

# DATA SHEET

## DisplayPort 1.2 Data Recovery Repeater DPAX

### Contents

- ◆ Description
- ◆ Features
- ◆ Applications
- ◆ Technical Specification
- ◆ Absolute Maximum Ratings
- ◆ Operating Conditions
- ◆ Drawing
- ◆ Connection Diagram
- ◆ DisplayPort PIN Description

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# DisplayPort 1.2 Data Recovery Repeater; DPAX

## Description

The new DisplayPort 1.2 Data Recovery Repeater, DPAX is an active repeater for DisplayPort video signal to increase video transmission of a DisplayPort signal up to combined length of 8m (26ft) over DisplayPort 1.2 copper cables.

3m (10ft) from the Source / 5m (16ft) to the Display at DP 1.2

5m (16ft) from the Source / 10m (33ft) to the Display at DP 1.1

DPAX complies with DisplayPort 1.2 standards, and supports Ultra High Definition (up to 4096x2160) at 60Hz with auxiliary channel, MST function.

DPAX has been especially designed to work with Opticis fiber-optic DisplayPort extenders, DPFX-700, DPFX-300, DPFX-250, DPFX-100, DPFC-200D and M1-5000, so it can extend transmission of DisplayPort signal even longer.

### The shipping group is as follows;

- 1) One (1) DPAX
- 2) One(1) Micro USB Power Cable
- 3) User Manual

### Optional Products;

- 1) DC +5V, 1A power adapter

## Features

- ◆ Complies with DisplayPort 1.2 standards
- ◆ Supports Ultra High Definition (up to 4096x2160) at 60Hz
- ◆ Offers data recovery function
- ◆ Transmits DisplayPort 1.2 data up to 8m (26feet) over copper cable  
3m (10ft) from the Source / 5m (16ft) to the Display at DP 1.2  
5m (16ft) from the Source / 10m (33ft) to the Display at DP 1.2
- ◆ Offers total data rate 21.6Gbps (5.4Gbps per lane)
- ◆ Supports auxiliary channel, MST function
- ◆ Supports much longer extension through daisy-chain connection
- ◆ Designed so that compatibility could go well with especially with Opticis DisplayPort extenders for optical transmission
- ◆ Operated by USB power or DC power supplying adaptor
- ◆ Dimensions (WDH): 39.5 x 50 x 13mm

## Applications

- ◆ Digital Signage
- ◆ Medical imaging
- ◆ Control room
- ◆ Any 4K Ultra High-Definition DisplayPort Solutions

## Technical Specifications

	Parameter	Specifications
Electrical	Input and output signals	ANSI 8B/10 level(complying with DP 1.2)
	Data Transfer Rate(Graphic Data)	MAX 5.4Gbps
	Total jitter at the end of output	35ps
Mechanical	Dimension(W x D x H)	39.5 x 50 x 13 mm
Connect	Electric Connector Type	20 pin DP Receptacle connector

## 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 <sub>CC</sub>		6.5	V
Operating Temperature	T <sub>OP</sub>	0	50	°C
Operating Relative Humidity	RH <sub>OP</sub>	10	80 <sup>1)</sup>	%RH
Storage Temperature	T <sub>STG</sub>	-30	70	°C
Storage Relative Humidity	RH <sub>STG</sub>	10	95 <sup>2)</sup>	%RH

