (0~100%): Vertical color windows divide 0 to 100% 5.Gray Level 1 (0~255): Gray level 1 setting 0 to 255 … 24.Gray Level 20 (0~255): Gray level 20 setting 0to 255 25~59 Common option
11. Convergence adjustment check pattern	Default 516 61 301		1.H Divide (0~255): Horizontal divide 0 to 255 2.V Divide (0~255): Vertical divide 0 to 255 3~37 Common option
8.White balance check pattern	Default 517 13 334		1.Box H Start (0~100%): Box horizontal start position setting 0 to 100% 2.Box V Start (0~100%): Box vertical start position setting 0 to 100% 3.Box H Size (0~100%): Box horizontal size setting 0 to 100% 4.Box V Size (0~100%): Box vertical size setting 0 to 100% 5.Center Box On/Off (0=Off, 1=On): Center box on/off setting 6.Box Full On/Off (0=Pff, 1=On): full or empty box select 7~41.
13. Gray scale tracking pattern with square type	Default 518 None None		1.Divide (1~64): Square box divide 1 to 64 2.Gray Type (0~1): Black or white type select 3.Shape Type (0=Fill, 1=2by2): Shape type select 4~38 Common option
3D check pattern (Side by side / Top and bottom type)	Default 519 81,83 None		1.3D Struct Select (0=SSH, 1=TB): 3D pattern setting, 0=Side by side type / 1=Top and bottom type 2~36 Common option
AVL W/B (70%) pattern	Default 520 none		1.H Size (1~100%): Horizontal size setting 1 to 100% 2.V Size (1~100%): Vertical size setting 1 to 100% 3.Cross Hatch Width (0~30Pixels): Cross hatch width setting 0 to 30 pixels

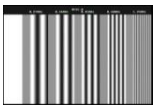
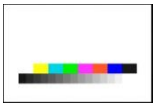
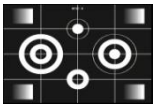
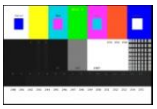
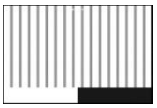
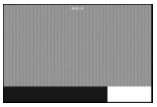
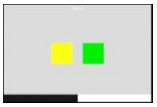
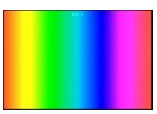
	26,59,92		4.Side width (0~30Pixes): Side width setting 0 to 30 pixels 5.Dot On/Off Color Level (0~255): Dot on/off color level setting 0 to 255 6~40 Common option
EDID check pattern 256Byte with diagram	Default 521 94,95,96,97,98,99,100,101 314,315,316,317,318,319,320,321		1.EDID No. (0~3:HDMI, 4:DVI, 5ANALOG, 6:DP) 255 EDID data value ▶0: HDMI Ch 1 EDID 255 DATA ▶1: HDMI Ch 2 EDID 255 DATA ▶2: HDMI Ch 3 EDID 255 DATA ▶3: HDMI Ch 4 EDID 255 DATA ▶4: DVI EDID 255 DATA ▶5: ANALOG EDID 255 DATA ▶6: DISPLAYPORT EDID 255 DATA 2~36 Common option
EDID check pattern Simple EDID data	Default 522 86,87,88,89,90,91,92,93 306,307,308,309,310,311,312,313		1.EDID No. (0~3:HDMI, 4:DVI, 5ANALOG, 6:DP) EDID data value ▶0: HDMI Ch 1 EDID DATA ▶1: HDMI Ch 2 EDID DATA ▶2: HDMI Ch 3 EDID DATA ▶3: HDMI Ch 4 EDID DATA ▶4: DVI EDID DATA ▶5: ANALOG EDID DATA ▶6: DISPLAYPORT EDID DATA 2~36 Common option
EDID check pattern Detail EDID data	Default 523 102,103,104,105,106,107,108,109 none		1.EDID No. (0~3:HDMI, 4:DVI, 5ANALOG, 6:DP) EDID detail data value ▶0: HDMI Ch 1 EDID detail DATA ▶1: HDMI Ch 2 EDID detail DATA ▶2: HDMI Ch 3 EDID detail DATA ▶3: HDMI Ch 4 EDID detail DATA ▶4: DVI EDID detail DATA ▶5: ANALOG EDID detail DATA ▶6: DISPLAYPORT EDID detail DATA 2~36 Common option
3.Geometry check pattern with Circle	Default 524 None none		1.Large 1 Circle (0=Off, 1=On): Large circle on/off 2.Large Circle width (0~10): Large circle width setting 0 to 10 3.Middle 5 Circle (0=Off, 1=On): Middle circle on/off 4.Middle Circle width (0~10): Middle circle width setting 0 to 10 5.Cross 4 Circle (0=Off, 1=On): Cross circle on/off 6.Cross Circle width (0~10): Cross circle width setting 0 to 10 7.Small 5 Circle (0=Off, 1=On): Small circle on/off 8.Small Circle width (0~10): Small circle width setting 0 to 10 9~41 Common option
1.Purity check pattern with square box	Default 525 none 5,6,7,8,9,10,11,12,13,14		1.Color Box H Start(0~100):Color box horizontal start position setting 0 to 100 2.Color Box V Start(0~100):Color box vertical start position setting 0 to 100 3.Color Box H Size(0~100): Color Box horizontal size setting 0 to 100 4.Color Box V Size(0~100): Color Box vertical size setting 0 to 100 5~7.Color Box R,G,B level (0~255): Color Box level red, green and blue setting 0 to 255 8.Color Rectangular H Start(0~100):Color Rectangular horizontal start position setting 0 to 100 9.Color Rectangular V Start(0~100):Color Rectangular vertical start position setting 0 to 100 10.Color Rectangular H Size(0~100): Color Rectangular horizontal size setting 0 to 100 11.Color Rectangular V Size(0~100): Color Rectangular vertical size setting 0 to 100 12.Rectangular/Diamond/Box Select (0=Rectangular/1=Diamond/2=Box) 13~47 Common option

