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**CDH 1411**

**yelloGUI** compatible

## 12G SDI to HDMI® Converter

- Support for SDI video inputs up to 12Gbit/s (2160P)
- Supports HDR and WCG indication at HDMI output
- Automated detection of input signal color range via VPID information
- 3G SDI Level A and Level B support
- Automatic input standard and format detection
- Fiber input and output options
- HDMI video output with embedded audio
- Analog and AES audio outputs
- Selectable timecode burn-in and Metadata burn-in
- CEA 708 Closed caption burn-in
- 16 channel on screen audio level meter
- H/V delay & H flip and safe area markers
- yelloGUI compatible: Gain access to additional features


Shown with Fiber SFP Option Installed

The CDH 1411 is a versatile, compact 12G SDI to HDMI converter designed to combat a host of monitoring and display applications in broadcast, post production and pro AV markets. Convert any SDI video signal into an HDMI signal for monitoring and display. Fiber connectivity options add SDI fiber transmission and/or SDI fiber reception using the integrated fiber SFP socket.

Two channels of audio can be de-embedded providing digital AES and analog audio outputs. Analog audio outputs have selectable full scale range presets. The two selected audio channels can also be embedded into the HDMI output. Alternatively 8 channels selected from the input signal (8 audio groups in 64 channels) can be embedded into the HDMI output. Various burn in features make the CDH 1411 a true monitoring tool. Individually selectable timecode burn-in, Closed Caption burn-in, 16 channel audio metering, safe area markers and Metadata display are just a few of the on-screen monitoring features. The yelloGUI software provides support for a host of additional settings and features which are accessed using a PC and the USB port on the module.

### CWDM Wavelength Options. ITU-T G.694.2 (select one)

| Model | Description | Power | |
|---|---|---|---|
| **SDI Fiber Transmitter Options** | | | |
| **OH-TX-12G-LC/ST** | 12G SFP Fiber TX - Singlemode - LC or ST conn. - 10km | -5.. +0.5dBm | |
| **SDI CWDM Fiber Transmitter Options** | | | |
| **OH-TX-12G-XXXX-LC** XXXX=Wavelength | CWDM SFP Fiber TX - Singlemode LC Conn. - 10km* 18 according to ITU T G692.2 [ 1270nm - 1610nm ] | -2.. +3dBm | |
| Model | Description | Sensitivity | |
| **SDI Fiber Receiver Options** | | | |
| **OH-RX-12G-LC/ST** | 12G SFP Fiber RX - Singlemode - LC or ST connector | -16...-10dBm | |
| Model | Description | Power | Sense |
| **SDI Fiber Transceiver Options** | | | |
| **OH-TR-12G-LC** | SFP Fiber RX/TX - Singlemode, LC Connector - 10km | -5...+0.5 dBm | -10dBm |
| **SDI CWDM Fiber Transceiver Options** | | | |
| **OH-TR-12G-XXXX-LC** XXXX=Wavelength | CWDM SFP Fiber RX/TX - Singlemode LC Conn. - 10km* 18 according to ITU T G692.2 [ 1270nm - 1610nm ] | -2.. +3dBm | -14 ... -10dBm |

Other SFP sticks are available. Ask our sales team for the right solution for you.

