

12G SDI to HDMI® Converter

- Support for SDI video inputs up to 12G (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

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.



Shown with Fiber SFP Option Installed

Technical Specifications

SDI Video	1 x SDI input on 75 Ohm BNC connectors			
	1 x SDI output on 75 Ohm BNC connectors			
	SMPTE 2082, SMPTE ST 2081, SMPTE 424M, SMPTE 292 3G Level A & B Dual-Link according to SMPTE ST 425-1			
	Multi-standard operation from 1.5Gbit/s to 12Gbit/s Multirate relocking: 1.5Gbit/s - 3Gbit/s - 6Gbit/s - 12Gbit/s			
Fiber Optic	Automatic cable EQ	1.5Gbit/s 190m	3Gbit/s 150m	12Gbit/s 85m
		Belden 1694A		Belden 4794R
	1 x fiber optic input, 1 x fiber optic output Duplex (singlemode) using LC/PC connection			
	SMPTE 297M - 2006			
HDMI Output	Transmitter	Wavelength	See Optional SFP Table	
		Optical power	See Optional SFP Table	
	Receiver	Sensitivity	See Optional SFP Table	
	Max. distance*	See Optional SFP Table		
AES 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)			
Audio Output	AES3-id on 75 Ohm BNC, 2 channels (selectable)			
	Left and right analog audio using 3.5mm jack sockets			
	Balanced mode with 24, 22, 20, 18, 15, 12dBu, 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 (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			



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

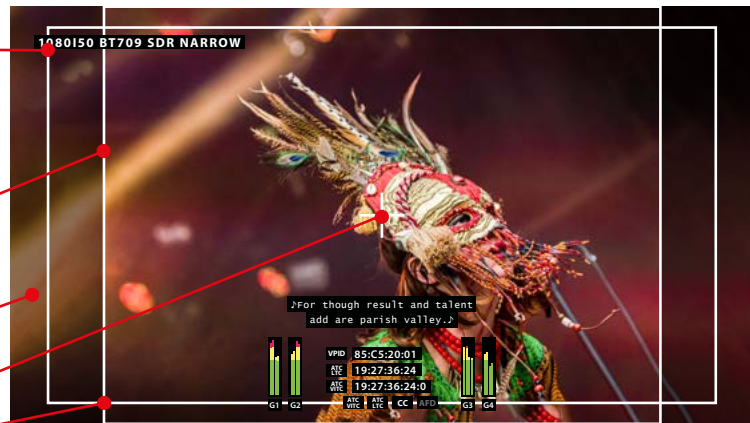


The CHD 1411 features full **yelloGUI** support that provides access to additional features and settings, not possible from the module's local controls. Additional features are accessed using our free **yelloGUI** application. Additional settings include:

Parameter Options and Default Settings

= Default Settings

Safe Area Parameter	Settings
Safe Area Markers	OFF
	SMPTE Safe Action (90/90)
	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	OFF
	ON
Marker Color	White
	Red, Green, Blue, Yellow, Cyan, Magenta, Black
Safe Area from Aspect	OFF
	ON



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	Video Parameter	Settings	Audio Parameter	Settings
SDI Color Range	AUTO	HDMI Bit Depth	Auto	3G Level B Audio Source	Stream A
	SMPTE Limited		8 bit		Stream B
	Full Range		10 bit	Audio Channels	1:1
HDMI Color Range	Default	HDMI EOTF	12 bit		Convert*
	SMPTE Limited		Auto		
	Full Range		gamma SDR		
HDMI Colorimetry	Auto		gamma HDR		
	BT.709		ST.2084 PQ		
	BT.2020		HLG		
HDMI Colorspace	Auto	Flip Output Signal	No Flip		
	RGB		H (Horizontal)		
	YCbCr 4:2:2				
	YCbCr 4:4:4				

