## Table of Contents

# 1. General Information

## 1.1 Inspection

After removing the unit from its box, check for any damage.
See that you have the following accessories :

One user manual and one power cable.
The 75-ohm coaxial cable with BNC connectors as well as the S-Video cable must be purchased separately from your dealer. Contact Video International Development Corporation if an item is missing or the unit is not in satisfactory condition.

## 1.2 Introduction

A challenge everybody is facing in the world of video standards conversion is the competitive market and the increased volume of video information being exchanged worldwide. New technologies help us to redefine your business in order to differentiate yourself in a new and competitive environment. Making the right technology decision, as well as finding cost-effective equipment, is not an easy task. **Video International** recognizes this problem and the importance of this changing technology and has developed a new line of standards converters that will meet those challenges of the next century.

High quality conversion with cost effectiveness made possible by an affordable price is the result achieved by **Video International** using the latest computer design techniques. APC technology was developed by Video International in order to make products like the DTC 1600 series possible. Simple operation with excellent video processing and powerful 4-field/ line motion interpolation. APC technology is our answer to the challenges of the next century, letting us create state of the art video processing equipment to join our established product line already known for their excellence in performance, reliability and ease of operation.

Call **Video International Development Corp.** and ask for information on our entire product line.

## Feature Highlights

Superior Video Quality
The DTC series is well known for its superior quality in video conversion. Thanks to full digital signal processing the new DTC series will further improve the quality of multi-standards conversion.

User Friendly Operation
The new DTC series will continue the easy and convenient operation for which it is known. No complicated programming is necessary. Simply press a button. The standards converter will memorize the current setup and will retain it in a memory. You can change the setup at any time and recall the previous setup, if needed, or save the changes you made.

Built-in Color-bar Generator
A built-in color-bar generator available for all standards provides a convenient way to check the transmission lines. You can use the test picture as temporary replacement for the converted picture. The unit also provides a black-burst signal.

DTC 1600P6 System Interface
The DTC 1600P6 is perfectly suited to work with composite video, Y/C (S-Video) and Y/U/V signals. An optional serial digital or analog audio interface can be added. A wide range of commercial and professional applications is available to you.

DTC 1600P (M) System Interface
The DTC 1600P (M) has a composite video and Y/C (S-Video) interface. There are no optional interface available for the P (M) model.

Automatic
To simplify the operation further, the standards converter is equipped with automatic input standards identification. Press the AUTO button, connect your video signal source to any video input and the standards converter will identify the video standard.

Noise Reduction
Noise Reduction up to 20dB.

Comb-Filter
A more advanced filter technology for composite video signals.

Aperture Filter
Select one of four interpolation filters for the best possible conversion.

Store Capability
If you need a particular picture permanently on the monitor, press the FREEZE button and the selected picture will stay in the memory until you return to normal operation.

Power Source
The standards converter works within a voltage range of 100VAC to 240VAC

Transportation
The unit has a lightweight and compact design that allows you to carry the standards converter around without problems. The weight is approximately 4 pounds.

## 1.3 Recommended Video Equipment and Accessories

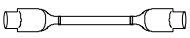
Monitors
**Standards** PAL, PAL-M, PAL-N, SECAM, NTSC, NTSC 4.43
**Inputs** Composite Video, Y/C, Y/U/V

Video Tape Recorder (VTR)
**Standards** PAL, PAL-M, PAL-N, SECAM, NTSC, NTSC 4.43
**Inputs** Composite Video, Y/C, Y/U/V
**Outputs** Composite Video, Y/C, Y/U/V

**Cable and Connectors**


BNC/Cinch Adapter


75 ohm coaxial cable


S-Video cable

**Note:** All models are prepared for rack-mounting installation and do not require any additional hardware.

## 1.4 Precautions & Safety Instructions

Cleaning
Unplug the unit before doing any kind of cleaning. Clean the cabinet, buttons and controls with a soft cloth, lightly moistened with a mild detergent solution. Do not use any type of solvent that might damage the finish.

Alteration
Do not alter or add to the electronic design. Design alteration and additions might alter the safety characteristics and performance of this unit and void the manufacturer's warranty.

Power Source
The standards converter must be operated only from the type of power source described in section 1.5.

Service
Remove the power cable from your ac-outlet and contact a qualified service technician in case of a malfunction, the standards converter does not operate normally when the operating instructions are followed, or, if you notice a change in performance.

Ventilation
Allow adequate air circulation to prevent unnecessary heat buildup. Slots and openings in the cabinet are provided for ventilation. (Figure 1.4-1, Figure 1.4-2)

- Do not block the ventilation slots.
- Do not install the unit near a heat source such as a radiator, etc.; nor place the unit on surfaces that may block the ventilation.
- Damages caused by over-heating will void the manufacturer's warranty.

