

## 1. General Description

The unique FX-P220 fiber optical transceiver lets your PC, digital HDTV or projector extend up to 1,000 meters (3300ft) away from host based on DisplayPort standard without signal degradation at 4K (3840x2160) / 30Hz resolution.

- High Speed and long distance transmission by optical system
- Compatible with DisplayPort standard V1. 1a
- Main-link video signal/AUX data and Hot Plug Detection signal is transmitted by 1 channel multimode optical fiber
- External power supply use
- DPCD (DisplayPort Configuration Data) compliant
- HDCP (High-bandwidth Digital Contents Protection) compliant
- Does not support DP Dual Mode

## 2. General Specification

	Transmitter	Receiver
Optical Converter	850nm, 4Ch Transmit OSA 911nm, 1Ch VCSEL 980nm, 1Ch PIN P/D Diode	850nm, 4Ch Receive OSA 980nm, 1Ch VCSEL 911nm, 1Ch PIN P/D Diode
Input and Output Signal	ANSI8B/10B (DisplayPort 1.1a standard)	
Video Bandwidth	3.5 Gbps/Channel	
Module Dimension	33x12x282mm (WxHxD)	
Module Weight	-	
Used electrical Connector	20 pin DisplayPort Plug (input)	20 pin DisplayPort Plug (Output)
Optical Connector	1 SC Connector	1 SC Connector
Recommended Fiber	50/125um Multi-mode glass-fiber	
Maximum Supported Resolution	4K (3840x2160)/30Hz	

## 3. Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Power Supply	$V_{CC}$	-0,3	+5,5	V
Operating temperature	$V_{OT}$	0	+50	°C
Storage temperature	$V_{ST}$	-20	+70	°C
Relative Humidity	$H_{RH}$	10	80	RH

**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.

## 4. Electrical Specification

### 4.1 Transmitter Module

	Parameter	Symbol	Min.	Typ	Max.	Units	Condition
POWER	Supply Voltage (Option External Power)	$V_{CC}$	4.5	5.0	5.5	V	
	Supply Current	$I_{CC}$	-	210	260	mA	
	Power Dissipation	$P_O$	-	1.05	1.30	W	
TMDS	Diff. P-to-P Input level 1	$V_{TX-DIFF-PP1}$	0.34	0.4	0.46	V	
	Diff. P-to-P Input level 2	$V_{TX-DIFF-PP2}$	0.51	0.6	0.68	V	
	Diff. P-to-P Input level 3	$V_{TX-DIFF-PP3}$	0.69	0.8	0.92	V	
	Diff. P-to-P Input level 4	$V_{TX-DIFF-PP4}$	1.02	1.2	1.38	V	
	TX DC Common Mode	$V_{TX-DC-CM}$	0		2.0	V	
	TX AC Common Mode	$V_{TX-AC-CM}$			20	mV	

Transmitter module of Model FX-P220 includes 4 channel VCSEL (Vertical Surface Emitting Laser Diode) with 850, 911, 980nm invisible laser radiation. **Do not view directly laser module of transmitter or the end of the other side of optical cable connected to transmitter with optical instrument.** Transmitter module of FX-P220 is Class 1M Laser Product.

### 4.2 Receiver Module

	Parameter	Symbol	Min.	Typ	Max.	Units	Condition
POWER	Supply Voltage (External Power)	$V_{CC}$	4.5	5.0	5.5	V	
	Supply Current	$I_{CC}$	-	230	260	mA	
	Power Dissipation	$P_O$	-	1.15	1.30	W	
TMDS	Diff. P-to-P Output Voltage	$V_{RX-DIFF-PP-H}$	120			mV	For HBR
	Diff. P-to-P Output Voltage	$V_{RX-DIFF-PP-R}$	40			mV	For HBR
	RX DC Common Mode	$V_{RX-DC-CM}$	0			V	



### 4.3 Connector Pin Assignment

#### 4.3.1 Transmitter

Pin	Signal Assignment	Pin	Signal Assignment
1	ML_Lane0(p)	11	GND
2	GND	12	ML_Lane3(n)
3	ML_Lane0(n)	13	No Connect (CONFIG1)
4	ML_Lane1(p)	14	No Connect (CONFIG2)
5	GND	15	AUX_CH (p)
6	ML_Lane1(n)	16	GND
7	ML_Lane2(p)	17	AUX_CH (n)
8	GND	18	Hot Plug Detect
9	ML_Lane2(n)	19	Return
10	ML_Lane3(p)	20	DP_PWR

