DESCRIPTION

The DNS-3902 provides high quality signal decoding for signal acquisition applications within a video facility requiring color decoding and off-air signal synchronization, noise reduction and monitoring. The DNS-3902 converts broadcast-quality multi-standard (NTSC, PAL-B, I and PAL-M) composite video into SDI serial video streams, with monitoring analog composite outputs. The noise reducer includes a motion adaptive temporal median filter and a motion-adaptive recursive filter to remove impulse noise and random noise.

This module, as is the case with all modules in the NEO family, can be controlled locally via a front-edge display or by remote communications allowing for remote control, monitoring and diagnostics using hardware control panels and/or a GUI.

This module can be used in combination with other NEO modules to provide added video and audio capabilities such as audio tracking delay and hot-switching.

USER CONTROL VARIABLES

- **Video IP Gain** Adjusts analog input video gain
- **Black Level** Sets the Black Level
- **Chroma Gain** Sets the Chrominance level
- **Chroma Phase** Adjusts the Chroma Phase with respect to Burst
- **Decoder Lock Mode** Selects the locking mode for the Decoder's PLL circuit
- **Video IP Std Fb** Reports the detected Composite Input video Standard (NTSC, PAL-B, PAL-M)
- **Video IP Present** Reports the presence of the analog input video signal
- **Video IP Burst Prsnt** Reports the presence of the Burst signal from the analog input video signal
- **Video IP Locked** Reports the locked status of the analog input video signal when above set threshold level
- **Video Frozen** Reports the output video frozen status
- **Video IP SC/H Error** Reports the detected SC/H relationship from the analog input video signal
- **Video IP Std Set** Selects the analog input video standard for the Decoding circuit
- **Frame Comb** Controls the activation of the Frame Comb Filter
- **Field Comb** Controls the activation of the Field Comb Filter
- **Line Comb** Controls the activation of the Line Comb Filter
- **Notch Comb** Controls the activation of the Notch Comb Filter
- **Field Select** Selects the Field 1 or Field 2; this control is used conjunction with VBI Line
- **VBI Line Select** Selects the VBI Line; this control is used conjunction with Field Select and VBI Comb Mode
- **VBI Comb Mode** Assigns the selected Combing Mode to the selected VBI Line
- **Black Clip Level** Sets the Black Clip level
- **Black Clip** Controls the activation of Black Clip
- **White Clip Level** Sets the White Clip level
- **White Clip** Controls the activation of White Clip
- **Setup Line Select** Selects a starting line for removal of setup (setup is removed after this line)
- **Input Setup** Enables or Disables the removal of Setup (pedestal level) from the input video
- **Fine Picture Position** Adjusts the Fine Picture Position
- **Enhancement Function** Controls the insertion of Aperture Correction and Hanover Bar Suppression circuit in the signal processing path
- **Aperture Correction** Controls the activation of Aperture Correction circuit
- **Aperture H. Gain** Adjusts the horizontal gain of Aperture Correction
- **Aperture V. Gain** Adjusts the vertical gain of Aperture Correction
- **Hanover Bar Suppress** Controls the activation of the Hanover Bar Suppression circuit

FEATURES

- **NEOSCOPE card edge video monitoring**
- **A to D 12-bit input processing**
- **Noise reduction removes impulse and random noise**
- **Input standard auto detect supporting NTSC/PAL-B/PAL-M**
- **User selectable adaptive comb filter (Frame, Field, 3 line adaptive and notch)**
- **Hanover bar suppressor for PAL signals (On / Off)**
- **Input noise immunity and input video soft clipping.**
- **2 dedicated SDI Outputs with embedded EDH**
- **2 user-selectable outputs:**
  - SDI Output with embedded EDH, or
  - Composite
- **Analog Monitoring**
- **Composite Monitoring, offering two outputs**
- **VBI selection (normal, simple, bypass, delete)**
- **Shadowed / Restored parameter settings when changing video standards**
- **Outputs TTL I/O Delay pulse to synchronize downstream audio cards**
- **Command Control System (CCS) Enabled**
- **DejaView intelligent settings recovery system**

- **Cable Equalizer** Controls the activation of the Cable Equalizer
- **Cable Length** Sets the length of the cable for the equalizer circuit
- **NR Function** Controls the insertion of the Noise Reduction circuit in the signal processing path
- **Noise Reduction** Controls the activation of the Noise Reduction circuit
- **Recursive Threshold** Selects the coefficient used in the Recursive Filter
- **Motion Detect** Selects the Noise Reducer Motion Detect threshold level
- **Threshold FS Function** Controls the insertion of the Frame Synchronizer circuit in the signal processing path
- **Vertical Phase** Sets the Vertical Timing
- **Horizontal Phase** Sets the Horizontal Timing
- **Fine Phase** Fine output timing adjustment
- **Frame Sync Mode** Selects the operational mode for the Frame Synchronizer
- **Video OP Mode** Selects the output video mode when the input video is disrupted
- **Freeze Type** Selects the type of video freeze
- **Force Freeze** Forces the output video to freeze
- **Video IO Delay Fb** Reports the input to output delay within the Frame FIFO memory
- **Video OP Setup** Controls the addition of the SETUP (7.5 IRE) pedestal signal to the active video lines in 525 line standard for the analog video output
- **Video OP Std Set** Sets the analog output video standard
- **Video OP Gain** Adjusts analog output video level
- **Force Black & White** Forces the output video to be black & white
- **Test Signal** Allows the user to select the internal Colour Bars test signal.
- **Down Bus Enable** Allows for passing of signals to a downstream card for concatenated function
- **GL Video Std Fb** Reports the detected external reference signal standard
- **GL Locked** Reports the locked status of the external reference signal
- **GL Burst Present** Reports the presence of the Burst signal from the external reference source

