

**BETACAM SP**  
**2000 PRO**

Videocassette Recorder/Player  
**PVW-2800**  
(NTSC)



**SONY**

# A New Dimension in Industrial Video Performance

The excellent performance of the Betacam SP™ format has led to its universal adoption as a high quality, flexible, recording standard throughout the broadcast and post production industries.

This market performance, combined with the recording quality of the format, has made Betacam SP particularly attractive for use by corporate and institutional videographers. To meet this requirement, the long experience of Sony in the field of video recording and its commitment to continuous product development have led to the creation of a more affordable Betacam SP system – the Betacam SP 2000 PRO series.

The PVW-2800 Recorder/Player is one of the major products in this range. Inheriting the advanced performance of the Betacam SP format, the PVW-2800 assures maximum compatibility with BVW series Betacam SP products and a wide range of their peripheral equipment.

It is equipped with a built-in Time Base Corrector and Time Code Generator/Reader. In addition to composite and component video inputs and outputs, it offers S-video In/Out connectors, an RS-422A control port and an optional U-matic Dub Out capability. This comprehensive interfacing makes the PVW-2800 easy to integrate into current editing systems.

Together with the PVW-2800, Sony now has the PVW-2600 Player and the PVW-1/DXC-537 Camcorder to form the versatile Betacam SP 2000 PRO family.

Featuring the highest levels of professional performance, ease of operation, flexibility and reliability, they offer an easy and economical way to upgrade your current systems.



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# FEATURES

## Superior Picture Quality

The adoption of the world standard Betacam SP recording format results in the superior picture quality of the PVW-2800. This format uses the component recording, in which the chrominance signals (R-Y, B-Y) are time compressed and recorded on one track, using the CTDM (Compressed Time Division Multiplex) system originally developed by Sony, while the luminance (Y) signal is recorded on a separate track. Therefore cross color and cross luminance effects do not exist in this system. This component two-track recording technology is combined with high frequency FM carriers for each track, providing very wide bandwidths for both the luminance and chrominance signals. Thus pictures with detailed luminance and chrominance information can be reproduced. These characteristics create the excellent multi-generation picture performance of the Betacam SP format.

In order to obtain the maximum performance of the Betacam SP format, the PVW-2800 uses metal particle tapes exclusively for recording. Of course, it can play back both metal and oxide tapes and assures the two-way playback compatibility with BVW series Betacam SP VTRs.

## High Audio Quality

The PVW-2800 provides two longitudinal audio channels. Thanks to the tape speed of the format and the adoption of the proven Dolby™ C-type NR (Noise Reduction), the PVW-2800 offers high quality audio with a wide dynamic range even at high frequencies, minimum distortion and excellent S/N ratio.

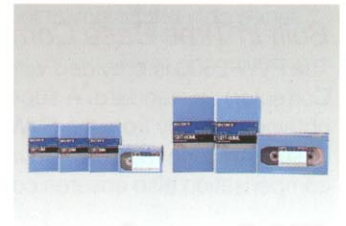
## Longer Operating Time

The PVW-2800 accepts both L-size and S-size cassettes, giving operating times of over 90 minutes and over 30 minutes respectively.

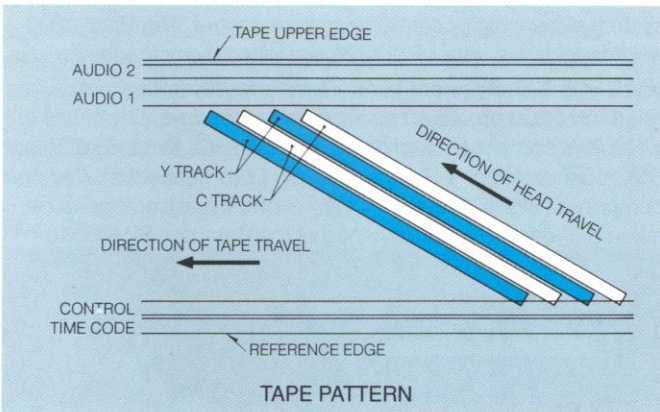
Both grades of Sony Betacam SP videocassettes, the BCT series and the SBT series, can be used in the PVW-2800. For the highest possible performance, the BCT series is recommended.



