

# DATA SHEET

## DisplayPort1.2 to HDMI 2.0 Converting Active Optical Cable, DHFC-200D

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## ■ Description

Detachable DisplayPort 1.2 to HDMI 2.0 converting active optical cable, DHFC-200D, enables to convert DisplayPort 1.2 signal to HDMI 2.0 signal, and extends 4K (4096x2160) at 60Hz up to 100m (328feet) over plenum graded (or LSZH) hybrid cable. It avoids any scaling or data compression for lessening a burden of data transmission.

DHFC-200D is designed compact enough to be fitted into various installation environments with cutting edge technology performance.

DHFC-200D offers perfect flexibility during installation by separating DisplayPort and HDMI connector part and Active Optical Cable part. It gives slim, light, easy installation like a general copper cable, moreover DHFC-200D converts DisplayPort 1.2 signal to HDMI 2.0 signal and extends this signal much longer than general copper cable.

With High-Retention HDMI connector, HDMI connector (Rx) side allows more retention force compared to standard HDMI connector whereas DisplayPort connector secures its connection with its own locking mechanism.

## ■ Features

- Extends up to 4K (4096x2160) at 60Hz (RGB & YCbCr : 4:4:4)
- Converts DisplayPort 1.2 signal to HDMI 2.0 signal and transmits converted signal up to 100m (328feet) over hybrid cable
- Adopts plenum graded (or LSZH - Low Smoke Zero Halogen) hybrid cable
- Offers perfect flexibility during installation by separating DisplayPort and HDMI connector from cable
- Prevents accidental disconnection by using High-Retention HDMI connector(Rx) and DisplayPort connector(Tx)
- Supports 3D contents transmission
- Supports CEC, EDID and HDCP 2.2

## ■ Applications

- Home AV system
- Digital Signage
- Control room
- Conference room
- Rental Staging

## ■ 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 | Typ | Max | Units |
|----------------------------------|-----------------|-----|-----|-----|-------|
| Storage Temperature <sup>1</sup> | T <sub>ST</sub> | -20 |     | 85  | °C    |
| Supply Volt <sup>1</sup>         | V <sub>CC</sub> |     | 5   | 6   | V     |
| Relative Humidity <sup>2</sup>   | RH              |     |     | 90  | %     |
| Electrostatic Discharge          | ESD             | -4  |     | +4  | KV    |

## ■ Recommended Operating Conditions

| Parameter                   | Symbol          | Min     | Typ | Max     | Units |
|-----------------------------|-----------------|---------|-----|---------|-------|
| Bitrate/Channel             | B               | 5.4(DP) |     | 6(HDMI) | Gbps  |
| Operation Temperature Range | T <sub>O</sub>  | 0       |     | 60      | °C    |
| Supply Voltage              | V <sub>CC</sub> | 4.8     | 5   | 5.2     | V     |
| Operating Current           | I <sub>CC</sub> |         | 290 | 320     | mA    |
| Differential Impedance      | R               |         | 100 |         | ohm   |

## ■ Physical Characteristics

| Parameter             | Description                                    |
|-----------------------|--|
| Cable Type            | Hybrid Cable<br>MMF(OM2) + 6C Electrical Wires |
| Cable Jacket          | LSZH/Plenum                                    |
| Cable Dimensions(WxH) | 3.9 x 2.7 mm                                   |
| Pull Strength         | 30 kg  |
| Minimum Bend Radius   | 32 mm*   |

\* Allow 10mm Bending Below 10 turns

<sup>1</sup> Stresses listed may be applied without causing damage. Functionality at or above the values listed is not implied. Exposure to these values for extended periods may affect reliability.

<sup>2</sup> Non-condensing environment.

