

# SONY®

NTSC

## BETACAM SX™

### Digital Video Cassette Recorder

# DNW-A28



# DNW-A28 Digital Video Cassette Recorder

*In 1996, Sony developed the Betacam SX™ system as the next generation digital video format. Adopting MPEG2 4:2:2 Profile @ Main Level compression technology, Betacam SX equipment delivers exceptional video quality at very low data rates. The Betacam SX format has been widely acclaimed by many broadcasters for superb picture quality and cost-effectiveness.*

*Furthermore, with the introduction of the Digital Portable Editor, DNW-A25, the Betacam SX format has expanded the application of VTRs to field operation.*

*To complete the line-up of VTR field operation, Sony has now introduced a compact design Betacam SX VTR, the DNW-A28.*

*The DNW-A28 is the front loading and front access version of the DNW-A25 Digital Portable Editor. Its front access design makes it suitable for use in a limited 19-inch rack space such as in OB vans. Also, connecting to existing editors and monitors, the DNW-A28 can make full use of current broadcast equipment.*



## **Superb Picture Quality of MPEG2 4:2:2P@ML**

The DNW-A28 delivers the superb digital picture quality of the Betacam SX format, recording 8-bit, 4:2:2 component digital signals using the advanced MPEG2 compression algorithm.

## **Audio 4 channel Recording**

The DNW-A28 can mix or swap any 2 channels of audio from the available 4 channel digital audio channels or 2 analog audio channels. The monitor output has 2 output channels (L and R). Each of the 2 channels can output mixed audio from any of the 4 channels.

## **Compact and Lightweight Design**

Many new technological advances are designed into the DNW-A28. It is half rack size with 3U height and weighs approx. 5.8 kg (12 lb). Its compact size enables it to meet user needs for installation into limited rack spaces.

## **Front Loading**

The DNW-A28 is a front loading and front access compact VTR. In order to achieve this, the DNW-A28 adapts a sliding key panel mechanism, which maximizes the effective use of front space of the compact VTR. Furthermore, with the Sliding Key Panel, the tape loading slot can be closed off, which helps to protect the VTR from dust.



DNW-A28 Front (Panel Up)



DNW-A28 Front (Panel Down)

## Sliding Key Panel

The Sliding Key Panel mechanism makes it possible to control a variety of functions, despite its compact size. In addition to the normal PLAY/STOP/REC functions, the video output signal and Timecode are also controlled on the front panel. Furthermore, below are some examples of the flexibility of the control panel:

### Audio Levels

With the Sliding Key Panel, the DNW-A28 can have two audio controllers (large ones and small ones) in a compact design body. You can select which level (Recording or Playback) you control with the large volume controllers (Recording and Playback Volume Priority Switching Function).

### Manual Editing Function

The DNW-A28 also has a Manual Editing Function. You can select the insert signal (VIDEO, AUDIO, and Time Code) via the menu mode.

### Jog Dial

Despite its compact size, the DNW-A28 still enables the Jog/Shuttle functions by utilizing the jog dial for menu controls as well as the Jog/Shuttle dial.



Jog Dial

## Editing Function

Manual Editing, such as Assemble, Video/Audio/Time Code insert, and pre-read functions are possible in the DNW-A28.

Of course, connecting the DNW-A28 with editing controllers such as the BVE Series Editing Control Units via the RS-422A interface, a full editing system can be built.

## Sequential Recording Function

The DNW-A28 can record up to 62 minutes on the Betacam SX S-size cassette. Furthermore, two DNW-A28s can be connected to provide sequential recording. This can provide endless recording by synchronizing the recording process across both DNW-A28s.



DNW-A28 Front

## Good Shot Mark Handling

One of the most useful features of the Betacam SX Series VTRs is the Good Shot mark system. The DNW-A28 can scan tapes and automatically detect all the Good Shot and REC Start marks recorded on the tape. After scanning for marks, a list of all the marks can be displayed on the monitor, allowing easy cueing to any mark point.

## Reading Shot Data

Shot data, such as the date and time or shooting device, is recorded continuously on the tape by the DNW-7/9WS/90/90WS Betacam SX Camcorder or the DNV-5 Dockable Recorder. You can view the data on the monitor (shown on the right hand side) with the DNW-A28.

## Analog Playback Capability

The DNW-A28 can play back analog Betacam® and Betacam SP® recordings made on oxide or metal particle tape. This analog playback capability allows existing Betacam SP camcorders to be used for news acquisition, and to playback the large volume of analog Betacam and Betacam SP tapes that many of the broadcast stations already own.

\*DT and AFM Audio cannot be supported.

## Remote Control Interface

Using the Sony 9-pin RS-422A interfaces, the DNW-A28 can be remotely controlled from the optional remote controllers and editors.

## 525/60 or 625/50 Versatility

The DNW-A28 can easily be switched from 525/60 to 625/50 modes when used in a component digital signal environment. In addition, Analog Betacam/Betacam SP monitoring is available for both 525/60 and 625/50 mode. This flexibility enables the DNW-A28 to work in international environments.

