

# PureLink

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## HDG-mini HDMI signal generator Owner's Manual



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## Chapter 1. Introduction

### 1.1 Safety Precautions

When using and installing Dtrovision PureLink product, adhere to the following basic safety precautions.

- Read and understand all instructions before using and installing this product.
- The safety and operating instructions should be retained for future reference.
- Always use the correct external power supply (indicated on the product label) when operating this unit.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Mishandling of this product may lead to a fire or explosion hazard.
- Do not place any heavy objects or equipment on top of the product.
- Keep away from wet, magnetic, and flammable surfaces or substances.
- Air vents should be kept clean and unobstructed at all times.
- Any external impact may cause damage to the operation of this unit.
- Be sure this product is properly grounded (earthed) in order to prevent the risk of electrical shock.
- Turn off and unplug power before adding or removing Input/Output Boards.
- Input/Output Boards may be damaged when they are replaced with power turned on.
- Use surge protectors and/or AC line conditioners when powering this product.
- Only use a fuse(s) with the correct fuse rating in your enclosure.
- Make sure the product is on or attached to a stable surface.

**If you experience any malfunctioning of product or have any question as to operation of the product, please contact our customer service center.**

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## 1.2 Product Introduction

**HDG-mini is Purelink's new HDMI instrument for testing HDMI/DVI video display device as well as analyzing input video source device.** HDG-mini is designed to analyze the HDMI source device and allow user to verify the basic technical specification of connected source device, such as video resolution, video format, color format and etc. HDG-mini is capable of generating an image from limited selection of pre-programmed test-pattern image and transmits the image to connected DVI or HDMI monitor.

## 1.3 Package Contents

**Please make sure all of the following items are included in the package:**

- 1) HDG-mini
- 2) 5V DC power supply adapter
- 3) Owner's manual

## Chapter 2. Features and Specifications

### 2.1 Features

▶ **Built-in selectable 5 different test-pattern image**

HDG-mini offers a quick and easy calibration test on digital display device by utilizing 5 different still images: Cross-Hatch, Gray256, Gray16, Color Bar and Color Gray.

▶ **Input signal analyzing capability**

It can accept HDMI video source and extract some of the most basic information of connected video source device, such as timing, video format, HDCP & 3D signal detection, color depth and audio format.

▶ **Enhanced EDID management**

PureLink's EDID library and emulation features failsafe EDID capture & storage to provide constant and continuous EDID communication between HDG-mini and video source device.

▶ **Extremely portable, robust and compact design**

Handheld size and its ability to runs on AAA battery power make it even more convenient instrument to use in wide range of environment.

▶ **HDCP Compliant**

▶ **Plug-N-Play**

▶ **Resolutions up to WUXGA 1920x1200 and HD 1080p @ 60Hz.**

## 2.2 Operation and Reliability Specification

### 1. Operating Environment

Temperature : 50F ~ 104F (10°C~ 40°C)  
Humidity : 10% ~ 80%  
Altitude : 3,000m Max.

### 2. Transit Environment

Temperature : -13F ~ 140F (-25°C~ 60°C)  
Humidity : 5% ~ 95%  
Altitude : 15,000m Max.

### 3. Storage Environment

Temperature : -4F ~ -49F (-20°C~ 45°C)  
Humidity : 5% ~ 95%  
Altitude : 3,000m Max.

### 4. Reliability

- MTBF: 90% at over 50,000 hours aging test
- In compliance with LCD Monitor reliability test standard

## 2.3 Technical Specification

Model Name	HDG-mini
Input Signal	DVI / HDMI (TMDS)
Output Signal	DVI / HDMI (TMDS)
Supported built-in timing chart	<p>720 X 480p @60Hz  1024 X 768 @60Hz  1280 X 720p @60Hz  1920 X 1080p @60Hz  1920 X 1200 @60Hz</p> <p>* Useful when using it to test a monitor by sending test pattern image at common resolution. *</p>
Supporting Display Resolutions	<p>PC: VGA ~ WUXGA  (up to 1920 x 1200 @60Hz)</p> <p>HDTV: 480i ~ 1080p</p>
HDCP Compliance	Yes
Connector Type	HDMI Female connector ( Rx, Tx) (Rx for source), (Tx for monitor)
Conformations	HDMI 1.3
Power Rating	DC +5V, Use 3 Watts Max
Dimension	4.7' x 3.5' x 0.8' (120 x 90 x 20 mm)
Weight	0.92 lbs (0.42 Kg)

## Input Signal Characteristics

Input Signal	Description	Unit	Min	Typical	Max	Remarks
DC input	DC Voltage	VDC	4.5	5	5.5	
	Power Consumption	Watts	1.5	1.8	2.0	

Input Signal	Description	Unit	Min	Typical	Input Signal	Remarks
TMDS Interface	Differential Input	mVp-p	450	510	570	

