COBALT

9970-QS-MC • 3G/HD/SD-SDI/CVBS Expandable Master Control Multiviewer
with Advanced On-Screen Graphics

The Cobalt® **9970-QS-MC 3G/HD/SD-SDI/CVBS Expandable Master Control Multiviewer** integrates five discrete 3G/HD/SD-SDI or CVBS inputs onto a single 3G/HD/SD-SDI quint-split output, with each image being flexibly inserted into the output image area.

Based on our award-winning 9970-QS, the 9970-QS-MC is specifically designed for master control applications by providing layout optimization that saves space, and easily implemented QC screening of master control ingest.

The 9970-QS-MC provides the ability to orient and arrange PIPs in columns arranged for a 9x16 "portrait" layout. This allows consumer or professional monitors to be oriented "on-end", thereby saving wall-width in any area (especially in space-conscious mobile environments). The 9970-QS-MC provides individual per-PIP detection of missing video, and black/frozen frame or audio silence events on input A. This detection can propagate an alert to individual QC GPO signals for instant notification of video/audio errors. While the 9970-QS-MC offers unprecedented flexibility, it also offers an unprecedented ease of use. Fully-flexible layouts using one-button template presets or fully customizable layouts using easy to use sizing/positioning custom controls. Custom layouts can be saved to user presets. Any template layout or custom layout changes can be done "on-the-fly" in real time, without tedious setup compiler or layout programs like many other split/multiviewer products.

Multiple 9970-QS-MC cards can be cascaded to provide splits greater than the base quint-split. The 9970-QS-MC PIP5 input can be used in a cascaded chain of 9970-QS-MC cards that provides multiviewer layouts of up to 8x8 (64:1). The QuickSet grid definer precisely and easily sets up a multiviewer grid where columns and rows of each of the cards PIPs are arranged to work together in a cascaded aggregate arrangement. Low-latency processing allows multiple 9970-QS-MC cards to be cascaded without significant accumulated delays within the chain.

A master output up-down-cross convert scaler provides scale-to HD or 3G SDI formats for the combined multiviewer output, which also includes an HDMI output (with audio embedding) to directly feed a consumer wall monitor. The openGear® card-based form factor of the 9970-QS-MC provides scalable, easily integrated multi-image functions for the 20-slot frame form factor with easy to use DashBoard™ remote control. Full user DashBoard™ or Remote Control Panel remote control allows full status and control access locally or across a standard Ethernet network.

FEATURES

Supports all popular formats: 480i, 576i, 720p, 1080i, 1080psF, 1080p

Scalable openGear® multiviewer master control solution. Card-based form factor provides high density, space-saving economical integration.

9x16 "portrait" layout mode allows monitor "on-end" orientation to save wall-width space in master control environments

Easy, real-time "on the fly" custom layout changes without needing setup compiler or layout programs

Quality events (such as missing video, frozen/black frame, or audio silence) alert/alarms can be propagated to individual per-PIP GPO (Input A only)

Easy to configure PIP sizing and borders. Custom settings can be saved to user presets.

Cascading Mode and QuickSet grid definer offers easy to set up scalable multiviewer functions (up to 64:1) using multiple cascaded (daisy-chained) 9970-QS-MC cards. Two cards can provide an 8:1 multiviewer, with up to 16 cards providing a 64:1 multiviewer. Single card provides up to 5:1 split, with up to ten 5:1 splits per frame.

3G/HD/SD-SDI 2x DA and HDMI with audio embed outputs

DashBoard Output Preview function provides display of regularly-sampled screen captures in the card DashBoard page. Provides remote-access program video content/presence and multiviewer layout confidence monitoring via the card's DashBoard display without needing collocation with the card or its input or output video signals.

Audio routing directs selected PIP audio to combined-stream outputs. Audio downmixing also provided.

Fully flexible input compatibility – mixed formats on inputs can be automatically sized and outputted in a combined output scaled to desired broadcast SD/HD/3G output format. Each input automatically detects and sets up for SDI or CVBS input. Supports asynchronous inputs using per-PIP ref lock. Per-PIP independent ARC settings and controls.

