AD-210 Owner's Manual

VGA/DVI to DVI Converter/Scaler w. PIP

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Table of Contents

1-1 Package Contents

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

1) AD-210
2) Power Supply Adapter(DC 12V)
3) AC Power Cord
4) USB Cable
5) User Manual

1-2 General Specification

PureLink's AD-210 signal conversion UP/Down scaler product is a high performance analog & DVI to DVI scaler that converts incoming analog RGB and YPbPr signal to DVI signal. In addition to conversion, AD-210 is capable of UP/Down scaling DVI input resolution as well as DVI output resolution. AD-210 supports the resolution from VGA to WUXGA, 60Hz~85Hz.

With AD-210's highest quality Sigma scaling IC, the transmission speed of massive HD video data is faster than ever, as well as the processing speed of the incoming and outgoing video signal.

For user's convenience, the newly designed OSD (On Screen Display) menu option can be easily reconfigure through the front LCD display of the AD-210

Item	Description	Remark
Model	AD-210	
Signal Type	Analog RGB, YPbPr	1920 x 1200 @ 60Hz Max
	DVI(TMDS)	1920 x 1200 @ 60Hz Max
	HDMI 1.3	
Output Signal	DVI (TMDS)	1920 x 1200 @ 60Hz Max
	HDMI 1.3	
Resolution	Hf : 30 to 95 KHZ Vf : 60 to 85 HZ RGB(YPbPr):VGA ~ WUXGA	PC Mode: VGA ~ WUXGA D-TV Mode : 480P ~1080P
Connector Type	DC Power Jack 3.5MM Terminal Block D_DETAILED,DVI	
HDCP Compliant	Yes	
Image Scaler	GF9452A	Sigma Design

Power Consumption	9W Max	DC +12V
Unit Dimension	7.4 x 6.7 x 1.7 Inch	
Weight	2.2 lbs	
User Controls	6 Buttons Control	
Plug & Play	DDC2B	VESA

1-3 Operation and Reliability Specification

1. Operating Environment
   Temperature : 50F ~ 104F (10℃~ 40℃)
   Humidity : 10% ~ 80%
   Altitude : 3,000m Max.

2. Transit Environment
   Temperature : -13F ~ 140F (-25℃~ 60℃)
   Humidity : 5% ~ 95%
   Altitude : 15,000m Max.

3. Storage Environment
   Temperature : -4F ~ -49F (-20℃~ 45℃)
   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

1-4 Main Features

***High Quality Picture – No Signal Loss and Support wide range of video resolution**

AD-210 is designed with one of the highest quality scaling IC which offers various effective function, such as quickly and reliably convert analog (RGB & YPbPr) and DVI signal to HD digital (DVI/HDMI) signal and put UP/Down the resolution on both VGA&DVI input and DVI output port. At the same time, the digital noises that may affect the picture quality will be eliminated. Due to the nature of the digital signals and passing through multiple stages of connection, it is important to eliminate the digital noises and boost the signal strength to preserve/enhance the video signal quality.

***Signal amplification for signal reliability and long distance signal transmission**

AD-210 uses external DC 12V power supply adapter to be reliably operated and also to run an internal chipset, which is designed to transmit high quality visual signal to long distance. Up to 15M copper DVI-D single link cable can be used.

***Compact and Practical Design**

AD-210 is designed compactly and practically, allowing users more ease and convenience.
It takes 1 rack unit space.

***Auto EDID feature**

In order to support the maximum resolution of connected monitor, an EDID data of the monitor needs to be recognized by video source graphic adapter and communicated with each other. But with PureLink's AD-210 AUTO EDID feature, the users can easily pre-save an EDID data of any DVI(HDMI) monitor. AD-210 is capable of selecting your pre-saved EDID or 14 different EDID data which was pre-programmed internal EEPRO Chipset of AD-120.