## Output Signal Characteristics

Input Signal	Description	Unit	Min	Typical	Input Signal	Remarks
TMDS Interface	Differential Input	mVp-p	450	510	570	

## Connector Pin out

### DC input connector

Part	Pin#	Description	Remarks
DC002	1	VCC( DC5V)	
	2	GND	
	3	GND	

### HDMI Input / Output connector

Part	Pin#	Description	Remarks
HDMI 19pin	1	TMDS DATA 2P	
	2	TMDS DATA 2 Shield	
	3	TMDS DATA 2M	



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HDMI 19pin	4	TMDS DATA 1P	
	5	TMDS DATA 1 Shield	
	6	TMDS DATA 1M	
	7	TMDS DATA 0P	
	8	TMDS DATA 0 Shield	
	9	TMDS DATA 0M	
	10	TMDS Clock P	
	11	TMDS DATA Clock Shield	
	12	TMDS Clock M	
	13	CEC	
	14	N.C	
	15	DDC Clock	
	16	DDC Data	
	17	GND	
	18	+5V	
19	Hot Plug Detect		

## Chapter 3. Installation and Operating Instruction

### 3.1 Installation

**NOTE:** Please ensure to turn all your system off before applying any cable.

1. It can be operated by either AAA battery x 4 qty or external DC power plug.
2. Video source needs to be connected to RX side and monitor goes to TX side.
3. Turn on the switch on the HDG-mini

**\*\* When LCD display blinks or back light is too dimmer than usual, please check your power connection or battery. \*\***

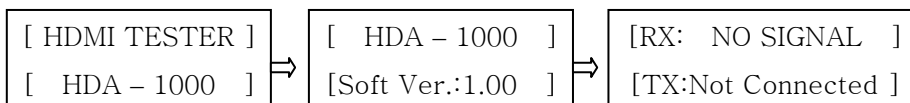
### 3.2 Operating Instruction

1. Navigation button is located on the left side of the LCD display.
2. Menu / Enter and Exit button are on the right side of the LCD display.

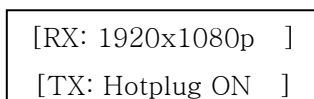
<Please see the picture below> <When there is no connection >



3. Initial display on the front LCD display when there is no connection.



4. The following message will appear on the LCD screen after connecting video and display device.



5. The use of "UP button ( ⬆ )"
  - a. When press UP button, the HDG-mini will start retrieving information from connected video source.

- b. You will see the following information below:

RX: HV Resolution Info.

RX: HDMI or DVI Mode.

RX: HDCP On/Off.

RX: 8/10/12Bit Color Depth.

RX: RGB Mode / YCbCr444 / YCbCr422 Mode.

RX: 3D Mode On/Off.

RX: Audio Format => DSD / HBR / None PCM, Encoded / PCM

- c. The extracted information can be used to determine whether the video source in used is compatible with connected monitor.

6. The use of “DOWN button (⏴)”

- a. When press DOWN button, the HDG-mini will start retrieve information from connected display device.

- b. You will see the following information below:

TX: HDCP Pass or Fail will display.

TX: EDID Read OK or NG will display.

TX: EDID Product Code will display.

TX: EDID Version will display.

TX: EDID Type (DVI or HDMI) will display.

TX: EDID Standard Timing will display.

TX: EDID Supported Color Depth will display.

\*\* Please note that EDID information will not display properly if error occurs during EDID saving, or if a display device has broken EDID data. \*\*

\*\* The best way to verify whether or not the issue is directly related to the HDG-mini is either change the video cable or the monitor. \*\*

7. How to use the HDG-mini as EDID emulator?

**What's EDID?**

**Extended Display Identification Data (EDID)** is an information set that digital display provides to describe its capabilities to a Video source. Video source will know what kinds of displays are connected and it will determine which resolution to Output according to the EDID information received from the display.

The EDID normally includes manufacturer name and serial number, sets of capable resolution including native resolution, supported timing, pixel mapping data (for digital displays only) and etc.

In a digital connectivity environment; in order to support the maximum resolution of connected monitor, EDID handshake is a critical because improper EDID handshake between sources to the display will result in no image on the display.

EDID handshake may sound simple; however, with multiple peripheral devices within the chain, display's EDID information easily get lost or blocked while it is traveling to the source device.

HDG-mini provides Auto EDID management system to meet today's sophisticated digital connectivity integration environment.

- a. It can be used to emulate the EDID of a monitor. Simply, it has ability to capture the EDID of connected monitor (via TX port) and transfer the data to other device as needed. For example, you're required to capture EDID of a primary monitor located on the other side of the building, but you can't find any long enough cable to do the job. The HDG-mini comes in handy in such situation.
  