Low-power/high-density design – less than 18 Watts per card

DashBoard™ remote control status monitoring and setup/control

Hot-swappable

Five year warranty
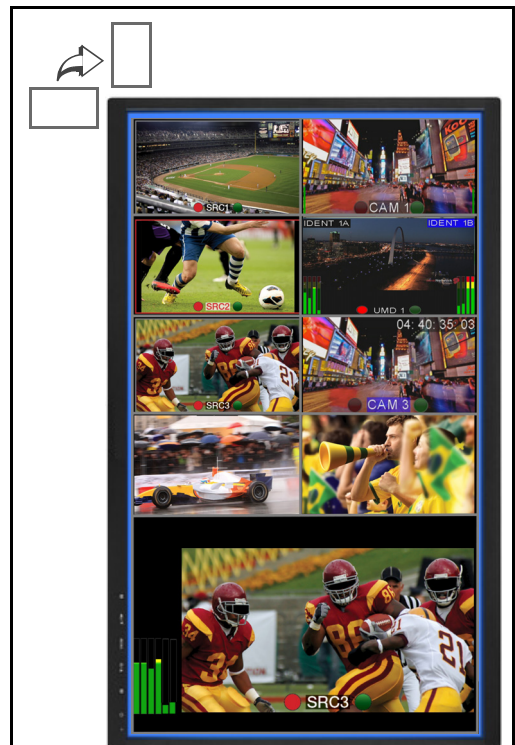
9x16 Portrait output mode provides space efficiency allowing consumer-size monitors to be positioned on-end. The 9970-QS-MC allows the same cascading as the 9970-QS model, allowing large-scale multiviewer setups using less wall space.

Per-PiP detection of missing video, black/frozen frame, or audio silence events can propagate an alert to individual QC GPO signals for instant detection of video/audio errors.

DashBoard

openGear®

Multiple 9970-QS-MC cards can operate in a **cascading** mode, where four PiP inputs serve as program video inputs, and the PIP5 input receives the cascading combined layout of a preceding 9970 card in a daisy-chain arrangement.
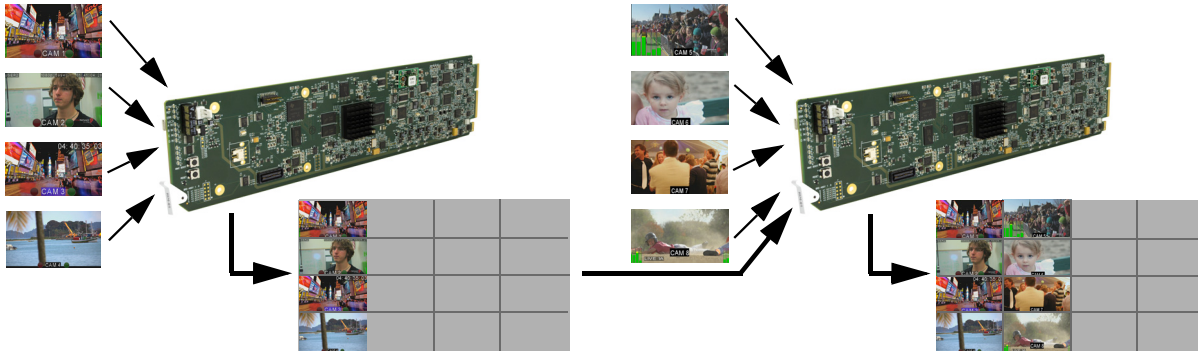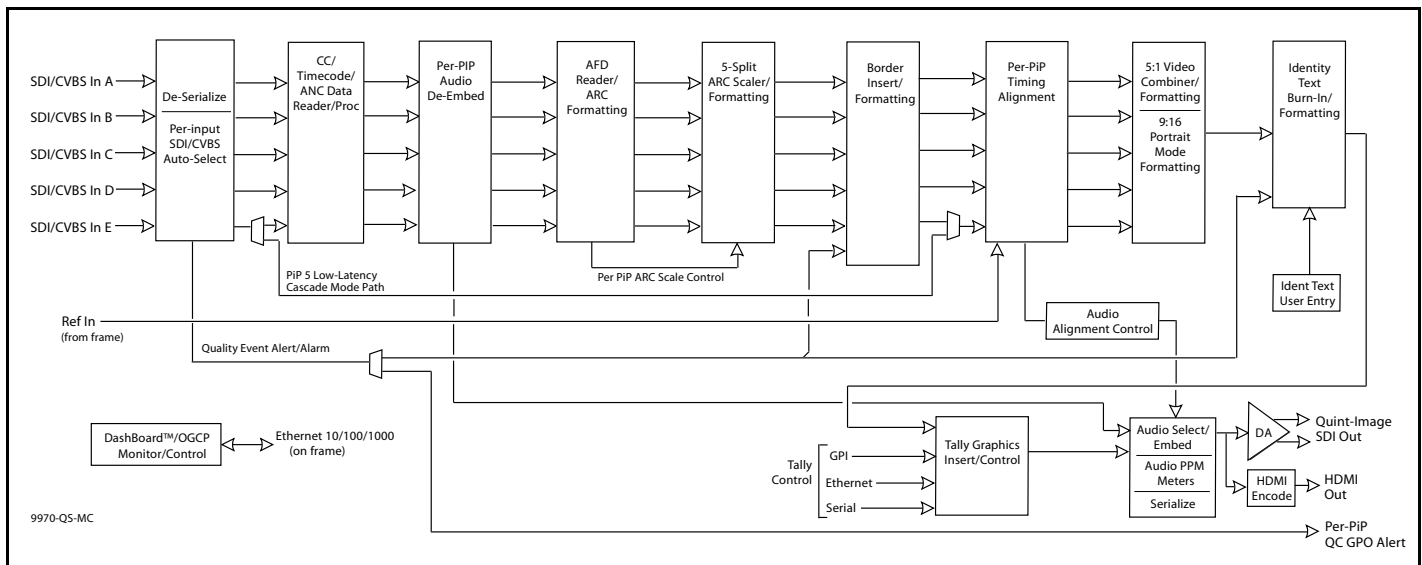

