



DPM

Optical DisplayPort Extension system

Specification for

Model : DPM

Revised : Apr. 09. 2012
Original Release Date : Jul. 19. 2010

OPHIT

Revision History

Version Number	Revision Date	Author	Description of Changes
1.0	Jul. 19. 2010	J.H Lee	Initial Version
1.1	Apr. 09. 2012	J.H Lee	Ordering Information Removed

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1. General Description

DPM, optical DisplayPort extension, lets your DisplayPort compliant display device signal extend up to 65meters (215feet) away from host based on DisplayPort standard without signal degradation by WQXGA (2560x1600) resolution.

- High speed and long distance transmission by optical system
- Fully compatible with DisplayPortV1.1a standard by VESA
- The use of standard DisplayPort source-sink connector
- Needs external power supply for proper operation
- MMF optical fiber + copper hybrid cable structure
- HBR(High Bit Rate) Cable Assembly (up to 2.7Gbs Data Rate)
- AUX and Hotplug channels are transmitted by copper line
- DPCP & HDCP compliant(DPCP & HDCP are not part of the DisplayPort standard)
- Power & channel operation LED installed

2. General Specification

Parameter	Symbol	
	Transmitter	Receiver
Optical Converter	4 ch 850nm Multi-mode VCSEL	4 ch GaAs PIN photo Diode
Input and Output Signal	DisplayPort Signal (Std. V1.1a)	
Video Bandwidth	10bit Deep color / 60Hz	
Module Size	114 x 25 x 21mm (WxDxH)	73 x 25 x 21mm (WxDxH)
Electrical Connector	20 pin DisplayPort Plug(Male)	20 pin DisplayPort Plug(Female)
Applied Fiber	50/125 μm Multi-mode glass-fiber	

3. Absolute Maximum Ratings

Parameter	Rating
Storage temperature	-20°C ~ +70°C
Operating temperature	0°C ~ +50°C
Power Supply	-0.3 ~ +3.3V
Relative Humidity	10 ~ 80 %
Lead-free solder temperature	260°C, 10 seconds

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 Electrical Specification

4.1.1 Transmitter (Source) Module

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage	V _{CC}		+3.3		V	
	Supply Current	I _{CC}		116		mA	
	Power Dissipation	P _O		0.38		W	
S I G N A L	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 DPM includes 4 channel VCSEL(Vertical Surface Emitting Laser Diode) with 850 nm invisible laser radiation.

Transmitter module of DPM is Class 1 Laser Product.

4.1.2 Receiver (Sink) Module

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage	V _{CC}		+3.3		V	
	Supply Current	I _{CC}		196		mA	
	Power Dissipation	P _O		0.65		W	
S I G N A L	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 RBR
	RX DC Common Mode	V _{RX-DC-CM}	0		2.0	V	

4.2 Connector Pin Assignment

Transmitter (Source, Male)