15.Color matrix check pattern with level adjustment	Default 526 None 35,85		1.Color H Divide (1~8): Color horizontal divide 1 to 8 2.Color V Divide (1~64): Color vertical divide 1 to 64 3.H Size (1~100%): Horizontal size setting 1 to 100% 4.V Size (1~100%): Vertical size setting 1 to 100% 5.Reserved 6.Reserved 7.Color 1 R level (0~255): Color 1 red level setting 0 to 255 … 30.Color 30 B level (0~255): Color 8 blue level setting 0 to 255 31~65 Common option
7.Regulation check pattern	Default 527 None 36		1.H Line space value (0~50%): Horizontal line space value setting 0~50% 2.H Box space value (0~50%): Horizontal box space value setting 0~50% 3.V Line space value (0~50%) Vertical line space value setting 0~50% 4.V Box space value (0~50%) Vertical box space value setting 0~50% 5~39 Common option
7.Regulation check pattern	Default 528 none 38		1.H Line Count (0~64%): Horizontal line count setting 0 to 64% 2.V Line Count (0~64%): Vertical line count setting 0 to 64% 3.H Line Position (0~100%): Horizontal line position setting 0 to 100% 4.V Line Position (0~100%): Vertical line position setting 0 to 100% 5.H Box Position (0~100%): Horizontal box position setting 0 to 100% 6.V Box Position (0~100%): Vertical box position setting 0 to 100% 7.Color Box R level (0~255) 8.Color Box G level (0~255) 9.Color Box B level (0~255) 10~44 Common option
3D check pattern All of 3D type can be display with "3D" character	Default 529 None 40		1.3D Structure Type (0=SBS(Half), 1=T&B) ▶0: Side by side half type 3D ▶1: Top and bottom type 3D 2~36 Common option
9.Auto color gain adjustment check pattern 14.Color matrix check pattern	Default 530 None 45		1.H Divide (1~8) 2.V Divide (1~20) 3.8 Color Level (0~255) 4.Gray level (0~255) 5.Gray Step by one color (0~32) 6~40 Common option
13.Color scale tracking pattern with vertical type	Default 531 none 57,82		1.V Divide (1~255) 6~40 Common option
Cross talk check pattern	Default 532 None 70		1.Color Box H Start (0~100): Color Box Horizontal start setting 0 to 100 2.Color Box V Start (0~100): Color Box Vertical start setting 0 to 100 3.Color Box H Size (0~100): Color Box Horizontal size setting 0 to 100 4.Color Box V Size (0~100): Color Box Vertical size setting 0 to 100 5.Color Box R Level (0~255): Color Box Red level setting 0 to 255 6.Color Box G Level (0~255): Color Box Green level setting 0 to 255 7.Color Box B Level (0~255): Color Box Blue level setting 0 to 255 8.Characte Line On(0~255) 9.Characte Line Off(0~255) 10.Character Box H Start (0~100%) 11.Character Box V Start (0~100%) 12. Character Box H End (0~100%) 13. Character Box V End (0~100%)