***HDCP (High-bandwidth Digital Content Protection) Compliant**
AD-210 is fully HDCP compliant. Many video sources such as DVD players and Satellite/Cable Receivers are HDCP encrypted. For these video sources to be displayed correctly, HDCP compliant devices (e.g., TV, DVI Switch, distribution amplifier) are required.

***DVI & HDMI Compliancy**

AD-210 is in compliance with DDWG DVI 1.0 and HDMI v 1.3 Standard.

1-5 Technical Specification

Input Signal Characteristics

Input Signal	Description	Unit	Min	Typical	Max	Remarks
DC input	DC Voltage	VDC	11.5	12	12.5	
	Power Consumption	Watts	7.2	7.8	8.8	
VGA input (15Pin D-Detailed)	Video	Vp-p		0.714(1.0)		75Ω Terminated
	Sync Voltage	Vp-p		5.0		
	Horizontal Frequency	Khz	30	-	95	Depends on Mode
	Vertical Frequency	Hz	60	-	85	Depends on Mode
DVI input (29Pin DVI)	Differential Output	mVp-p	450	510	570	TMDS Interface

Output Signal Characteristics

Output Signal	Description	Unit	Min	Typical	Input Signal	Remarks
DVI input (29Pin DVI)	Differential Output	mVp-p	450	510	570	TMDS Interface

1.1 Analog Timing Chart (RGB, YPbPr)

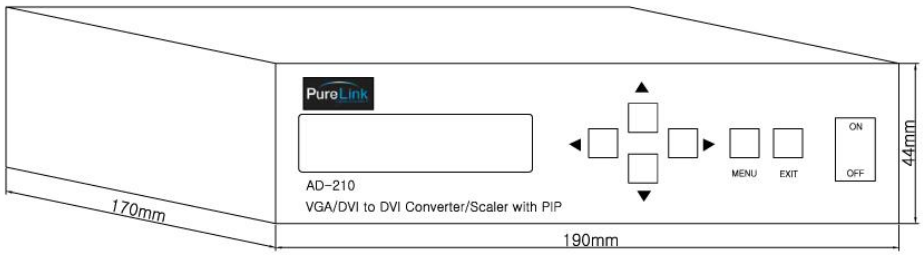
- 640*480 60Hz	- 1024*768 60Hz	- 720*480p 60Hz
- 640*480 72Hz	- 1024*768 70Hz	- 720*576p 50Hz
- 640*480 75Hz	- 1024*768 75Hz	- 1280*720p 60Hz
- 640*480 85Hz	- 1024*768 85Hz	- 1280*720p 50Hz
- 800*600 56Hz	- 1280*1024 60Hz	- 1920*1080i 60Hz
- 800*600 60Hz	- 1280*1024 75Hz	- 1920*1080i 50Hz
- 800*600 72Hz	- 1280*1024 85Hz	- 1920*1080p 60Hz
- 800*600 75Hz	- 1600*1200 60Hz	- 1920*1080p 50Hz
- 800*600 85Hz	- 1920*1200 60Hz	

