English

LVDS Timing Generator

LTG-01

Real time control of digital gradation.

Meet various LVDS needs!

LTG-01 is a universal signal generator designed for LCD modules with LVDS input.
By the replacement of the LVDS input board, the device can match with any LCD panels.
Its resolution goes from VGA, UXGA(1600 x 1200) and up to 4096 horizontal dots (including a blanking period) x 4096 vertical lines (including a blanking period).
Such signals as sync signals and data enable signals can be created in the unit of one clock of the master clock, so any signals can be quickly and easily generated and edited.
There are 3 channels of power supply outputs as VCC, VDD and VIF.
With the combination of 32 timing signals, 32 level setting and 32 video signals, the maximum of 64 test conditions can be preprogrammed.

Major Features

- The LTG-01 integrates LVDS output signal generators, and power supplies for LCD modules.
- Video signal can be displayed up to 16,000,000 color.
- Quick and easy operation of remote box thinking about a production use.
- VCC, VDD and VIF voltages and currents can be displayed on the remote panel. Upper and lower limits of the values can be preprogrammed to make judgments.
- The model name (8 alpha-numerical letters) of the module under test and the test step number can be displayed on the remote panel.
- Up to 64 test patterns can be registered. Each pattern can be switched in less than 0.2 seconds.
- It meets various LVDS devices by exchanging of a option board in addition to TMDS, GVIF and parallel interface. (option)
- It is possible to play the video by inputting NTSC, PAL and DVI signal.
- Rotating the encoder on the remote panel varies digital video gradation data, controlling brightness very easily.
- The attached PC software includes a video pattern generator instantly to create such patterns as CROSSHATCH, RASTER, WINDOW, SLANT, STRIPE and CHESS.
- In addition, even a natural image made with a bitmap (BPM) file can be also used for testing and evaluation.
- Test pattern data is registered using preprogrammed data file names, facilitating addition of new test patterns.
- Signal pattern data for each LCD module model can be edited via PC and be saved in the memory card.
- Data can be updated by loading the memory card onto the LTG-01 main system.
- The model changeover can be easily made by replacing the memory card (Smart Media or compact flush (option)) .
- It can be controlled LTG-01 by connecting to a PC.

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◆ GENERAL SPECIFICATION		
Ambience (Indoor)	Temperature	5 to 40 ºC
	Humidity	30% to 80% (without dews)
Line voltage		85VAC to 132VAC / 170VAC to 265VAC
Line frequency		50Hz / 60Hz
Power consumption		180VA or less (at 100VAC input)
Dimension		465mm(W) X 350mm(D) X 102mm(H)
Weight		6.6kg or less

◆ POWER SUPPLY UNIT (LCD POWER SUPPLY BOARD)				
(1)VCC, VDD, VIF PS (Positive PS)				
(2)Output range	VCC,VDD	Voltage 0~+12V	Current +2000mA	
	VIF	Voltage 0~+5V	Current +2000mA	
(3)Monitor display	VCC,VDD	Voltage +12.00V	Current +2000mA	Accuracy: +/-0.5% of full scale
	VIF	Voltage +5.00V	Current +2000mA	Accuracy: +/-0.5% of full scale

◆ CLK & Timing (Clock generation, Timing memory, and amplification)		
(1)Dot clock frequency	Single link	6.25 to 12.5MHz 31.25kHz Step 12.5 to 25MHz 62.5kHz Step 25 to 50MHz 0.125MHz Step 50 to 100MHz 0.25MHz Step
	Dual link	12.5 to 25MHz 62.5kHz Step 25 to 50MHz 0.125MHz Step 50 to 100MHz 0.25MHz Step 100 to 200MHz 0.5MHz Step
(2)Accuracy of oscillation frequency		Set value +/-0.005% or less
(3)Horizontal dots		4096 dots / 1H
(4)Number of vertical scanning lines		14096 lines / 1V
(5)Number of the timing signal outputs		4 channels (CLK(=MCK), Hsync, Vsync, DE)
(6)Electric characteristic		Output for LVDS I/F
1. Output voltage		3.3V
2. De-phasing between channels		5nsec or less (under the same loading condition)
3. Rise & fall time		10nsec or less (at 3.3Vp-p amplitude)
4. Overshoot		10% or less
5. Phase adjustment function		Range of adjustment +/-40nS 1 step 4nS+/-1nS (The phase of the VIDEO signal is adjusted for the timing signal)

◆ VIDEO GENERATION UNIT (VIDEO SIGNAL GENERATION UNIT)	
(1)Output signals	
1. Video	Digital 8 bit / 3 channel (R, G, B) x 2 system The video can match with single link and dual link. Tone setting can be added and subtracted in the -255 to +255 (8 bit tone) against tone data for default.
(2)Electric characteristics	
1. Output range	+3.3 V
2. Rise & fall time	10 nsec or less
3. Overshoot	5 % or less

◆ LVDS DRIVER UNIT (UNIT BOARD NO.1) *Please choose either UNIT BOARD NO.1 or NO.2.		
(1)Input signals	Digital 8 bit / 3channel x 2 system, Hsync, Vsync, DE, MCK	
(2)Output signals	TA1+/- to TD1+/-, TCLK1+/-, TA2+/- to TD2+/-, TCLK2+/-	
(3)Dot clock frequency	Single link	25 to 85MHz
	Dual link	50 to 170MHz
(4)Transmitter IC	Maker	Thine Electronics
	Model	THC63LVD823
◆ LVDS DRIVER UNIT (UNIT BOARD NO.2) * Please choose either UNIT BOARD NO.1 or NO.2.		
(1)Input signals	Digital 8 bit / 3channel x 2 system, Hsync, Vsync, DE, MCK	
(2)Output signals	A0P/N to A3P/N, CLK1P/N, A4P/N to A7P/N, CLK2P/N	
(3)Dot clock frequency	Single link	32.5 to 100 MHz
	Dual link	65 to 200 MHz
(4)Transmitter IC	Maker	National Semiconductor
	Model	DS90C387
◆ VIDEO SIGNAL INPUT		
(1)Input signals	NTSC, PAL, DVI	
◆ CPU BOARD		
(1)CPU	H8S (Maker: Renesas Technology)	
(2)Memory I/F	Smart Media or Card socket for compact flash (option)	
(3)Remote Box Outputs	Mini-DIN 6Pin I2C	
(4)Serial port	RS-232C *You are connected to a PC and can control LTG-01 from a PC.	
◆ PC Software *1		
(1)Configuration Editor	It is software to set a sequence at the time of the power supply voltage and a start stop.	
(2)Video Parameter	It is software to configure setting for master clock frequency, horizontal and vertical frequency, a display position of a cursor, a drive signal waveform.	
(3)Image Editor	It is software to create and edit a video signal. You can take in bitmap file.	
(4)Make Floppy	It is software to write the data which you created by the following software in Smart Media.	
◆ DATA WRITER (OPTION)		
It is a device to write the data which you created the timing signal and other voltage setting by PC software in Smart Media.		

***1** Please refer to operation manual for LTG-01. The corresponding OS is as follows.
Windows95/98 WindowsNT Windows2000 WindowsXP