

Specification for

Model : DSL

Revised : Apr. 09. 2012
Original Release Date : May. 19. 2008

OPHIT

Revision History

Version Number	Revision Date	Author	Description of Changes
1.0	May 19, 2008	J.H Lee	Initial Version
1.1	Jun 30, 2008	J.H Lee	Optical SPEC Added
1.2	Jun 01, 2009	J.H Lee	Supply current and Optical SPEC Changed
1.3	Apr 03, 2012	J.H Lee	Optical Specification modified
1.4	Apr 09, 2012	J.H Lee	Ordering Information Removed

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1. General Description

DSL, optical DVI extension module, is designed to let digital flat panel display signal extend over 1,000 meters away from host based on DVI standard by optical transmission technology.

Its small package and pseudo DDC detect function and Self-EDID detect function to use standard SC fiber connector allow users to install and utilize the device conveniently.

- Long distance transmission of digital graphic signal corresponding to T.M.D.S
-over 1000 meter(3,300ft) by multi-mode one fiber.
- R, G, B, Clock signals are transmitted separately by one multi-mode optical fiber.
- Pseudo-DDC detection function for EDID information.
Self detecting function for EDID information.
Maximum supported resolution is WUXGA
- External power supply for Transmitter is optional. Automatic power switch is included.

2. General Specification

Parameter	Symbol	
	Transmitter	Receiver
Optical Converter	850nm, 4ch Transmit OSA	850nm, 4ch Receive OSA
Input and Output Signal	TMDS Signal(DVI 1.0 standard)	TMDS Signal(DVI 1.0 standard)
Max Data Transfer rate	1.65Gbps / Channel	
Module Size	40.0 x 15.0 x 66.4 mm (W x H x D)	
Module Weight	--	--
Electrical Connector	24 PIN DVI-D Plug(input)	24 PIN DVI-D Plug(output)
Optical Connector	1 SC Connector	1 SC Connector
Recommended Fiber	50/125 μ m 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 ~ 5.5 V
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 & Optical Specification

4.1 Electrical Specification

4.1.1 Transmitter Characteristics

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage (Option External Power)	Vcc	+4.5	+5.0	+5.5	V	
	Supply Current	Icc		160		mA	
	Power Dissipation	Po		0.8		W	
T M D S	Reference voltage for graphic signal	Vref	+3.1	+3.3	+3.5	V	
	Single-ended high level input voltage	VH	Vref-0.01		Vref+0.01	V	
	Single-ended low level input voltage	VL	Vref-0.6		Vref-0.4	V	
	Single-ended input swing voltage	Vswing	0.4		0.6	V	
	Single-ended standby input voltage		Vref-0.01		Vref+0.01	V	
	Data Output Load	RLD		50		Ohms	

4.1.2 Receiver Module

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage (External Power)	Vcc	+4.5	+5.0	+5.5	V	
	Supply Current	Icc		125		mA	
	Power Dissipation	Po		0.63		W	
T M D S	Reference voltage for graphic signal	Vref	+3.1	+3.3	+3.5	V	
	Single-ended output swing voltage	Voswing	0.4		0.6	V	AC couple
	Data Input Load	RLD		50		Ohms	

4.2 Optical Specification

4.2.1 Transmitter Characteristics

Parameter (per Channel)	Symbol	Min	Typ	Max	Units
Optical Power ¹	Pout	-3.0	0.0		dBm
Optical Modulation Amplitude		-6.25			dBm
Center Wavelength – Lane 0			778		nm
Center Wavelength – Lane 2			800		nm
Center Wavelength – Lane 2			825		nm
Center Wavelength – Lane 3			850		nm
Optical Rise/Fall Time ²			200		Ps

4.2.2 Receiver Characteristics

Parameter (per channel)	Symbol	Min	Typ	Max	Units
Wavelength – Lane 0			778		nm
Wavelength – Lane 1			800		nm
Wavelength – Lane 2			825		nm
Wavelength – Lane 3			850		nm
Data Rate per Channel ³				1.65	Gb/s
Peak Optical Input Power	Pin		0.0	4.0	dBm
OMA Sensitivity ⁴		-14.25	-16.00		dBm

Notes:

Transmitter module of Model DSL 4 channel includes VCSEL(Vertical Surface Emitting Laser Diode) with 850 nm 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 DSL is Class 1M Laser Product.

¹ I= 5mA, T=25C. Measured at the end of a 2m section of 62.5μ fiber.

² Rise and fall times measured from 20 - 80%

³ Requires DC-balanced data pattern and max run rate of 80 bits. Measured with input signals conforming to HDMI rev 1.3a.

⁴ Optical Modulation Amplitude. Based on an unstressed input signal.

