HD/SD-SDI to HDMI adaptor board
HD-3000v2
Manual

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1. Introduction

The HD-3000v2 converts SD/HD-SDI (SD, HD and 3G) signal to HDMI for driving HDMI monitors. The HD-3000v2 provides re-clocked loop through outputs for "daisy chaining" multiple monitors or other equipments to the same HD-SDI source. It also supports embedded audio.

Fully compliant with the SMPTE 259M-C, SMPTE 292M, SMPTE 424M, 425M standards.

HD-3000v2 Key Features

a. Supports 1.5Gbits & 3Gbits bit rate input signal support.
The mode support is listed in page 10.

b. Two SDI input port switching with One HDMI out supported.
HD-3000v2 supports Path A (HD-SDI input from J1 port convert to output HDMI at HDMI1/HDMI1A port) or Path B (HD-SDI input from J2 port convert to output HDMI at HDMI1/HDMI1A port). See Figure below :
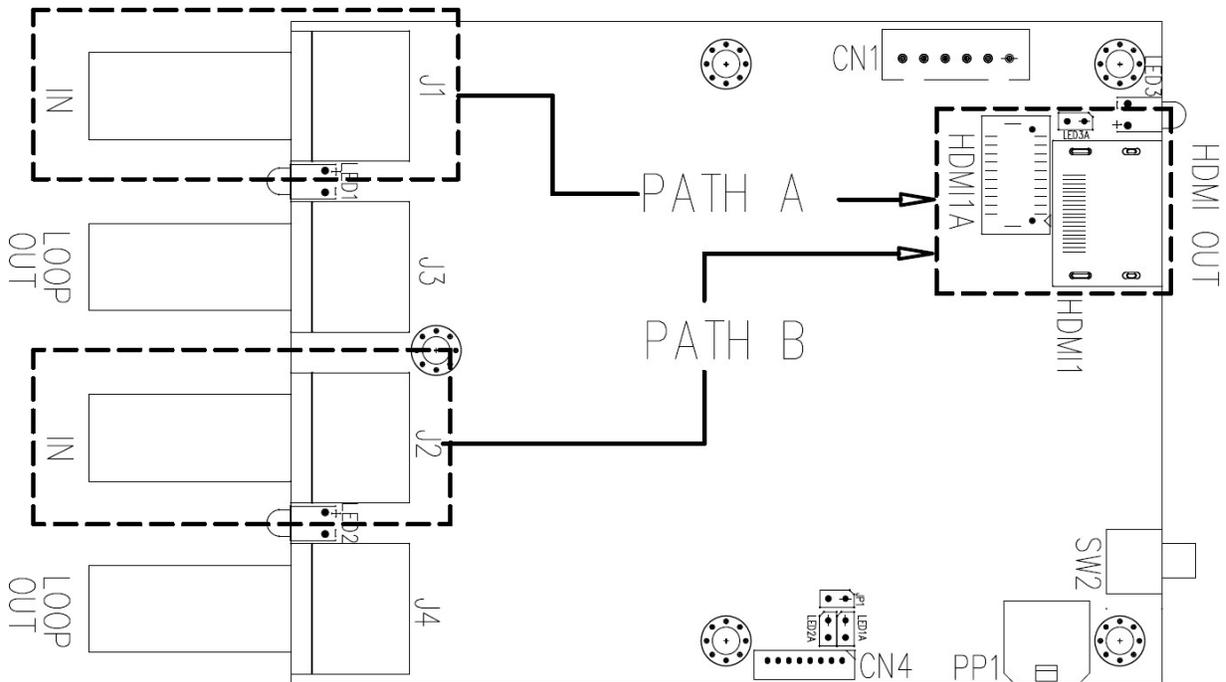
c. HD-SDI re-clock loop through output.
J1 HD-SDI input and re-clock loop through to J3 HD-SDI output. J2 HD-SDI input and re-clock loop through to J4 HD-SDI output.

d. HDMI (v1.3) x 1 output port.
One HDMI output ports are HDMI1/HDMI1A outputting 1920x1080p60 mode.