- b. In Purelink EDID management system, there are two different way to emulate the EDID.
  - 1) External EDID < Copy and save EDID of connected monitor >
  - 2) Internal EDID < Select one from the pre-programmed EDID list >Here are the list:
  - 1. External EDID (TX EDID READ)
  - 2. HD1080p 2CH
  - 3. HD1080p MULTI
  - 4. HD1080i 2CH
  - 5. 800 x 600 60Hz
  - 6. 1024x768 60Hz
  - 7. 1280x768 60Hz
  - 8. 1280x1024 60Hz
  - 9. 1360x768 60Hz
  - 10. 1440x900 60Hz
  - 11. 1600x900 60Hz
  - 12. 1600x1200 60Hz
  - 13. 1680x1050 60Hz
  - 14. 1920x1200 60Hz

**8. How to test a monitor with using 5 different still-images and 5 different video resolutions.**


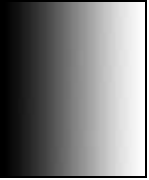

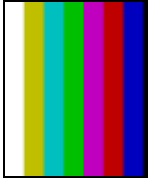

Set the timing first from the following list

- 1. TEST OFF
- 2. 720x480p
- 3. 1280x720p
- 4. 1920x1080p
- 5. 1024x768
- 6. 1920x1200

Timing No.	1	2	3	4	5
Resolution	720 x 480P	1024 x 768	1280 x 720P	1920 x 1080P	1920 x 1200
Timing Item					
DOT_CLK	27.000MHZ	65.000MHZ	74.250MHZ	148.50MHZ	154.125MHZ
H_FREQ	31.469KHZ	48.363KHZ	45.000KHZ	67.500KHZ	74.099KHZ
V_FREQ	59.940HZ	60.004HZ	60.000HZ	60.000HZ	59.999HZ
H_TOTAL	858DOT	1344DOT	1650DOT	2200DOT	2080DOT
H_DISP	720DOT	1024DOT	1280DOT	1920DOT	1920DOT
H_FP	16DOT	24DOT	110DOT	88DOT	48DOT
H_SW	62DOT	136DOT	40DOT	44DOT	32DOT
V_TOTAL	525LINE	806LINE	750LINE	1125LINE	1235LINE
V_DISP	480LINE	768LINE	720LINE	1080LINE	1200LINE
V_FP	9LINE	3LINE	5LINE	4LINE	2LINE
V_SW	6LINE	6LINE	5LINE	5LINE	6LINE
SYNC POL	-/-	-/-	+/+	+/+	+/+

Select the pattern image from the following list

1. CROSS HATCH    2. GRAY 256    3. GRAY 16
4. COLORBAR    5. COLOR GRAY64

Pattern No.	1	2	3	4	5
Pat. Name	CrossHatch	Gray256	Gray16	color Bar	Color Gray
Image					

**Additional Function**

1. HDCP off    2. HDCP On    3. HDCP Auto < only works when both I/O devices are connected >

\*\* "Snow display" – If a monitor in used isn't compatible with HDCP video source, Blank image or snow display will occur. Please refer to the picture below:



**9. How to set LCD backlight.**

1. Set to On ( Always on)
2. Set to 5 sec ( will go off in 5 seconds )
3. Set to 10 sec ( will go off in 10 seconds )
4. Set to Off ( Always off)

## Chapter 4. Additional Information

### **Manufacturer's Warranty (2-Year)**

Dtrovision warrants this HDG-mini to be free from defects in workmanship and materials, under normal use and service, for a period of two (2) year from the date of purchase from Dtrovision or its authorized resellers.

If the product does not operate as warranted during the applicable warranty period, Dtrovision shall, at its option and expense, execute one of the following as necessary:

1. Repair the defective product or part
2. Deliver to customer and equivalent product or part to replace the defective item
3. Refund to customer the purchase price paid for the defective product

All products that are replaced become the property of Dtrovision, LLC. Replacement products may be new or reconditioned. Repaired or replacement products or parts come with a 90-day warranty or the remainder of the warranty period. Dtrovision shall not be responsible for any software, firmware, information, or memory data loss of contained in, stored on, or integrated with any products returned to Dtrovision for repair under warranty.

### **Customer Service**

Any customer service inquiries can be submitted electronically through the Q&A form on our website at [www.purelinkav.com](http://www.purelinkav.com). For immediate assistance please contact us at (201) 488-3232 to reach our customer care or tech support team.

## **FCC/CE Statement**

This device complies with part 15 of FCC Rules and EN 55022/55024/61000-3 for CE certification. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must not accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 and 2 of FCC Rules and EN 55022/55024/61000-3 for CE certification. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction guide, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult a service representative for help.

Properly shielded and grounded cables and connectors must be used in order to comply with FCC/CE emission limits. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **UL Statement**

This device has completed a UL Commercial Inspection and Testing Services for the multimode HDMI cable complied with VW-1 under UL 758. It is validated by the UL file number SV2038 and project number 04CA05353.