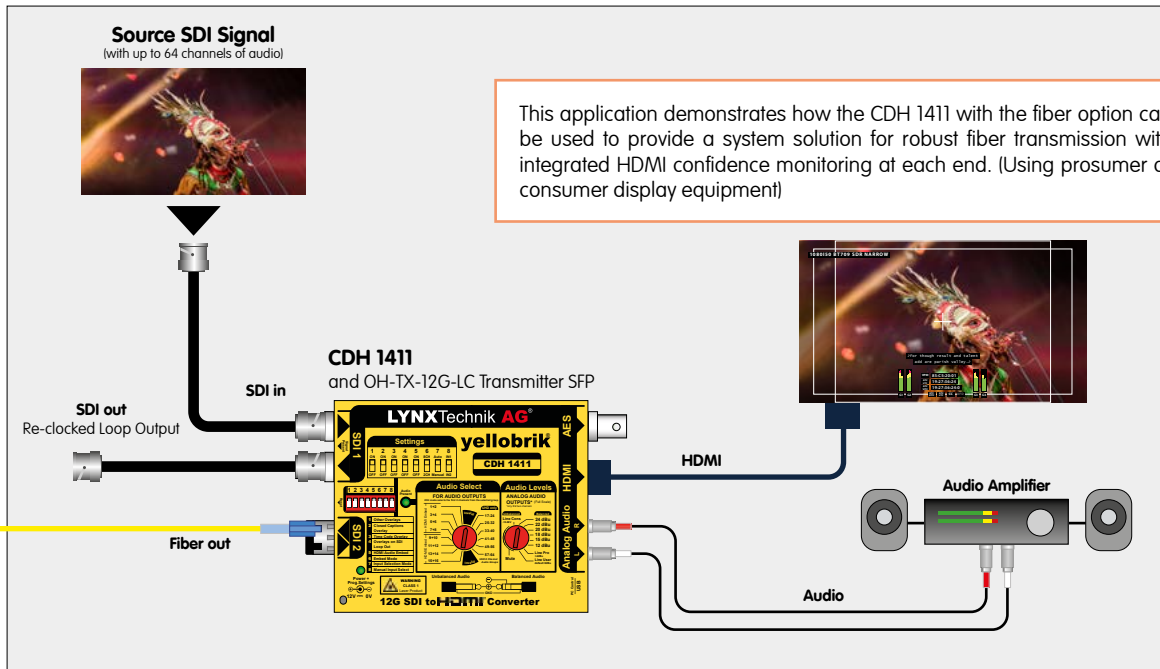
*DEFAULT: Audio channels 1 through 8 are mapped 1:1 from SDI to HDMI. When set to "Convert" channels 3 and 4 are swapped resulting in channel allocations per SMPTE 320M (3=center /4=LFE) and CEA-861 (3=LFE / 4=FrontCenter)

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.



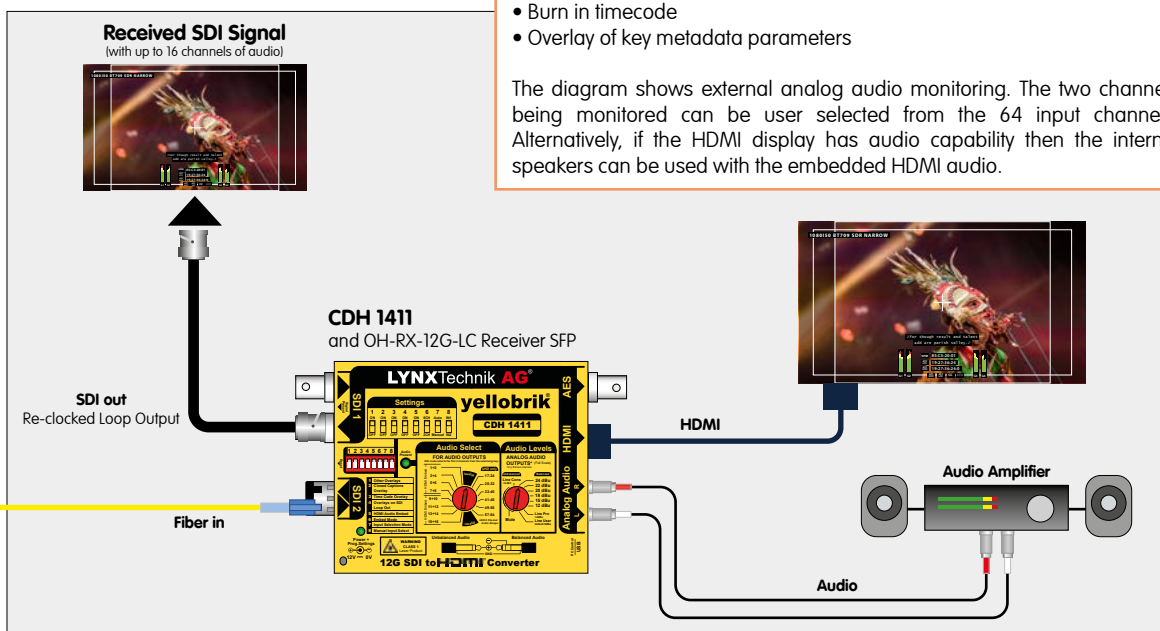
Fiber Application Using CDH 1411 SDI to HDMI Converter

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.



This application demonstrates how the CDH 1411 with the fiber option can be used to provide a system solution for robust fiber transmission with integrated HDMI confidence monitoring at each end. (Using prosumer or consumer display equipment)

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



- HDMI Display of video signal
 - Burn in timecode
 - Overlay of key metadata parameters
- The diagram shows external analog audio monitoring. The two channels being monitored can be user selected from the 64 input channels. Alternatively, if the HDMI display has audio capability then the internal speakers can be used with the embedded HDMI audio.