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Chapter 1. Introduction

1.1 Foreword

- Thank you for purchasing the MSPG-6100L video signal generator.
- This manual provides details on how to operate the MSPG-6100L and the precautions to be needed when doing so.
- Take the time to read through this manual before attempting to operate the MSPG-6100L.
- After reading this manual, keep it in a safe place for your future reference.

1.2 Product overview

- The generator enables you to test a board range of video displays including composite or component television video signals as well as computer video display terminals(MSPG-6100L, It can test the almost signal (HDMI, DVI, TV, Analog, Media Play etc.)).
- The generator enables you to quickly set signal generator formats appropriate for each display by twisting a Jog.
- The generator's functions can be customized to support video display testing in a variety of environments such as development, repair center, or production line.

1.3 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-6100L.
- These instructions to ensure that you will operate the MSPG-6100L 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. In installing time don't do any operations.
- Fuse replacement : The fuse is a F3.15AL 250V "F" type.

1.4 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.

1.4.1 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.

1.4.2 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.

1.4.3 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.

1.4.4 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.

1.4.5 International Electrical Symbols

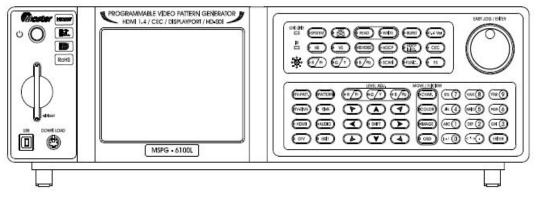
| ~ | AC : Alternating Current |
|------|--|
| ÷ | Earth Grounding |
| CE | Conforms to European Union directives |
| | High Definition Multimedia Interface |
| | Digital Visual Interface |
| RoHS | Directive on Restriction of the use of certain Hazardous Substances in EEE |

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.

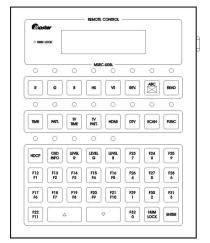
Tel : + 82-55-297-8880 / Fax : + 82-55-256-7388 E-mail : sales@Ltdmaster.com / webmaster@Ltdmaster.com

1.5 Accessories packed with the MSPG-6100L

1) MSPG-6100L : Programmable Video Signal Generator



2) MSRC-005L : Remote Controller



3) User Manual







Chapter 2. Concerning the MSPG-6100L

2.1 Introduction

- HDMI Function Execution : HDMI 1.4a Version(Support 3D Video Formats)
- CEC Function Support, Support Deep Color & xvYCC
- Analog & Digital(Dual) Pixel rate up to 330MHz
- HDCP Execution, Teletext, V-Chip, Closed Caption
- Displayport 1.1a Version



〈MSPG-6100L Front〉



⟨MSPG-6100L Real⟩

< MSPG-6100L Output Port >
HDMI(Ver 1.4) & Optical 5 PORT
DVI 2 PORT (Single, Dual)
DISPLAYPORT 1 PORT
ANALOG 1 PORT
COmponent 1 PORT
CVBS & S-Video 1 PORT
Audio(R,L) & Optical(Input, Output) & S/PDIF

2.2 Features

1) Possible to adjust and inspect of high-resolution monitors

- Analog Monitor : 8~330MHz Pixel Frequency
- Digital single Monitor : 25~165MHz Pixel Frequency
- Digital dual Monitor : 25~330MHz Pixel Frequency
- Max Image : 2048X2048 bit map size Max 60 page possible to save
- 2) Analog/Digital signal simultaneous output
 - BNC, 15P D-SUB ,DVI and HDMI simultaneous output
- 3) Certain abundant preset testing patterns and particular patterns
 - MSPG-6100L 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 edited by user.
- 4) Convenience operation of the unit
 - Possible to call patterns and timings by remote Controller & RS-232C.
- 5) Possible to make scan and function group with model and pattern
 - Editing any model and pattern, using the function Group(1~99), and Scan Group(1~99).
- 6) Digital output
 - It can output the Digital Single / Dual output using Sil170(Panel Link)chip, which includes HDCP(High-Bandwidth Digital Content Protection) function.
 - It can output the HDMI 1.4Ver signal with HDCP using Sil9334 chip.
- 7) D-TV signal output
 - 1080p, 1080i, 720p, 483p, 480i, 576p, 576i, etc. ATSC and DVB format.
- 8) NTSC, PAL, SECAM output
 - NTSC-M, NTSC-J, NTSC-4.43
 - PAL-B/D/G/H/I, PAL-M, PAL-60
 - SECAM

9) SUPPORTS PC download

- Possible to download the main firmware program by PC.
- 10) Internal Audio output
 - Mono & Fix & Swap & Sweep & Up & Down Mode

11) S/PDIF

- Input the Digital Audio signal, and then output it through HDMI port.
- 12) Optical Audio signal Input/output
 - Input the Optical Audio signal, and then output it through HDMI port.

13) Displayport Output

 Displayport is a high-speed interface which is transmit Digital Video & Audio signal compliance with VESA standard.

2.3 Specifications

*** MSPG-6100L Specifications ***

| | Display Size | 2560 X 1600 |
|----------------------|-----------------------|--|
| | Pixel Clock | Max. 10.8Gbps (2.7GHz-1,2,4 Lanes / 1.6GHz-1,2,4 Lanes) |
| Displayport | Link Rate | 25~300MHz |
| | Input Format | RGB444, YCbCr444, YCbCr422 (6,8,10,12 Bit) |
| | Compliant | Displayport 1.1a Version |
| | Audio | SPDIF, 192KHz, 2 Channels |
| H/V Frequency | Horizontal | 10~300KHz / 1 Dot Resolution |
| The requency | Vertical | 10~300Hz / 1 Line Resolution |
| | Display Size | 4096 X 4096 |
| | Pixel Clock | 8~330MHz |
| Analog Output | Video Level | R, G, B (Load 75 ohms, 0~1.0V Programmable) |
| Analog Output | Output Connector | 15P D-Sub, DVI-I |
| | EDID | Read |
| | Separate Sync | HS, VS (3.0V~5.5Vp-p Programmable / Inherited Sync Level is 5.0Vp-p) |
| | Pixel Clock | * Single Link: 25~165MHz / * Dual Link: 25~330MHz |
| | Transfer Type | * Single TMDS 24 Bit Input Mode |
| | | * Dual TMDS 12 Bit Input Mode |
| | EDID | Read |
| DVI (TMDS) Output | HDCP | Support Single & Dual |
| | Compliant | DVI 1.0 Support |
| | Video Signal Type | RGB |
| | Output Connector | DVI-I (DVI 2 Ports, Single/Dual) |
| | Data Bit | 8~16 Bit |
| CVBS Output | | * NTSC M,J (3.58MHz) |
| | Output Mode | * 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 |

| | | * XFCC Rating: TV-Y, TV-Y7, TV-G, TV-PG, TV-14, TV-MA |
|-----------------|-------------------------|--|
| | Teletext (PAL) | Teletext System B Level 1, 1.5 |
| | Signal | Y, Pb, Pr |
| | Connector | BNC |
| D-TV Output | Time | 480i/p, 576i/p, 720p, 1080i/p for ATSC and DVB Format |
| | Note | Support D Terminal for Japanese D-TV (Adjustable to 16:9, 4:3 aspect ratio) |
| | Compliant | 1.4a Version (CEC Support) |
| | Pixel Rate Range | 25~165MHz (TMDS Clock : 25~225MHz) |
| | Standard Spec | EIA/CEA-861D |
| | Video Signal Type | RGB, YCbCr |
| | Pixel Encoding | RGB444, YCbCr444, YCbCr422 |
| HDMI (TMDS) | Data bit of RGB & YCbCr | 8, 10, 12 |
| Video Output | Color Space | RGB, BT-601, BT-709, xvYCC-601, xvYCC-709 |
| | HDCP | Support HDCP 1.1 Version |
| | EDID | Read |
| | Output Connector | Type A, HDMI 5 Port |
| | Note | Support Deep Color & xvYCC |
| | HDMI Ver 1.4 | 3D Video Formats(Stereoscopic) |
| | Sample Rate | 32 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz |
| | Number of Channel | 8 Channels |
| | Bit per Sample | 24 |
| HDMI Audio | Waveform | Sine Wave |
| Output | Frequency Range | 0Hz to 24KHz / 5Hz step |
| | Level Range | 0mV to 2.0V / 100mV step |
| | External Audio Input | S/PDIF, Optical |
| | Special Control Mode | Fix, Sweep, Swap, Optical, Mute |
| | Frequency Range | 20Hz to 20KHz / 5Hz step |
| | Level Range | 0mV to 2.0V / 100mV step |
| Audio (Analog) | Waveform | Sine Wave |
| Output | Number of Channel | 2 Channels |
| | Connector | RCA |
| | Special Control Mode | Fix, Sweep, Swap, Mute |
| Scan & Function | Scan Storage | 99 Group (1 Group; 24 Step) |
| Group | Function Storage | 99 Group (1 Group; 32 Step) |
| Data Storage | Timing | 999 Timing (User: 1~500, Default: 501~999) |

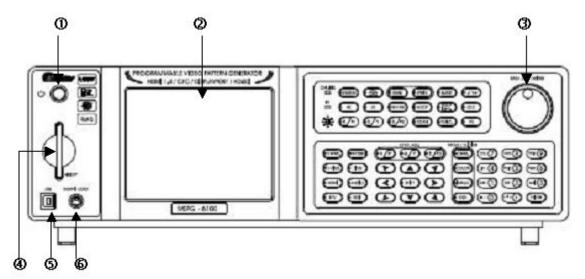
| | Pattern | 999 Pattern (User: 1~500, Default: 501~999) |
|---------------|----------------------|--|
| | Compact Memory Card | 2GB |
| | Power Consumption | AC 100~240VAC, 50/60Hz Auto Switch |
| General | Operating Conditions | * Temperature : 0~40 °C |
| Specification | | * 80% Humidity, Non-condensing |
| | Dimension (WXDXH) | 440 X 355 X 145mm, Weight: 6Kg |
| | Max Image | 2048 X 2048 Bit Map Image Size |
| | Moving | 1 Dot, 1 Line Control |
| Others | | * Front Panel (6.4 inch / Graphic LCD) Key Pad |
| | User Interface | * Possible to Timing Parameter Edit |
| | | * USB, RS-232C, PC EDIT Tool |

* Note: 1ppm = 1Mhz per 1Hz unit

* All specifications are subject to change without any notice.

2.4 Panel parts and their functions

2.4.1 Front Panel of MSPG-6100L



- (1) Power Switch: AC Power ON/OFF Key.
- (2) LCD: Display all of data information is at the screen.
- (3) Easy JOG/Enter: This turned clockwise or counter clockwise to select the setting items or parameters or levels etc.
- (4) CF Card: Read/Write of system programs, Time Data, Pattern Data.
- (5) Download Port: Firmware download port.
- (6) USB: BMP File Write (Write to generator only).

2.4.2 Description of front key

| ON LINE SYSTEM (ABC) (READ (WRITE) (BURST) (1.4 Ver) R HS (VS) (REVERSE) (HDCP) (HDCP) (CEC) (NFC) (CEC) (R (R/Pr) (G/Y) (B/Pb) (SCAN) (FUNC) (FS) | | |
|---|---|--|
| HS | Output the HS signal, upon LED On condition. If the Button is ON output. Transfer to display the screen, otherwise No Transfer. If Only HS Button On, No Display in the screen. HS, VS both Button on Screen Display Output. | |
| VS | Output the VS signal, upon LED On condition. If the Button is ON Output. Transfer to display the screen, otherwise No Transfer. If Only VS Button On, No Display in the screen. HS, VS both Button on Screen Display Output. | |
| RPr | Output the Red signal, upon LED On condition. If the Button is ON Output Transfer to display the screen, otherwise No Transfer (In case of full white pattern). (1) Push R, G, B Button On that time Screen Display White, (2) Push R, G Button On that time Screen Display Yellow, (3) Push R, B Button On that time Screen Display Magenta, (4) Push G, B Button On that time Screen Display Cyan. Output the Green signal, upon LED On condition. | |
| •GY | Output the Red signal, upon LED On condition. If the Button is ON Output Transfer to display the screen, otherwise No Transfer (In case of full white pattern). (1) Push R, G, B Button On that time Screen Display White, (2) Push R, G Button On that time Screen Display Yellow, (3) Push R, B Button On that time Screen Display Magenta, (4) Push G, B Button On that time Screen Display Cyan. Output the Green signal, upon LED On condition. | |

| • B Pb | Output the Red signal, upon LED On condition. If the Button is ON Output Transfer to display the screen, otherwise No Transfer(In case of full white pattern). |
|---------------|--|
| | Use this key for Patterns of position check.(Inserting order is as like □, ×, OSD pattern) (1) Push 1st Time : Out Side Line Display(Check Top, Bottom, Left and Right(□)). (2) Push 2nd Time : Cross Line Display(Center Position Checking(×)). (3) Push 3rd Time : Character Checking. (4) Push 4th Time : OFF |
| READ | Copy the data from CF card to MSPG-6100L. (Reference page. 56) |
| WRITE | Copy the data from MSPG-6100L to CF card. (Reference page. 56) |
| REVERSE | Reverse the pattern: On/off key using reverse button. |
| HDCP | When LED on, running the HDCP function. When HDCP Button is on, you are not able to edit. If you need to edit, you should turn off the HDCP Button. |
| HDCP INFO. | This key is for checking the result, after inspecting HDCP certificate. You can see the info about AKSv, BKSv, Ti, Ri and HDCP pass on the display. (1) 1, 2, 3 4 for HDMI & HDCP information section (2) 5, 6 for DVI information section (3) 7 for information off. |
| SCAN | This key can call the set Scan data(Time, Pattern) to display auto-progression. Pattern and Timing will change automatically. |
| FUNC | Pattern and Timing will change automatically. This key can call Function Group (F1~F32) that is saved as edit the Function(Time, Pattern). (Reference page. 55) |
| BURST | Color Burst On/Off set up key(CVBS, S-Video Only). If the Burst is in On Condition the Color displayed in the screen. If the Burst is in Off Condition Color No Display Black & White Display in the screen. |

| 14 Ver | This key for HDMI 1.4 Part of PCB Board. User can use HDMI1.4 function as push this key after then activity. | |
|--------|--|--|
| CEC | This is only HDMI Functionality (Output only). If you On this Button ready for HDMI, CEC connection, else Disconnect the HDMI, CEC.(Media player adapted auto CEC check. | |
| RATIO | The key for setting up the Media display ratio. | |
| SYSTEM | (1) Set the Buzzer On/Off (2) Setting Sync output level : from 3000 to 5500mV per 100mV (3) RS-232C Baud Rate : No.1 : 4800 / No.2 : 9600 / No.3 : 19200 / No.4 : 38400 / No.5 : 57600 / No.6 : 115200 / No.7 : 230400 / No.8 : 460800 (4) Data Bit : 8bit, 7bit (5) Stop Bit : 1bit, 2bit (6) Parity : Non, Even, Odd (7) Data set up : This is option. When you use RS-232C Communication to use either select Y Level(0~100%) of pattern or 0~255. (8) Data Size set up : This is option to use either select pattern Size(0~100%) of window inner BOX or H/V. (9) EDID Block Read set up : Set up the part of EDID Block for read(0~4). (10) Old Edit Passwords : Input of new password(Before input new password, you should store old password). (12) HDCP Display set up : HDCP OSD's set up to Pass or OK. (Normal -> HDCP Pass OSD.SAMSUNG -> HDCP OK OSD) (13) HDCP Retry On set up : Off -> HDCP fail case : HDCP authorization runs until 5times and then not try to authorization option. On -> HDCP fail case : HDCP authorization runs until success. (14) HDMI Lip Sync set up : HDMI Lip Sync On/Off set up. (15) AV MUTE set up : When HDCP Fail case's that Audio and Video Display /Clear. (16) Image set up : Set the output speed of output option images. Speeds up the rate set by FPGA. | |

| | level adj. | MOV/FLICKER |
|------------------|---------------|-------------------------|
| TV-PATT. PATTERN | R Pr G Y B Pb | CHAR. STU 7 WWX 8 YZ@ 9 |
| | | COLOR JKL 4 MNO 5 PQR 6 |
| | < • ESC > | IMAGE ABC 1 DEF 2 GHI 3 |
| | | OSD ;-/ O <*>• ENTER |

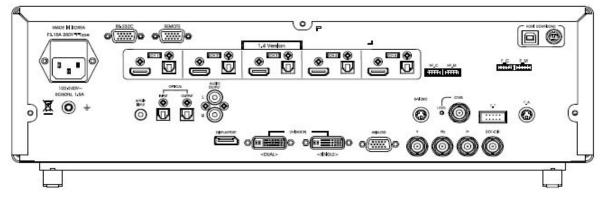
| TV-PATT. | This key is for call the pattern from CVBS, S-VIDEO MODE. |
|---------------------------|---|
| TV-TIME | This key is for call the Timing from CVBS, S-VIDEO MODE |
| PATTERN | This key is for call the pattern which is output from Analog, DVI, HDMI, DTV, D5 calling. (Reference page. 37) |
| TIME | This key is to call all Times [1]. User Time, 2]. Default Time]) from user Time to Default Time. (Reference page. 38) |
| HDMI | This key is for call only HDMI Time Mode. If you call other calling mode except HDMI Time Mode, It will cry warning sound. |
| | This key is for call only DTV Time Mode. If you call other calling mode except DTV Time Mode, It will cry warning sound. |
| AUDIO | This key is for calling Audio Pattern. |
| MENU | (1) Edit the pattern & time data when V/G function.(2) Move to edit menu when Media Function. |
| • R Pr • G Y • B Pb | [LEVEL ADJUSTMENT] This key is for changing level value of brightness and contrast with only LED on condition. Especially, In case of contrast, the SHIFT key should be "On" condition to change level value. |
| ESC SHIFT | In case of V/G Mode, it can used by contrast & Brightness. In case of Media mode, it can used by EXIT key. |

| | The keys for moving the Pattern in all direction (Left, Right, Up, Down). (A, Y Key) : Up Down key. To change Brightness/Contrast. |
|---|--|
| | These Key can set pattern as moving direction. |
| CHAR. COLOR IMAGE OSD | Moving, 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. Flick On Time : Top/Bottom key, inputting by jog shuttle. Flick Off Time : Inputting by left/right key. |
| ENTER <*>• YZ@ 9 ABC 1 | The key for inputting number, Character, special Character. Shift key 'Off' condition, select the number key, you can choice only number. Shift key 'On' condition, select the key, you can choice Character, Special Character. Pattern and Name appointment. |

*** NOTICE ***

When you apply to Moving function for HDCP ON, this equipment outputs cryptographic TMDS signal as stopping that works in comparison with Ri, Ti Data. When you stop Moving function, this equipment works in comparison with Ri, Ti Data every 2 seconds to check again. So please take notice that is a super information.

2.4.3 Description of rear port



| SPDIF INPUT | Audio input port for HDMI. |
|--------------------------------|--|
| OPTICAL INPUT/OUTPUT | Optical audio signal input /output port. |
| AUDIO OUTPUT | Internal analog audio signal output port. - R Frequency : 20HZ ~ 20.000Hz - L Frequency : 20HZ ~ 20.000Hz |
| RS-232C, REMOTE (MSRC-005L) | RS-232 Communication interface port. Connecting port to remote controller(MSRC-005L). |
| CVBS, S-VIDEO | CVBS (Composite) / Y signal output port |
| FG ground | It can be connect with Frame Ground to Display's ground. |
| AC Input | AC input fuse and filter built in AC 100~240V 56/60Hz. |
| HDMI Ver. 1.4 | 3D Video Formats(Stereoscopic) support Audio Return Channel (ARC) support |
| DVI-I(HDCP) | Digital (Single & Dual) and Analog (R, G, B, Hs, Vs) output port through TMDS protocol. (MSPG-6100L has DVI Single Port and DVI Dual Port) |

| | 15P D-SUB Connector. Output of Analog Video Signal R, G, B, Hs, Vs. | | | |
|-------------|---|----------|---------|----------|
| ANALOG | Pin No. | Pin Name | Pin No. | Pin Name |
| | 1 | R | 9 | NC |
| | 2 | G | 10 | GND |
| | 3 | В | 11 | GND |
| | 4 | NC | 12 | SDA |
| | 5 | GND | 13 | H-SYNC |
| | 6 | R GND | 14 | V-SYNC |
| | 7 | G GND | 15 | SCL |
| | 8 | B GND | | |
| Y, Pb, Pr | Y, Pb, Pr signal output for DTV. | | | |
| DOT-CLK | Dot frequency port. Can be used for calibration and inspection. | | | |
| Displayport | High-Speed interface signal, which is, transmit Digital Audio & Video signal compliance with VESA standard. | | | |

Chapter 3. Each signal parameter and output format

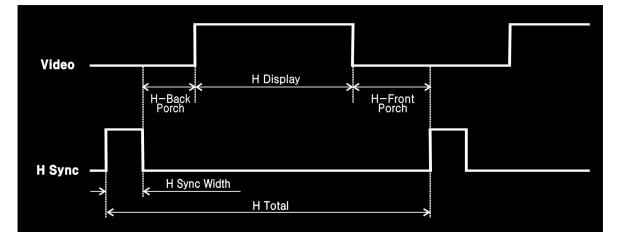
3.1 Timing parameters for each signal

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).

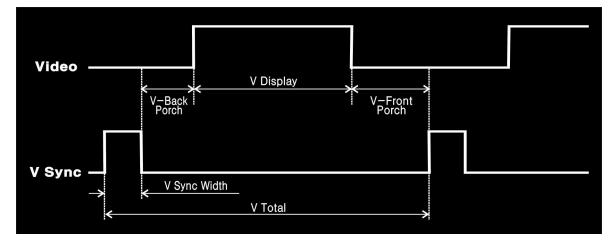
5) Hbp (horizontal front porch)

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

- 1) Dot F = Hdisp (Time, MHz) ÷ Hdisp (Dot, Mhz) ex) 1024 ÷ 13.653 = 75.000
- 2) Dot F = Htd × Hfreq(KHz) ex) 1328 × 56.476 = 1328
- 3) Htd = Dot F ÷ Hfreq ex) 75MHz ÷ 56.476KHz = 1328
- 4) Vtl = Vfreq ÷ Hfreq ex) 56.476KHz ÷ 70.069Hz = 806
- *** NOTICE ***
- The parameter diagram depends on the value of dot frequency.
- The vertical parameter diagram is the same as horizontal parameter diagram.

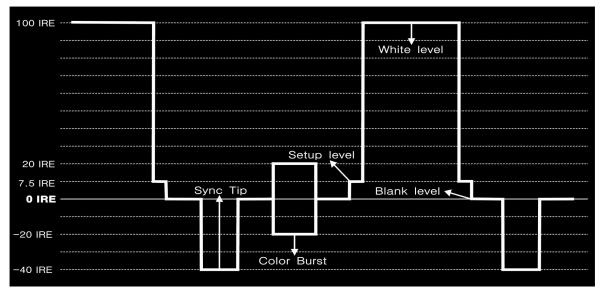
3.1.5 Data chart

| Timing List | Time | Dot & Line | Frequency |
|-----------------|--------|------------|-----------|
| Dot - Frequency | | | 75.000MHz |
| HS - Frequency | | | 56.476KHz |
| VS - Frequency | | | 70.069Hz |
| Htd | | 1328 | |
| Hdisp | 13.653 | 1024 | |
| Hsw | 1.813 | 136 | |
| Hfp | 0.32 | 24 | |
| VtI | | 806 | |
| Vdisp | 13.599 | 768 | |
| Vsw | 0.106 | 6 | |
| Vfp | 0.053 | 3 | |

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 | 3.579545 | 4.433618 For=4.406 Fob=4.2 | |
| frequency (MHz) | 3.379545 | | |

3.3 A Summary concept of HDMI signal

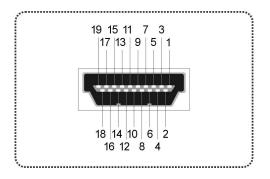
1) Definition

- 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 : 25MHz~165MHz
- Connector Type : HDMI Type A
- Video Signal Type : RGB & YCbCr
- Video Sampling Mode : 4:4:4, 4:2:2
- 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 1.4 Version (3D Video Formats(Stereoscopic)),Audio Return Channel (ARC) support
- HDCP/CEC/xvYCC support and EDID Checking

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 | Reserved (in cable but N.C on device) |
| 15 | SCL |
| 16 | SDA |
| 17 | DDC/CEC ground |
| 18 | +5V Power |
| 19 | Hot Plug Detect |

3.4 A Summary concept of DVI signal

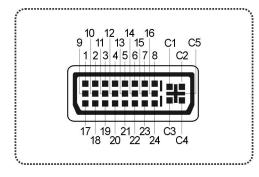
1) Definition

- 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



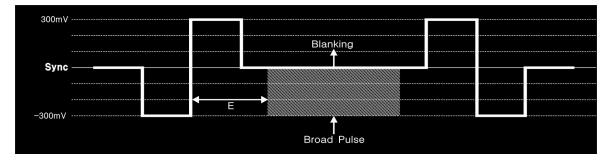
| Pin No. | Pin Name | Pin No. | Pin Name |
|---------|----------------------|---------|---------------|
| 1 | TMDS Data 2- | C1 | Analog Red |
| 2 | TMDS Data 2+ | C2 | Analog Green |
| 3 | TMDS Data 2/4 Shield | C3 | Analog Blue |
| 4 | TMDS Data 4- | C4 | Analog H-Sync |
| 5 | TMDS Data 4+ | C5 | 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- | | |

3.5 A Summary concept of D-TV signal

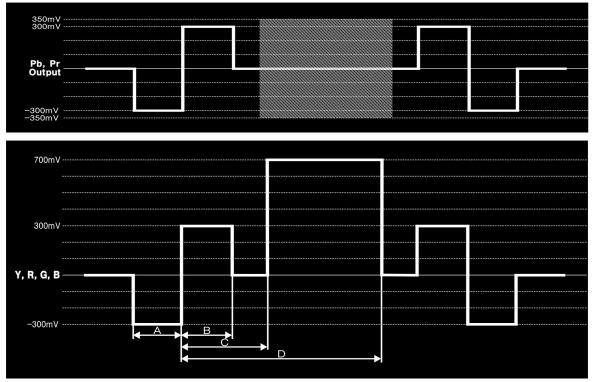
1) Definition

- 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



* E : Rising edge of sync to start of broad pulse.