The cascade output (consisting of the four PiP images and a full-size underlay) can be sent to another 9970-QS as a **cascade** input, serving as an underlay which can accept more PiP insertions.

A Quickset grid definer precisely sets up a multiviewer grid where columns and rows of each of the cards PIPs are arranged to work together in a cascaded aggregate arrangement. Simply set for the number of rows and columns desired   the Quickset definer does the rest!

More downstream 9970-QS cards can be added and have its PiPs added next to those furnished from the upstream card cascade. Here, PiP insertions are arranged in columns, although almost any desired grid and arrangement scheme is possible.

Even more cards and PiPs can be added using open adjacent cells in the grid. Grids of up to 8x8 are supported, providing for a 64:1 multiviewer using only 16 cards all within the compact 2RU openGear-standard frame form.

VID IN A   VID IN B
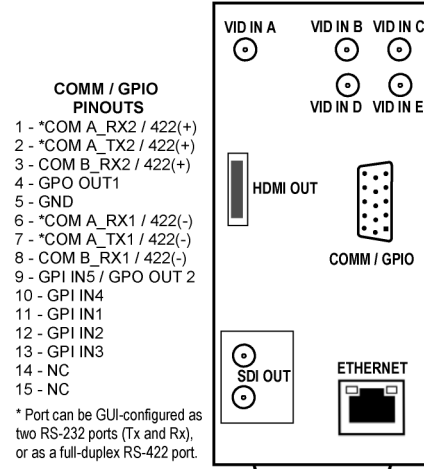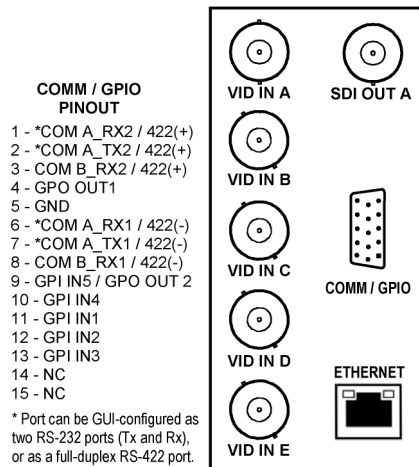
VID IN C   VID IN D

