

# Ready for a range of audio and video testing with

# 12G-SDI systems



## ESG-4100

### Multi-Rate SDI 4K Test Signal Generator

#### Full range of test patterns, extensive outputs

Test signal generator that generates 4K signals (UHD 3840 x 2160p, Full 4K 4096 x 2160p). 4K video signals that are output at 60p/59.94p/50p are able to be distributed from 12G-SDI lines to 8 outputs and Quad Link 3G-SDI lines to two outputs at the same time. Embeds 16-channel audio into 12G/3G-SDI or 3G/HD-SDI output. Equipped with two outputs for MADI signals. When using an SG-2 option, the two lines are independently configurable.

#### Features

##### Versatile 4K output

Can produce any combination of Square Division (SQD)/ 2-Sample Interleave (2SI) signals, and 3840 x 2160p/4196 x 2160p resolution. (12G mode can be used only with 2SI.)

##### Video test patterns / Flash function

Standard test patterns include color bars, ramp, step, white, black, pathological, crosshatch, multiburst, and noise. Up to 10 custom register test patterns created via PC interface. Flash function allows White or Black signals to be inserted into video.

##### Colorimetry switching

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

##### Test pattern scrolling

Scrolling test patterns can be selected horizontally, vertically, horizontally and vertically at the same time, sequenced, or randomized.

##### Character display

Display time codes or channel numbers on test patterns as necessary. Alphanumeric characters able to be scrolled.

##### Logos

Logos (PNG format) created on a PC can be displayed on test patterns, and scrolled (excluding USER patterns).

##### 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 (30 seconds, 32 channels).

##### External control, SNMP monitoring

Control the unit via Telnet, or monitor operation via SNMP.

##### HDR test chart

PG and HLG (Gray scale, Color bar) test charts available as optional accessories.

##### 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.

##### As Standard (One-Line Output)

4K	12G mode at 60p/59.94p/50p	12G-SDI lines to 8 outputs and Quad Link 3G-SDI lines to 2 outputs
	3G mode at 60p/59.94p/50p	Quad Link 3G-SDI lines to 4 outputs
	3G mode at 30p/29.98p/25p/24p/23.97p	Dual Link 3G-SDI lines to 8 outputs
HD	1.5G mode at 30p/29.98p/25p/24p/23.97p	Quad Link HD-SDI lines to 4 outputs
	60p/59.94p/50p	3G-SDI lines to 7 outputs
	60i/59.94i/50i/30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF	HD-SDI lines to 7 outputs

##### With Option (Two-Line Output)

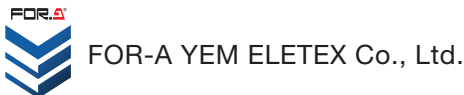
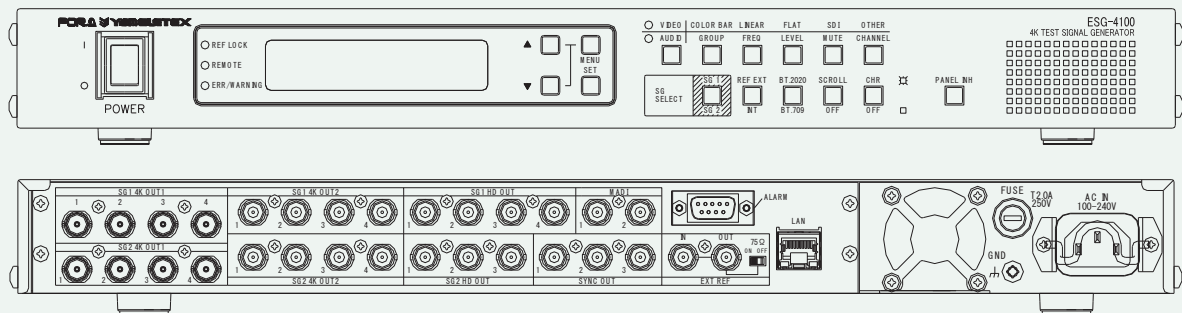
4K	12G mode at 60p/59.94p/50p	(12G-SDI lines to 4 outputs and Quad Link 3G-SDI to 1 output) x2 lines
	3G mode at 60p/59.94p/50p	(Quad Link 3G-SDI lines to 2 outputs) x2 lines
	3G mode at 30p/29.98p/25p/24p/23.97p	(Dual Link 3G-SDI lines to 4 outputs) x2 lines
HD	1.5G mode at 30p/29.98p/25p/24p/23.97p	(Quad Link HD-SDI lines to 2 outputs) x2 lines
	60p/59.94p/50p	One 3G-SDI line to 4 outputs and another 3G-SDI line to 3 outputs
	60i/59.94i/50i/30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF	One HD-SDI line to 4 outputs and another HD-SDI line to 3 outputs

