

DATA SHEET

DisplayPort 1.2 Data Recovery Repeater DPAX

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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 18m (59ft) over Premium grade DisplayPort cable.

3m (10ft) from the Source / 15m (49ft) to the Display at DP 1.2

5m (16ft) from the Source / 20m (65ft) to the Display at DP 1.1

DPAX complies with DisplayPort 1.2 standards, and supports Ultra High Definition (up to 3840x2160) at 60Hz with auxiliary channel, MST function.

DPAX has been especially designed to work with Opticis fiber-optic DisplayPort extenders, DPFX-100, DPFX-200 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 3840x2160) at 60Hz
- ◆ Offers data recovery function
- ◆ Transmits DisplayPort 1.2 data up to 18m (59feet) over Premium grade DisplayPort cable
3m (10ft) from the Source / 15m (49ft) to the Display at DP 1.2
5m (16ft) from the Source / 20m (65ft) 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_{CC} | | 6.5 | V |
| Operating Temperature | T_{OP} | 0 | 50 | °C |
| Operating Relative Humidity | RH_{OP} | 10 | 80 ¹⁾ | %RH |
| Storage Temperature | T_{STG} | -30 | 70 | °C |
| Storage Relative Humidity | RH_{STG} | 10 | 95 ²⁾ | %RH |

Note

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

Operating Conditions

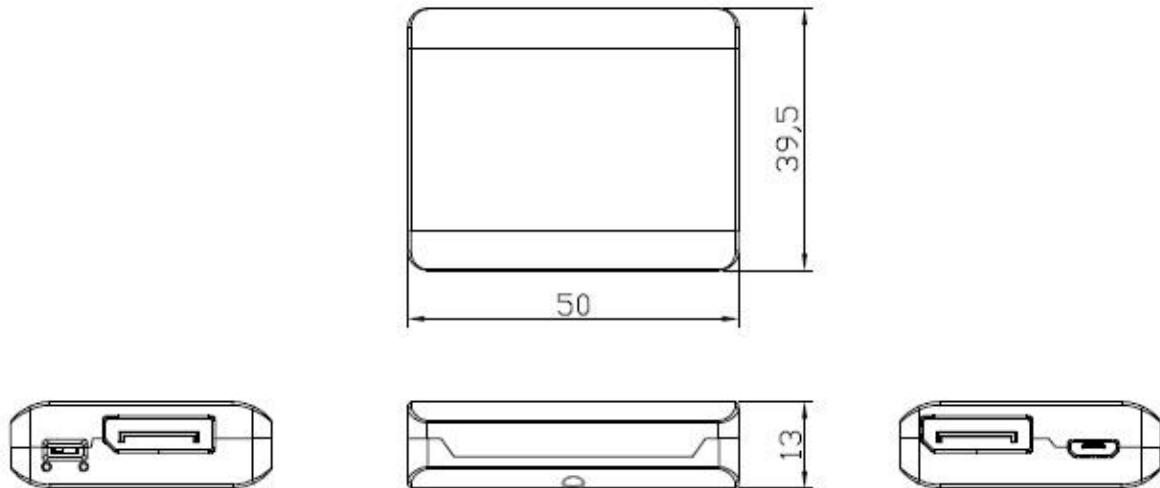
DPAX

| | Parameter | Symbol | Minimum | Typical | Maximum | Units |
|------------------|---|-------------|---------|---------|---------|-------------------|
| Power Supply | Supply Voltage | V_{CC} | 4.5 | 5.0 | 5.5 | V |
| | Supply Current | I_{TCC} | 290 | 330 | 370 | mA |
| | Power Dissipation | P_{TX} | 1.45 | 1.65 | 1.85 | 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_{ODp-p} | | 600 | | mV _{p-p} |