■ DisplayPort Connector PIN Description

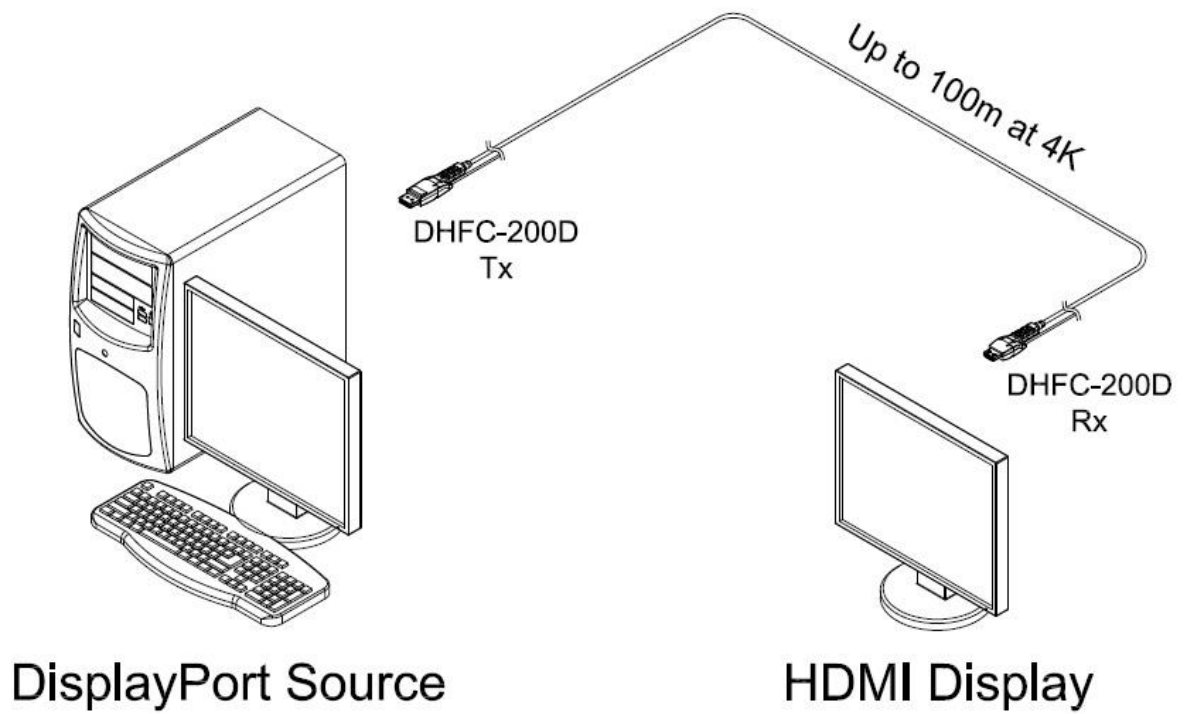
| Source(TX) |              |                        | Display (Rx) |           |                                     |
|------------|--------------|------------------------|--------------|-----------|-------------------------------------|
| Pin Number | Symbol       | Functional Description | Pin Number   | Symbol    | Functional Description              |
| 1          | ML_Lane 0(p) | Lane 0 Positive        | 1            | CH2+      | TMDS Data Signal Channel 2 Positive |
| 2          | GND          | Ground                 | 2            | GND       | TMDS Data Signal Channel 2 Shield   |
| 3          | ML_Lane 0(n) | Lane 0 Negative        | 3            | CH2-      | TMDS Data Signal Channel 2 Negative |
| 4          | ML_Lane 1(p) | Lane 1 Positive        | 4            | CH1+      | TMDS Data Signal Channel 1 Positive |
| 5          | GND          | Ground                 | 5            | GND       | TMDS Data Signal Channel 1 Shield   |
| 6          | ML_Lane 1(n) | Lane 1 Negative        | 6            | CH1-      | TMDS Data Signal Channel 1 Negative |
| 7          | ML_Lane 2(p) | Lane 2 Positive        | 7            | CH0+      | TMDS Data Signal Channel 0 Positive |
| 8          | GND          | Ground                 | 8            | GND       | TMDS Data Signal Channel 0 Shield   |
| 9          | ML_Lane 2(n) | Lane 2 Negative        | 9            | CH0-      | TMDS Data Signal Channel 0 Negative |
| 10         | ML_Lane 3(p) | Lane 3 Positive        | 10           | CLK+      | TMDS Clock Channel Positive         |
| 11         | GND          | Ground                 | 11           | GND       | TMDS Clock Channel Shield           |
| 12         | ML_Lane 3(n) | Lane 3 Negative        | 12           | CLK-      | TMDS Clock Channel Negative         |
| 13         | Config 1     | Connected to ground    | 13           | CEC       | CEC Consumer Electronics Control    |
| 14         | Config 2     | Connected to ground    | 14           | Utility   | NC                                  |
| 15         | AUX ch (p)   | Auxiliary channel      | 15           | SCL       | SCL HDCP/DDC                        |
| 16         | GND          | Ground                 | 16           | SDA       | SDA HDCP/DDC                        |
| 17         | AUX ch (n)   | Auxiliary channel      | 17           | GND       | DDC/CEC Ground & DDC/CEC shield     |
| 18         | Hot plug     | Hot plug detect        | 18           | +5V Power | +5V Power                           |
| 19         | Return       | Return for power       | 19           | HPD       | HEAC-                               |
| 20         | DP_PWR       | Not connected          |              |           |                                     |