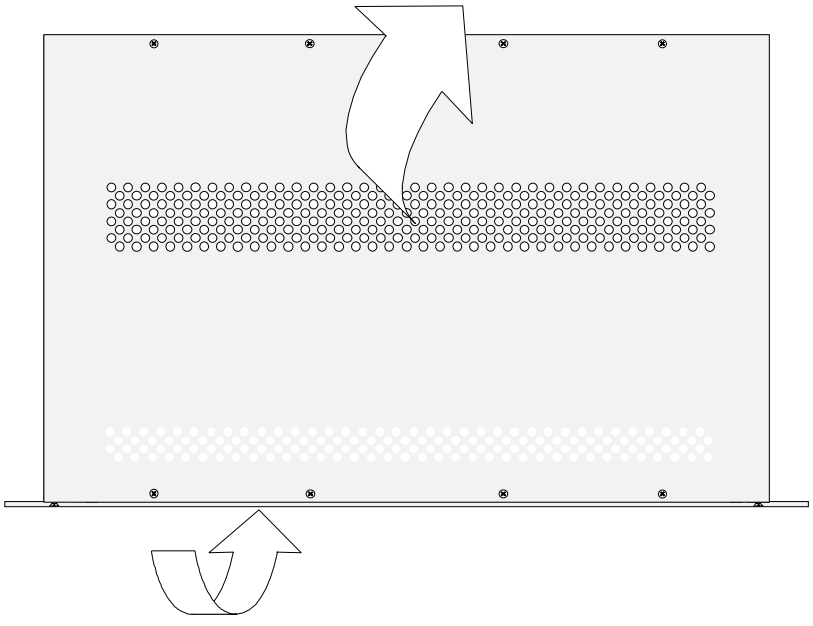


**Figure 1.4-1**

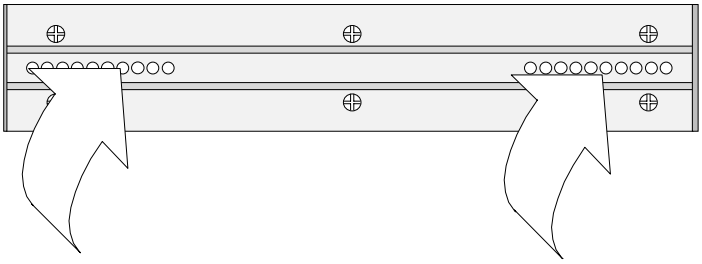


**Figure 1.4-2**

## 1.5 Power

The unit is equipped with a compact and lightweight power supply. The input voltage can range from 100VAC to 240VAC, -10%/+6%. The power supply adapts automatically to the input voltage. To prevent electrical shock, do not open the cabinet. Any service should be carried out only by qualified service personnel.

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# 2. System Control

## 2.1 Front Panel View

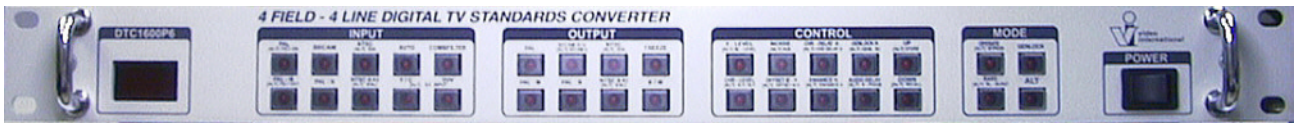



**Figure 2.1-1**

## 2.2 System Control Support Functions

### Alternate Key Function

[ALT] The purpose of the ALT button is to access an alternate function of a particular button.
Example :
To access the system mode BARS you press the BARS button once. To reach the function BL.-BURST (black-burst) you must press and hold down the ALT button and press the BARS button. If a system function has the prefix [ALT] you must press ALT + the required function in order to access the alternate function of the button.

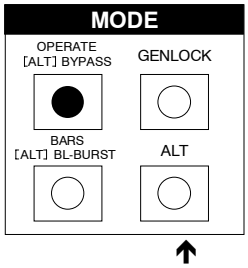



**Figure 2.2-1**

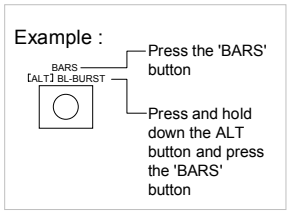



**Figure 2.2-2**

### Adjust Setting

[UP]
[DOWN] With the UP function you count upwards, with the DOWN function downwards.
The sequence is as follows :

1. Enable the adjustment function.
2. Adjust or select with the UP and DOWN button.

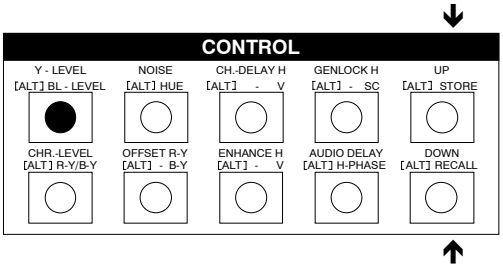



**Figure 2.2-3**

### Store System Settings

[ALT] + [UP] Every time you press the button combination [ALT] and [UP] you save the settings of the system control group INPUT, OUTPUT and CONTROL.

### Recall System Settings

[ALT] + [DOWN] To recall the standards converter to the last saved system status press and hold down ALT and press the DOWN button. Release both buttons. The saved system status is now the actual status, overwriting all new changes.

## 2.3 System Operating Modes

### Operate

[OPERATE] Press the OPERATE button to select the conversion (non-conversion) mode. The indicator light comes ON, indicating that the unit is in normal operation mode. The OPERATE mode is ON by default after you switch the standards converter ON.

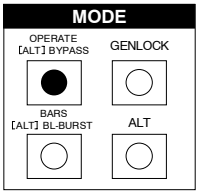



**Figure 2.3-1**

### Bypass

[ALT] + [OPERATE] Press and hold down the ALT button and press OPERATE. The OPERATE indicator light will not illuminate in BYPASS mode. The composite video signal is available only on CVBS OUT 1. The Auto mode in the INPUT group will be disabled while the BYPASS mode is active. If you are working with the AUTO mode ON, you must select the AUTO mode after returning to OPERATE mode.

### Color Bars

[BARS] Press the BARS button once to enable the color-bar mode. The indicator light comes ON. A built-in color-bar generator provides a test-picture in all standards. It is designed for testing transmission links and broadcast systems; available on all outputs. Select the required video standard in the system control group OUTPUT.

### Black Burst

[ALT] + [BARS] Press ALT + BARS. The indicator light comes ON as it does in BARS mode, but you see only a 'black' picture on the monitor. A composite video signal with no active video, but with all synchronization signals necessary for a color system is available on all outputs. Select the output standard and black & white or color output mode.

### Store Current Picture

[FREEZE] The FREEZE function is located in the OUTPUT group. Press the button once to store the current picture permanently, until you switch this mode OFF. The FREEZE indicator light illuminates during this period.

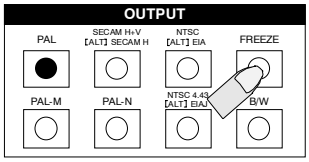



**Figure 2.3-2**

## Black & White (Color)

[BW] Select this mode if a monochrome (black & white) output signal is required. Press the B/W button repeatedly to switch between black & white and color output mode. The button is located in the OUTPUT group. In SECAM output mode, you may notice the presence of a subcarrier. The subcarrier, called burst, is used in the SECAM system besides the color sequence identification as white reference. It is an undeviated frequency of one of the subcarriers (D'R or D'B), that is, the position assumed when no chrominance is present.

