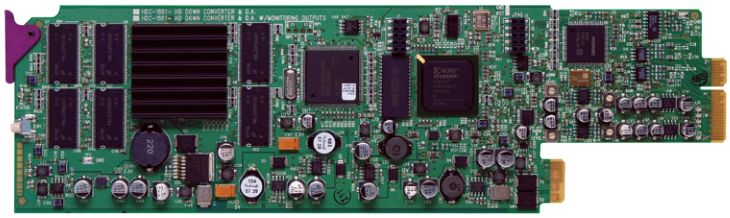
DATASHEET



HCP-1801

HD/SD SDI Video and Embedded Audio Control Probe

Stay in control with customizable monitoring and interfaces.

The HCP-1801 HD/SD control probe from Grass Valley integrates many advanced features for monitoring both video and embedded audio signals, including a new macro-block detection option.

It offers complete real-time measurement and analysis of signal parameters, as well as flexible alarm thresholds and user-defined profiles. In addition, the probe functions as a distribution amplifier, with a single input and four HD or SD reclocked outputs.

Used in conjunction with Grass Valley's iControl, the HCP-1801 allows users to see the signals they are monitoring. The probe generates real-time streaming video and audio level meters for transmission over IP networks.

The probe can be used along with a wide variety of Densité Series interfaces and DAs, and allows users to benefit from the extensive flexibility and ease of use so unique to the Densité platform.

Macroblock Detection Option

The Densité HCP-1801 probe now allows detection of macroblocks on HD and SD SDI signals which can arise from the decoding of MPEG-2 and MPEG-4 compression.

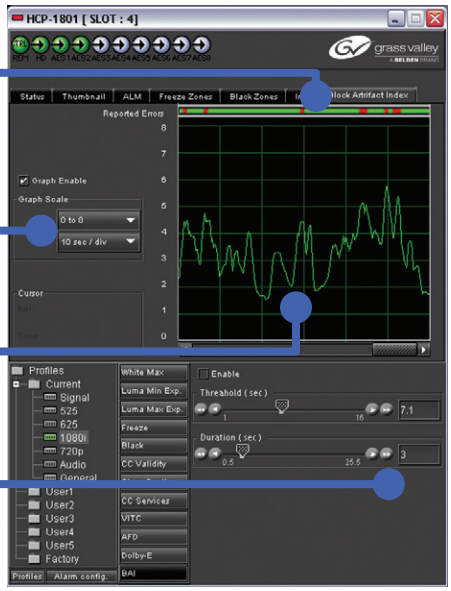
The proliferation of television channels is continually stressing the bandwidth of video transmission and distribution networks, especially with the current rapid transition to HD signals. A method commonly used by broadcasters and TV service providers seeking to transmit and carry more HD signals within the confines of limited bandwidth is to force extended compression levels in MPEG. Unfortunately, compression of signals is often too severe, sometimes causing the introduction of macroblocks in the image once the signal is decoded for viewing.

The HCP-1801 provides a robust, repeatable and affordable way for broadcasters and TV service providers to perform real-time monitoring of image blockiness on SD or HD-SDI signals. Using a unique algorithm, the HCP-1801 performs a pixel-by-pixel, frame-by-frame analysis of the video signal, detecting the presence and measuring the severity of image macroblocks.

This advanced measurement results in the calculation of the Block Artifact Index (BAI), ranging in levels from 1 to 16.

KEY FEATURES AND BENEFITS

- The Block Artifact Index (BAI) index (measuring the level of block-to-block divergence) allows even the most subtle levels of image blockiness to be detected
- Macroblock levels and alarms can be reviewed using the intuitive control panel of the HCP-1801
- The control panel alarm bar allows the occurrence and duration of blockiness errors to be quickly identified and referenced using date and time
- Recording of macroblock levels can extend for a period of up to 7 days. Simply scrolling the bar from left to right allows one to review past BAI levels and alarms
- Earlier recordings can be reviewed using convenient auto-saved files
- Selectable graph scales allows users to zoom in and out, and to quickly review alarming across days, hours, minutes and seconds
- Graph activity can be suspended to allow detailed review of past alarms and BAI level recording
- Like other Densité probe alarms, the sensitivity of macro-block detection can be adjusted by setting thresholds and duration to avoid generating too many alarms
- Supports all leading formats of SDI signals: HD 1080i, HD 720p, SD 625 and SD 525
- Macroblock detection option is easily activated on HCP-1801 using a software key, which makes installation in the field quick and simple