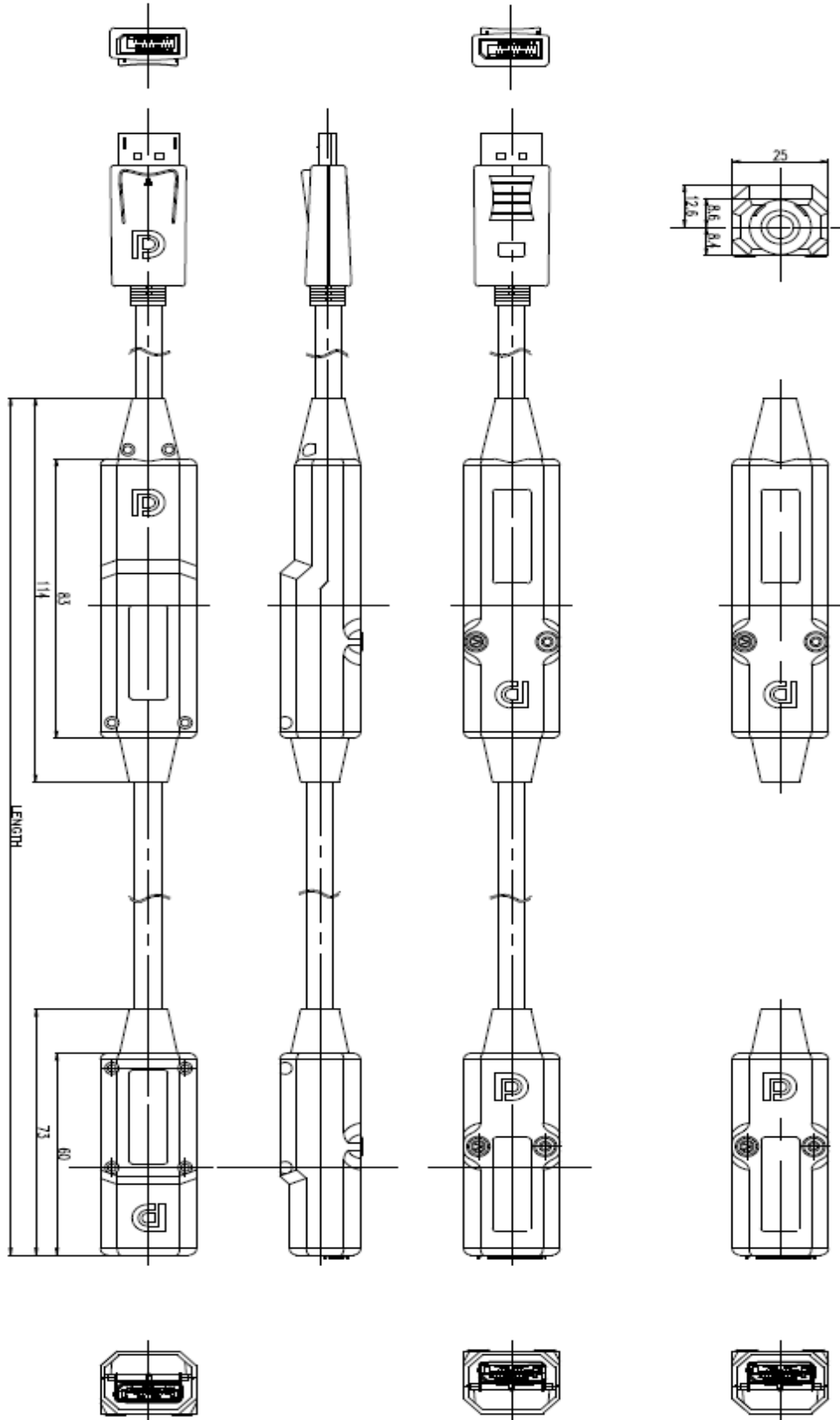
Pin	Signal Assignment	Pin	Signal Assignment
1	Main Link Lane 0 (Positive)	11	Ground
2	Ground	12	Main Link Lane 3 (Negative)
3	Main Link Lane 0 (Negative)	13	Config1 (Ground)
4	Main Link Lane 1 (Positive)	14	Config2 (Ground)
5	Ground	15	AUX Channel (Positive)
6	Main Link Lane 1 (Negative)	16	Ground
7	Main Link Lane 2 (Positive)	17	AUX Channel (Negative)
8	Ground	18	Hot Plug
9	Main Link Lane 2 (Negative)	19	Return
10	Main Link Lane 3 (Positive)	20	DP_PWR (+3.3V input)

Receiver (Sink, Female)

Pin	Signal Assignment	Pin	Signal Assignment
1	Main Link Lane 0 (Positive)	11	Ground
2	Ground	12	Main Link Lane 3 (Negative)
3	Main Link Lane 0 (Negative)	13	Config1 (Ground)
4	Main Link Lane 1 (Positive)	14	Config2 (Ground)
5	Ground	15	AUX Channel (Positive)
6	Main Link Lane 1 (Negative)	16	Ground
7	Main Link Lane 2 (Positive)	17	AUX Channel (Negative)
8	Ground	18	Hot Plug
9	Main Link Lane 2 (Negative)	19	Return
10	Main Link Lane 3 (Positive)	20	DP_PWR (+3.3V output)