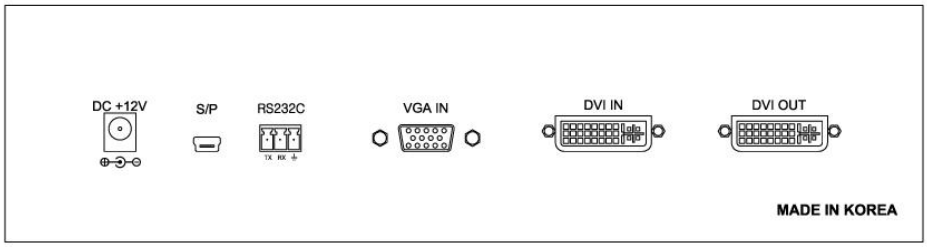
1.2 DVI (HDMI) Timing Chart

- Auto Time Set	- 1920*1080p 50Hz	- 1280*1024 75Hz
- 720*483p 59.94Hz	- 1920*1080p 59.94Hz	- 1280*1024 85Hz
- 720*576p 50Hz	- 1920*1080p 60Hz	- 1360*768 60Hz
- 1280*720p 50Hz	- 800*600 60Hz	- 1366*768 50Hz
- 1280*720p 59.94Hz	- 800*600 75Hz	- 1400*900 60Hz
- 1280*720p 60Hz	- 1024*768 60Hz	- 1600*1200 60Hz
- 1920*1080i 25(50)Hz	- 1024*768 75Hz	- 1920*1200 60Hz
- 1920*1080i 29.7(59.94)Hz	- 1024*768 85Hz	- 1920*1080p 60Hz
- 1920*1080i 30(60)Hz	- 1280*1024 60Hz	

1-6 External Design

Dimension (W * D * H): 7.4 x 6.7 x 1.7 Inch





Front Panel

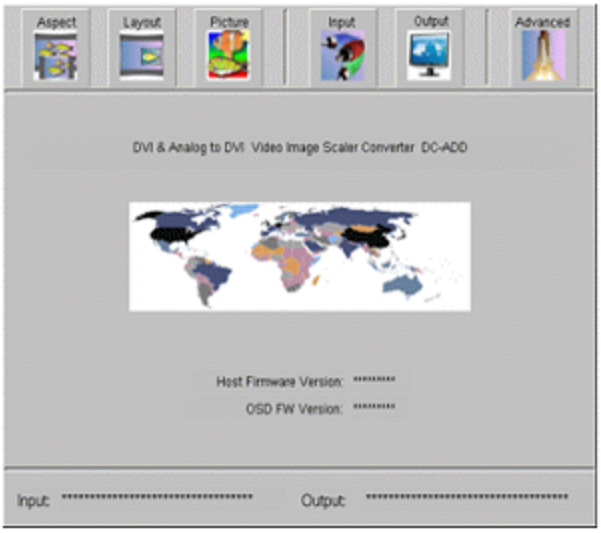
LCD Display: 16*2 LCD
Power: Toggle Switch
▲▼◄►: Cursor Control
MENU: Menu Button
ENTER: Selecting Menu