- * A : Low sync width
- * B : High sync width
- * C : Start of line to start active video
- * D : Start of line to end active video

3.6 A Summary concept of Displayport

1) Definition

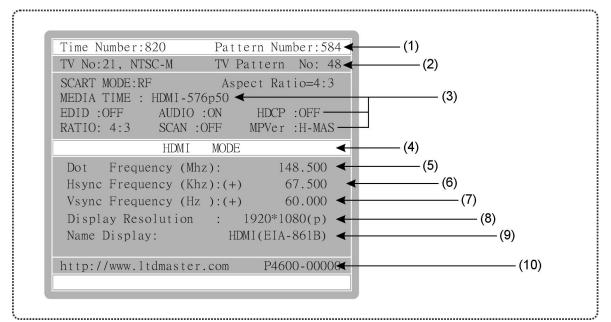
- Displayport(D/P) is a high-speed interface which is transmit Digital Video & Audio signal compliance with VESA standard.
- It is composed Main Link for Stream transmission and AUX CH to access DPCD(Display Port Configuration Data), EDID(Extended Display Identification Data) and support MCCS(Monitor Control Command Set).
- Main Link is composed 1, 2, 4(Lane), every Lane available 1.62Gbps or 2.7Gbps support maximum up to 10.8Gbps.

2) Features

- Pixel Bandwidth : 25MHz~300MHz
- 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 : 32, 44.1, 48, 88.2, 96, 176.4, 192KHz
- Max Lane Count Control (1,2,4 Lane select)
- Max Lane rate Control (1.62, 2.7Gbps select)
- EDID Checking

Chapter 4. MSPG-6100L main operation

4.1 Initial screen



- (1) Time/Pattern Number
- (2) TV Time / Pattern Number
- (3) Media Function Information
- (4) Mode Name
- (5) Dot frequency
- (6) Horizontal frequency
- (7) Vertical frequency
- (8) Resolution
- (9) Resolution Name
- (10) MASTER website & Program version

*** REFERENCE ***

| | User Section | Default Section |
|----------------|--------------|-----------------|
| Time Number | No. 1~500 | No. 501~999 |
| Pattern Number | No. 1~500 | No. 501~999 |
| Edit | 0 | Х |

4.2 Password Functions

1) Passwords Functions

| @@@@ Number:@@@ | Pattern Number:@@@ |
|----------------------|---|
| TV No:@@@@@ | TV Pattern No:@@@ |
| | |
| | |
| | |
| Password Number: * ; | * * * |
| 0000 | MODE |
| Dot Frequency (Mh | nz): @@@.@@@ |
| Hsync Frequency (Kh | nz):(-) @@@.@@@ |
| Vsync Frequency (Hz | 2):(-) @@@.@@@ |
| Display Resolution | : @@@@*@@@@@(@) |
| Name Display: @@@@@ | 0@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ |
| | |
| http://www.ltdmaster | .com P4600-@@@@@@@ |
| | |
| | |

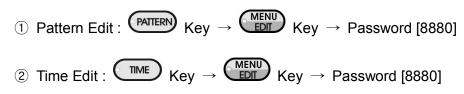
2) How to setup the Passwords

| System Option Set |
|-------------------------------------|
| 1.Buzzer On/Off (On=1,Off=1) |
| 2.Sync Output Level (3000-550mV): |
| 3.RS-232c Baud Rate Set (1-8): 2 |
| 4.Data Bit (8bit=0,7bit=1): 0 |
| 5.Stop Bit (1bit=0,2bit=1): 0 |
| 6.Parrity (Non=0,Even=1,Odd=2): 0 |
| 7.Data ((0-100%)=1,(0-255)=0): 0 |
| 8.Data Size((0-100%)=1,(H,V)=0): 0 |
| 9.EDIT Block Read (0-4): |
| 10.01d Edit Pass Words :**** |
| 11.New Edit Pass Words :**** |
| 1=4800, 2=9600, 3=19200, 4=38400 |
| 5=57600,6=115200,7=230400,8=460800 |
| |

- These functions for prohibit someone who accesses another user.
- Password function are adapting by edit key and password input window is appear like next picture.
- Default Password is [8880]

- 1 Push the SYSTEM key.
- Using direction key or jog, move '10.Old Edit Passwords'.
- ③ Press origin passwords and press ENTER.
- Using direction key or jog, move '11.New Edit Passwords'.
- 5 Press new passwords and press ENTER.
- 6 Please, find message as below, "Save Ok !!!!!!".

3) Direction for Edit Pattern and Time option



4.3 Pattern Call and Edit Functions

- 1) How to call the pattern(In case of Analog, DVI, HDMI, DTV)
 - ① Push the PATTERN key.
 - 2 Select number using numeral key or jog shuttle.
 - ③ Push the ENTER key or jog.
 - 4 Selected number is signed on the LCD window.
- 2) How to call the TV pattern(In case of CVBS, S-Video)
 - ① Push the TV-PATT key.
 - 2 Select number using numeral key or jog shuttle.
 - 3 Push the ENTER key or jog.
 - ④ Selected number is signed on the LCD window.
- 3) How to edit pattern
 - 1 Push the PATTERN key.
 - ② Select number using numeral key or jog shuttle(Please refer Time and pattern Sticker).
 - ③ Push the ENTER key or jog.
 - ④ Push the EDIT key.
 - 5 The passwords input window is appear.
 - ⑥ Input the password and Push the ENTER key or jog.
 - ⑦ Find the list of 65 options on the LCD.(We will supply separately related pattern option.)
 - ⑧ If you edit any option, you should push the ENTER key or jog shuttle to save pattern number, and then finally push the ENTER key or jog shuttle, again.
 - O Please, find message as below, "Save Ok !!!!!!".

*** REFERENCE ***

| | User Section | Default Section |
|----------------|--------------|-----------------|
| Time Number | No. 1~500 | No. 501~999 |
| Pattern Number | No. 1~500 | No. 501~999 |

4.4 Time Call and Edit Functions

- 1) How to call the time
 - ① Push the TIME key.
 - 2 Select number using numeral key or jog shuttle.
 - ③ Push the ENTER key or jog.
 - ④ Selected Time number is signed on the LCD window.

2) How to edit time

- ① Push the TIME key.
- ② Select number using numeral key or jog shuttle (Please refer Time & Pattern Sticker).
- ③ Push the ENTER key or jog.
- ④ Push the EDIT key.
- (5) The passwords input window is appear.
- ⑥ Input the password and Push the ENTER key or jog.
- O Option for commonness & model are appear on the LCD.
- ⑧ If you edit any option, you should push the ENTER key or jog shuttle to save time number, and then finally push the ENTER key or jog shuttle, again.
- 9 Please, find message as below, "Save Ok !!!!!!".

*** NOTICE ***

- There are total 499(501~999) default times in the MSPG-6100L. Basically, also you can Save/Edit these default times to user time(In 500) Section.
- There are total 8(21~28) Default TV-TIME in the MSPG-6100L. Basically, also you can select Default TIME(1~20) through the saving & calling.

3) Time data example (VESA 800X600)

| Originator | 16 | Originator | 16 | |
|-----------------------|--------------------|------------------------|---------|--|
| | VESA | Originator | VESA | |
| Parameter (Unit) | Parameter (Unit) F | | 39.9244 | |
| H-Resolution (Pixels) | 800 | H Front Porch (Pixels) | 40 | |
| V-Resolution (Lines) | 600 | H Sync (Pixels) | 128 | |
| H-Frequency (KHz) | 37.879 | H Total (Pixels) | 1054 | |
| V-Frequency (Hz) | 60.317 | V Front Porch (Lines) | 1 | |
| Scan Type | Р | V Sync (Lines) | 4 | |
| H Sync Polarity | Р | V Total (Lines) | 628 | |
| V Sync Polarity | Р | | | |

4) Definition of the Option

- (1) Dot_Frequency (MHz) Input the Dot Frequency as MHz.
- (2) HS_Frequency (KHz) Input the Horizontal Frequency as KHz.
- (3) VS_Frequency (Hz) Input the Vertical Frequency as Hz.
- (4) H_Total (Dot/uS)

Input the data as Dot or Time for whole pixels of marking Horizontal 1 line.

(5) H_Display (Dot/uS)

Input the data as Dot or Time for available pixels of marking Horizontal 1 line.

(6) 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.

(7) HS_Width (Dot/uS)Input the data as Dot or Time for Horizontal returning section.

(8) V_Total (Line/mS)

Input the data as line or time for whole line of one frame.

(9) V_Display (Line/mS)

All of Vertical display line frame except vertical front porch and back porch.

(10) Vfront_Porch (Line/mS)

No video section of one frame at the bottom.

(11) VS_Width (Line/mS)

Vertical recurrence period.

(12) HS_Polarity (P=0,N=1)

Select the Polarity of Horizontal sync. [Positive=0 or Negative=1]

(13) VS_Polarity (P=0,N=1)

Select the Polarity of Vertical sync. [Positive=0 or Negative=1]

(14) Serration On of(DTV&CS) (Y/N)

Select the nothing or being or serration pulse. [Y=Serration ON, N=Serration OFF]

- (15) Serration Pulse (HS/2=0,HS=1) Select the space of serration pulse.
- (16) Interlace with video (Y/N)

When setup for interlace mode, existence about adapt to video signal. [Y:Apply, N:Non Apply]

- (17) H_V Resolution Display (Y/N)Show the information of solution on the screen or not. [Y:Display, N:Non Display]
- (18) Model Name Display (Y/N) Show the Model name or not. [Y:Display, N:Non Display]
- (19) Number of EQP Pulse (Front, EA)Select the number of EQP pulse in Vertical front porch.

(20) Number of EQP Pulse (Back, EA)

Select the number of EQP pulse in Vertical back porch.

- (21) Audio Pattern Number Select audio pattern format.
- (22) Video Pattern Number Select video pattern format.
- (23) Video Level (mV) Set the default level of video output.
- (24) Model Name Set the model name.

(25) Sync On Green (Y/N)

Set up the G(Green) Video added horizontal, vertical sync frequency or not. [Y: send Sync, N : does not send Sync]

(26) HS Out Terminal <= CS (Y/N)

Set the Horizontal Sync port, with adding Vertical Sync or not. [Y:Send Vertical Sync, N:Does not send Vertical Sync]

(27) VS Out Terminal Off (Y/N)

Set the Vertical Sync port, with adding Vertical Sync or not. [Y:Send Vertical Sync, N:Does not send Vertical Sync]

(28) DPMS_Video (On=0, Off=1)

Selecting the video signal output or not, when the DPMS is operating. [On=0:Sending the Video Signal, Off=1: Does not send the Video Signal]

(29) DPMS_Hsync (On = 0, L_Off = 1, H_Off = 2)

DPMS is a mode for power saving at the monitor. [On = 0 : Sending the Horizontal sync normally, L_Off = 1 : Does not send the Horizontal sync by Low voltage = 0v, H_Off = 2 : Does not send the Horizontal sync by high voltage = 5v]

- (30) DPMS_Vsync (On = 0, L_Off = 1, H_Off = 2)
 DPMS is a mode for power saving at the monitor. [On = 0 : Sending the Vertical sync normally, L_Off = 1 : Does not send the Vertical sync by Low voltage = 0v, H_Off = 2 : Does not send the Vertical sync by high voltage= 5v]
- (31) DVI Out (D&A=0, Digital=1, Analog=2) Selecting the DVI output signal. [0=Digital & Analog, 1=Digital, 2=Analog]
- (32) DVI Out (Full=0, Limit=1, RBLv240=2)Setting of the Digital output signal to Full/Limit Range. [Full=0, Limit=1, RBLev240=2]
- (33) LVDS Format Out Data Bit (8~16)Setting of Digital Data bit. (8Bit~16Bit available)
- (34) HDCP ON(D) (0=Off, 1=On, 2=Info On) HDCP OSD On/Off while screen output.(D : Dual)
- (35) HDCP ON(S) (0=Off, 1=On, 2=Info On) HDCP OSD On/Off while screen output.(S : single)

- (25) Aspect Ratio (4:3=0, 16:9=1) Setting of info frame data, 4:3 or 16:9
- (26) HDCP On (0=Off, 1=On, 2=Info On) The function of HDCP On/Off, and set up the HDCP Info OSD.
- (27) Color Space(RGB=0, 601=1, 709=2) Set of color Matrix Format.

(28) RGB444=0, Ycbcr444=1, Ycbcr422=2

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=1: The express method as base on the Y, Cb, Cr

- (29) Out Data Bit (8=0, 10=1, 12=2) Set of Data Bit of Data Format.
- (30) DVI Out (Full=0, Limit=1, RBLv240=2) Set of Full/Limit Range to the Digital signal.
- (31) Audio (Int=0, Ext.Spdif=1, Opt.=2) Set of HDMI Audio output signal(internal/external).
- (32) Audio Format (Spdif=0, I2S=1) Set of HDMI Audio output Format.

(33) Audio Sample Rate (0-7)

Set of HDMI Audio output Frequency.(Option 0~7)

| 0=Mute | 1=32Kz | 2=44.1Khz | 3=48Khz |
|-----------|---------|------------|----------|
| 4=88.2Khz | 5=96Khz | 6=176.4khz | 7=192khz |

(34) RGB444=1, Ycbcr444=2, Ycbcr422=3

Set of Data Format Info-Frame information.

[0=32Khz, 1=44.1Khz, 2=48Khz, 3=88.2Khz, 4=96Khz, 5=176.4Khz, 6=192Khz]

(35) Audio Sample (0:1, 6:7) (1-7)

Set of HDMI Audio output Frequency Info-Frame.

(36) HDMI (Full = 0, Limit = 1, xvYCC = 2)

Set of HDMI output signal to Full/Limit/xvYCC Range.

(37) HDMI Repetition (0,2)

HDMI Repetition settings On/Off. (0=Non setting, 2=2Time Repetition setting) *In less than 25MHz will be automatically setting, this option can be set in 1440timing.

(1) HDMI Video Format

(4Kx2K=1, 3D=2)

(2) 3D Structure (0-8)

| 0 | 0000 | Frame packing |
|---|-----------|-------------------------------------|
| 1 | 0001 | Field alternative |
| 2 | 0010 | Line alternative |
| 3 | 0011 | Side-by-Side(Full) |
| 4 | 0100 | L+depth |
| 5 | 0101 | L+depth+Graphics+Graphics-depth) |
| 6 | 0110~0111 | Reserved for future use |
| 8 | 1000 | Side-by-Side(Half), (See Table H-3) |

(3) 3D Ext Data (0-7)

Side-by-Side (Half)

| | 3D_Ext_Data | Meaning | | | | |
|---|-------------|-----------------|---------------------------------------|--|--|--|
| 0 | 0000 | | Odd/Left picture, Odd/Right picture | | | |
| 1 | 0001 | Horizontal | Odd/Left picture, Even/Right picture | | | |
| 2 | 0010 | sub-sampling | Even/Left picture, Odd/Right picture | | | |
| 3 | 0011 | | Even/Left picture, Even/Right picture | | | |
| 4 | 0100 | | Odd/Left picture, Odd/Right picture | | | |
| 5 | 0101 | Quincunx matrix | Odd/Left picture, Even/Right picture | | | |
| 6 | 0110 | | Even/Left picture, Odd/Right picture | | | |
| 7 | 0111 | | Even/Left picture, Even/Right picture | | | |

- (4) (i)HDMI Video Format (4K=1, 3D=2)
- (5) (i)3D Structure (0-8)
- (6) 3D Ext Data (0-7)
- (7) Frame Packing Interlace (Y/N)
- (8) 3D Vact_Space /V blank_3 (Line)

| | | - | |
|-----|--------------------------------------|-----|--|
| No. | Name | 881 | 1920*1080(p)/30.000Hz Top-and-Bottom |
| 863 | 1280*720(p)/24.000Hz Frame packing | 882 | 1920*1080(p)/59.940Hz Top-and-Bottom |
| 864 | 1280*720(p)/30.000Hz Frame packing | 883 | 1920*1080(p)/60.000Hz Top-and-Bottom |
| 865 | 1280*720(p)/59.940Hz Frame packing | 884 | 1920*1080(p)/50.000Hz Top-and-Bottom |
| 866 | 1280*720(p)/60.000Hz Frame packing | 885 | 1280*720(p)/59.940Hz Side-by-Side(Half) |
| 867 | 1280*720(p)/50.000Hz Frame packing | 886 | 1280*720(p)/60.000Hz Side-by-Side(Half) |
| 868 | 1920*1080(i)/59.94Hz Frame packing | 887 | 1280*720(p)/50.000Hz Side-by-Side(Half) |
| 869 | 1920*1080(i)/60.000Hz Frame packing | 888 | 1920*1080(p)/59.940Hz Side-by-Side(Half) |
| 870 | 1920*1080(i)/50.000Hz Frame packing | 889 | 1920*1080(p)/60.000Hz Side-by-Side(Half) |
| 871 | 1920*1080(p)/23.976Hz Frame packing | 890 | 1920*1080(p)/50.000Hz Side-by-Side(Half) |
| 872 | 1920*1080(p)/24.000Hz Frame packing | 891 | 1920*1080(p)/23.980Hz Side-by-Side(Half) |
| 873 | 1920*1080(p)/29.970Hz Frame packing | 892 | 1920*1080(p)/24.000Hz Side-by-Side(Half) |
| 874 | 1920*1080(p)/30.000Hz Frame packing | 893 | 1920*1080(i)/60.000Hz Field alternative |
| 875 | 1280*720(p)/59.940Hz Top-and-Bottom | 894 | 1920*1080(i)/50.000Hz Field alternative |
| 876 | 1280*720(p)/60.000Hz Top-and-Bottom | 895 | 1920*1080(p)/23.976Hz Line alternative |
| 877 | 1280*720(p)/50.000Hz Top-and-Bottom | 896 | 1920*1080(p)/24.000Hz Line alternative |
| 878 | 1920*1080(p)/23.980Hz Top-and-Bottom | 897 | 1280*720(p)/59.940Hz Side-by-Side(Full) |
| 879 | 1920*1080(p)/24.000Hz Top-and-Bottom | 898 | 1280*720(p)/60.000Hz Side-by-Side(Full) |
| 880 | 1920*1080(p)/29.970Hz Top-and-Bottom | 899 | 1280*720(p)/50.000Hz Side-by-Side(Full) |
| | | | |

<3D Timing List>

(25) Sync On (Pb&Pr) with Y (Y/N)

Selecting the sync signal with Pb&Pr.

[Y: Pb&Pr with sync signal, N: No Pb&PR with sync signal]

(26) (Pb&Pr) Out Level (0-100%) Set of Pb&Pr signal level.

(27) DTV Sync Level (50-400Mv) Set the sync level (Default: 300Mv)

(28) Sync Set (Tri Level=0, Bi Level=1)

[0=Tri Level: Output with antagonism sync, 1=Bi Level: Output with general sync]

- (29) DVI Out (Full=0, Limit=1, RBLv240=2) Set of Digital output signal to Full/Limit Range.
- (30) Data Format (RGB=0, 601=1, 709=2) Set of color Matrix Format. [0=RGB, 1=601, 2=709]
- (31) D5 Aspect Rat. (4:3=0, LT=1, 16:9=2) Set of output data information through 11 pin voltage.

- (26) Scart (0=RF,1=CVBS,2=RGB,3=Y/C) Set of scart output mode.
- (27) Scart Aspect Ratio (0=4:3,1=16:9)Set of display rate when scart are displaying.
- (28) S-V Ratio (0=4:3,1=4:3(L),2=16:9) Set of display rate when S-Video are displaying.
- (29) Video Filter (0-7)Function of reduce the Video signal noise.
- (30) Default = 0, 7.5IRE=1, 0IRE_S=2, 0IRE=3 Set of Video Black Level.
- (31) Teletext (0-15) Set of Teletext On/Off when PAL is displaying.
- (32) Closed Caption (0-255)
 - Set of Closed Caption On/Off when NTSC is displaying.
- (33) V-Chip (0-255)

Set of V-Chip On/Off when NTSC is displaying.

(34) Sync Amplitude (1-318Mv): Default: 300Mv

(35) Scart Monitoring (0=same, 1=return)

Same: Output the same signal except RF mode by TV & MONITORING port. Return: TV port for normal signal and MONITORING port for returning signal output.

(36) Wss Aspect Ratio Control (0-7)

In television technology, **Wide Screen Signaling (WSS)** is a digital stream embedded in the TV signal describing qualities of the broadcast, in particular the intended aspect ratio of the image. This can be used by a wide screen TV to switch to the correct display mode.

How to set WSS

^aPush Pattern key and then input No.670 enter.

- Densh Time key and then input No.2 enter. (or default no.954).
- ©Push Edit key and then input password 8880. Push enter key.
- dPush enter key again and then push << > key of LCD panel.
- [®]Move cursor to option no.36 "WSS ASPECT RATIO CONTROL"
- (f)Push Shift key and then WSS EDIT MODE will be shown as below.

<WSS EDID MODE>

| BIT | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | А | В | С | D |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VAL | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

<ASPECT RATIO BIT 0-3 SET>

- 0. B[0:3]0001 4:3 576 Line FULL FORMAT
- 1. B[0:3]0001 14:9 504 Line CENTER
- 2. B[0:3]0001 14:9 504 Line TOP
- 3. B[0:3]0001 16:9 430 Line CENTER
- 4. B[0:3]0001 16:9 430 Line TOP
- 5. B[0:3]0001 20:9 CENTER
- 6. B[0:3]0001 14:9 576 Line FULL FORMAT
- 7. B[0:3]0001 16:9 576 Line FULL FORMAT

(B) The desired options can be set using the front arrow key.

But No.8 bit must set up to 1.

(h)After set pressing, push Shift key then you can get out of the WSS EDIT MODE.

i)Push Enter key and then set WSS option will be printed.

This time phrase appears "Save Time Number", if you want save edited option value then you can save at 1~500 in an empty street.

(1) Link Rate (auto=0, 162G=1, 2.7G=2)

Auto : Signal generator connected with the DP display device has a unique value of the DPCD to check the entry of the "Link Rate" for the automatic output mode

- 1. 62G : This output mode that DP display unit has to ignore the value of DPCD and output by link rate fixed to 1.62GB.
- 2. 7G : This output mode that DP display unit has to ignore the value of DPCD and output by link rate fixed to 2.7GB.
- (2) Lane Count (auto=0,1=1, 2=2, 4=3)

Auto : DP display device has a unique value of the DPCD to check the entry of the "Lane Count" for the automatic output mode.

1Lane : The mode, using the 1Lane of DP display to output data.

2Lane : The mode, using the 2Lane of DP display to output data.

4Lane : The mode, using the 4Lane of DP display to output data.

| Link rate = 2.7 Gbps | Link rate = 1.62 Gbps |
|-----------------------------------|----------------------------------|
| - 1 lane = 270 Mbytes per second | - 1 lane = 162 Mbytes per second |
| - 2 lane = 540 Mbytes per second | - 2 lane = 324 Mbytes per second |
| - 4 lane = 1080 Mbytes per second | - 4 lane = 648 Mbytes per second |

(3) Down Spread (auto=0, 0%=1, 0.5%=2) : SSC Range Measurement

Auto : DP display device has a unique value of the DPCD to check the entry of the "Down Spread" for the automatic output mode

0% : "Down Spread Amplitude 0%" to output mode(SSC Disable Mode)

0.5% : "Down Spread Amplitude 0.5%" to output mode(SSC Disable Mode)

SSC(Spread Spectrum Clocking)

:A technique used to reduce electromagnetic interference (EMI) produced by synchronous digital systems (such as computer systems).

(4) p-to-p (0.4=0 ,0.6=1, 0.8=2, 1.2=3) : Variable test output level

0.4 : The signal from DP port output level 0.4Vp-p to the output by setting the mode.

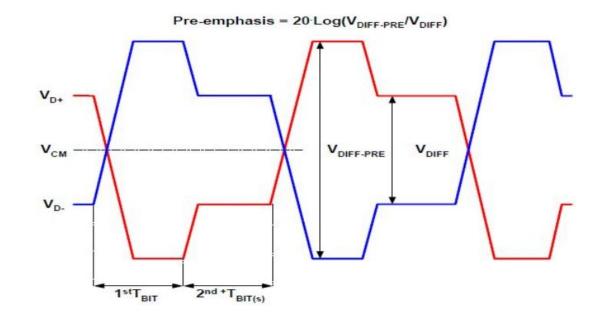
- 0.6 : The signal from DP port output level 0.6Vp-p to the output by setting the mode.
- 0.8 : The signal from DP port output level 0.8Vp-p to the output by setting the mode.
- 1.2 : The signal from DP port output level 1.2Vp-p to the output by setting the mode.

(5) Emphasis (0.0=0, 3.5=1, 6.0=2, 9.0=3) : Complementary set for a particular noise.

- 0.0 : pre-emphasis 0dB(x1) set to output mode (Default Setting)
- 3.5 : pre-emphasis 3.5dB(x1) set to output mode.
- 6.0 : pre-emphasis 6.0dB(x1) set to output mode.
- 9.0 : pre-emphasis 9.0dB(x1) set to output mode.

[Definition of Pre-emphasis]

Pre-emphasis, as used in this document is defined as 20 multiplied by the log_{10} of the ratio of the peak-to-peak amplitude for the first T_{BIT} immediately following a transition divided by the peak-to-peak amplitude for the subsequent bits until the next transition (20.Log(V max/V min)).



| [Allowed Vdiff_pp - Pre-emphasis Combinations] | | | | | | | | |
|--|---|---------------|---------------|---------------|--|--|--|--|
| | Pre-emphasis Level (dB) | | | | | | | |
| | Required Optional | | | | | | | |
| | 0 dB (1x) 3.5 dB (1.5x) 6 dB (2x) 9.5 dB (3x) | | | | | | | |
| V diff_pp | V diff_pre_pp | V diff_pre_pp | V diff_pre_pp | V diff_pre_pp | | | | |
| 0.4 | 0.4 | 0.8 | 1.2 | | | | | |
| 0.6 | 0.6 | Not allowed | | | | | | |
| 0.8 | 0.8 1.2 Not allowed Not al | | | | | | | |
| 1.2 | 1.2 Not allowed Not allowed Not allowed | | | | | | | |
| * Note : This table sh | nows nominal values | | | | | | | |

(6) Ext. DPCD auto TestLane Count (NO=0, YES=1)

No : During DPCP that output mode(Default Setting) for **without** check "Automated Testing Sub-Field (00218h to 0027Fh below) is optional" filed.