## 2.4 System Synchronization

Model DTC 1600P6 Only

[GENLOCK] To synchronize the DTC 1600P6 externally supply a black-burst signal to the GENLOCK INPUT. The following output standards can be synchronized in GENLOCK mode : PAL-B,G, H, I and NTSC 3.58. Press the GENLOCK button in the MODE group to enable the external synchronization mode. The indicator light comes ON and the system will be synchronized from the black-burst signal supplied to the GENLOCK input at the rear panel.

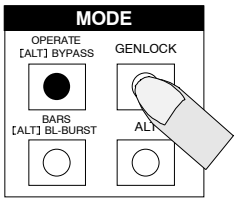



**Figure 2.4-1**

Press GENLOCK again to disable the GENLOCK mode.
The indicator light is OFF and the system will be synchronized internally.
**Don't work in GENLOCK mode without synchronizing the unit externally**.
The output signal becomes unstable and you lose the color.

## 2.5 System Input Interface

### Composite Video

With the Y/C and YUV indicator light OFF the unit works in composite video mode.

1. If the Y/C or (and) YUV button is lit up press the Y/C or YUV button to select CVBS.
2. Supply a video signal to the CVBS IN connector and terminate the composite video input.

#### 75 Ohm Termination Procedure

[ALT + [PAL] 75 ohm Termination ON
Press and hold down the ALT button and press the PAL button.

[ALT] + [PAL-M] 75 ohm Termination OFF
Press and hold down the ALT button and press the PAL-M button.

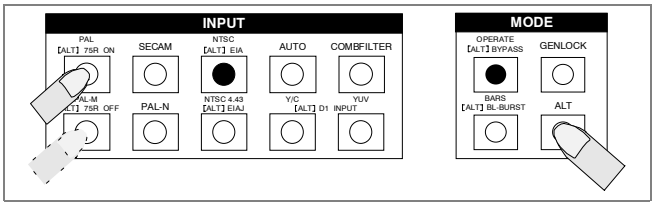



**Figure 2.5-1**

### Y/C

[Y/C] Press the Y/C button in the INPUT group to select the Y/C interface. Supply a Y/C signal to the Y/C IN connector on the rear panel. Be aware that you need a special cable to interface with the standards converter.

### Y/U/V

[YUV] Press the YUV button in the INPUT group to enable the Y/U/V input mode. The YUV button illuminates. **This function is only available for the DTC 1600P6.**

### D1 (Option)

[ALT] + [Y/C ]
[ALT] + [YUV]
Press and hold down the ALT button and press the Y/C or YUV button. Release both buttons. The Y/C and YUV button indicator light illuminates.
**The SDI mode is only available for the DTC 1600P6**.

## 2.6 Video Input Standard Selection

### Automatic Video Standard Identification

[AUTO] Press the AUTO button once to select the AUTO mode. The indicator light comes ON. The automatic identification circuit identifies the video-input standard and change the system setup accordingly. Should the automatic be unable to identify the input standard, press the AUTO button again or press the required input standard button to switch the AUTO mode OFF. We recommend selecting PAL-N manually.

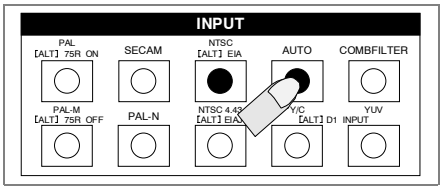



**Figure 2.6-1**

### Manual Video Standard Selection

Press one of the video standard buttons to select the standard manually.
The AUTO mode will be deactivated.

[PAL] 625 lines. 50 fields (25 frames) per second. 0% black level setup. 4,43361875 MHz color frequency.

[SECAM] 625 lines. 50 fields (25 frames) per second. 0% black level setup.
FOR 4,406 250.00, FOB 4,250 000.00

SECAM Bandwidth Limitation
If you work with SECAM, you can lower the bandwidth to reduce interference, which may be present in the picture.

- Press the SECAM button once to select the SECAM mode with normal bandwidth. The indicator light comes ON.
- Press and hold down the ALT button and press SECAM to select the reduced bandwidth mode.

[NTSC] 525 lines. 59.95 fields (29.975 frames) per second. 7.5% black level setup (EIA). 0% black level setup (EIAJ). 3,579 545.4545 MHz color frequency.

[PAL-M] 525 lines. 60 fields (30 frames) per second. 7.5% black level setup. 3,575 611.49 MHz color frequency.

[PAL-N] 625 lines. 50 fields (25 frames) per second. 0% black level setup. 3,582 056.25 MHz color frequency.

[NTSC 443] 525 lines. 59.95 fields (20.975 frames) per second. 7.5% black level setup (EIA). 0% black level setup (EIAJ). 4,43361875 MHz color frequency.

## NTSC Black Reference Level

[ALT] + [NTSC] 7.5% Setup
If you press ALT + NTSC the NTSC black level setup becomes 7.5%.
This function is not available in PAL, SECAM and PAL-N mode.

[ALT] + [NTSC 4.43] 0% Setup
If you press ALT + NTSC 4.43 the NTSC black level setup becomes 0%.
This function is not available in PAL, SECAM and PAL-N mode.

## Composite Video Input Filter Selection

[COMBFILTER] To select the comb-filter mode press the COMBFILTER button once. The indicator light comes ON. Press COMBFILTER again to switch the comb-filter OFF. The indicator light is OFF and you can use any standard video signal.

Why Comb-filtering ?
The composite video signal must be decoded into two separate components, luminance and chrominance, before it can be processed individually. Separating luminance and chrominance with a digital adaptive comb filter is the most beneficial way to maintain the bandwidth and at the same time avoid luminance /chrominance cross talk.

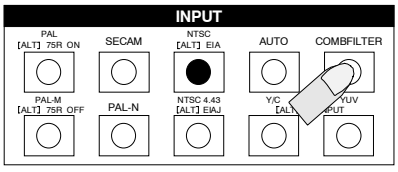



**Figure 2.6-2**

In order to work, it is essential that the correlation between the subcarrier and horizontal frequency is maintained before the video signal enters the standards converter. If this is not the case, select the notch filter. The comb filter beneficially removes luminance components from the chrominance channel but with slight limitation. Comb-filters, by virtue of their line-averaging properties, reduce the chroma resolution in the vertical direction of the picture.

