

# Specification for

**Model : HDA**

Revised : March. 09. 2015  
Original Release Date : November. 09. 2011

# OPHIT

## Revision History

<b>Version Number</b>	<b>Revision Date</b>	<b>Author</b>	<b>Description of Changes</b>
1.0	November. 29. 2011	H.S YANG	Initial Version
1.1	May. 14. 2012	H.S YANG	The General Specification Modified
1.2	July. 30. 2012	J.H LEE	Form Changed, Ordering Information Removed
1.3	August. 10. 2012	H.S YANG	VGA Type modified
1.4	August. 27. 2012	H.S YANG	Electrical Specification modified
1.5	March. 09. 2015	H.S YANG	Support Resolution update

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## 1. General Description

**HDA**, This unique HDMI converter transports your PC's HDMI signal to analog graphic signal so that analog display devices without HDMI input can be connected to your PC and Laptop with HDMI output easily and conveniently.

- Compliant with HDMI 1.2a specification
- Compliant with DVI standard by DDWG
- Compliant Analogue Video output up to 1920x1080/60Hz(Full HD)
- Support Separate Sync output and Sync On Green(option)
- Compliant with HDCP 1.2 specification
- Compact form 3" x 1.8" x0.8"(W x H x D)
- Optional external power supply (Automatic power switch is included).

## 2. General Specification

Parameter		Symbol	
Input	Output	HDMI	VGA 15 pin
Video Bandwidth(Input)		1.65 Gbps / Channel	
Module Dimension		77(3)x 46(1.8) x 21(0.8) mm(inch) - (W x H x D)	
Module Weight		86g	
In / Out Connector		19 pin HDMI-A Type Plug(Female)	15 pin VGA 15 pin Plug(Female)
Audio		Stereo / Mono	
Power		DC 5V	
Compatibility		HDMI 1.2a, DVI 1.0, HDCP 1.2	
Maximum Supporting Resolution		PC : WUXGA(1920x1200)60Hz HD : 1080P(12bit Deep Color)	

### 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.

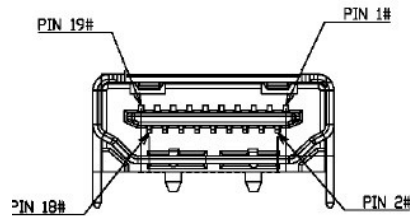
## 4. Electrical Specification

### 4.1 Electrical Specification

	Parameter	Symbol	Min	Typ	Max	Units	Condition
<b>POWER</b>	Supply Voltage (Option External Power)	$V_{CC}$	-	5.0	5.5	V	
	Supply Current	$I_{CC}$	-	510	540-	mA	
	Power Dissipation	$P_O$	-	2.55	2.97	W	
<b>TMDS (Input)</b>	Reference voltage for graphic signal	$V_{REF}$	3.1	3.3	3.5	V	
	Single-ended high level input voltage	VH	$V_{REF} - 0.01$		$V_{REF} + 0.01$	V	
	Single-ended low level input voltage	VL	$V_{REF} - 0.6$		$V_{REF} - 0.4$	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	