13.Color scale tracking pattern with horizontal type	Default 533 None 533		1.H Divide (1~256): Horizontal step divide 1 to 256 2~36 Common option
13.Color scale tracking pattern with horizontal type	Default 534 None 75		1.H Divide (0~255): Horizontal divide 0 to 255 2.V Divide (0~16): Vertical divide 0 to 16 3~37 Common option
3.Geometry check pattern	Default 535 None 1,2,94		1.H Line Divide (0~64): Horizontal line add 0 to 64 2.V Line Divide (0~64): Vertical line add 0 to 64 3.H Width (0~64): Horizontal line width setting 0 to 64 4.V Width (0~64): Vertical line width setting 0 to 64 5.H Line Position (0~100) 6.V Line Position (0~100) 7.Rectangular Full (0=Off, 1=On): Rectangular fill up or empty 8.Rectangular H Size (0~100) 9.Rectangular V Size (0~100) 10~44Common option
13.Gray scale tracking check pattern	Default 536 5,6,26,56,57 17,18,19,41,54,55,56,302,303,304,333,344		1.Color Step (1~256, 0=256) 2.Color Step Case (1~4) ▶1: Step gray ▶2: Reverse step gray ▶3: Dual step gray ▶4: Reverse dual step gray 3.Mode Char Display (0=Off, 1=On): bit mode indicate 4.Red Color Max Level (0~4095) 5.Green Color Max Level (0~4095) 6.Blue Color Max Level (0~4095) 7.Red Color Min Level (0~4095) 8.Green Color Min Level (0~4095) 9.Blue Color Min Level (0~4095) 10~44 Common option
Windows square check pattern	Default 537 None 339,340,341,342		1.Base R Color Level (1~100%) 2.Base G Color Level (1~100%) 3.Base B Color Level (1~100%) 4.Center Box Size (1~100%) 5.Center Box R Level (1~100%) 6.Center Box G Level (1~100%) 7.Center Box B Level (1~100%) 8.Small Box Size (1~100%) 9.Small Box R Level (1~100%) 10.Small Box G Level (1~100%) 11.Small Box B Level (1~100%) 12~46 Common option
Windows square check pattern with color	Default 538 none 329		1.Color Windows H Start (1~100%) 2.Color Windows V Start (1~100%) 3.Color Windows H Size (1~100%) 4.Color Windows V Size (1~100%) 5.Color Windows H Divide (0~4) 6.Color Windows V Divide (0~3) 7.Color 1 R Level (0~255) … 45.Color 13 B Level (0~255) 46~80 Common option

Uniformity check pattern	Default 539 None 77,87,91		1.Pattern Size (0~100%) 2.Horizontal Divide (2~16) 3.Vertical Divide (2~12) 4.Circle Size (1~32): Circle size setting 1 to 32 5.Circle ratio (0=4:3, 1=16:9, 2=21:9): Circle ratio setting 6.Color Box R Level (0~255) 7.Color Box G Level (0~255) 8.Color Box B Level (0~255) 9.Triangle On/Off (0=Off, 1=On) 10~44 Common option
7.Regulation check pattern 12.Over scan check pattern	Default 540 None 95		1.Pattern Style (0~1) 2.High Level (0~100%) 3.Low Level (0~100%) 4~38 Common option
Back ground color with gray scale check pattern	Default 541 None 98		1.Gray Step (0~256) 2.Gray Min Level (0~100%) 3.Gray Max Level (0~100%) 4.Gray H Size (0~100%) 5.Gray V Size (0~100%) 6.Color Box R Level (0~255) 7.Color Box G Level (0~255) 8.Color Box B Level (0~255) 9~43 Common option
Gray rotate pattern	Default 542 None 331		1.Gray Rotate Step (0=16,1=256) 4~38 Common option
Consumption Power check pattern	Default 543 None 343		1.Box H Size (0~100%) 2.Box V Size (0~100%) 3.Box 1_1 Level (0~100%) 4.Box 1_2 Level (0~100%) 5.Box 1_3 Level (0~100%) 6.Box 1_4 Level (0~100%) 7.Box 2_1 Level (0~100%) 8.Box 2_2 Level (0~100%) 9.Box 2_3 Level (0~100%) 10.Box 2_4 Level (0~100%) 11~45 Common option
Video wall check pattern	Default 544 None 345		1.Horizontal Divide (1~15) 2.Vertical Divide (1~15) 3.Line Width (1~20) 4.Horizental Text space (1~20) 5.Vertical Text space (1~20) 6.Text On/Off (0=Off, 1=On) 7~41 Common option
Color box Line check pattern	Default 545 None None		1.Color Box 1 R Level (0~100%) … 9.Color Box 3 B Level (0~100%) 10~44Common option