e. Stereo embedded audio support .
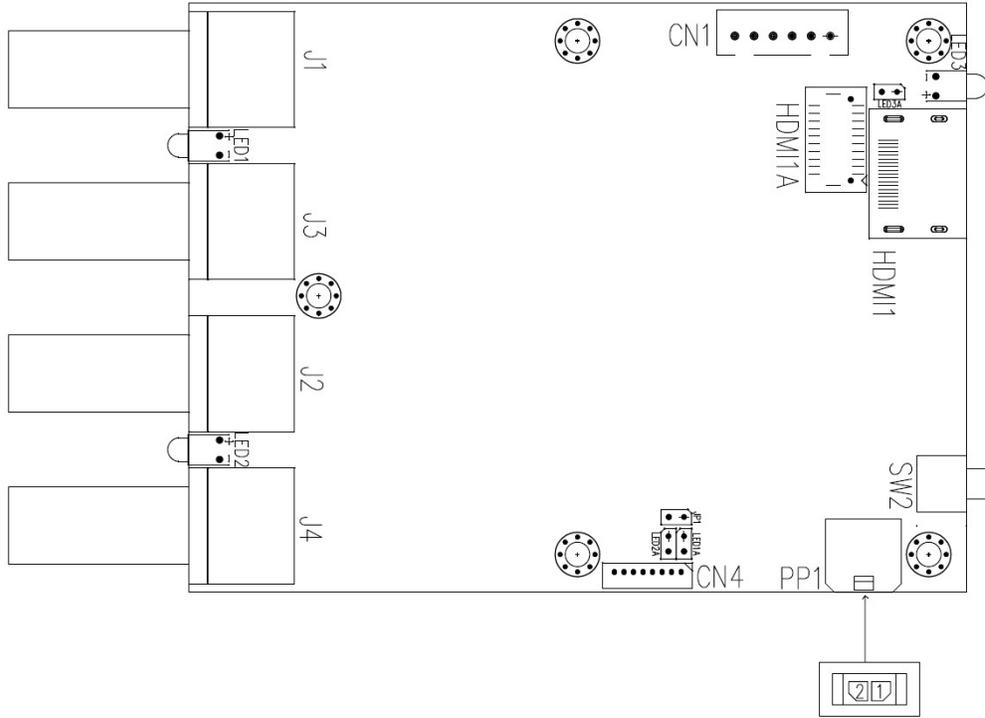
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f. Input SDI Video de-interlaced to HDMI output for non-frame buffer DV controller.

g. Provide a fast port switching between the dual SDI input if the two SDI inputs are in the same video format. (HDMI output is always ON)

h. PIP support option (custom firmware required)

2. CONNECTORS, PINOUTS & JUMPERS

The various connectors are:

Summary: Connectors

Ref	Description	Type / Use
J1	SD/HD-SDI 1 Input	BNC connector
J2	SD/HD-SDI 2 Input	BNC connector
J3	SD/HD-SDI 1 re-clock loop through output	BNC connector
J4	SD/HD-SDI 2 re-clock loop through output	BNC connector
CN1	RS-232 & I^2C control connector	JST 6-way, B6B-XH-A or compatible (Matching type : XHP-6) > (Matching power & I2C cable P/N 426090700-3 for connection with Digital View LCD controller) > (Matching cable with DB9 female connector P/N 426090200-3 for RS-232 command communication) > (Matching cable with DB9 male connector P/N 426090400-3 for RS-232 command communication)

CN4	External I/O connector	Hirose DF13-8P-1.25DSA or compatible.
		            (Matching type : Hirose DF13-8S-1.25C)
		        (Matching extend cable with Hirose DF13-8S-1.25C
		         connector : P/N 426894500-3)

HDMI1	HDMI 1 Output	HDMI connector

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Ref	Description	Type / Use

HDMI1A	Alternate HDMI 1 Output	JST BM20B-SRDS (Matching type : JST SHDR-20V-S-B)
		(Matching extend cable with female HDMI connector :
		  P/N 426301800-3)
		(Matching extend cable with male HDMI connector :
		  P/N 426006600-3)

PP1	Power Input (Alternate)	Molex 43650-0200 compatible
		  (Matching connector type : Molex 43645-0200 compatible)
		  (Matching power cable : P/N 426013800-3)

SW2	Manual SDI 1 / SDI 2 Input port selection (work for standalone application only)	Tact Switch

Summary: Jumper settings :

Ref	Purpose	Note
LED1A	External LED connection	Refer to pin assignment in page 7
LED2A	External LED connection	Refer to pin assignment in page 7
LED3A	External LED connection	Refer to pin assignment in page 7
JP1	Reserved for programming use	Reserved