This constitutes a problem if the comb filter remains in the signal path under all conditions. If the video signal contains rapid vertical transitions from one color to another, the transitions will become blurred over one or more scan lines by the comb filter. This effect can be very noticeable on high-saturation color transitions. To prevent this, the processor contains an adaptive circuit that switches the comb filter in and out of the chrominance path on a pixel-by-pixel basis dependent on the picture contents.

## 2.7 Aperture Filter

Different program material requires different aperture filters. You can select four different aperture filters. You have to experiment, which filter is best suited for your application.

[ALT + [PAL-N] Press and hold down the ALT button and press the PAL-N button in the OUTPUT group to access the aperture filter function. Release both buttons.

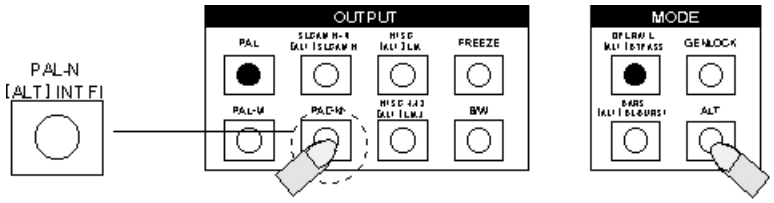



**Figure 2.7-1**

**Aperture Filter 1** **Aperture Filter 2** **Aperture Filter 3** **Aperture Filter 4**

Press the UP or DOWN button in the CONTROL group to select the aperture filter.

Note :
If the label [ALT] INT FI is not on your front panel, the function may still be available.

## 2.8 Output Standard Selection

### Video Standards

Press one of the video standard buttons as described below.

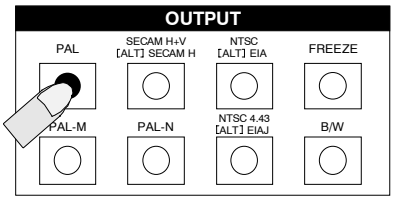



**Figure 2.8-1**

[PAL] 625 lines. 50 fields (25 frames) per second. 0% black level setup. 4,43361875 MHz color frequency.

[SECAM] 625 lines. 50 fields (25 frames) per second. 0% black level setup. FOR 4,406 250.00, FOB 4,250 000.00

#### SECAM Synchronization

If you work with SECAM output you can select the color synchronization mode.

[SECAM] H+V Identification.
If you press the SECAM button alone, the signal contains the horizontal and vertical identification pulse.

[ALT] + [SECAM] H-Identification.
If you press ALT & SECAM the signal contains only the horizontal Identification pulse.

If you are not sure, stay with SECAM H+V (Horizontal and Vertical Identification).

[NTSC] 525 lines. 59.95 fields (29.975 frames) per second. 7.5% black level setup (EIA). 0% black level setup (EIAJ). 3,579 545.4545 MHz color frequency.

[PAL-M] 525 lines. 60 fields (30 frames) per second. 7.5% black level setup. 3,575 611.49 MHz color frequency.

[PAL-N] 625 lines. 50 fields (25 frames) per second. 0% black level setup. 3,582 056.25 MHz color frequency.

[NTSC 4.43] 525 lines. 59.95 fields (20.975 frames) per second. 7.5% black level setup (EIA). 0% black level setup (EIAJ). 4,43361875 MHz color frequency.

#### NTSC Black Reference Level

[ALT] + [NTSC] If you press this button the NTSC black-level setup will be 7.5%. This function is not available in PAL, SECAM and PAL-N mode.

[ALT] + [NTSC 4.43] If you press this button the NTSC black-level setup becomes 0%. This function is not available in PAL, SECAM and PAL-N mode.

…

# 3. Video Adjustments

## 3.1 Signal Adjustments

### Luminance Amplitude

[Y-LEVEL] Press the **Y - LEVEL** button to access the luminance input level adjustment. The indicator light comes ON. Press the **UP** button to raise the luminance amplitude or the **DOWN** button to reduce the amplitude.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 072 | Norm | 100 | Maximum | 137 | Custom Setup |
| Display SCOG 9x | Minimum | -99 | Norm | 0 | Maximum | 99 | Custom Setup |

The nominal value is 1Vp-p on 75 ohm. An amplitude greater than 1Vp-p leads to signal distortion. Perform Adjustment with a waveform monitor or oscilloscope.

### Black Reference Level

[ALT] + [Y-LEVEL] Press and hold down the ALT button and press Y - LEVEL once. Both indicator lights come ON. Press the UP button to raise the black level or the DOWN button to reduce the black reference level.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -64 | Norm | 0 | Maximum | 63 | Custom Setup |
| Display SCOG 9x | Minimum | -32 | Norm | 0 | Maximum | 32 | Custom Setup |

O% Setup

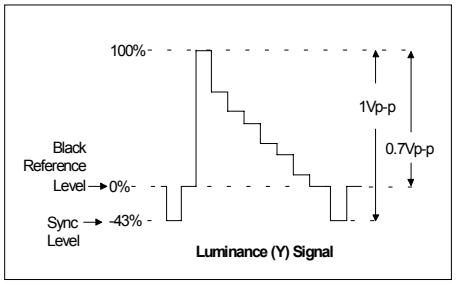



**Figure 3.1-1**

7.5% Setup

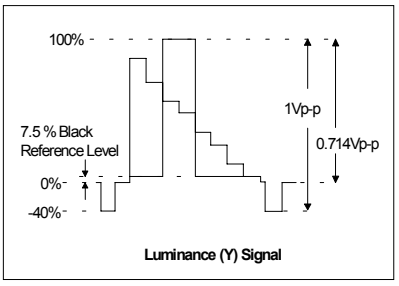



**Figure 3.1-2**

Do not adjust below zero (0%). This may lead to synchronization problems.
Perform the adjustment with a waveform monitor or oscilloscope.
The system specific values are :

| | | | | |
|---|---|---|---|---|
| PAL | 0% | SECAM | 0% | NTSC 4.43 = 7.5% (0%) |
| PAL-M | 7.5% | NTSC-EIA | 7.5% | |
| PAL-N | 0% | NTSC-EIAJ | 0% | |

## Noise Reduction

[NOISE] Press the NOISE button once. The indicator light comes ON.

Press the UP button to raise the noise reduction up to level 3.

Press the DOWN button to lower the NR level down to zero.

