

Video Pattern Generator

MODEL 22294-A

Key Features

- HDMI TMDs Clock support up to 300MHz
 - 4K x 2K 24/30Hz
 - 1080p 120Hz
 - 3D format with 1080p 60Hz (Frame packing / Side-by-Side Full)
- Comply with HDMI 1.4b standard
 - 24 / 30 / 36 bit color depth
 - 3D standard format output
 - ARC (Audio Return Channel)
 - HEC (Ethernet Channel)
 - Color space standard sYCC601 / Adobe RGB / Adobe YCC601 / xvYCC
- 4 HDMI ports output
- Analog support up to 300MHz
- DVI support up to 330MHz
- Support HDCP function
- S-Video / CVBS / SCART / RGB / Component / D-terminal
- NTSC / PAL / SECAM standard
- EDID Read / Write / Compare / Analyze
- Optical / Coaxial audio input (SPDIF)
- Pattern scrolling function
- Built in China high-definition test pattern
- ESD protection circuit
- Front panel USB and control interface
- Graphic operating and editing interface



Chroma



VIDEO PATTERN GENERATOR MODEL 22294-A

Chroma 22294-A is a programmable video pattern generator that equipped with various standard analog / digital signal output functions. The built-in high speed graphic engine is able to provide standard test signals and patterns for display devices with various resolutions to meet the requirements of multimedia display industries today and in the future for R&D and test applications.

The Video Pattern Generator supports the up-to-date high resolution multimedia digital audio and video transmission interface HDMI V1.4b specification with the following features:

Support up to 4K x 2K ultra high resolution

For digital interface, the HDMI supports 300MHz and DVI supports up to 330MHz (Dual link). For analog interface, the signal supports up to 300MHz. The high bandwidth signal output capability supports the testing for the newest generation of 4K x 2K ultra high resolution displays.

3D standard format signal output

The 3D format defined by HDMI specification is fully supported with abundant 3D test patterns, and provided for the user to download customized 3D patterns (splitting left/right images in Bitmap file format).

Fully support HDMI defined functions

The 22294-A is equipped with HEAC (Ethernet / Audio Return Channel) / Lipsync / HDCP / CEC / EDID functions and supports 24 / 30 / 36 bit color depth (RGB or YCbCr) and newest generation of color standard xvYCC / sYCC601 / Adobe RGB / Adobe YCC601.

Multi-signal port for simultaneous output

The 22294-A has 4 HDMI output ports that can provide multi-signal output simultaneously to meet the test applications for multi-port displays nowadays.

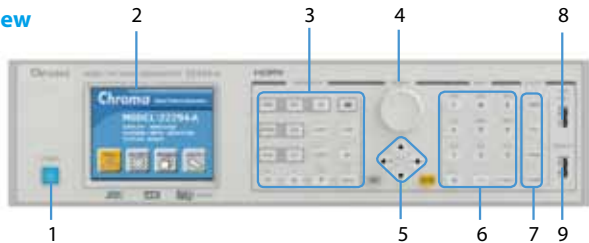
The RGB (BNC / D-Sub) and component (YPbPr / D-Terminal) signals provided by 22294-A are able to output all kinds of standard signal formats to test the displays with traditional analog interface. For digital DVI output signal, the pixel rate is up to 330MHz and supports dual channels HDCP which is most applicable for high resolution display testing.

For TV signals, the 22294-A is able to output the signals that comply with NTSC, PAL and SECAM specifications, also to support CVBS and Y/C separation signal formats for BNC / S-Video / SCART output ports. Special TV function tests such as Closed Caption, V-chip and Teletext are also supported.

Chroma 22294-A has full color graphic interface and super large capacity of storage memory with lots of special test patterns built-in such as xvYCC, HDCP, E-EDID, Deep color, CEC, Lipsync and high-definition test images defined by China to give the user an easy way to judge the test result and save the time for production improvement as well as to achieve cost effective control. In addition to the panel editing of standalone device, remote control can be applied also the application software VPG Master can be utilized to edit various test programs and parameters. Its easy-to-use interface and complete test functions are most suitable for the applications of R&D, production tests and quality assurance in all video and associate industries.

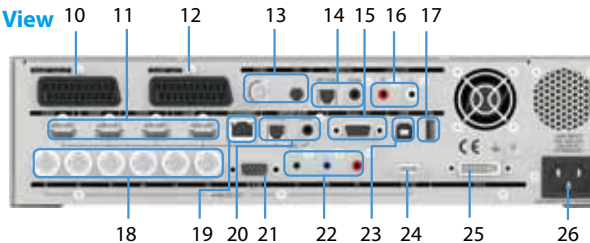
PANEL DESCRIPTIONS

Front View



1. Power Switch
2. 3.5" LCD Display
3. Function Group
4. Selection Rotary
5. Arrow Keys
6. Numeric Keys
7. Function Keys
8. Device USB Interface
9. Remote Control Device Interface

