COBALT

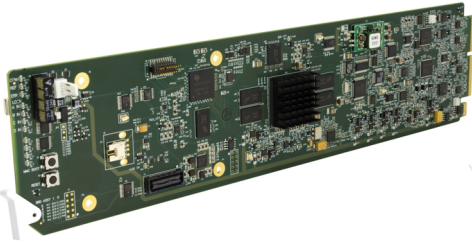## 9960-TG2-REF1 • 3G/HD/SD-SDI Dual Test Signal Generator
with Moving Box Active Signal Indication and Bi-Level/Tri-Level Sync Out

The Cobalt® **9960-TG2-REF1 3G/HD/SD-SDI Dual Test Signal Generator with Moving Box Active Signal Indication and Bi-Level/Tri-Level Sync Out** offers an easy to use, economical solution to providing comprehensive test signal packages to ensure validity of downstream baseband SDI systems. The 9960-TG2-REF1 is an unprecedented first in the high-density openGear® based card form factor. Two independent generator blocks can be set to offer dual test packages which can be simultaneoulsy outputted or selectively fed to a single downstream path via a 2x4 output crosspoint.

SCTE 104 insertion function provides generation and insertion of SCTE 104 messages into baseband SDI. Message send can be triggered from automation GPI, manual, or other event action modes. The function can also execute card actions based on SCTE 104 messages received by the card, as well as send triggered SCTE 104 packets to other downstream systems.

The 9960-TG2-REF1 also provides AES and analog audio test tones (both using 24-bit data). A moving-box insertion can be enabled to serve as a dynamic raster confidence check. The 9960-TG2-REF1 can use either of two frame references to provide an output that's synchronous with house ref, or use its internal ref timing to generate its own ref. An analog video output offers SD black burst or HD tri-level reference output.

Preset save/load allows saving custom card settings while allowing one-button revert to factory settings. Layered presets allow invoking changes related only to a specific area of concern while not changing any other settings or aspects. Full user DashBoard™ or Remote Control Panel remote control allows full status and control access locally or across a standard Ethernet network. GPIO allows direct input routing control and status monitoring.

FEATURES

Comprehensive test signal generation for SDI/analog video and baseband discrete audio in an easily integrated openGear® card

Easy to use, intuitive, flexible, and far more economical than typical bench equipment

Fully-independent dual generator blocks offer simultaneous output of user-configured test packages, or instant user selection between generators via output crosspoint

Moving-box/motion insertion enable serves as an easy to use dynamic raster confidence check

Closed-captioning CEA 608 generator allows user test packages of VBI closed captioning for testing downstream systems

SCTE 104 insertion available using ancillary data, GPI, SNMP, or JSON via HTTP POST / WebSocket, with full control of splice start, end, and cancel as well as pre-roll and break duration offsets

SDI import allows insertion of user static raster/patterns as an alternative addition to standard test pattern outputs
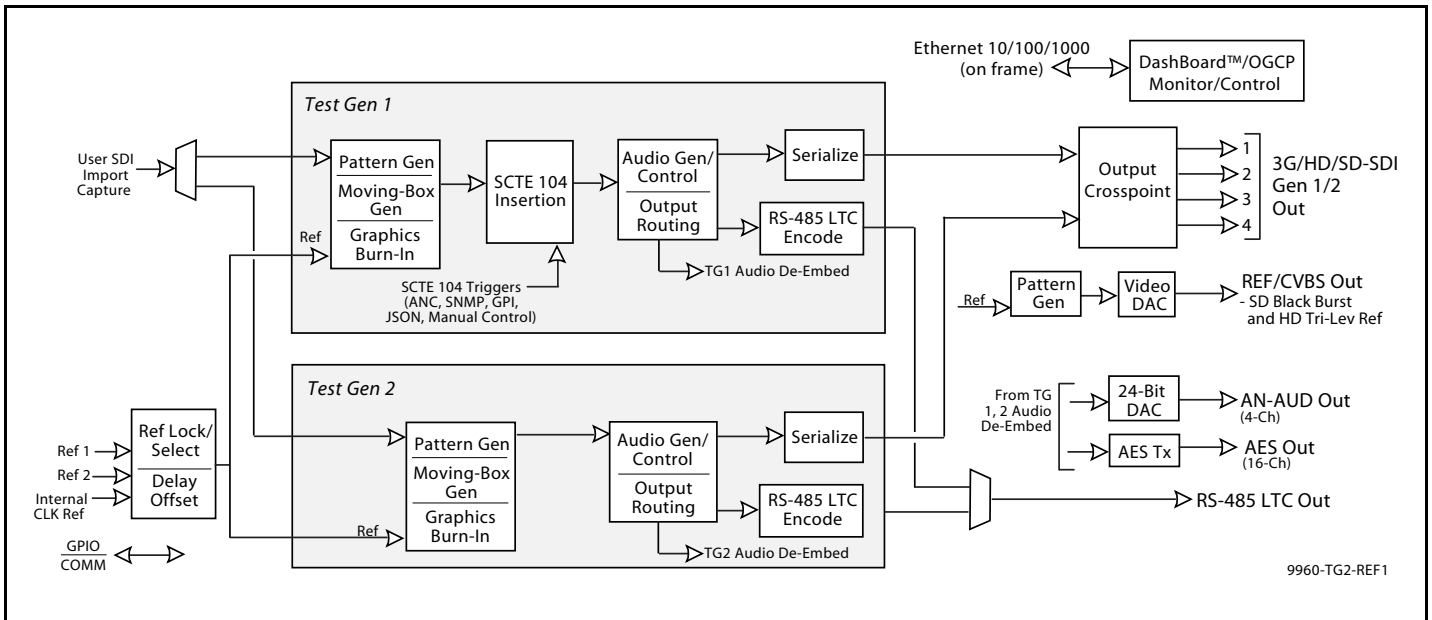
Full suite of output interfaces – SDI, CVBS, AES and analog audio