Observe the picture on the monitor.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 0 | Norm | 0 | Maximum | 3 | Custom Setup |
| Display SCOG 9x | Minimum | 0 | Norm | 0 | Maximum | 3 | Custom Setup |

## Chroma Amplitude

[CHR.-LEVEL] Press the CHR.-LEVEL button to access the chroma input level adjustment. The indicator light comes ON.

Press the UP button to raise the chroma amplitude or the DOWN button to reduce the chroma amplitude. Perform the adjustment with a waveform monitor, vectorscope or oscilloscope.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 0 | Norm | 100 | Maximum | 199 | Custom Setup |
| Display SCOG 9x | Minimum | -32 | Norm | 0 | Maximum | 32 | Custom Setup |

## Chroma Gain Balance

[ALT] + CHR.-LEVEL Press and hold down ALT and press CHR.-LEVEL once. Both indicator lights come ON.

Press the UP button to raise the R-Y amplitude and lower the B-Y amplitude.

Press the DOWN button to lower the R-Y amplitude and raise the B-Y amplitude.

Perform the adjustment with a vectorscope, waveform monitor or oscilloscope.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -64 | Norm | 0 | Maximum | 64 | Custom Setup |
| Display SCOG 9x | Minimum | -32 | Norm | 0 | Maximum | 32 | Custom Setup |

## Hue (NTSC Chroma Phase)

[ALT] + [NOISE] Press and hold down the ALT button and press NOISE. Both indicator lights come ON.

Press the UP button to change the chroma phase clockwise 0 to 358 degree.

Press the DOWN button to change the chroma phase 358 to 0 degree.

The Hue function is only operational in composite video input mode. Perform the adjustment with a vectorscope or adjust the phase visually on the monitor screen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 0 | Norm | 0 | Maximum | 358 | Custom Setup |
| Display SCOG 9x | Minimum | 0 | Norm | 0 | Maximum | 358 | Custom Setup |

## R-Y Offset

[OFFSET R-Y] Press the OFFSET R-Y button once. The indicator light comes ON.
Press the UP button to shift the V-axis to -V.
Press the DOWN button to shift the V-axis to +V.

Perform the adjustment with a vectorscope.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -32 | Norm | 0 | Maximum | 32 | Custom Setup |
| Display SCOG 9x | Minimum | -15 | Norm | 0 | Maximum | 15 | Custom Setup |

## B-Y Offset

[ALT] + [OFFSET B-Y] Press ALT AND OFFSET R-Y. The indicator lights come ON.
Press the UP button to shift the U-axis to -U.
Press the DOWN button to shift the U-axis to +U.

Perform the adjustment with a vectorscope.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -32 | Norm | 0 | Maximum | 32 | Custom Setup |
| Display SCOG 9x | Minimum | -15 | Norm | 0 | Maximum | 15 | Custom Setup |

## Horizontal Chroma Delay

[CH.-DELAY H] Press the CH.-DELAY H button once to select the chrominance horizontal delay adjustment. The indicator light comes ON.
Press the UP button to shift the color to the left.
Press the DOWN button to shift the color to the right.

Perform the adjustment on the screen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -15 | Norm | 0 | Maximum | 16 | Custom Setup |
| Display SCOG 9x | Minimum | -8 | Norm | 0 | Maximum | 7 | Custom Setup |

## Vertical Chroma Delay

[ALT] + [CH.-DELAY H] Press the ALT and CH.-DELAY H button. The indicator lights come ON.
Press the UP button to shift the color upwards
Press the DOWN button to shift the color downwards

Perform the adjustment on the screen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -3 | Norm | 0 | Maximum | 3 | Custom Setup |
| Display SCOG 9x | Minimum | -4 | Norm | 0 | Maximum | 3 | Custom Setup |

## Horizontal Enhancement

[ENHANCE H] Press the ENHANCE H button once. The indicator light comes ON.
Press the UP button to raise the enhancement up to level 7.
Press the DOWN button to lower the enhancement level down to zero.

Perform the adjustment visually on the screen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 0 | Norm | 0 | Maximum | 7 | Custom Setup |
| Display SCOG 9x | Minimum | 0 | Norm | 0 | Maximum | 7 | Custom Setup |

## Vertical Enhancement

ALT + [ENHANCE V] Press and hold down the ALT button and press the ENHANCE H button once. Both indicator lights come ON.
Press the UP button to raise the enhancement up to level 7.
Press the DOWN button to lower the enhancement level down to zero.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | 0 | Norm | 0 | Maximum | 7 | Custom Setup |
| Display SCOG 9X | Minimum | 0 | Norm | 0 | Maximum | 7 | Custom Setup |

## Horizontal Image Position

[ALT] + [AUDIO DELAY] Press and hold down the ALT button and press the AUDIO DELAY button once. Both indicator lights illuminating.
Press the UP button to shift the image to the right
Press the DOWN button to shift the image to the left.

Perform the adjustment with a waveform monitor, oscilloscope or on the screen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -8 | Norm | 0 | Maximum | 7 | Custom Setup |
| Display SCOG 9x | Minimum | -16 | Norm | 0 | Maximum | 16 | Custom Setup |

## Genlock H – Phase

[GENLOCK H] Press the GENLOCK H button once. The indicator light comes ON.
Press the UP button to shift the horizontal line to the right.
Press the DOWN button to shift the horizontal line to the left.

Perform the adjustment with an oscilloscope. This function is only available for the DTC 1600P6.

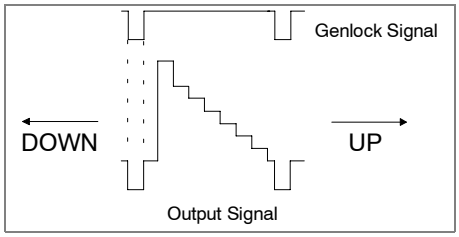



**Figure 3.1-3**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Display SCOG 0012 | Minimum | -64 | Norm | 0 | Maximum | 63 | Custom Setup |
| Display SCOG 9x | Minimum | -51 | Norm | 0 | Maximum | 39 | Custom Setup |

## Subcarrier-To-Horizontal Phase

[ALT] + [GENLOCK H]

Press and hold down the ALT button and press the GENLOCK H button. Both indicator lights come ON.