Rear Panel

DVI OUT: DVI-D
DVI IN: DVI-D
VGA IN: D-Detailed
RS232C: RS-232C
S/P: FIRMWARE UPGRADE PORT
DC +12V: Power Plug

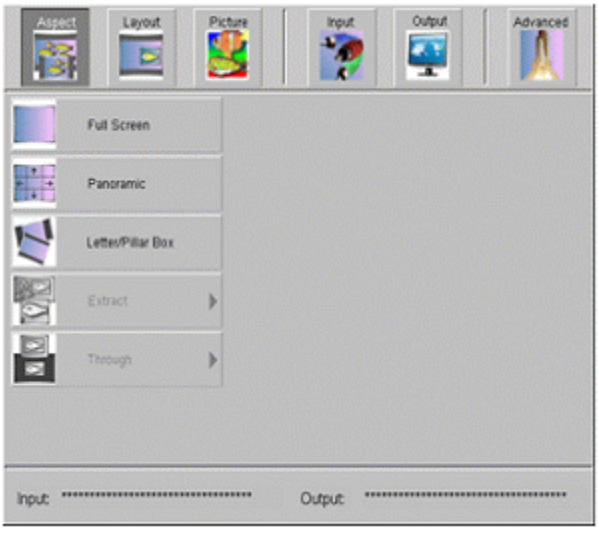
1-7 How to use Menu Option

1. Operation Manual (OSD View)

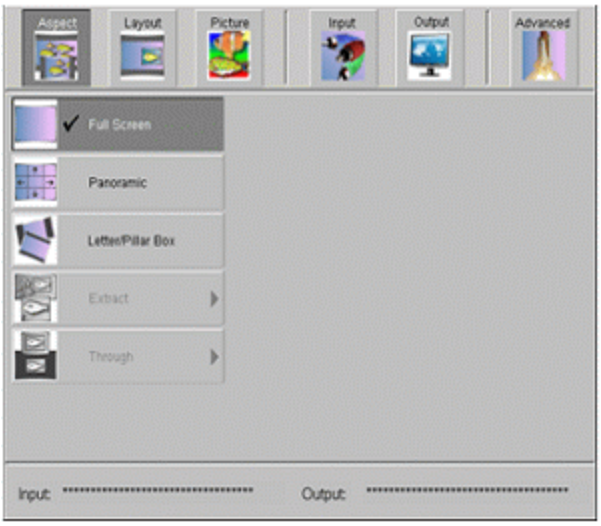


- OSD (On Screen display) will appear when Menu Button is selected.
- OSD will disappear when Exit Button is selected.

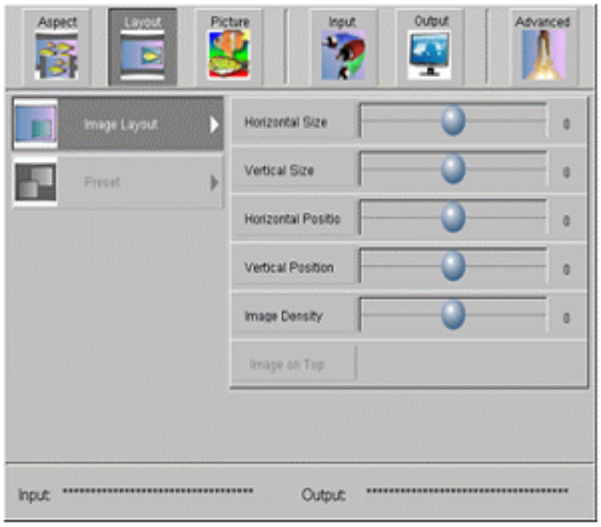
*On the main menu, you will see the current firmware & OSD version and I/O (Input / Output) connection information.



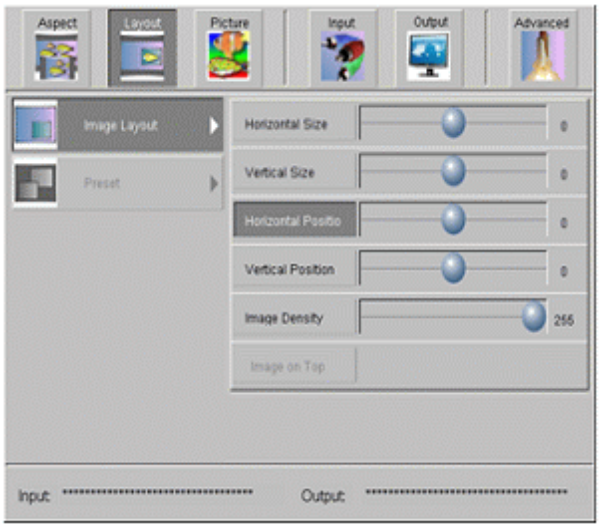
- Detailed-Menu detail will appear in regular sequence by pressing Left / Right Button



- Detailed-Menu of Aspect will be selected when Aspect menu is highlighted by pressing Menu Button
- Aspect Ratio will be changed to following three options:
  (Full<->panoramic<->Letter Box).
- Go back to main Menu by pressing Exit Button