BCT series

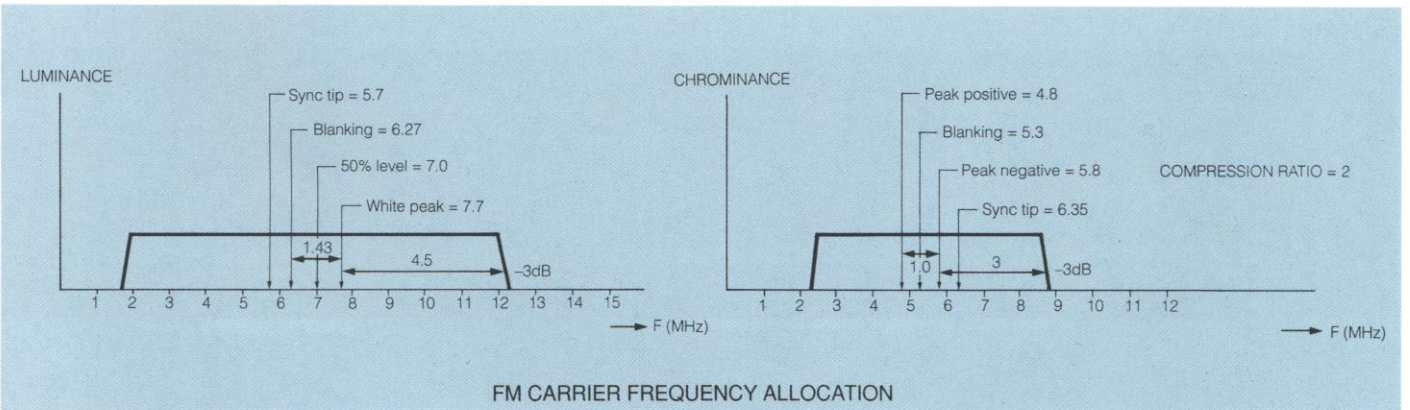


SBT series



## Compact and Lightweight

Compactness and light weight are key factors designed into the PVW-2800, which weighs approximately 25kg (55 lb 2 oz), and is 5 units high (19-inch rack mountable). The power consumption is 150 W.



## VTR to VTR Comprehensive Editing Facility

The PVW-2800 provides a comprehensive, built-in VTR to VTR editing facility.

In addition to the insert and assemble edit functions which are equipped with auto preview/review, the PVW-2800 also provides an audio split editing capability with independent IN and OUT memories. The PVW-2800 meets the requirements of a modern editing system, having frame-by-frame editing point trim, selectable pre-roll time and auto edit in/out functions, delivering frame accurate editing without any additional control hardware.

Thanks to the DMC (Dynamic Motion Control) editing function, the PVW-2800 can perform slow motion editing when a DT™ equipped VTR such as the BVW-65 or BVW-75 with RS-422A communication is used as the player VTR.

## Built-in Time Base Corrector

The PVW-2800 is provided with a built-in TBC (Time Base Corrector) as standard. A superior quality output video is obtained directly from the PVW-2800, with no additional time base correction required. Advanced high quality digital dropout compensation also ensures consistent picture performance.

## TBC Remote Control

In addition to the built-in TBC adjustment of the PVW-2800, remote adjustments may be performed using the optional BVR-50 connected via the D-sub 15-pin cable to the rear panel connector (TBC REMOTE).

## Built-in Time Code Generator/Reader

The generation and reading of both VITC (Vertical Interval Time Code) and LTC (Longitudinal Time Code) to the SMPTE format, together with user bits, come as standard in the PVW-2800. LTC can be automatically recorded on the dedicated time code track. Time code or user bits settings can be easily executed using the HOLD/SET button and the search dial located on the control panel. External/Internal time code, REGEN/PRESET, or REC-RUN/FREE-RUN selections are available on the subcontrol panel.

## Character Display

The PVW-2800 is provided with a built-in character generator and characters can be superimposed on the signals from Video Output 3 or the Monitor Output. It displays time code generator/reader data (VITC/LTC/U-BIT) and CTL timer data. VTR function status, including shuttle tape speed, can also be displayed by accessing the setup menu. Furthermore, error number and status can be automatically displayed when the error is detected. Character display is On/Off switchable from the subcontrol panel. When the PVW-2800 is operated under the setup menu mode, the initial setup menu is automatically displayed from the character generator.

