

DATA SHEET

Two (2) fibers Detachable DisplayPort 1.2 Extender, DPFX-200A-TR

Contents

- ◆ Description
- ◆ Features
- ◆ Applications
- ◆ Technical Specifications
- ◆ Operating Conditions
- ◆ Drawing of Module
- ◆ Drawing of Cable Connection
- ◆ DP Pin Description

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Description

New optical DisplayPort 1.2 extender, DPFX-200A-TR consists of transmitter module and receiver module, each of which has Two (2) LC fibers connection and is designed compact enough to be fitted into various installation environments.

It enables to transmit 4K(4096x2160) at 60Hz signal up to 100m (328feet), avoiding any tricks like scaling or data compression for lessening a burden of data transmission. It provides total data throughput 21.6Gbps (5.4Gbps per lane).

The pure fiber connection by two (2) LC fibers connector between transmitter and receiver, gives clean, secure and easy installation with perfect electrical isolation, but without electrical hazard and interference.

Two (2) Micro USB to USB cables will be provided in shipping group.

The shipping items are shown as follows;

- 1) One (1) Transmitter (Tx) and One (1) Receiver (Rx)
- 2) One (1) 0.2m Male to Female DisplayPort copper cable
- 3) Two (2) Micro USB to USB cables
- 4) User's Manual

※ Other options – contact with sales office

Features

- Supports DisplayPort 1.2 standards
- Extends 4K(4096x2160) at 60Hz
- Transmits DP data up to 100m (328feet) over two (2) LC multi-mode fibers.
- Offers total data rate 21.6Gbps (5.4Gbps per lane)
- Compact design allows direct connect to the DP display
- Directly connected with small form factor
- Operated by 3.3V from USB power
- Data security with negligible EMI emission.
- Includes two (2) Micro USB to USB cables for the transmitter and receiver
- Certification: CE / FCC, UL IT, Laser Safety class 1

Applications

- Medical imaging
- Military
- Control room
- Simulator

Technical Specifications

	Parameter	Specifications
Components	Laser Diodes in TX Module	Multi-mode VCSEL (Vertical Cavity Surface Emitting Laser)
	Photo Diodes in Rx Module	PIN-PD
Electrical	Input and Output Signals	ANSI 8B/10 Level (complying with DP1.2)
	Data Transfer Rate (Graphic Data)	Max. 5.4Gbps
	Total Jitter at the end of Rx output	TBD
	Skew inter-channels	TBD
Optical	Link Power Budget	TBD
Mechanical	Module dimension (WDH)	26 x 72 x 15mm
Connect	Optical Connector	Duplex LC connectors
	Electric Connector Type from Systems and to Displays	20pin DP Receptacle Connector
	Recommended Fiber	OM3(50/125 um) Multi-mode Glass Fiber

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the 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.

Parameter	Symbol	Min	Max	Unit
Supply Adapter Voltage	V_{CC}	-	6.5	V
Operating Temperature	T_{OP}	0	50	°C
Operating Relative Humidity	RH_{OP}	10	85 ⁽¹⁾	%RH
Storage Temperature	T_{stg}	-30	70	°C
Storage Relative Humidity	RH_{stg}	10	95 ⁽²⁾	%RH

Operating Conditions

Transmitter module: DPFX-200A-T

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	V _{CC}	4.5	5.0	5.5	V
	Supply Current	I _{TCC}	TBD	TBD	TBD	mA
	Power Dissipation	P _{TX}	TBD	TBD	TBD	W
	Power Supply Rejection (Note1)	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}	TBD	TBD	TBD	V
Optical Link (Note3)	Output Optical Power	P _o	1		-6	dBm
	Wavelength	λ	850		980	nm
	Spectral width in RMS	Δλ			3	nm
	Relative Intensity of Noise (Note2)	RIN		TBD		dB/Hz
	Extinction Ratio	Ext	3.5			dB
	Rising/Falling Time	T _{rise} /T _{fall}			TBD	ps
	Jitter in p-p value (Note3)	T _{jitter}			TBD	ps