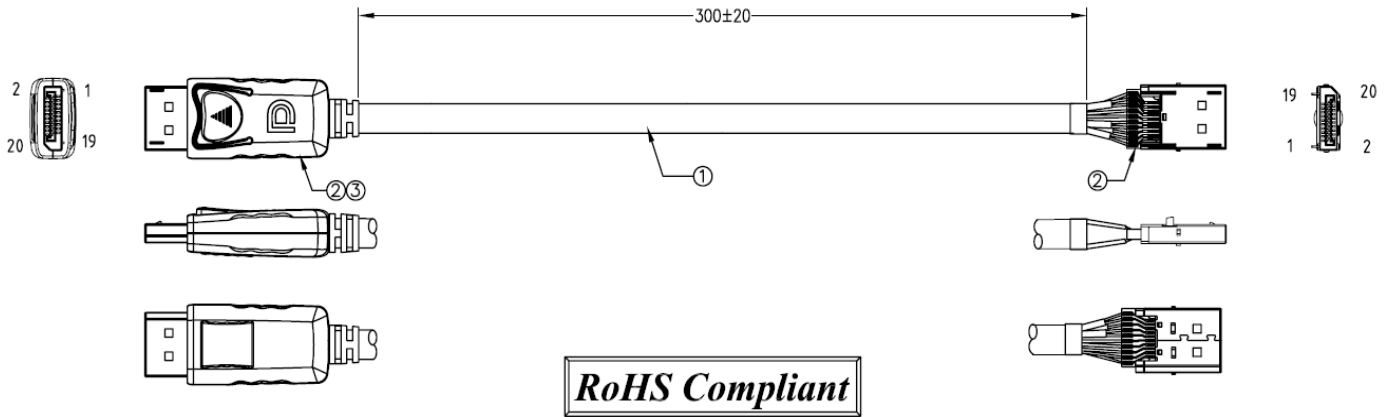
5. Mechanical Specification

5.1 Case Dimension



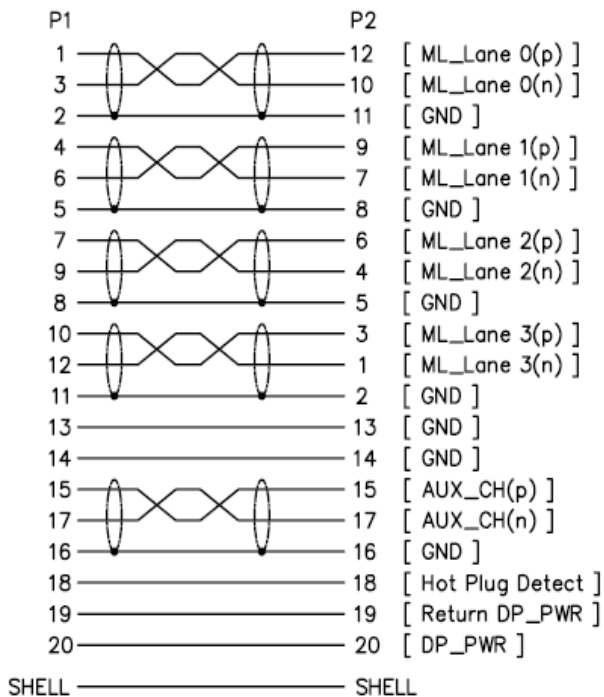
5.2 Cable Information

5.2.1 Electric Cable



3	INNERMOLD	PE LOW DENSITY
2	CONNECTOR	DISPLAYPORT PLUG CONTACT: 15u" SHELL: G/F W/LATCH W/COVER BLACK
1	CABLE	Display Port CABLE UL20276 30AWG OD: 6.0 BLACK
NO.	PART NAME	SPEC DESCRIPTION

PIN ASSIGNMENT:



Electrical character:

- a. 100% open & short testing.
- b. Withstanding voltage: DC 300V 0.01Sec.
- c. Insulation resistance: 10M Ohm(Min.).
- d. Conductive resistance: 3 Ohm(Max.).

