FiberX Optical DisplayPort Cable Specification

FX-I240

1. General Description

This fiber optic cable system lets your DisplayPort compliant display device extend up to 40 meters (131.2 fit) away from host based on DisplayPort standard without signal degradation at a maximum of 4K@60 UHD (3840 x 2160 @ 60Hz) resolution.

- High speed and long distance transmission by optical system
- Compatible with DisplayPort 1.2a standard
- Standard DisplayPort source-sink connector
- MMF optical fiber + copper hybrid cable structure
- HBR2 (High Bit Rate) cable assembly with up to 5.4 Gbs data rate
- AUX and Hot Plug channels are transmitted by copper line
- DPCD/HDCP compliant
- Power operation LED installed

2. General Specification

	Transmitter	Receiver
Optical Converter	4 ch 850 nm Multi-mode VCSEL	4 ch GaAs PIN photo Diode
Input and Output Signal	DisplayPort Signal (Std. V1.2a)	
Video Bandwidth	4 lanes, 21.6 Gbps (HBR2)	
Module Size	114x25x21mm (WxHxD)	114x25x21mm (WxHxD)
Using electrical connector	20 pin DisplayPort Plug (Male)	20 pin DisplayPort Plug (Male)
Applied Fiber	50/125 µm Multi-mode glass-fiber	

3. Absolute Maximum Ratings

Parameter	Rating
Storage temperature	-20°C ~ +70°C
Operating temperature	0°C ~ +50°C
Power Supply (DC)	-0.3 ~ +3.3V
Relative Humidity	10~ 80%
Lead solder temperature	260°C, 10 seconds

Notice: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

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4. Electrical Specification

4.1 Transmitter (Source) Module

	Parameter	Symbol	Min.	Typ	Max.	Units	Condition
POWER	Supply Voltage (DC)	V_{CC}	+2.9	+3.3	+3.6	V	
	Supply Current	I_{CC}		0.18		A	4K 60Hz (MST)
	Power Dissipation	P_O		0.59		W	
TMDS	Diff. P-to-P Input level 1	$V_{TX\text{-}DIFF\text{-}PP1}$	0.34	0.4	0.46	V	
	Diff. P-to-P Input level 2	$V_{TX\text{-}DIFF\text{-}PP2}$	0.51	0.6	0.68	V	
	Diff. P-to-P Input level 3	$V_{TX\text{-}DIFF\text{-}PP3}$	0.69	0.8	0.92	V	
	Diff. P-to-P Input level 4	$V_{TX\text{-}DIFF\text{-}PP4}$	1.02	1.2	1.38	V	
	TX DC Common Mode	$V_{TX\text{-}DC\text{-}CM}$	0		2.0	V	
	TX AC Common Mode HBR2	$V_{TX\text{-}AC\text{-}CM}$			30	mV rms	

Transmitter module of Model FX-I240 includes 4 channel VCSEL(Vertical Surface Emitting Laser Diode) with 850 nm invisible laser radiation. Transmitter module of FX-I240 is Class 1 Laser Product.

4.2 Receiver (Sink) Module

	Parameter	Symbol	Min.	Typ	Max.	Units	Condition
POWER	Supply Voltage	V_{CC}	+2.9	+3.3	+3.6	V	
	Supply Current	I_{CC}		0.21		A	4K 60Hz (MST)
	Power Dissipation	P_O		0.69		W	
TMDS	Diff. P-to-P Output Voltage	$V_{RX\text{-}DIFFp\text{-}p\_HBR2}$	70			mV	For HBR2
	Diff. P-to-P Output Voltage	$V_{RX\text{-}DiFFr\text{-}p}$	40			mV	For HBR
nal	RX DC Common Mode	$V_{RX\text{-}DC\text{-}CM}$	0		2.0	V	

4.3 Connector Pin Assignment

4.3.1 Transmitter (Source, Male)

Pin	Signal Assignment	Pin	Signal Assignment
1	Main Link Lane 0 (Positive)	11	Ground
2	Ground	12	Main Link Lane 3 (Negative)
3	Main Link Lane 0 (Negative)	13	Config1 (Ground)
4	Main Link Lane 1 (Positive)	14	Config2 (Ground)
5	Ground	15	AUX Channel (Positive)
6	Main Link Lane 1 (Negative)	16	Ground
7	Main Link Lane 2 (Positive)	17	AUX Channel (Negative)
8	Ground	18	Hot Plug
9	Main Link Lane 2 (Negative)	19	Return
10	Main Link Lane 3 (Positive)	20	DP_PWR (+3.3V input)

