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VSG-401

Compact Video and Audio Signal Generator

The VSG-401 is a ½RU-wide, dual-link, 3G/HD/SD signal and sync generator. Part of the Videotek Compact Monitor Series, the unit is small in size and light in weight, making it a perfect fit for all broadcast television and post production environments.

The VSG-401 provides four SDI test signal outputs with selectable format, frame rate and signal type, and up to 16 channels of embedded audio, with group enabled settings and global settings for amplitude and frequency. There are two AES outputs, with one output selectable as word clock or digital audio reference signal (DARS). Also included are two sync outputs selectable as blackburst or tri-level sync and a reference input for blackburst or tri-level sync.

The test signal outputs on the VSG-401 allow source ID selection up to 19 characters. Users can add continuous motion of a bouncing block to any test pattern except check field.

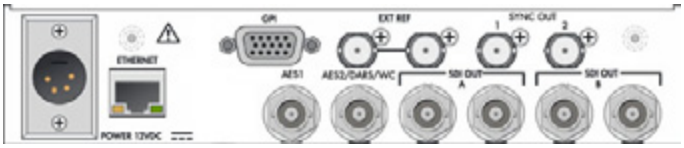
The VSG-401 is simple to operate, with an Ethernet port facilitating software updates and web browser control. A 110/220 universal AC adapter provides DC voltage power input.

Features

- Small form factor
- Four outputs (two for dual link), selectable as 3 Gb/s, HD, SD or DL
- Two blackburst or tri-level sync outputs
- Two AES/EBU outputs
- Up to 16 channels of embedded audio test signals
- Selectable audio level and frequency
- 19-character source ID can be added to test signals
- Genlock to standard color, black or tri-level sync
- Genlock auto external or internal settings
- Front-panel genlock and input status LED
- Ethernet port for updates and web browser

Images/Diagrams

Back Panel



Specifications

Specifications and designs are subject to change without notice

Genlock Input

Input Type	1 input, passive looping
Input Connector Type	Electrical, single-ended, unbalanced, mechanical, BNC
Input Impedance	Hi-Z
Blackburst Input Amplitude	NTSC: sync and burst 286 mV, nominal PAL: sync and burst 300 mV, nominal Blackburst Input Amplitude Tolerance ±6 dB
Return Loss	≥40 dB to 10 MHz
Lock Range	±6 ppm (NTSC Fsc ±21 Hz, PAL Fsc ±26 Hz)
Black Burst Subcarrier Jitter	<1 ns (pk-pk) over one horizontal line
Tri-Level Sync Amplitude	600 mV pk-pk nominal
Tri-Level Sync Amplitude Tolerance	±3 dB

Blackburst/Tri-Level Sync (TLS) Output

Number/Connector Type	2 BNC, female
Load Impedance	75 ohms nominal
Return Loss	≤-40 dB (100 kHz to 10 MHz)
Blackburst Signal Level	NTSC: sync and burst 286 mV, nominal PAL: sync and burst 300 mV, nominal
Blackburst Subcarrier Jitter	<1 ns (pk-pk) over one horizontal line
Tri-Level Signal Level	600 mV pk-pk
DC Offset	0 V ±.5 V
SC/H Phase	0° ±10°
Reference to Output Timing	±100 ns

General SDI Output Characteristics

Number of Outputs	4
Output Connector Type	BNC, female
Output Impedance	75 ohms nominal

3G/HD/SD-SDI Output Characteristics

Output Return Loss	(5 MHz to 1.485 GHz) ≤-15 dB (1.485 to 3 GHz) ≤-10 dB
Output Signal Level	800 mV ±10%
Output DC Offset	0 V ±0.5 V
Output Rise and Fall Time	(@ 2.97 GHz) <135 ps (20 to 80% amplitude), not differing by more than 50 ps (@ 1.484 GHz) <270 ps (20 to 80% amplitude),not differing by more than 100 ps (@ 270Mhz) 400 to 700 ps (20 to 80% amplitude), not differing by more than 500 ps
Jitter	(@ 2.97 GHz): <0.3UI (@1.484 GHz): <0.2 UI (@270MHz): <0.2 UI

