



## BESCHREIBUNG FIBERONE BOARD

The FIBERONE extender board is innovative connectivity device that is capable of transmitting full HD 1080p@60Hz with 36-Bit deep color video, audio, RS-232 and Infrared Red signals simultaneously through one thin, transparent, fiber optical cable at distances up to 1000 ft. All these aforementioned functions and features are implemented in an ASIC. This product uses no compression, and support Hollywood approved content protection, HDCP. Focused on improving the digital home, this product allows consumers to place their home electronics in the most convenient places in the home without breaking open walls to pull cables around.

FIBERONE makes it easy to setup whole house video and audio distribution. By using an external A/V switch, one set of source devices can be accessed by multiple displays located in various places throughout the home. Each display can access a separate video and audio source, making it possible, for example, to watch a sports event while listening to your music.

FIBERONE is also well suited for commercial applications, such as sports bars, digital signage/public display, touch panels, gyms, etc. because of the length and quality of transmission distance. Right now, many commercial TVs are still standard definition because transmitting high definition signals is very challenging and costly. With FIBERONE the cost and challenge of installation is much less.

### 1.2 FIBERONE Extender Board Features

Uses only one single core multi-mode fiber to connect the local video/audio/data sources and remote peripherals at up to 1000 feet distance.

HDCP compliant.

Supports HDMI and DVI displays.

Supports maximum 1080p@60Hz with 36-bit deep color HDMI video resolution.

Supports WXGA 1920x1200@ 60Hz with 36-bit deep color DVI resolution.

Status LED shows integrity of fiber link.

IR repeating functions

Forwarding channel external stereo audio.

Pass through RS-232 port bridges UART interface on the RX side and TX side.

Microprocessor debug port for testing and code downloading.

### 2.1.1 Power

The TX board requires a 5V DC source for power. The DC jack is center positive with dimensions of 2.1x5.5MM. The power requirement is a maximum of 1 A. This input is fused at 2A and the maximum power input to the TX board is 5.5V.

### 2.1.2 Video

The FIBERONE TX board uses a Silicon Image SII9135 HDMI receiver to receive video from an HDMI/DVI source. The ASIC firmware sets the SII9135 to a known state for proper operation. The reclocking circuit help stabilizing jittery input sources. The video bus width is set to operate at 36 bit though; color depths of 24, 30, or 36 bit are set automatically according to the video source.

### 2.1.3 Audio

In addition to HDMI audio, the TX board provides a forward channel stereo audio through its on-board audio ADC/DAC and via the J7 Jumpers.

#### 2.1.3.1 HDMI Audio

HDMI Audio is provided through the SII9135 HDMI receiver and provides up to 4 channels of I2S. They are passed to the RX board over DLI link.

#### 2.1.3.2 Forward Channel Stereo Audio

The forward channel stereo audio supports a stereo audio outputs via the J7 jumpers labeled "Audio\_L" and " AudioR".

### 2.1.4 IR Repeating

The IR repeating feature allows the user to point the remote controller at the TV (sink) to control DVD (or other source devices that are connected to the TX board) and an IR OUTPUT jack (J5) is provided for an external IR emitter available as an accessory from us.

### 2.1.5 Pass Thru UART

The pass through function bridges UART interface on the TX side and RX side. It automatically detect and supports any baud rate up to 115.2K and any number of start or stop bit.

## 2.1.6 MCU UART

This interface is for 8051 code upgrading, debugging purpose. OWLink "tool" software can be used to set and read registers of the ASIC as well as update the board's firmware.

The MCU interface can be accessed by connecting an USB RS-232 converter (FTDI FT2232) to the J8 jack or J7 jumpers labeled " MCU TXD", "MCU\_RXD" and "GND".

Figure 3 – 3.5mm stereo plug pin-out

## 2.1.7 DLI Link LED

We have several LEDs on the TX board. They are labeled as D1, D2, D3, D5, D7 and D10. These LEDs indicate the state of the DLI link. The table below lists the functions of these LEDs.

### LED Function/Description

#### **D1 - Power LED**

#### **D2 - Indicates LOS (Loss of signal)**

- OFF - when signal is detected on DLI
- ON - when signal loss is detected on the DLI link

#### **D3 - Indicates HPD status**

- ON – HPD high
- OFF – HPD low

#### **D5- Indicates HDMI 5V present from video**

- ON – A voltage is present
- OFF – No voltage detected

#### **D7 - Indicates video sync**

- ON – The HDMI receiver IC has synced with the source and is transmitting video
- OFF – The HDMI receiver IC has not synced with the source and is not transmitting video

#### **D10 - Indicates the link status of the DLI**

- Blinks when the chip is in a bootload state
- Glows On/Off when establishing and/or looking for link
- Solid when link is established

## 2.2.1 Power

The RX board requires a 5V DC source for power. The DC jack is center positive with dimensions of 2.1x5.5MM. Maximum consumption is 1 A.

This input is fused at 2A and the maximum power input to the TX board is 5.5V.

## 2.2.2 Video

The FIBERONE RX board uses a Silicon Image SII9135 HDMI transmitter to transmit video from an HDMI/DVI source. The ASIC firmware sets the SII9135 to a known state for proper operation. The driver circuit can drive long cable runs, with our cable typical 15m to 20m. The video bus width is set to operate at 36 bit though; color depths of 24, 30, or 36 bit are set automatically according to the video source.

## 2.2.3 Audio

In addition to HDMI audio, the RX board provides a forward channel stereo audio through its on-board audio ADC/DAC and via the J7 Jumpers.

### 2.2.3.1 HDMI Audio

HDMI Audio is provided through the SII9135 HDMI transmitter which accepts up to 4 channels of I2S. These channels are recovered by the chip and sent to the HDMI transmitter.

### 2.2.3.2 Forward Channel Stereo Audio

The forward channel stereo audio supports a stereo audio outputs via the J7 jumpers labeled "Audio\_L" and "AudioR".

## 2.2.4 IR Repeating

The IR repeating feature allows the user to point the remote controller at the TV (sink) to control DVD (or other source devices that are connected to the TX board) and an IR OUTPUT jack (J5) is provided for an external IR receiver.

## 2.2.5 Pass Thru UART

The pass through function bridges UART interface on the TX side and RX side. It automatically detect and supports any baud rate up to 115.2K and any number of start or stop bit. The pass thru UART supports +3V RS-232 output, it can be accessed through an external +3V to +5V RS-232 line driver/receiver IC to connect to the J6 jumpers labeled "PTU\_TX", "PTU\_RX", "V5R0" and "GND".

## 2.2.6 MCU UART

This interface is for 8051 code upgrading, debugging purpose. OWLink "tool" software can be used to set and read registers of the ASIC as well as update the board's firmware.

The MCU interface can be accessed by connecting an USB RS-232 converter (FTDI FT2232) to the J8 jack or J7 jumpers labeled " MCU TXD", "MCU\_RXD" and "GND".

Figure 5 – 3.5mm stereo plug pin-out

## 2.2.7 DLI Link LED

We have several LEDs on the RX board. They are labeled as D1, D2, D3, and D5. These LEDs indicate the state of the DLI link. The table below lists the functions of these LEDs.

### LED Function/Description

#### **D1 - Power LED**

#### **D2 - Indicates LOS (Loss of signal)**

- Off when good signal is detected on DLI
- On when signal loss condition is detected

#### **D3 - Indicates EDID transferred properly**

- Blinks when incorrect EDID is detected
- Solid when EDID pass-through is correct

#### **D5 - Blinks when chip is bootloading**

- Glows On/Off when waiting for fiber link
- Solid when DLI link is established OWLink