Yes : During DPCP that output mode(Default Setting) for **with** check "Automated Testing Sub-Field (00218h to 0027Fh below) is optional" filed.

(7) Scramble (Enable=0, Disable=1)

Enable : Data will be output with Scramble signal.

Disable : Data will be output **without** Scramble signal.

(8) AUX Line (0~8) x200us Delay

Through the AUX Line, EDID Data reading speed settings.

(9)Power Down Mode (On=0, Off=1)

On : Reading all EDID block Data while cut Sync Line out to DPMS mode.

Off : Reading all EDID block Data while cut Sync Line maintain to DPMS mode.

(10) HDCP ON (0=Off, 1=On, 2=Info On) HDCP OSD on/off while screen output.

4.5 AUDIO Call and Edit Functions

- 1) How to call the Audio
 - 1 Push the AUDIO key.
 - 2 Select the number using numeral key or jog shuttle.
 - ③ Push the ENTER key or jog shuttle.
 - ④ Selected number is signed on the LCD window.

2) How to edit the Audio

- 1 Push the AUDIO key.
- 2 Select the number using numeral key or jog shuttle.
- ③ Push the EDIT key.
- 4 The passwords input window is appear.
- 5 Input the password and Push the ENTER key or jog.
- 6 option are appeared on the LCD. Fix contents and then Push the ENTER key or jog.
- O After input the Audio number for store, Push the ENTER key or jog.
- 8 Please, find message as below, "Save Ok !!!!!!".

*** NOTICE ***

 There are total 12(21~32) Default Audio in the MSPG-6100L, basically, also you can select Default Audio(1~20) through the saving & calling.

| Channel No. | Frequency | Volume |
|--------------|-----------|--------|
| 1CH (FL) | Hz | dB |
| 2CH (FR) | Hz | dB |
| 3CH (LFE) | Hz | dB |
| 4CH (FC) | Hz | dB |
| 5CH (RL/RC) | Hz | dB |
| 6CH (RR) | Hz | dB |
| 7CH (RLC/RC) | Hz | dB |
| 8CH (RRC/TC) | Hz | dB |

3) Audio 8Ch Edit Option

[Audio Option Disc.]

 $\mathsf{F}:\mathsf{Front},\mathsf{L}:\mathsf{Left},\mathsf{R}:\mathsf{Right},\mathsf{C}:\mathsf{Center},\mathsf{R}:\mathsf{Rear},\mathsf{W}:\mathsf{Wide},\mathsf{H}:\mathsf{High},\mathsf{T}:\mathsf{Top},$

LFE : Low Frequency Effect

| No. | Format |
|-----|-----------------|
| 0 | Speak Set |
| 1 | Freq & DB Set |
| 2 | Freq All Set |
| 3 | DB All Set |
| 4 | ON / OFF |
| 5 | SWAP RL |
| 6 | SWAP ALL |
| 7 | SWEEP UP |
| 8 | SWEEP DOWN |
| 9 | SWEEP UP / DOWN |

• Audio Format (0-9) : Audio output Format setup.

Channel Allocation No (0 - 49) :

[Channel Allocation Ex.]

2CH = 0, 2.1 CH = 1, 4 CH = 8, 5.1 CH = 11, 7.1 CH = 19 / 31 / 41 / 43 / 45 / 47 / 49

- Frequency Min (0-24000Hz) :
- Frequency Max (0-24000Hz):
- Frequency Step (0-999Hz) :
- Time Interval (0-999(10msec) : Audio output convert time setup
- 4) MSPG-6100L Audio Specification
 - MSPG-6100L Provide the Analog Audio output and S/PDIF format of HDMI Digital Audio to converted by A/D.
 - ② There are 2 Mode in Audio option
 - i) Programmable Mode (1~20) : User can set the Audio option.
 - ii) Default Mode (21~32) : User can operate audio mode without parameter setting.
- Programmable Mode is set up Default Pattern & Parameter related Audio output by user.
- It depends on Pattern type that is impossible Parameter setting.
- It is impossible setting Parameter to set, that is setting Default.
- Range of Voltage : 0~2V, 100mV
- Voltage range : 0~ 2V per 2mV unit.
- Frequency range :0 ~ 20Khz per 1Hz unit.
- Frequency maintenance Time : 1mS
- Output impedance : 600k Ω
- Greatest output Voltage : 2.2Vp-p
- Output Bandwidth : 0 ~ 20KHz

5) Default Mode : (21~32)

| Name | Waveform | Description | Voltage | Frequency | Duration Time |
|------------|---|-------------------------------------|------------------------|--|------------------|
| Pattern 1 | | Static (Plain Beep Sound) | 500mV | L : 400Hz R : 1KHz | Continue |
| Pattern 2 | | Winker (Beep Sound On/Off) | 500mV⇒0V | 1KHz | 1000msec |
| Pattern 3 | | Alternating Winker | 500mV⇒0V | 1KHz | 1000msec |
| Pattern 4 | с <u>- 100000000000000000000000000000000000</u> | Random | 500mV | 5K⇒61K⇒ 4K⇒2.5K⇒ 6.7KHz | 500msec |
| Pattern 5 | с <u>- </u> | Alternating Winker and Random | 500mV⇒0V | 5K⇒61K⇒ 4K⇒2.5K⇒ 6.7KHz | 500msec |
| Pattern 6 | | Discrete Sliding Up | 500mV | $\begin{array}{c} 1K {\Rightarrow} 2K {\Rightarrow} 3K \\ {\Rightarrow} 4K {\Rightarrow} 5K {\Rightarrow} \\ 6KHz \end{array}$ | 100mS |
| Pattern 7 | L | Discrete Sliding Down | 500mV | 6K⇒5K⇒4K ⇒3K⇒2K⇒ 1KHz | 100mS |
| Pattern 8 | ⊾ \ R \ | Continuity Sliding Up | 500mV | 0~1KHz (1Hz Step) | 10mS |
| Pattern 9 | ⊾ ₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩ | Continuity Sliding Down | 500mV | 1~0KHz (1Hz Step) | 10mS |
| Pattern 10 | | Rising Voltage | 1mV~1.2V (1mV Step) | 1KHz | 10mS |
| Pattern 11 | r | Rotational Sliding | 500mV | 0K⇒1K⇒ 0KHz (1Hz Step) | 1uS |
| Pattern 12 | | Static | 500mV | L : 400Hz R : 1KHz | Continue |

* Programmable Mode : (1~20)

4.6 SCAN Call and Edit Functions

1) Definition

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

2) How to call the scan (1~99)

- 1 Push the SCAN key.
- ② Select the number using numeral key or jog shuttle.
- ③ Push the ENTER key or jog shuttle.
- ④ Time Number/Pattern Number are signed on the LCD and it will display.

3) How to edit the scan (1~99)

| Scan Data Edit No: 99 | | | | | | | | |
|-----------------------|------|------|-----|---|----|------|------|-----|
| No | T.no | P.no | Sec | | No | T.no | P.no | Sec |
| 1 | 501 | 101 | 5 | | 13 | 525 | 113 | 5 |
| 2 | 503 | 102 | 5 | | 14 | 527 | 114 | 5 |
| 3 | 505 | 103 | 5 | | 15 | 529 | 115 | 5 |
| 4 | 507 | 104 | 5 | | 16 | 531 | 116 | 5 |
| 5 | 509 | 105 | 5 | | 17 | 533 | 117 | 5 |
| 6 | 511 | 106 | 5 | | 18 | 535 | 118 | 5 |
| 7 | 513 | 107 | 5 | | 19 | 537 | 119 | 5 |
| 8 | 515 | 108 | 5 | | 20 | 539 | 120 | 5 |
| 9 | 517 | 109 | 5 | | 21 | 541 | 121 | 5 |
| 10 | 519 | 110 | 5 | | 22 | 543 | 122 | 5 |
| 11 | 521 | 111 | 5 | | 23 | 545 | 123 | 5 |
| 12 | 523 | 112 | 5 | ĺ | 24 | 547 | 124 | 5 |
| | | | | | | | | |

- ① Push the SCAN key.
- ② Select the number using numeral key or jog shuttle.
- 3 Push the EDIT key.
- ④ The passwords input window is appear.
- ⑤ Input the password and Push the ENTER key or jog.
- 6 Signs are appear like below on the LCD window.
- Edit the each value of time number(1~999), pattern number(1~999) and second(0~999) using the direction key.
- 8 Push the ENTER key or jog shuttle.
- ${\it (9)}\,$ Select the Scan number(1~99), and then push the ENTER key or jog shuttle, again.
- 10 Please, find message as below, "Save Ok !!!!!!".

4.7 FUNCTION Call and Edit Functions

1) Definition

- Function(F1~F32) means that Arbitrary pattern and model have been coupled and then it can be called by pushing F1 to F32 key.
- Remote controller(MSRC-005L) has only special key(F1~F32) to call function group.

2) How to call the function (1~99)

- 1 Push the FUNC key.
- 2 Select the number using numeral key or jog shuttle.
- 3 Push the ENTER key or jog shuttle.
- ④ Time Number/Pattern Number/Function Group Name are signed on the LCD and it will display.
- (5) Control by using F1~F32 of remote(MSRC-005L) : F17~F32, controlled by NUM LOCK key.

3) How to edit the function (1~99)

| Fur | Function Group Edit No: 99 | | | | | | | | |
|-----|----------------------------|------|----|------|------|-----|------|------|--|
| No | T.no | P.no | No | T.no | P.no | No | T.no | P.no | |
| 1 | 501 | 101 | 12 | 523 | 112 | 23 | 545 | 123 | |
| 2 | 503 | 102 | 13 | 525 | 113 | 24 | 547 | 124 | |
| 3 | 505 | 103 | 14 | 527 | 114 | 25 | 549 | 125 | |
| 4 | 507 | 104 | 15 | 529 | 115 | 26 | 551 | 126 | |
| 5 | 509 | 105 | 16 | 531 | 116 | 27 | 553 | 127 | |
| 6 | 511 | 106 | 17 | 533 | 117 | 28 | 555 | 128 | |
| 7 | 513 | 107 | 18 | 535 | 118 | 29 | 557 | 129 | |
| 8 | 515 | 108 | 19 | 537 | 119 | -30 | 559 | 130 | |
| 9 | 517 | 109 | 20 | 539 | 120 | 31 | 561 | 131 | |
| 10 | 519 | 110 | 21 | 541 | 121 | 32 | 563 | 132 | |
| 11 | 521 | 111 | 22 | 543 | 122 | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

- 1 Push the FUNC key.
- ② Select the number using numeral key or jog shuttle.
- ③ Push the ENTER key or jog shuttle.
- 4 Push the EDIT key.
- 5 The passwords input window is appear.
- ⑥ Input the password and Push the ENTER key or jog.
- Signs are appear like below on the LCD window.

8 Edit the each value of time number(1~999), pattern number(1~999) using the direction key.

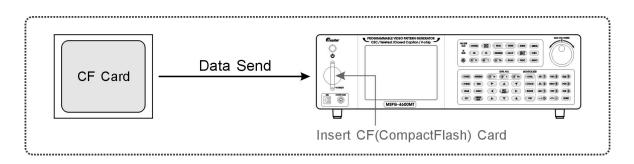
- 9 Push the ENTER key or jog shuttle.
- 10 Select the Function number(1~99), and then push the ENTER key or jog shuttle, again.
- 1 Please, find message as below, "Save Ok !!!!!!".

4.8 READ and WRITE Functions

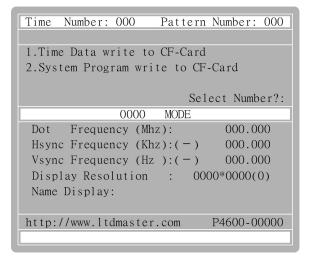
1) Read the Data from CF card to Generator

| Time Number: 000 Pattern Number: 000 | | | | | | |
|---|--|--|--|--|--|--|
| 1.Time Data read from CF-Card 2.System Program read from CF-Card | | | | | | |
| Select Number?: | | | | | | |
| 0000 MODE | | | | | | |
| Dot Frequency (Mhz): 000.000 | | | | | | |
| Hsync Frequency (Khz):(-) 000.000 | | | | | | |
| Vsync Frequency (Hz):(-) 000.000 | | | | | | |
| Display Resolution : 0000*0000(0) | | | | | | |
| Name Display: | | | | | | |
| | | | | | | |
| http://www.ltdmaster.com P4600-00000 | | | | | | |
| | | | | | | |

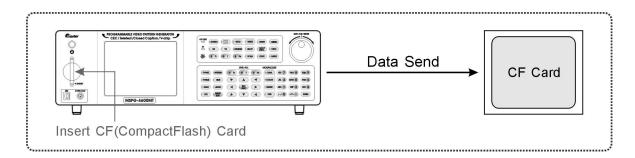
- 1 The Read function can copy the data from CF Card to MSPG-6100L.
- 2 If push the READ key, it will be displaying on the LCD as right picture.
- 3 Please, select which one will you read among below.
 - 1. Time Data read from CF-Card
 - 2. System Program read from CF-Card
- 4 It will operate when you select 1, 2.
- ⑤ In case of 3, it you push ENTER, [Start?(Y=1,N=0)] select contents are appear and then press '1' press ENTER, It will be operate.



2) Write the Data from Generator to CF card



- 1 The Write function can copy the data from MSPG-6100L to CF Card.
- 2 If push the WRITE key, it will be displaying on the LCD as right picture.
- ③ Please, select which one will you write among below.
 - 1. Time Data write from CF-Card
 - 2. System Program write from CF-Card
- ④ When pushing the ENTER key, it will be running.



4.9 TELETEXT Functions

1) Teletext

- Teletext Function are incarnated by ETS 300 706 "Enhanced Teletext Specification" standard regulation.
- This function can operate only PAL Mode, and electrical specific is following the EIA standard.
- User can see the variety services from Teletext page.

*** NOTICE ***

• User can use this function by general Remote.

2) How to use Teletext (0~15)

| Edit TV No(1-28): 1 | | |
|-------------------------------|-----------|-----|
| 1.TV Time Mode | (1-8): | 1 |
| 2.ScartMode(0=RF,1=CVBS,2=RGF | B,3=Y/C): | 0 |
| 3.Scart Aspect Ratio (0=4:3) | ,1=16:9): | 0 |
| 4.S-Video (0=4:3,1=4:3(L)) | ,2=16:9): | 0 |
| 5.Video Filter | (0-7): | 0 |
| 6.default=0,7.5IRE=1,0IRE_S=2 | 2,01RE=3: | 0 |
| 7.Teletext | (0-15): | 0 |
| 8. Closed Caption | (0-255): | 255 |
| 9.V-Chip | (0-255): | 1 |
| | | |
| | | |
| 1=NTSC-M, 2=NTSC-J, 3=NTSC-4 | .43, 4=PA | L |
| 5=PAL-M, 6=PAL-N, 7=PAL-60 | , 8=SE | CAM |
| | | _ |

- 1 Push the TV-TIME key.
- 2 Select the number using numeral key or jog shuttle.
- ③ Push the ENTER key or jog shuttle.
- 4 Push the EDIT key.
- 5 The passwords input window is appear.
- 6 Input the password and Push the ENTER key or jog.
- O Selected number is signed on the LCD window.
- 8 Using direction key or jog, it has to move 7. Teletext.
- ${\ensuremath{\textcircled{}}}$ 9 Fix contents and then Push the ENTER key or jog.
- 0 Select the Time number(0~15), and then push the ENTER key or jog shuttle, again.
- ① Please, find message as below, "Save Ok !!!!!!".

3) How to use Teletext

• Teletext is transferred as below chart and it settled by 10 antilogarithm.

| No. | Transfer method |
|-----|-----------------|
| 1 | FLOP |
| 2 | ТОР |
| 4 | PDC |
| 8 | VPS |

4) Consist of the Page

• Each page is consisted of the variety series.

| Page No. | Page Name | Page Description | | | |
|----------|-----------------|--|--|--|--|
| 100 | Index | It is indicate the consist of Teletext page, and It is | | | |
| 100 | Index | mode of "Prompt". | | | |
| 110 | Introduction | Simply, Introduce the company. | | | |
| 120 | Color Check | Color Bar for checking the support color. | | | |
| 130 | Character Check | Checking the Display cell. | | | |
| 140 | Bit Check | Checking the basic Text set for supporting the Teletext. | | | |

4.10 CLOSED CAPTION Functions

1) Closed Caption

- Closed Caption Function are incarnated by EIA-608-A regulations.
- This function can operate only NTSC mode and electrical specific is following the EIA standard.
- Closed Caption mode is support the several display style, And Text Mode can support the Roll-up display style.
- User can On/Off each channel or whole channel.

| Edit TV No(1-28): 1 | |
|------------------------------|--------------|
| 1.TV Time Mode | (1-8): 1 |
| 2.ScartMode(0=RF,1=CVBS,2=RG | B, 3=Y/C): 0 |
| 3.Scart Aspect Ratio (0=4:3 | ,1=16:9): 0 |
| 4.S-Video (0=4:3,1=4:3(L) | ,2=16:9): 0 |
| 5.Video Filter | (0-7): 0 |
| 6.default=0,7.5IRE=1,0IRE_S= | 2,0IRE=3: 0 |
| 7.Teletext | (0-15): 0 |
| 8.Closed Caption | (0-255):255 |
| 9.V-Chip | (0-255): 1 |
| | |
| | |
| 1=NTSC-M, 2=NTSC-J, 3=NTSC-4 | .43, 4=PAL |
| 5=PAL-M, 6=PAL-N, 7=PAL-60 | , 8=SECAM |
| | |

2) How to edit the Closed Caption (0~255)

- 1 Push the TV-TIME key.
- ② Select the number using numeral key or jog shuttle.
- ③ Push the ENTER key or jog shuttle.
- 4 Push the EDIT key.
- (5) The passwords input window is appear.
- 6 Input the password and Push the ENTER key or jog.
- O Selected number is signed on the LCD window.
- 8 Using direction key or jog, it has to move "8.Closed Caption".
- (9) Fix contents and then Push the ENTER key or jog.
- 10 Select the Time number(0~255), and then push the ENTER key or jog shuttle, again.
- 1 Please, find message as below, "Save Ok !!!!!!".

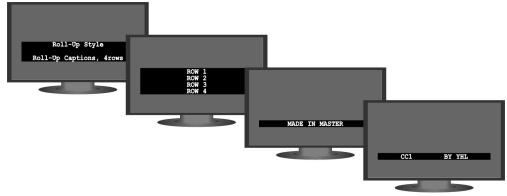
- 3) Display Style of Channel
- Display style is different by the channel

| No. | Channel Name | Display Style | Description | | |
|-----|--------------|-------------------|--|--|--|
| 1 | CC1 | Roll-Up | Characters are displayed by Roll-up style, from | | |
| 1 | | Roll-Op | 4Rows to 2Rows. | | |
| 2 | CC2 | Pop-On | Characters are displayed by Pop-On Style, Up, | | |
| 2 | 002 | Pop-On | Middle, Down. | | |
| 4 | T1 | Roll-Up (Default) | Characters are displayed complete sentences. | | |
| 8 | T2 | Roll-Up (Default) | Displayed by one sentence's character | | |
| 16 | CC3 | Paint-On | Font's background color changed and displaying | | |
| 10 | 003 | Faint-On | by paint-on style. | | |
| 32 | CC4 | Roll-Up | Simplify, Displaying by 2Row Roll-up style. | | |
| 64 | Т3 | Roll-Up (Default) | It does display character as T1, But The Character | | |
| 04 | 15 | Roll-Op (Delault) | of each row is displayed as different color. | | |
| 128 | T4 | Roll-Up (Default) | It does display character as T2. But The Character | | |
| 120 | 14 | | of each row is displayed as different color. | | |
| 255 | | Full On | | | |

- 4) Closed Caption Channel
- How to setup the closed caption channel.
- User can On/Off the each, also it can be set. by 8bit control (set or clear)

| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|--------|--------|-------|-------|--------|--------|-------|-------|
| Text 4 | Text 4 | CC4 | CC3 | Text 2 | Text 1 | CC2 | CC1 |

ex) Number 1 = cc1



This function can operate only NTSC.

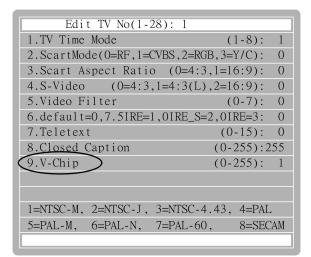
It user want to put together the style, just adding up the each channel.

Ex) 1+2=3 (CC1, CC2 are displayed)

4.11 V-CHIP Functions

- 1) V-Chip Function
- V-chip Function is consisted of EIA-608 Program Rating Format, and it is transferring according to the Extended Data Service (XDS) User can set the Moving Rating and USA TV Rating.

2) How to use V-Chip (0~255)



- ① Push the TV-TIME key.
- ② Select the number using numeral key or jog shuttle.
- 3 Push the ENTER key or jog shuttle.
- 4 Push the EDIT key.
- 5 The passwords input window is appear.
- 6 Input the password and Push the ENTER key or jog.
- O Selected number is signed on the LCD window.
- 8 Using direction key or jog, it has to move "9.V-Chip".
- 9 Fix contents and then Push the ENTER key or jog.
- 0 Select the Time number(0~15), and then push the ENTER key or jog shuttle, again.
- ① Please, find message as below, "Save Ok !!!!!!".

| No. | Movie Rating | No. | USA TV Rating |
|-----|--------------|-----|---------------|
| 0 | Not Rated | 0 | Not Rated |
| 1 | G | 129 | TV-Y |
| 2 | PG | 130 | TV-Y7 |
| 4 | PG-13 | 132 | TV-G |
| 8 | R | 136 | TV-PG |
| 16 | NC-17 | 144 | TV-14 |
| 32 | Х | 160 | TV-MA |

3) Rate Setting

4) V-chip data bit

• Higher bit has priority.

• You can see the V-chip data by a bit at the below chart.

| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|-----------------|-----------|-------|-------|-------|-------|-------|-------|
| 0=Movie Rating | Not Rated | Х | NC-17 | R | PG-13 | PG | G |
| 1=USA TV Rating | Not Rated | TV-MA | TV-14 | TV-PG | TV-G | TV-Y7 | TV-Y |

5) Rating detail

| | Movie Rating | | TV Rating | |
|--------|---|--------|----------------------------|--|
| Rating | Contents | Rating | Contents | |
| G | General Audiences (All Ages Admitted) | TV-Y | All Children | |
| | Parental Guidance Suggested | | | |
| PG | (Some Material May Not Be Suitable For | TV-Y7 | Directed to Older Children | |
| | Children) | | | |
| | Parents Strongly Cautioned | | | |
| PG-13 | (Some Material May Be Inappropriate For | TV-G | General Audience | |
| | Children Under 13) | | | |
| R | Restricted (Under 17 Requires | TV-PG | Parental Guidance | |
| ĸ | Accompanying Parent Or Adult Guardian) | IV-FG | Falenial Guidance | |
| NC-17 | No One 17 And Under Admitted | TV-14 | Parents Strongly Cautioned | |
| Х | No One Under 17 Admitted | TV-MA | Mature Audience only | |

4.12 REMOTE CONTROLLER

- 1) How to use MSRC-005L
- You can use remote box in order to promote work efficiency, Before operating remote box, first of all, check baud rate and protocol of communication.

| Mas | ter | | - REMOTE | CONTROL | | | 2 |
|------------|-------------|------------|-------------|------------|----------|-------------|----------|
| o num | | | | | | | |
| 0 | 0 | 0 | MSRC | -005L — | 0 | 0 | 0 |
| | | | | | | | |
| R | G | В | HS | VS | REV. | ABC | READ |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TIME | PATT. | TV TIME | TV PATT. | HDMI | DTV | SCAN | FUNC |
| 0 | 0 | 0 | 0 | 0 | | | |
| HDCP | OSD INFO | LEVEL R | LEVEL G | LEVEL B | F23 7 | F24 8 | F25 9 |
| F12 F1 | F13 F2 | F14 F3 | F15 F4 | F16 F5 | F26 4 | F27 5 | F28 6 |
| F17 F6 | F18 F7 | F19 F8 | F20 F9 | F21 F10 | F29 1 | F30 2 | F31 3 |
| F22 F11 | | Δ | 7 | < | F32 0 | NUM LOCK | ENTER |

Chapter 5. Customer Service

MASTER CO., LTD Warranty Statement

Completed information regarding MASTER's warranties is below

MASTER CO., LTD ("MASTER")

Warrants that its products are free from defects in material and workmanship. Subject to the conditions and limitations set forth below, Kingston will at its option, either repair or replace any part of its product(s) that prove defective by reason of improper workmanship or materials.

Repairing parts or replacement the products will be provided by MASTER on an exchange basis, and will be either new or refurbished to be functionally equivalent to new. This warranty does not cover any damage to this product those results from accident, abuse, misuse, natural or personal disaster, or any unauthorized disassembly, repair, or modification.

Duration of Warranty

One-Year Warranty :

The MASTER products are covered by this warranty for a period of one year from the date of original retail purchase.

This warranty covers only repair or replacement of defective MASTER products. MASTER is not liable for, and does not cover under warranty, any costs associated with servicing and/or the installation of MASTER products. MASTER will not discontinue support of its products as long as there are component materials available in the marketplace and reasonable customer demand for the products.

Customer must inform us of malfunction of products in warranty period in order to get aftersale service.