Video

Output Formats	3G/HD/SD/DL, selectable
Supported Formats	1080i/60, 1080i/59.94, 1080i/50; 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98; 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25, 720p/24, 720p/23.98
Segmented Frame	1080p/30sF, 1080p/29.97sF, 1080p/25sF, 1080p/24sF, 1080p/23.98sF
Dual Link (per SMPTE 372M)	4:2:2 (YCBCR) 10-bit, 1080p/60, 1080p/59.94, 1080p/50
3G-SDI	1080p: 60 Hz, 59.94 Hz, 50 Hz (4:2:2 Y'Cb'Cr/10-bit)
SD-SDI	525 at 59.94 Hz 625 at 50 Hz

Test signals available:

Color Bars	100% color bars, 75% color bars, RP-219 with +I, RP-219 with –I, RP-219 100% white, RP-219 75% white, SMPTE bars
Patterns	Check field, 4:3 in 16:9, circle, co-sited pulse, cross hatch, flat field 0%, 50%, 100%, red field, visible field, line sweep, multiburst, multiburst Y only, pulse bar, limit ramp, shallow ramp, ramp Y only, 5 step Y only, zone plate, V2A timing

Audio

Audio Formats	AES or DARS, unbalanced
Sample Rate	48 kHz
Output Impedance	75 ohms
Output Connector	2 BNC
AES Output Return Loss	≤-25 dB -0.1 to 6 MHz
Output Signal Level	1 V pk-pk (75 ohms terminated)
AES Jitter	0.25 UI

Word Clock Output Characteristics

Output Connector	1 BNC, female, shared with AES/DARS
Output Impedance	75 ohms nominal
Output Level	5 V TTL levels with 75 ohms load

Embedded Audio

Output Sample Rate	AES, 48 kHz
Output Level	0, -9, -12, -20 dBFS and silence, user-selectable
Output Frequency	Fixed selections of 400Hz, 1 kHz, and 10 kHz

Interfaces

Communication Interfaces	1 Ethernet port, RJ-45 connector, 10/100Base-T
Network Interface	IEEE 802.3 (Ethernet), 10/100Base-T for web browser control

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Power Requirements

Power Connector	15 VDC, nominal (11 to 18 VDC min-max) from 4-pin XLR
AC Adapter	Included

Mechanical

Dimensions (H x W x D)	1.75 x 8.5 x 6.60 in. (4.45 x 21.59 x 16.76 cm)
Weight	1.66 lbs (0.753 kg)

Environmental

Operating Temperature	32° to 122° F (0° to 50° C)
Storage Temperature	-22° to 149° F (-30° to 65° C)
Humidity (non-condensing)	Operating: 20% to 80% Non-operating: 5% to 90%

Applicable Standards	SMPTE RP 184-2004, SMPTE RP 165-1994, SMPTE RP 219, SMPTE 259M, SMPTE 272M, SMPTE 274M-2005, SMPTE 291M, SMPTE 292M-2006, SMPTE 295M, SMPTE 296M, SMPTE 299M, SMPTE 318M, SMPTE 352M, SMPTE 372M, SMPTE 424M, SMPTE 425M AB, SMPTE RP 184-2004, SMPTE RP 165-1994, SMPTE RP 219, SMPTE 318M, AES3–2003, AES11–2003
Standard Accessories	VSG-401 installation and operation handbook (on CD-ROM) Power cord and power supply

Ordering Information

VSG-401	Video signal generator, 3G/HD/SD video and embedded/AES audio outputs with genlock, ½RU wide, optional rack mount or desktop mount available
CMVS-DVI	Compact Monitor and Signal generator test set, includes CMN-41-3GB (DVI OUTPUT), VSG-401 and the DRT-4
CMVS-SDI	Compact Monitor and Signal generator test set, includes CMN-MV-3GB (SDI OUTPUT), VSG-401 and the DRT-4
BLK-5	Blank panel for left or right side of DRT-4
DRT-4A	Double rackmount tray for VSG-401, CMN-41 and CMN-MV, use BLK-4 to fill unused space if needed
PTC-4	Desktop case for VSG-401, CMN-41, CMN-MV and RCU-CMS

Related Products

VSG-4SYS-C	VSG-4CSD System includes 2 VSG-4CSD , 1 VSX-11-3G, 1 DRT-5, 1 RMT-U1, 2 VSG-4-BRK-1
VSG-4SYS-M	VSG-4MTG System includes 2 VSG-4MTG , 1 VSX-11-3G, 1 DRT-5, 1 RMT-U1, 2 VSG-4-BRK-1
VSG-4SYS-V	VSG-401 System includes 2 VSG-401 , 1 VSX-11-3G, 1 RMT-U1 and 1 DRT-4

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