■ **Micro HDMI Connector PIN Description**

| Pin Number | Symbol      | Functional Description              |
|------------|-------------|-------------------------------------|
| 1          | CH2+        | TMDS Data Signal Channel 2 Positive |
| 2          | GND         | TMDS Data Signal Channel 2 Shield   |
| 3          | CH2-        | TMDS Data Signal Channel 2 Negative |
| 4          | CH1+        | TMDS Data Signal Channel 1 Positive |
| 5          | GND         | TMDS Data Signal Channel 1 Shield   |
| 6          | CH1-        | TMDS Data Signal Channel 1 Negative |
| 7          | CH0+        | TMDS Data Signal Channel 0 Positive |
| 8          | GND         | TMDS Data Signal Channel 0 Shield   |
| 9          | CH0-        | TMDS Data Signal Channel 0 Negative |
| 10         | CLK+        | TMDS Clock Channel Positive         |
| 11         | GND         | TMDS Clock Channel Shield           |
| 12         | CLK-        | TMDS Clock Channel Negative         |
| 13         | CEC         | CEC Consumer Electronics Control    |
| 14         | Utility     | NC                                  |
| 15         | SCL         | SCL HDCP/DDC                        |
| 16         | SDA         | SDA HDCP/DDC                        |
| 17         | Utility_2   | 3.3V(internal pull up)              |
| 18         | +3.3V Power | +3.3V Power                         |
| 19         | HPD         | HEAC-                               |

(Internal design of PIN arrangement)