- Address : 42-20, Palyong, Changwon, Gyeongnam, Korea, 641-847
- Tel : +82-55-297-8880
- Fax : +82-55-256-7388
- E-mail : sales@Ltdmaster.com / webmaster@Ltdmaster.com

Chapter 6. APPENDIX

6.1 Timing Data (Default)

1) VESA Standard

| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | olarity V | Timing Data Name |
|-----|-----------------|---------------------------|--------------------|-----------------------|----------|-------------|--------------|--------------------------------|
| 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 | 70.069 | 1024x768 | Prog | | | VESA Standard |
| 517 | 60.019 | 75.024 | 78,745 | 1024x768 | Prog | + | + | VESA Standard |
| 518 | 68.667 | 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 | т | | 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 | | + | + | VESA Standard |
| 539 | | 65.000 | 175.500 | | Prog | | + | |
| | 81.250 | CONTRACTOR AND CONTRACTOR | | 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 VESA Standard |
| 542 | 106.250 | 85.000 | 229.500 | 1600x1200 | Prog | + | + | |
| 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 | 74.982 | 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 p H | olarity V | Timing Data Name |
|-----|-----------------|----------------|--------------------|-----------------------|----------|-------------|--------------|------------------|
| 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 | 74.038 | 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 | | | | | | | | Blank |
| 559 | 31.469 | 59.941 | 34.238 | 853x480 | Prog | | · | VESA Standard |
| 560 | 47.396 | 59.995 | 68.250 | 1280x768 | Prog | + | | VESA Standard |
| 561 | 37.531 | 74.763 | 30.625 | 640x480 | Prog | | + | VESA Standard |
| 562 | 24.668 | 49.834 | 19.734 | 640x480 | Prog | | + | VESA Standard |
| 563 | 29.844 | 60.048 | 23.875 | 640x480 | Prog | - | + | VESA Standard |
| 564 | 23.625 | 29.531 | 59.779 | 640x480 | Prog | | + | VESA Standard |
| 565 | 42.819 | 84.790 | 35.625 | 640x480 | Prog | | + | VESA Standard |
| 566 | 30.878 | 49.964 | 31.125 | 800x600 | Prog | | + | VESA Standard |
| 567 | 37.231 | 59.857 | 38.125 | 800x600 | Prog | | + | VESA Standard |
| 568 | 46.995 | 74.952 | 48.875 | 800x600 | Prog | | + | VESA Standard |
| 569 | 53.504 | 84.927 | 56.500 | 800x600 | Prog | | + | VESA Standard |
| 570 | 36.979 | 59.837 | 35.500 | 800x600 | Prog | + | | VESA Standard |
| 571 | 39.444 | 49.866 | 51.751 | 1024x768 | Prog | | + | VESA Standard |
| 572 | 47.712 | 60.015 | 64.125 | 1024x768 | Prog | | + | VESA Standard |
| 573 | 60.110 | 74.950 | 81.750 | 1024x768 | Prog | | + | VESA Standard |
| 574 | 68.496 | 84.877 | 94.250 | 1024x768 | Prog | | + | VESA Standard |
| 575 | 47.297 | 59.870 | 56.000 | 1024x768 | Prog | + | | VESA Standard |
| 576 | 49.405 | 50.005 | 83.000 | 1280x960 | Prog | | + | VESA Standard |
| 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 | 59.915 | 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 | + | | CVI |
| 596 | 78.983 | 49.989 | 218.615 | 2048x1536 | Prog | | + | CVT |
| 597 | 95.357 | 60.011 | 267.000 | 2048x1536 | Prog | | + | CVI |

| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | olarity V | Timing Data Name |
|-----|-----------------|----------------|--------------------|-----------------------|----------|-------------|--------------|------------------|
| 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 | 29.000 | 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 | 1964x600 | 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 | | + | CVI |
| 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 | 65.501 | 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 | | + | CVI |
| 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 |

| | H-freq | V-freq | Dot Clock | Resolution | | Sync r | oolarity | |
|-----|---------|--------|-----------|------------------------|--------------|--------|----------|------------------|
| No | (KHz) | (Hz) | (MHz) | (H x V) | Int/Prog | H | | Timing Data Name |
| 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 | | 49,972 | 229.876 | 2304x1440 | - | т | | VESA Standard |
| 686 | 74.058 | 60.003 | 229.870 | 2304x1440 2304x1440 | Prog Prog | | + + | VESA Standard |
| 687 | 89.405 | 59.979 | 280.374 | 2304x1440 2304x1440 | - | | + | VESA Standard |
| 688 | 78.987 | 49.992 | 218.875 | | Prog | + | | |
| | | | | 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 | 74.977 | 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 | 100 | | DUAL |

3) EIA-861B

| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | olarity V | Timing Data Name |
|-----|---------------------|------------------|--------------------|-----------------------|----------|-------------|--------------|----------------------|
| 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 | 27.629 | 1440x240 | Prog | | | EIA-861B |
| 716 | 15.750 | 60.115 | 27.657 | 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 |
| 720 | 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 |
| 723 | 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 |
| 720 | 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 | 74.170 | 1920x1080 | Prog | + | + | EIA-861B |
| 730 | 28.125 | 25.000 | 74.250 | 1920x1080 | Prog | + | + | EIA-861B |
| 731 | 33.716 | 29.970 | 74.230 | 1920x1080 | Prog | + | + | EIA-861B |
| 732 | 33.750 | 30,000 | 74.175 | 1920x1080 | Prog | + | + | EIA-861B |
| 733 | 15.625 | 50.000 | 54.000 | 2880x576 | Int | T | | EIA-861B |
| 734 | 15.625 | 50.000 | 54.000 | 2880x378 2880x288 | | | | EIA-861B |
| 735 | 15.625 | | 54.000 | | Prog | | | EIA-861B |
| | | 49.920 | | 2880x288 2880x288 | Prog | | | EIA-861B |
| 736 | 15.625 15.734 | 49.761 59.940 | 54.000 53.999 | 2880x288 2880x480 | Prog | | | |
| 737 | 15.750 | | | | Int | | | EIA-861B EIA-861B |
| 738 | 5. X. 4055. 1540.00 | 60.000 | 54.054 | 2880x480 | Int | | | 2 PS 20 2022 8 20 |
| 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 | 27.000 | 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 | 27.000 | 1440x480 | Int | | | EIA-861B |
| 752 | 31.500 | 120.000 | 27.027 | 1440x480 | Int | | | EIA-861B |
| 753 | 125.000 | 200.000 | 108.000 | 720x576 | Prog | | | EIA-861B |
| 754 | 62.500 | 200.000 | 54.000 | 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 | 54.000 | 1440x480 | Int | | | EIA-861B |
| 758 | 63.000 | 240.000 | 54.054 | 1440x480 | Int | | | EIA-861B |

4) EIA-861B (HDMI)

| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | oolarity V | Timing Data Name |
|------------|------------------|------------------------------|--------------------|-----------------------|----------|-------------|---------------|----------------------------------|
| 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 | 27.629 | 1440x240 | Prog | | | HDMI(EIA-861B) |
| 816 | 15.750 | 60.115 | 27.657 | 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 | 59.94 | 148.35 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 820 | 67.500 | 60.000 | 148.50 | 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 | 50.080 | 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 | 148.50 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 828 | 26.973 | 23.976 | 74.176 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 829 | 27.000 | 24.000 | 74.250 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 830 | 28.125 | 25.000 | 74.250 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 831 | 33.716 | 29.970 | 74.175 | 1920x1080 | Prog | + | + | HDMI(EIA-861B) |
| 832 | 33.750 | 30.000 | 74.170 | 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) |
| | | | 54.000 | | 10.00 | | | , , |
| 836 | 15.625 | 49.761 59.939 | | 2880x288 | Prog | | | |
| 837 | 15.734 | and the second second second | 53.999 | 2880x480 | Int | + | + | HDMI(EIA-861B) |
| 838 839 | 15.750 31.250 | 60.000 50.000 | 54.054 54.000 | 2880x480 1440x576 | Int | + | + | HDMI(EIA-861B) HDMI(EIA-861B) |
| | | | | | Prog | + | + | |
| | | | | | | | | |
| | | | | | | | | |

5) EIA-861D (HDMI)

| | H-freq | V-freq | Dot Clock | Resolution | | Sync r | olarity | |
|-----|---------|---------|-----------|------------|----------|--------|---------|--------------------|
| No | (KHz) | (Hz) | (MHz) | (H x V) | Int/Prog | H | V | Timing Data Name |
| 840 | 31.250 | 50.000 | 72.000 | 1920x1080 | Int | + | + | HDMI(EIA-861D) |
| 841 | 56.250 | 100.00 | 148.500 | 1920x1080 | Int | + | + | HDMI(EIA-861D) |
| 842 | 75.000 | 100.00 | 148.500 | 1280x720 | Prog | + | + | HDMI(EIA-861D) |
| 843 | 62.500 | 100.00 | 54.000 | 720x576 | Prog | | | HDMI(EIA-861D) |
| 844 | 31.250 | 100.00 | 27.000 | 1440x576 | Int | | | HDMI(EIA-861D) |
| 845 | 67.432 | 119.88 | 148.352 | 1920x1080 | Int | + | + | HDMI(EIA-861D) |
| 846 | 67.500 | 120.00 | 148.500 | 1920x1080 | Int | + | + | HDMI(EIA-861D) |
| 847 | 89.909 | 119.88 | 148.352 | 1280x720 | Prog | + | + | HDMI(EIA-861D) |
| 848 | 89.909 | 120.00 | 148.500 | 1280X720 | Prog | + | + | HDMI(EIA-861D) |
| 849 | 62.937 | 119.88 | 54.000 | 720x480 | Prog | | | HDMI(EIA-861D) |
| 850 | 62.937 | 120.00 | 54.000 | 720x480 | Prog | | | HDMI(EIA-861D) |
| 851 | 31.500 | 119.88 | 27.027 | 1440x480 | Int | | | HDMI(EIA-861D) |
| 852 | 31.500 | 120.00 | 27.027 | 1440x480 | Int | | | HDMI(EIA-861D) |
| 853 | 125.00 | 200.00 | 108.00 | 720x576 | Prog | | | HDMI(EIA-861D) |
| 854 | 62.500 | 200.00 | 54.000 | 1440x576 | Int | | | HDMI(EIA-861D) |
| 855 | 125.874 | 201.398 | 108.000 | 720x480 | Prog | | | HDMI(EIA-861D) |
| 856 | 126.000 | 201.600 | 108.108 | 720x480 | Prog | | | HDMI(EIA-861D) |
| 857 | 62.937 | 239.76 | 54.00 | 1440x480 | Int | | | HDMI(EIA-861D) |
| 858 | 63.000 | 240.000 | 54.054 | 1440x480 | Int | | | HDMI(EIA-861D) |
| 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 | 1280x1470 | Prog | + | + | Frame packing |
| 364 | 45.000 | 30.000 | 148,500 | 1280x1470 | Prog | + | + | Frame packing |
| 365 | 89.910 | 59.940 | 148.351 | 1280x1470 | Prog | + | + | Frame packing |
| 366 | 90.000 | 60.000 | 148.500 | 1280x1470 | Prog | + | + | Frame packing |
| 367 | 75.000 | 50.000 | 148.500 | 1280x1470 | Prog | + | + | Frame packing |
| | | | | | - | + | | |
| 368 | 67.716 | 30.096 | 148.975 | 1920x2228 | Prog | | + | Frame packing |
| 869 | 67.500 | 30.000 | 148.500 | 1920x2228 | Prog | + | + | Frame packing |
| 870 | 56.250 | 25.000 | 148.500 | 1920x2228 | Prog | + | + | Frame packing |
| 871 | 53.946 | 23.976 | 148.351 | 1920x2205 | Prog | + | + | Frame packing |
| 872 | 54.000 | 24.000 | 148.500 | 1920x2205 | Prog | + | + | Frame packing |
| 873 | 67.432 | 29.970 | 148.350 | 1920x2205 | Prog | + | + | Frame packing |
| 874 | 67.500 | 30.000 | 148.500 | 1920x2205 | Prog | + | + | Frame packing |
| 875 | 44.955 | 59.940 | 74.176 | 1280x720 | Prog | + | + | Top and Bottom |
| 376 | 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 |
| 379 | 27.000 | 24.000 | 74.250 | 1920x1080 | Prog | + | + | Top and Bottom |
| 380 | 33.716 | 29.970 | 74.175 | 1920x1080 | Prog | + | + | Top and Bottom |
| 381 | 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 |
| 384 | 56.250 | 50.000 | 148.500 | 1920x1080 | Prog | + | + | Top and Bottom |
| 885 | 44.955 | 59.940 | 74.176 | 1280x720 | Prog | + | + | Side by Side(Half) |
| 386 | 45.000 | 60.000 | 74.250 | 1280x720 | Prog | + | + | Side by Side(Half) |
| 387 | 37.500 | 50.000 | 74.250 | 1280x720 | Prog | + | + | Side by Side(Half) |
| 388 | 67.432 | 59.940 | 148.350 | 1920x1080 | Prog | + | + | Side by Side(Half) |
| 389 | 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) |
| 391 | 26.973 | 23.976 | 74.176 | 1920x1080 | Prog | + | + | Side by Side(Half) |
| 392 | 27.000 | 24.000 | 74.250 | 1920x1080 | Prog | + | + | Side by Side(Half) |
| 893 | 67.500 | 60.000 | 148.500 | 1920x2206 | Int | + | + | Field alternative |
| 394 | 56.250 | 50.000 | 148.500 | 1920x2206 | Int | + | + | Field alternative |
| 895 | 53.946 | 23.976 | 148.351 | 1920x2160 | Prog | + | + | Line alternative |
| 896 | 54.000 | 24.000 | 148.500 | 1920x2160 | Prog | + | + | Line alternative |
| 897 | 44.955 | 59.940 | 148.351 | 2560x720 | Prog | + | + | Side by Side(Full) |
| 898 | 45.000 | 60.000 | 148.500 | 2560x720 | Prog | + | + | Side by Side(Full) |
| | 37.500 | 50.000 | 148,500 | 2560x720 | Prog | + | + | Side by Side(Full) |

6) SMPTE

| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | olarity V | Timing Data Name |
|------------|------------------|------------------|--------------------|------------------------|----------|-------------|--------------|----------------------------------|
| 901 | 15.734 | 59.939 | 13.500 | 720x484 | Int | | | ITU-R-BT601 |
| 902 | 15.625 | 50.000 | 13.500 | 720x576 | 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 | 1920x1080i | 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 | - | 201770 | ,, 0 | 1720/1000 | | | | |
| 928 | - | | | | | | | |
| 929 | _ | | | | | | | |
| 930 | - | | | | | | | |
| 931 | 15.734 | 59.939 | 13.500 | 720x487 | Int | | | SDI ITU-R-BT601 |
| 932 | 15.625 | 50.000 | 13,500 | 720x407 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 |
| 930 | 67.500 | 60.000 | 148.500 | 1920x1080 | 2023JAAK | 1 | + | 3G-SDI CEA-861 |
| N. 2751 B. | | a substances and | | | Prog | + | <u> </u> | |
| 938 939 | 56.250 26.973 | 50.000 23.976 | 148.500 74.176 | 1920x1080 1920x1080 | Prog | + | + | 3G-SDI CEA-861 HD-SDI CEA-861 |
| | | | | | Prog | + | + | |
| 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 |
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7) TV

| /) I V | | | | | | | | |
|--------|-----------------|----------------|--------------------|-----------------------|----------|-------------|--------------|------------------|
| No | H-freq (KHz) | V-freq (Hz) | Dot Clock (MHz) | Resolution (H x V) | Int/Prog | Sync p H | olarity V | Timing Data Name |
| 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 | | | NTSC4.43 |
| 954 | 15.625 | 50.000 | 13.500 | 702x576 | Int | | | PAL |
| 955 | 15.734 | 59.939 | 13.500 | 710X484 | Int | | | PAL-M |
| 956 | 15.625 | 50.000 | 13.500 | 702X576 | Int | | | PAL-N |
| 957 | 15.734 | 59.939 | 13.500 | 710X484 | Int | | | PAL-60 |
| 958 | 15.625 | 50.000 | 13.500 | 702x576 | Int | | | SECAM |
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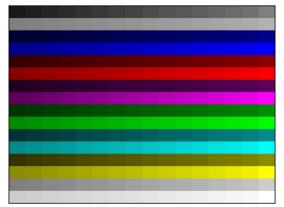
6.2 Pattern Edit List Sample

| 1. H_Line Divide/Space (0-64): | 16 |
|-------------------------------------|----|
| 2. V_Line Divide/Space (0-64): | 12 |
| 3. Cross_Hatch/Dot/Line (0-18): | 2 |
| 4. H_Width (0-64): | 0 |
| 5. V_Width (0-64): | 0 |
| 6. Dot Pattern (On=1,Off=0): | 0 |
| 7. Gray step/Line(ea),EDID (0-255): | 0 |
| 8. Side Line Box=1/Char. On=2(0-2): | 1 |
| 9. Circle Ratio (4:3=0,16:9=1): | 0 |
| 10. Circle Width (0 - V_Line/2): | 0 |
| 11. Circle (0-14): | 0 |
| 12. Circle_1 (r=0-100% of V_Line): | 0 |
| 13. Circle_2 (r=0-100% of V_Line): | 0 |
| 14. Center Marker/Slash/Box (0-15): | 0 |
| 15. Character Pattern Style (0-18): | 0 |
| 16. Character Font Size (0-7): | 0 |
| 17. Character Font (28-127): | 0 |
| 18. Character Font H_Space (0-100): | 0 |
| 19. Character Font V_Space (0-100): | 0 |
| 20. Color Box H_Start (0-100%): | 0 |
| 21. Color Box V_Start (0-100%): | 0 |
| 22. Color Box R/Low_P (0-100%): | 0 |
| 23. Color Box G(Y)_Level (0-100%): | 0 |
| 24. Color Box B/Dir (0-100%): | 0 |
| 25. Color_Box_H_Size (0-100%): | 0 |
| 26. Color_Box_V_Size (0-100%): | 0 |
| 27. Color Pattern (0-33): | 0 |
| 28. Diamond V_Size (0-100%): | 0 |
| | |

| 29. | H_Line_2 | (0-100%): 0 |
|-----|-----------------------|---------------|
| 30. | V_Line_2 | (0-100%): 0 |
| 31. | Box (Ful | 1=1,Non=0): 0 |
| 32. | Character Box H_Start | (0-100%): 0 |
| 33. | Character Box V_Start | (0-100%): 0 |
| 34. | Character Box H_Size | (0-100%): 0 |
| 35. | Character Box V_Size | (0-100%): 0 |
| 36. | White_Gray High Level | (0-100%): 0 |
| 37. | White_Gray Low Level | (0-100%): 0 |
| 38. | Divide(H&HL) | (0-255): 0 |
| 39. | Divide(V&HR) | (0-255): 0 |
| 40. | Base_RLevel | (0%-100%): 0 |
| 41. | Base_GLevel | (0%-100%): 0 |
| 42. | Base_BLevel | (0%-100%): 0 |
| 43. | Character_R_Level | (0%-100%):100 |
| 44. | Character_G_Level | (0%-100%):100 |
| 45. | Character_B_Level | (0%-100%):100 |
| 46. | OSD_R_Level | (0%-100%):100 |
| 47. | OSD_G_Level | (0%-100%):100 |
| 48. | OSD_B_Level | (0%-100%):100 |
| 49. | Reverse On Time | (0-999)/Vf: 0 |
| 50. | Reverse Off Time | (0-999)/Vf: 0 |
| 51. | Auto Bright Up&Down | (0-12): 0 |
| 52. | OSD Display | (0-6): 0 |
| 53. | Character Moving | (0-8): 0 |
| 54. | OSD Moving | (0-8): 0 |
| 55. | Color Moving | (0-12): 0 |
| 56. | Graphic Moving | (0-8): 0 |
| 57. | Moving Speed Fast | (0-20): 1 |
| 58. | Moving Speed Slow | (0-99): 0 |
| 59. | Flicker On(CH,OSD,CL, | GP) (0-15): 0 |
| 60. | Flicker On Time | (0-999)/Vf: 0 |
| 61. | Flicker Off Time | (0-999)/Vf: 0 |
| 62. | Gamma Correction | (0-30)/10: 10 |
| 63. | Video Level | (0-999mV): 0 |
| 64. | Add Pattern Number | (1-999): 0 |
| 65. | Add Pattern Number | (1-999): 0 |
| | | |

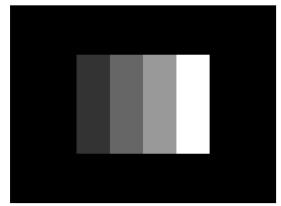
| 1. H_Line Divide/Space (0-64): 1 | 16 |
|-------------------------------------|----|
| 2. V_Line Divide/Space (0-64): 1 | 12 |
| 3. Cross_Hatch/Dot/Line (0-18): | 1 |
| 4. H_Width (0-64): | 0 |
| 5. V_Width (0-64): | 0 |
| 6. Dot Pattern (On=1,Off=0): | 0 |
| 7. Gray step/Line(ea),EDID (0-255): | 0 |
| 8. Side Line Box=1/Char. On=2(0-2): | 1 |
| 9. Circle Ratio (4:3=0,16:9=1): | 0 |
| 10. Circle Width (0 - V_Line/2): | 1 |
| 11. Circle (0-14): | 1 |
| 12. Circle_1 (r=0-100% of V_Line): | 0 |
| 13. Circle_2 (r=0-100% of V_Line): | 0 |
| 14. Center Marker/Slash/Box (0-15): | 0 |
| 15. Character Pattern Style (0-18): | 0 |
| 16. Character Font Size (0-7): | 0 |
| 17. Character Font (28-127): | 0 |
| 18. Character Font H_Space (0-100): | 0 |
| 19. Character Font V_Space (0-100): | 0 |
| 20. Color Box H_Start (0-100%): | 0 |
| 21. Color Box V_Start (0-100%): | 0 |
| 22. Color Box R/Low_P (0-100%): | 0 |
| 23. Color Box G(Y)_Level (0-100%): | 0 |
| 24. Color Box B/Dir (0-100%): | 0 |
| 25. Color_Box_H_Size (0-100%): | 0 |
| 26. Color_Box_V_Size (0-100%): | 0 |
| 05 0 1 D | 1 |
| 27. Color Pattern (0-33): 2 | 21 |

| 29. | H_Line_2 | (0-100%): | 0 |
|-----|-----------------------|-------------|-----|
| 30. | V_Line_2 | (0-100%): | 0 |
| 31. | Box (Ful | 1=1,Non=0): | 0 |
| 32. | Character Box H_Start | (0-100%): | 0 |
| 33. | Character Box V_Start | (0-100%): | 0 |
| 34. | Character Box H_Size | (0-100%): | 0 |
| 35. | Character Box V_Size | (0-100%): | 0 |
| 36. | White_Gray High Level | (0-100%): | 0 |
| 37. | White_Gray Low Level | (0-100%): | 0 |
| 38. | Divide(H&HL) | (0-255): | 0 |
| 39. | Divide(V&HR) | (0-255): | 0 |
| 40. | Base_R_Level | (0%-100%): | 0 |
| 41. | Base_GLevel | (0%-100%): | 0 |
| 42. | Base_BLevel | (0%-100%): | 0 |
| 43. | Character_R_Level | (0%-100%):1 | .00 |
| 44. | Character_G_Level | (0%-100%):1 | 00 |
| 45. | Character_B_Level | (0%-100%):1 | 00 |
| 46. | OSD_R_Level | (0%-100%):1 | 00 |
| 47. | OSD_G_Level | (0%-100%):1 | .00 |
| 48. | OSD_B_Level | (0%-100%):1 | 00 |
| 49. | Reverse On Time | (0-999)/Vf: | 0 |
| 50. | Reverse Off Time | (0-999)/Vf: | 0 |
| 51. | Auto Bright Up&Down | (0-12): | 0 |
| 52. | OSD Display | (0-6): | 0 |
| 53. | Character Moving | (0-8): | 0 |
| 54. | OSD Moving | (0-8): | 0 |
| 55. | Color Moving | (0-12): | 0 |
| 56. | Graphic Moving | (0-8): | 0 |
| 57. | Moving Speed Fast | (0-20): | 1 |
| 58. | Moving Speed Slow | (0-99): | 0 |
| 59. | Flicker On(CH,OSD,CL, | GP) (0-15): | 0 |
| 60. | Flicker On Time | (0-999)/Vf: | 0 |
| 61. | Flicker Off Time | (0-999)/Vf: | 0 |
| 62. | Gamma Correction | (0-30)/10: | 10 |
| 63. | Video Level | (0-999mV): | 0 |
| 64. | Add Pattern Number | (1-999): | 0 |
| 65. | Add Pattern Number | (1-999): | 0 |
| | | | |



| 1. | H_Line Divide/Space (0-64): | 0 |
|-----|-----------------------------------|----|
| 2. | V_Line Divide/Space (0-64): | 0 |
| 3. | Cross_Hatch/Dot/Line (0-18): | 0 |
| 4. | H_Width (0-64): | 0 |
| 5. | V_Width (0-64): | 0 |
| 6. | Dot Pattern (On=1,Off=0): | 0 |
| 7. | Gray step/Line(ea), EDID (0-255): | 0 |
| 8. | Side Line Box=1/Char. On=2(0-2): | 0 |
| 9. | Circle Ratio (4:3=0,16:9=1): | 0 |
| 10. | Circle Width (0 - V_Line/2): | 0 |
| 11. | Circle (0-14): | 0 |
| 12. | Circle_1 (r=0-100% of V_Line): | 0 |
| 13. | Circle_2 (r=0-100% of V_Line): | 0 |
| 14. | Center Marker/Slash/Box (0-15): | 0 |
| 15. | Character Pattern Style (0-18): | 0 |
| 16. | Character Font Size (0-7): | 0 |
| 17. | Character Font (28-127): | 0 |
| 18. | Character Font H_Space (0-100): | 0 |
| 19. | Character Font V_Space (0-100): | 0 |
| 20. | Color Box H_Start (0-100%): | 0 |
| 21. | Color Box V_Start (0-100%): | 0 |
| 22. | Color Box R/Low_P (0-100%): | 0 |
| 23. | Color Box G(Y)_Level (0-100%): | 0 |
| 24. | Color Box B/Dir (0-100%): | 0 |
| 25. | Color_Box_H_Size (0-100%): | 0 |
| 26. | Color_Box_V_Size (0-100%): | 0 |
| 27. | Color Pattern (0-33): | 18 |
| 28. | Diamond V_Size (0-100%): | 0 |
| | | |