Consumption Power check pattern	Default 546 None None		1.Low Level Gray Box 1 (0~255) 2.Low Level Gray Box 2 (0~255) 3.Low Level Gray Box 3 (0~255) 4.Low Level Gray Box 4 (0~255) 5.High Level Gray Box 1 (0~255) 6.High Level Gray Box 2 (0~255) 7.High Level Gray Box 3 (0~255) 8.High Level Gray Box 4 (0~255) 9.Side Box Level (0~255) 10~44 Common option
HDMI CEC ping OK/NG check pattern	Default 547 None None		1~35 Common option
Customize pattern	Default 548 None None		1~35 Common option
Circle radius check pattern	Default 549 None None		1.Circle radius (1~100%): Circle size setting 1 to 100% (0~255) 2.Circle width[VDISP/2] (1~242): Circle line setting 3.Circle ratio (0=16:9, 1=4:3) 4~38 Common option
2.Linearity check pattern 3.Deflection linearity check pattern	Default 550 None None		1~35 Common option
11.Convergence adjustment check pattern	Default 551 None None		1.H Divide Value (1~64) 2.V Divide Value (1~48) 3.Circle 4~3 size (0~100%) 4.Circle 16-9 size (0~100%) 5.Circle width (0~100) 6~40 Common option
8.White balance check pattern	Default 552 None None		1~35 Common option
HDMI Ch 1 to 4 HDCP, EDID check pattern	Default 553 None none		1~35 Common option
DLP full white check pattern	Default 615 None 23		1~35 Common option
Samsung W/B pattern	Default 616 None 16		1~35 Common option

8.White balance check pattern Slash zone pattern	Default 617 None None		1~35 Common option
Multiburst pattern To check a display's ability to produce sharply defined stripes at equal brightness up to full resolution	Default 618 None None		1~35 Common option
	Default 619 None None		1~35 Common option
Analog pattern 14.Color matrix check pattern	Default 620 None None		1~35 Common option
14.Color matrix check pattern	Default 621 None None		1~35 Common option
Circle 16 gray 3.Geometry check pattern	Default 622 None 328		1~35 Common option
Magazine pattern Combination pattern	Default 623 None 332		1~35 Common option
Delay time check pattern Customized	Default 624 None 322		1~35 Common option
	Default 625 none 323		1~35 Common option
	Default 626 none 324		1~35 Common option
13.Color scale tracking pattern	Default 630 None None		1~35 Common option

<Common option>

1.Center Marker/Slash/Box(0~11)
- ▶ 0: None
- ▶1: 9point center/border/edge
- ▶2: Cross line
- ▶3:Center Cross point
- ▶4:X line
- ▶5:Inverted triangle with white
- ▶6:Cross line with Circle
- ▶7:Black cross bar with white bar
- ▶8: Cross line
- ▶9: Two vertical line
- ▶10: Cross line with center square box
- ▶11: Border line

2 ~ 4. Base R, G, B Level (0~100%)
- ▶ N/A(These pattern haven't base)

5 ~ 7. Character R, G, B Level (0~100%)
- ▶ N/A(These pattern haven't Character)

8. OSD Display (0~6): On Screen Display
- ▶ 1:美 Character at the bottom
- ▶2 :美 Character at the top
- ▶3 :美 Character at the top and bottom
- ▶4:Boarder line character
- ▶5:X line character
- ▶6:Boarder and X line character