SHOT MARK (058/058)			
NO.		TIME	CODE
051	R	00:22:01:24	
052	S1	00:22:33:20	
053	R	00:23:06:07	
054	S2	00:23:30:02	
055	R	00:24:01:16	
056	S2	00:24:31:03	
057	R	00:25:01:16	
+058	S2	00:25:40:19	

Good Shot Display

MODEL NAME	DNW	0007
SERIAL NUMBER		030148
DATE		1999.01.07
TIME		12.05.42
CASSETTE NUMBER		0001
SHOT NUMBER		0004
ID1		AAAAAAAAAAAA
ID2		BBBBBBBBBBBB
ID3		CCCCCCCCCCCC
ID4		DDDDDDDDDDDD
TCR.		00:09.05.00
		STOP

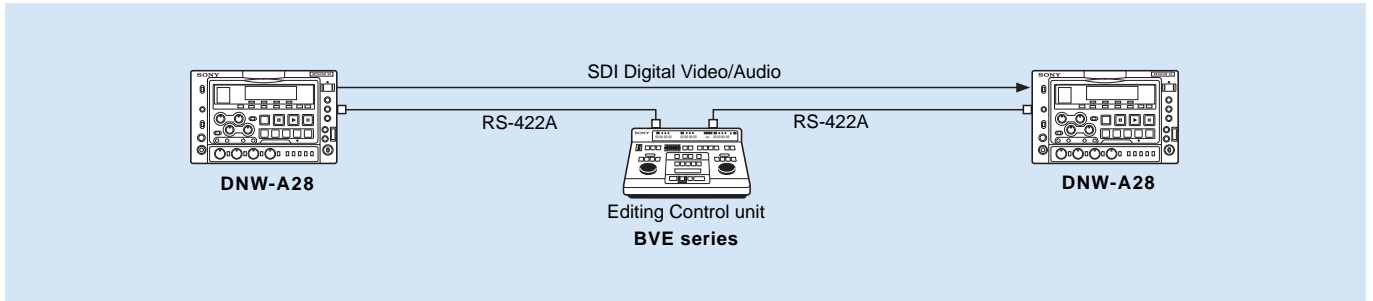
Reading Shot Display



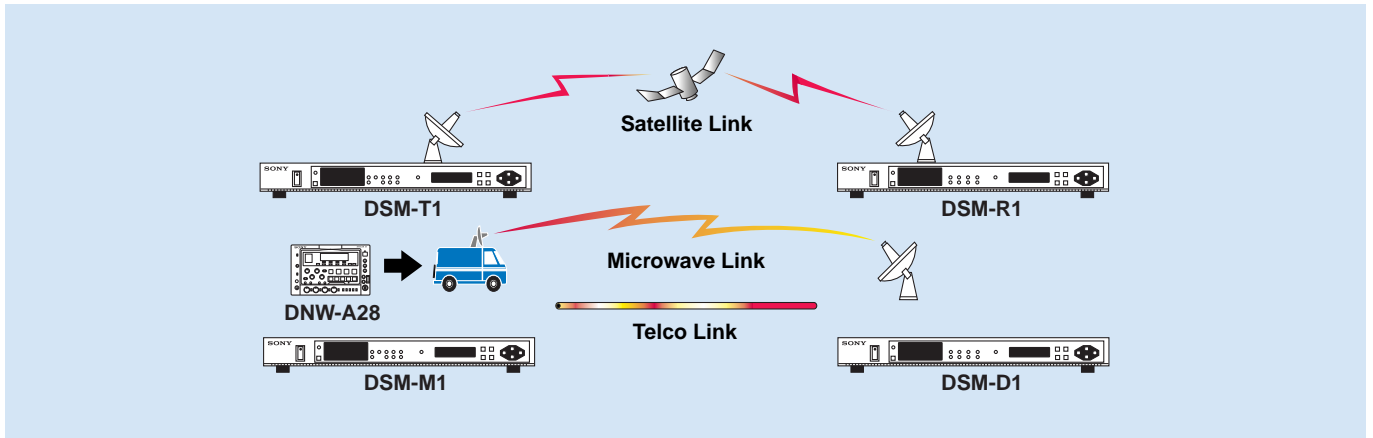
DNW-A28 Rear Panel

# System Configuration

## Editing System



## Transmission



# Optional Accessories



Dynamic Motion Controller  
**DTR-3000**



Digital Satellite Modulator/Demodulator  
**DSM-T1/R1**



SDTI Multiplexer/Demultiplexer  
**DSM-M1/D1**



Lithium-ion Battery Adapter  
**BKP-L551**



Rechargeable Lithium-ion Battery  
**BP-L60A**



AC Adaptor  
**AC-550**



Betacam SX Video Cassette  
**BCT-12SX/22SX/32SX/  
60SX/62SX**



Cleaning Cassette  
**BCT-5CLN**



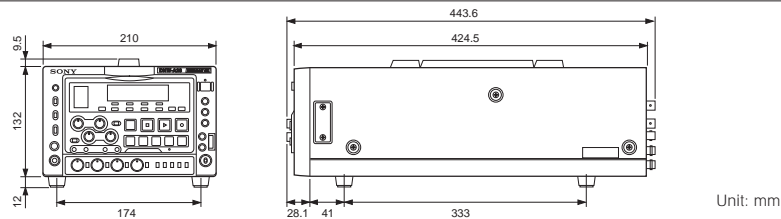
Cleaning Cassette  
**BCT-D12CL**

# Specifications

## DNW-A28

<b>General</b>	Power requirements	DC 12 V +5.0 V/-1.0 V	
	Power consumption	58 W	
	Operating temperature	0° C to +40° C (+32° F to +104° F)	
	Storage temperature	-20° C to +60° C (-4° F to +140° F)	
	Humidity	25 % to 80 % (relative humidity)	
	Mass	5.8 kg (12 lb 12 oz)	
	Tape speed	Betacam SX: 59.515 mm/s (525 mode) /59.575 mm/s (625 mode), Betacam/Betacam SP: 118.6 mm/s	
	Digital playback/recording	Max. 62 minutes with BCT-62SX cassette	
	Rewind time	Approx. 3 min with BCT-62SX cassette	
	Search speed range	Betacam SX: $\pm 24$ times normal playback speed.	
		Betacam/Betacam SP: $\pm 10$ times normal playback speed	
	Servo lock time	0.5 s or less (from standby on)	
	Load/unload time	8 s or less (load)/5 s (unload)	
	<b>Inputs/output signals</b>	Analog composite input	BNC (x1), 1.0 Vp-p, 75 $\Omega$ , sync negative
		Analog composite output	BNC (x2); including one character out), 1.0 Vp-p, 75 $\Omega$ , sync negative
SDI input		BNC (x1), SMPTE 259M, 270 Mbit/s	
SDI output		BNC (x2), SMPTE 259M, 270 Mbit/s	
Analog audio input (CH1,2)		XLR (x2)	
