

# Ready for a range of audio and video testing with

# 12G-SDI / IP



## ESG-4200 4K/HD Test Signal Generator

Creates 4K signals (UHD 3840 x 2160p, Full 4K 4096 x 2160p). 4K video signals that are output at 60p/59.94p/50p can be distributed from 12G-SDI lines to 4 outputs and Video over IP interface to 2 outputs. 2 lines of 3G/HD-SDI outputs are also supported and controlled independently (optional).

### Features

#### 12G-SDI and Video over IP support

Support 12G-SDI and Video over IP interface. SMPTE 2022-6 supported. SMPTE 2110 is planning to be supported.

#### 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, multi-burst, 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

PQ 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.

##### Standard (One-line output)

4K	IP	2 distributed outputs from SFP+
	12G mode at 60p/59.94p/50p	4 distributed outputs of 12G-SDI and 2 distributed outputs of Quad Link 3G-SDI
	3G mode at 60p/59.94p/50p	3 distributed outputs of Quad Link 3G-SDI
	3G mode at 30p/29.98p/25p/24p/23.97p	6 distributed outputs of Dual Link 3G-SDI
HD	1.5G mode at 30p/29.98p/25p/24p/23.97p	3 distributed outputs of Quad Link HD-SDI
	60p/59.94p/50p	7 distributed outputs of 3G-SDI
	60i/59.94i/50i/30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF	7 distributed outputs of HD-SDI

##### With option (Two-line output)

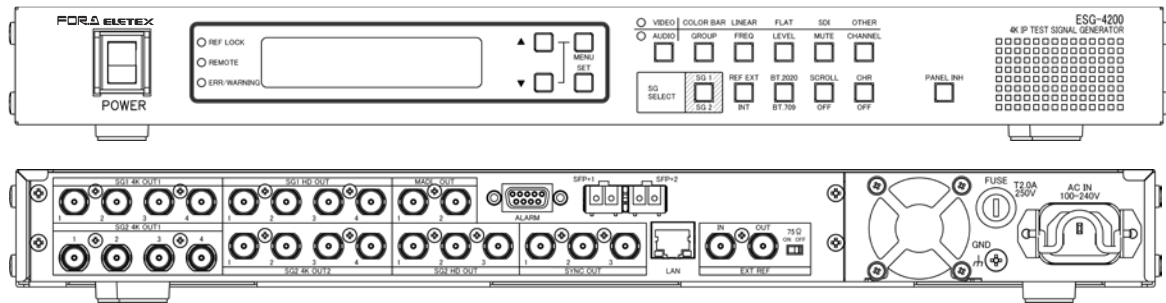
4K	IP	Line-1: 2 distributed outputs from SFP+
	12G mode at 60p/59.94p/50p	Line-1: Distributed output of Quad Link 3G-SDI Line-2: 4 distributed outputs of 12G-SDI and distributed output of Quad Link 3G-SDI
	3G mode at 60p/59.94p/50p	Line-1: Distributed output of Quad Link 3G-SDI Line-2: 2 distributed outputs of Quad Link 3G-SDI
	3G mode at 30p/29.98p/25p/24p/23.97p	Line-1: 2 distributed output of Quad Link 3G-SDI Line-2: 4 distributed outputs of Quad Link 3G-SDI
HD	1.5G mode at 30p/29.98p/25p/24p/23.97p	Line-1: Distributed output of Quad Link 1.5G-SDI Line-2: 2 distributed outputs of Quad Link 1.5G-SDI
	60p/59.94p/50p	Line-1: 4 distributed output of Quad Link 3G-SDI Line-2: 3 distributed outputs of Quad Link 3G-SDI
	60i/59.94i/50i/30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF	Line-1: 4 distributed output of Quad Link 3G-SDI Line-2: 4 distributed outputs of Quad Link 3G-SDI

# Specifications

Video output	4K 3840 x 2160/4096 x 2160 YUV422/10bit	IP (SFP+): SMPTE 2022-6, SMPTE 2110*1 12G-SDI: 60p/59.94p/50p (Level A TYPE-1 2SI), SMPTE ST 2082-1 compliant Quad Link 3G-SDI: 60p/59.94p/50p (Level A/B, 2SDI/SQD), SMPTE ST 425-5 compliant Dual Link 3G-SDI: 30p/29.97p/25p/24p/23.98p (Level B, 2SDI/SQD), SMPTE ST 425-3 compliant Quad Link HD-SDI: 30p/29.97p/25p/24p/23.98p (2SDI/SQD), SMPTE ST 425-3 compliant
	HD 1920 x 1080 YUV422/10bit	3G-SDI: 60p/59.94p/50p (Level A/B), SMPTE ST 274/425-1 compliant HD-SDI: 60i/59.94i/50i, SMPTE ST 274/292-1 compliant HD-SDI: 30p/30PsF/29.97p/29.97PsF/25p/25PsF/24p/24PsF/23.98p/23.98PsF, SMPTE ST 274/292-1 compliant
Audio formats		48 kHz, 24-bit, 32 channels (AES3-compliant)
Audio output	4K (SDI EMBEDDED)	BNC x1 (16 ch/8 ch x1 <sup>2</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, 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.110 W (at 100 V AC)
Dimensions/weight		430 (W) x 44 (H) x 450 (D) mm/7 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-42SG2: SG-2 option ESG-4CHDR: HDR test chart

\*1: Planned for future release \*2: 8 ch when set to 4096 horizontal resolution

# External View Diagrams



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