Convenience RS-485 LTC output works with legacy systems and checks bi-phase LTC/SMPTE 12 correlation in mixed systems
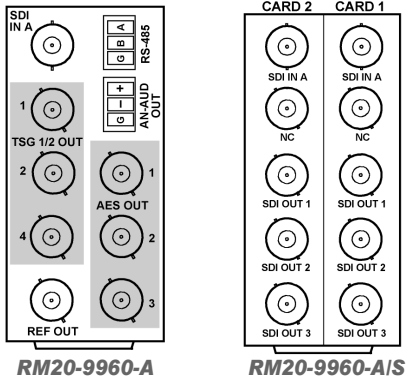
Low-power/high-density design – less than 18 Watts per card

Remote control/monitoring via Dashboard™ software or OGCP-9000 remote control panels

Five year warranty

openGear®

RM20-9960-A   *RM20-9960-A/S*

SPECIFICATIONS

Note: Inputs/outputs are a function in some cases of rear I/O module used.

Power
< 18 Watts

SDI Inputs/Outputs
(1) SDI User Input (75Ω BNC)
Up to (4) 75Ω BNC outputs
SDI Formats Supported: SMPTE 259M, SMPTE 292M, SMPTE 424M
SDI Alignment Jitter: 3G/HD/SD: < 0.3/0.2/0.2 UI
Timing Jitter: 3G/HD/SD: < 2.0/1.0/0.2 UI

CVBS Video Output
(1) 75Ω BNC output

Discrete Audio Outputs
AES-3id 75Ω outputs (8 pair (16-Ch) max)
Balanced analog audio outputs (4-Ch max)
(I/O conforms to 0 dBFS = +24 dBu)
Analog Output Impedance: < 50 Ω
Analog Reference Level: -20 dBFS
Analog Nominal Level: +4 dBu
Analog Max Output Level: +24 dBu (0 dBFS)
Analog Freq. Response: ±0.2 dB (20 Hz to 20 kHz)
Analog SNR: 115 dB (A weighted)
Analog THD+N: -96 dB (20 Hz to 10 kHz)
Analog Crosstalk: -106 dB (20 Hz to 20 kHz)

Timecode Insertion/Burn-In
Burn-in and embedded video output timecode selected via user controls from input video SMPTE embedded timecode and/or audio LTC. Burn-in enable/disable user controls. Configurable for burn-in string of seconds, seconds:frames, seconds:frames:field. User controls for text size and H/V position.

Text Burn-In
(2) independent strings supported. Independent insertions controls for enable/disable and enable upon LOS. User controls for text size and H/V position.

User Audio Delay Offset from Video
Bulk delay control: -33 msec to +3000 msec.
Per-channel delay controls: -800 msec to +800 msec

GPIO/COMM
(2) GPI configurable to select input routing. (2) GPO configurable to invoke upon input selected. RS-232/485 comm port. All connections via rear module RJ-45 GPIO/COMM jack.

Frame Reference Input
(2) reference from frame bus. SMPTE 170M/318M "Black Burst", SMPTE 274M/296M.
Return Loss: >35 dB up to 5.75 MHz

ORDERING INFORMATION

9960-TG2-REF1   3G/HD/SD-SDI Dual Test Signal Generator with Moving Box Active Signal Indication and Bi-Level/Tri-Level Sync Out

RM20-9960-A 20-Slot Frame Rear I/O Module (Standard Width) (1) 3G/HD/SD-SDI Input BNC, (3) 3G/HD/SD-SDI Output BNCs, (1) REF/CVBS Out BNC, (3) AES Out BNC, (1) Balanced Analog Audio Output, (1) RS-485 I/O

RM20-9960-A/S 20-Slot Frame Rear I/O Module (Split; supports 2 cards) (1) 3G/HD/SD-SDI Input BNC, (2) 3G/HD/SD-SDI Input BNCs, (3) 3G/HD/SD-SDI Processed or Reclocked Output BNCs (connections are per each Card 1 / Card 2 connector bank)