

Instruction Manual

*PX-720
Standards Converter*

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1.0 INTRODUCTION

Thanks for purchasing this PX-720 Standards Converter from TV One. The PX-720 is designed to convert any of the widely used world television standards to any other standard plus perform frame synchronization and time base correction to these signals as required. 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, Standards Converters, 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.

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1.2 FEATURES

The *PX-720* has many features that enable it to perform in a superior manner. Among those features you will find:

- Converts between the world's widely used television standards
- Performs field and line interpolation
- Time Base Corrects all Input signals
- Restores distorted or noisy sync signals
- Genlocks to System Reference
- Composite & S-Video Inputs and Outputs
- Video Processing Amplifier adjustments with Input Filter selection
- Built in AGC to ensure 1 Vpp output signals
- NTSC, NTSC 4.43, NTSC-J, PAL, PAL-N & PAL-M & SECAM Operation
- Desktop Case with Optional Rackmount

2.0 SPECIFICATIONS

Video Inputs	
Composite Video	2 x via BNC Connector
S-Video (Y/C)	1 x via 4-PIN Mini-DIN Connector
Genlock (C-Video)	1 x via BNC, Loop-thru
Video Outputs	
Composite Video	1 x via BNC Connector
S-Video (Y/C)	1 x via 4-PIN Mini-DIN Connector
Genlock (C-Video)	1 x via BNC, Loop-thru
Video Specifications	
Impedance	75Ω
Television Standards	NTSC, NTSC 4.43, NTSC Japan, PAL-B,G,N,M, SECAM ¹
Signal Processing	8-bit per Y, R-Y, B-Y
Sampling Frequency	13.5 MHz (Y), 6.75 MHz (R-Y, B-Y)
Frequency Response	Flat to more than 5 MHz
Chroma to Luma Delay	<= 5 nS
Differential Gain	<= 1 %
Differential Phase	<= 1 °
Luma Nonlinearity	<= 1 %
Signal to Noise Ratio	Better than 60 dB
Video Level Adjustment	Luma, Chroma, Setup, Hue, Sharp
Filter Selection	Adaptive Comb, Low Pass
Control Method	
Display	16x2 LCD
Front Panel Buttons	Up, Down, Escape, Enter
Warranty	
Limited Warranty	2 Years Parts and Labor
Note 1:	SECAM operation is Input only

3.0 CHECKING PACKAGE CONTENTS

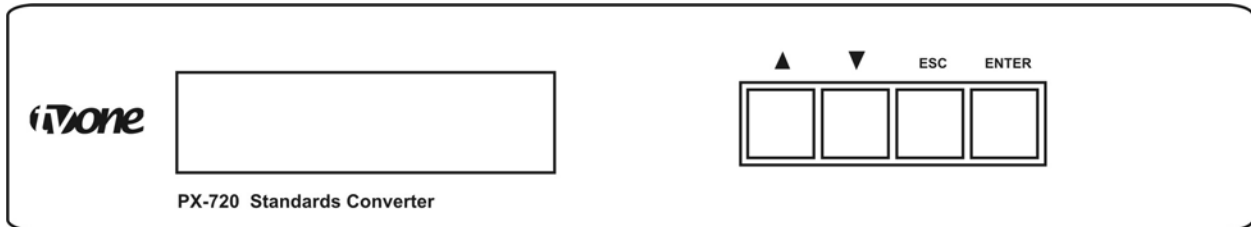
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- PX-720 Standards Converter
- 100/240 VAC @ 50/60 Hz to +5 VDC Power Adaptor
- 6' (2m) BNC to BNC Cable
- Operation Manual

