SEL-4CQS1-S/ -REL-S

Clean and Quiet Switcher

The Selenio Clean and Quiet Switcher (CQS) includes video processing to ensure all video switching is glitch-free, while audio processing is provided for quiet switching. Inputs are synchronized so that the outputs are always clean, with no disturbances, enabling the highest level of visual quality and accuracy.

The Selenio CQS is ideal for on-air source switching – using manual or automated control – as a back up to a master control switcher. The dual 2 x 2 configuration enables the user to simultaneously switch HD and SD sources into HD and SD outputs. The versatile CQS can also be utilized as a quad-channel SDI (HD or 3G) frame synchronizer with embedded audio processing. In this case, there can be four different program signals or quad link SDI (HD or 3G) for UHD video signals. The CQS also can be used as a simple switcher for on-air transitions under automation control.

Features

- 4×4 Clean and Quiet Switch or Dual 2×2 Clean and Quiet Switch configurations
- Modular card set housed in Selenio MCP3 frame
- Frame sync or line sync operation
- User-selectable transition modes and duration
- Four auto-sensing SD/HD/3G-SDI inputs
- EDH and CRC error monitoring on all SDI inputs
- Freeze and Black monitoring on all SDI inputs
- Frame reference of NTSC, PAL, or tri-level sync
- Rich set of supported control protocols
  - RS-232/422/485 serial XY protocol support
  - Six configurable GPI inputs or outputs (TTL level), for triggering switch operation or alarm outputs
  - ADC Automation control support
  - XY over IP support
  - CCS-P support for Magellan panels (RCP-24LCD-OLED, RCP-48LCD-OLED)
- Four processed SD/HD/3G-SDI signal outputs
- Four video frame synchronizers with H-phase, V-phase, and frame delay controls
- Four line synchronizers for minimum latency operation
- Four configurable video mixers (with audio follow) for the following transition modes:
  - Cut
  - X-Fade
  - V-Fade
  - Cut-Fade
  - Fade-Cut with arbitrary transition timing of up to 4 seconds
- Four test signal generators
- De-embedding capability for four 16-channel audio streams
  - 64-channels of audio synchronization, with delays of up to 3000 ms per channel
  - 64-channels of audio proc amp capability for mute, gain, swap/copy, invert, and sum
    - Four 16-channel audio embedders

Specifications

Specifications and designs are subject to change without notice

3G/HD/SD-SDI INPUT VIDEO	
Number of Inputs	4 (including 2 in SFP)

3G/HD/SD-SDI INPUT VIDEO

Standard	1080p (SMPTE 424M) 3G HD-SDI * 1080i/p (SMPTE 292M) HD-SDI 720p (SMPTE 296M) HD-SDI 525/625 component (SMPTE 259M-C, 270 Mb/s) SD-SDI
Frame Rate	1080i/p/psf: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 Hz 720p: 50, 59.94, 60 Hz 525/625
Connector (High-Density)	HD-BNC
Impedance	75 ohms
Return Loss	>15 dB to1485 MHz >10 dB from 1485 to 2790 MHz
Equalization	3G: Adaptive cable equalization for up to 459 ft (140 m), typical, of Belden 1694A coaxial cable; 328 ft (100 m) for SEL-DDA1-REL version, typical** HD: Adaptive cable equalization for up to 656 ft (200 m) typical, of Belden 1694A coaxial cable; 524 ft (160 m) for SEL-DDA1-REL version, typical** SD: Adaptive cable equalization for up to 984 ft (300 m) typical, of Belden 8281 coaxial cable; 1,312 ft (400 m), typical, of 1694A Belden 1694A coaxial cable**

* Support for SMPTE 372M Level B (1080p50/59/60DL)

