

# PRODUCT DATA SHEET

## DDA

*Digital to Analog Convertor*



## Revision History

Version Number	Revision Date	Page	Description of Changes
1.0	May 16, 2008	-	Initial Version
1.1	Apr 06, 2011	6	Support Resolution Added & Electrical Specification Modified
1.2	Apr 09, 2012	9	Ordering Information Removed
1.3	Sep 25.2019	-	Renewal of Specification

### PROPRIETARY NOTE

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## 1. General Description

**DDA**, digital to analog converter, takes your PC's DVI signal and converts it to analog graphic signal so that analog display devices without DVI output can be connected to your PC and Laptop with digital output easily and conveniently.

- Input : DVI (single Link), Output : Analog VGA signal
- Compatible with DVI standard by DDWG
- External power adapter is available as an option.
- VGA, SVGA, XGA, SXGA, UXGA, WUXGA resolution support
- Supports HDCP complaint Device

## 2. General Specification

Parameter	Symbol	
	Transmitter(Input)	Receiver(Output)
Connector	DVI 24pin receptacle	15pin D-sub female
Input and Output Signal	Digital signal	Analog signal
Video Bandwidth	1.65Gbps (Single Link)	
Product Size(mm)	3500*39.5*15.0(W*D*H)	
Product NET Weight(g)	63.0	

### 3. Absolute Maximum Ratings

Parameter	Rating
Storage temperature	-20°C ~ +70°C Non-Condensing
Operating temperature	0°C ~ +50°C Non-Condensing
Transportation temperature	-20°C ~ +70°C Non-Condensing
Power Supply	-0.3 ~ 5.5 V
Relative Humidity	10 ~ 80 %
Lead solder temperature	260°C, 10 seconds

**NOTICE**

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating 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

	Parameter	Symbol	Min	Typ	Max	Units	Condition
P O W E R	Supply Voltage	Vcc	+4.5	+5.0	+5.5	V	
	Supply Current (UXGA)	Icc			0.36	mA	
	Power Dissipation (UXGA)	Po			1.8	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	

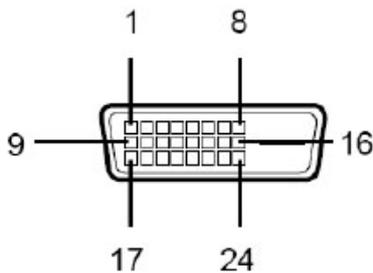
### 4.2 Current Test Report

State	Resolution	Current	Power Dissipation	Source
Supply Current (25°C Ambient)	VGA (640x480, 60Hz) Master Pattern	200	1	Video signal generator (Model : MIK21 K- 8258p)
	SVGA (800x600, 60Hz) Master Pattern	210	1.05	
	XGA (1024x768, 60Hz) Master Pattern	250	1.25	
	SXGA (1280x1024, 60Hz) Master Pattern	290	1.45	
	UXGA (1600x1200, 60Hz) Master Pattern	360	1.8	
	WUXGA (1920x1200, 60Hz) Master Pattern	300	1.5	
			Units : [mA]	

### 4.3 Connector Pin Assignment

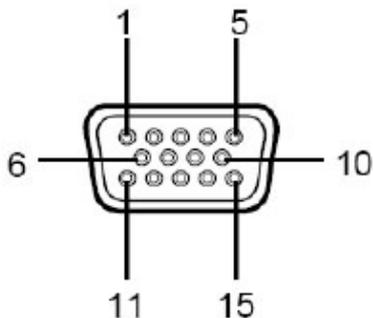
#### Transmitter(Digital in)

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 Connection	12	No Connection	20	No Connection
5	No Connection	13	No Connection	21	No Connection
6	DDC Clock	14	+5V Power	22	T.M.D.S Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S Clock+
8	No Connection	16	Hot Plug Detect	24	T.M.D.S Clock-