Summary : PinOuts :

CN1 – RS-232 & I²C control : JST B6B-XH-A   (Matching type : XHP-6)

PIN	SYMBOL	DESCRIPTION
1	SCLK	I2C_SCLK
2	SDATA	I2C_SDATA
3	VCC	+5V (optional input power)
4	TXD	RS-232 Tx data
5	GND	Ground
6	RXD	RS-232 Rx data

CN4 – External I/O connector : Hirose DF13-8P-1.25DSA (Matching type : Hirose DF13-8S-1.25C)

PIN	SYMBOL	DESCRIPTION
1	3V3	3.3V output
2	LED3	LED3 Anode
3	N/A	N/A
4	N/A	N/A
5	EXT_IP_1	Reserved
6	LED1	LED1 Anode
7	LED2	LED2 Anode
8	GND	LED Cathode

LED1A, LED2A, LED3A – External LED connection

PIN	SYMBOL	DESCRIPTION
1	+	LED Anode
2	-	LED Cathode

HDMI1A – Alternate HDMI connector: JST BM20B-SRDS (Matching type : JST SHDR-20V-S-B)

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	Ground
3	RXC+	TMDS Data C+
4	RXC-	TMDS Data C-

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PIN	SYMBOL	DESCRIPTION
5	RX0+	TMDS Data 0+
6	RX0-	TMDS Data 0-
7	RX1+	TMDS Data 1+
8	RX1-	TMDS Data 1-
9	RX2+	TMDS Data 2+
10	RX2-	TMDS Data 2-
11	GND	Ground
12	GND	Ground
13	MSTR2_SCL	Reserved
14	MSTR2_SDA	Reserved
15	DDC_5V	+5V power supply for DDC (optional)
16	HPD	Hot plug detection
17	DDC_SCL	DDC serial clock
18	DDC_SDA	DDC Data
19	VCC1	VCC 5V output
20	VCC2	VCC 5V output

PP1 - 12VDC power supply

PIN	DESCRIPTION
1	+12VDC in
2	Ground

3. LED status and Source switching

Status LEDs on board :

The definition of the LED1, LED2, LED3 are :

Ref	Description
LED1 / LED2	Green LED on : Signal detected
LED3	Green LED on : Power on and HDMI output

Source switching :
The two SDI inputs can be selected by :