| 29. | H_Line_2 | (0-100%): 0 |
|-----|-----------------------|---------------|
| 30. | V_Line_2 | (0-100%): 0 |
| 31. | Box (Ful | 1=1,Non=0): 0 |
| 32. | Character Box H_Start | (0-100%): 0 |
| 33. | Character Box V_Start | (0-100%): 0 |
| 34. | Character Box H_Size | (0-100%): 0 |
| 35. | Character Box V_Size | (0-100%): 0 |
| 36. | White_Gray High Level | (0-100%): 0 |
| 37. | White_Gray Low Level | (0-100%): 0 |
| 38. | Divide(H&HL) | (0-255):128 |
| 39. | Divide(V&HR) | (0-255): 16 |
| 40. | Base_RLevel | (0%-100%): 0 |
| 41. | Base_GLeve1 | (0%-100%): 0 |
| 42. | Base_BLevel | (0%-100%): 0 |
| 43. | Character_R_Level | (0%-100%):100 |
| 44. | Character_G_Level | (0%-100%):100 |
| 45. | Character_B_Level | (0%-100%):100 |
| 46. | OSD_R_Level | (0%-100%):100 |
| 47. | OSD_G_Level | (0%-100%):100 |
| 48. | OSD_B_Level | (0%-100%):100 |
| 49. | Reverse On Time | (0-999)/Vf: 0 |
| 50. | Reverse Off Time | (0-999)/Vf: 0 |
| 51. | Auto Bright Up&Down | (0-12): 0 |
| 52. | OSD Display | (0-6): 0 |
| 53. | Character Moving | (0-8): 0 |
| 54. | OSD Moving | (0-8): 0 |
| 55. | Color Moving | (0-12): 0 |
| 56. | Graphic Moving | (0-8): 0 |
| 57. | Moving Speed Fast | (0-20): 1 |
| 58. | Moving Speed Slow | (0-99): 0 |
| 59. | Flicker On(CH,OSD,CL, | GP) (0-15): 0 |
| 60. | Flicker On Time | (0-999)/Vf: 0 |
| 61. | Flicker Off Time | (0-999)/Vf: 0 |
| 62. | Gamma Correction | (0-30)/10: 10 |
| 63. | Video Level | (0-999mV): 0 |
| 64. | Add Pattern Number | (1-999): 0 |
| 65. | Add Pattern Number | (1-999): 0 |
| | | |



| 1. | Color Pattern | (0-22): 3 |
|-----|------------------------|--------------|
| 2. | Color_Box_H_Size | (0-100%): 50 |
| 3. | Color_Box_V_Size | (0-100%): 50 |
| 4. | Color_H_Divide/V_Color | (0-20): 4 |
| 5. | Color_V_Divide/H_Color | (0-20): 0 |
| 6. | Color Size/Gray Lev_1 | (0-100%): 40 |
| 7. | Color Size/Gray Lev_2 | (0-100%): 60 |
| 8. | Color Size/Gray Lev_3 | (0-100%): 80 |
| 9. | Color Size/Gray Lev_4 | (0-100%):100 |
| 10. | Color Size/Gray Lev_5 | (0-100%): 0 |
| 11. | Color Size/Gray Lev_6 | (0-100%): 0 |
| 12. | Color Size/Gray Lev_7 | (0-100%): 0 |
| 13. | Color Size/Gray Lev_8 | (0-100%): 0 |
| 14. | 8 Color Gray Step/Dir | (0-32)*8: 0 |
| 15. | Color Level_1/R_1 | (0-100%): 0 |
| 16. | Color Level_2/G_1 | (0-100%): 0 |
| 17. | Color Level_3/B_1 | (0-100%): 0 |
| 18. | Color Level_4/R_2 | (0-100%): 0 |
| 19. | Color Level_5/G_2 | (0-100%): 0 |
| 20. | Color Level_6/B_2 | (0-100%): 0 |
| 21. | Color Level_7/R_3 | (0-100%): 0 |
| 22. | Color Level_8/G_3 | (0-100%): 0 |
| 23. | Color Level_9/B_3 | (0-100%): 0 |
| 24. | Color R_4 | (0-100%): 0 |
| 25. | Color G_4 | (0-100%): 0 |
| 26. | Color B_4 | (0-100%): 0 |
| 27. | Color1/ R_5 | (0-100%): 0 |
| 28. | Color2/ G_5 | (0-100%): 0 |

| 29. Color3/ B_5 | (0-100%): 0 |
|--------------------------|----------------|
| 30. Color1/ R_6 | (0-100%): 0 |
| 31. Color2/ G_6 | (0-100%): 0 |
| 32. Color3/ B_6 | (0-100%): 0 |
| 33. Color1/ R 7 | (0-100%): 0 |
| | (0-100%): 0 |
| | (0-100%): 0 |
| 36. Color R_8(R) | (0-100%): 0 |
| 37. Color G_8(G) | (0-100%): 0 |
| 38. Color B_8(B) | (0-100%): 0 |
| 39. COLOR(R,G,B)/Step | (0-255): 0 |
| 40. Base_RLevel | (0%-100%): 0 |
| 41. Base_GLevel | (0%-100%): 0 |
| 42. Base_BLevel | (0%-100%): 0 |
| 43. Character_R_Level | (0%-100%):100 |
| 44. Character_G_Level | (0%-100%):100 |
| 45. Character_B_Level | (0%-100%):100 |
| 46. OSD_R_Level | (0%-100%):100 |
| 47. OSD_G_Level | (0%-100%):100 |
| 48. OSD_B_Level | (0%-100%):100 |
| 49. Reverse On Time | (0-999)/Vf: 0 |
| 50. Reverse Off Time | (0-999)/Vf: 0 |
| 51. Auto Bright Up&Down | (0-12): 0 |
| 52. OSD Display | (0-6): 0 |
| 53. Character Moving | (0-8): 0 |
| 54. OSD Moving | (0-8): 0 |
| 55. Color Moving | (0-12): 0 |
| 56. Graphic Moving | (0-8): 0 |
| 57. Moving Speed Fast | (0-20): 1 |
| 58. Moving Speed Slow | (0-99): 0 |
| 59. Flicker On(CH,OSD,CL | ,GP) (0-15): 0 |
| 60. Flicker On Time | (0-999)/Vf: 0 |
| 61. Flicker Off Time | (0-999)/Vf: 0 |
| 62. Gamma Correction | (0-30)/10: 10 |
| 63. Video Level | (0-999mV): 0 |
| 64. Add Pattern Number | (1-999): 0 |
| 65. Add Pattern Number | (1-999): 0 |
| | |

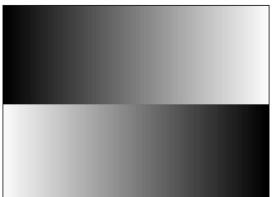
| 1. | Color Pattern | (0-22): | 6 |
|-----|------------------------|-------------|----|
| 2. | Color_Box_H_Size | (0-100%): | 0 |
| 3. | Color_Box_V_Size | (0-100%): | 0 |
| 4. | Color_H_Divide/V_Color | (0-20): | 2 |
| 5. | Color_V_Divide/H_Color | (0-20): | 2 |
| 6. | Color Size/Gray Lev_1 | (0-100%) | 0 |
| 7. | Color Size/Gray Lev_2 | (0-100%) | 0 |
| 8. | Color Size/Gray Lev_3 | (0-100%) | 0 |
| 9. | Color Size/Gray Lev_4 | (0-100%) | 0 |
| 10. | Color Size/Gray Lev_5 | (0-100%) | 0 |
| 11. | Color Size/Gray Lev_6 | (0-100%) | 0 |
| 12. | Color Size/Gray Lev_7 | (0-100%) | 0 |
| 13. | Color Size/Gray Lev_8 | (0-100%) | 0 |
| 14. | 8 Color Gray Step/Dir | (0-32)*8: | 0 |
| 15. | Color Level_1/R_1 | (0-100%): 9 | 93 |
| 16. | Color Level_2/G_1 | (0-100%): 9 | 93 |
| 17. | Color Level_3/B_1 | (0-100%): 9 | 93 |
| 18. | Color Level_4/R_2 | (0-100%): | 50 |
| 19. | Color Level_5/G_2 | (0-100%): | 50 |
| 20. | Color Level_6/B_2 | (0-100%): | 50 |
| 21. | Color Level_7/R_3 | (0-100%): 2 | 29 |
| 22. | Color Level_8/G_3 | (0-100%): 2 | 29 |
| 23. | Color Level_9/B_3 | (0-100%): 2 | 29 |
| 24. | Color R_4 | (0-100%):10 | 00 |
| 25. | Color G_4 | (0-100%): | 0 |
| 26. | Color B_4 | (0-100%):10 | 00 |
| 27. | Color1/ R_5 | (0-100%): | 0 |
| 28. | Color2/ G_5 | (0-100%): | 0 |
| | | | |

| 29. | Color3/ B_5 | (0-100%): | 0 |
|-----|----------------------|--------------|----|
| | Color1/ R_6 | (0-100%): | 0 |
| 31. | Color2/ G_6 | (0-100%): | 0 |
| 32. | Color3/ B_6 | (0-100%): | 0 |
| 33. | Color1/ R_7 | (0-100%): | 0 |
| 34. | Color2/ G_7 | (0-100%): | 0 |
| 35. | Color3/ B_7 | (0-100%): | 0 |
| 36. | Color R_8(R) | (0-100%): | 0 |
| 37. | Color G_8(G) | (0-100%): | 0 |
| 38. | Color B_8(B) | (0-100%): | 0 |
| 39. | COLOR(R,G,B)/Step | (0-255): | 0 |
| 40. | Base_R_Level | (0%-100%): | 0 |
| 41. | Base_G_Level | (0%-100%): | 0 |
| 42. | Base_B_Level | (0%-100%): | 0 |
| 43. | Character_R_Level | (0%-100%):10 |)0 |
| 44. | Character_G_Level | (0%-100%):10 |)0 |
| 45. | Character_B_Level | (0%-100%):10 |)0 |
| 46. | OSD_R_Level | (0%-100%):10 | 00 |
| 47. | OSD_G_Level | (0%-100%):10 | 00 |
| 48. | OSD_B_Level | (0%-100%):10 | 00 |
| 49. | Reverse On Time | (0-999)/Vf: | 0 |
| 50. | Reverse Off Time | (0-999)/Vf: | 0 |
| 51. | Auto Bright Up&Down | (0-12): | 0 |
| 52. | OSD Display | (0-6): | 0 |
| 53. | Character Moving | (0-8): | 0 |
| 54. | OSD Moving | (0-8): | 0 |
| 55. | Color Moving | (0-12): | 0 |
| 56. | Graphic Moving | (0-8): | 0 |
| 57. | Moving Speed Fast | (0-20): | 1 |
| 58. | Moving Speed Slow | (0-99): | 0 |
| 59. | Flicker On(CH,OSD,CL | ,GP) (0-15): | 0 |
| 60. | Flicker On Time | (0-999)/Vf: | 0 |
| 61. | Flicker Off Time | (0-999)/Vf: | 0 |
| 62. | Gamma Correction | (0-30)/10: 1 | 0 |
| 63. | Video Level | (0-999mV): | 0 |
| 64. | Add Pattern Number | (1-999): | 0 |
| 65. | Add Pattern Number | (1-999): | 0 |
| | | | |

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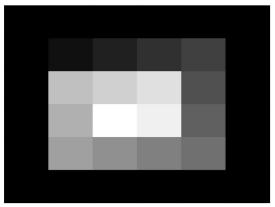
| 1. | Color Pattern | (0-22): 17 |
|-----|------------------------|--------------|
| 2. | Color_Box_H_Size | (0-100%): 0 |
| 3. | Color_Box_V_Size | (0-100%): 0 |
| 4. | Color_H_Divide/V_Color | (0-20): 0 |
| 5. | Color_V_Divide/H_Color | (0-20): 0 |
| 6. | Color Size/Gray Lev_1 | (0-100%) 0 |
| 7. | Color Size/Gray Lev_2 | (0-100%) 0 |
| 8. | Color Size/Gray Lev_3 | (0-100%) 0 |
| 9. | Color Size/Gray Lev_4 | (0-100%) 0 |
| 10. | Color Size/Gray Lev_5 | (0-100%) 0 |
| 11. | Color Size/Gray Lev_6 | (0-100%) 0 |
| 12. | Color Size/Gray Lev_7 | (0-100%) 0 |
| 13. | Color Size/Gray Lev_8 | (0-100%) 0 |
| 14. | 8 Color Gray Step/Dir | (0-32)*8: 0 |
| 15. | Color Level_1/R_1 | (0-100%): 0 |
| 16. | Color Level_2/G_1 | (0-100%): 0 |
| 17. | Color Level_3/B_1 | (0-100%):100 |
| 18. | Color Level_4/R_2 | (0-100%): 0 |
| 19. | Color Level_5/G_2 | (0-100%):100 |
| 20. | Color Level_6/B_2 | (0-100%):100 |
| 21. | Color Level_7/R_3 | (0-100%): 50 |
| 22. | Color Level_8/G_3 | (0-100%): 0 |
| 23. | Color Level_9/B_3 | (0-100%): 50 |
| 24. | Color R_4 | (0-100%):100 |
| 25. | Color G_4 | (0-100%): 0 |
| 26. | Color B_4 | (0-100%):100 |
| 27. | Color1/ R_5 | (0-100%):100 |
| 28. | Color2/ G_5 | (0-100%): 0 |

| 29. Color3/ B_5 | (0-100%): 0 | |
|--------------------------|----------------|--|
| 30. Color1/ R_6 | (0-100%): 50 | |
| 31. Color2/ G_6 | (0-100%): 50 | |
| 32. Color3/ B_6 | (0-100%): 0 | |
| 33. Color1/ R_7 | (0-100%):100 | |
| 34. Color2/ G_7 | (0-100%):100 | |
| 35. Color3/ B_7 | (0-100%): 0 | |
| 36. Color R_8(R) | (0-100%): 0 | |
| 37. Color G_8(G) | (0-100%):100 | |
| 38. Color B_8(B) | (0-100%): 0 | |
| 39. COLOR(R,G,B)/Step | (0-255): 16 | |
| 40. Base_RLevel | (0%-100%): 0 | |
| 41. Base_GLevel | (0%-100%): 0 | |
| 42. Base_BLevel | (0%-100%): 0 | |
| 43. Character_R_Level | (0%-100%):100 | |
| 44. Character_G_Level | (0%-100%):100 | |
| 45. Character_B_Level | (0%-100%):100 | |
| 46. OSD_R_Level | (0%-100%):100 | |
| 47. OSD_G_Level | (0%-100%):100 | |
| 48. OSD_B_Level | (0%-100%):100 | |
| 49. Reverse On Time | (0-999)/Vf: 0 | |
| 50. Reverse Off Time | (0-999)/Vf: 0 | |
| 51. Auto Bright Up&Down | (0-12): 0 | |
| 52. OSD Display | (0-6): 0 | |
| 53. Character Moving | (0-8): 0 | |
| 54. OSD Moving | (0-8): 0 | |
| 55. Color Moving | (0-12): 0 | |
| 56. Graphic Moving | (0-8): 0 | |
| 57. Moving Speed Fast | (0-20): 1 | |
| 58. Moving Speed Slow | (0-99): 0 | |
| 59. Flicker On(CH,OSD,CL | ,GP) (0-15): 0 | |
| 60. Flicker On Time | (0-999)/Vf: 0 | |
| 61. Flicker Off Time | (0-999)/Vf: 0 | |
| 62. Gamma Correction | (0-30)/10: 10 | |
| 63. Video Level | (0-999mV): 0 | |
| 64. Add Pattern Number | (1-999): 0 | |
| 65. Add Pattern Number | (1-999): 0 | |



| 1. | Color Pattern | (0-22): | 15 |
|-----|------------------------|-----------|----|
| 2. | Color_Box_H_Size | (0-100%): | 0 |
| 3. | Color_Box_V_Size | (0-100%): | 0 |
| 4. | Color_H_Divide/V_Color | (0-20): | 7 |
| 5. | Color_V_Divide/H_Color | (0-20): | 1 |
| 6. | Color Size/Gray Lev_1 | (0-100%) | 0 |
| 7. | Color Size/Gray Lev_2 | (0-100%) | 0 |
| 8. | Color Size/Gray Lev_3 | (0-100%) | 0 |
| 9. | Color Size/Gray Lev_4 | (0-100%) | 0 |
| 10. | Color Size/Gray Lev_5 | (0-100%) | 0 |
| 11. | Color Size/Gray Lev_6 | (0-100%) | 0 |
| 12. | Color Size/Gray Lev_7 | (0-100%) | 0 |
| 13. | Color Size/Gray Lev_8 | (0-100%) | 0 |
| 14. | 8 Color Gray Step/Dir | (0-32)*8: | 0 |
| 15. | Color Level_1/R_1 | (0-100%): | 0 |
| 16. | Color Level_2/G_1 | (0-100%): | 0 |
| 17. | Color Level_3/B_1 | (0-100%): | 0 |
| 18. | Color Level_4/R_2 | (0-100%): | 0 |
| 19. | Color Level_5/G_2 | (0-100%): | 0 |
| 20. | Color Level_6/B_2 | (0-100%): | 0 |
| 21. | Color Level_7/R_3 | (0-100%): | 0 |
| 22. | Color Level_8/G_3 | (0-100%): | 0 |
| 23. | Color Level_9/B_3 | (0-100%): | 0 |
| 24. | Color R_4 | (0-100%): | 0 |
| 25. | Color G_4 | (0-100%): | 0 |
| 26. | Color B_4 | (0-100%): | 0 |
| 27. | Color1/ R_5 | (0-100%): | 0 |
| 28. | Color2/ G_5 | (0-100%): | 0 |
| | | | |

| 29. | Color3/ B_5 | (0-100%): | 0 |
|-----|----------------------|--------------|----|
| 30. | Color1/ R_6 | (0-100%): | 0 |
| 31. | Color2/ G_6 | (0-100%): | 0 |
| 32. | Color3/ B_6 | (0-100%): | 0 |
| 33. | Color1/ R_7 | (0-100%): | 0 |
| 34. | Color2/ G_7 | (0-100%): | 0 |
| 35. | Color3/ B_7 | (0-100%): | 0 |
| 36. | Color R_8(R) | (0-100%): | 0 |
| 37. | Color G_8(G) | (0-100%): | 0 |
| 38. | Color B_8(B) | (0-100%): | 0 |
| 39. | COLOR(R,G,B)/Step | (0-255): | 0 |
| 40. | Base_R_Level | (0%-100%): | 0 |
| 41. | Base_GLevel | (0%-100%): | 0 |
| 42. | Base_BLevel | (0%-100%): | 0 |
| 43. | Character_R_Level | (0%-100%):10 |)0 |
| 44. | Character_G_Level | (0%-100%):10 |)0 |
| 45. | Character_B_Level | (0%-100%):10 |)0 |
| 46. | OSD_R_Level | (0%-100%):10 | 00 |
| 47. | OSD_G_Level | (0%-100%):10 |)0 |
| 48. | OSD_B_Level | (0%-100%):10 |)0 |
| 49. | Reverse On Time | (0-999)/Vf: | 0 |
| 50. | Reverse Off Time | (0-999)/Vf: | 0 |
| 51. | Auto Bright Up&Down | (0-12): | 0 |
| 52. | OSD Display | (0-6): | 0 |
| 53. | Character Moving | (0-8): | 0 |
| 54. | OSD Moving | (0-8): | 0 |
| 55. | Color Moving | (0-12): | 0 |
| 56. | Graphic Moving | (0-8): | 0 |
| 57. | Moving Speed Fast | (0-20): | 1 |
| 58. | Moving Speed Slow | (0-99): | 0 |
| 59. | Flicker On(CH,OSD,CL | ,GP) (0-15): | 0 |
| 60. | Flicker On Time | (0-999)/Vf: | 0 |
| 61. | Flicker Off Time | (0-999)/Vf: | 0 |
| 62. | Gamma Correction | (0-30)/10: 1 | 0 |
| 63. | Video Level | (0-999mV): | 0 |
| 64. | Add Pattern Number | (1-999): | 0 |
| 65. | Add Pattern Number | (1-999): | 0 |
| | | | |



| 1. | Color Pattern | (0-22): | 0 |
|-----|------------------------|-----------|---|
| 2. | Color_Box_H_Size | (0-100%): | 0 |
| 3. | Color_Box_V_Size | (0-100%): | 0 |
| 4. | Color_H_Divide/V_Color | (0-20): | 0 |
| 5. | Color_V_Divide/H_Color | (0-20): | 0 |
| 6. | Color Size/Gray Lev_1 | (0-100%) | 0 |
| 7. | Color Size/Gray Lev_2 | (0-100%) | 0 |
| 8. | Color Size/Gray Lev_3 | (0-100%) | 0 |
| 9. | Color Size/Gray Lev_4 | (0-100%) | 0 |
| 10. | Color Size/Gray Lev_5 | (0-100%) | 0 |
| 11. | Color Size/Gray Lev_6 | (0-100%) | 0 |
| 12. | Color Size/Gray Lev_7 | (0-100%) | 0 |
| 13. | Color Size/Gray Lev_8 | (0-100%) | 0 |
| 14. | 8 Color Gray Step/Dir | (0-32)*8: | 0 |
| 15. | Color Level_1/R_1 | (0-100%): | 0 |
| 16. | Color Level_2/G_1 | (0-100%): | 0 |
| 17. | Color Level_3/B_1 | (0-100%): | 0 |
| 18. | Color Level_4/R_2 | (0-100%): | 0 |
| 19. | Color Level_5/G_2 | (0-100%): | 0 |
| 20. | Color Level_6/B_2 | (0-100%): | 0 |
| 21. | Color Level_7/R_3 | (0-100%): | 0 |
| 22. | Color Level_8/G_3 | (0-100%): | 0 |
| 23. | Color Level_9/B_3 | (0-100%): | 0 |
| 24. | Color R_4 | (0-100%): | 0 |
| 25. | Color G_4 | (0-100%): | 0 |
| 26. | Color B_4 | (0-100%): | 0 |
| 27. | Color1/ R_5 | (0-100%): | 0 |
| 28. | Color2/ G_5 | (0-100%): | 0 |
| | | | |

| 29. Color3/ B 5 | (0-100%): | 0 |
|--------------------------|--------------|----|
| 30. Color1/ R_6 | (0-100%): | 0 |
| 31. Color2/ G 6 | (0-100%): | 0 |
| 32. Color3/ B_6 | (0-100%): | 0 |
| 33. Color1/ R_7 | (0-100%): | 0 |
| 34. Color2/ G_7 | (0-100%): | 0 |
| 35. Color3/ B_7 | (0-100%): | 0 |
| | (0-100%): | 0 |
| 37. Color G_8(G) | (0-100%): | 0 |
| 38. Color B_8(B) | (0-100%): | 0 |
| 39. COLOR(R,G,B)/Step | (0-255): | 0 |
| 40. Base_RLevel | (0%-100%): | 0 |
| 41. Base_GLevel | (0%-100%): | 0 |
| 42. Base_BLevel | (0%-100%): | 0 |
| 43. Character_R_Level | (0%-100%):10 | 00 |
| 44. Character_G_Level | (0%-100%):10 | 00 |
| 45. Character_B_Level | (0%-100%):10 | 00 |
| 46. OSD_R_Level | (0%-100%):10 | 00 |
| 47. OSD_G_Level | (0%-100%):10 | 00 |
| 48. OSD_B_Level | (0%-100%):10 | 00 |
| 49. Reverse On Time | (0-999)/Vf: | 0 |
| 50. Reverse Off Time | (0-999)/Vf: | 0 |
| 51. Auto Bright Up&Down | (0-12): | 0 |
| 52. OSD Display | (0-6): | 0 |
| 53. Character Moving | (0-8): | 0 |
| 54. OSD Moving | (0-8): | 0 |
| 55. Color Moving | (0-12): | 0 |
| 56. Graphic Moving | (0-8): | 0 |
| 57. Moving Speed Fast | (0-20): | 1 |
| 58. Moving Speed Slow | (0-99): | 0 |
| 59. Flicker On(CH,OSD,CL | ,GP) (0-15): | 0 |
| 60. Flicker On Time | (0-999)/Vf: | 0 |
| 61. Flicker Off Time | (0-999)/Vf: | 0 |
| 62. Gamma Correction | (0-30)/10: | 10 |
| 63. Video Level | (0-999mV): | 0 |
| 64. Add Pattern Number | (1-999): | 0 |
| 65. Add Pattern Number | (1-999): | 0 |
| | | |

6.3 PROGRAM, BMP Download and PC Edit

6.3.1 Initial Display

| File Name: | | | CLEAR MSG HELP |
|--|---------------|-----------------|--|
| | DATA SEND | | Bytes Send |
| ' Information: | | J CASULI (• HEX | Dytes Send |
| | | | |
| | Receive Data | C ASCIL @ HEX | Bytes Received |
| | Tieceive Data | C ASCIL (* TIEX | by the first of the second sec |
| | | | |
| | | | |
| | | | |
| Open File Send All Files Send Selected | | | |
| | | | |
| No File Name [Width x Hight] [01] Not Opened! | | | |
| [02] Not Opened! [03] Not Opened! | | | |
| [02] Not Opened! [03] Not Opened! [04] Not Opened! | | | |
| [04] Not Opened! [05] Not Opened! [06] Not Opened! [07] Not Opened! | | | |
| [05] Not Opened! [06] Not Opened! [07] Not Opened! | | | |
| [07] Not Opened! | 3 | | |
| [U8] Not Opened! | | | |
| [10] Not Opened! | | | |
| [11] Not Opened! | | | |
| [12] Not Opened! | | | |
| [U7] Not Opened! [08] Not Opened! [09] Not Opened! [10] Not Opened! [11] Not Opened! [11] Not Opened! [12] Not Opened! [13] Not Opened! [14] Not Opened! [15] Not Opened! [15] Not Opened! | | | |
| [15] Not Opened! | | | |
| 1 103 N. 10 II | | | |
| [Ib] Not Opened! | | | |
| [06] | | | |
| [16] Not Opened! [17] Not Opened! [18] Not Opened! [19] Not Opened! | | | |
| [17] Not Opened! | | | |

6.3.2 USB Connect

Push the "COM SETUP" button.

"COM SETUP" button located on right side top.

