

Specification for

Model : DSP

Revised : Apr 09, 2012
Original Release Date : July 28, 2011

OPHIT

Revision History

Version Number	Revision Date	Author	Description of Changes
1.0	December 24, 2009	D.H. Kim	Initial Version
2.0	July 28, 2011	K.H. Kim	Supports HDCP (Rev 1.1) Extend distance (300 meter) Ordering Information (Dummy No.) Electrical Specification (Supply Current)
2.1	Feb 07, 2012	J.H. Lee	Document Form modified
2.2	Apr 09, 2012	J.H. Lee	Ordering Information Removed

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1. General Description

DSP, optical DVI extension module, is designed to let digital flat panel display signal extend over 300 meters away from host based on DVI standard by optical transmission technology. Its small package and transmit up to four video and one low-speed lane, while simultaneously receiving one low-speed signal, all on one multimode fiber.

- Long distance transmission of digital graphic signal corresponding to T.M.D.S -over 300 meter (1,000ft) by multi-mode one fiber.
- TMDS video signals and EDID data are transmitted by 1 channel multimode optical fiber
- Maximum Supported resolution – WUXGA (1920x1200)
- Supports HDCP(Rev 1.1) by DDC channel
- Small size for insertion into internal system
- 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 911nm, 1Ch VCSEL 980nm, 1Ch PIN P/D Diode	850nm, 4Ch Receive OSA 980nm, 1Ch VCSEL 911nm, 1Ch PIN P/D Diode
Input and Output Signal	TMDS Signal (DVI 1.0 standard)	TMDS Signal (DVI 1.0 standard)
Video Bandwidth	3.5Gbps / Channel	
Module Dimension	39 x 14 x 61.4 mm (W x H x D)	
Module Weight	--	--
Used electrical Connector	24 PIN DVI-D Plug (input)	24 PIN DVI-D Plug (output)
Optical Connector	1 SC Connector	1 SC Connector
Recommended Fiber	50/125um Multi-mode glass-fiber	
Maximum Supported Resolution	WUXGA(1920x1200) / 60Hz	

3. Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Power Supply	V_{CC}	-0.3	+5.5	V
Operating temperature	V_{OT}	0	+50	°C
Storage temperature	V_{ST}	-20	+70	°C
Relative Humidity	H_{RH}	10	80	RH

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 Module

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage (Option External Power)	V_{CC}	4.5	5.0	5.5	V	
	Supply Current	I_{CC}	-	200	250	mA	
	Power Dissipation	P_O	-	1.00	1.25	W	
T M D S	Reference voltage for graphic signal	V_{REF}	3.1	3.3	3.5	V	
	Single-ended high level input voltage	V_H	$V_{REF} - 0.01$		$V_{REF} + 0.01$	V	
	Single-ended low level input voltage	V_L	$V_{REF} - 0.6$		$V_{REF} - 0.4$	V	
	Single-ended input swing voltage	V_{ISWING}	0.4		0.6	V	
	Single-ended standby input voltage		$V_{REF} - 0.01$		$V_{REF} + 0.01$	V	
	Data Output Load	RLD		50		Ω	

Transmitter module of Model DSP includes 4 channel VCSEL (Vertical Surface Emitting Laser Diode) with 850, 911, 980nm 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 DSP is Class 1M Laser Product.

4.1.2 Receiver Module

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage (External Power)	V_{CC}	4.5	5.0	5.5	V	
	Supply Current	I_{CC}	-	170	220	mA	
	Power Dissipation	P_O	-	0.85	1.10	W	
T M D S	Reference voltage for graphic signal	V_{REF}	3.1	3.3	3.5	V	
	Single-ended output swing voltage	V_{OSWING}	0.4		0.6	V	AC couple
	Data Input Load	RLD		50		Ω	

4.2 Connector Pin Assignment

4.2.1 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 (SCL)	14	+5V Power	22	T.M.D.S Clock Shield
7	DDC Data (SDA)	15	Ground (for +5V)	23	T.M.D.S Clock +
8	No Connect	16	Hot Plug Detect	24	T.M.D.S Clock -