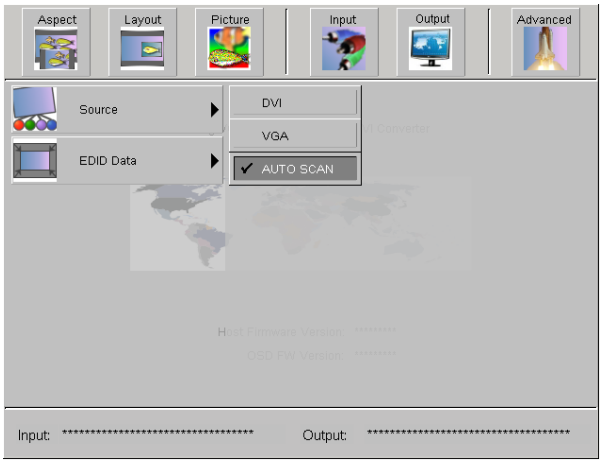
- To change Image Layout, press the Menu Button when Layout menu is highlighted
- To go to the Detailed-Menu, press Menu Button again.
- Up/Down Button will allow selecting different Detailed-Menu
- By using Left/Right Button, it will change the offset value as well as the size and the position of the image.
- Go back to main menu by pressing Exit Button



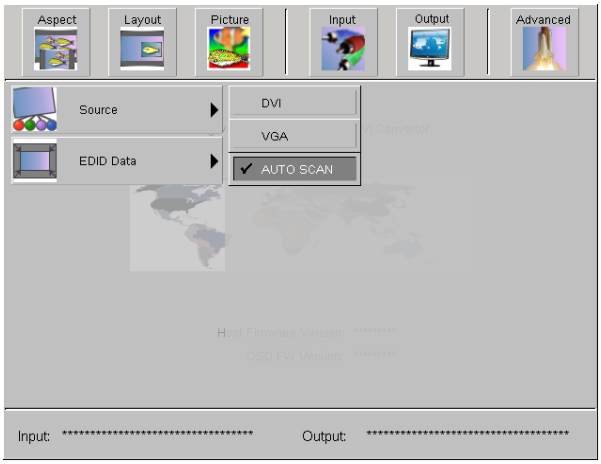
※ Size/Position Offset Value ±1

※ Size/Position Offset Max Value =±1000

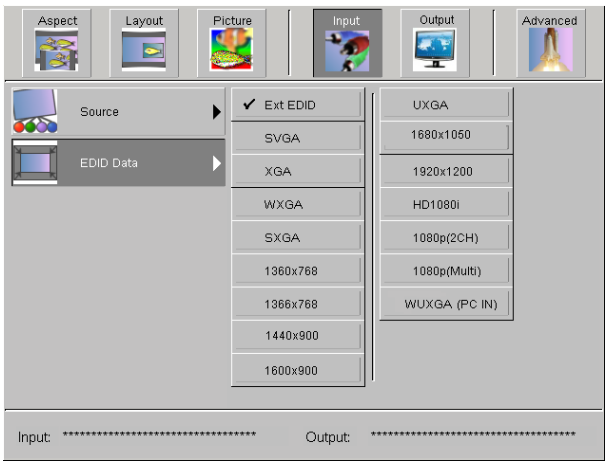
※ Image Size Max Value = 2048 x 2048



- Input source can be changed on the Input Menu (DVI or VGA source)
- Source or EDID Data menu can be selected by using Up/Down Button
- You can change the detail setting when one of the menu is highlighted
- Go back to main menu by pressing Exit Button



- DVI Selection: only DVI input will be activated
- VGA Selection: Only VGA input will be activated
- AUTO Scan Selection: It will automatically detects VGA or DVI input source when connected



- You can enter into EDID data Detailed-menu by pressing Menu Button when EDID Data is highlighted.

- Check marked represents the current selection, and it can be changed to different data by pressing UP/Down Button

- When you press Menu Button on the highlighted Data list it will store the data into its internal EEPROM

※ Ext EDID – Allowing user to read an EDID data and save its information to EEPROM (DVI Input).