Note

1), 2) Under the conditions of No drops of dew

## Operating Conditions

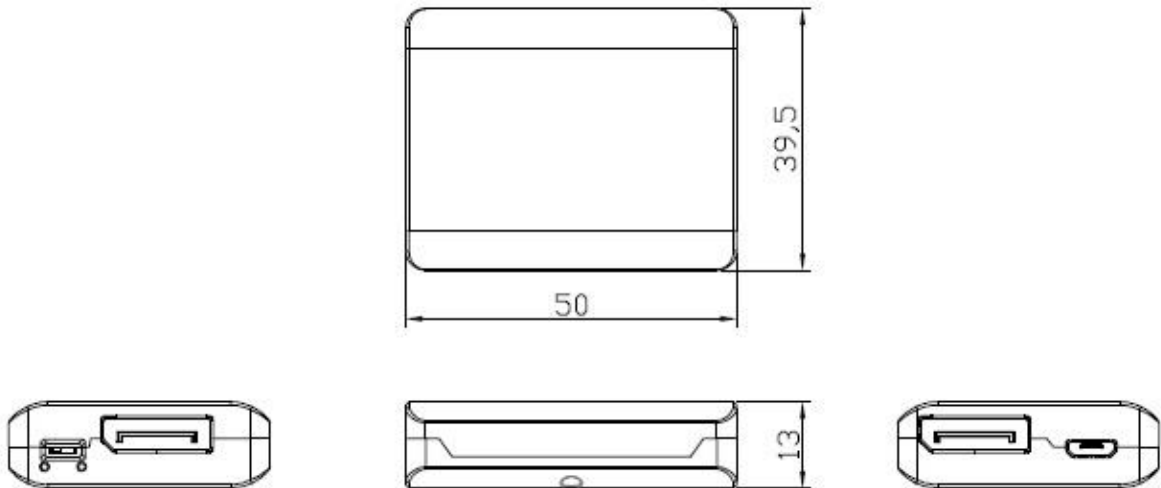
### DPAX

	Parameter	Symbol	Minimum	Typical	Maximum	Units
Power Supply	Supply Voltage	V <sub>CC</sub>	4.5	5.0	5.5	V
	Supply Current	I <sub>TCC</sub>	290	330	370	mA
	Power Dissipation	P <sub>TX</sub>	1.45	1.65	1.85	W
	Power Supply Rejection (Note1)	PSR		50		mV <sub>p-p</sub>
DATA ANSI 8b/10b	Data Output Load	R <sub>LD</sub>		50		Ω
	Transmitter Differential Input Voltage Swing (Peak-to-Peak)	V <sub>ODp-p</sub>		600		mV <sub>p-p</sub>

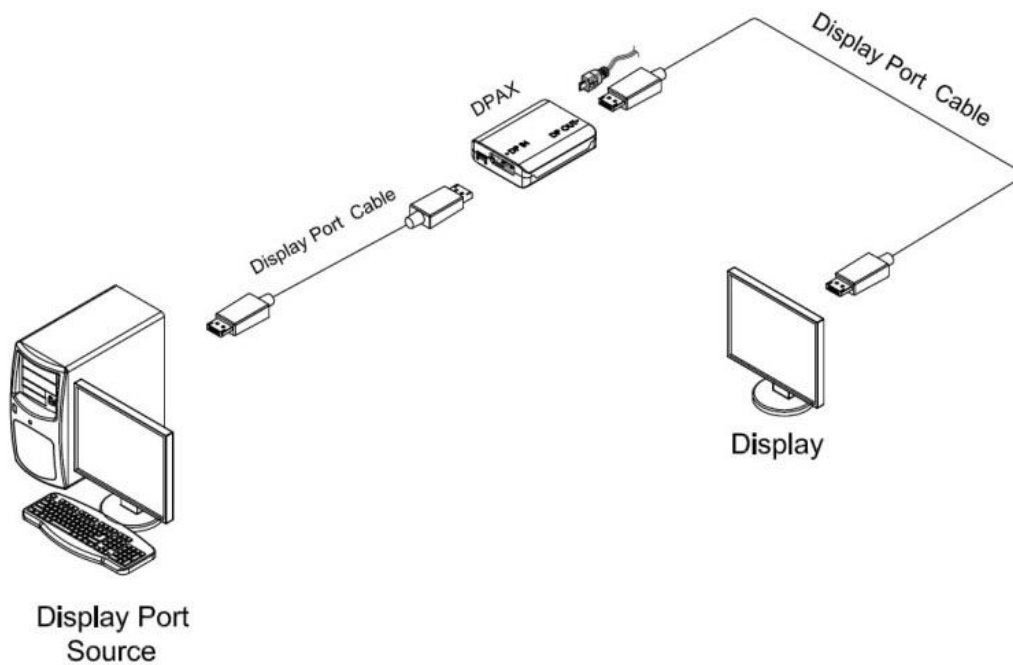
Note 1. Tested with a 50 mV<sub>p-p</sub> sinusoidal signal in the frequency range from 500Hz to 500MHz on the V<sub>CC</sub> supply with the recommended power supply filter in place. Typically less than a 0.25dB change in sensitivity is experienced.