9 ~ 11 OSD R, G, B Level (0~100%)
- ▶On Screen Display Red, Green and Blue level setting 0 to 100%

12. Auto Bright up & down (0~12)
- ▶0:None
- ▶1: Auto Contrast up & down with Red, Green and Blue
- ▶2: Auto Contrast up & down Red only
- ▶3: Auto Contrast up & down Green only
- ▶4: Auto Contrast up & down Blue only
- ▶5: Auto Contrast up & down with Red, Green and Blue
- ▶6: Auto Contrast up & down Red only
- ▶7: Auto Contrast up & down Green only
- ▶8: Auto Contrast up & down Blue only
- ▶9: Auto Bright up & down with Red, Green and Blue
- ▶10: Auto Bright up & down Red only
- ▶11: Auto Bright up & down Green only
- ▶12: Auto Bright up & down Blue

13. Reverse On Time (0~999)/Vf
- ▶ Reverse pattern on time setting 0 to 999/Vertical Frequency

14. Reverse Off Time (0~999)/Vf
- ▶ Reverse pattern off time setting 0 to 999/Vertical Frequency

15. Character Moving (0~8)
- ▶0:None
- ▶1:Character moving right to left
- ▶2:Character moving left to right
- ▶3:Character moving down to up
- ▶4:Character moving up to down
- ▶5:Character moving left up to right down
- ▶6:Character moving right up to left down
- ▶7:Character moving left down to right up
- ▶8:Character moving right down to left up
- ▶9:Character moving right up to left down

16. Color Moving (0~12)
- ▶0:None
- ▶1:Color moving right to left
- ▶2:Color moving left to right
- ▶3:Color moving down to up
- ▶4:Color moving up to down
- ▶5:Color moving left up to right down
- ▶6:Color moving right up to left down
- ▶7:Color moving left down to right up
- ▶8:Color moving right down to left up
- ▶9:Color moving right up to left down

17. Graphic Moving (0~8)
- ▶0:None
- ▶1:Graphic moving right to left
- ▶2:Graphic moving left to right
- ▶3:Graphic moving down to up
- ▶4:Graphic moving up to down
- ▶5:Graphic moving left up to right down
- ▶6:Graphic moving right up to left down
- ▶7:Graphic moving left down to right up
- ▶8:Graphic moving right down to left up
- ▶9:Graphic moving right up to left down

18. Moving Pixel Step (0~99)
- ▶ Moving step setting 0 to 99 by pixel step

19. Moving Frame Interval (0~99)
- ▶ Moving frame interval setting 0 to 99, it is relate with 49.Moving Pixel step setting

20. Flicker On (CH, OSD, CL, GP) (0~15)
- ▶ Flicker on item to

CH(1)=Character, OSD(2)=On Screen Display, CL(4)=Color, GP(8)=Graphic
- ▶0=None
- ▶1=CH
- ▶2=OSD
- ▶3=CH+OSD
- ▶4=CL
- ▶5=CH+CL
- ▶6=OSD+CL
- ▶7=CH+OSD+CL
- ▶8=GP
- ▶9=CH+GP
- ▶10=OSD+GP
- ▶11=CH+OSD+GP
- ▶12=CL+GP
- ▶13=CH+CL+GP
- ▶14=OSD+CL+GP
- ▶15=CH+OSD+CL+GP

21. Flicker On Time (0~999)/Vf
- ▶ Flicker on time setting to 0~999/Vertical Frequency

22. Flicker Off Time (0~999)/Vf
- ▶ Flicker off time setting to 0~999/Vertical Frequency

23. Gamma Correction (0~30)/10
- ▶ Gamma correction setting 0 to 30, default value is 10

24 ~ 26. Video R, G, B (On=1, Off=0)
- ▶ Each video off to Red, Green and Blue

27. Video Level (0~999mV)
- ▶ Analog(VGA) Video level setting to 0~999mv

28. RGB444=1, YCbCr444=2, YCbCr422=3

▶ Pattern RGB444, YCbCr444 or YCbCr422 setting

29.Scart 1=RF, 2=CVBS, 3=RGB, Y/C+1=4

▶SCART setting

30~35. Add pattern number (1~999)

▶ Pattern add to another with pattern number

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