Which is shown red circle as shown below.

| File Name: | DATA SEN | D C ASCIL @ HEX | CLEAR MSG HELP Bytes Send |
|--|--------------|-----------------|------------------------------|
| Infomation: | _ | | |
| | Receive Data | C ASCIL @ HEX | Bytes Received |
| Open File Send All Files Send Selected No File Name [Width x Hight] [01] | | | |
| 0% | 50% | | 00:00[min:sec] 100 |

When the USB are connected, the message are shown like below picture.



If using USB connection, push the (Y) key.

When you use USB as Serial connection, push the "N" Button.

Then communication option and connection window will be open.

6.3.3 RS232 Connect

Push the "COM SETUP" button.

"COM SETUP" button located on right side top.

Which is shown red circle as shown below.

| | | | | CLEAR MSG HELP |
|---|----|-------------|---------------|---------------------|
| File Name: | | | | |
| | _ | DATA SEND | C ASCII @ HEX | Bytes Send |
| Information: | | | | |
| | | | | |
| | Re | eceive Data | C ASCIL @ HEX | Bytes Received |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Open File Send All Files Send Selected | | | | |
| No File Name [Width x Hight] | | | | |
| | ~ | | | |
| [01] Not Opened! | | | | |
| [01] Not Opened! [02] Not Opened! [03] Not Opened! | | | | |
| [01] Not Opened! [02] Not Opened! [03] Not Opened! [04] Not Opened! | | | | |
| [01] Not Opened [03] Not Opened [04] Not Opened [04] Not Opened [05] Not Opened | | | | |
| [01] Not Opened! [02] Not Opened! [03] Not Opened! [04] Not Opened! [05] Not Opened! [06] Not Opened! | | | | |
| [01] Not Opened [02] Not Opened [03] Not Opened [05] Not Opened [05] Not Opened [06] Not Opened [06] Not Opened [06] Not Opened [06] Not Opened [07] Not Opened [07] Not Opened | | | | |
| [01] Not Opened! [02] Not Opened! [03] Not Opened! [04] Not Opened! [05] Not Opened! [06] Not Opened! [07] Not Opened! [08] Not Opened! [08] Not Opened! [08] Not Opened! [09] Not Opened! | | | | |
| [01] Not Opened [02] Not Opened [03] Not Opened [04] Not Opened [05] Not Opened [06] Not Opened [07] Not Opened [08] Not Opened [09] Not Opened | | | | |
| [01] Not Opened [02] Not Opened [03] Not Opened [04] Not Opened [05] Not Opened [06] Not Opened [07] Not Opened [08] Not Opened [09] Not Opened [10] Not Opened [11] Not Opened | | | | |
| [01] | | | | |
| [01] Not Opened [02] Not Opened [03] Not Opened [05] Not Opened [05] Not Opened [06] Not Opened [06] Not Opened [06] Not Opened [08] Not Opened [10] Not Opened [11] Not Opened [12] Not Opened [13] Not Opened [13] Not Opened | | | | |
| [01] Not Opened! [02] Not Opened! [03] Not Opened! [04] Not Opened! [05] Not Opened! [06] Not Opened! [07] Not Opened! [08] Not Opened! [09] Not Opened! [10] Not Opened! [11] Not Opened! [12] Not Opened! [13] Not Opened! [14] Not Opened! [14] Not Opened! [14] Not Opened! | | | | |
| [02] | | | | |
| [02] | | | | |
| [02] | | | | |
| [02] | | | | |
| [02] | | | | |
| [02] | | | | 00:00[min:\$ec] 100 |

Select the communication option of RS232C Setup and than confirm.

| COM PORT | COM1 - |
|----------------------|--------------------|
| Baud Rate | 115200 - |
| Data Bit Stop Bit | |
| Parity Bit | NONE |
| Connect | Disconnect |
| Not Opened Any | / Communications!! |

Set up communication like above window, except COM PORT and Baud Rate, which are depended on USER.

Start the communication, after pushing "Connect" key.

6.3.4 BMP File Download

Main Display is in BMP File Section.

In this section Push "Open File" Button.

Open Dialog box is displayed given below. select the BMP File from open dialog.

| PG(VCXX33) File Transfer V1.3(Beta) | |
|--|---|
| BMP File System BOM File NvBAM File Heer Control | 1/0 device UART COM SETUP EXIT |
| BMP File System ROM File NvRAM File User Control | CLEAR MSG HELP |
| File Name: | |
| 706 군구종류720 480,bmp | DATA SEND O ASCII © HEX Bytes Send |
| Information: | |
| Total number of Packet : 1440 Size(Width × Height) = 720 × 480 | |
| File size = 1036800 | Receive Data C ASCII © HEX Bytes Received |
| Total number of Packet : 1440 Size(Width x Height) = 720 x File eize = 1135800 | ? 🛛 |
| | |
| 찾는 위치(!): 🔁 BMP | |
| 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 107 강아지 720 483,bmp 708 연꽃720 483,bmp 708 연꽃720 483,bmp 708 연꽃720 483,bmp 708 연꽃720 483,bmp |
| Open File Send A 📷 703 물범 640 480, bmp | 📷 709 단풍720 483,bmp 📷 7 📕 문화 문화 문화 문화 문화 문화 문화 |
| No File Name [Width 10 704 중국패턴monoscop(720,480).bi | mp 🗃 710 중국패턴monoscop(720,576).bmp 🗃 7 률 711 사과 꽃720 576,BMP 📅 7 |
| [02] Not Opened! 706 구구종를 720 480 brop | 🗃 712 단풍과 길 720 576,bmp 📅 7 |
| [04] Not Opened < | |
| [06] Not Opened! 파일 이름(N): 706 군구종류720 4 | |
| [08] Not Opened! 파일 형식(I): BMP FILE (*, BMI [09] Not Opened! [10] Not Opened! | P) 👤 <u>취소</u> |
| [10] Not Opened! [11] Not Opened! | |
| [11] Not Opened! [12] Not Opened! [13] Not Opened! | |
| [14] Not Opened! [15] Not Opened! | |
| [16] Not Opened! [17] Not Opened! | |
| [18] Not Opened! [19] Not Opened! | |
| | |
| 0% | 50% 00:00[min:sec] 100% |
| | |
| | |
| | |

When opening the file, it will be added in the list, as well as show it's image and information. (It can be also open the file with double click of the Mouse.)

User can save files up to 2048*2048The Information below box displayed the picture size and Data information.

Number 1~60 number can save to BMP of 2048*2048 size (Pattern Number 701 ~760).

When you save the image pattern, you should check the number that corrects image size.

There are 2 kinds of methods for BMP file download. (Send All Files, Send Selected)

i) If clicking Send All Files, it will send all data from combo box.

| | 10 device Not Selected COM SETUP EXIT |
|---|---|
| BMP File System ROM File NvRAM File User Control File Name: 706 군구종류720 480.bmp Information: Total number of Packet : 1440 Size(Widh × Height) = 720 × 480 File size = 1036800 Total number of Packet : 1440 Size(Widh × Height) = 720 × 480 File size = 1036800 | CLEAR MSG HELP DATA SEND C ASCII © HEX Bytes Send Receive Data C ASCII © HEX Bytes Received |
| Open File Send All Files Send Selected | |

ii) If clicking Send Selected, it will send selected data from list.

| PG(VCXX33) File Transfer VI.3(Beta) BMP File Sustem ROM File NyRAM File User Control | I/O device Not Selected COM SETUP EXIT |
|--|---|
| BMP File System ROM File NvRAM File User Control File Name: 706 군구종류720 480,bmp Information: | DATA SEND CASCII CHEX Bytes Send |
| Total number of Packet : 1440 Size(Width × Height) = 720 × 480 File size = 1036600 Total number of Packet : 1440 Size(Width × Height) = 720 × 480 File size = 1036800 | Receive Data C ASCII © HEX Bytes Received |
| Open File Send All Files Send Selected | |

How to select the files :

Select first file, then push shift key(Category selecting) or Ctrl Key (personal selecting)on the keyboard continue until making the range of final file.

List No. 1 ~ 60(Default Pattern No.701~760) : BMP MAX Size 2048(W) X 2048(H) {w=h size, h=v size}.

6.3.5 System ROM DAT File Download

When push the Open File key on the System ROM DAT file display, it can show as below to select a file. (file type : *.DAT)

| B PG(VCXX33) File Transfer VI.3(Beta) | |
|--|----------------|
| 1/0 device Not Selected | COM SETUP EXIT |
| BMP File System ROM File NvRAM File User Control | |
| | |
| | |
| Open File Send File CLEAR MSG HELP | |
| Open File Send File CLEAR MSG HELP | |
| File Name: | |
| 멸기 | 2 🛛 |
| File 찾는 위치(!): 🔁 2033 업체별 타이밍 파일 🔍 🔶 🖻 🗃 🖽 | |
| | |
| | |
| | |
| | |
| | |
| 파일 이름(N): 로DAT 열기(Q | <u>></u> |
| 파일 형식(<u>T</u>): DATA FILE (+,DAT) 💌 취소 | |
| | |
| | |
| 0% 0 / 0 100% | |
| | |
| | |
| | |
| | |
| | |

When open the file, it will show the file list and information on the File Information box.

| BMP File System I | I/O device Not Selected COM SETUP EXIT IOM File NvRAM File User Control 1651 1 0 1 0 0 0004966 0 0000966 0 0000966 0 0000966 0 00000006 0 |
|-------------------|---|
| | 0% 0 / 0 100% |

When push the Send File, it will be lunch the File download.

| PG(VCXX33) File Transfer VI.3(Beta) | | | X |
|--|--|---|---|
| | I/O device Not Selected | COM SETUP | EXIT |
| BMP File System ROM File NvRAM File User Control | | | 1 |
| | | | |
| | | | |
| | | | |
| Open File Send File LEAR MSG | HELP | | |
| | BMP File System ROM File NvRAM File User Control | VO device Not Selected BMP File System ROM File NvRAM File User Control | VO device Not Selected COM SETUP BMP File System ROM File NvRAM File User Control |

When clicking Make Rom File, it will make a ROM file from DAT file in order to use it for system through copying CF-card.

| 23 | PG(VCXX33) File Transfer VI.3(Beta) |
|----|--|
| , | I/O device Not Selected COM SETUP EXIT BMP File System ROM File NvRAM File User Control EXIT |
| | |
| | Open File Send File CLEAR MSG HELP |
| | File Name: |
| | File Info: Make ROM File |
| | |

6.3.6 NvRAM File Download

It can send or receive the NvRAM files from PC to MSPG-6100L or MSPG-6100L to PC. NvRAM File has the information of Timing, Scan, Function, Pattern, Audio, System General.

| Timing | Scan Function Pattern | Audio System General | |
|--------|--|--------------------------------------|--|
| | Time List(MSPG-3233) | TIME DATA EDIT | Default & PC Time LIST |
| | Confirm Time List | Time Call No : TIME T | Reload |
| | No Name / | | No Name A |
| | [001] TIME 001 [002] TIME 002 [003] TIME 003 [004] TIME 003 | Mode : PC MODE Interlace Name : DUAL | [001] DUAL [002] VESA [003] VESA |
| | | Name DUAL | L 005 J VESA |
| | [004] Thite 600 [005] Thite 600 [006] Thite 20 [007] Thite 20 [00 | | |
| | [007] TI 찾는 위치(!): | 🗅 nvrDATA 💽 🔶 🛍 (| VESA VESA VESA |
| | [009] TI [010] TI | | VESA |
| | | | VESA VESA VESA |
| | [013] TI [014] TI [015] TI | | VESA VESA VESA |
| | | | VESA |
| | 1014 1 TT 1015 TT 1015 TT 1015 TT 1015 TT 1017 TT 1018 TT 1 | | VESA VESA |
| | [019] TI 파일이름(N): | *.NVR | 열기(0) VESA INDUSTRY |
| | [[021] TIN | NvRAM FILE (*,NVR) | 취소 VESA VESA |
| | [023] TIN | | VESA |
| | [025] TIME 025 | Read/Write Data | [024] VESA [025] VESA [026] VESA |
| | [027] TIME 027 | ○ Write | [027] VESA [028] VESA |
| | [023] TIME 024 [025] TIME 025 [026] TIME 025 [026] TIME 025 [027] TIME 027 [028] TIME 027 [028] TIME 028 [029] TIME 030 [030] TIME 030 | Select Data Length | LE N291 VESA |
| | [030] TIME 030 [031] TIME 031 | 2033 Select PC Select | [030] VESA [031] VESA [032] VESA |
| | [032] TIME 032 [033] TIME 032 [034] TIME 033 [034] TIME 034 [035] TIME 034 | | [033] VESA |
| | [034] TIME 034 [035] TIME 035 | Read | [034] VESA |

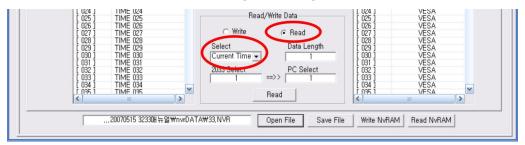
Button send editing data to MSPG-6100L and rewrite memory. This time, all of editing data in the PC will be erased, so it should be backup, if you need to save important files.

| 20070515 3233매뉴얼₩nvrDATA₩33,NVR | Open File | Save File | Write NvRAM | Read NvRAM | |
|---------------------------------|-----------|-----------|-------------|------------|--|
| | | | \smile | | |

READ Button can show receiving data from MSPG-6100L on the Edit Box. This time, all of editing data in the PC will be erased, so it should be backup, if you need to save important files.

| 20070515 3233매뉴얼₩nvrDATA₩33,NVR | Open File | Save File | Write NvRAM | Read NvRAM | |
|---------------------------------|-----------|-----------|-------------|------------|--|
| <u>J</u> | | | | \sim | |

READ Button can send the whole of the calling data from MSPG-6100L to EDIT box to control data selected, also selecting data range as below list.



-Select-

- ▷ Current Time : It will sending a selected data current from the list.
- ▷ All Time Data : It will sending all data from the list.
- ▷ Select Range : It will sending selected data by user from list.

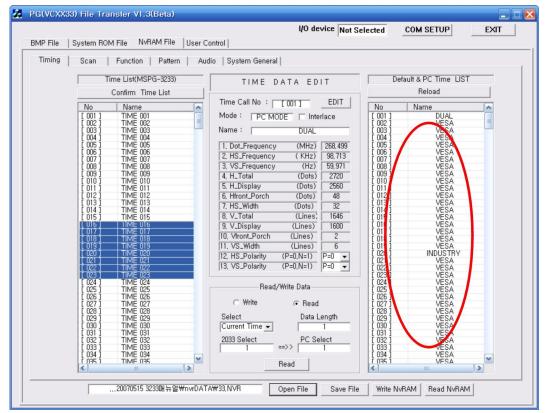
Button can returning all edited data from EDIT box to MSPG-6100L for EDIT, also select data range as below list like "Select" item

| L U24 J IIME U24 [025] TIME 025 [026] TIME 025 [026] TIME 026 [027] TIME 028 [029] TIME 029 [030] TIME 030 [031] TIME 031 [032] TIME 033 [033] TIME 033 [033] TIME 034 [035] TIME 035 [035] TIME 035] TIME 035 [035] TIME 035] TIME 035 [035] TIME 035] TI | Read | [(025) [(025) [(026) [(028) [(030) [(031) [(032) [(033) [(035)] (025) [(025) [(026) [(| VESA VESA VESA VESA VESA VESA VESA VESA | |
|--|-------------------------------|---|--|--|
| | TA₩33,NVR Open File Save File | Write NvRA | M Read NvRAM | |

| | | | I/O de | evice Not Se | lected | COM SETUP | EXIT |
|---------------|---|--|----------------|----------------|--|------------------------------|------|
| MP File Sys | tem ROM File NvRAM File U | Iser Control | | | | | |
| Timing S | can Function Pattern | Audio System Gener | al | | | | |
| Г | Time List(MSPG-3233) | TIME | DATA ED | IT | Def | ault & PC Time LIST | |
| | Confirm Time List | | | | | Reload | 1 |
| Ē | No | Time Call No : | [001] | EDIT | No | Name | |
| | 001] TIME 001 002] TIME 002 003 TIME 002 | | | erlace | [001] [002] [003] | DUAL VESA VESA | |
| | 004] TIME 004 | 1. Dot_Frequenc | y (MHz) | 268, 499 | [004] [005] [006] [007] | VESA VESA VESA VESA | |
| | 0/6] TIME 006 107] TIME 007 08] TIME 008 009] TIME 009 010] TIME 010 | 3, VS_Frequence | (Hz) (Dots) | 59,971 2720 | F 008 1 | VESA | |
| | 010] TIME 010 011] TIME 011 | 5, H_Display | (Dots) | 2560 | [009] [010] [011] | VESA VESA | |
| | 012] TIME 012 | 6, Hfront_Porch | (Dots) | 48 | [012] | VESA | |
| | 013] TIME 013 014] TIME 014 | 7, HS_Width | (Dots) | 32 | [013] [014] | VESA VESA | |
| | 015] TIME 015 | 8, V_Total | (Lines) | 1646 | [015] | VESA | |
| 1 | 016] 11ME 016 017] TIME 017 | 9, V_Display | (Lines) | 1600 | [016] | VESA VESA | |
| - | | 10, Vfront_Porch | (Lines) | 2 | [018] | VESA | |
| li i | 191 TIME 019 | 11, VS_Width | (Lines) | 6 | [019] | VESA | |
| 1 | 0 0] TIME 020 | 12, HS_Polarity | (P=0,N=1) | P=0 • | [020] | INDUSTRY | |
| | 02] TIME 021 022] TIME 022 | 13, VS_Polarity | (P=0,N=1) | P=0 • | [021] | VESA VESA | |
| li i | 023 TIME 023 | process of an end of a second se | | · · · | [023 1 | VESA | |
| ĩ | 024] TIME 024 025] TIME 025 026] TIME 025 027] TIME 027 | Pee | d/Write Data — | | [024] | VESA VESA | |

Display the Time Data information of MSPG-6100L. (Impossible to edit)

It is the Edit Box to control Time Data information from MSPG-6100L.



6.3.7 Time Data File Edit (sending/receiving)

1) Confirm Time data

To find saved Time List in MSPG-6100L, just push the Confirm Time List button, also it can update every sending/ receiving the Time Data, moreover whole NvRAM data, too.

| Timing | Scan Function Pattern | Audio System General | |
|--------|--|----------------------------------|---|
| | Time List(MSPG-3233) | TIME DATA EDIT | Default & PC Time LIST |
| < | Confirm Time List | | Reload |
| | No Name | Time Call No : [001] EDIT | No Name 🔼 |
| | L 001 1 TIME 001 | Mode : PC MODE Interlace | |
| | [001] TIME 002 [003] TIME 002 [003] TIME 004 [005] TIME 005 [006] TIME 005 [006] TIME 005 [007] TIME 006 [007] TIME 008 [008] TIME 009 | Name : DUAL | [002] VESA [] [003] VESA [] [004] VESA |
| | [003] TIME 004 [004] TIME 004 [005] TIME 005 [006] TIME 006 [007] TIME 007 | | [004] VESA |
| | [005] TIME 005 | 1, Dot_Frequency (MHz) 268,499 | [005] VESA [006 VESA |
| | [007] TIME 007 | 2, HS_Frequency (KHz) 98,713 | [007] VESA |
| | [008] TIME 008 [009] TIME 009 [010] TIME 010 | 3, VS_Frequency (Hz) 59,971 | VESA |
| | [009] TIME 009 | 4. H_Total (Dots) 2720 | [09] VESA [00] VESA |
| | [011] TIME 011 | 5, H_Display (Dots) 2560 | VESA |
| | [003] TIME 003 [010] TIME 010 [011] TIME 011 [012] TIME 012 [013] TIME 013 | 6, Hfront_Porch (Dots) 48 | [D12] VESA |
| | [013] TIME 013 [014] TIME 014 | 7, HS_Width (Dots) 32 | [013] VESA [014] VESA |
| | [013] TIME 013 [014] TIME 014 [015] TIME 015 | 8, V_Total (Lines) 1646 | 1015] VESA |
| | 11 U16 1 1 11ME U16 | 9, V_Display (Lines) 1600 | 016] VESA |
| | [017] TIME 017 [018] TIME 018 | 10, Vfront_Porch (Lines) 2 | 017] VESA 018] VESA |
| | | 11, VS_Width (Lines) 6 | UECA |
| | 1 020 1 TIME 020 | 12, HS_Polarity (P=0,N=1) P=0 - | 019 1 VESA 1 020 1 INDUSTRY |
| | | 13, VS_Polarity (P=0,N=1) P=0 - | [021] VESA |
| | [022] TIME 022 [023] TIME 023 | 115, V3_Polarity (P=0,N=1) P=0 • | 1022] VESA [023] VESA |
| | [023] TIME 023 [024] TIME 024 [025] TIME 025 [026] TIME 026 [027] TIME 027 | D 18915 D 1 | [124] VESA |
| | [025] TIME 025 | Read/Write Data | [25] VESA |
| | [026] TIME 026 | C Write @ Read | [06] VESA [07] VESA |
| | [028] TIME 027 | , nous | [02] VESA |
| | [028] TIME 028 [029] TIME 029 [030] TIME 030 | Select Data Length | [029] VESA |
| | 1 024) TIME 024 1 025) TIME 025 1 026) TIME 026 1 027) TIME 026 1 028) TIME 028 1 029) TIME 029 1 030) TIME 030 1 031) TIME 031 1 032) TIME 033 | Current Time - 1 | L 021 VESA L 0291 VESA L 030 VESA L 031 VESA |
| | [032] TIME 031 | 2033 Select PC Select | |
| | [031] TIME 031 [032] TIME 032 [033] TIME 033 | | [033] VE9A |
| | [034] TIME 034 [035] TIME 035 | × | [034] YESA SA |
| | < IIII IIII IIII IIII IIII IIIII IIIII IIII | | VESA |

2) Time Data Edit

To edit Time Data or to create new Time Data, just click the "EDIT" button or double-click Time Data of List.

Then the Time Data Edit Box is opened. After editing Time Data, if click the Apply button, it will be just save, on the other hand, if click the OK button, it will be save and then close Edit Box.