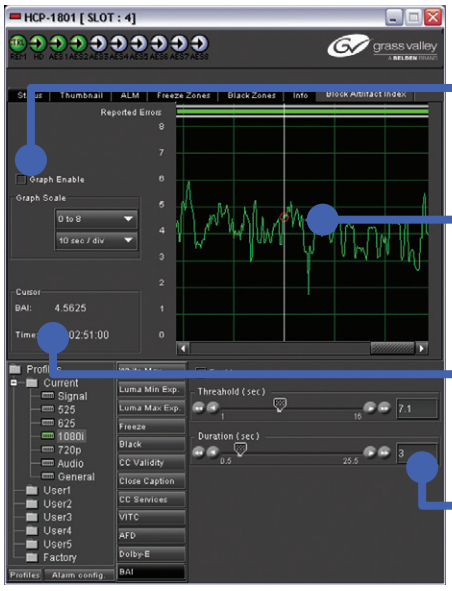


Alarm bar with history: quick way of identifying whether Block Artifact Index exceeds threshold defined below

Graph scale control:
- Vertical: BAI value
- Horizontal: time interval

BAI graph: display blockiness presence and severity over time

BAI alarm thresholds: determine when alarm will be reported

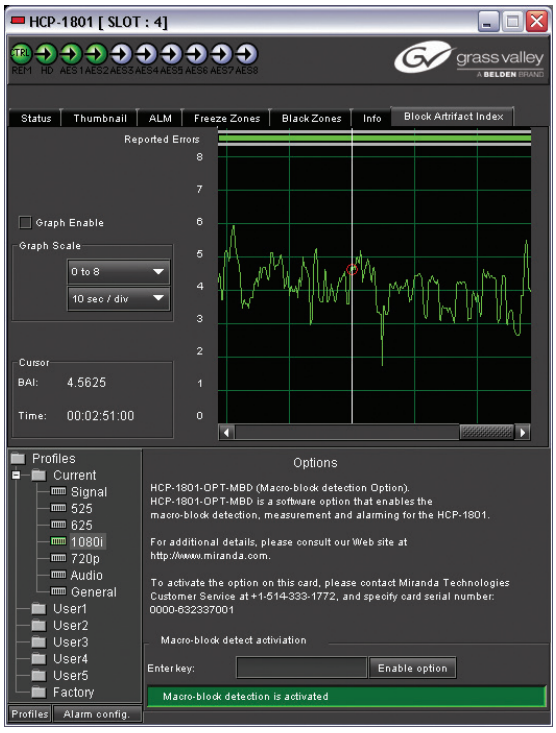


Graph activity can be suspended to review past measurements and alarms

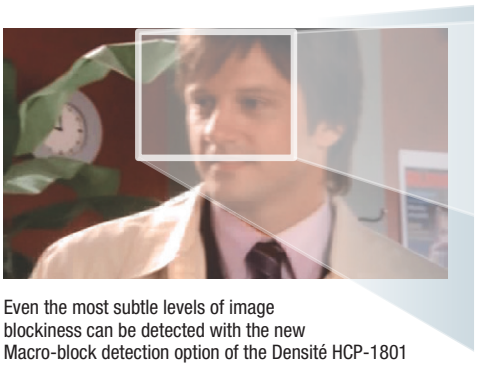
Close review of the severity of image macro-blocking is easy: cursor can be positioned at any point along the graph