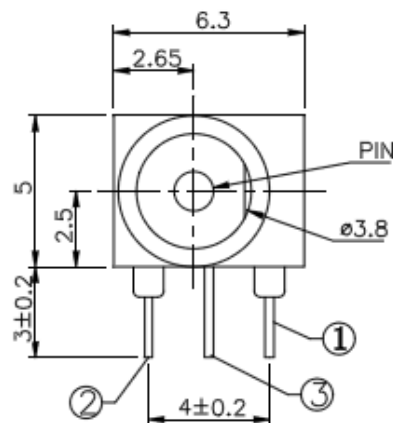
## 4.2 Connector Pin Assignment

### 1) HDMI Connector Pin Assignment( Input, Female)

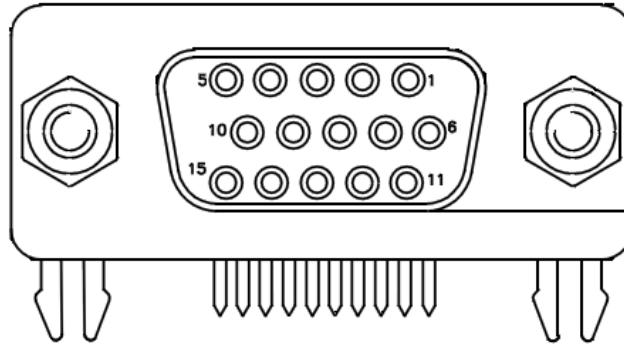


Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2+	9	T.M.D.S. Data0-	17	Ground (for +5V)
2	T.M.D.S. Data2 Shield	10	T.M.D.S Clock+	18	+5V Power(Input)
3	T.M.D.S. Data2-	11	T.M.D.S Clock Shield	19	Hot Plug Detect
4	T.M.D.S. Data1+	12	T.M.D.S Clock-	20	
5	T.M.D.S. Data1 Shield	13	Reserved	21	
6	T.M.D.S. Data1-	14	Reserved	22	
7	T.M.D.S. Data0+	15	DDC Clock (SCL)	23	
8	T.M.D.S. Data0 Shield	16	DDC Data (SDA)	24	

### 2) Power Connector( Input, Female)

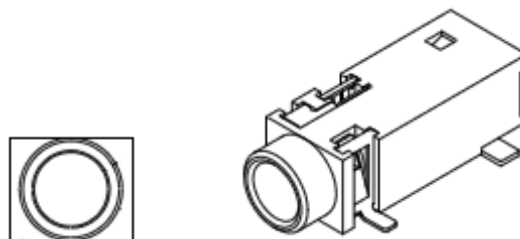


3) VGA Connector Pin Assignment( Output, Female)



Pin	Signal Assignment	Pin	Signal Assignment
1	RED	9	Reserved
2	GREEN	10	Sync Ground
3	Reserved	11	Reserved
4	BLUE	12	DDC Data (SDA)
5	Ground	13	Horizontal Sync
6	RED Ground	14	Vertical Sync
7	GREEN Ground	15	DDC Clock (SCL)
8	BLUE Ground		

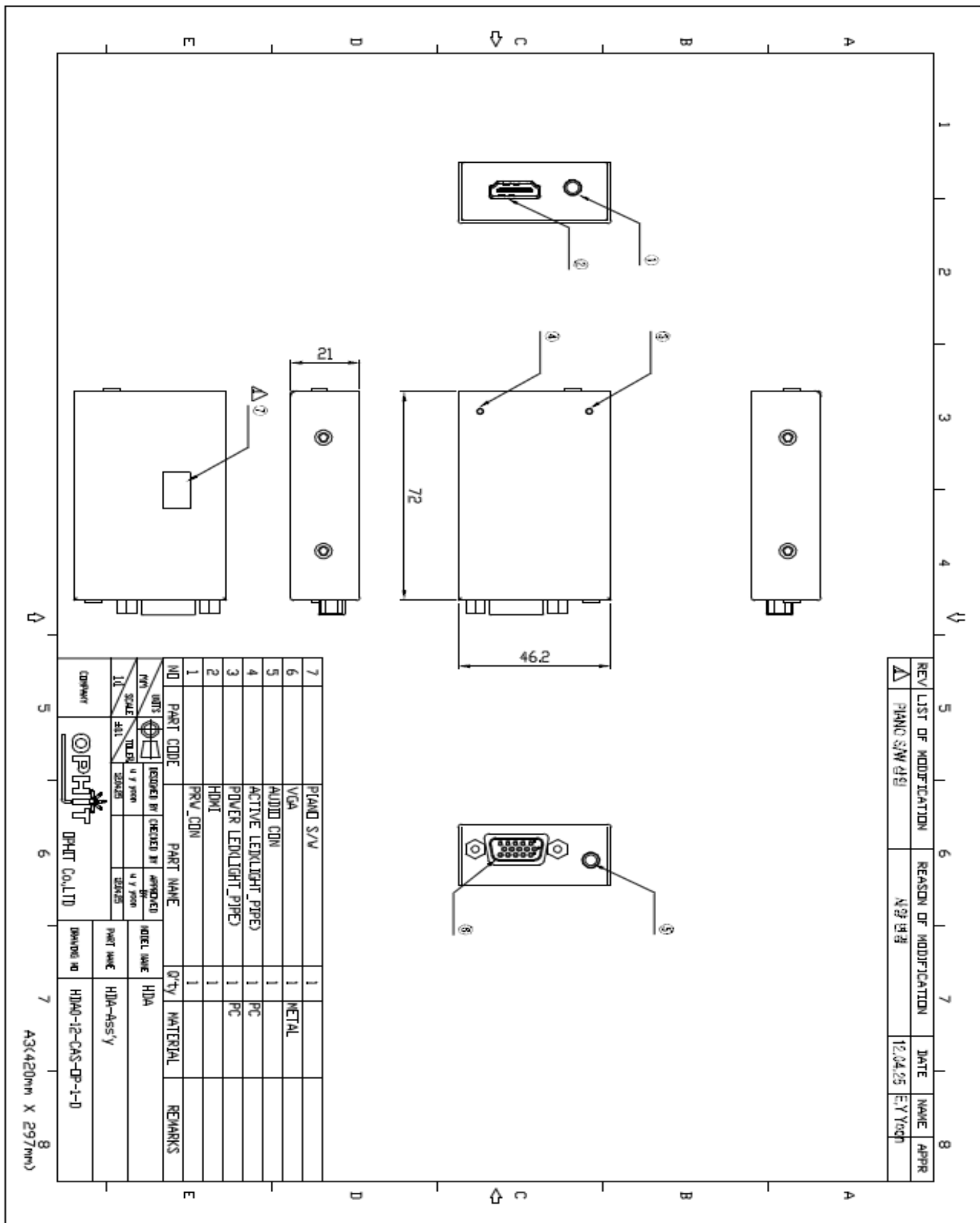
4) Audio Connector( Output, Female)