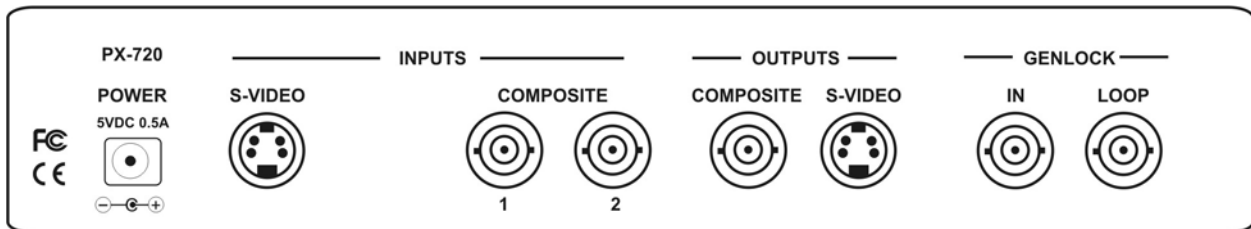
Note: Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or TV One immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

4.0 CONNECTING THE HARDWARE

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



PX-720 Front Panel



PX-720 Rear Panel

4.1 Input / Output Connections

The first step is to connect the Video source(s) to the appropriate input connector(s) and then the output(s) to the proper destination(s).

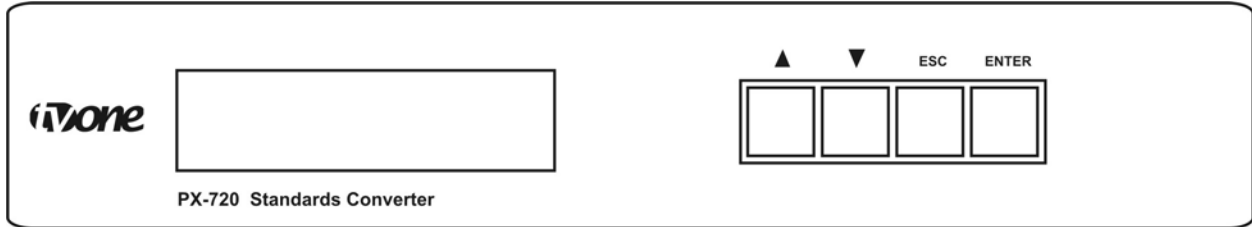
All PX-720 outputs are active. All outputs can be used simultaneously or just one of the outputs can be used according to the user's needs.

4.2 Connecting Power to the Unit

The PX-720 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 Standards Converter is controlled via four buttons and status is indicated on the front panel LCD.

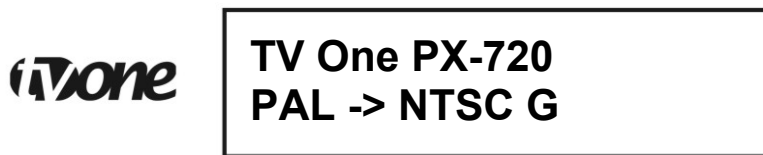


- **ENTER Button:** Allows entering the secondary menus or confirms menu item selection.
- **ESC Button:** *ESC*apes from the current selection, going up one menu level, without any changes to the previous setting.

5.1 Status

As soon as the unit is plugged in (and after initialization and the recalling of the values and settings stored in the non-volatile memory), the PX-720 LCD shows **TVOne PX-720** on the first line and Input Signal Status on the second line: **INPUT ABSENT** or **Std In -> Std Out**, where Std In is the current input standard and Std Out is the current output standard.

If the unit is effectively Genlocked, a **G** will be shown after **Std Out**; and if output video is frozen, an **F** will appear.



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
- Hue Level
- Input
- Sharpness Adj.
- Input Filter
- Auto Response
- Freeze Mode
- Input Standard
- Output Standard
- Genlock
- Horizontal Phase
- Subcarrier Phase
- Reduce Flicker

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 **Level = XX**, (where 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** returning the unit to the value that was present before the change was made.

Gain level factor can be considered as a percentage of a "control potentiometer" setting. Mid scale value (reading of 50) means factory calibrated unity gain, maximum level is 99 (100 % increase) and minimum level is 00 (no luminance output).