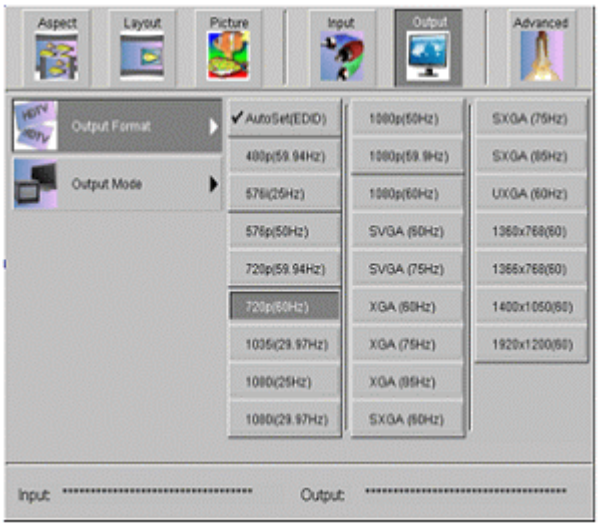
※ WUXGA(PC IN)- The selected Analog EDID Data from VGA input port will be stored in EEPROM.

- You can enter into Output Format Detailed-Menu by pressing Menu Button.

- Use Up/Down Button to select the Output Format Detailed-Menu or Output Mode Detailed-Menu.

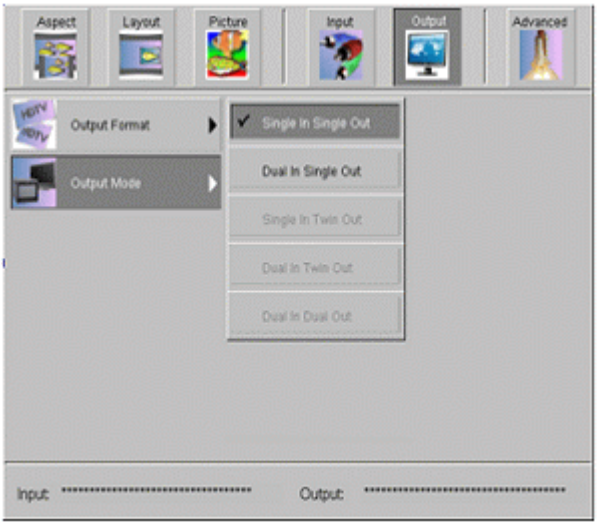
- Check marked represents the current selection.

- Go back to main Menu by pressing Exit Button.



- You can use Up/Down Button to select the desired Timing option on the Output Format Detailed-Menu.

- Go back to the main menu by pressing Exit Button

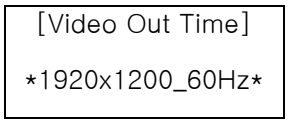


- Use UP/Down Button to select the desired Output mode.

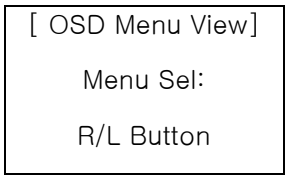
※ When it's set to Dual In Single Out, the position of PIP (Picture in Picture) (VGA or DVI input) source vary depending on Input setting.

2. Operation Manual (LCD View)

− Main Menu



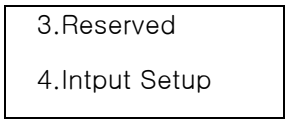
On the main Menu, use the Right/Left Button to display I/O timing information.



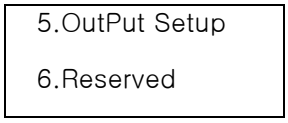
Press the Menu Button to display OSD on the monitor.

− Menu List

Main Menu list will show when Right/Left Button is press

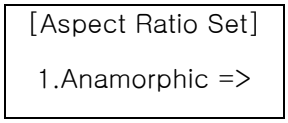


Use Right/Left Button to select the desired option and press Menu Button to enter the detailed-menu

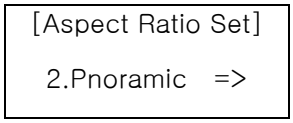


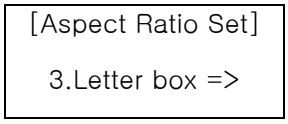
Press Exit Button to go back to the main Menu

- Aspect Menu

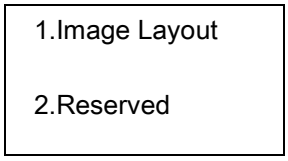


Select the Menu List 1.Aspect Ratio when changing the Aspect Ratio and press Menu Button to go to the detailed-menu. And then use Up/Down Button to select the desired option.





