



Analog 165MHz
DVI(TMDS) 165MHz (2402)
HDMI V1.3b 165MHz (2402)
(TMDS Rate 225MHz)

KEY FEATURES

- Analog pixel rate 165MHz
- Analog output with DDC
- 2K x 2K Graphic size
- NTSC / PAL / SECAM signal (Model 2401)
- Closed Caption function (NTSC) (Model 2401)
- V-Chip function (NTSC) (Model 2401)
- Teletext function (PAL) (Model 2401)
- S-Video / CVBS / SCART / RGB Color Component / D-Terminal (Model 2401)
- Bi-level SDTV format (Model 2401)
- Tri-level HDTV Format (Model 2401)
- DVI pixel rate 165MHz (Model 2402)
- HDMI V1.3b (with xvYCC) (Model 2402)
- DVI & HDMI with HDCP output (Model 2402)
- Y, Pb, Pr / Y, Cb, Cr / Y, R-Y, B-Y output (Model 2401)
- PC remote control
- User Define Key
- Built-in variety of video timings & patterns
- Scrolling Pattern
- USB interface
- High Capacity Memory
- ESD protection circuit
- Economy

Along with the rapid development of LCD TV industry, all manufacturers are facing the competition of producing high value added and low cost products; and seeking for a total test solution to meet their needs has become the first priority.

Chroma 2401/2402 Video Pattern Generator with the features described below is specially designed to fit in the requirements and application of production line for LCD-TV manufacturers.

(1). Lightweight Design : The size of Chroma 2401/2402 VPG is close to A4 that is portable and handy for various kinds of spaces or locations.

(2). Exclusive Signals : The mapped international standard signal sources are provided for diverse Video signals requirements such as the requisite TV and monitor that are applied in the configuration of production line planning and test workstation.



(3). Convenient & Rapid Function : The test programs created in advance increase the production efficiency; in addition for the frequently used function keys, users can edit the User KEY to work with compound functions in specific test to save the test time.

(4). USB Interface : The convenient USB interface can use USB Disk on PC to edit test programs, patterns and even to upload or download the upgrade programs to 2401/2402 to reduce engineer's workload in setup and management.

(5). Large Capacity : It has built in large capacity of storage memory that allows users to swap and save for different UUT without backup or download.(1000 TIMINGS and PATTERNS, 500 PROGRAMS)

(6). Abundant Test Patterns : It includes standard static, dynamic and pattern screens to check the characteristics response, white balance and residual of UUT. Also it can use PC to create the test patterns required.

(7). Extended Control : The default extended function on the front/rear panel is able to add remote control device or output control device for on-line link automatically.



Model 2401 Rear View



Model 2402 Rear View

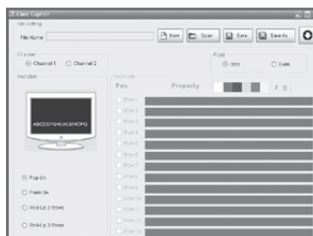
ORDERING INFORMATION

2401: Video Pattern Generator
Analog 165MHz/TV/HDTV

2402: Video Pattern Generator
Analog 165MHz/DVI 250MHz/HDMI 165MHz
(TMDS Rate 225MHz)

A240001: Remote Controller

Software - Model 2401

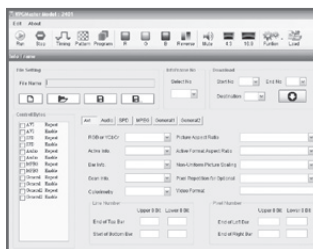


Closed Caption Screen

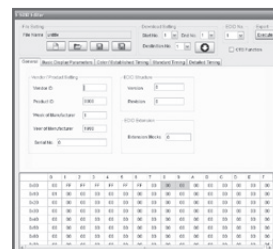


User Key Screen

Software - Model 2402



InfoFrame Screen



E-EDID Screen

SPECIFICATIONS

ANALOG OUTPUT

Display Size	2048 x 2048
Pixel Rate Range	0.5~165MHz
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 Pixels	64~8192 pixels / 2 pixels resolution
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VERTICAL TIMING

Total Pixels	4~4096 lines (non-interlace) / 1 line programmable 4~2048 lines (interlace) / 1 line programmable
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COMPOSITE SYNC