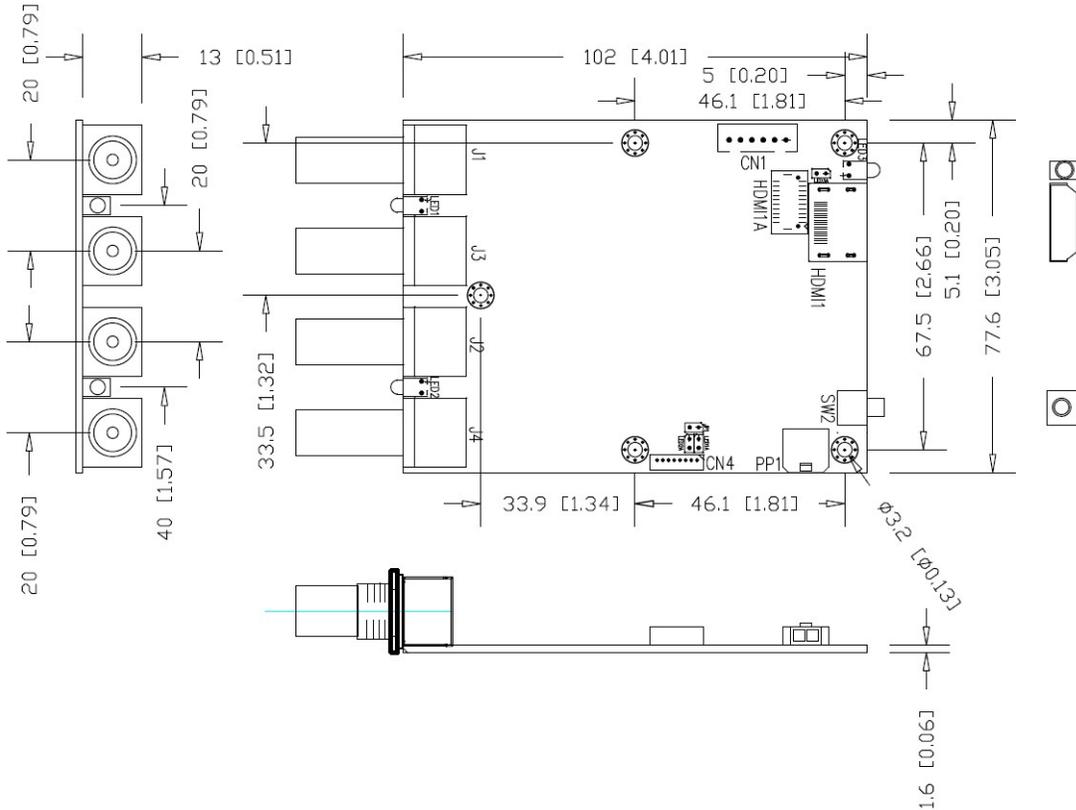a) On board tact switch to toggle from one SDI input to another one SDI input :
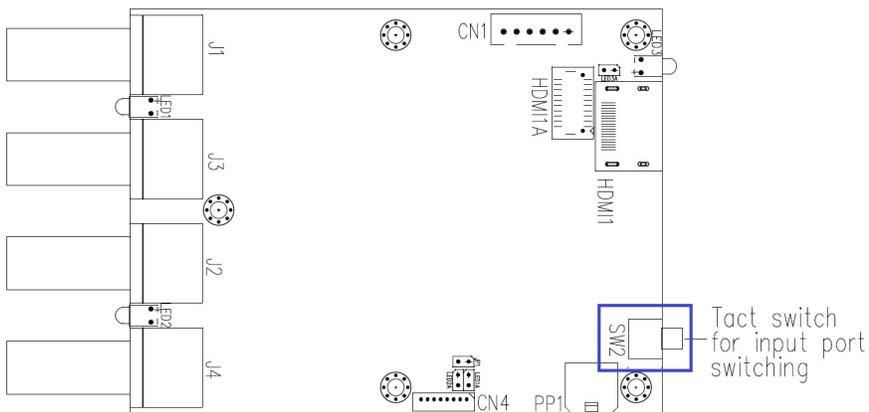
* This function will be disabled when connected with c).

b) RS-232 commands (Refer to Appendix I)

c) Connect with Digital View LCD controller (Refer to Appendix II)

The last selected SDI input source will be memorized after power cycle.

4. BOARD DIMENSIONS

Ready-made 3D Pro-E (SLDPRT) drawing files - Save time and effort for your system volumetric analysis design. Includes jpg file previews. Please go to download at http://www.digitalview.com/accessories/hd-3000v2

The maximum thickness of the adaptor board is 18mm (measured from bottom of PCB to top of components, excluding the BNC connectors. We recommend clearances of:

- 5mm from bottom of PCB - if mounting on a metal plate we also recommend a layer of suitable insulation material is added to the mounting plate surface.
- 10mm above the components
- 3~5mm around the edges

Any of the holes shown above can be used for mounting the PCB, they are 3.2mm in diameter.

CAUTION: Ensure adequate insulation is provided for all areas of the PCB with special attention to high voltage parts such as the inverter.

5. SIGNAL SUPPORT MODE TABLE

SDI input Mode	HDMI output mode
576i50 (PAL)	
480i60 (NTSC)	
720p60 (4:2:2)	
720p59.94 (4:2:2)	
720p50 (4:2:2)	
720p30 (4:2:2)	
720p29.97 (4:2:2)	
720p25 (4:2:2)	
720p24 (4:2:2)	
720p23.98 (4:2:2)	
1080p30 (4:2:2)	
1080p29.97 (4:2:2)	Sync with the input resolution
1080p25 (4:2:2)	
1080p24 (4:2:2)	
1080p23.98 (4:2:2)	
1080psf30 (4:2:2)	
1080psf25 (4:2:2)	
1080psf24 (4:2:2)	
1080psf23.98 (4:2:2)	
1080i60 (4:2:2)	
1080i59.94 (4:2:2)	
1080i50 (4:2:2)	
1080p60 (4:2:2)	
1080p50 (4:2:2)	