NEO

LEITCH
**Color Decoder/Synchronizer/Noise Reducer**

DNS-3902

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<td>GL Video Present</td>
<td>Reports the presence of the video signal from the external reference source</td>
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<tr>
<td>GL SC/H Error</td>
<td>Reports the detected SC/H relationship from the external reference source</td>
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<tr>
<td>DEC Hardware ID</td>
<td>Reports the physical hardware identification of the Decoder IC</td>
</tr>
<tr>
<td>GL/FS Hardware ID</td>
<td>Reports the physical hardware identification of the Genlock / Frame</td>
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<td>Software Version</td>
<td>Reports the software version</td>
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<td>Factory Recall</td>
<td>Recalls the factory settings</td>
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<td>REFERENCE Present</td>
<td>Composite Reference is detected or not</td>
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<td>Indicates Freeze status of output video</td>
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<tr>
<td>FS ON/OFF</td>
<td>Indicates FrameSync feature is on / off</td>
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<tr>
<td>NR ON/OFF</td>
<td>Indicates Noise Reduction feature is On/Off</td>
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<tr>
<td>Major Alarm</td>
<td>Provides a quick indication to the operator if a major alarm is present</td>
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<tr>
<td>Minor Alarm</td>
<td>Provides a quick indication to the operator if a minor alarm is present</td>
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<td>Power</td>
<td>Illuminates when the DNS-3901 is powered-on</td>
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<tr>
<td>Status</td>
<td>Indicates nominal operating status of the DNS-3901</td>
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**CARD EDGE INDICATORS**

- **COMP IN Present**: Presence or absence of composite Input
- **COMP IN Locked**: Lock status of composite input video
- **BURST Present**: Presence or absence of Composite video input subcarrier
- **NOISE Present**: Presence or absence of noise in Composite Input

**SPECIFICATIONS**

**INPUT - ANALOG VIDEO**

- **Connector type**: BNC
- **Number of inputs**: 1 (two loop-through implementation)
- **Input level**: 1 Vp-p ± 6 dB
- **Impedance**: 75 ohms
- **Return loss**: > 40 dB to 6 MHz
- **Common mode range**: 10 Vp-p
- **Common mode rejection ratio**: > 60 dB at 60 Hz
- **System input (A to D converted)**
- **Quantization**: 12 bit
- **Setup level range**: ± 7.5 IRE
- **Frequency response**: ± 0.1 dB to 6 MHz
- **Signal-to-noise ratio**: > 62 dB RMS
- **Chrominance/luminance gain error**: < 0.1 dB
- **Chrominance/luminance delay error**: < 10 ns
- **Differential gain**: < 0.5 %
- **Differential phase**: < 1.0 °

**OUTPUT - SERIAL DIGITAL VIDEO**

- **Standards**: SMPTE 259M-C; 270 Mbps, 525/625 component
- **Quantization**: 10-bit
- **Connector**: BNC
- **Number of outputs**: 4 (jumper selectable)
- **Impedance**: 75 ohms
- **Return loss**: > 18 dB to 270 MHz
- **Signal level**: 800 mV ± 10%
- **DC offset**: 0V ± 0.5 V
- **Rise and fall time**: 400-700 ps (20 to 80% amplitude)
- **Overshoot**: < 10% of amplitude
- **Jitter**: < 0.2 UI (740 ps) peak-to-peak
Output-Monitoring Analog Composite

- Quantization: 8-bit
- DAC Resolution: 10-bit
- Connector: BNC
- Number of outputs: 2 (jumper-selectable)
- Type: NTSC or PAL (input line rate-dependent)
- PAL-M user selectable
- Impedance: 75 ohms, unbalanced
- Return loss: >40 dB to 6 MHz
- Signal level: 1.0 Vp-p ± 10%
- Signal-to-noise ratio: 54 dB RMS
- DC offset: ± 100 mV
- Differential gain: 1.0%
- Differential phase: 1.0°
- Chrominance / luminance delay: 2 ns
- Frequency Response: ± 0.5 dB to 5 MHz

Genlock Input and Loop Through

- Connector: BNC (IEC169-8)
- Impedance: 75 ohms
- Return Loss: > 40 dB

Ordering Information

DNS-3902 NTSC/PAL to SDI Color Decoder/Synchronizer/Noise Reducer, NTSC/PAL monitoring output, SDI input with color decode bypass.

See the CCS (Command Control System™) section of the catalog for detailed explanations of applications and remote control panels applicable to the NEO product line. Leitch’s CCS offers applications such as Pilot™ that provide the tools you need to configure, control, monitor, diagnose, and provide secure access to the equipment on your network regardless of your network topology.