## Drawing

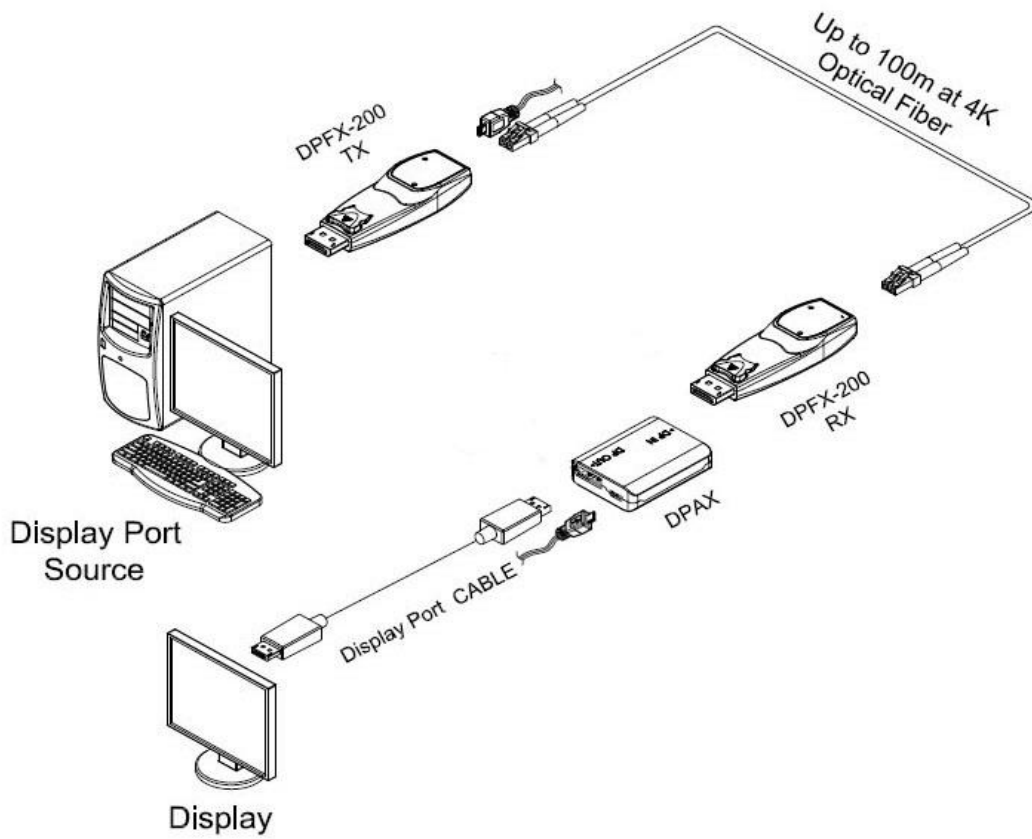
Dimensions [mm]