SEPARATE SYNC

VIDEO FORMAT

Video Output	R, G, B / RS-343A Y, R-Y, B-Y Y, Cb, Cr / ITU 601 Y, Pb, Pr / ITU 709, RP 177, SMPTE 240M DDC II B
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HDMI VIDEO OUTPUT (Model 2402 only)

Version	HDMI V1.3b (with xvYCC)
Pixel Rate Range	25 ~ 165 MHz (TMDS CLK : 225MHz)
Support HDMI Timing	77 Timing(CEA-861D)
Pixel Repetition	4
Video Signal Type	RGB or YCbCr
Sampling Mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2
Bits per Component	8 bits (1024 color)
Color Space	RGB / ITU-R BT.601 / ITU-R BT.709 / xvYCC
HDCP Support	HDCP V.1.2
EDID	Read / Write / Compare / Edit

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
Waveform	Sine wave
Amplitude	-90.3 to 0.0 dBFS
Frequency Range	10Hz to 20KHz
Frequency Resolution	10Hz / Step
External Audio Input	Optical and Coaxial (S/PDIF)
Special Control Mode	Tone / Sweep / Mute / Repeat / Play Time

DVI (TMDS) OUTPUT (Model 2402 only)

Pixel Rate Range	25< 1 link ≤ 165MHz (256 color)
E-EDID	Read / Write / Compare / Edit
HDCP Support	HDCP V1.0
Compliant	DVI 1.0 specification
Video Signal Type	RGB
Sampling Mode	4:4:4

TV OUTPUT (Model 2401 only)

Output Mode	NTSC			PAL				SECAM	
Subcarrier Frequency	443 4.43	M,J 3.58	BDGHI 4.43	M 3.57	60 4.43	N 4.43	Nc 3.58	4.41/4.25	MHz
Subcarrier Stability	± 50								Hz
Video Output	Composite (RCA), S-Video								
	Burst On/Off (NTSC, PAL)								
	Contrast programmable								
	Brightness programmable								
	Saturation programmable								
	Hue programmable								
Closed Caption Support (NTSC)	C1, C2, C3, C4/ T1, T2, T3, T4								
V-CHIP (NTSC)	MPAA Rating : G, PG, PG-13, R, NC-17, X								
	FCC Rating : TV-Y, TV-Y7, TV-G, TV-PG, TV-14, TV-MA								
	Canada English Rating : C, C8+, G, PG, 14+, 18+								
	Canada French Rating : G, 8 ans+, 13 ans+, 16 ans+, 18 ans+								
Teletext (PAL)	Teletext System B Level 1, 1.5								

SDTV / HDTV FORMAT (Model 2401 only)

Timing	Progressive Mode Frame Rate (Hz)	Interlace Mode Frame Rate (Hz)	Standard
720 x 483	59.94P	60/1.001	SMPTE 293 ITU 601 SMPTE 170M
720 x 576	50P	50	ITU 1382 ITU 601
1920 x 1080	60P	60	SMPTE 274
	59.94P	60/1.001	SMPTE 274
	50P	50	SMPTE 274
	30P	30	SMPTE 274
	29.97P	30/1.001	SMPTE 274
	25P	25	SMPTE 274
	24P	24	SMPTE 274
	23.98P	24/1.001	SMPTE 274
1920 x 1035		60I	SMPTE 240
		59.94I	30/1.001 SMPTE 240
1280 x 720	60P	60	SMPTE 296
	59.94P	60/1.001	SMPTE 296
	50P	50	SMPTE 296

AUDIO (ANALOG) OUTPUT

Frequency Range	50Hz~20KHz
Waveform	Sine wave
Number of Channel	2 Channel (R / L)
Level Range	0V to 2V (at 600 Ohms Load)
Special Control Mode	Tone / Sweep / Mute / Repeat / Play Time

DATA STORAGE DEVICE

Default	1000 timings + 1000 patterns
Internal Memory	1000 timings + 1000 patterns + 500 programs
External Memory	USB Host interface

OTHERS

AC Input	1Ø 100~240V ± 10% V _{LN} , 47~63Hz
Operation/Storage Temp.	+5~+40 deg.C / -20~+60 deg.C
Humidity	20~90 %

DIMENSION

2401 (H x W x D)	88 x 320 x 240 mm / 3.46 x 12.6 x 9.45 inch
2402 (H x W x D)	88 x 320 x 240 mm / 3.46 x 12.6 x 9.45 inch

WEIGHT

2401	3.2 kg / 7.05 lbs
2402	3.1 kg / 6.83 lbs