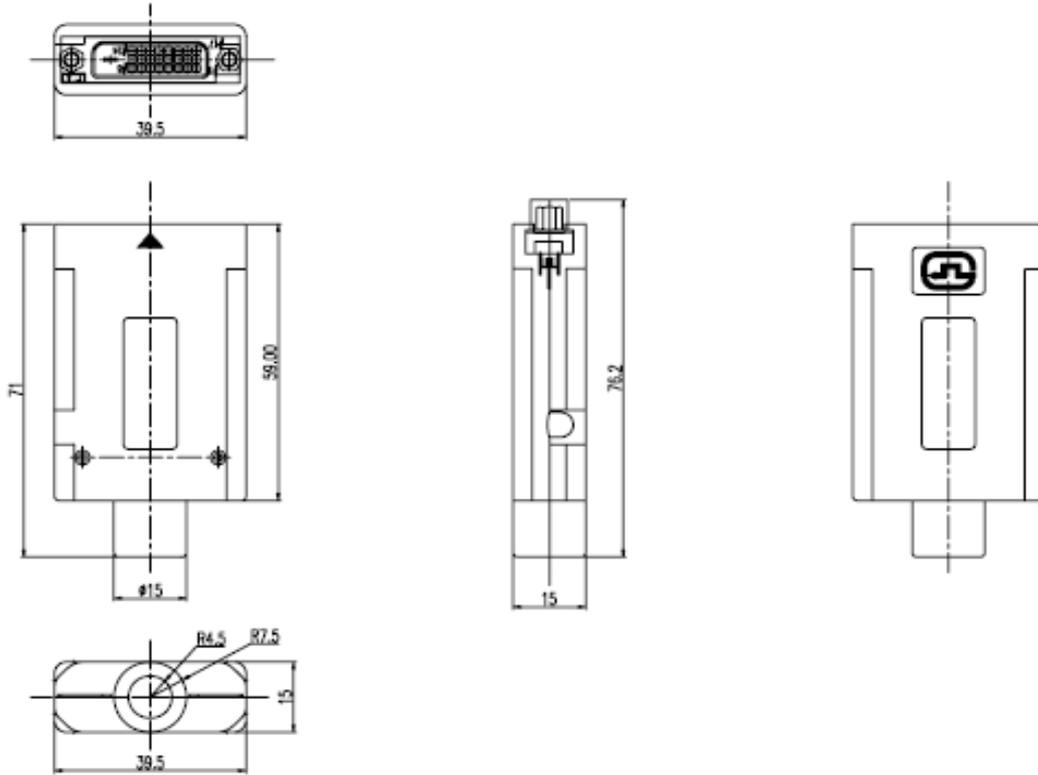
#### Receiver(Analog out)

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	RED	6	Ground-Red	11	No Connection
2	GREEN	7	Ground-Green	12	No Connection
3	BLUE	8	Ground-Blue	13	H.sync
4	No Connection	9	+5V	14	V.sync
5	DDC 5V Standby	10	Ground-Sync	15	DDC Colock(SCL)