SDI OUT 1   SDI OUT 2

9 - UARTA TX
8 - UARTA RX
7 - GND
6 - GPI IN1
5 - GPI IN 2
4 - GND
3 - GPO OUT 1
2 - GPO OUT 2
1 - GPO RTN

COMM / GPIO
• 9
• 8
• 7
• 6
• 5
• 4
• 3
• 2
• 1

ETHERNET

RM20-9970-B

VID IN A   VID IN B   VID IN C

VID IN D   VID IN E

COMM / GPIO PINOUTS
1 - *COM A_RX2 / 422(+)
2 - *COM A_TX2 / 422(+)
3 - COM B_RX2 / 422(+)
4 - GPO OUT1
5 - GND
6 - *COM A_RX1 / 422(-)
7 - *COM A_TX1 / 422(-)
8 - COM B_RX1 / 422(-)
9 - GPI IN5 / GPO OUT 2
10 - GPI IN4
11 - GPI IN1
12 - GPI IN2
13 - GPI IN3
14 - NC
15 - NC

* Port can be GUI-configured as
two RS-232 ports (Tx and Rx),
or as a full-duplex RS-422 port.

HDMI OUT

COMM / GPIO

SDI OUT

ETHERNET
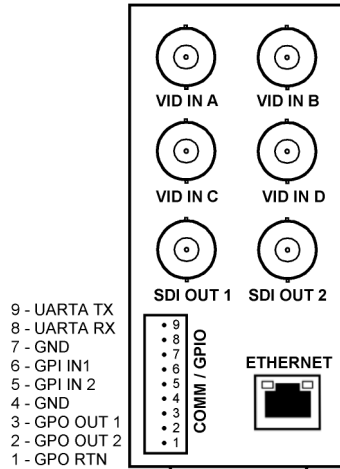
RM20-9970-C-DIN
RM20-9970-C-HDBN

COMM / GPIO PINOUT
1 - *COM A_RX2 / 422(+)
2 - *COM A_TX2 / 422(+)
3 - COM B_RX2 / 422(+)
4 - GPO OUT1
5 - GND
6 - *COM A_RX1 / 422(-)
7 - *COM A_TX1 / 422(-)
8 - COM B_RX1 / 422(-)
9 - GPI IN5 / GPO OUT 2
10 - GPI IN4
11 - GPI IN1
12 - GPI IN2
13 - GPI IN3
14 - NC
15 - NC

* Port can be GUI-configured as
two RS-232 ports (Tx and Rx),
or as a full-duplex RS-422 port.

VID IN A   SDI OUT A

VID IN B

VID IN C

COMM / GPIO

VID IN D

VID IN E   ETHERNET

RM20-9970-D

COMM / GPIO PINOUT
1 - *COM A_RX2 / 422(+)
2 - *COM A_TX2 / 422(+)
3 - COM B_RX2 / 422(+)
4 - GPO OUT1
5 - GND
6 - *COM A_RX1 / 422(-)
7 - *COM A_TX1 / 422(-)
8 - COM B_RX1 / 422(-)
9 - GPI IN5 / GPO OUT 2
10 - GPI IN4
11 - GPI IN1
12 - GPI IN2
13 - GPI IN3
14 - NC
15 - NC

* Port can be GUI-configured as
two RS-232 ports (Tx and Rx),
or as a full-duplex RS-422 port.