## High Speed Picture Search

By using the search dial incorporated in the PVW-2800, picture search can be made at various speeds over a range of up to 24 times normal speed in forward and reverse. A recognizable color picture can be obtained at up to ten times (24 times in monochrome) normal speed in forward and reverse. In the jog mode, tape movement accurately follows the rotation of the search dial in both directions.

## Versatile System Interface

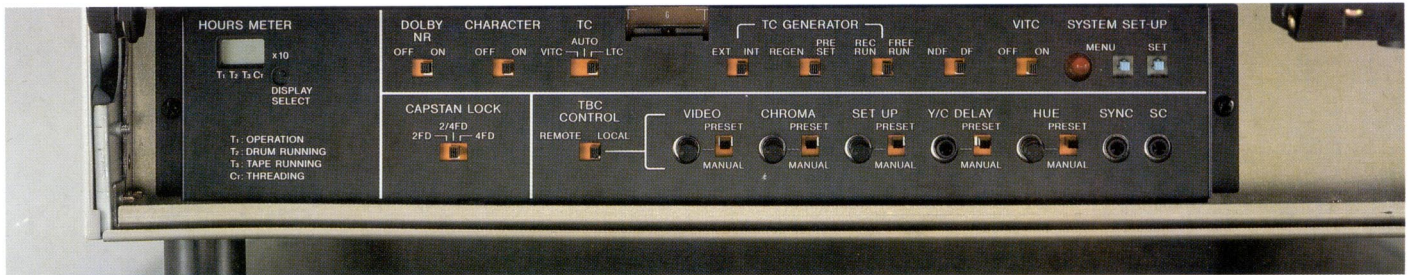
### • RS-422A serial interface (9-pin)

An RS-422A serial interface is provided for versatile editing system expansion and flexible system control. The PVW-2800 will interface with other RS-422A equipped Sony machines.

### • Y/R-Y/B-Y Component Video Signal Input/Output

The PVW-2800 provides two types of connectors for both Y/R-Y/B-Y component signal input and output: two sets of three BNC connectors or a Betacam 12-pin DUB connector. This component signal interface facility allows full advantage to be taken of the superb performance of the Betacam SP format.

Subcontrol Panel

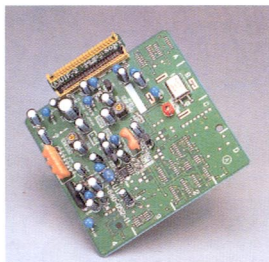


#### • Composite Video Signal Input/Output

In addition to the component connectors, the PVW-2800 is equipped with the composite video signal input/output connectors. The PVW-2800 employs new digital LSIs for video signal processing, including Y/C separation and decoding, so that the composite video input signals can be decoded faithfully.

#### • U-matic DUB Signal Output

With the optional BKW-2020 U-matic DUB Out Kit installed, the PVW-2800 can transfer Betacam SP material to a U-matic VTR through its 7-pin U-matic DUB output connector with minimum picture degradation. This transfer is made without being affected by the performance of the Y/C separator in the U-matic VTR.



BKW-2020

#### • S-video Signal Input/Output

S-video signal input/output connectors are also provided so that other equipment with S-video connectors can easily be interfaced to the PVW-2800.

### User Friendly Dial Menu Operation

In order to meet various customized operations, the PVW-2800 is provided with an initial setup menu which has easy accessibility and simple operation. This initial setup menu allows many operational parameters to be preset for operator convenience. The initial setup menu is scrolled and modified by the search dial while monitoring Video Output 3, Monitor out, or the LED Timer display. The modified menu is memorized in a non-volatile memory.

### Improved Serviceability

For easy maintenance and servicing, the PVW-2800 is provided with comprehensive self-diagnostics. A digital hour meter is also fitted to indicate the accumulated times of power on, drum rotation and tape running. It can also display the number of threading/unthreading operations.