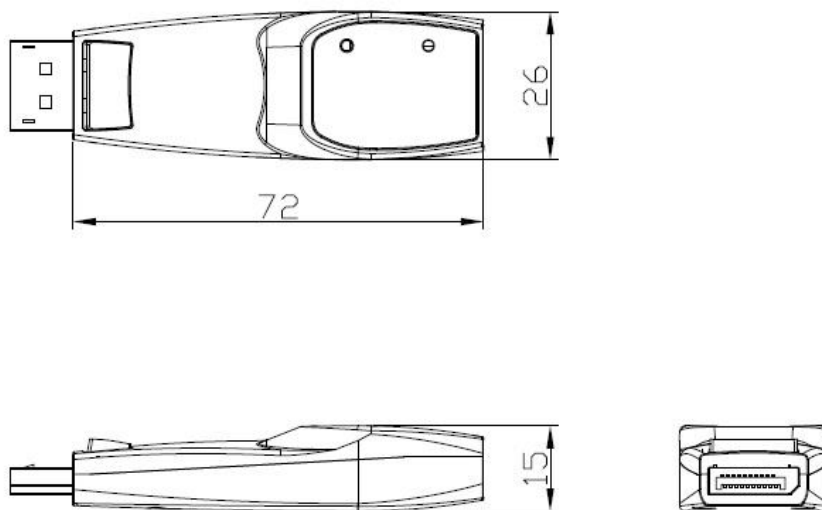
Receiver module: DPFX-200A-R

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	V _{CC}	4.5	5.0	5.5	V
	Supply Current	I _{RCC}	TBD	TBD	TBD	mA
	Power Dissipation	P _{RX}	TBD	TBD	TBD	W
	Power Supply Rejection (Note4)	PSR		50		mV _{p-p}
DATA ANSI 8b/10b	Data Input Load	R _{LD}		50		Ω
	Receiver Data Output Voltage Swing (Peak-to-Peak)	V _{ODp-p}		TBD		mV _{p-p}
Optical Link	Receiving Optical Power	P _o	-9		0.5	dBm
	Receiving Wavelength	λ	850		980	nm
	Signal Detect Good	SDg			-11	dBm
	Signal Detect Fail	SDf	-22			dBm
	Link Power Budget	P _{bgt}	3			dB
	Total Jitter (note 5)	TR _{jitter}			TBD	UI

Recommended specifications of fiber-optic cable

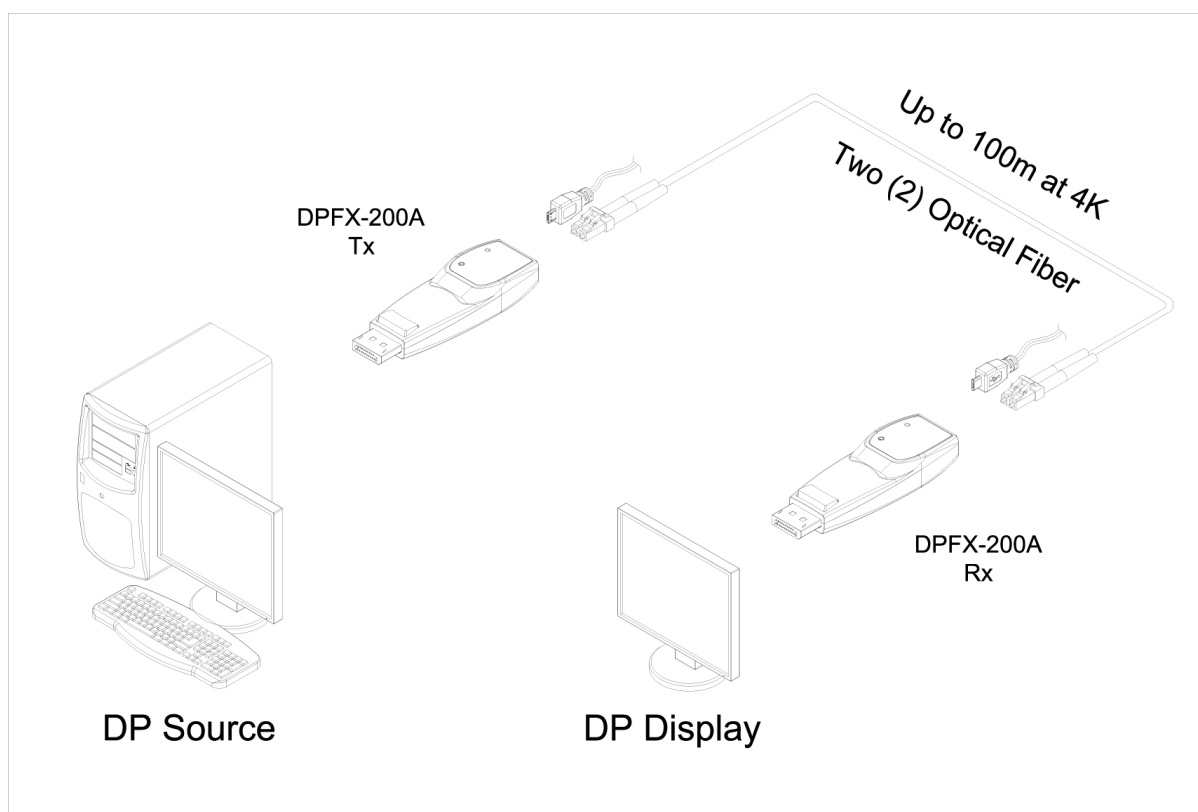
Parameters	Conditions	Specifications
Fiber Type		50μm Multi-mode Graded Index Glass Fiber
Modal Bandwidth	λ = 850nm	Min. 500 MHz km
Fiber Cable Attenuation	λ = 850nm	Max. 2.5dB/km
Extension Distance		10 – 1650ft (500 meters)
No. of Ferrules	Duplex LC	2 ferrule
Skew		Max. 0.4ns
Insertion Attenuation		Max. 0.5dB
Total Optical Attenuation	In 330 ft (100 meter) extension	Max. 1.5dB

