ESG-4000
4K/HD Test Signal Generator

Full range of test patterns, extensive outputs
Test signal generator that generates 4K signal (UHD 3840 x 2160p, Full 4K 4096 x 2160p). Distributes each of two lines (4K video) from quad-link 3G-SDI to two outputs, or two HD-SDI lines (HD video) to three outputs. Embeds 32-channel audio in 3G-SDI or 16-channel audio in HD-SDI output. Equipped with two outputs for MADI signals. Two lines independently configurable.

Features

Versatile 4K output support
Can produce any combination of 3G-SDI (Level-A/B) and Square Division (SQD)/2-Sample Interleave Division (2SI) signals, and 3840 x 2160p/4196 x 2160p resolution.

Video test patterns
Standard test patterns include color bars, ramp, steps, white, black, pathological, crosshatch, multiburst, and noise. Register up to 10 custom test patterns created via computer.

Colorimetry switching
Choose from ITU-R BT.2020 or ITU-R BT.709 for 4K testing (except for custom test patterns).

Test pattern scrolling
Scroll test patterns horizontally, vertically, or diagonally.

Character display
Display time codes or channel numbers on test patterns as needed.

Output frame frequency switching
Supports multiple formats.

Audio test signals
Outputs standard test signals (1 kHz, etc.) Test signals can also be customized by registering 10 computer-generated WAV (linear PCM) files.

Two-line output
One line (SG-1) for 4K and HD output is provided as standard. Able to support two-line output (SG-1, SG-2) with option. SG-1 and SG-2 independently configurable. 4K output can be distributed to two systems, and HD output to three.

Genlock
Output can be synced to an external reference signal, with BB or tri-level sync available for each of the three output lines.

External control, SNMP monitoring
Control the unit via telnet, or monitor operation via SNMP.
Audio formats
48 kHz, 24-bit, 32 channels (AES3-compliant)

Audio output
4K (SDI EMBEDDED)
BNC x2 (16 ch x2, 2 lines/2-way distributed)
SMPTPE ST 299-1-compliant

HD (SDI EMBEDDED)
BNC x1 (16 ch x1, 2 lines/3-way distributed)
SMPTPE ST 299-1-compliant

MADI
BNC x1 (32 ch x1, 2 lines)
AES10-compliant

Reference input
BB: NTSC: 0.429 Vp-p/75Ω, SMPTE ST 170-compliant
Tri-level sync: 0.6 Vp-p, SMPTE ST 240-compliant
575i, BNC x1 with loop-through

Reference output
BNC x3 (tri-level sync or BB available for each)
Formats:
HD reference: Tri-level sync, SMPTE ST 240-compliant
SD reference: BB, SMPTE ST 170/ST 318-compliant

Time code output*1
4K (3G-SDI)
BNC x4 (shared with video output; 2 lines/2-way distributed)
SMPTPE ST 12-1/ST 12-2-compliant

HD (HD-SDI)
BNC x1 (shared with video output; 2 lines/3-way distributed)
SMPTPE ST 12-1/ST 12-2-compliant

Interface
Ethernet: 10BASE-T/100BASE-TX (IEEE802.3), RJ-45 x1

Video output patterns
COLOR BAR group
Full color bar (100%/75%), SQD full color bar (100%/75%), Multi-format color bar (100%/75%), SQD multi-format color bar (100%/75%)

LINEAR group
Y Ramp (UP/DOWN), Y Step (5/10), G Step (5/10), B Step (5/10), R Step (5/10)

FLAT group
White (100%/50%), Black (100%/50%), Red (100%/50%), Blue (100%/50%), Green (100%/50%)

SDI group
EQ, PLL, Pathological

OTHER group
Crosshatch (NOR/REV), Multiburst, Noise, User (1-10)
(Up to 10 frame test patterns created on a computer can be registered.)

Audio test signals
Multiplexing groups
Off, 1, 1+2, 1+2+3, 1+2+3+4 (Can specify audio packets to multiplex into the four lines of SDI output.)

Audio frequency
400 Hz, 800 Hz, 1 kHz, 2 kHz, 3 kHz, 4 kHz, 6 kHz, 8 kHz, 10 kHz, 12 kHz, User (1-10)
User (1-10): Register a custom WAV (linear PCM) file up to 30 sec

Audio level
0 dBFS, -6 dBFS, -12 dBFS, -18 dBFS, -20 dBFS, -22 dBFS, -24 dBFS, MUTE

Audio mute
MUTE OFF, MUTE CH1 to 4, MUTE CH2 to 4, MUTE CH3 to 4, MUTE CH4

Audio channel
ALL OFF, 1 ON, 2 ON, 1 to 2 ON, 1 to 3 ON, 1 to 4 ON
(Audio channels can be enabled or disabled using active channel data in audio control packets.)

Temperature/humidity
0°C to 40°C / 10% to 80% (no condensation)

Power/consumption
100 V AC to 240 V AC±10%, 50/60 Hz / Max. 80 W (at 100 V AC)

Dimensions/weight
430 (W) x 44 (H) x 450 (D) mm / 6 kg

Consumables
Cooling fans (to be replaced every 5 years)

Power unit (to be replaced every 3 years)

Accessories
AC cord, Rack mount brackets, CD-ROM (Operation manuals)

Options
ESG-40SG2: SG-2 option

*1: Planned for spring 2016 release  *2: Optional  *3: 8 ch x2 when set to a horizontal resolution of 4096  *4: Multiplexed time codes represent time information in free-run mode