5.2.2 Optical Cable

The construction of 4 optical fibers and 6 copper wires cable shall be in accordance with Figure 1 and Table 1.

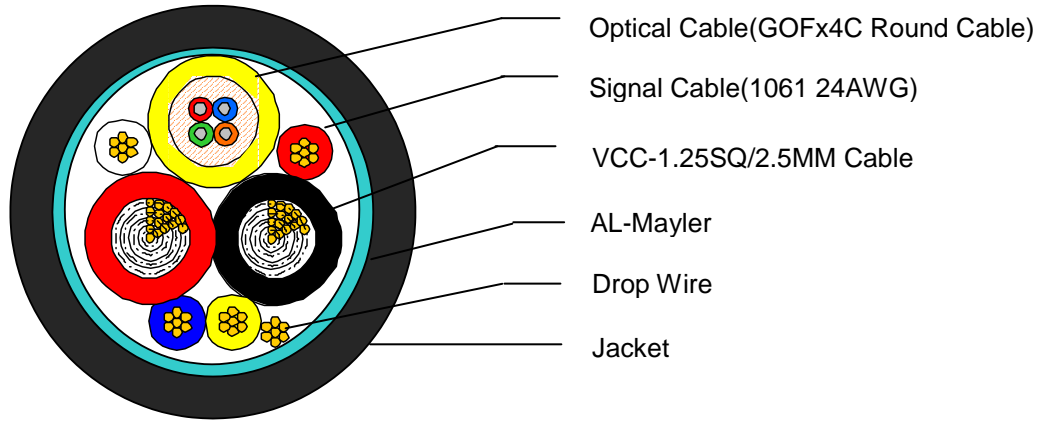


Figure 1. Cable structure of DPM

Table 1. Specification of electrical wire for DPM cable

The Dimension of DPM Cable		
Items	Unit	Specification
DVI Cable Make-up	-	Layer Stranding
Drain Wires (Size/Stranded)	mm(AWG)	-0.203/7 (24)
AL-Mylar Screen Shield	-	A helically
Cable Outer Diameter	mm	7.40±0.20
Jacket Color	-	FR-PVC(Orange, Blue, Black)
Cable Marking	-	If need

The construction of 4 optical fibers and 4 copper wires cable shall be in accordance with Figure 2 and Table 2 and 3.

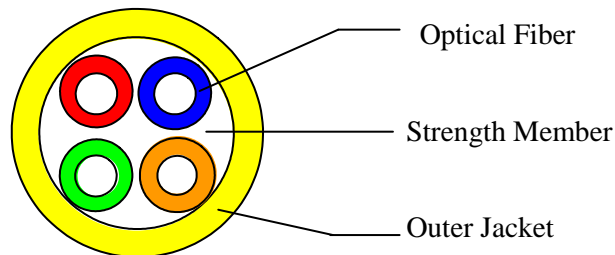


Figure 2. Cable structure of GOFx4C Round Cable

Table 2. Fiber Cable Construction

Item		Description
Optical Fiber	Number	4
	Structure	Figure 1
Strength Member		Aramid Yarn
Outer Jacket	Material	FR-PVC(Yellow)
	Approx.Thickness	1.6mm
Nominal Outside Diameter		φ4.0±0.4mm
Approximate Net Weight		10kg/km
Cable Identification		OPTICAL DPM CABLE

Table 3. Fiber Cable Characteristics

Item	spec.	unit	Condition
Storage Temperature	-40 ~ 70	°C	Spooled
Operational Test	-20 ~ 70	°C	-
Max. Tensile Load	245	N	By careless handling(short term)
Min. Radius Bend	75	mm	By careless handling(short term)
	125		After installing(long term)
Crush Resistance	490	N/50mm	By careless handling(short term)

6. 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 **OPHIT CO., LTD.** 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:

- DPM

If you have any further questions regarding the RoHS compliance of parts delivered by **OPHIT CO., LTD.**, please do not hesitate to contact us at support@ophit.com.

Best regards,

JONG-KOOK MOON/CEO

OPHIT CO., LTD.