3G/HD/SD-SDI OUTPUT VIDEO

Number of Outputs	4
Standard	1080p (SMPTE 424M) 3G HD-SDI 1080i/p (SMPTE 292M) HD-SDI 720p (SMPTE 296M) HD-SDI 525/625 component (SMPTE 259M-C, 270 Mb/s) SD-SDI
Frame Rate	1080i/p/psf: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 Hz 720p: 50, 59.94, 60 Hz 525/625
Connector (High-Density)	HD-BNC
Impedance	75 ohms
Return Loss	>15 dB to1485 MHz >10 dB from 1485 to 2790 MHz
Signal Level	800 mV ± 10%
DC Offset	0.0V ± 0.5 V
Rise and Fall Time	3G: <135 ps HD-SDI: <270 ps SD-SDI: 400 – 1500 ps
Overshoot	<10%
Jitter	Timing jitter: 3G HD-SDI: <2 UI pk-pk (>10 Hz) HD-SDI: <1 UI pk-pk (>10 Hz) SD-SDI: <0.2 UI pk-pk (>10 Hz) Alignment jitter: 3G HD-SDI: <0.3 UI pk-pk (>100 Hz) HD-SDI: <0.2 UI pk-pk (>100 Hz) SD-SDI: <0.2 UI pk-pk (>1 kHz)

GPI INPUTS AND OUTPUTS

Connector	Samtec TFM-110-01-L-D-RE1-WT 20 pins connector
Number of Inputs/Outputs	6 (configurable)
Logic Level	+5V TTL

RS-232/422/485	
Number of Rx Ports	1 RS-422/485 or RS-232
Number of Tx Ports	1 RS-422/485 or RS-232
Standard Electrical	EIA-32-C, EIA-422-B, EIA-485-A
Connector	Samtec TFM-110-01-L-D-RE1-WT 20 pins connector RS-232/422/485 switchable from user control RS-422 termination through jumpers
Power Consumption	40 W maximum

Ordering Information

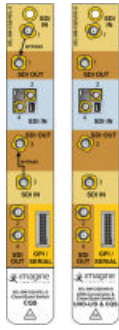|	
SEL-4CQS1-S	4×4 or Dual 2×2 CQS Clean and Quiet SDI Switcher, line sync or frame sync mode, includes single back module with 2 HD-BNC input connectors, 2 inputs on SFP (SFP+2ERX+NR+L dual HD-BNC input SFP included) and 4 HD-BNC outputs, GPI and serial data port
SEL-4CQS1-REL-S	4×4 or Dual 2×2 CQS Clean and Quiet SDI Switcher with 2 relay bypasses, line sync or frame sync mode, includes single back module with 2 HD-BNC input connectors, 2 inputs on SFP (SFP+2ERX+NR+L dual HD-BNC input SFP included) and 4 HD-BNC outputs, GPI and serial data port
APPLICATION MODULE ACCESSORIES	
SEL-FM-CQS1	Front module only for CQS Clean and Quiet Switcher
SEL-BM-CQSUHD-S	CQS, UHD-U/D, QFS, DEN back module only (SFP+2ERX+NR+L dual HD-BNC input SFP included)
SEL-BM-CQS-REL-S	Back module with relay bypass only for CQS Clean and Quiet Switcher (SFP+2ERX+NR+L dual HD-BNC input SFP included)
SELOPTCAB-HD-BNC-A	HD-BNC Plug to BNC Jack Adaptor Cable for Audio (12″/0.3m)
SELOPTCAB-HD-BNC-V	HD-BNC Plug to BNC Jack Adaptor Cable for Video (12″/0.3m)
SELOPT-TOOL-CABLE	HD-BNC Cable Insertion and Extraction Tool
REMOTE CONTROL PANELS	
Magellan™ Panel with OLED Displays, Control Knobs and LCD Pushbuttons (user programmable LCD pushbuttons)	
RCP-24LCD-OLED	1RU control panel with 24 LCD buttons and OLED display
RCP-48LCD-OLED	2RU control panel with 48 LCD buttons and OLED display
SOFTWARE KEY FOR MAGELLAN PANELS	
RCP-PROCMV-OPT	Software key license that enables control of Imagine Communications multiviewers and processing devices on Magellan™ Remote Control Panels (OLED display with LCD programmable push button and OLED display with pushbutton versions only)

Images/Diagrams

PROD - MCP MODULE - SEL-4CQS1-S - SWATCH