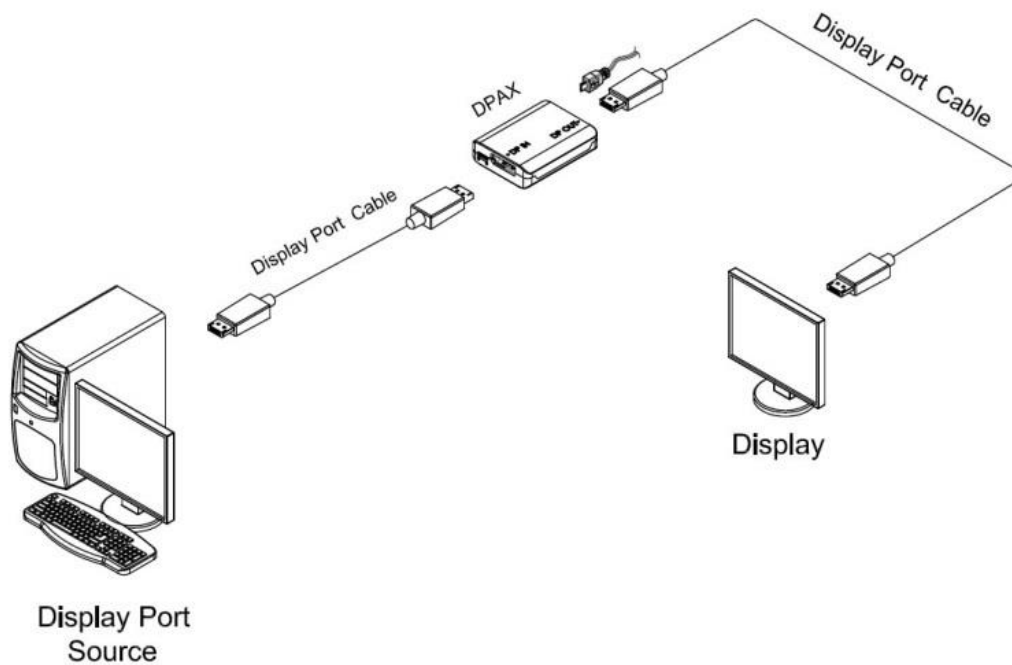
Note 1. Tested with a 50 mV_{p-p} sinusoidal signal in the frequency range from 500Hz to 500MHz on the V_{CC} supply with the recommended power supply filter in place. Typically less than a 0.25dB change in sensitivity is experienced.

Drawing

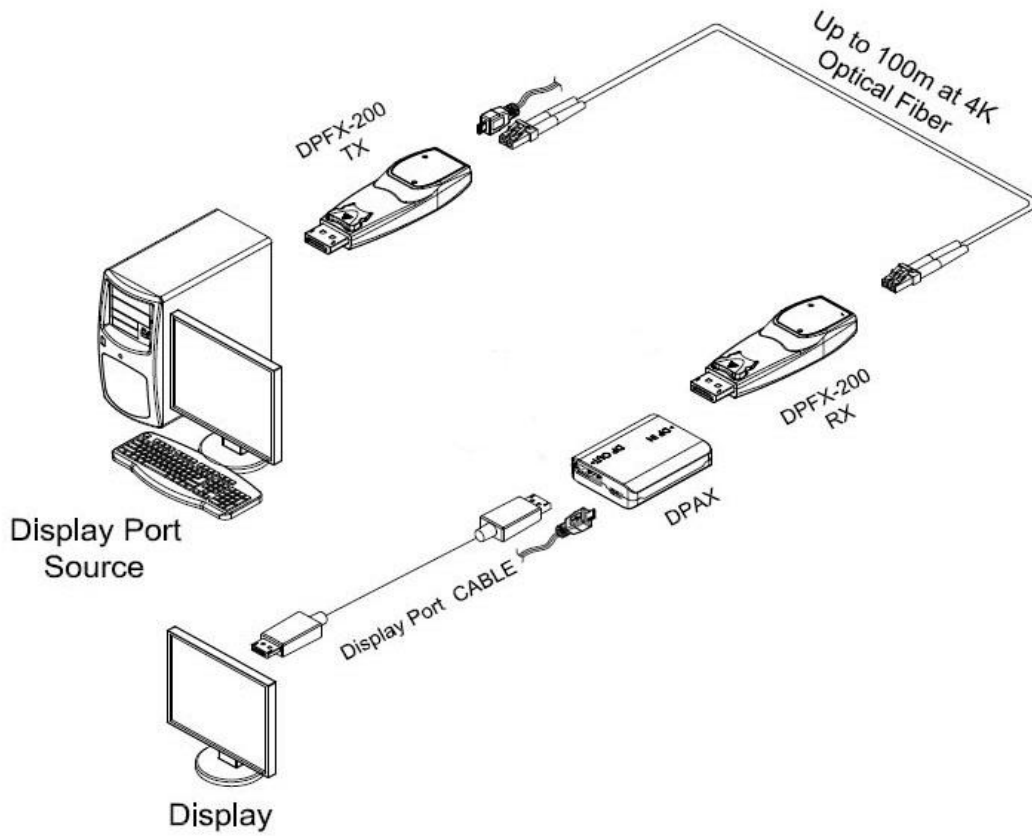
Dimensions [mm]