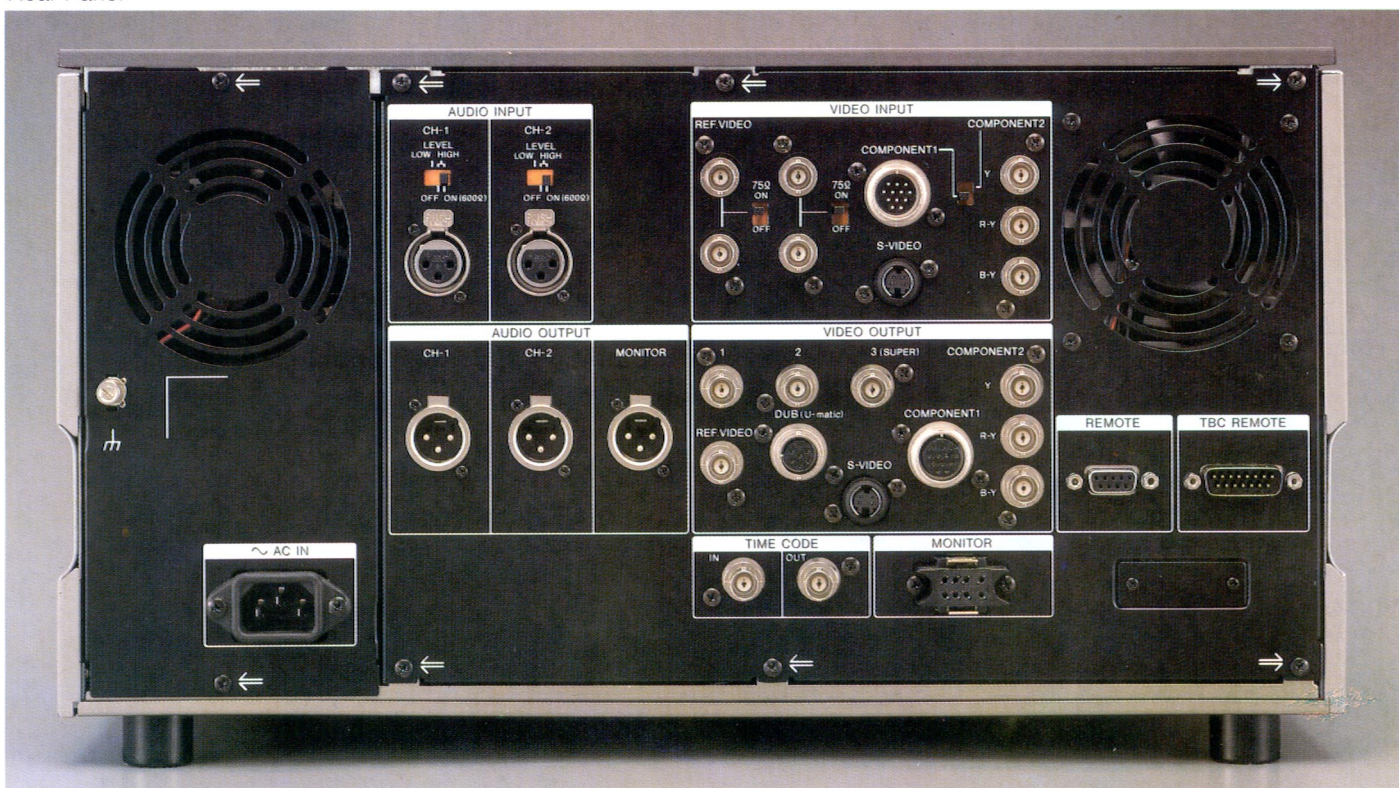
### Detachable Control Panel

The control panel of the PVW-2800 can be tilted at up to 90 degrees. Alternatively, the control panel can be removed from the machine to provide remote control from a distance of up to 5m by using the optional BKW-2010 Control Panel Extension Kit and BK-803 Control Panel Case.

### 19-inch EIA Standard Rack Mountable

With the optional RMM-100, the PVW-2800 can be mounted into a 19-inch EIA standard rack without taking off the side panel.