4.2.2 Receiver (Sink, Female)

Pin	Signal Assignment	Pin	Signal Assignment
1	Main Link Lane 0 (Positive)	11	Ground
2	Ground	12	Main Link Lane 3 (Negative)
3	Main Link Lane 0 (Negative)	13	Config1 (Ground)
4	Main Link Lane 1 (Positive)	14	Config2 (Ground)
5	Ground	15	AUX Channel (Positive)
6	Main Link Lane 1 (Negative)	16	Ground
7	Main Link Lane 2 (Positive)	17	AUX Channel (Negative)
8	Ground	18	Hot Plug
9	Main Link Lane 2 (Negative)	19	Return
10	Main Link Lane 3 (Positive)	20	Not Connect(DP_PWR)

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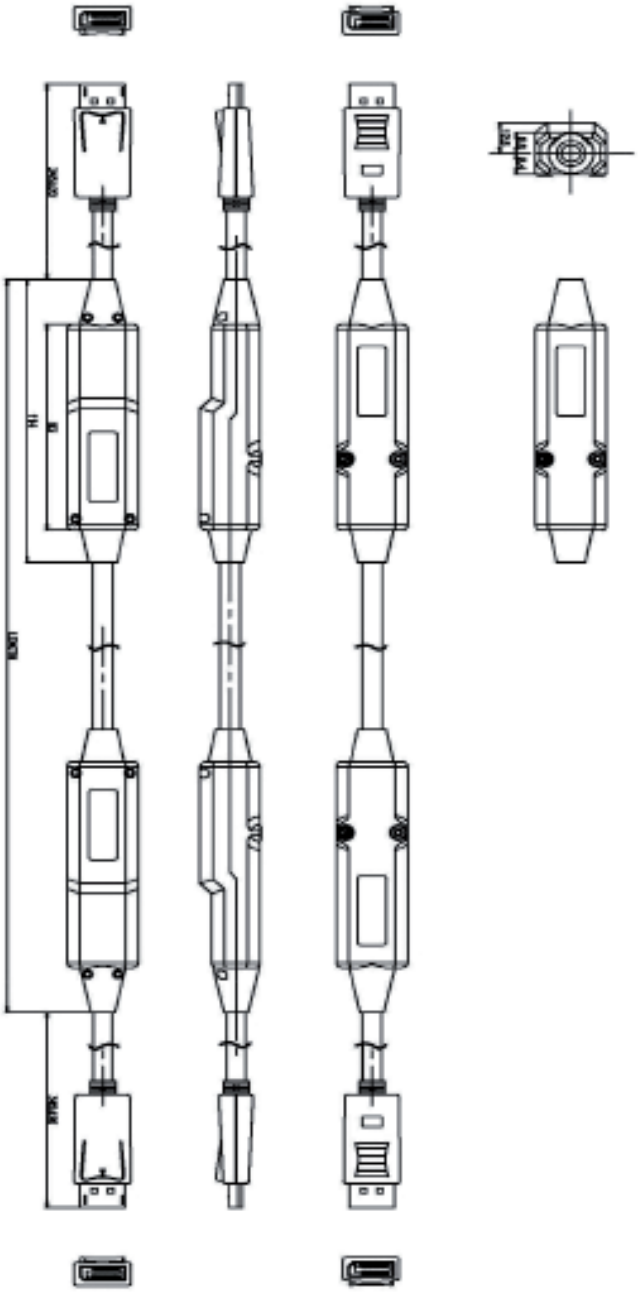
5. Mechanical Specification

5.1 Dimension



*It may change without notice

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5.2 Optical Cable

	Dimension of FX-I240 Cable	
Items	Unit	Specification
Cable Outer Diameter	mm	7.40±0.20
Jacket Color	-	FR-PVC (Black)
Cable Marking	-	If need

5.3 Optical cable characteristics

Item	spec.	unit	Condition
Storage Temperature	-40 ~ 40	°C	Spooled
Operational Test	-20 ~ 70	°C	-
Max. Tensile Load	245	N	By careless handling (Short term)
Min. Radius Bend	75	mm	By careless handling (Short term)
	125		After installing (long term)
Crush Resistance	490	N/50mm	By careless handling (short term)

6. RoHS

Certificate of Conformance RoHS

On January 27, 2003, the European Parliament and the Adminstrative Council adopted Directive 2002/95/EC (RoHS) that concerns the "Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".

The parts currently delivered by PureLink GmbH are already free of lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr 6), polybrominated biphenyl (PBB) and poly brominated dipheny (PBDE).

This Certification of Conformance is to certify that the products listed below comply with RoHS Directive mentioned above:

- FX-I240

If you have any further questions regarding the RoHS compliance of parts delivered, please do not hesitate to contact your supplier.

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