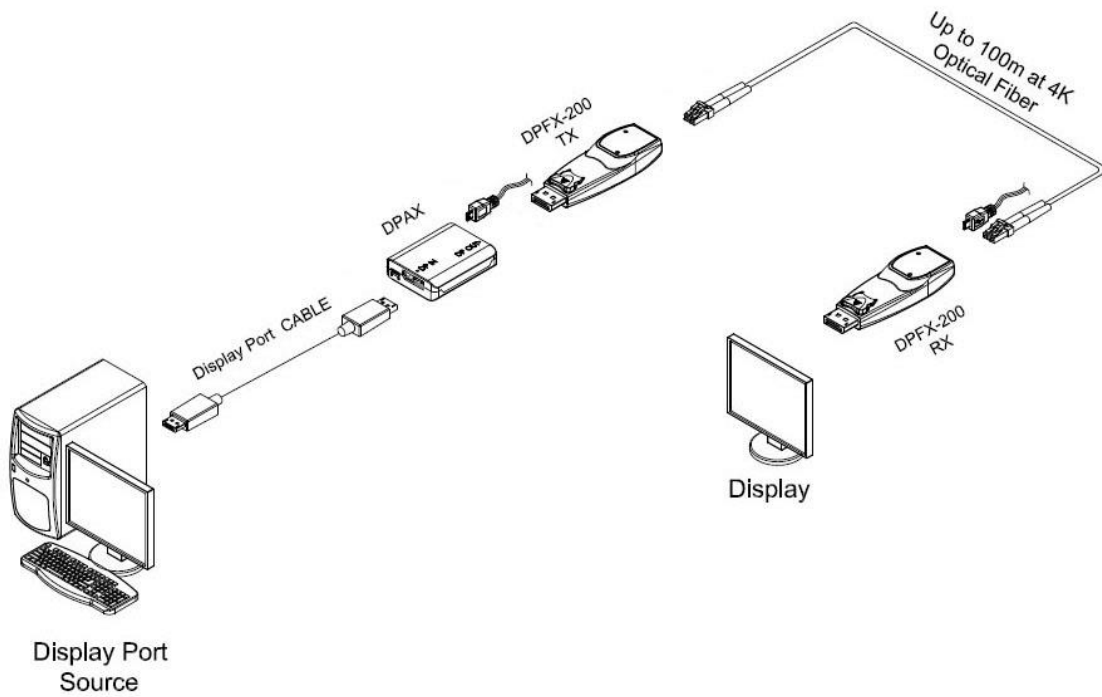
## Connection Diagrams



Connection of DPAX with Copper cable



Connection of DPAX with Copper cable and Optical fiber (RX side)



Connection of DPAX with Copper cable and Optical fiber (TX side)

## DisplayPort Pin Description

### DPAX Input

Pin	Symbol	Mating Row Contact Location	Functional Description
1	ML_Lane0(p)	Top	Display port Data Lane0 Positive
2	GND	Bottom	Ground
3	ML_Lane0(n)	Top	Display port Data Lane0 Negative
4	ML_Lane1(p)	Bottom	Display port Data Lane1 Positive
5	GND	Top	Ground
6	ML_Lane1(n)	Bottom	Display port Data Lane1 Negative
7	ML_Lane2(p)	Top	Display port Data Lane2 Positive
8	GND	Bottom	Ground
9	ML_Lane2(n)	Top	Display port Data Lane2 Negative
10	ML_Lane3(p)	Bottom	Display port Data Lane3 Positive
11	GND	Top	Ground
12	ML_Lane3(n)	Bottom	Display port Data Lane3 Negative
13	CONFIG1	Top	Cable Adaptor Detect
14	CONFIG2	Bottom	None
15	AUX CH(p)	Top	Display port AUX Channel Positive
16	GND	Bottom	Ground
17	AUX CH(n)	Top	Display port 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	None

### DPAX Output

Pin	Symbol	Mating Row Contact Location	Functional Description
1	ML_Lane3(p)	Top	Display port Data Lane3 Positive
2	GND	Bottom	Ground
3	ML_Lane3(n)	Top	Display port Data Lane3 Negative
4	ML_Lane2(p)	Bottom	Display port Data Lane2 Positive
5	GND	Top	Ground
6	ML_Lane2(n)	Bottom	Display port Data Lane2 Negative
7	ML_Lane1(p)	Top	Display port Data Lane1 Positive
8	GND	Bottom	Ground
9	ML_Lane1(n)	Top	Display port Data Lane1 Negative
10	ML_Lane0(p)	Bottom	Display port Data Lane0 Positive
11	GND	Top	Ground
12	ML_Lane0(n)	Bottom	Display port Data Lane0 Negative
13	CONFIG1	Top	Cable Adaptor Detect
14	CONFIG2	Bottom	None
15	AUX CH(p)	Top	Display port AUX Channel Positive
16	GND	Bottom	Ground
17	AUX CH(n)	Top	Display port 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	None