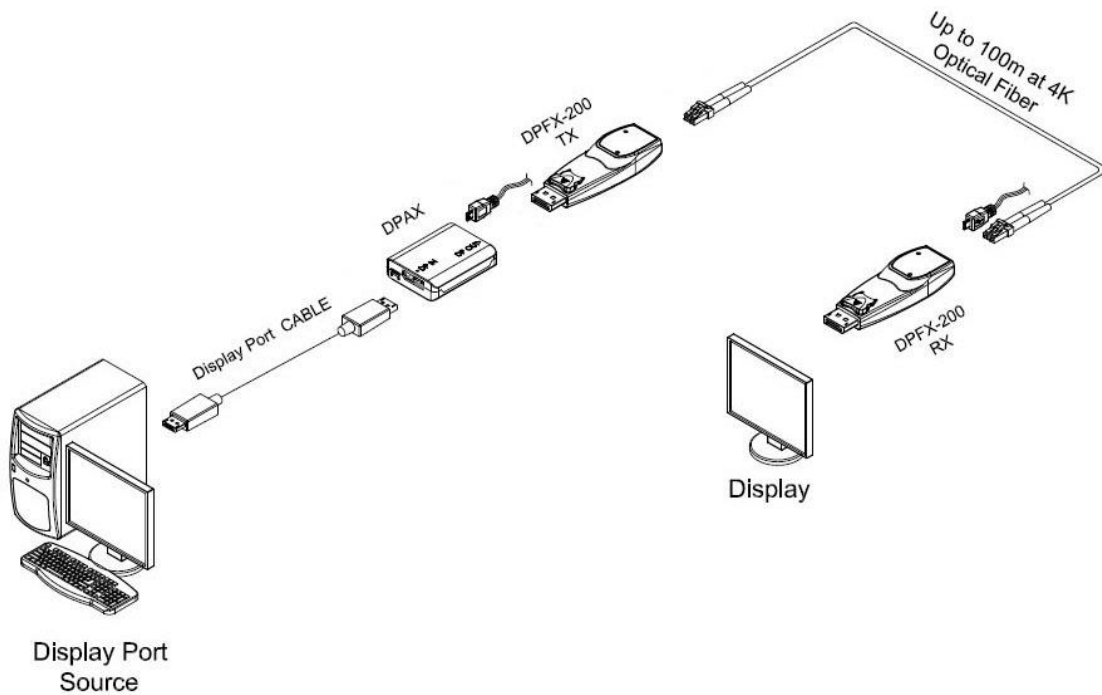
Connection Diagrams



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 |