■ **Connection Diagram**

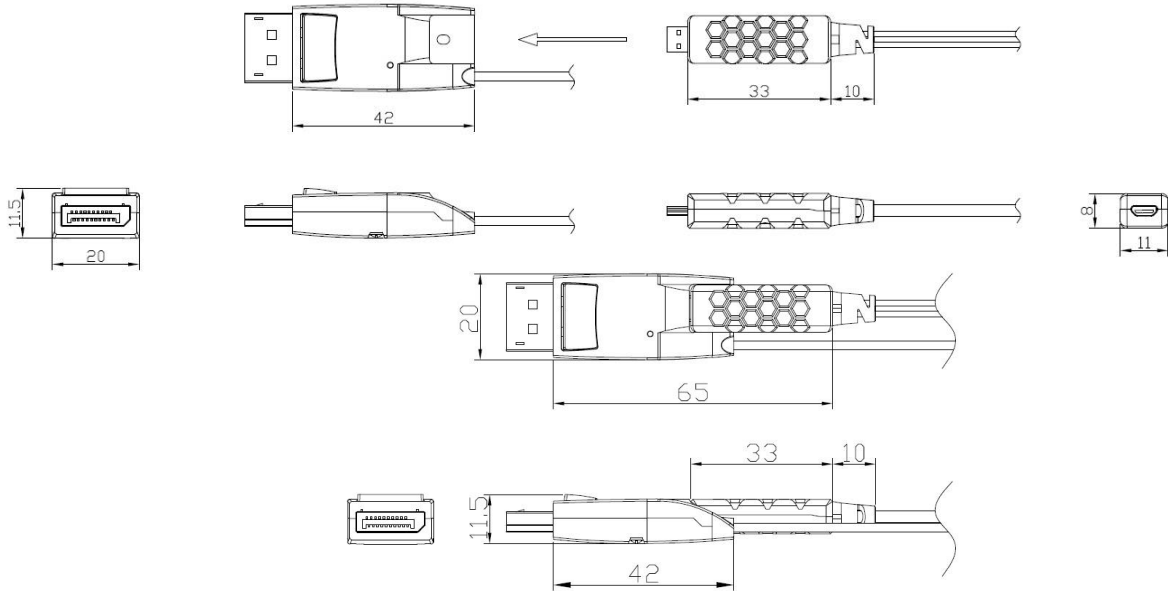


**Example : PC to DisplayPort Monitor Set-up**

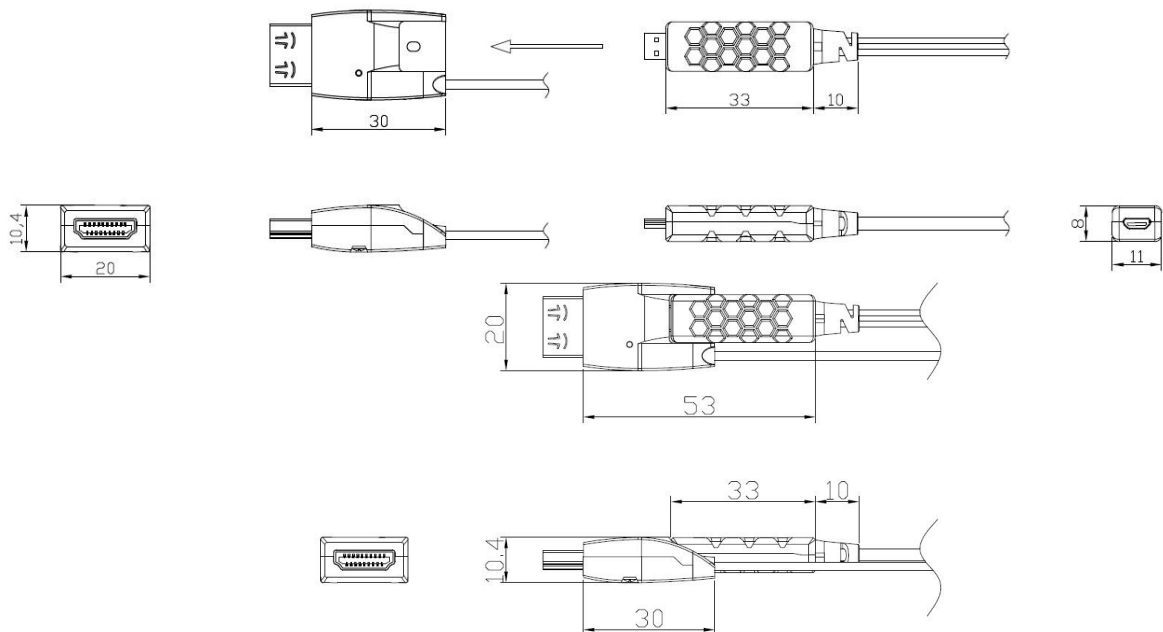
- Source : DisplayPort source PC, Set-top box, Console
- Display : HDMI Display UHD TV, Projector, 4K monitor

■ Dimensions

DHFC-200D-Tx



DHFC-200D-Rx



Dimensions (L\*W\*H)

Tx: 65 x 20 x 11.5mm

Rx: 50 x 20 x 10.4mm