Rear View



10. SCART Input/Output
11. HDMIx4 Output
12. SCART Output
13. CVBS: BNC, Y/C Output
14. Digital Audio Input: Optical & Coaxial
15. Smart I/O Control
16. Analog Audio Output: R/L
17. Host USB Interface
18. R/G/B/Hs/Vs/Xs BNC Analog Output
19. Ethernet Interface
20. ARC Digital Audio Output: Optical & Coaxial
21. D-SUB Analog Output
22. YPbPr Output
23. Device USB Interface
24. D-Terminal (D1-D5) Output
25. DVI-I Output
26. AC Power Input

SPECIFICATIONS

Analog output

Display Size	4096 x 2160
Pixel Rate Range	0.5MHz~300MHz
Video Level	R, G, B (75 ohms) 0~1.0V programmable
Sync on Green/Level	0~0.5V On/Off programmable
White Level	0~1.2V programmable
Black Level	7.5 IRE / 0 IRE Selectable

Horizontal timing

Total pixel	32~8192 pixels / 1 pixel resolution
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Vertical timing

Total line	4~4096 lines (non-interlace) / 1 line programmable 4~2048 lines (interlace) / 1 line programmable
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Composite sync

Hs+ Vs, Hs EXOR Vs, Equalization & Serration Pulse

Separate sync

BNC : Hs, Vs, Xs / D-SUB : Hs(Xs), Vs

DVI (TMDS) output

Pixel Rate Range	25 ≤ 1 link ≤ 165MHz/ 165<2 link ≤ 330MHz
EDID	Read / Write / Compare / Edit / Analysis
HDCP	Support HDCP V1.0 (with Dual Mode)
Compliant	DVI 1.0
Video Signal Type	RGB
Sampling Mode	4:4:4

HDMI video output

Version	HDMI 1.4b (3D Format / ARC / HEC / CEC / Lip Sync)
Pixel Rate Range	25 ~ 300 MHz
Support HDMI Timing	88 Timing(CEA-861E)
Pixel Repetition	4
Video Signal Type	RGB or YCbCr
Sampling Mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2
Color depth	8 / 10 / 12 @ RGB & YCbCr
Color Space	RGB / ITU-R BT.601 / ITU-R BT.709 / xvYCC (IEC61966-2-4) / sYcc601 / Adobe RGB / Adobe sYcc601
HDCP	HDCP V1.2
EDID	Read / Write / Compare / Edit / Analysis

HDMI audio output

Sample Rate	32, 44.1, 48, 88.2, 96, 176.4, 192KHz
Number of Channel	8 Channel (FL/FR/RL/RR/FC/LFE/RLC/RRC)
Bits per Sample	16 / 24 bit
Waveform	Sine wave
Amplitude	-90.3 to 0.0 dBFS / -138.4 to 0.0dBFS
Frequency Range	10Hz to 20KHz
Frequency Resolution	1Hz / Step
External Audio Input	OPTICAL and COAXIAL (S/PDIF)
Special Control Mode	Tone / Sweep / Mute / Repeat / Play Time

ORDERING INFORMATION

22294-A: Video Pattern Generator
A240001: Remote Controller

Developed and Manufactured by:
CHROMA ATE INC.

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Worldwide Distribution and
Service Network

TV output	
Output Mode	NTSC PAL SECAM
Subcarrier Frequency	443 M,J BDGHI M 60 N Nc 4.41/ 4.43 3.58 4.43 3.57 4.43 4.43 3.58 4.25 MHz
Video output mode	Composite (BNC),S-Video Burst On/Off (NTSC,PAL) Contrast / Brightness / Saturation / Hue programmable
Closed Caption (NTSC)	C1,C2,C3,C4 / T1,T2,T3,T4
V-Chip (NTSC)	MPAA/FCC / Canada English / Canada French Rating
Teletext (PAL)	Teletext System B Level 1, 1.5

SDTV / HDTV format	
Timing	Progressive Mode Frame Rate (Hz) Interlace Mode Frame Rate(Hz) Standard
1920X1080	60P 60 60I 30 SMPTE 274
	59.94P 60/1.001 59.94I 30/1.001 SMPTE 274
	50P 50 50I 25 SMPTE 274
	30P 30 SMPTE 274
	29.97P 30/1.001 SMPTE 274
	25P 25 SMPTE 274
1920X1035	24P 24 SMPTE 274
	23.98P 24/1.001 SMPTE 274
	60I 30 SMPTE 240
1280X720	59.94P 60/1.001 SMPTE 296
	50P 50 SMPTE 296
	60I 30/1.001 SMPTE 296

3D video format output	
3D Scanning Mode	Frame packing Field alternative Line alternative Side-by-Side (Full) L + depth L + depth + graphics + graphics-depth Top & Bottom Side-by-Side (Half) Frame sequential Line-by-Line Checkerboard

Data storage device	
Default	2000 timings + 2000 patterns
Internal Memory	3000 timings + 3000 patterns + 1000 programs
External Memory	USB Host interface
Other	
AC Input	1Ø 110~240V ± 10% V _{LN} 47~63Hz
Operation/Storage Temp	+5~+40 deg.C / -20~+60 deg.C
Humidity	20~90 %
Dimension & Weight	
22294-A	88 x 350 x 350 mm / 3.46 x 13.78 x 13.78 inch (HxWxD) 5.6 kg / 12.33 lbs