Press the UP or DOWN button to adjust the SC/H phase to zero degree.

Perform the adjustment with a vectorscope or an oscilloscope.

| | | | | |
|---|---|---|---|---|
| Display SCOG 0012 | Minimum 0 | Norm 0 | Maximum 358 | Custom Setup |
| Display SCOG 9x | Minimum 0 | Norm 0 | Maximum 358 | Custom Setup |

The subcarrier-to-horizontal phase adjustment capability is a very important feature. The SC/H phase should be checked with a vectorscope with digital readout and adjusted accordingly. If the SC/H phase is not maintained, horizontal shift problems will occur during match-frame editing. The output signal of the DTC 1600P6 should be checked whenever necessary for zero SC/H phase.

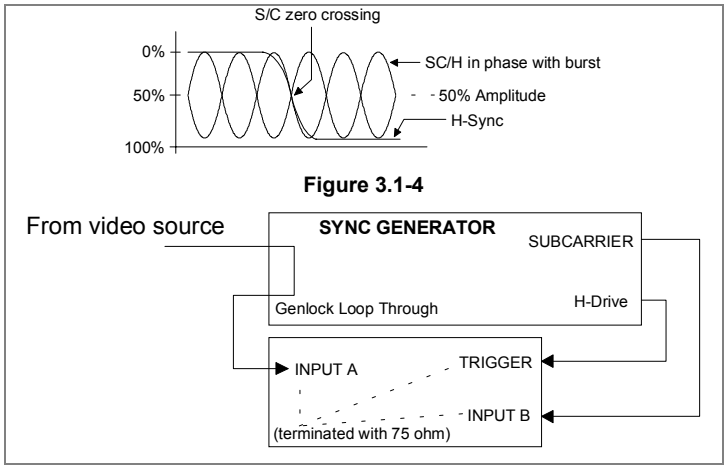



**Figure 3.1-4**




**Figure 3.1-5**

Video tape recorder and composite digital signal processing require correct subcarrier-to-horizontal phase. Editing requires correct SC/H for color framing. A correct SC/H phase exists if the sync on every line is coincident with a zero crossing of subcarrier (see Figure 3.1-5). The maximum SC/H error, which can occur, is 90 degree, because the SC/H is defined with reference to either the positive or the negative going zero crossing of subcarrier.

In order to identify the color field in the correct order, the SC/H phase must be maintained throughout the system. A SC/H phase may drift a little bit, but this is normal and does not harm the correct color field identification.

Attention also must be paid the video cable, because due to the non-phase-linear characteristic of the cable a SC/H error can be introduced. You can use a vectorscope with SC/H readout or an oscilloscope.

…

# 4. Audio Adjustments

OPTIONAL ONLY FOR DTC 1600P6

## 4.1 Introduction

The more sophisticated and complex video equipment become, the more delay there is between audio and video. The most obvious result of audio-to-video mismatch is visible in lip-sync-errors. This always causes a subconscious degradation of the entertainment quality. The standard calls for +25ms to -40ms specification for transmission facilities from end-to-end. The specification also recommends +1, -2 fields throughout the system. Whatever the requirements are, a lip sync error can not be tolerated. An integrated audio delay line offers a convenient way to compensate for the video delay. The delay time will be adjusted automatically according to the INPUT/OUTPUT configuration and will be shown in the display. The audio delay line is adjustable from 2 to 999 ms (milli-second).

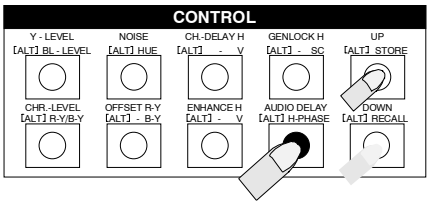



**Figure 4.1-1**

## 4.2 Interface Connectors

The unit can be equipped with two types of audio delay interface, analog or digital. The analog type provides two balanced inputs and outputs. The input connectors are XLR 3-pin female and the output connectors type XLR 3-pin male. The analog interface uses all four connectors, the digital interface only two. Connect your equipment with the appropriate cable to the unit.

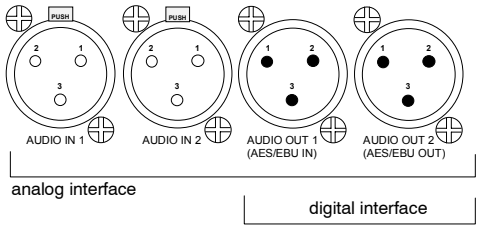



**Figure 4.2-1**

## 4.3 Delay Adjustment Procedure

To compensate for the audio-to-video delay you can adjust the delay time. The delay time is preset according to the system setup. You can adjust the time between 2ms and 999ms (milli-seconds). After you press the Audio Delay button, a number shows up in the display, representing the preset delay time in milli-seconds. Adjust the delay time with the UP and DOWN button.

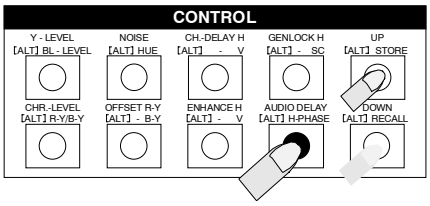
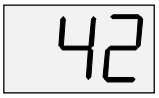



**Figure 4.3-1**




milli - seconds

**Figure 4.3-2**

If you did not change the adjustment for a particular input/output standard configuration you will see the delay time preset by the system. If you make any changes, they will be saved. When you return to the same configuration, the delay time will be the same.

## 4.4 Amplitude Adjustment Procedure

To adjust the audio amplitude press the AUDIO DELAY button until you see


The sequence of numbers shown in the display is Hex 0-F (Decimal 0-15).

**0-1-2-3-4-5-6-7-8-9-A-B-C-D-E-F**

**Figure 4.4-1**

Press the UP button to raise the output amplitude or the DOWN button to lower the output amplitude. The number can range from 0 to F. The preset setup is 0.

If the display has changed since your last delay or amplitude adjustment, you must press the button again. Press repeatedly until you see a number like this


**Figure 4.4-2**

You are now in AUDIO DELAY ADJUSTMENT MODE.