6. Specification

Supported serial interface standard	SMPTE 292M, 259M-C, 424M, 425M (Level A)
Supported SDI video mode	576i50 (PAL) 480i60 (NTSC) 720p60 (4:2:2) 720p59.94 (4:2:2) 720p50 (4:2:2) 720p30 (4:2:2) 720p29.97 (4:2:2) 720p25 (4:2:2) 720p24 (4:2:2) 720p23.98 (4:2:2) 1080p30 (4:2:2) 1080p29.97 (4:2:2) 1080p25 (4:2:2) 1080p24 (4:2:2) 1080p23.98 (4:2:2) 1080psf30 (4:2:2) 1080psf25 (4:2:2) 1080psf24 (4:2:2) 1080psf23.98 (4:2:2) 1080i60 (4:2:2) 1080i59.94 (4:2:2) 1080i50 (4:2:2) 1080p60 (4:2:2) 1080p50 (4:2:2)
Number of channel input port supported	2
HD-SDI re-clock loop through output	Yes
Output port	HDMI (v1.3) x 1
Embedded audio	Supported with Stereo
LEDs	Status LED (Green)
Power requirement	Regulated DC 12V input (2.5mm center positive) (optional +5V , <1.3A input via CN1)
Power consumption	+12VDC ±5%, 5W (optional +5VDC ±10%, 5.5W)
Environmental	Operating temperature : 0°C to 60°C Relative humidity : 5%-95% relative humidity (Non-condensing)
RoHS Compliant	Yes
Dimensions	102(W) x 77.6 (D) x 18(H) mm

7. Appendix I - RS-232 control protocols

RS-232 Serial control (Baud rate 9600, 8 bits, 1 stop bit and no parity)
Physical connection :

Controller side
Connector interface : CN1
Mating connector : Molex 51021-0600

(6)(5)(4)(3)(2)(1)   Mating face of CN8

PIN#	Description
4	RS-232 Tx Data
5	Ground
6	RS-232 Rx Data

Computer side
Connector interface : Serial port
Mating connector : DB9 Female

(1)(2)(3)(4)(5) (6)(7)(8)(9)   Mating face of RS-232 DB9 Male

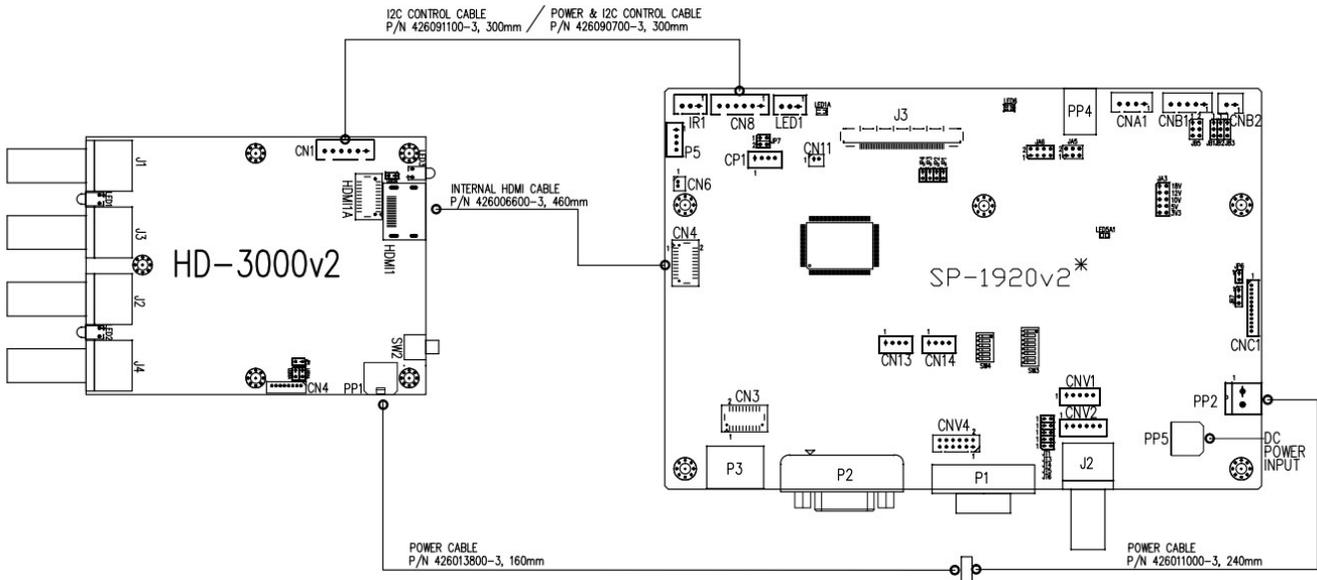| PIN#	Description
2	RS-232 Rx Data
3	RS-232 Tx Data
5	Ground