VID IN A   VID IN B   VID IN D

VID IN C

COMM / GPIO

HDMI OUT

SDI OUT 1A

SDI OUT 2A   VID IN E

SDI OUT 1B
◄ RLY BYP

ETHERNET

RM20-9970-E-DIN
RM20-9970-E-HDBNC

9970-QS-MC • **3G/HD/SD-SDI/CVBS Expandable Master Control Multiviewer**
with Advanced On-Screen Graphics

SPECIFICATIONS

Power
< 18 Watts

Video Input/Outputs
Video Inputs: (5) 75Ω BNC; auto-detect/setup for 3G/HD/SD-SDI or CVBS. (3G support for Level A only.)
SDI Outputs: (2) 75Ω BNC (2x DA); user-selectable as 720p, 1080i, or 1080p (3G). (9x16 portrait output mode available only for 1080p (3G) output raster.)
HDMI Output: (1) HDMI output with audio embedding
Formats Supported: SMPTE 259M, SMPTE 292M, SMPTE 424M (level A)
I/O Latency: Basic PIP Input/Output < 1.5 frames (max). Cascade latency consists of basic PIP I/O latency plus < 2 line added delay.
Receive Cable Length: 3G/HD/SD: 120/180/320 m (Belden 1694A)
Return Loss: >15 dB up to 1.485 GHz; >10 dB up to 2.970 GHz
Alignment Jitter: 3G/HD/SD: < 0.3/0.2/0.2 UI

Timecode Burn-In
Independent per-PIP burn-in via user controls from input video SMPTE embedded timecode. Burn-in enable/disable user controls. Configurable for burn-in string of seconds, seconds:frames, seconds:frames:field. User controls for text size, color, and H/V position.

Text Burn-In
Per-PIP UMD and two user identity text strings (as alternate, automatic PIP input video format can be inserted). Independent insertions controls for enable/disable. User controls for text size, color, and
H/V position.

Audio Output
16-ch embedded. Per-PIP select allows routing of PIP input 16-ch embedded audio to combined SDI output. HDMI output tracks with group 1/2 audio as selected for SDI embedded audio output.

Tally Indicators/Inputs
Per-PIP dual tally indicators. GPI , Ethernet, serial per-PIP control. Per-PIP tally lamp position and sizing controls.

Frame Reference Input
(2) reference from frame bus. SMPTE 170M/318M "Black Burst", SMPTE 274M/296M "Tri-Level".

ORDERING INFORMATION

9970-QS-MC   3G/HD/SD-SDI/CVBS Expandable Master Control Multiviewer with Advanced On-Screen Graphics

RM20-9970-B   20-Slot Frame Rear I/O Module (Standard-Width) (4) 3G/HD-SD-SDI/CVBS Input BNCs, (2) 3G/HD/SD-SDI Output BNCs (2xDA), COMM/GPIO Port, Ethernet Port

RM20-9970-C-DIN   20-Slot Frame Rear I/O Module (Standard-Width) (5) 3G/HD-SD-SDI/CVBS Inputs, (2) 3G/HD/SD-SDI DA Outputs, COMM/GPIO Port (Combined D-connector), HDMI Output, Ethernet Port (all coaxial connectors DIN 1.0/2.3)

RM20-9970-C-HDBNC   20-Slot Frame Rear I/O Module (Standard-Width) (5) 3G/HD-SD-SDI/CVBS Inputs, (2) 3G/HD/SD-SDI DA Outputs, COMM/GPIO Port (Combined D-connector), HDMI Output, Ethernet Port (all coaxial connectors HD-BNC)

RM20-9970-D   20-Slot Frame Rear I/O Module (Standard-Width) (5) 3G/HD-SD-SDI/CVBS Input BNCs, (1) 3G/HD/SD-SDI Output BNC, COMM/GPIO Port (Combined D-connector), Ethernet Port

RM20-9970-E-DIN   20-Slot Frame Rear I/O Module (Standard-Width) (5) 3G/HD-SD-SDI/CVBS Inputs, (2) SDI x2 Outputs (1 with relay bypass protect), COMM/GPIO Port (Combined HD-15 connector), HDMI Output, Ethernet Port (all coaxial connectors DIN 1.0/2.3)

RM20-9970-E-HDBNC   20-Slot Frame Rear I/O Module (Standard-Width) (5) 3G/HD-SD-SDI/CVBS Inputs, (2) SDI x2 Outputs (1 with relay bypass protect), COMM/GPIO Port (Combined HD-15 connector), HDMI Output, Ethernet Port (all coaxial connectors HD-BNC)