### Technical Specifications

| | | | |
|---|---|---|---|
| **SDI Video** | 1 x SDI input on 75 Ohm BNC connectors<br>1 x SDI output on 75 Ohm BNC connectors | | |
| | SMPTE 2082, SMPTE ST 2081, SMPTE 424M, SMPTE 292<br>3G Level A & B Dual-Link according to SMPTE ST 425-1 | | |
| | Multi-standard operation from 1.5Gbit/s to 12Gbit/s | | |
| | Multirate reclocking: 1.5Gbit/s - 3Gbit/s - 6Gbit/s - 12Gbit/s | | |
| | Automatic cable EQ | 1.5Gbit/s<br>190m | 3Gbit/s<br>150m<br>Belden 1694A | 12Gbit/s<br>85m<br>Belden 4794R |
| **Fiber Optic** | 1 x fiber optic input, 1 x fiber optic output<br>Duplex (singlemode) using LC/PC connection | | |
| | SMPTE 297M - 2006 | | |
| | Transmitter | Wavelength | See Optional SFP Table |
| | | Optical power | See Optional SFP Table |
| | Receiver | Sensitivity | See Optional SFP Table |
| | Max. distance* | See Optional SFP Table | |
| **HDMI Output** | 10bit HDMI 2.0b Type A connector - deep color and embedded audio | | |
| | 24bit (3x8bit) and 30bit (3x10bit) deep color (R,G,B / Y,Cr,Cb / X,Y,Z) | | |
| | 2 or 8 channel audio embedding (selectable) | | |
| **AES Output** | AES3-id on 75 Ohm BNC, 2 channels (selectable) | | |
| **Audio Output** | Left and right analog audio using 3.5mm jack sockets | | |
| | Balanced mode with 24, 22, 20, 18, 15, 12dBu,<br>Line Level Pro (4dBu) and Line User | | |
| | Unbalanced mode with Consumer Line Level (-10 dBV) | | |
| **Power** | +12V DC @ 8.7W nominal - (supports 10 - 24V DC input range) | | |
| **Physical** | Size (incl. connectors) | 140m x 90mm x 22mm<br>(5.51" x 3.54" x 0.86") | |
| | Weight: | 230g (8.11oz) | |
| **Ambient** | 5 - 40°C (41 - 104°F) 90% Humidity (non condensing) | | |
| **Model #** | CDH 1411 | 4250479327436 | |
| **Includes** | Module, AC power supply, HDMI + mini USB cable | | |

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## Monitoring Features

The CHD 1411 is ideal for regular transparent image monitoring, providing a clean 1:1 HDMI conversion of the SDI input signal. There are also a number of other HDMI monitoring options available. These monitoring modes are activated using the module dip switch and can be used individually or as combined monitoring modes.

### Clean Feed

- Direct conversion of input SDI Stream
- HDMI output is the same as the SDI input resolution and frame rate (CDH 1411 does not scale)
- Colorspace, Colometry, Color Range, and Bit-Depth for HDMI output can be set via yelloGUI
- Manual EOTF settings available.

### Burn in Windows

- Select and display two timecode values (VITC, LTC)
- SDI input format with frame rate
- Up to 16 audio level meters
- VITC, LTC, Closed Caption and AFD metadata presence indicator
- Display Closed Captions


### Safe Area Markers

- Multiple different Safe Area markers available (default: SMPTE Safe Action 90/90)
- Center cross marker
- Aspect Ratio Marker and safe from Aspect Ratio Marker
- Curtain Transparency Settings (30-100%)
- Eight Marker Colors
- Settings available via yelloGUI

### H/V Delay & H Flip

- View horizontal and vertical blanking
- Flip on horizontal axis

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## yelloGUI

The CHD 1411 features full **yelloGUI** support that provides access to additional features and settings, not possible from the module's local controls.
Additional features are accessed using our free **yelloGUI** application. Additional settings include:

### Parameter Options and Default Settings

= Default Settings

| Safe Area Parameter | Settings |
|---|---|
| **Safe Area Markers** | SMPTE Safe Action (90/90) |
| | OFF |
| | SMPTE Safe Title (80/80) |
| | EBU Action (3.5/3.5) |
| | EBU Graphics (5/10) |
| **Aspect Ratio Markers** | OFF |
| | 4:3 |
| | 16:9 |
| **Curtain Transparency** | 100% |
| | Adjustable 30%-90% |
| **Center Cross** | ON |
| | OFF |
| **Marker Color** | White |
| | Red, Green, Blue, Yellow, Cyan, Magenta, Black |
| **Safe Area from Aspect** | ON |
| | OFF |


The on screen markers can be custom configured to suit any application. This includes various "standard" safe area markers, aspect ratio markers with adjustable curtain transparency. The color of the markers may also be changed.

