Baaske Medical

Optical HDMI isolator

HDFX-350

Item no. 2012405

HDMI 2.0-LWL-Extender

HDMI 2.0 optical fiber detachable extender, HDFX-350, extends HDMI 2.0 signal up to 200m (656feet) and transmits 4K UHD (4096x2160) at 60Hz over one duplex LC multi-mode fibers. The leading-edge technology allows long distance transmission of 4K signal without any video/audio degradation. The compact design allows integration into various installation environments. Compatible with standard HDMI functions such as CEC, EDID and HDCP 2.2, the HDFX-350 offers more flexibility during installation and enables fast, easy and simple galvanic isolation of the HDMI interface. In addition, the High Retention HDMI connector provides more holding power than the standard HDMI connector and prevents accidental disconnection of the signal source.

The HDFX-350 can be operated either with 5V power from the HDMI source (Tx only) or via USB power.

Benefits

- Supports HDMI2.0 standards feature
- Extends 4K UHD (4096x2160) at 60Hz (RGB & YCbCr : 4:4:4)
- Transmits HDMI data up to 200m (656feet) over one duplex LC multi-mode fibers (OM3).
- Offers total data rate 18Gbps (6Gbps per Channel)
- Prevents accidental disconnection by using High-Retention HDMI connector
- Operates by DDC 5V from HDMI source or using USB Power cable
- Provides Auto Power-Switching feature
- Provides diagnosis feature
- Supports 3D contents transmission
- Complies with CEC, EDID and HDCP 2.2
- Supports HDR at 10 bit or 12 bit speeds respectively within its maximum bandwidth, 18Gbps

Technical details and usage

Technical Data

	Parameters	Spezifications
Components	Laser Diodes in Tx modul	Multi-Mode VCSEL (Verticat Cavity Surface Emittin Laser)
	Photo Diodes in Rx modul	Pin-PD
Electrical	Input and Output Signals	ANSI 8B/10 Level (complying with HDMI2.0)
	Data Transfer Rate (Graphic Data)	Max. 6Gbps
	Total Jitter at the end of Rx output	Max. 0.6UL
	Skew inter-channels	Max. 2ns
Optical	Link Power Budget	Min. 2dB (TBD)
Mechanical	Modul dimensions (WHD)	26x 72x 15 mm
Connect	Optical	Duplex LC connectors
	Electric conector type from Systems and to Display	High-retention HDMI connector
	Recommended Fiber	OM3(50/125 um) Multi-mode glass fiber
Item No.	2012405	

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to device. These are absolute stress ratings only. Functional operation of the device is not implied at these of any other conditions in excess of those given in the operational sections of the datasheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameters	Symbol	Min	Max	Unit
Supply Adapter Voltage	V_{cc}	-0.3	+6.0	V
Operating Temperature	T_{OP}	0	50	C
Operating Relative Humidity	RH_{OP}	10	85[1)]	%RH
Storage Temperature	Tstg	-30	70	C
Storage Relative Humidity	RHstg	10	95[2)]	%RH

[1)/2)] Under the conditions of no drops of dew.

Recommended specifications of fiber-optical cable

Parameters	Conditions	Specifications
Fiber Type		50µm Multi-Mode Graded Index Glass Fiber
Modal bandwith	λ = 850nm	min. 500 MHz km
Attenuation	λ = 850nm	min. 2.5dB/km
Extension Distance		200 meters
No. of ferrules	Duplex LC	2 ferrules
Skew		max. 0.4ns
Inseration Attenuation		max. 0.5dB
Total Optical Attenuation	in 100 meters extension	max. 1.5dB

09.20 Rev.1 Technical changes and errors expected.

Transmitter Modul: HDFX-350-TX

	Parameters	Symbol	Min	Typical	Max	Units
Power Supply	Supply voltage	V_{cc}	4.5	5.0	5.5	V
	Supply current	I_{TCC}	350	400	450	mA
	Power dissipation	P_{TX}	1.58	2.0	2.48	W
	Power supply rejection[1]	PSR		50		mV_{P-P}
DATA ANSI 8b/10b	Data output load	R_{LD}		50		Ω
	Transmitter differential input voltage swing (peak-to-peak)	V_{ID}	0.4	-	1.6	V
Optical Link[3]	Output optical power	P_O			3	dBm
	Wavelength	λ	825		990	nm
	Spectral width in RMS	Δλ			3	nm
	Relative intensity of noise[2]	RIN		-20		dB/Hz
	Extinction ratio	Ext	4			dB
	Rising/Falling time	T_{rise}/T_{fall}			77	ps
	Jitter in p-p value[3]	T_{jitter}			50	ps

[1] Tested with 50mVP-P sinusoidal signal in the frequency range from 500 Hz to MHz on a VCC power supply, power supply filter is recommended. Typically, a change sensitivity of less than 0.25 dB is achieved.
[2] Measurement in 1 GHz frequency bandwidth
[3] Under PPG (Pulse Pattern Generator) Use with Jitter 50ps

Receiver Modul: HDFX-350-RX

	Parameters	Symbol	Min	Typical	Max	Unit
Power supply	Supply voltage	V_{cc}	4.5	5.0	5.5	V
	Supply current	I_{RCC}	350	400	450	mA
	Power dissipation	P_{RX}	1.58	2.0	2.48	W
	Power supply rejection[4]	PSR		50		mV_{P-P}
DATA ANSI 8b/10b	Data inpuput load	R_{LD}		50		Ω
	Receiver Data output voltage swing (peak-to-peak)	VOHDMI-p	600	800	1200	mV_{p-p}
Optical Link	Receiving optical power	P_O			1	dBm
	Wavelength	λ	825		990	nm
	OMA sensibility	SENS	-14.25			dBm
	Link power budget	P_{bgt}	2			dB
	Total Jitter[5]	TR_{jitter}			0.6	UI

[4] Tested with 50mVP-P sinusoidal signal in the frequency range from 500 Hz to MHz on a VCC power supply, power supply filter is recommended. Typically, a change sensitivity of less than 0.25 dB is achieved.
[5] Measurement as total jitter including Tx and Rx modules under maximum extension- 100 meters at 6 Gbps.

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