Detailed BAI levels are provided for specific date and time

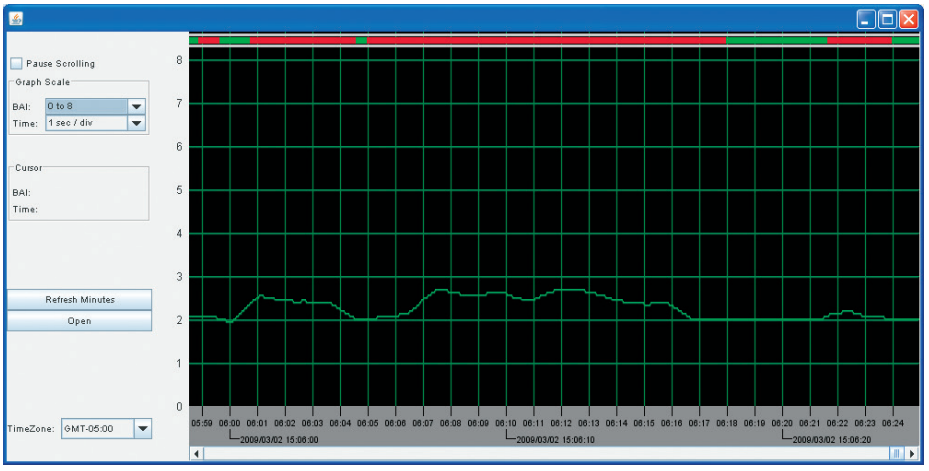
Horizontal bar allows scrolling back in time: the HCP-1801 records up to 7 days of data



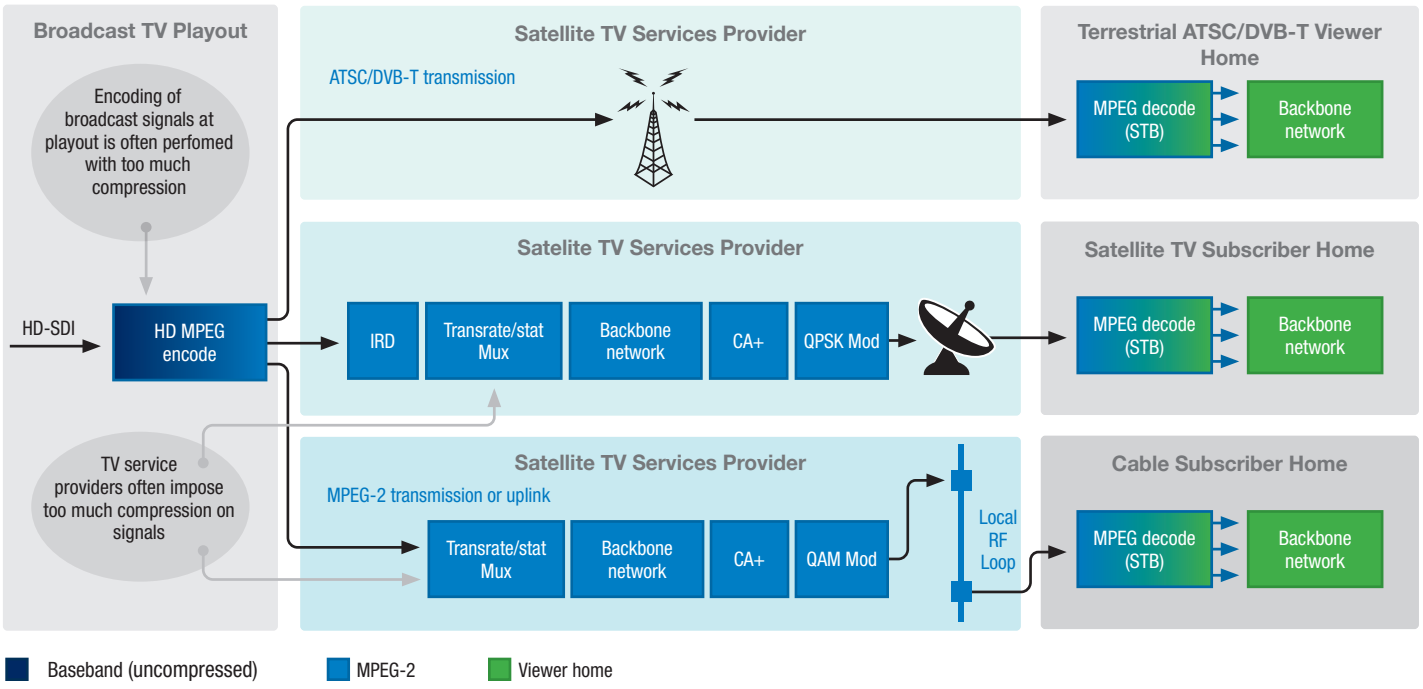
The new macro-block detection option is enabled on the HCP-1801 using a software key. This makes installation in the field quick and easy