| Video Parameter | Settings |
|---|---|
| **SDI Color Range** | AUTO |
| | SMPTE Limited |
| | Full Range |
| **HDMI Color Range** | Default |
| | SMPTE Limited |
| | Full Range |
| **HDMI Colorimetry** | Auto |
| | BT.709 |
| | BT.2020 |
| **HDMI Colorspace** | Auto |
| | RGB |
| | YCbCr 4:2:2 |
| | YCbCr 4:4:4 |

| Video Parameter | Settings |
|---|---|
| **HDMI Bit Depth** | Auto |
| | 8 bit |
| | 10 bit |
| | 12 bit |
| **HDMI EOTF** | Auto |
| | gamma SDR |
| | gamma HDR |
| | ST.2084 PQ |
| | HLG |
| **Flip Output Signal** | No Flip |
| | H (Horizontal) |

| Audio Parameter | Settings |
|---|---|
| **3G Level B Audio Source** | Stream A |
| | Stream B |
| **Audio Channels** | 1:1 |
| | Convert* |

*DEFAULT: Audio channels 1 through 8 are mapped 1:1 from SDI to HDMI. When set to "Convert" channels 3 and 4 are swapped resulting in channel allocations per SMPTE 320M (3=center /4=LFE) and CEA-861 (3=LFE / 4=FrontCenter)

HDMI configuration settings are set automatically by the internal EDID communication between the two connected devices. These settings can be changed manually for specific applications.

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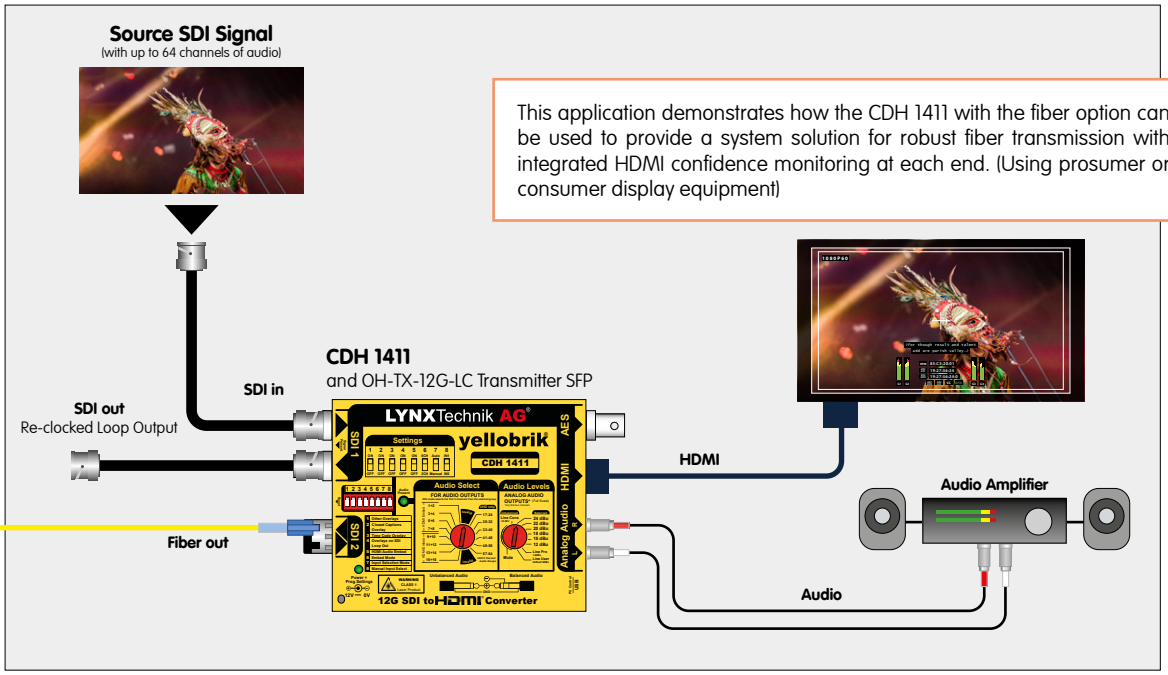
## Fiber Application Using CDH 1411 SDI to HDMI Converter

Sample application using two CDH 1411 modules for SDI fiber optic transmission up to 10km (6.2 miles) @12Gbit/s with integrated HDMI signal confidence monitoring at each end.




Fiber connection up to 10 km (6.2 miles) @ 12Gbit/s