#### Rear Panel



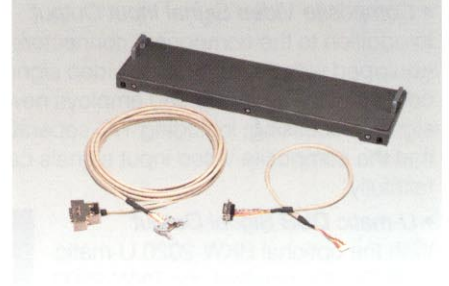
# OPTIONAL ACCESSORIES



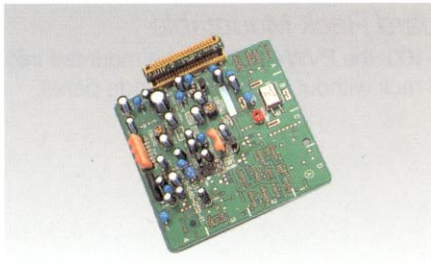
**BVR-50**  
TBC Remote Controller



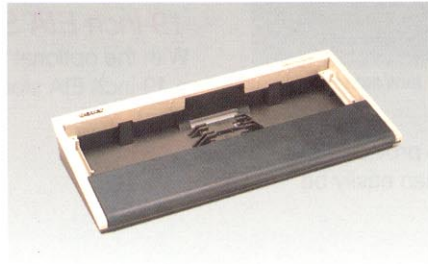
**BVX-10**  
Component Color Corrector



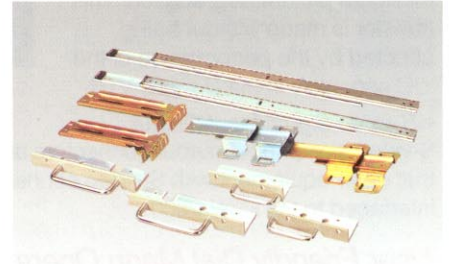
**BKW-2010**  
Control Panel Extension Kit



**BKW-2020**  
U-matic DUB Output Kit



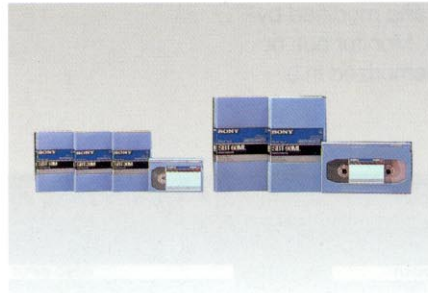
**BK-803**  
Control Panel Case



**RMM-100**  
Rack Mount Kit



**BCT-5M/10M/20M/30M**  
(Small Cassette)  
**BCT-5ML/10ML/20ML/30ML/60ML/90ML**  
(Large Cassette)  
Metal Particle Videocassette Tapes



**SBT-10M/20M/30M**  
(Small Cassette)  
**SBT-60ML/90ML**  
(Large Cassette)  
Metal Particle Videocassette Tapes



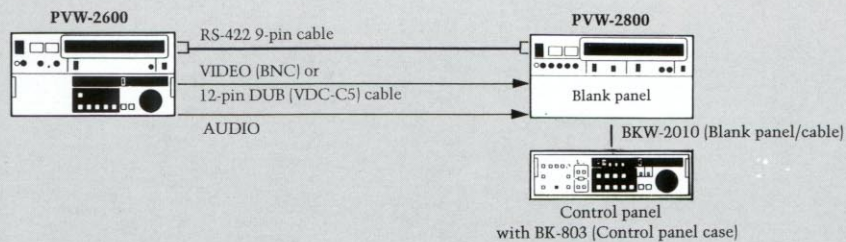
**RCC-5G/10G/30G**  
(5m)(10m)(30m)  
Remote Control Cable