# Specifications

Video output	4K 3840 x 2160/4096 x 2160 YUV422/10bit	12G-SDI : 60p/59.94p/50p (Level A TYPE-1 2SI) 2-line / 4-way distribution <sup>1</sup> , SMPTE ST 2082-1 compliant Quad Link 3G-SDI : 60p/59.94p/50p (Level A/B, 2SDI/SQD) 2-way distributed <sup>1,2</sup> or 2-line / 2-way distribution <sup>2</sup> , SMPTE ST 424 compliant Dual Link 3G-SDI : 30p/29.97p/25p/24p/23.98p (Level B) 2-line / 4-way distribution <sup>2</sup> , SMPTE ST 424 compliant Quad Link HD-SDI : 30p/29.97p/25p/24p/23.98p (Level B, 2SDI/SQD) 2-line / 2-way distribution <sup>2</sup> , SMPTE ST 292-1 compliant
	HD 1920 x 1080 YUV422/10bit	3G-SDI : 60p/59.94p/50p (Level A/B) 2-line / 4-way and 3-way distribution <sup>2</sup> , SMPTE ST 424 compliant HD-SDI : 60i/59.94i/50i 2-line / 4-way and 3-way distribution <sup>2</sup> , SMPTE ST 292-1 compliant HD-SDI : 30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF 2-line / 4-way end 3way distribution <sup>2</sup> , SMPTE ST 292-1 compliant
Audio formats		48 kHz, 24-bit, 32 channels (AES3-compliant)
Audio output	4K (SDI EMBEDDED)	BNC x1 (16 ch x1 <sup>3</sup> ), SMPTE ST 299-1-compliant
	HD (SDI EMBEDDED)	BNC x1 (16 ch x1), SMPTE ST 299-1-compliant
	MADI	BNC x1 (32 ch x1, 2 lines), AES10-compliant
Reference input		BB: NTSC: 0.429 Vp-p/PAL: 0.45 Vp-p, SMPTE ST 170-compliant Tri-level sync: 0.6 Vp-p, SMPTE ST 240-compliant 75Ω, 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
Interface		Ethernet: 10BASE-T/100BASE-TX (IEEE802.3), RJ-45 x1 GPIO: D-Sub 9-pin, Programmable I/O 7 bit
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%), Color space (100%/75%)
	LINEAR group	Y Ramp (UP/DOWN), Y Step (5/10), G Step (5/10), B Step (5/10), R Step (5/10), Expansion Ramp (White/Yellow/Cyan/Green/Magenta/Red/Blue)
	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, STEP, MUTE (Signal levels in registered audio files cannot be adjusted, except for 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, 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, Frame pattern registration software, SNMP MIB files)
Options		ESG-41SG2: SG-2 option ESG-4CHDR: HDR test chart

\*1: In 12G mode \*2: Optional \*3: 8 ch when set to 4096 horizontal resolution

# External View Diagrams



## FOR-A COMPANY LIMITED

3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan  
 FOR-A Corporation of America: 11155 Knott Ave. Suite G&H, Cypress, CA 90630, U.S.A.  
 FOR-A Corporation of America East Coast Office: 2 Executive Drive, Suite 670, Fort Lee Executive Park, Fort Lee, NJ 07024, U.S.A.  
 FOR-A Corporation of America Service Center: 2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.  
 FOR-A Corporation of America Southeast Office: 8333 North West 53rd Street, Suite 450, Doral, FL 33166, U.S.A.  
 FOR-A Corporation of Canada: 1131A, Leslie Street #209, Toronto, Ontario, M3C 3L8, CANADA  
 FOR-A Europe S.r.l.: Via Volturmo, 37, 20861 Brughiero MB, Italy  
 FOR-A UK Limited: Trident Court, 1 Oakcroff Road, Chessington, KT9 1BD, UK  
 FOR-A Italia S.r.l.: Via Volturmo, 37, 20861, Brughiero MB, Italy  
 FOR-A Corporation of Korea: 1007, 57-5, Yangsan-ro, Yeongdeungpo-gu, Seoul 150-103, Korea  
 FOR-A China Limited: 708B Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China  
 FOR-A Middle East-Africa Office: Dubai Media City, Aurora Tower, Office 1407, P.O. Box 502688, Dubai, UAE  
 Agiv (India) Private Limited (FOR-A India): 85, V.N. Purav Marg Sion-Chunabhatti (E) Mumbai - 400 022  
 FOR-A South East Asia Office: Studio 09, Rm. A1, 3/F., Phase 1, Hang Fung Ind. Bldg., 2G Hok Yuen St., Hung Hom, Hong Kong

## www.for-a.com

Tel : +81-(0)3-3446-3936  
 Tel: +1-714-894-3311  
 Tel: +1-201-944-1120  
 Tel: +1-352-371-1505  
 Tel: +1-305-931-1700  
 Tel: +1-416-977-0343  
 Tel: +39-039-879-778  
 Tel: +44-(0)20-3044-2935  
 Tel: +39-039-881-086/103  
 Tel: +82-(0)2-2637-0761  
 Tel: +86-(0)10-8721-6023  
 Tel: +971-(0)4-551-5830  
 Tel: +91-22-2405-1258

Fax : +81-(0)3-3446-1470  
 Fax: +1-714-894-5399  
 Fax: +1-201-944-1132  
 Fax: +1-352-378-5320  
 Fax: +1-714-894-5399  
 Fax: +1-416-977-0657  
 Fax: +39-039-878-140  
 Fax: +44-(0)20-3044-2936  
 Fax: +39-039-878-140  
 Fax: +82-(0)2-2637-0760  
 Fax: +86-(0)10-8721-6033  
 Fax: +971-(0)4-551-5832  
 Fax: +91-22-2405-0007