

# Instruction Manual

***SD-220DA***  
***SDI to Analog Converter***



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## 1.0 INTRODUCTION

Thanks for purchasing this SD-220DA SDI to Analog Converter from TV One. The SD-220DA is designed to convert 270 Mb/s SDI signals into analog video (composite, Y/C and component). Our professional video conversion products have been serving the industry for over twenty years. TV One offers a full line of high quality Video Scalers, Scan Converters, Analog-Digital (DV, SDI, DVI) Converters, Standards Converters, Digital Video Recorders, Frame Synchronizers, Time Base Correctors, LCD Monitors, Matrix Routing Switchers and Distribution Amplifiers.

### 1.1 Liability Statement

Every effort has been made to ensure that this product is free of errors. TV One cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

TV One reserves the right to revise any of its hardware and software following its policy to modify and/or improve its products where necessary or desirable. This statement does not affect the legal rights of the user in any way.

All third party trademarks and copyrights are recognised. The TV One logo, TV One-task and CORIO are the registered Trademarks of TV One. All other trademarks are the property of their respective holders.

### 1.2 FEATURES

The *SD-220DA* has many features that enable it to perform in a superior manner. Among those features you will find:

- 10-bit Signal Processing
- Serial Digital Video Input at 270Mbits/sec
- Reclocking and Equalizing of the input signal
- Reclocked SDI active looped output
- Composite, S-Video, YUV (or RGB) Outputs
- Video Processing Amplifier Adjustments
- NTSC, NTSC-J, PAL & PAL-N Operation
- Desktop Case with Optional Rackmount

## 2.0 SPECIFICATIONS

<b>SDI Video Input</b>	
SMPTE 259M, 270Mbits/sec	1x via BNC Connector
<b>SDI Video Output</b>	
Active Looping Signal	Equalized & Reclocked, Signals are ITU-R BT.601 and ITU-R BT.656 compliant
<b>Equalizing Range</b>	Up to 300 meters of 8281 type cable
<b>Analog Video Outputs</b>	
Composite	1x via BNC Connector
S-Video (Y/C)	1x via 4-PIN Mini-DIN
Component (YUV or RGB)	1x via 3 BNC Connectors
Television Standards	NTSC, NTSC-J, PAL, PAL-N
Impedance	75Ω
<b>Video Specifications</b>	
Signal Processing	10-bit
Frequency Response	Flat to more than 6MHz
SC/H Phase	$\leq 5^\circ$
Chroma to Luma Delay	$\leq 5\text{nS}$
Differential Gain	$\leq 0.5\%$
Differential Phase	$\leq 0.5^\circ$
Luminance Non-linearity	$\leq 2\%$
K Factor	$\leq 0.8\%$
<b>Signal to Noise Ratio</b>	
White Field, weighted	Better than 77db
Black Field, weighted	Better than 80db

## 3.0 CHECKING PACKAGE CONTENTS

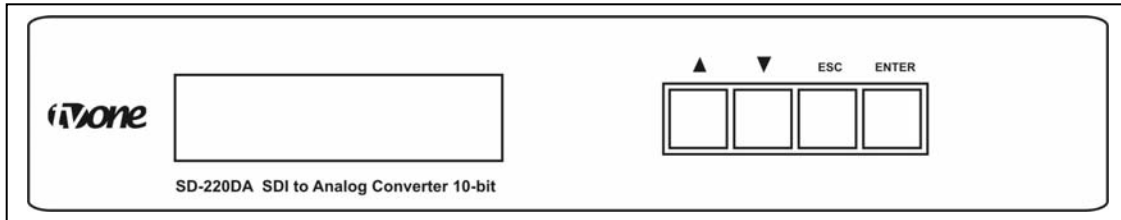
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- SD-220A SDI to Analog Converter.
- 100/240 VAC@50/50 Hz to +5 VDC Power Adaptor
- 6' (2m) BNC to BNC Cable
- Operation Manual

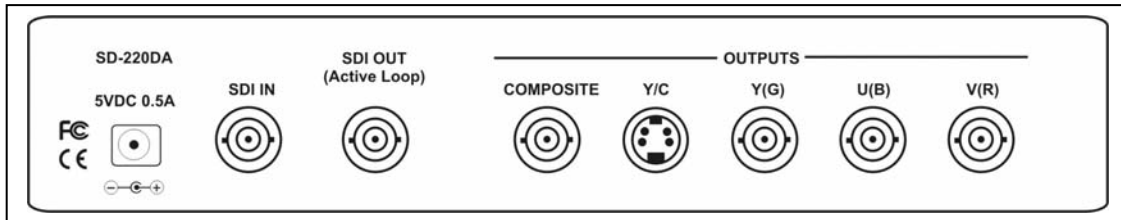
**Note:** Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or TV One immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

## 4.0 CONNECTING THE HARDWARE

Please study the panel drawings below and become familiar with the signal input, outputs, power requirements plus any controls present.