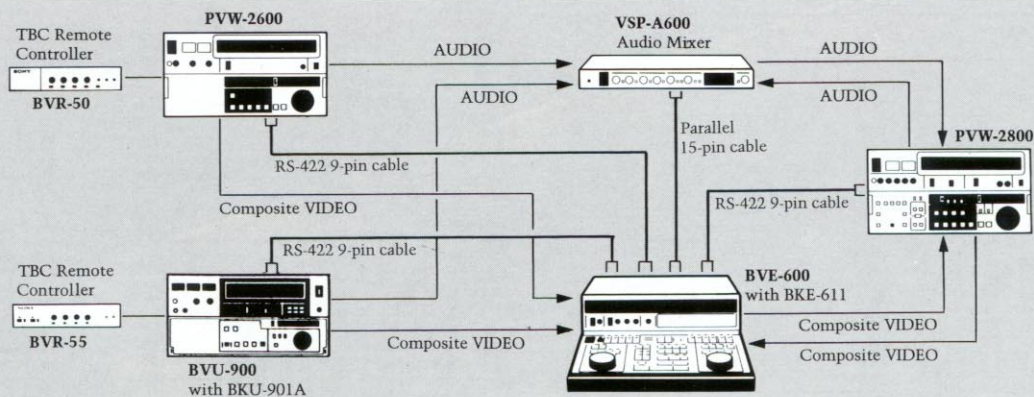
**VDC-C5 (5m)**  
12-pin Dubbing Cable

# TYPICAL CONNECTIONS

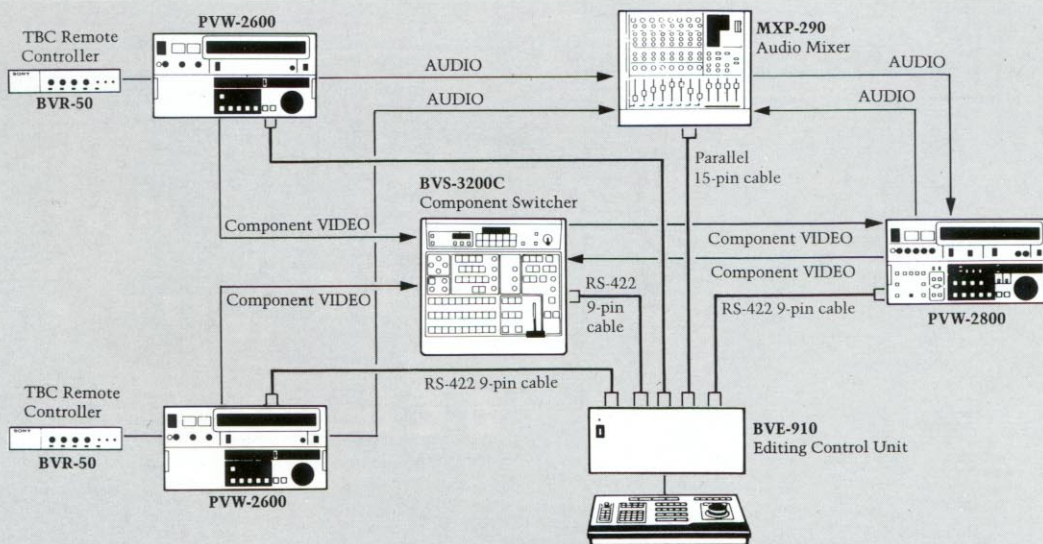
## 1) VTR to VTR Editing System



## 2) A/B Roll Composite Editing System



## 3) A/B Roll Component Editing System



# SPECIFICATIONS

General	
Power requirements	AC 90 to 265V, 48 to 64Hz
Power consumption	150W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	Less than 80% (relative humidity)
Weight	Approx. 25 kg (55 lb 2 oz)
Tape speed	11.86 cm/sec.
Recording/playback time	More than 90 min. with BCT-90ML More than 30 min. with BCT-30M
Fast forward time	Less than 3 min. with BCT-90ML
Rewind time	Less than 3 min. with BCT-90ML
Search speed SHUTTLE	19 steps, still to 24 times normal speed, forward and reverse
JOG	Frame by frame, forward and reverse

Video performance	Metal Particle Tape	Oxide Tape
Bandwidth		
Luminance (50% modulation)	30Hz to 4.5MHz $\begin{smallmatrix} +0.5 \\ -4.0 \end{smallmatrix}$ dB	30Hz to 4.0MHz $\begin{smallmatrix} +0.5 \\ -6.0 \end{smallmatrix}$ dB
Color difference (50% modulation)	30Hz to 1.5MHz $\begin{smallmatrix} +0.5 \\ -3.0 \end{smallmatrix}$ dB	30Hz to 1.5MHz $\begin{smallmatrix} +0.5 \\ -3.0 \end{smallmatrix}$ dB
S/N ratio		
Luminance (Component IN/OUT)	More than 51dB	More than 48dB
Chrominance		
AM	More than 53dB	More than 50dB
PM	More than 53dB	More than 50dB
Differential gain	Less than 3%	Less than 3%
Differential phase	Less than 3°	Less than 3°
K-factor (2T pulse)	Less than 2%	Less than 3%
Y/C delay	Less than 20 nsec.	Less than 20 nsec.