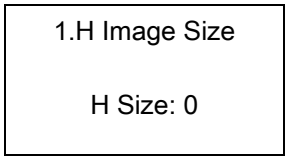
- Layout Menu

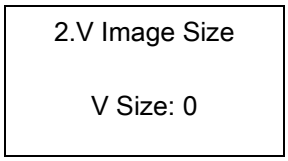


- Select the Menu List 2. Video Layout when changing the Layout setting, and press the Menu Button to go to the detailed-menu.

When Image Layout is highlighted re-enter Menu Button to go to the Image Layout Detailed-Menu

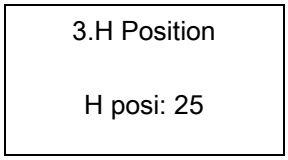
Image Layout Detailed-Menu

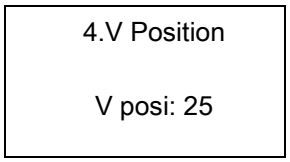


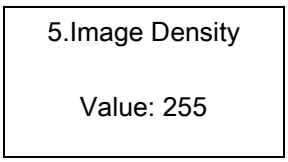


-Using Up/Down Button to select the list.

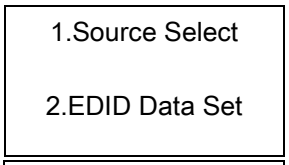
-Press Left/Right Button change the value of each setting.



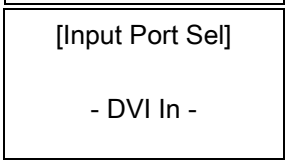




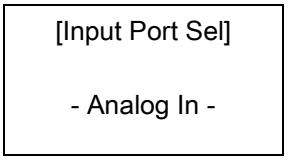
- Input Menu

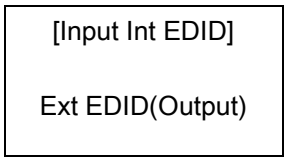


-Menu List 4, Input Setup -> Press Menu Button -> Select the Source Menu and press the Menu Button again.



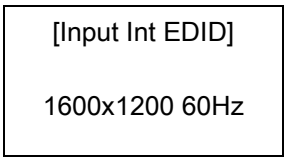
-Press Up/Down Button to select DVI or VGA Input Source



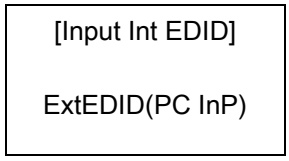


- Menu List 4.Input Setup -> Press Menu Button -> use the Down button to select EDID Data.

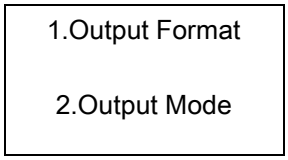
- EDID Data List will show on the LCD display when press Menu Button.



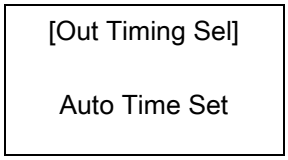
-Select the desired EDID Data by using Up/Down Button and press Menu button to save



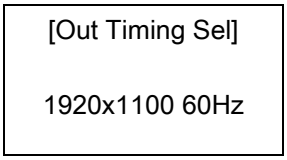
–Output Menu



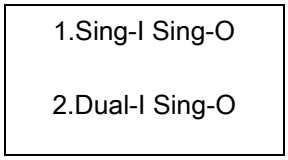
-Menu List 5.Output -> Press Menu button to select The Output Format



-Timing list will show when press Menu button.



- Select the desired timing list by pressing UP/Down button.



- Menu List 5.Output -> Press Menu button to select Output Mode

- Select the desired Output Mode by pressing UP/Down button.