SD-220DA Front Panel



SD-220DA Rear Panel

### 4.1 Input / Output Connections

The first step is to connect the SDI source to the “SDI IN” BNC connector and then the output(s) to the proper destination(s).

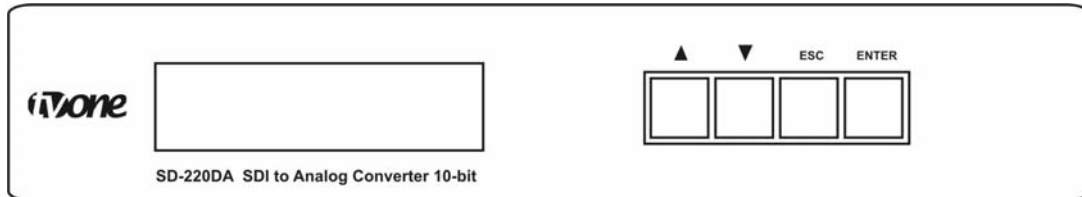
*All SD-220DA outputs are active. All outputs can be used simultaneously or just one of the outputs can be used according to the user's needs.*

### 4.2 Connecting Power to the Unit

The SD-220DA is shipped with an AC Power Adapter to convert 100~240VAC@50-60Hz to +5 VDC. Connect the DC Output Cable from the Power Adapter to the back of the unit and then plug the Power Adapter into an AC Receptacle. When the unit is plugged in, the front panel LCD indicator will illuminate.

## 5.0 OPERATING THE UNIT

The SDI to Analog converter is controlled via four buttons and status is indicated on the front panel LCD.



- **▲ and ▼ Buttons:** These buttons allow navigation within the Menu and adjustment of the operational parameters.
- **Enter Button:** Allows entering the secondary menus or confirms menu item selection.
- **ESC Button:** **ESC**apes from the current selection, going up one menu level, without any changes to the previous setting.

### 5.1 Status

As soon as the unit is plugged in (and after initialization and recalling of the values and settings stored in the non-volatile memory), the SD-220DA LCD shows **TVOne SD-220DA** on the first line and Input Signal Status on the second line: **INPUT ABSENT** or **SDI -> 'Std'**, where 'Std' is the SDI Standard identified when SDI presence is detected at the input.

When status is displayed, depressing the **Enter** button sets the gain settings to unity as the default condition, sets image sharpness to flat (factory calibration) plus updates the non-volatile memory with these values.

If you depress **ESC**, the LCD display shows Component Output Format, Levels and Gain Status on the display's second line. (For example, it may show: **YUV SMPTE CAL**, indicating component output is YUV with SMPTE levels plus all level controls [Luma, Chroma and Set Up] are at unity gain.)

Alternatively, it could show **YUV BCAM UNCAL**, (if Component Output with Betacam® Levels has been selected), provided one or more of the level controls has been set to a value other than unity.

Another possibility is **RGB CAL**, if RGB output has been selected.

## 5.2 Main Menu

Depressing the arrow buttons (▲ or ▼), when status is being displayed, allows navigation through the Main Menu. The options are:

- Luma Level
- Chroma Level
- Set Up Level
- Sharpness Adj.
- Output Standard
- Component Format
- Component Level

Press **Enter** to select the desired option or press **ESC** to go back to the Status display.

### 5.2.1 Luminance Level

When this option is selected, the LCD's first line shows **Adjust Luma** and the second line will indicate **Gain = X.XX**, (where X.XX is the current gain level factor).

▲ or ▼ increases or decreases the Luma level.

Output luminance changes in step with the displayed value. Pressing **Enter** saves this value to the non-volatile memory and returns you to the **Main Menu**. Pressing the **ESC button** will cycle you back to the **Main Menu** without saving the adjustment. *(To amplify on this point a bit, even though you didn't save the new value, pressing the **ESC button** does not return the unit to the value that was present before the change was made. The change you made is still present until you remove power from the unit. When you next apply power, the last saved value will appear. If you want the new value you just created to appear the next time you apply power, you have to save it first as explained above).*

Steps are 0.05 (5 %) each, while maximum level is 1.50 (50 % increase) and minimum 0.00 (no luminance output).