4.3 Connector Pin Assignment

Transmitter

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2 Shield	11	T.M.D.S. Data1 Shield	19	T.M.D.S. Data0 Shield
4	No Connect	12	No Connect	20	No Connect
5	No Connect	13	No Connect	21	No Connect
6	DDC Clock (Only TX)	14	+5V Power	22	T.M.D.S Clock Shield
7	DDC Data (Only TX)	15	Ground (for +5V)	23	T.M.D.S Clock+
8	No Connect	16	Hot plug detect	24	T.M.D.S Clock-

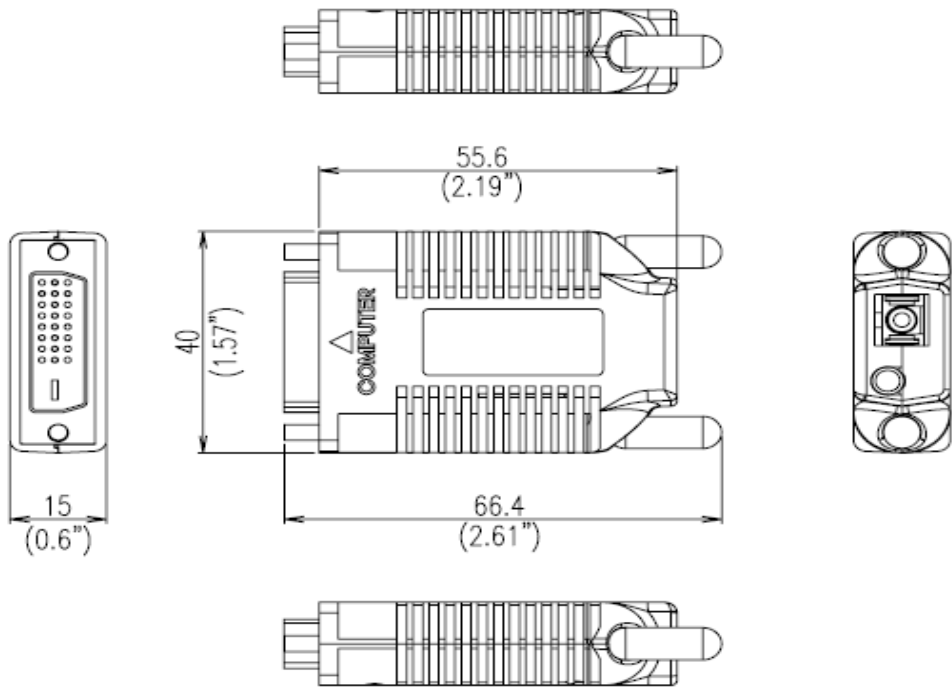
Receiver


Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2 Shield	11	T.M.D.S. Data1 Shield	19	T.M.D.S. Data0 Shield
4	No Connect	12	No Connect	20	No Connect
5	No Connect	13	No Connect	21	No Connect
6	No Connect	14	Out +5V Power	22	T.M.D.S Clock Shield
7	No Connect	15	Ground (for Out +5V)	23	T.M.D.S Clock+
8	No Connect	16	No Connect	24	T.M.D.S Clock-


5. Mechanical Specification

5.1 Case Dimension

ITEM	DESCRIPTION	Q'TY	MATERIAL	TREATMENT/FINISH
		4ea		

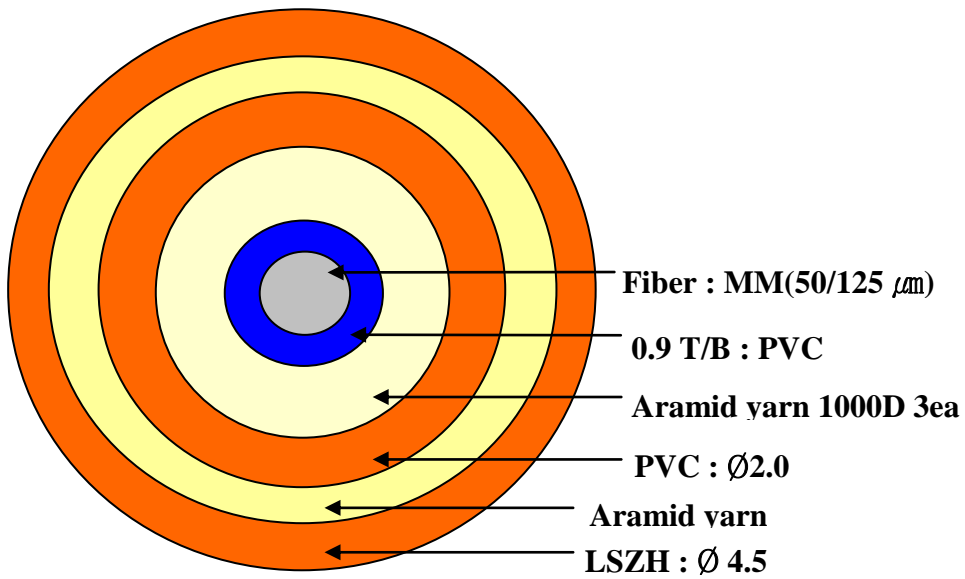
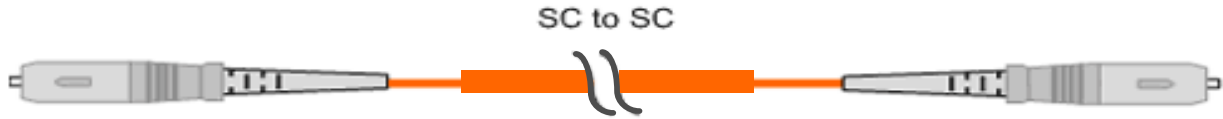


UNIT	mm	PROJECTION	DESIGNED	CHECKED	APPROVAL	PROJECT	ADURO CABLE CONECTOR
SCALE	1/1					DESCRIPTION	DSL ASS'Y
TOLER.	±0.05		'06. 10. 10			DRAWING NUMBER	ADR-0600010-01

	OPHIT Co.,LTD	FILE NO.	
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5.2 Cable Information

- Outdoor Type Cable



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 (Cr^{6+}), polybrominated biphenyl (PBB) and poly brominated diphenyl (PBDE).

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

- DSL

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.