Easy to See
Time Lag

EDD-5400
4K Time-lag Checker

Measures video delay, audio delay, relative delay between audio channels, or relative delay between video and audio, based on test time code signals.

Generates and transmits TTC signals in video, audio, or VANC output that match the phase of source video,audio,or VANC signals. Transmitted video and audio signals reenter the checker and are compared to the current time to determine video and audio delay. Measurement of delay over long distances is possible via GNSS using two checkers.

Features

12G/3G/HD-SDI signal format support
Broad format support enables a single checker to be used in measurement of transmission delay involving format conversion. Useful for live international broadcasts. (12G-SDI support is available as an option.)

Original test time code signals
Resistant to attenuation, even with data compression. Time information (active video period) is listed on the screen. For audio signals, an original, LTC-based signal is used. Regarding the systems or equipment measured, measurement is not system-dependent. Also enables checking of differences in the time required for compression or decompression of source video by the system measured, by multiplexing TTC signals onto input signals.

Measurement of video/VANC discrepancies
Measures discrepancies between video and VANC signals by multiplexing TTC signals into VANC areas.

Measurement of transmission delay over long distances
Transmission delay from a remote site can be measured using two checkers with GNSS-synchronized clocks. Audio and video delay can be measured even without GNSS synchronization.
Note: GNSS-based long-distance transmission delay measurement may not be possible depending on antenna coverage or weather conditions. (Initially, signals must be acquired from at least four GNSS satellites.)

High-precision internal clock (GNSS synchronized)
Measurement is accurate to within 1 msec. if performed within eight hours of outdoor GNSS synchronization of the internal clock used for measurement. (GNSS time synchronization is available as an option.)

Measurement logging
Enables efficient analysis on a computer. Output via Ethernet is possible for data needed in delay analysis, such as time code data, reference signal data, and delay measurement values for each signal relative to reference signals.

High-precision measurement
Measurement of delay is accurate to 0.001 ms.
(High accuracy mode will be planned in the future)

Full-featured measurement
Supports the following measurement: video and audio delay, video transmission delay, discrepancy of delay between video signals and VANC, audio transmission delay, and delay between any combinations of audio channels. Can also measure delay of signals with different input and output formats.
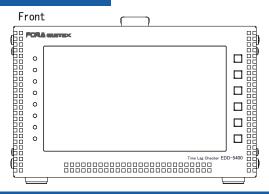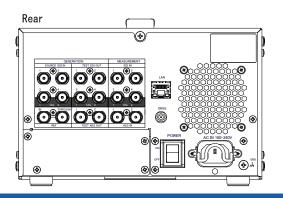
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Specifications

Video inputs (Measurement circuit)	12G-SDI*1: 3840 x 2160/60p, 59.94p, 50p, SMPTE ST 2082-1, 75Ω, BNC x 1 3G-SDI: 1920 x 1080/60p, 59.94p, 50p, SMPTE ST 424, 75Ω, BNC x 4 HD-SDI: 1920 x 1080/60i, 59.94i, 50i, 1280 x 720/60p, 59.94p, 50p, SMPTE ST 292-1, 75Ω, BNC x 4 *Supporting 4K formats (payload) when 12G-SDI or quad 3G-SDI inputs.
Video outputs (Test signal generator circuit)	12G-SDI*1: 3840 x 2160/60p, 59.94p, 50p, SMPTE ST 2082-1, 75Ω, BNC x 1 3G-SDI: 1920 x 1080/60p 59.94p, 50p, SMPTE ST 424, 75Ω, BNC x 4 HD-SDI: 1920 x 1080/60i, 59.94i, 50i, 1280 x 720/60p, 59.94p, 50p, SMPTE ST 292-1, 75Ω, BNC x 4 *Supporting 4K formats (payload) when 12G-SDI or quad 3G-SDI outputs.
Audio inputs (Measurement circuit)	Embedded Audio: SMPTE ST 272/299, Linear PCM 48 KHz, 32 channels (each BNCs) (HD-SDI is supporting 16 channels per BNCs) AES/EBU: Linear PCM 4 channels (stereo x 2), 1.0 Vp-p, BNC x 2
Audio outputs (Test signal generator circuit)	Embedded Audio: SMPTE ST 272/299, Linear PCM 48 KHz, 32 channels (each BNCs) (HD-SDI is supporting 16 channels per BNCs) AES/EBU: Linear PCM 4 channels (stereo x 2), 1.0 Vp-p, BNC x 2
Measurement range	99.999999 sec: maximum range between TTC and signal on a 0.001 msec basis 59.999999 sec: range between signals
Accuracy	±1 μsec (in the same frame rates) *High accuracy mode will be planned in the future
Display units	sec/msec, sec/frame/msec
Reference inputs	BB: NTSC 0.429 Vp-p/PAL: 0.45 Vp-p or Tri-level Sync: 0.6 Vp-p, 75Ω, BNC x 1
GNSS inputs*1	SMA connector, 50Ω, 3 V output
Interface	LAN: 100 Base-TX, RJ-45 x 1 (telnet)
Temperature / Humidity	5ºC to 40ºC / 10% to 80% (no condensation)
Power / Consumption	100 VAC to 240 VAC ±10%, 50/60 Hz / Approx. 50 W at 100 VAC
Dimensions / Weight	212 (W) mm x 135 (H) mm x 350 (D) mm / Approx. 5.5 kg
Consumables	Power supply: Approx. 5 years, Cooling fan: Approx. 5 years
Accessories	AC cord, CD-ROM (operation manual)

*1: Optional

External Dimensions

Front

Rear