### 5.2.2 Chroma Level

Chroma level adjustment is accomplished the same way as the luma level described above—you select Chroma from the menu after which the same rules that governed Luma adjustments apply to Chroma adjustments.

*The only difference is the maximum allowed level is 2.00 (two times unity gain) instead of 1.5 times unity gain.*

### 5.2.3 Set Up Level

Set up level adjustment is very similar to Luma and Chroma levels but with few differences.

First, the value shown is relative, not the absolute gain as with the others. This value varies from 00 (no set up) up to + 31 and down to –32 (thereby crushing blacks) in steps of 1.

*In the case of NTSC, set up level is referenced to the standard 7.5 IRE pedestal.*

### 5.2.4 Sharpness Adjustment

The SD-220DA has a digital luminance sharpness response control that allows the user to enhance or attenuate the high frequency components of the luminance.

▲, ▼, **ESC** and **Enter** behave the same way as in the level control sub menus.

Steps are 0.5 dB each, varying from **Flat** to + and – 3 dB. *(Remember, adding sharpness will often add high frequency noise to the picture as well).*

### 5.2.5 Output Standard

When this option is selected, the LCD's first line shows: **Sel Out Std**, and the second line will show the current standard.

The ▲ and ▼ buttons allows selection of PAL, PALN, NTSC and NTSCJ (NTSC without pedestal).

Output Standard changes takes effect after pressing **Enter**, which stores the selection in the non-volatile memory. Confirmation of the change is shown on the LCD's second line via the text **\*OK** after the new standard selection has been stored.

To return to the **Main Menu**, press the **ESC** button.

*(Note the output standard is not modified until **Enter** is depressed, a difference from the way the level controls work. **ESC** takes you back to the **Main Menu** without any change to the selected standard).*

### 5.2.6 Component Format

The SD-220DA allows the user to choose which signals are sent to the component format's BNC connectors: YUV or RGB.

When this option is selected, the first LCD line will show **Change Format** and the second the format currently in use.

The arrow buttons, ▲ and ▼, allow selection of one of the two choices.

*(Note the output format selection is not accepted until **Enter** is depressed, as was the case with the Output Standard functionality described in section 5.2.5. **ESC** takes you back to the **Main Menu** without any change to the selected standard).*

### **5.2.7 Component Level**

When selecting this option, if the component format chosen is YUV, the first line of the LCD shows **Change Level** and the second line on the display shows the current option.

The arrow buttons, ▲ and ▼, allows selection of either SPMTE/EBU or Betacam® output levels. The **Enter** and **ESC** buttons behave the same way as the functionality described in 5.2.5 and 5.2.6.

*When selecting RGB format, the LCD display will show **Not Available** and, after a few seconds, the unit will revert to the **Main Menu**.*

## 6.0 TROUBLESHOOTING

Other than checking for faulty cables, the other common problem would be operating with a wrong standard. Make sure SDI input is 270 Mb/s SMPTE 259M standard and the output standard selected is compatible with the input (525/60 or 625/50).

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions before contacting TV One. Should the dealer's technical personnel be unable to assist you, contact TV One via our support website: ***<http://tvone.crmdesk.com>***. Create a technical support request on the site and our support team will respond within a short period of time.

## **7.0 LIMITED WARRANTY**

LIMITED WARRANTY – With the exceptions noted in the next paragraph, TV One warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this product, in TV One’s opinion, prove defective within this warranty period, TV One, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of TV One. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into TV One products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to TV One.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from TV One and return the product to a location designated by TV One, freight prepaid. After repairs are complete, the product will be returned, freight prepaid.

LIMITATIONS - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. TV One assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

TV One makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of TV One with respect to any defective products will be limited to the repair or replacement of such products. In no event shall TV One be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

## **8.0 REGULATORY COMPLIANCE**

This product has been tested for compliance with: FCC Class B and CE.

The Power Adapter has been tested for compliance with: UL, CSA and CE.

## 9.0 CONTACT INFORMATION

Should you have questions or require assistance with this product in areas not covered by this manual, please contact TV One at the appropriate location shown below:

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### **TV One China**

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## NOTES





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