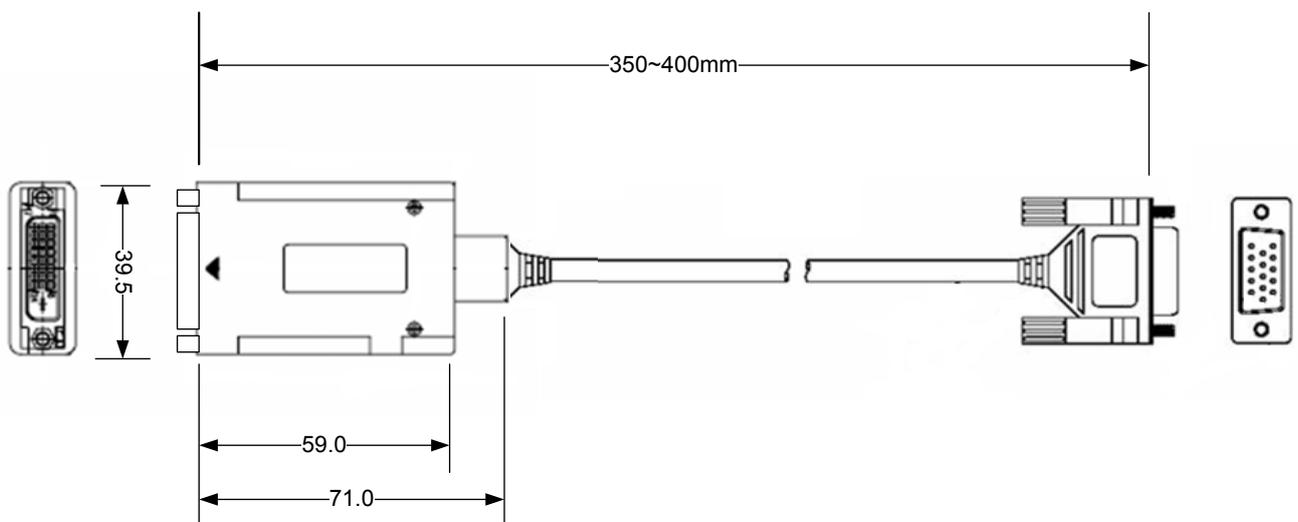


### 5. Mechanical Specification

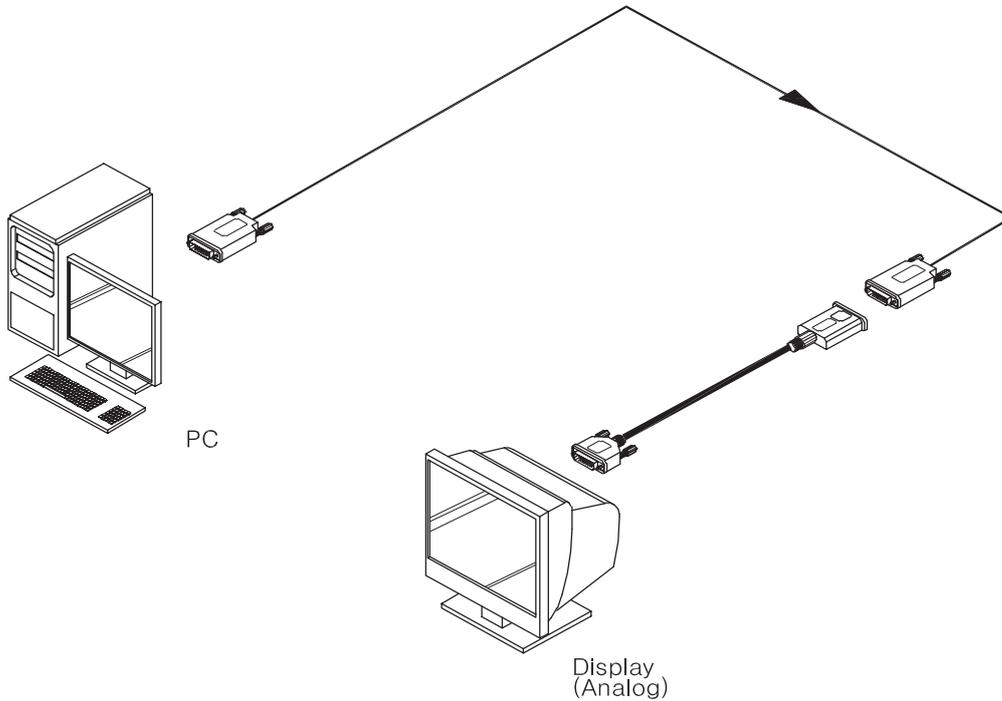
#### 5.1 Case Dimension



#### 5.2 Outdoor Product



**5.3 Connection**



**6. Regulatory**

**6.1 EMC & Safety Agency approval**

**6.1.1 CE-EMC compliance:**

This Product is investigated to EN 55022:1998+A1:2000+A2:2003  
/EN 55024:1998+A1:2001+A2:2003