| ode : PC Mode Interlace ode : PC Mode Interlace O Dot O Time 14. Serration On of (DTV&CS)(Y/N) 14. Serration On of (DTV&CS)(Y/N) 15. Serration Pulse (HS/2=0)(HS=1) 15. Serration Pulse (HS/2=0)(HS=1) 16. Interlace with video (Y / N) 17. H_Y Resolution Display (Y / N) 98.713 3. VS_Frequency (Hz) 59.971 4. H_Total (Dot / uS) 2720 5. H_Display (Dot / uS) 2560 6. Hfront_Porch (Dot / uS) 22 7. HS_Width (Dot / uS) 32 8. V_Total (Lin / mS) 1646 16. 0.61 16.209 0. Vfront_Porch (Lin / mS) 2 1. VS_Width (Lin / mS) 6 1. Load Enable LOAD TIME | (DTV&CS)(Y/N) N=0 (HS/2=0)(HS=1) HS/2=0 (Y / N) N=0 play (Y / N) N=0 N=0 play (Y / N) N=0 N=0 Ny (Y / N) N=0 N=0 N=0 (N=0 N=0 (MV) N=0 (MV) N=0 (MV) N=0 (MV) (mV) 700 OUAL (Y / N) (Y / N) N=0 (Y / N) N=0 (Y / N) N=0 | | N=1) P=0 |
|---|---|----------------|----------------|
| I. Dot_Frequency [MHz] 268.499 I. Dot_Frequency [MHz] 268.499 I. Dot_Frequency [KHz] 98.713 B. VS_Frequency [KHz] 98.713 B. VS_Frequency [KHz] 59.971 I. H_Total [Dot / uS] 2720 I. Dot / uS] 2720 10.13 S. H_Display [Dot / uS] 2560 G. Hfront_Porch [Dot / uS] 2560 B. V_Total [Lin / mS] 1646 I. S. 2002 1.119 B. V_Total [Lin / mS] I. Sourd Force [MV] 24. Model Name: DU 0. Vfront_Porch [Lin / mS] I. Load Enable LOAD TIME ystem Time: [501] VESA 640x 350(p) * | (HS/2=0)(HS=1) HS/2=0 (HS/2=0)(HS=1) HS/2=0 (Particle of the second s | Mada | N=1) P=0 |
| 1. Dot_Frequency (MHz) 2668.493 1. Dot_Frequency (MHz) 2668.493 2. HS_Frequency (KHz) 98.713 3. VS_Frequency (Hz) 59.971 4. H_Total (Dot / uS) 2720 5. H_Display (Dot / uS) 2720 6. Hfront_Porch (Dot / uS) 2560 7. HS_Width (Dot / uS) 32 8. V_Total (Lin / mS) 1646 16.6.675 3. V_Display (Lin / mS) 16.00 16.209 0. Vfront_Porch (Lin / mS) 6 0.02 0.02 1. VS_Width (Lin / mS) 6 0.04 Enable LOAD TIME ystem Time : [501] VESA 640x 350(p) | (Y / N) N=0 pplay (Y / N) N=0 py (Y / N) N=0 psy (Y / N) N=0 (mV) 700 DUAL psy (Y / N) N=0 (Y / N) N=0 (Y / N) | MUUC | r/N) N=0 |
| 1. Dot_Frequency [MHz] [MHz] [MHz] 2. HS_Frequency [KHz] 98.713 3. VS_Frequency [Hz] 59.971 4. H_Total [Dot / uS] 2720 5. H_Display [Dot / uS] 2560 5. H_Display [Dot / uS] 2560 6. Hfront_Porch [Dot / uS] 2560 7. HS_Width [Dot / uS] 32 8. V_Total [Lin / mS] 1646 16.675 3. V_Display [Lin / mS] 1600 16.209 0. Vfront_Porch [Lin / mS] 6 0. Vfront_Porch [Lin / mS] 6 1. VS_Width [Lin / mS] 6 0. uotront_Porch Lin / mS] 6 1. vS_Width [Lin / mS] 6 0.021 .Vfront_Porch [Lin / mS] 2. Odd .Vfront_Porch [Lin / mS] 3. V_Display [Lin / mS] 6 0.021 .Vfront_Porch [Lin / mS] 2. Odd .Vfront_Porch [Lin / mS] 3. V_Display [Load Enable LOAD TIME </th <th>Image: rest of the second se</th> <th></th> <th>IS=1) HS/2=0</th> | Image: rest of the second se | | IS=1) HS/2=0 |
| 2. HS_Frequency (KHz) 98.713 3. VS_Frequency (Hz) 59.971 4. H_Total (Dot / uS) 2720 10.13 5. H_Display (Dot / uS) 2560 9.534 6. Hfront_Porch (Dot / uS) 2560 9.534 7. HS_Width (Dot / uS) 32 0.119 8. V_Total (Lin / mS) 1646 16.675 9. V_Display (Lin / mS) 1600 16.209 0. Vfront_Porch (Lin / mS) 6 0.061 ystem Default Time Load Enable LOAD TIME 27. VS Out Terminal <= CS | Import (Import N=0 ise (Front,EA) 0 ise (Back,EA) 0 per 1 per 0 (mV) 700 DUAL 0 (Y / N) N=0 (Y / N) N=0 (Y / N) N=0 | quency (MHz) | '/N) N=0 |
| 18. Wo_Frequency (Hz) 59.971 18. Model Name Display (Y / N) 19. Number Of EQP Pulse (Front,EA) 20. Number Of EQP Pulse (Back,EA) 21. Audio Pattern Number 22. Video Pulse 22. Video Pattern Number 22. Video Pattern Number 23. V_Total (Lin / mS) 1646 16.00 16.209 23. Video Level (mV) 24. Model Name: DU 0. Vfront_Porch (Lin / mS) 6 0.061 ystem Default Time LOAD TIME 27. VS Out Terminal <= CS | ise (Front,EA) 0 ise (Back,EA) 0 per 1 per 0 (mV) 700 DUAL 0 (Y / N) N=0 (Y / N) N=0 | . , . , | '/N) N=0 |
| 10.113 2720 10.13 11.113 2720 10.13 11.113 2720 10.13 11.113 2720 10.13 11.113 2720 10.13 11.113 2720 10.13 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 2560 9.534 11.113 1646 16.675 11.113 1646 16.675 11.113 1600 16.209 11.113 1600 16.209 11.114 11.111 11.111 11.114 11.111 11.111 11.114 11.1111 11.1111 11.114 11.1111 11.1111 11.114 11.1111 11.1111 11.114 11.1111 11.11111 11.114 | ise (Back,EA) 0 per 1 per 0 (mV) 700 DUAL 0 (Y / N) N=0 (Y / N) N=0 (Y / N) N=0 | | / N) N=0 |
| 1.1 Load Exact, EA 25. H_Display (Dot / uS) 25. H_Display (Dot / uS) 25. H_Fort Porch (Dot / uS) 48 0.179 7. HS_Width (Dot / uS) 32 0.119 3. V_Total (Lin / mS) 1646 16.675 9. V_Display (Lin / mS) 1600 16.209 0. Vfront_Porch (Lin / mS) 2 0.02 1. VS_Width (Lin / mS) 6 0.061 ystem Default Time 25. Sync on Green Load Enable LOAD TIME ystem Time : [501] VESA 640x 350(p) 9 | (contention) (contention) (mV) 700 (mV) 700 (mV) 700 (mV) 700 (mV) N=0 (Y / N) N=0 (Y / N) N=0 | , , , | t,EA) O |
| 21. Audio Pattern Number 22. Video Pattern Number 23. V_Total (Lin / mS) 1646 16.675 3. V_Total (Lin / mS) 1646 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.203 0. Vfront_Porch (Lin / mS) 2 0.02 1. VS_Width (Lin / mS) 6 0.061 ystem Default Time Load Enable LOAD TIME ystem Time : [501] VESA 640x 350(p) | (mV) 70 (mV) 70 DUAL (Y / N) (Y / N) N=0 (Y / N) N=0 (Y / N) N=0 | | ,EA) 0 |
| 7. HS_Width [Dot / uS] 32 0.119 3. V_Total [Lin / mS] 1646 16.675 3. V_Display [Lin / mS] 1600 16.209 0. Vfront_Porch [Lin / mS] 2 0.02 1. VS_Width [Lin / mS] 6 0.061 ystem Default Time [COAD TIME] 26. HS Out Terminal <= CS | (mV) 700 DUAL (Y / N) N=0 CS (Y / N) N=0 (Y / N) N=0 | | 1 |
| 3. V_Total (Lin / mS) 1646 16.675 3. V_Display (Lin / mS) 1600 16.209 0. Vfront_Porch (Lin / mS) 2 0.02 1. VS_Width (Lin / mS) 6 0.061 ystem Default Time 27. VS out Terminal <= CS | (Y / N) N=0 CS (Y / N) N=0 (Y / N) N=0 | | 0 |
| 24. Model Name: DU 0. Vfront_Porch [Lin / mS] 1600 16.209 0. Vfront_Porch [Lin / mS] 2 0.02 1. VS_Width [Lin / mS] 6 0.061 ystem Default Time [Y / N] Load Enable LOAD TIME ystem Time : [501] VESA 640× 350(p) [Songer] | [Y / N] N=0 CS [Y / N] N=0 [Y / N] N=0 | , | nV) 700 |
| 0. Vfront_Porch (Lin / mS) 2 0.02 1. VS_Width (Lin / mS) 6 0.061 ystem Default Time 26. HS Out Terminal <= CS | CS (Y / N) N=0 (Y / N) N=0 | | DUAL |
| 1. VS_Width (Lin / mS) 6 0.061 25. Sync on Green (Y / N) ystem Default Time 26. HS Out Terminal <= CS | CS (Y / N) N=0 (Y / N) N=0 | , , | |
| ystem Default Time Load Enable LOAD TIME ystem Time : [501] VESA 640× 350(p) | (Y/N) N=0 | | N) N=0 |
| Load Enable LOAD TIME 27. VS Out Terminal Off (Y / N) ystem Time : [501] VESA 640× 350(p) 29. DPMS_HSync (On=0,Off=1,H_Off=2) | (11.) | ault Time | / N) N=0 |
| 28. DPMS_Video [0n=0,0ff=1] ystem Time : [501] VESA 640× 350[p] 29. DPMS_HSync [0n=0,0ff=1,H_Off=2] | (On=0,Off=1) On=0 | | (N) N=0 |
| | | LOAI | i=1) On=0 |
| | n=0,Off=1,H_Off=2] On=0 | ne: [501] VESA | _Off=2] On=0 |
| 30. DPMS_VSync (On=0,Off=1,H_Off=2) | n=0,Off=1,H_Off=2) On=0 | ir i | _Off=2) On=0 |
| 31. DVI Out (D&A=0,Digital=1,Analog=2) |)igital=1,Analog=2) D&&A= | \sim | slog=2) D&&A=0 |

3) Call Default Time Data

Calling No.501~958 as fixed Time Data to edit/copy among $1 \sim 500$, it needs to check the menu of Load Enable as below.

| System Default Time | 20. It's Out Terminal CE CS [17 / N] N=0 |
|---------------------------------------|--|
| Load Enable | 28. DPMS_Video (On=0,Off=1) On=0 |
| System Time : [501] VESA 640× 350(p) | 29. DPMS_HSync [On=0,Off=1,H_Off=2] On=0 |
| | |
| , , , , , , , , , , , , , , , , , , , | 30. DPMS_VSync (On=0,Off=1,H_Off=2) On=0 |
| | 30. DPMS_VSync (On=0,Off=1,H_Off=2) On=0 31. DVI Out (D&A=0,Digital=1,Analog=2) D&&A=0 |
| Apply OK Exit | |

Selecting Time Data, and click LOAD TIME Button, which will show Time Data information, after that click Apply button or OK Button to save.

4) Time Data sending/receiving

i) Sending/Receiving through Menu Button

When sending Time Data, just click the Write Button to change to sending Mode. When receiving Time Data, just click the Read Button to change to receiving Mode.



The quantity of sending/receiving Data send/received as "Current Time" as a data or "All Time Data" as 500 data or "Select Range" as pointed data up to the quantity of Data Length.

ii) Sending/Receiving through the List Selection

It can sending/ receiving the Time Data simply using Mouse controlling.

First, select a list or more from Source side, and click right button of the Mouse on the selected list, the cursor will be changed as like \Rightarrow , \triangleleft .

Click a left button of the Mouse on the recommended list of the Destination, and pointed data will send/receive each side.

If you select data more than one, just use the Shift key.

5) Time Data Copy

It can copy the data in the same list from only PC.

Select the Time Data, and click right button of the Mouse to make cursor like *4*, after that click left button of the Mouse to copy on the pointed list.

6.3.8 Scan Data File Edit sending/receiving

1) Scan Data Edit

After clicking left button of the Mouse on the selected list, it will be show the present data. It is able to modify data from present group to edit data of display window.

| Timing | Scan | Function Patter | n Audio S | ystem Gene | ral | | | | | | | |
|--------|-------------------|--|--------------|------------|--------|---------|-----------|-----------|------|---------|---|--|
| | SCAN L | JIST | | | | S | can Gro | up [01] | | 1 | | |
| | No | Name | | | | - | | | | | | |
| | 001 002 | Scan Group 001 Scan Group 002 | | STEP | | Pattern | Time | STEP | | Pattern | | |
| | 003 | Scan Group 003 Scan Group 004 Scan Group 005 | | Step01 | 719 | 200 | 5 | Step13 | 719 | 213 | 5 | |
| | 005 | Scan Group 005 | | Step02 | 719 | 201 | 5 | Step14 | 719 | 214 | 5 | |
| | 007 | Scan Group 006 Scan Group 007 Scan Group 008 | | Step03 | 719 | 203 | 5 | Step 15 | 719 | 215 | 5 | |
| | 009 | Scan Group 008 Scan Group 009 | | Step04 | 719 | 204 | 5 | Step16 | 719 | 216 | 5 | |
| | 010 | Scan Group 009 Scan Group 010 Scan Group 011 | - | Step05 | 719 | 205 | 5 | Step17 | 719 | 217 | 5 | |
| | 012 | Scan Group 012 Scan Group 013 Scan Group 014 | | Step06 | 719 | 206 | 5 | Step18 | 719 | 218 | 5 | |
| | 014 | Scan Group 014 | | Step07 | 719 | 207 | 5 | Step 19 | 719 | 219 | 5 | |
| | 016 | Scan Group 015 Scan Group 016 Scan Group 017 | | Step08 | 719 | 208 | 5 | Step20 | 719 | 220 | 5 | |
| | 017 018 | Scan Group 017 Scan Group 018 | | Step09 | 719 | 209 | 5 | Step21 | 719 | 221 | 5 | |
| | 019 | Scan Group 018 Scan Group 019 Scan Group 020 | | Step10 | 719 | 210 | 5 | Step22 | 719 | 222 | 5 | |
| | 021 | Scan Group 021 Scan Group 022 Scan Group 023 | | Step11 | 719 | 211 | 5 | Step23 | 719 | 223 | 5 | |
| | 022 023 024 | Scan Group 023 | | Step12 | 719 | 212 | 5 | Step24 | 719 | 224 | 5 | |
| | 024 025 026 | Scan Group 024 Scan Group 025 Scan Group 025 Scan Group 026 Scan Group 027 Scan Group 028 | | | Data S | elect- | | | | | | |
| | 027 | Scan Group 026 Scan Group 027 | | | | Data: | Current | tScan | • | | | |
| | 028 | Scan Group 028 Scan Group 029 | | | | | Scan 0 | | - | | | |
| | 030 | Scan Group 029 Scan Group 030 Scan Group 031 | | | | Size : | - | 1 | EA | | | |
| | 031 032 033 | Scan Group 032 Scan Group 033 | | | | | , | | | | | |
| | 033 | Scan Group 033 Scan Group 034 | ~ | | | D | ata Write | Data | Read | | | |
| | < | | | | | | | | | | | |

2) Scan Data sending/receiving

| 125 Scan Group 125 126 Scan Group 026 027 Scan Group 027 128 Scan Group 128 029 Scan Group 129 030 Scan Group 129 031 Scan Group 129 033 Scan Group 131 032 Scan Group 132 033 Scan Group 132 034 Scan Group 134 | Data Select Data: Current Scan First: Scan 001 Size : 1 EA Data Write Data Read |
|--|---|
| 20070515 3233매뉴얼₩nvrDATA₩33,N | VR Open File Save File Write NvRAM Read NvRAM |

The Scan Data could be send/receive "Current Scan" as one data or "All Scan Data" as all 99 data or "Select Range" as selected quantity. "Data Write" is for sending data. "Data Read" is for the receiving data.

3) Scan Data Copy

The Scan Data can copy each other in the list.

Select one or more Scan Data and then click right button of the Mouse to make cursor like *****CP, after that click left button of the Mouse to copy on the pointed list.

6.3.9 Function Data File Edit Sending/Receiving

1) Function Data Edit

After clicking left button of the Mouse on the selected list, it will be show the present data. It is able to modify data from present group to edit data of display window.

| vlPFile System ROM File VvRAM File User Control Timing Scan Function Pattern Audio | ystem General | |
|---|---|--|
| Function | Function List | |
| No Name | Function List | |
| 041 Not Use 042 Not Use | Group Name : | |
| 044 Not Use | Function Model Pattern Function Model Pattern | |
| 045 Not Use 046 Not Use | Fnct ,01 0 Fnct ,17 0 0 | |
| 047 Not Use 048 Not Use | Fnct .02 0 0 Fnct .18 0 0 | |
| 049 Not Use 050 Not Use | Fnct .03 0 0 Fnct .19 0 0 | |
| | Fnct .04 0 0 Fnct .20 0 0 | |
| 051 Not Use 052 Not Use 053 Not Use 054 Not Use 055 Not Use 056 Not Use | Fnct ,05 0 0 Fnct ,21 0 0 | |
| 055 Not Use 056 Not Use | Fnct .06 0 0 Fnct .22 0 0 | |
| 057 Not Use | Fnct .07 0 0 Fnct .23 0 0 | |
| 057 Not Use 058 Not Use 059 Not Use 060 Not Use | Fnct .08 0 0 Fnct .24 0 0 | |
| 060 Not Use 061 Not Use | Fnct .09 0 0 Fnct .25 0 0 | |
| 061 Not Use 062 Not Use 063 Not Use | Fnct ,10 0 0 Fnct ,26 0 0 | |
| 064 Not Use 065 Not Use | Fnct ,11 0 0 Fnct ,27 0 0 | |
| | Fnct ,12 0 0 Fnct ,28 0 0 | |
| Data Select | Fnct .13 0 0 Fnct .29 0 0 | |
| Data: Current Function 💌 | Fnct ,14 0 0 Fnct ,30 0 0 | |
| First: Function 001 | Fnct ,15 0 0 Fnct ,31 0 0 | |
| Size : 1 EA Data Write Data Read | Fnct.16 0 0 Fnct.32 0 0 | |
| Data mile Data neau | | |

2) Function Data Sending/Receiving

| Data Select Data: Current Function ▼ First: Function 001 ▼ Size : 1 EA Data Write Data Read | Fnct .13 0 0 Fnct .29 0 0 Fnct .14 0 0 Fnct .30 0 0 Fnct .15 0 0 Fnct .31 0 0 Fnct .16 0 0 Fnct .32 0 0 |
|---|---|
| 20070515 3233매뉴얼₩nvrDATA₩33,NVF | Open File Save File Write NvRAM Read NvRAM |

The Scan Data could be send/receive "Current Scan" as one data or "All Scan Data" as all 99 data or "Select Range" as selected quantity. "Data Write" is for sending data. "Data Read" is for the receiving data.

3) Function Data Copy

The Function Data Copy can copy each other in the list.

Select one or more Scan Data and then click right button of the Mouse to make cursor like , after that click left button of the Mouse to copy on the pointed list.

6.3.10 Audio Data File Edit Sending/Receiving

1) Audio Data Edit

After selecting Audio Number in the "Audio Call No" Combo Box, it will be show each data and be possible to edit.

After Editing, if you want to modify Audio Number selection, the editing data is saved first and next data is opened.

| Timing Scan Function Pattern Audio System Genern Audio Call No : Audio Option Image: Audio Option Image: Audio Option Image: Audio Option 1. AUDIO FORMAT (1 - 9) Image: Audio Option Image: Audio Option Image: Audio Option 2. Left Volume (0 - 2000mV) 500 Image: Audio Option Image: Audio Option 3. Right Volume (0 - 2000mV) 500 Image: Audio Option Image: Audio Option 4. Left Frequency (20 - 20000Hz) 500 Image: Fourier Content option Image: Audio Option 5. Right Frequency (20 - 20000Hz) 1000 Image: Fourier Content option Image: Fourier Content option Data Step Time (0 - 2000mS) 10 Image: Fourier Content option Data Select Image: Fourier Content option Image: Fourier Content option Image: Fourier Content option Data Select Image: Fourier Content option Image: Fourier Content option Image: Fourier Content option Data Select Image: Fourier Content option Image: Fourier Content option Image: Fourier Content option Data Write Data | Audio Format Discription(1-9) 1. Static 2. Winker 3. Alternate Winker 4. Random 5. LR Different Random 6. Frequency Up 7. Frequency Down 8. Continue Up 9. Continue Down |
|---|---|
|---|---|

2) Audio Data Sending/Receiving

If change the Audio Number after editing, editing data will be preferentially saved, and then next data will be opened.

The Scan Data could be send/receive "Current Scan" as one data or "All Scan Data" as all 20 data or "Select Range" as selected quantity. "Data Write" is for sending data. "Data Read" is for the receiving data.

| Data Select Data: Current No First: Audio No 1 Size : 1 EA | |
|---|--|
| Data WriteData Read | |
| | |
| 20070515 3233매뉴얼₩nvrDATA₩33,NVR | Open File Save File Write NvRAM Read NvRAM |

6.3.11 System General

It is possible to call the System setting values using READ Button from MSPG-6100L to PC, as well as edit each setting value, and then finally resend edited data to MSPG-6100L using WRITE Button.

| PG(VCXX33) File Transfer V1.3(Beta) | | _ [|
|--|---|-----|
| BMP File System BOM File NvBAM File User Control | 1/0 device UART COM SETUP EXIT | |
| | | _ |
| Timing Scan Function Pattern Audio System Gene | INFORMATION | |
| Current Running Mode | System Option Setting | |
| Time Number : 31 Pattern Number : 25 TV No : 21 TV Pattern No: 16 AUDIO No: 2 TIME MODE : PCMODE • DTV No : 331 SCAN No : 1 HDMI No : 376 Function No : 159 SCART No : 1 Func Group No : 1 | 1. Buzzer On/Off (On=0, Off=1) On = 0 • 2. Sync Output Level (3000-5500mV) 4800 3. RS-232c Baud Rate Set 9600 BPS • 4. Data Bit (8bit=0, 7bit=1) 8Bit = 0 • 5. Stop Bit (1bit=0, 2bit=1) 1Bit = 0 • 6. Parity (Non=0, Event=1, Odd=2) NON = 0 • 7. Data ((0-100%)=1, (H, V)=0) (H, V) = 0 • 8. Data Size ((0-100%)=1, (H, V)=0) (H, V) = 0 • 9. EDID Block Read (0-4) 2 • | |
| READ | WRITE | |
| | | |
| 20070515 3233매뉴얼₩nvrDATA₩33,NVR | Open File Save File Write NvRAM Read NvRAM | _ |

6.3.12 Pattern File Edit Sending/Receiving

1) Pattern Edit Method

Click the picture part of below to edit Pattern. You can go Edit Mode.

| PG(VCXX33) File Tra | | 1/0 device Not | Selected COM SETUP | EXIT |
|---|--|--|---|------|
| MP File System RO | M File NvRAM File User Co | ontrol | | |
| Timing Scan | Function Pattern Auc | lio System General | | |
| Pa | ttern List(MSPG-2033) | Pattern Edit (Click the below pattern) | Default & PC Pattern LIST | |
| No 1 U0 1 1 002 1 1 003 1 1 004 1 1 005 1 1 006 1 1 006 1 1 007 1 1 008 1 1 008 1 1 009 1 1 001 1 1 001 1 1 000 1 1 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Confirm List Confirm List Pattern 002 Pattern 003 Pattern 004 Pattern 005 Pattern 006 Pattern 006 Pattern 006 Pattern 008 Pattern 008 Pattern 018 Pattern 011 Pattern 012 Pattern 012 Pattern 013 Pa | | No Name [001] Pattern 001 [002] Pattern 002 [003] Pattern 003 [004] Pattern 004 [005] Pattern 005 [006] Pattern 006 [007] Pattern 006 [009] Pattern 008 [009] Pattern 008 [001] Pattern 009 [011] Pattern 011 [012] Pattern 012 [013] Pattern 013 [014] Pattern 014 | |

2) Pattern Call Method

You push Load Pattern Button.

You can call User Pattern(No.1~500) and Default Pattern(No.501~999)

| attern Edit | | | |
|------------------------------------|---------------------------|--------------------------|----------------|
| Load Base Pattern 522 [001 - 9 | 99] 800×600 [Preview] | Value | |
| 1.H_Line Divide/Space (0-64) | 0 | | |
| 2.V_Line Divide/Space (0-64) | 0 | | |
| 3.Cross_Hatch/Dot/Line (0-18) | 0 | | |
| 4.H_Width (0-64) | 0 | | |
| 5.V_Width (0-64) | 0 | | |
| 6.Dot Pattern (On=1,Off=0) | 0 | | |
| 7.Gray step/Line(ea) (0-255) | 0 | | |
| 8.Side Line Box=1/Char. On=2 (0-2) | 0 | | |
| 9.Circle Ratio (4:3=0,16:9=1) | 0 | | |
| 10.Circle Width (0 - V_Line/2) | 0 | 669+669 Ht: 87, 8798Hz | V2 : 68, 31 79 |
| 11.Circle (0-14) | 0 | | |
| 12.Circle_1 (r=0-100% of V_Line) | 0 | 27.Color Pattern | (0-33) 2 |
| 13.Circle_2 (r=0-100% of V_Line) | 0 | 28.Diamond V_Size | (0-100%) 0 |
| 14.Center Marker/Slash/Box (0-15) | 0 | 29.H_Line_2 | (0-100%) 0 |
| 15.Character Pattern Style (0-18) | 0 | 30.V_Line_2 | (0-100%) 0 |
| 16.Character Font Size (0-7) | 0 | 31.Box (Ful | l=1,Non=0) 0 |
| 17.Character Font (28-127) | 0 | 32.Character Box H_Start | (0-100%) 0 |
| 18.Character Font H_Space (0-100) | 0 | 33.Character Box V_Start | (0-100%) 0 |
| 19.Character Font V_Space (0-100) | 0 | 34.Character Box H_Size | (0-100%) 0 |
| 20.Color Box H_Start (0-100%) | 0 | 35.Character Box V_Size | (0-100%) 0 |
| 21.Color Box V_Start (0-100%) | 0 | 36.White_Gray High Level | (0-100%) 0 |
| 22.Color Box R/Low_P (0-100%) | 0 | 37.White_Gray Low Level | (0-100%) 0 |
| 23.Color Box G(Y)_Level (0-100%) | 0 | 38.Divide(H <u>H</u> L) | (0-255) 12 |
| 24.Color Box B/Dir (0-100%) | 0 | 39.Divide(V <u>H</u> R) | (0-255) 4 |
| 25.Color_Box_H_Size (0-100%) | 0 | MORE OPTIONS SA | VE EXIT |
| 26.Color_Box_V_Size (0-100%) | 0 | | |

3) Pattern Option Edit

You can edit option(No.1~39) through option Box, when pattern is calling.

After modify you go next step then the pattern will be shown as changed option value.

If you want to set addition option, click More Option then you can edit addition option(No.40~65).

| 25.Color_Box_H_Size | (0-100%) | 0 | | ONE | EVIT |
|---------------------|----------|---|--------------|--------------|------|
| 26.Color_Box_V_Size | (0-100%) | 0 | MORE OPTIONS | <u>S</u> AVE | EXIT |

4) Save Method of Editing Pattern

If you want to save editing Pattern, push the Save Button.

| 25.Color_Box_H_Size | (0-100%) | 0 | | | |
|---------------------|----------|---|--------------|------|------|
| 26.Color_Box_V_Size | (0-100%) | 0 | MORE OPTIONS | SAVE | EXIT |

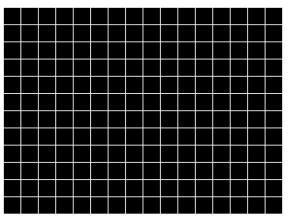
5) Pattern Edit End

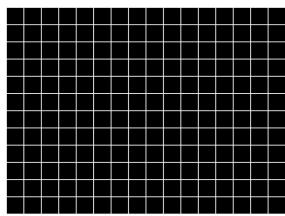
If you click EXIT Button of right lower, you can go former step. Then you should push Save Button.