Drawing of Module



Note: The transmitter, DPFX-200A-T and the receiver, DPFX-200A-R have the same mechanical dimensions

Drawing of Cable Connection



DisplayPort Pin Description

TX Module

Pin	Symbol	Mating Row Contact Location	Functional Description
1	ML_Lane0(p)	Top	DisplayPort Data Lane0 Positive
2	GND	Bottom	Ground
3	ML_Lane0(n)	Top	DisplayPort Data Lane0 Negative
4	ML_Lane1(p)	Bottom	DisplayPort Data Lane1 Positive
5	GND	Top	Ground
6	ML_Lane1(n)	Bottom	DisplayPort Data Lane1 Negative
7	ML_Lane2(p)	Top	DisplayPort Data Lane2 Positive
8	GND	Bottom	Ground
9	ML_Lane2(n)	Top	DisplayPort Data Lane2 Negative
10	ML_Lane3(p)	Bottom	DisplayPort Data Lane3 Positive
11	GND	Top	Ground
12	ML_Lane3(n)	Bottom	DisplayPort Data Lane3 Negative
13	CONFIG1	Top	Cable Adaptor Detect
14	CONFIG2	Bottom	None
15	AUX CH(p)	Top	DisplayPort Aux Channel Positive
16	GND	Bottom	Ground
17	AUX CH(n)	Top	DisplayPort Aux Channel Negative
18	Hot Plug Detect	Bottom	HPD is used to detect a sink device by the source device
19	Return	Top	None
20	DP_PWR	Bottom	Power for Connector (3.3V 500mA)

RX Module

Pin	Symbol	Mating Row Contact Location	Functional Description
1	ML_Lane3(n)	Top	DisplayPort Data Lane3 Negative
2	GND	Bottom	Ground
3	ML_Lane3(p)	Top	DisplayPort Data Lane3 Positive
4	ML_Lane2(n)	Bottom	DisplayPort Data Lane2 Negative
5	GND	Top	Ground
6	ML_Lane2(p)	Bottom	DisplayPort Data Lane2 Positive
7	ML_Lane1(n)	Top	DisplayPort Data Lane1 Negative
8	GND	Bottom	Ground
9	ML_Lane1(p)	Top	DisplayPort Data Lane1 Positive
10	ML_Lane0(n)	Bottom	DisplayPort Data Lane0 Negative
11	GND	Top	Ground
12	ML_Lane0(p)	Bottom	DisplayPort Data Lane0 Positive
13	CONFIG1	Top	Cable Adaptor Detect
14	CONFIG2	Bottom	None
15	AUX CH(p)	Top	DisplayPort Aux Channel Positive
16	GND	Bottom	Ground
17	AUX CH(n)	Top	DisplayPort Aux Channel Negative
18	Hot Plug Detect	Bottom	HPD is used to detect a sink device by the source device
19	Return	Top	None
20	DP_PWR	Bottom	Power for Connector (3.3V 500mA)

Revision History

Version	date	History
0.9	2017-06	Release of preliminary version datasheet