5.2.2 Chroma Level

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

5.2.3 Set Up Level

Set up level adjustment is similar to Luma and Chroma levels but with a slight difference: Mid scale value (50 %) means no set up, increasing the value adds pedestal, while decreasing reduces it. Range is about ± 100 mV.

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

5.2.4 Hue Level

Hue level allows compensation for hue variations while operating with input NTSC signals.

Adjustment is similar to Set Up level, a reading of 50 means no hue correction; increasing values generate a positive phase correction, while decreasing, negative phase. Range is about $\pm 60^\circ$.

5.2.5 Input

The Input sub menu allows the user to select which input will be time base corrected; choices are Composite 1, Composite 2 or S-Video (Y/C).

Navigation is done with **▲**, **▼** and input confirmation accomplished by depressing **Enter**.

Input changes take 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 an asterisk (*) after the new input name, when the selection has been stored.

Esc button takes you back to the **Main Menu** without any change to the selected input.

5.2.6 Sharpness Adjustment

The PX-720 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 relative, varying from **Flat** to + 7 and – 8. (Secam range is -1 to +2) (*Remember, adding sharpness will often add high frequency noise to the picture as well*).

5.2.7 Input Filter

The PX-720 allows the user to choose what kind filter topology is to be used for luma/chroma separation.

When selecting this option, the first line of the LCD shows **Input Filter** and the second line on the display shows the current option.

The arrow buttons, ▲ and ▼, allows selection of either Adaptive Comb or Low Pass filters. Note that Input filter selection is not accepted until **Enter** is depressed, **Esc** takes you back to the **Main Menu** without any change to the selected filter. *Note: This feature is not applicable to SECAM.*

5.2.8 Auto Response

The PX-720 allows the user to choose how the device will respond if the current video input fails.

Options, selected by ▲ and ▼ are: **Freeze**, **Ignore** and **Other Input**.

If **Freeze** is selected, the output video field will be frozen, **Ignore** will show the noise or whatever unexpected condition is present at the selected input and **Other Input** will search for a valid video signal at the other inputs. (The search sequence is: Comp1, Y/C and Comp2.)

Enter stores the selection in the non-volatile memory. To return to the **Main Menu**, press the **Esc** button which takes you back without any change to the selected standard.

Note: Tthe PX-720 assumes a video failure when no sync is detected.

5.2.9 Freeze Mode

Upon entering this option, the LCD's first line shows: **Freeze Menu** and the second line will show **Field Freeze**.

Depressing **Esc** takes you to the **Main Menu** without any functional modification, while hitting **Enter** will take you to the next selection: **Yes** or **No**. By depressing **Enter** when selection is **Yes**, the output video will freeze; by selecting **No**, it will become normal (if already frozen) otherwise, no visible action is taken. Also, **Esc** takes you to the previous level without any modification.

When output video is frozen an **F** is shown in the status display (5.1).

5.2.10 Input Standard

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

The ▲ and ▼ buttons allows selection of PAL, PAL-N, NTSC, NTSC 4.43, NTSC-J (NTSC without pedestal), PAL-M and SECAM.

Input 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 an asterisk (*) after the new standard name, when selection has been stored.

To return to the **Main Menu**, press the **Esc** button which takes you back without any change to the selected standard.

5.2.11 Output Standard

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

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 an asterisk (*) after the new standard name when selection has been stored.

To return to the **Main Menu**, press the **Esc** button which takes you back without any change to the selected standard.

5.2.12 Genlock

When this option is selected, the PX-720 shows, in the second line of the LCD, the current status of the Genlock function.

The arrow buttons, **▲** and **▼**, allow selection of one of the two choices, **Enabled** or **Disabled**.

When **Enabled**, the PX-720 will lock to the composite video signal connected to the loop through Genlock input BNCs; when **Disabled**, it will free run generating video timing from its internal master oscillator.

When the unit is effectively genlocked, a **G** is shown in the status display (5.1).

Note 1: PX-720 performs no checking of the genlock reference signal, its stability, quality or proper standard. It is the user's responsibility to ensure that the signal is acceptable for use as a reference signal.