Even the most subtle levels of image blockiness can be detected with the new Macro-block detection option of the Densité HCP-1801 probe. All leading formats of SDI are supported, in HD and SD.



Expanded graph view allows instant review of seven day period of macro-block levels and alarms.



KEY FEATURES

Video standard, presence detection and alarming

- Video format detection
- Video presence/loss
- Multizone freeze detection
- Multizone black detection
- Luma min and max
- White limit max

Closed captioning presence and validity

- CC525 EIA-608-A extract and display
- CEA-708-B presence detection of:
  - Primary caption service
  - Secondary language service
  - Services 3-6

Active Format Description (AFD)

- Detection of active format description (AFD) aspect ratio data

Other Ancillary Data detection and identification

- SMPTE ST 12 HD timecode
- Wide screen signaling (WSS)
- VITC 525/625
- Video line index (VLI)
- Teletext: ETSI EN 3000 706 pages A, B, C, D data detection

Monitoring of up to 16 audio channels of embedded audio

- Signal presence detection
- Signal format validation for each AES audio pair: PCM, AC-3 (Dolby Digital) or Dolby E
- Presence control for each AES audio pair
- Adjustable level, phase and mono signal alarms

Audio parameter alarming

- Loss of sound/audio silence
- Audio min and max levels
- Overload
- Absence of dynamics
- Phase alarm
- Stereo width
- Imbalance

Dolby metadata extract

- Program ID

Audio channel status monitoring and identification

- Format used
- Data type
- Emphasis
- Lock
- Sampling frequency
- Channel mode
- User bits
- Aux bits
- Work length

Extensive profile management

- 5 user-defined profiles can be stored directly in the probe memory
- Fully-configurable signal alarm thresholds and sensitivities
- Duration adjustable granularity range from 0 to 90 seconds
- Number of occurrences within period ranging between 1 minute and 24 hours
- Remote configuration with iControl software
- For added configuration convenience, the active profile of an HCP-1801 module can be copied to other cards

Transmission over IP for display and listening

- Thumbnails with adjustable picture size, quality and transmission rate
- Alarms and status
- VITC, closed captioning, V-chip, WSS, XDS, AFD, VLI, and Dolby E
- Audio level and phase meters on up to 4 simultaneous AES audio pairs
- Audio overload counter
- Selectable HD or SD video test pattern

Input/output

- Supports SMPTE ST 259-C digital video signal with embedded SMPTE ST 272 digital audio in the following formats:
  - HD 1080i (SMPTE ST 274) at 59.94 and 50 Hz
  - HD 720p (SMPTE ST 296) at 59.94 and 50 Hz
  - SD 525i (SMPTE ST 125) at 59.94 Hz
  - SD 626i (ITU-R BT.656) at 50 Hz
- One input, four outputs

Remote control and status

- On card status LED
- Current and latch status for remote reporting

SPECIFICATIONS

Video Input

HD signal:

SMPTE ST 292 (1.485,1.485/1.001 Gb/s) with embedded audio (SMPTE ST 299)

1080i (SMPTE ST 274) at 59.94 and 50 Hz

720p (SMPTE ST 296) at 59.94 and 50 Hz

SD signal:

SMPTE ST 259-C (270 Mb/s) with embedded audio (SMPTE ST 272)

525i (SMPTE ST 125) at 59.94 Hz

625i (ITU-R BT.656) at 50 Hz

Input cable length:

HD: 110m (360 ft.) Belden 1694A at 1.485 Gb/s

SD: 250m (820 ft.) Belden 1694A up to 270 Mb/s

Return loss: >15 dB up to 1.5 GHz

Serial Digital Outputs (4)

Signal:

Reclocked SMPTE ST 292 (1.485, 1.485/1.001 Gb/s) with embedded audio (SMPTE ST 299)

Reclocked SMPTE ST 259-C (270 Mb/s) with embedded audio (SMPTE ST 272)

Return loss: >15 dB up to 1.5 GHz

Added jitter: <0.2 UI p-p (wideband)

Processing Performance

Serial digital outputs (4)

Signal path: 10 bits

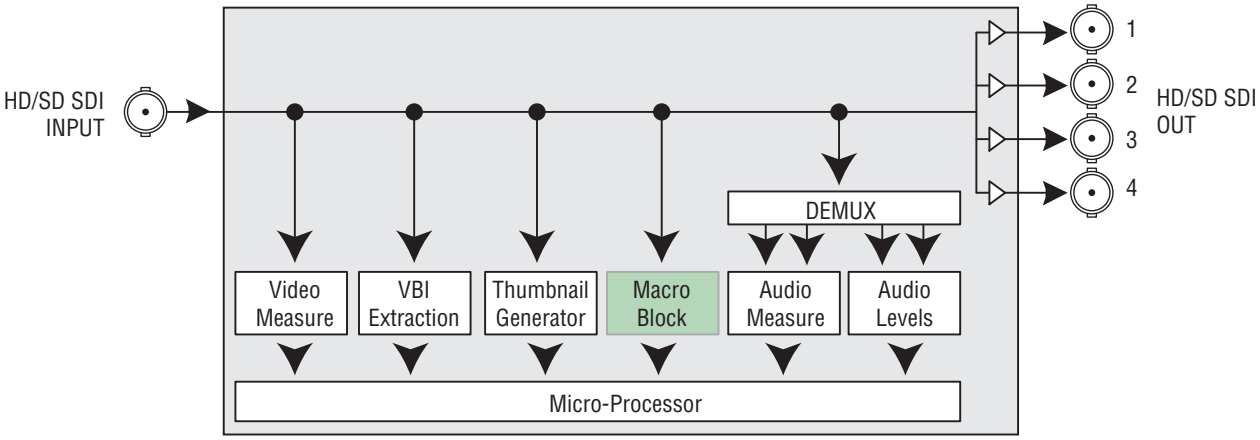
Latency: <6 ns

Electrical

Power: 4W

Densité Thumbnails Resolution Chart

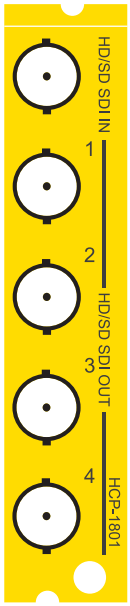
Input format		iControl display					
Input format	Aspect ratio	Small thumbnail		Medium thumbnail		Large thumbnail	
		Width	Height	Width	Height	Width	Height
720x480	4x3	80	60	160	120	320	320
720x480	16x9	106	60	213	120	426	426
720x576	4x3	80	60	160	120	320	320
720x576	16x9	106	60	213	120	426	240
1280x720	16x9	106	60	213	120	426	240
1920x1080	16x9	120	67	240	135	480	270



HCP-1801 Functional Block Diagram

Software Enabled Options

HCP-1801-OPT-MBD Macro-block detection for the HCP-1801 probe



HCP-1801-SRP

ORDERING

Densité 2 frame

HCP-1801

HCP-1801-SRP

Densité 3 frame

HCP-1801-3RU

HCP-1801-SRP-3RU

Description

HD/SD serial digital video control probe with embedded audio

Single rear connector panel

Options

HCP-1801-OPT-MBD

Macro-block detection for the HCP-1801 probe

Remote control

iControl, RCP-200

Accessories

DENSITÉ-CPU-ETH2

Ethernet controller card for Densité frame