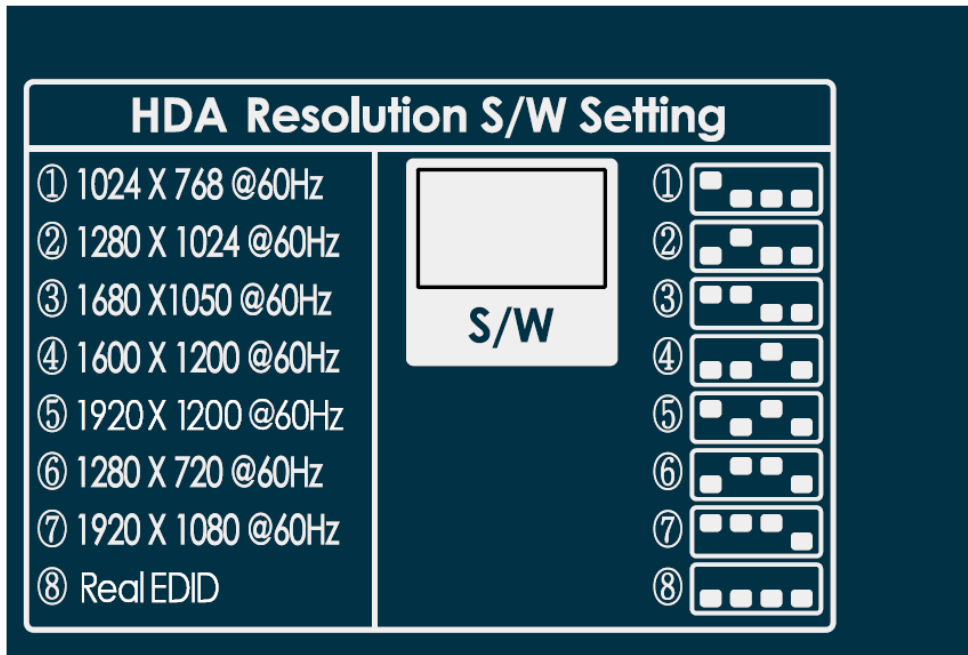


### 5. Mechanical Specification

#### 5.1 Case Dimension



## 6. EDID Internal Selection Function



### Etc. mode description

On etc mode, HDA reads analog EDID from VGA cable and configures data into Digital EDID to provide data to HDMI connector. Simply, you can see it as auto EDID mode.

### How to use Etc. Mode

1. Connect HDA and display via VGA cable.
2. Connect HDA and Source device via HDMI cable.
3. Plug power to HDA, HDA processes EDID automatically when power is supplied.
4. If source data is shown normally on display then EDID function is working normally.

## 7. 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<sup>6+</sup>), 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:

- HDA

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](mailto:support@ophit.com).

Best regards,

JONG-KOOK MOON/CEO

OPHIT CO., LTD.