*Note 2: The Genlock status selection is not accepted until **Enter** is depressed, as was the case with the Output Standard functionality described in section 5.2.11. **Esc** takes you back to the **Main Menu** without any change to the selected standard).*

5.2.13 Horizontal Phase

When Genlock is **Enabled**, the Horizontal Phase submenu option is available, otherwise the LCD display will show **Not Applicable** and, after a few seconds, the unit will revert to the **Main Menu**.

The arrow buttons, ▲ and ▼, allow increasing or decreasing the output video horizontal phase relative to the Master Sync (genlock) input.

Display values are relative, going from -100 to 100, with **00** meaning no phase shift; each step is 74 nS.

Phase offset is updated when changed by the arrows, so the user is able to properly adjust and verify current horizontal phase; once the required phase is obtained, depressing **Enter** will store it in the non volatile memory, while **Esc** takes you to the **Main Menu** without any change.

5.2.14 Subcarrier Phase

Subcarrier Phase offset between the output video and Master Sync (Genlock) input is adjusted in a very similar way as described above (**Horizontal Phase**).

Display values are also relative, going from -128 to 127, with **00** meaning no phase shift; every step is about 1.5°.

5.2.15 Reduce Flicker

The Flicker Reduction circuitry provides a method of optimizing the output of the PX-720 standards converter signal depending on the content present in the input image.

There are three levels of Flicker Reduction: **High**, **Medium** and **Low**. The **High** setting is used with pictures featuring average movement and is the factory default setting. The **Low** setting is used for images that have a great deal of movement within the scene and **Medium** is a setting used on pictures with more than average movement but not continuous, high speed movement.

The arrow buttons, ▲ and ▼, allow the selection of the desired Flicker Reduction level and as the selection is made, the user will instantly see the effect. Once the desired level of reduction is determined, pressing the **Enter** button stores the setting in non-volatile memory. Pressing the **Esc** button returns the user to the main menu and pressing **Esc** again exits the menu structure. *Note: If the input and output signals are the same standard, this feature is disabled.*

6.0 TROUBLESHOOTING

Other than checking for faulty cables, the other common problem would be operating with a wrong standard. Make sure input standard and the Master Sync signal (genlock input), if required, are compatible with the selected input.

In the event of no text display on the LCD, check that power is being applied to the device. Should you experience an indication of no input and the cables are not at fault, check that your source device is working properly by observing its output on a known good monitor.

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.



We Provide Solutions

TV One USA

1350 Jamike Drive
Erlanger, KY 41018
USA
Tel 800-721-4044
Fax 859-282-8225
sales@tvone.com
www.tvone.com

TV One Europe

Continental Approach
Westwood Industrial Estate
Margate, Kent CT9 4JG, UK
Tel +44 (0)1843 873311
Fax +44 (0)1843 873312
sales.europe@tvone.com
www.tvone.co.uk

TV One Latin America

2790 NW 79 Ave
Miami, FL 33122
USA
Tel 305-418-9305
Fax 305-418-3096
sales.latinamerica@tvone.com
www.tvonela.com

TV One Mercosur

Honduras 5849, 2nd Floor, Office C
(C1414BNI) Capital Federal
Buenos Aires, Argentina
Tel +54 11 4771-5570
Fax +54 11 4771-5570
sales.mercosur@tvone.com
www.tvonela.com

TV One Asia

10F, NO.34, Sec. 2
San-Min Rd, Panchiao City
Taipei Hsien 220
Taiwan R.O.C.
Tel +886 2 8951-0674
Fax +886 2 8951-0675
sales.asia@tvone.com
www.tvoneasia.com

TV One China

Rm. A 17C,
Regalia Building No.29,
Xiangcheng Rd.
Pudong, Shanghai
China (200122)
Tel +86 21 5830-2960
Fax +86 21 5081-9096
sales.china@tvone.com
www.tvonechina.com