Audio performance	Metal Particle Tape	Oxide Tape
Frequency response	50Hz to 15kHz $\begin{smallmatrix} +1.5 \\ -3.0 \end{smallmatrix}$ dB	50Hz to 15kHz $\begin{smallmatrix} +3.0 \\ -3.0 \end{smallmatrix}$ dB
S/N ratio (at 3% distortion level)	More than 72dB	More than 50dB (Dolby NR off)
Distortion T.H.D. (at 1 kHz reference level)	Less than 1%	Less than 2%
Wow and flutter	Less than 0.1% rms	Less than 0.1% rms

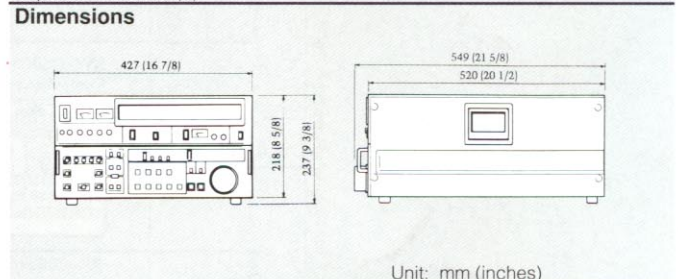
Signal inputs	
REF VIDEO IN (BNC)	1.0Vp-p, 75 ohms
VIDEO IN (BNC)	Composite video, 1.0Vp-p, 75 ohms, sync negative
COMPONENT IN 1 (12-pin male)	
Luminance	1.0Vp-p, 75 ohms, sync negative
Color difference	R-Y: 0.7Vp-p, 75 ohms, B-Y: 0.7Vp-p, 75 ohms
COMPONENT IN 2 (BNC x 3)	
Luminance	1.0Vp-p, 75 ohms, sync negative
Color difference	R-Y: 0.7Vp-p, 75 ohms, B-Y: 0.7Vp-p, 75 ohms
S-video IN	Y: 1.0Vp-p, 75 ohms C: 0.286Vp-p (burst), 75 ohms
AUDIO IN CH-1/2 (XLR 3-pin female)	
LOW	-60dBu, 3k ohms, balanced
HIGH	+4dBu, 600 ohms/10k ohms selectable, balanced
TIME CODE IN (BNC)	0.5V to 18Vp-p, 10k ohms

Signal outputs	
VIDEO OUT 1 (BNC)	Composite video, 1.0Vp-p, 75 ohms, sync negative
VIDEO OUT 2 (BNC)	Composite video, 1.0Vp-p, 75 ohms, sync negative
VIDEO OUT 3 (BNC)	Composite video, 1.0Vp-p, 75 ohms, sync negative, with or without character insertion
COMPONENT OUT 1 (12-pin male)	
Luminance	1.0Vp-p, 75 ohms, sync negative
Color difference	R-Y: 0.7Vp-p, 75 ohms, B-Y: 0.7Vp-p, 75 ohms
COMPONENT OUT 2 (BNC x 3)	
Luminance	1.0Vp-p, 75 ohms, sync negative
Color difference	R-Y: 0.7Vp-p, 75 ohms, B-Y: 0.7Vp-p, 75 ohms
AUDIO LINE OUT (XLR 3-pin male)	
CH1/2	+4dBu, 600 ohms, balanced
AUDIO MONITOR OUT (XLR 3-pin male)	
CH1/2	+4dBu, 600 ohms, balanced
U-matic DUB OUT (with an optional BKW-2020)	Y: 1.7Vp-p, 51 ohms C: 0.9Vp-p, 51 ohms
S-video OUT	Y: 1.0Vp-p, 75 ohms C: 0.286Vp-p (burst), 75 ohms
TIME CODE OUT (BNC)	1.2Vp-p, 75 ohms

Others	
REMOTE IN/OUT	9-pin, female
TBC REMOTE	15-pin, male
MONITOR	8-pin, female
HEADPHONES	JM-60 headphone stereo jack

Processor adjustment range	
Video level	±3 dB
Chroma level	±3 dB
Setup level	0 to +15 IRE
Hue	±15°
System SC phase	360°p-p
System sync phase	+3 to -1 μsec.
Y/C delay	±50 nsec.

Supplied accessories	
AC power cord (1), Remote control cable RCC-5G (9-pin) (1), Operation manual (1)	



\* The specifications of "video/audio performance oxide tape" were measured by playing back material on a standard PVW-2800 that had been recorded on a standard BWV series Betacam SP VTR.

\* 0dBu = 0.775 Vrms

Design and specifications subject to change without notice.

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