# 5. Rear Panel Description

## 5.1 DTC 1600P6 Rear Panel View

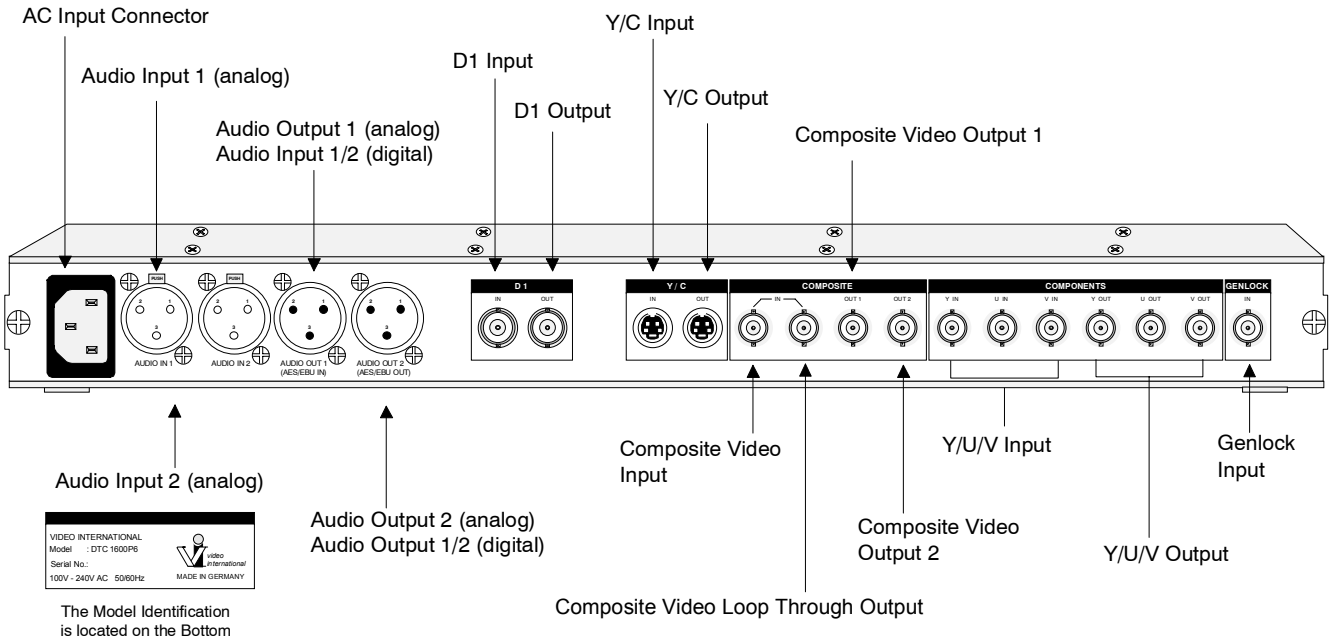



**Figure 5.1-1**

## 5.2 DTC 1600P Rear Panel View

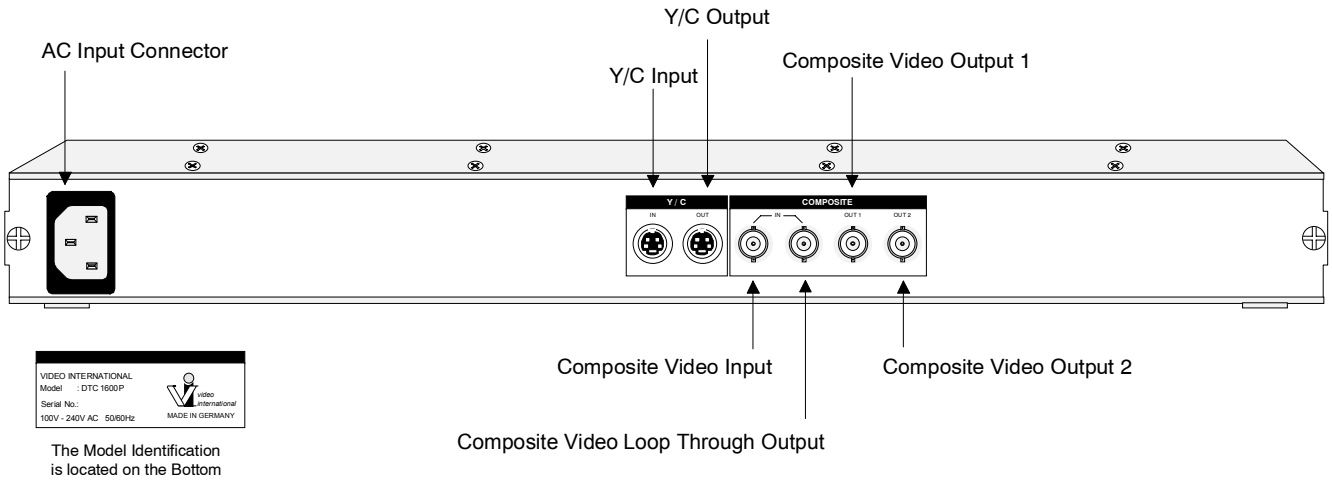



**Figure 5.2-1**

## 5.3 AC Connector

Connect the supplied 3-wire grounding type power cable to the AC IN connector. For safety, do not use any other type of cable. Contact your local electrician if your wall outlet does not meet the requirements. Do not defeat the safety purpose of the grounding type cable. If you use an extension cord, make sure it is from the same type.

The standards converter works within an AC-power range from 100 VAC to 240 VAC.

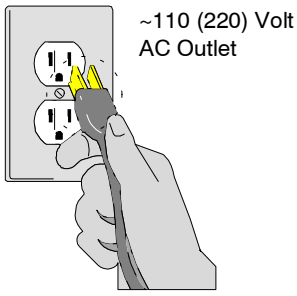



**Figure 5.3-1**

## 5.4 Composite Video

### Input

The BNC connector, located on the left in the COMPOSITE group, is the composite video input. The connector to the right is used as loop-through output (Figure 5.4-1). Connect the video source to the composite video input.

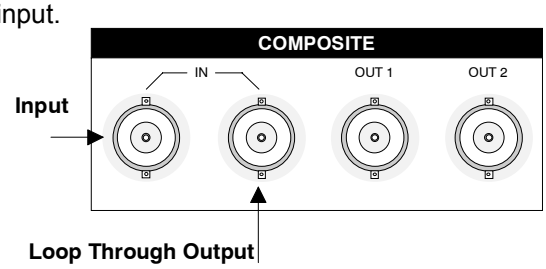



**Figure 5.4-1**

#### Termination

75 ohm termination ON
Press and hold down the ALT button and press the PAL button.