1-8 Connector Pin Assignment

DC Input

Part Number	Pin No.	Description	Remark
DC005	1	VCC(DC12V)	
	2	GND	
	3	GND	

RS232C

Part Number	Pin No.	Description	Remark
ECH350R-03	1	TXD	
	2	RXD	
	3	GND	

Analog RGB Input

Part Number	Pin No.	Description	Remark
DB15HD	1	RED	
	2	GREEN	
	3	BLUE	
	4	GND	
	5	GND(DDC-RETURN)	
	6	GND-RED	
	7	GND-GREEN	
	8	GND-BLUE	
	9	N.C	
	10	GND-SYNC	
	11	GND	
	12	DDC-DATA	
	13	H-SYNC	
	14	V-SYNC	
	15	DDC-CLOCK	

DVI-D Input & Output

Part Number	Pin No.	Description	Remark
DVI-D 29pin	1	TMDS DATA 2M	
	2	TMDS DATA 2P	
	3	TMDS DATA 2/4 Shield	
	4	TMDS DATA 4M(N.C)	
	5	TMDS DATA 4P(N.C)	
	6	DDC Clock	
	7	DDC Data	
	8	N.C	
	9	TMDS DATA 1M	
	10	TMDS DATA 1P	
	11	TMDS DATA 1/3 Shield	
	12	TMDS DATA 3M(N.C)	
	13	TMDS DATA 3P(N.C)	
	14	5V	
	15	GND	
	16	Hot Plug Detect	
	17	TMDS DATA 0M	
	18	TMDS DATA 0P	
	19	TMDS DATA 0/5 Shield	
	20	TMDS DATA 5M(N.C)	
	21	TMDS DATA 5P(N.C)	
	22	TMDS DATA Clock Shield	
	23	TMDS Clock P	
	24	TMDS Clock M	

1.9 Command Protocol

RS-232C Control Code Configuration

-AD-210 can be remotely controlled via RS-232 port.
The control commend codes are as follows and the code is composed of ASCII

1. ASPECT RATE SET
   *CAP01! + ENTER ➔ Full Screen
   *CAP02! + ENTER ➔ Panoramic
   *CAP03! + ENTER ➔ Letter/Pillar Box

2. INPUT SOURSE SET
   *CIS00! + ENTER ➔ ANALOG INPUT (VGA)
   *CIS01! + ENTER ➔ DIGITAL INPUT (DVI)
   *CIS02! + ENTER ➔ AUTO SCAN

3. OUTPUT TIMINIG SET
   *COT00! + ENTER ➔ AUTO TIMING SET (EDID)
   *COT01! + ENTER ➔ 480p
   …….
   *COT24! + ENTER ➔WUXGA (1920x1200)

4. OUTPUT MODE SET
   *COM00! + ENTER ➔ SINGLE DISPLAY
   *COM01! + ENTER ➔ DUAL INPUT DISPLAY

When there is an Error" NACK=*CAP01! + ENTER (The original value will be returned)

1.10 Warranty

2 (Two) Year Warranty

Dtrovision warrants this VGA/DVI to DVI Converter 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 a product does not work as warranted during the applicable warranty period, Dtrovision shall, at its option and expense, repair the defective product or part, deliver to customer an equivalent product or part to replace the defective item, or refund to customer the purchase price paid for the defective product.

All products that are replaced will become the property of Dtrovision.

Replacement products may be new or reconditioned.

Any replaced or repaired product or part has a ninety (90) day warranty or the reminder of the initial warranty period, whichever is longer.

Dtrovision shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to Dtrovision for repair under warranty or not.

Warranty Limitation and Exclusion

Dtrovision shall have no further obligation under the foregoing limited warranty if the product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress, unauthorized modifications, tampering, alterations, or service other than by Dtrovision or its authorized agents, causes other than from ordinary use or failure to properly use the Product in the application for which said Product is intended.

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.