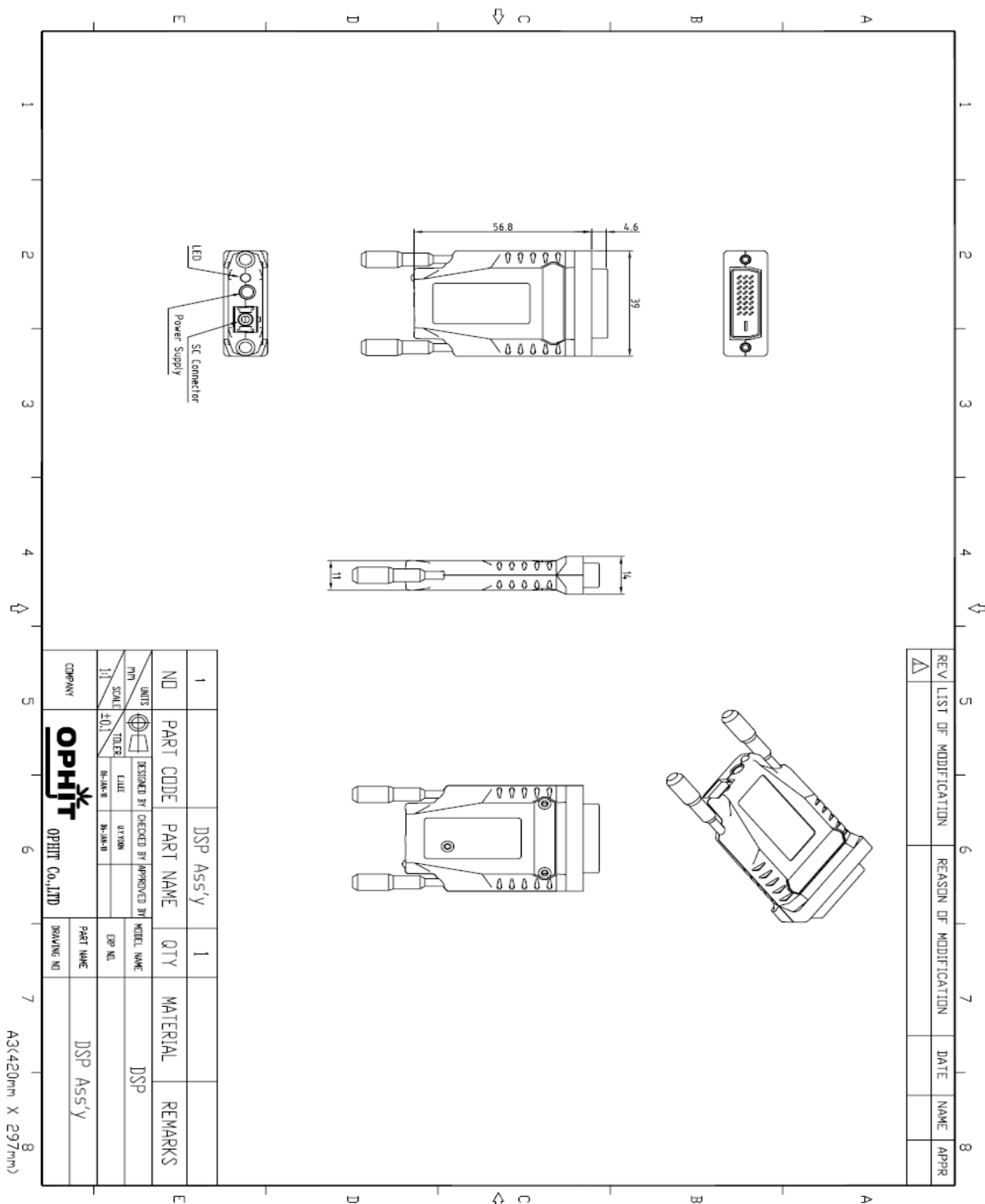
4.2.2 Receiver

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	DDC Clock (SCL)	14	Out +5V Power	22	T.M.D.S Clock Shield
7	DDC Data (SDA)	15	Ground (for Out +5V)	23	T.M.D.S Clock +
8	No Connect	16	Hot Plug Detect	24	T.M.D.S Clock -

5. Mechanical Specification

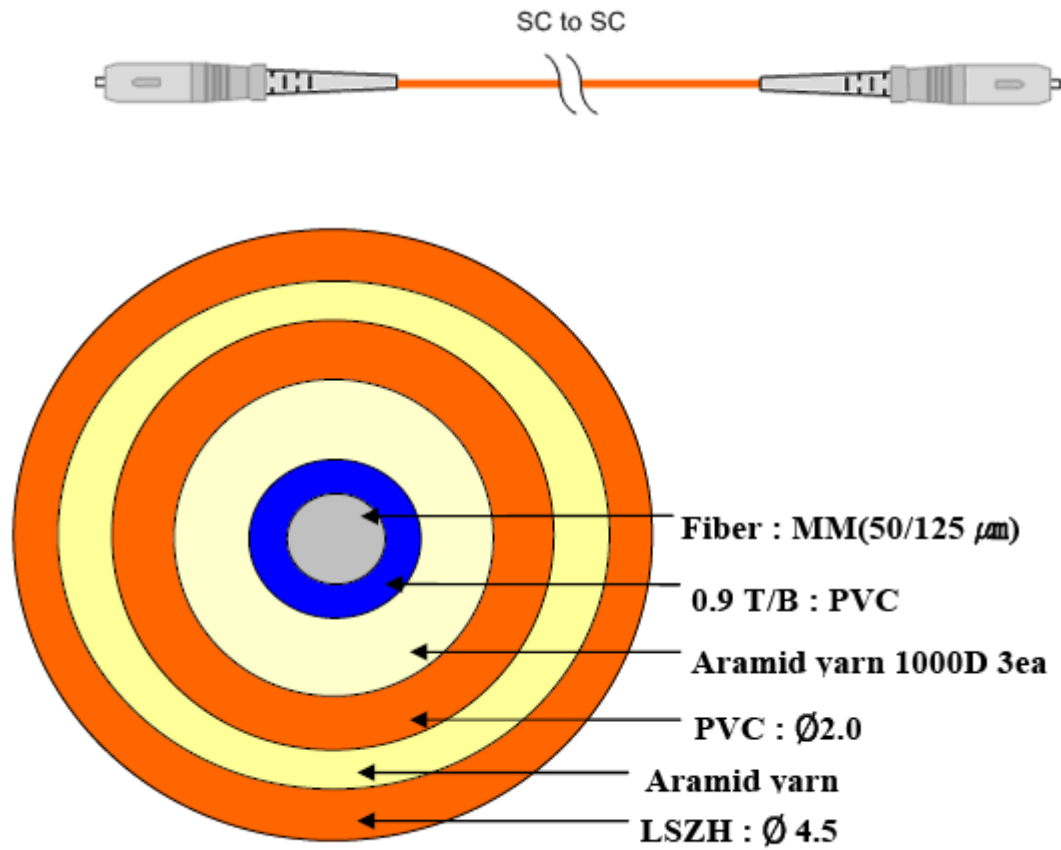
5.1 Case Dimension

5.1.1 Transmitter & Receiver



5.2 Cable Information

- Optical Fiber Cable (MMF 50/125)



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 polybrominated diphenyl (PBDE).

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

- DSP

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.