75 ohm termination OFF
Press and hold down the ALT button and press the PAL-M button.

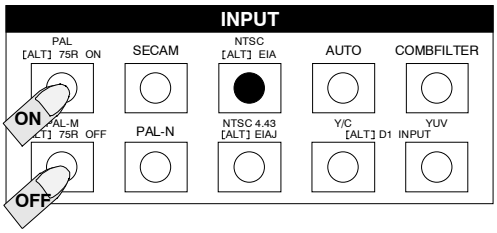



**Figure 5.4-2**

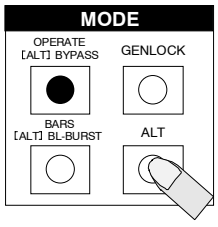
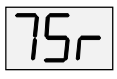



**Figure 5.4-3**




ON

**Figure 5.4-4**


OFF

**Figure 5.4-5**

If you connect other equipment to the loop through output (right BNC connector) switch the 75 ohm termination OFF. Make sure that only the last unit is terminated with 75 ohm and no other unit in between.

Why 75 ohm termination ?
All inputs must be terminated with 75 ohm to match the characteristic impedance of the co-axial cable and to minimize reflections and return loss. A missing termination usually causes an increase of 6dB or 1Vp-p. A termination with other than 75 ohm may lead to distortion. The 75-ohm termination must be seen as an integral part of the system as well as the video cable. Use only 75-ohm coaxial cable and keep all cable connections to their minimum length.

## Outputs

The system provides two independent outputs for the composite (CVBS) signal. The output level is 1Vp-p at 75 ohm. Both outputs are fed from the amplifier with the same signal.

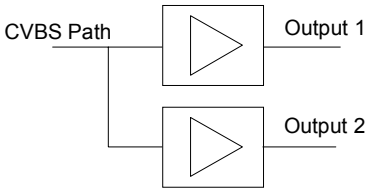



Figure 1.3.3-1

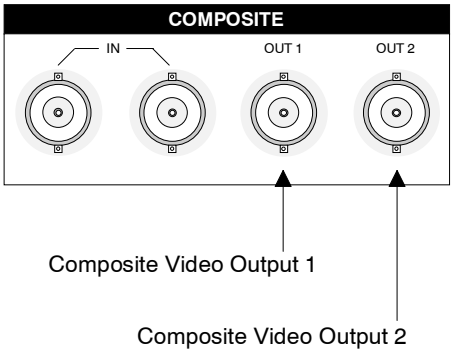



Figure 1.3.3-2

In BYPASS mode, the CVBS input signal is routed through output 1 via a relay. Output 1 is the primary output. We label output 1 as the primary output, because it is the only composite video output that makes the input signal available in OPERATE and BYPASS mode.

## 5.5 Y/C Input/Output

The Y/C INPUT is located in the Y/C group. Make the connection between the S-Video tape-recorder output and the Y/C input from the standards converter via the S-Video cable. The S-Video VTR processes the luminance and chrominance signal separately to maintain a clear color picture; avoiding the cross-luminance and cross-chrominance interference that results when Y and C are combined to form a single composite signal. The Y/C OUTPUT is also located in the Y/C group.

The Y/C signal is available simultaneously with the composite video (CVBS), Y/U/V and the D1 signal. Connect the video tape-recorder to the Y/C output connector. VTR = Video Tape Recorder

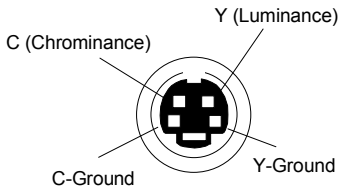



Figure 1.4-1

## 5.6 Y-U-V Input/Output

Figure 5.6-1 shows the components input and output connectors. Connect the Y-signal (Y+S) to the “Y IN” input in the COMPONENTS group. The U-signal (B-Y) to the “U IN” input and the V-signal (R-Y) to the “V IN” input. All inputs are terminated internally with 75 ohm. Make sure that all three cables have the same length to avoid different delay times. If you have different delay times, you can not adjust them on the standards converter. The Y/U/V output provides the Y+S (luminance + synchronization pulse), U (B-Y) and the V-signal (R-Y).

The YUV Interface is only available in the DTC 1600P6 !

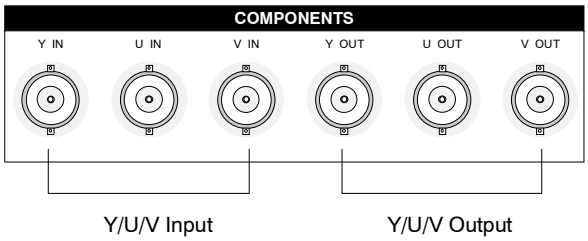



**Figure 5.6-1**

## 5.7 D1 Input/Output

Figure 5.7-1 shows the D1 input and output connector. These connectors are only present if the D1 interface is installed, if not, the connector openings are covered up. Supply the input signal to the IN connector. The output signal is available on the OUT connector.

THE SERIAL DIGITAL INTERFACE IS OPTIONAL and is only available for the DTC 1600P6 !

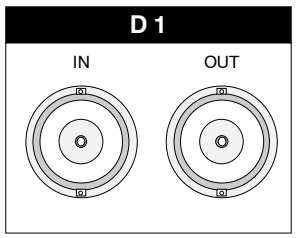



**Figure 5.7-1**

## 5.8 Genlock Input

The DTC 1600P6 can be synchronized externally. Supply a black-burst signal to the GENLOCK INPUT and enable the GENLOCK mode on the front panel. Once the unit operates in genlock mode, you can adjust the H-Phase as well as the subcarrier-to-horizontal phase on the front panel.

Do not work in genlock mode without synchronizing the unit from a stable source. Your output signal becomes unstable and the following equipment will not work properly.

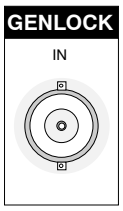



**Figure 5.8-1**

The GENLOCK Interface is only available in the DTC 1600P6 !

…

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