If you push Preview Button, you can preview about edited Pattern by user. (Size : 800*600)

6) Pattern Compilation Parameter

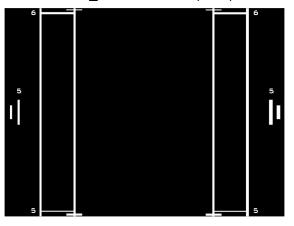




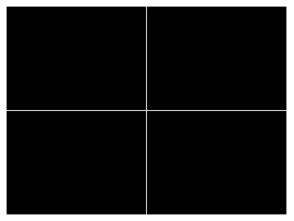


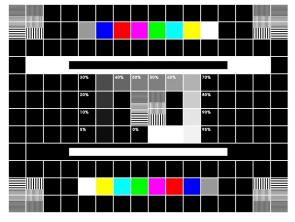
3. Cross_Hatch/Dot/Line(0-24) : 4

3. Cross_Hatch/Dot/Line(0-24): 3



3. Cross_Hatch/Dot/Line(0-24): 6

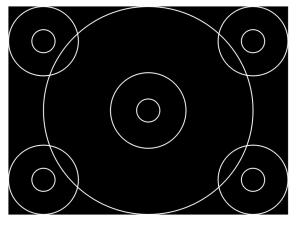




- 3. Cross_Hatch/Dot/Line(0-24): 8
- 3. Cross_Hatch/Dot/Line(0-24):10



3. Cross_Hatch/Dot/Line(0-24) : 11



3. Cross_Hatch/Dot/Line(0-24): 15

| 0+00 0+01 0+02 0+00 0+04 0+06 0+06 0+07 0+08 0+09 0+00 0+00 0+00 0+00 0+00 0+00 |
|--|
| 0x00 0x10 0x10 0x10 0x10 0x10 0x1 0x10 0x |
| 0+00 0+01 0+02 0+00 0+04 0+06 0+06 0+07 0+08 0+09 0+00 0+00 0+00 0+00 0+00 0+00 |
| 0+00 0+01 0+02 0+00 0+04 0+06 0+06 0+07 0+08 0+09 0+00 0+00 0+00 0+00 0+00 0+00 |
| 0+00 0+01 0+02 0+00 0+04 0+06 0+06 0+07 0+08 0+09 0+00 0+00 0+00 0+00 0+00 0+00 |
| 0x00 0x10 0x10 0x10 0x10 0x10 0x1 0x10 0x |
| 0xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx |
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| 0-0-00 over (over |
| to all o define the set of the set of a set of a set of a set of a set of the set of the set of a set |
| 0x40 0x11 0x11 0x11 0x11 0x11 0x11 0x11 |
| 0 1150 1150 1150 1150 1150 1150 1150 11 |
| 0x60 0x11 0x11 0x11 0x11 0x11 0x11 0x11 |
| |
| |
| 30 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |
| 00 11×0 11×0 11×0 11×0 11×0 11×0 11×0 1 |
| 0 11×0 11×0 11×0 11×0 11×0 11×0 11×0 11 |

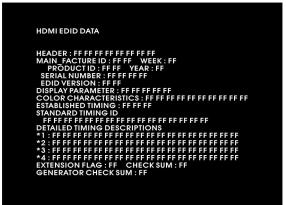
3. Cross_Hatch/Dot/Line(0-24):16

| HUN | /II ED | ים סו | AIA | | | | | | | | | | | | | |
|------|--------|-------|-------|------|------|-------|------|------|------|------|------|-------|------|------|-------|------|
| | | | | | | | | | | | | | | | | |
| | 0×00 | 0×01 | 0×02 | 0×03 | 0×04 | 0×05 | 0×06 | 0×07 | 0×08 | 0×09 | 0×0a | 0×0b | 0×0c | 0×0d | 0×0e | 0×0f |
| 0×00 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×10 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×20 | 0×11 | 0×11 | 11×0 | 0×11 | 0×11 | 11×0 | 0×11 | 0×11 | 11×0 | 0×11 | 11×0 | 0×11 | 11×0 | 11×0 | 0×11 | 0×ff |
| 0×30 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×40 | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×50 | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×11 | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×60 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×70 | 0×ff | 11×0 | 0×ff | 0×11 | 0×11 | 0×ff | 0×ff | 11×0 | 0×11 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×80 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×90 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×a0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×11 | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×60 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×c0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 11×0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×d0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×e0 | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×f f | 0×ff |
| avea | 0xff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 11×0 | 0×11 | 0×ff |

3. Cross_Hatch/Dot/Line(0-24): 17

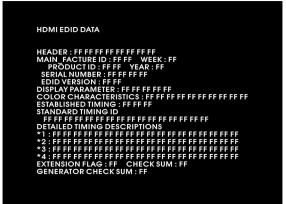
| HDM | | | ATA | | | | | | | | | | | | | |
|--------|------|-------|-------|------|------|------|------|------|------|-------|-------|-------|------|-------|-------|------|
| | | ים שו | AIA | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 10 | 0×00 | 0×01 | 0×02 | 0×03 | 0×04 | 0×05 | 0×06 | 0×07 | 0×08 | 0×09 | 0×0a | 0×0b | 0×0c | 0×0d | 0×0e | 0×0f |
| 0×00 0 | Dxff | 0×ff | 0×ff | 0xff | 0×ff | 0xff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×10 0 |)×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×20 0 | | | | | | | | | | | | | | | | |
| 0×30 0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×40 0 | | | | | | | | | | | | | | | | |
| 0×50 0 | 11×0 | 0×ff | 0×11 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×11 | 0×11 | 0×ff | 0×11 | 0×11 | 0×11 | 0×ff |
| 0×60 0 |)×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×70 0 | 11×0 | 11×0 | 11×0 | 0×ff | 11×0 | 0×ff | 0×ff | 11×0 | 0×11 | 0×11 | 0×ff | 0×ff | 0×11 | 11×0 | 0×11 | 0×ff |
| 0×80 0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×90 0 | DXff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 11×0 | 0×ff |
| 0×a0 0 | 11×0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×11 | 0×ff | 0×11 | 0×ff | 0×ff | 0×11 | 0×ff | 0×f f | 0×ff |
| 0×60 0 | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×f f | 0×ff | 0×ff | 0×f f | 0×ff | 0×ff |
| 0×c0 0 | 11×C | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×11 | 0×11 | 0×t1 | 0×t1 | 0×ff | 0×11 | 0×ff | 11×0 | 0×ff |
| 0×d0 0 | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×ff | 0×f f | 0×ff |
| 0×e0 0 |)×ff | 0×ff | 0×f f | 0×ff | 0×f f | 0×f f | 0×ff | 0×ff | 0×ff | 0×ff |
| 0×10 0 | 11×C | 11×0 | 11×0 | 0×11 | 0×11 | 0×11 | 0×11 | 11×0 | 0×11 | 0×11 | 0×11 | 0×11 | 0×11 | 0×11 | 0×11 | 0×ff |

3. Cross_Hatch/Dot/Line(0-24): 18



| HDMI EDID DATA | |
|--|--|
| HEADER : FF FF FF FF FF FF FF FF MAIN FACTURE ID : FF FF WEEK : FF PRODUCT ID : FF FF VEAR : FF SERIAL NUMBER : FF FF FF FF EDID VERSION : FF FF FF FF DISPLAY PARAMETER : FF FF FF FF FF | |
| COLOR CHARACTERISTICS : FF FF ESTABLISHED TIMING : FF FF FF STANDARD TIMING ID FF FF | |
| DETAILED TIMING DESCRIPTIONS *1 : FF F | |
| *4 : FF F | |

3. Cross_Hatch/Dot/Line(0-24): 20



3. Cross_Hatch/Dot/Line(0-24):21

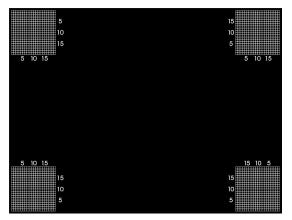


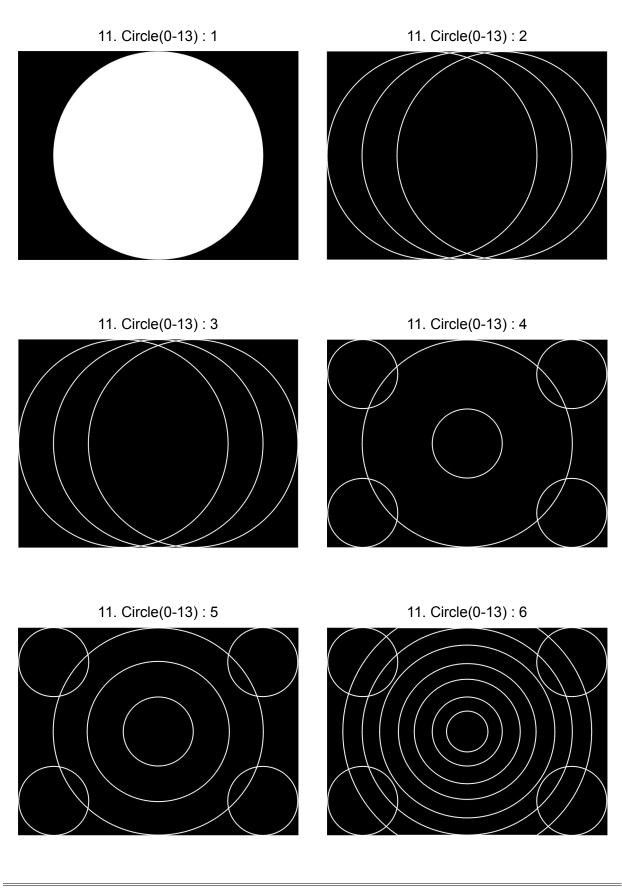
3. Cross_Hatch/Dot/Line(0-24) : 22



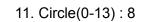
3. Cross_Hatch/Dot/Line(0-24):23

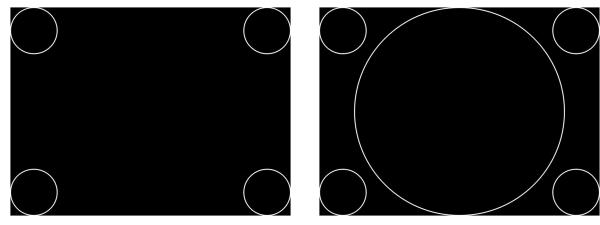
| NALOG EDID-DATA | |
|--|----|
| EADER : 00 00 00 00 00 00 00 00 | |
| D Manufacturer Name : @@@ | |
| roduct ID Code : 00 00 | |
| ast 5 Digits of serial Number : 00 00 00 00 | |
| /eek : 00 Year : 1990 | |
| DID version : 00 EDID Revision : 00 | |
| nput Mode : Analog | |
| ignal Level : 7.000,0.300 | |
| Ignal Level : Nonstanard | |
| eparate Sync : Nonsupport | |
| composite Sync : Nonsupport | |
| ync, On Green : Nonsupport | |
| sync plus : | |
| Aaximum Horizontal Image Size : 000cm | |
| Aaximum Vertical Image Size : 000cm | |
| isplay Gamma : 1.00 | |
| eature support Mode : Monocehrome | |
| hosphor or Filter Chromaticity | |
| ed x : 0.000 Green x : 0.000 Blue x : 0.000 White x : 0.000 | |
| ed y : 0.000 Green y : 0.000 Blue y : 0.000 White y : 0.000 | |
| stabilshed Timing I | |
| stabilshed Timing I | |
| stabilshed Timing II | |
| stabilshed Timing II | |
| stabilshed Timing III | |
| stabilshed Timing III | |
| Nanufacturer & Timing | |
| ot Clock : 000.00MHz | |
| DISP : 0000, H-Blank : 0000, HFP : 0000, HSW : 0000, HB : 00 | |
| DISP : 0000, V-Blank : 0000, VFP : 0000, VSW : 0000, VB : 00 | 00 |
| Image Size : 0000mm, V Image Size : 0000mm | |
| Ionitor Name : | |
| Nonitor Check sum : 00 GENERATOR CHECK SUM : 00 | |



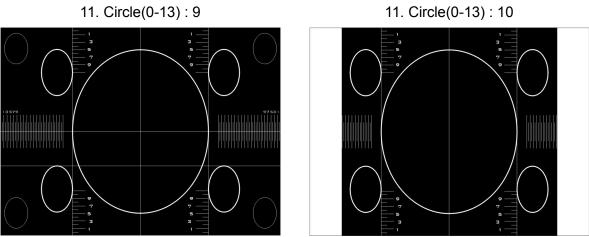


11. Circle(0-13): 7

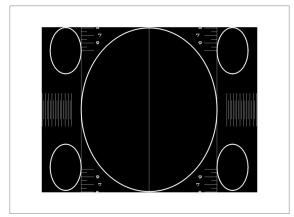


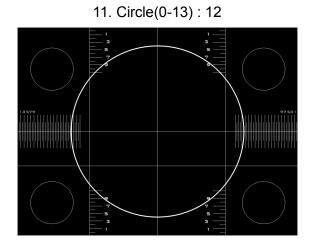


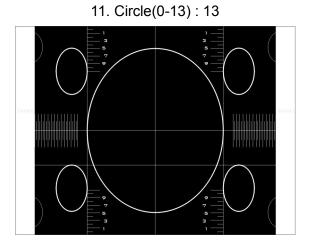
11. Circle(0-13): 9



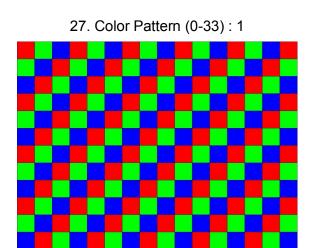
11. Circle(0-13) : 11



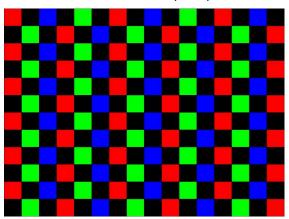




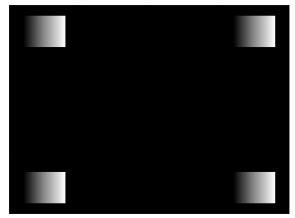




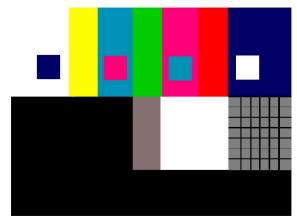
27. Color Pattern (0-33) : 2



27. Color Pattern (0-33) : 24



27. Color Pattern (0-33) : 25



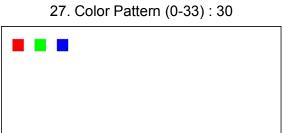
5

10

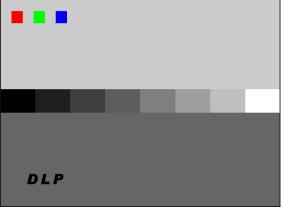
15

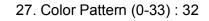
27. Color Pattern (0-33) : 26

10



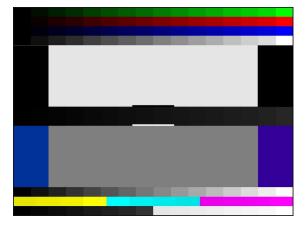


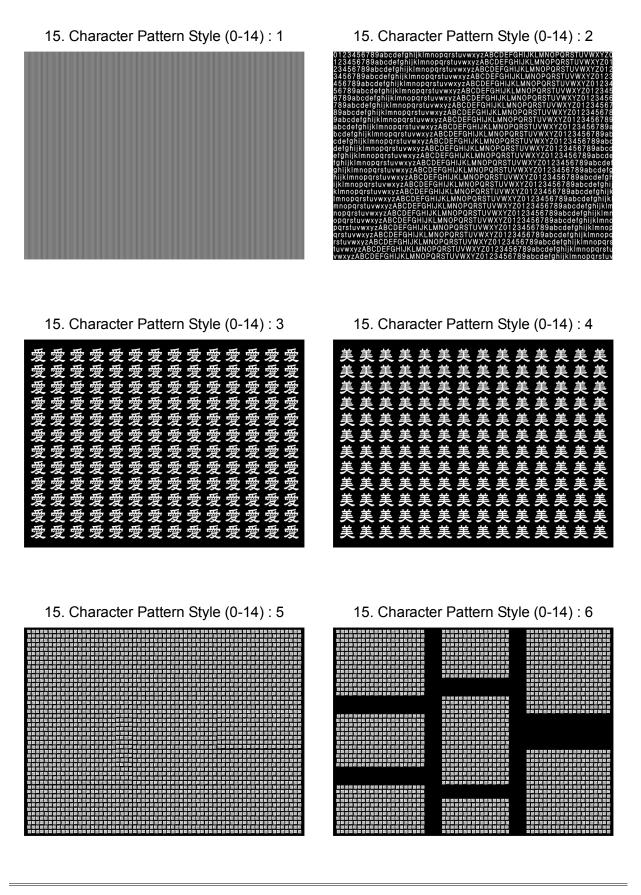






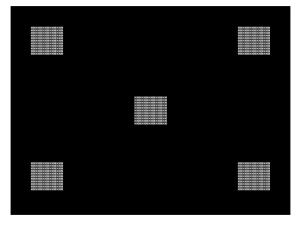
27. Color Pattern (0-33) : 33



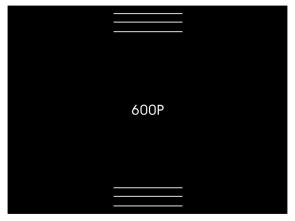


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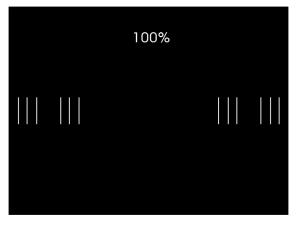
15. Character Pattern Style (0-14): 7



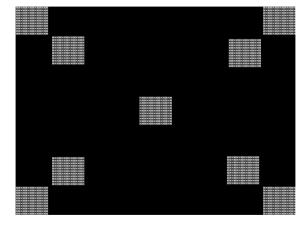
15. Character Pattern Style (0-14) : 10



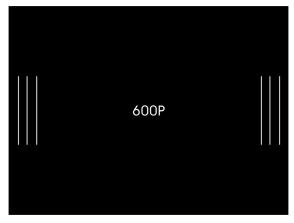
15. Character Pattern Style (0-14) : 12



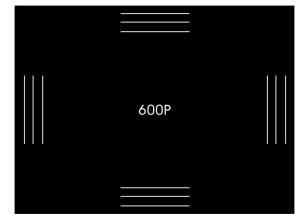
15. Character Pattern Style (0-14) : 13



15. Character Pattern Style (0-14): 9



15. Character Pattern Style (0-14) : 11



6.4 RS-232C Communication interface

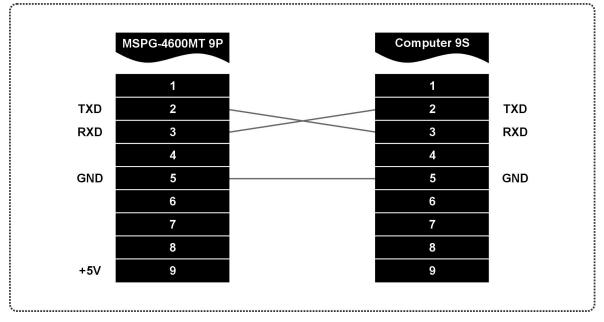
1) Definition of RS-232C interface

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-6100L through PC and other devices.

RS-232C cable is no problem as communicating cable, but be ware, because 9th pin of MSPG-6100L is connected to +5V.



2) RS-232C Cable Connection

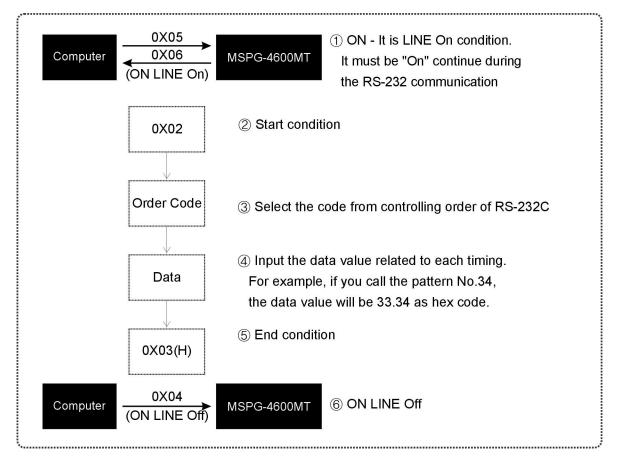
3) The controlling order of RS-232C

| It could be changed by user's request. |
|--|
|--|

| No. | Hex Code | Dec Code | Function |
|-----|----------|----------|-----------------------------|
| 1 | 0X02 | 02 | Start Transmitting |
| 2 | 0X03 | 03 | End Transmitting |
| 3 | 0X04 | 04 | On-Line Off (Interface Off) |
| 4 | 0X05 | 05 | On-Line On (Interface On) |
| 5 | 0X06 | 06 | Positive Response |
| 6 | 0X07 | 07 | Time Data (Model) |
| 7 | 0X08 | 08 | Pattern |
| 8 | 0X09 | 09 | Time Data and Pattern |
| 9 | 0X0B | 11 | H-Sync On/Off |
| 10 | 0X0C | 12 | V-Sync On/Off |

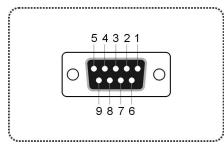
4) The operating method of RS-232C

Please, follow the flow chart as below.



5) RS-232C Connector specification

It is used, when communicating with remote controller, PC or other devices.



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

| No. | Function | Hex Code | Key Board | Note |
|-----|------------------------------------|----------|-----------|-----------------------------|
| 1 | Start transmitting command data | 02H | Ctrl + B | Start Code |
| 2 | End transmitting command data | 03H | Ctrl + C | End Code |
| 3 | Request to end the terminal mode | 04H | Ctrl + D | On-Line Off |
| 4 | Request to start the terminal mode | 05H | Ctrl + E | On-Line On |
| 5 | Call Model | 07H | Ctrl + G | Model Change |
| 6 | Call Pattern | 08H | Ctrl + H | Pattern Change |
| 7 | Call Model and Pattern | 09H | Ctrl + I | Model, Pattern Change |
| 8 | Video color change | 0AH | Ctrl + J | Video Color Pattern Change |
| 9 | H-sync on/off | 0BH | Ctrl + K | Horizontal Frequency on/off |
| 10 | V-sync on/off | 0CH | Ctrl + L | Vertical Frequency on/off |
| 11 | RGB Video Level | 0FH | Ctrl + O | RGB Video Level Change |

6) RS-232C Communication Command and Method

[Reference]RS-232C Interface

1. ON LINE CODE : Ctrl + E(0X05) 2. OFF LINE CODE : Ctrl + D(0X04)

NO.5 Model Change

| Start Code | Model Change | Three figure(Model 120) | End Code |
|----------------|----------------|-------------------------|----------------|
| Ctrl + B(0X02) | Ctrl + G(0X07) | 1(0X31) 2(0X32) 0(0X30) | Ctrl + C(0X03) |

NO.6 Pattern Change

| Start Code | Pattern Change | Three figure(Pattern 345) | End Code |
|----------------|----------------|---------------------------|----------------|
| Ctrl + B(0X02) | Ctrl + H(0X08) | 3(0X33) 4(0X34) 5(0X35) | Ctrl + C(0X03) |

NO.7 Model, Pattern Change, Contemporary

| Start Code | Model and | Three figure | Double figure | End Codo |
|------------|----------------|-------------------------|-----------------|----------|
| Start Code | Pattern Change | (Pattern 345) | (Pattern 34) | End Code |
| Ctrl + B | Ctrl + I | 1(0221) 4(0224) 5(0225) | 2(0222) 4(0224) | Ctrl + C |
| (0X02) | (0X09) | 1(0X31) 4(0X34) 5(0X35) | 3(0X33) 4(0X34) | (0X03) |

NO.8 Video Color Pattern Change

| | | • | | |
|-------------------|----------------|----------------|-----------------------|----------------|
| | Start Code | Color Change | One figure(Input "5") | End Code |
| | Ctrl + B(0X02) | Ctrl + J(0X0A) | 5(0X35) | Ctrl + C(0X03) |
| "0"(0X30) : White | | | | |

- "1"(0X31) : Cyan
- "2"(0X32) : Magenta
- "3"(0X33) : Blue
- "4"(0X34) : Yellow
- "5"(0X35) : Green
- "6"(0X36) : Red
- "7"(0X37) : Black

NO.9 Horizontal Frequency on/off

| Start Code | Horizontal on/off Change | One figure(Input "0") | End Code |
|----------------|--------------------------|-----------------------|----------------|
| Ctrl + B(0X02) | Ctrl + K(0X0B) | 0(0X30) | Ctrl + C(0X03) |

"0"(0X30) : ON

"1"(0X31) : OFF

NO.10 Vertical Frequency on/off

| Start Code | Vertical on/off Change | One figure(Input "1") | End Code |
|----------------|------------------------|-----------------------|----------------|
| Ctrl + B(0X02) | Ctrl + L(0X0C) | 1(0X31) | Ctrl + C(0X03) |

"0"(0X30) : ON

"1"(0X31) : OFF

NO.11 RGB Level Change

| Start Code | Level Change | Three figure(R Level 239) | Three figure(G Level 239) |
|----------------|----------------|---------------------------|---------------------------|
| Ctrl + B(0X02) | Ctrl + O(0X0C) | 2(0X32) 3(0X33) 9(0X39) | 2(0X32) 3(0X33) 9(0X39) |

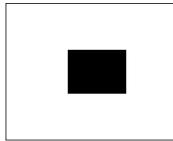
| Three figure(B Level 239) | End Code | |
|---------------------------|----------------|--|
| 2(0X32) 3(0X33) 9(0X39) | Ctrl + C(0X03) | |

RGB Level change is able to change each RGB Level from 0 to 255.

7) RS232C Interface (Commands)

| 1. On Line Code | 0X05 | 2. Off Line Code | |
|-----------------|--|---------------------|---|
| 3. Model Select | Command Step | 4. Pattern select | Command Step |
| | Code Start : 0X02 Model : 0X07 Model No. : X=3 digits End : 0X03 EXAMPLE : Model 3 select 02 - 07 - X(003) - 03 | | Code Start : 0X02 Model : 0X08 Model No. : X=2 digits End : 0X03 EXAMPLE : Model 20 select 02 - 08 - X(20) - 03 |

Pattern (Default 516)



| | Start | 0X02(Ctrl + B) | |
|-----------------|-------------|------------------------------------|--|
| | 22 | 0X0f(Ctrl + O) | |
| Background | R | R = 3 digits (0~255) | |
| RGB Level | G | G = 3 digits (0~255) | |
| adjustment | В | B = 3 digits (0~255) | |
| | End | 0X03(Ctrl + C) | |
| | 0X02 - 0 | X0f - R - G - B - 0X03 | |
| When R,G,B Leve | el 0,0,0 is | setting, it will going to Default. | |
| | Start | 0X02(Ctrl + B) | |
| | 22 | 0X10(Ctrl + P) | |
| Inner Box | R | A = 3 digits (0~255) | |
| RGB Level | G | B = 3 digits (0~255) | |
| adjustment | В | C = 3 digits (0~255) | |
| | End | 0X03(Ctrl + C) | |
| | 0X02 - 0 |)X10 - R - G - B - 0X03 | |
| When R,G,B Leve | el 0,0,0 is | setting, it will going to Default. | |
| | Start | 0X02(Ctrl + B) | |
| Inner Box Size | 22 | 0X11(Ctrl + Q) | |
| adjustment | H Size | H Size=3 digits(0~255) | |
| aujusimeni | V Size | V Size=3 digits(0~255) | |
| | End | 0X03(Ctrl + C) | |



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