**6.1.2 FCC compliance:**

This Product is investigated to FCC part 15

**7. Packing Information**

Set(Unpacking, DDA Only)	3500mm*39.5mm*15.0mm	63.0g
Package(1Set, Inner Box Packing)	160.0mm*140.0mm*67.0mm	195.0g
Package(Multi, 32PCS Packing)	595.0mm*305.0mm*345.0mm	6.4Kg

## 8. RoHS

OPHIT is fully aware of the requirement under the **Restriction of Hazardous Substances in Electrical and Electronic Equipment Directive EU 2015/863(RoHS3)**, which adds four new restricted substances to the previous Directive 2011/65/EU(RoHS2).

Hereby we guarantee that we do not intentionally use the substances described below and based on third party chemical analysis the thresholds of the substances as indicated are not exceeded for our all products.

Substance	CAS #	RoHS Limity by % (PPM)
Lead (PB)	7439-92-1	0.1% (1000 PPM)
Mercury (Hg)	7439-97-6	0.1% (1000 PPM)
Hexavalent Chromium (CrVI)	15840-29-9	0.1% (1000 PPM)
Polybrominated Biphenyls (PBB)	-	0.1% (1000 PPM)
Polybrominated Diphenyl Ethers (PBDE)	-	0.1% (1000 PPM)
Cadmium (Cd)	7440-43-9	0.01% (100 PPM)
Bis(2-Etylhexyl) phthalate(DEHP)	117-81-7	0.1% (1000 PPM)
Benzyl butyl phthalate(BBP)	85-68-7	0.1% (1000 PPM)
Dibutyl Phthalate(DBP)	84-74-2	0.1% (1000 PPM)
Disobutyl Phthalate(DIBP)	84-69-5	0.1% (1000 PPM)

Banned Substances by RoHS Directive 2011/65/EU+2015/863/EU, EN50581:2012

OPHIT will continue to monitor any new amendments/changes to Directive and subsequently review our all products with regards to compliance. OPHIT will also ensure that any new information is communicated to its customers, suppliers and stakeholders as required.

**Signature : Jong-Kook, Moon**

*Jong-kook, Moon*

**Title/Issue date : President/July.22.2019**

## 9. REACH

**The European REACH Regulation 1907/2006 on Registration, Evaluation, Authorization, and Restriction of Chemicals(REACH), Annex XV II** entered into Force in June 2009, and affects all companies producing, Importing, using, or placing Products on the European market. The aim of the REACH regulation is to ensure a high Level of protection of human health and the environment from chemical substances.

OPHIT Co., Ltd substances management system follow and complies with the current revision of the REACH Regulation on the substances as identified by ECHA(European Chemical Agency).

OPHIT Co., Ltd products are considered articles as defined in REACH Article 3(3). These products/articles under normal and reasonable conditions of use do not have intended release of substances. Therefore the requirement in REACH Article 7(1)(b) for registration of substances contained in these products/articles does not apply.

OPHIT Co., Ltd products/articles, do not contain **Substances of very High Concern** or if there **SVHC** in the product/article, the content is less than the 0.1%(wt/wt) as defined by REACH Article 57, Annex XIV, Directive 67/548/EEC. Therefore the requirement in REACH Article 7(2) to notify ECHA if a product/article contains more than 0.1% wt/wt of an SVHC and tonnage exceeding 1 tone per importer per year is not applicable.

OPHIT's European operations do not manufacture or import chemicals, therefore OPHIT Co., Ltd has no obligation to register substances.



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Jong-Kook, Moon

President

**OPHIT Co., Ltd ACCEPTS NO DUTY TO NOTIFY USERS OF THIS OF DECLARATION OF UPDATES OR CHANGES TO THIS DECLARATION.**