Analog audio output (CH1,2)		XLR (x2)	
Analog monitor output (L,R)		XLR (x2)	
Headphones output		Standard jack (x1), stereo	
Remote control		D-sub 9-pin (x1), Sony 9-pin remote interface	
Reference input		BNC (x1), 0.3 Vp-p, 75 $\Omega$ , sync negative (with loop through out)	
Test		Aux 6-pin (x1) for maintenance)	
Time code input		BNC (x1)	
Time code output		BNC (x1)	
<b>Processor adjustment range</b>	Video level	$\pm 3$ dB/- $\infty$ to 3 dB selectable	
	Chroma level	$\pm 3$ dB/- $\infty$ to 3 dB selectable	
	Set up/Black level	$\pm 30$ IRE/ $\pm 210$ mV	
	Y/C delay	$\pm 100$ ns (in Betacam/Betacam SP playback)	
	Chroma phase	$\pm 30^\circ$	
<b>Digital video signal system</b>	System phase	Sync: $\pm 15$ $\mu$ s (SC step), SC: $\pm 200$ ns	
	Sampling frequency	Y: 13.5 MHz, R-Y/B-Y: 6.75 MHz	
	Quantization	8 bits/sample	
<b>Analog composite recording playback</b>	Compression	MPEG2 4:2:2 Profile@Main Level	
	Bandwidth (Y)	0 to 4.5 MHz +0.5 dB/-3.0 dB (525 mode), 0 to 5.5 MHz +0.5 dB/-3.0 dB (625 mode)	
<b>Digital audio signal system</b>	S/N	53 dB or more	
	Differential gain	2 % or less	
	Differential phase	2° or less	
	Y/C delay	15 ns or less	
	K factor (2T pulse)	1.5 % or less	
	Output SCH phase	Based upon RS-170A/ITU-R BT.624-3	
	Sampling frequency	48 kHz (synchronized with video)	
	Quantization	16 bits/sample	
	Headroom	20 dB (or 18 dB selectable)	
	Emphasis	T1=50 $\mu$ s, T2=15 $\mu$ s (on/off selectable in recording mode)	
<b>Analog output</b>	A/D, D/A quantization	16 bits/sample	
	Frequency response	20 Hz to 20 kHz +0.5 dB/-1.0 dB (0 dB at 1 kHz)	
	Dynamic range	88 dB or more (at 1 kHz, emphasis on, 30 kHz LPF ON)	
	Distortion	0.08 % or less (at 1 kHz, emphasis on, reference level (+4 dBm), 30 kHz LPF ON)	
	Crosstalk	-80 dB or less (at 1 kHz, between any two channels, 1kHz BPF ON)	
	Channel coding	S-1-NRZI PR-IV	
<b>Others</b>	Error correction	Reed Solomon code	
	Display	Counter, Servo Lock, Tape Remain, Battery Remain, etc.	
<b>Audio level meter</b>		CH1, CH2 (indication of CH3, 4 is also available by switch)	
<b>Supplied accessories</b>		Operation manual (x1) Installation manual (x1)	

### Dimensions



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