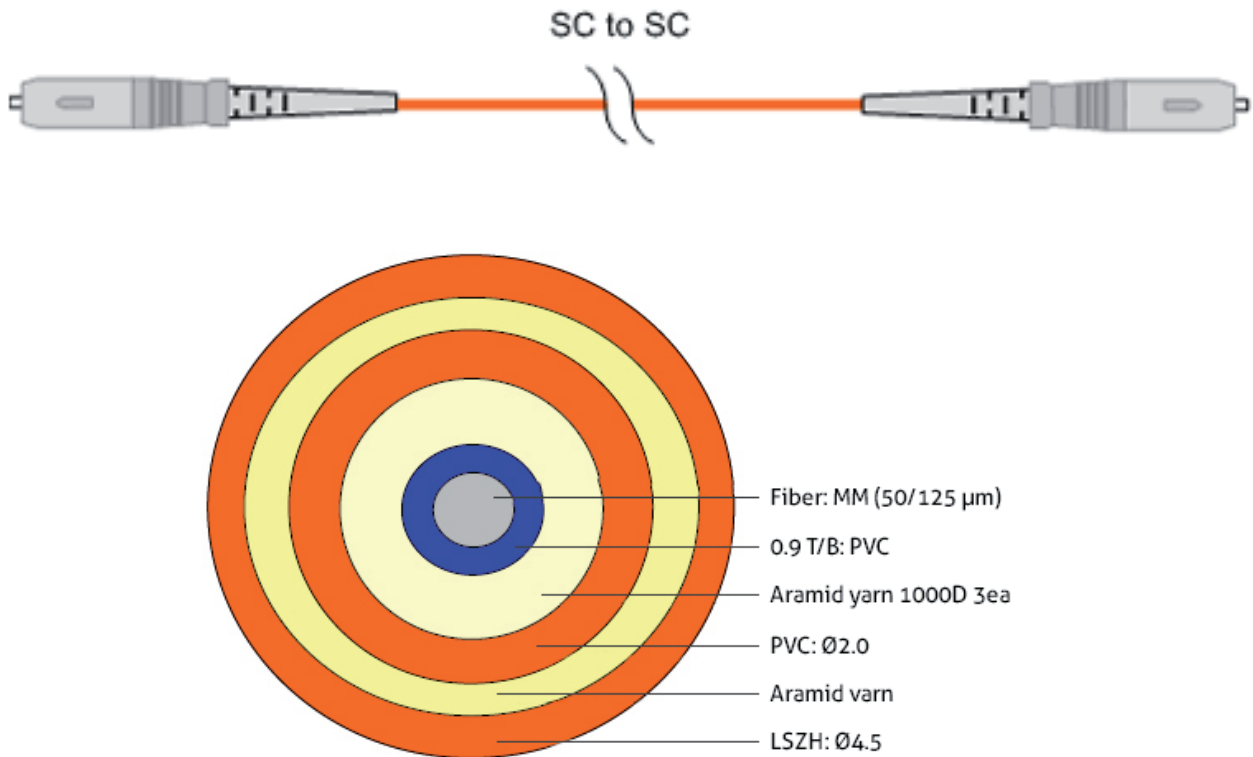
#### 4.3.2 Receiver

Pin	Signal Assignment	Pin	Signal Assignment
1	ML_Lane3(n)	11	GND
2	GND	12	ML_Lane0(p)
3	ML_Lane3(p)	13	No Connect (CONFIG1)
4	ML_Lane2(n)	14	No Connect (CONFIG2)
5	GND	15	AUX_CH (p)
6	ML_Lane2(p)	16	GND
7	ML_Lane1(n)	17	AUX_CH (n)
8	GND	18	Hot Plug Detect
9	ML_Lane1(p)	19	Return
10	ML_Lane0(n)	20	No Connect (DP_PWR)



### 4.4 Cable Information

#### Optical Fiber Cable (MMF 50/125)



## 5. RoHS

### Certificate of Conformance RoHS

Dear Customer,

On January 27, 2003, the European Parliament and the Administrative 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 (Cr6+), polybrominated biphenyl (PBB) and polybrominated diphenyl (PBDE).

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

- FX-P220

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