Input port select	0x98, nn | "+" | "-" | "r" | "R" | "?"	Select input main = SDI 1 or SDI 2 or next available Reset Query	Main selected. "0x45,0x31" SDI 1(Default) "0x45,0x32" SDI 2

8. Appendix II - System connection with Digital View LCD controllers.

HD-3000v2 with SVX-1920-PRO (as an example) :
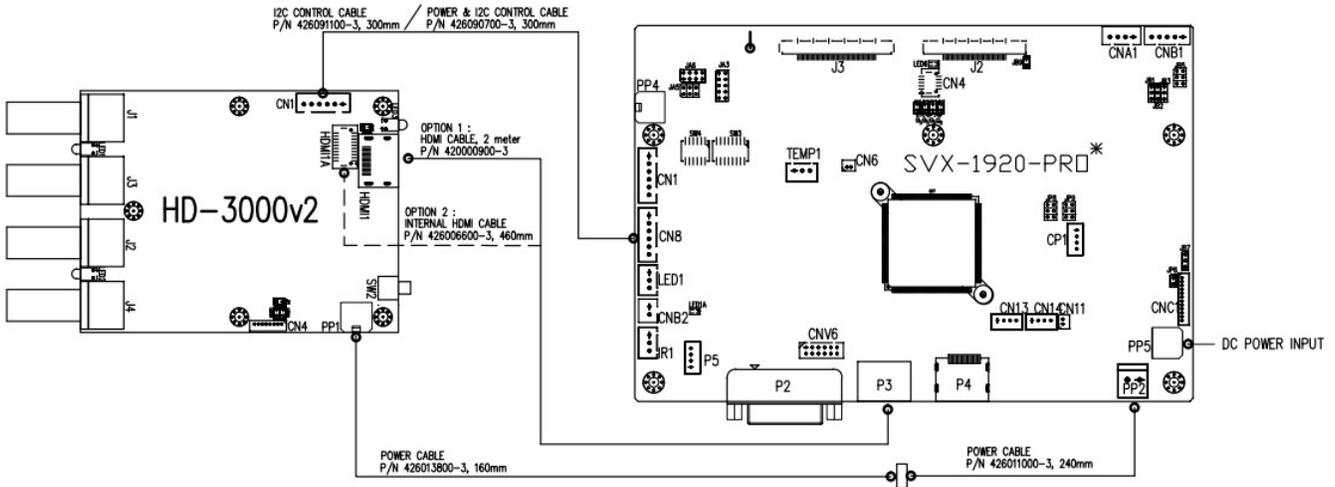
HD-3000v2 with SP-1920v2 (as an example) :

Remark :
* Custom firmware version required.

Please note that the overall suitability and image quality acceptance for usage in critical applications must be independently tested and verified by the user.

9. WARRANTY

The products are warranted against defects in workmanship and material for a period of three (3) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:
- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

CAUTION

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.

TRADEMARKS

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- HD-3000v2

10. CONTACT DETAILS

Digital View has offices in Asia, Europe and USA :

USA

Digital View Inc.
18440 Technology Drive
Building 130
Morgan Hill,
California, 95037
USA

Tel: (1) 408-782 7773   **Fax**: (1) 408-782 7883

Sales: ussales@digitalview.com

EUROPE

Digital View Ltd.
6 Marylebone Passage,
London, W1W 8EX,
UK.

Tel: +44-(0)20-7631-2150   **Fax**: Fax: +44-(0)20-7631-2156

Sales: uksales@digitalview.com

ASIA

Digital View Ltd
Unit 705-708, 7/F Texwood Plaza
 6 How Ming Street
 Kwun Tong, Hong Kong
Tel: (852) 2861 3615   **Fax**: (852) 2520 2987

Sales: hksales@digitalview.com

WEBSITE

   www.digitalview.com

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11. REVISION HISTORY

Date	Rev No.	Page	Summary
23 Feb 2023	1.00	All	First Issue version.
14 Aug 2023	2.00	11	Change HDMI output format mode from '1920x1080p60' to 'Sync with the input resolution'.