SONY

NTSC

BETACAM SX™

Digital Video Hybrid Recorder

DNW-A100/A50/A45

ISR Interactive Status Reporting

The First Digital Recorder to Combine Tape and Disk

The Sony Digital Video Hybrid Recorder introduces a unique concept in video technology: a high-performance non-linear Digital Video Hybrid Recorder that incorporates both digital tape and digital disk recording.

Digital disk recording has become indispensable for the instant retrieval and non-linear editing of video and audio segments, while digital video tape enjoys a tremendous advantage in terms of acquisition flexibility—and its economical price is not likely to be soon overtaken by disk-based media.

By combining a tape transport and a hard disk drive into one unit, the Sony Digital Video Hybrid Recorder offers significant advantages of productivity and creativity to the broadcast industry.

The Betacam SX™ format used in the Sony Digital Video Hybrid Recorder represents the next generation of Betacam® format, complying with a compression algorithm of MPEG2 4:2:2 Profile at Main Level (MPEG2 4:2:2P@ML) to record high-quality video/audio on tape or hard drive— the key to a Sony total system approach that maintains superior image quality through digital video acquisition, editing and archival storage.

The Betacam SX format is also designed to maintain compatibility with current analog systems; both Betacam and Betacam SP® analog tapes can be played back and digitized by the Hybrid Recorder for non-linear editing.

The Higher Quality of MPEG2 4:2:2P@ML

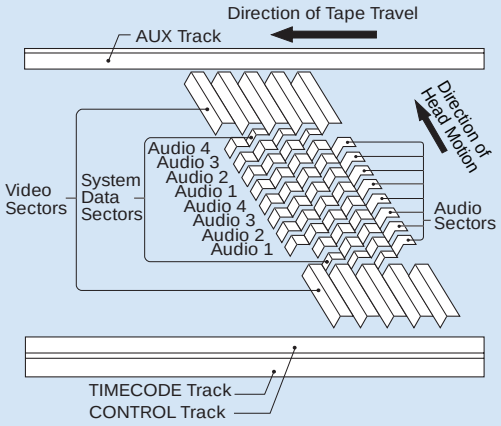
The Betacam SX format records 8-bit, 4:2:2 sampled component digital signals using an advanced compression algorithm. The robust compression algorithm of the Betacam SX format results in a reduced bit rate of 18Mbps for the video signal, achieving greater efficiency both in transmitting the signal from the field to the station and in storage onto disk, while at the same time maintaining broadcast-quality pictures and supporting 4-channel, 16-bit/48kHz digital audio.

<Betacam SX Format>

General	
Tape width	12.65mm (1/2 inch)
Tape material	Metal partcle tape
Recording/playing time	Max. 62 min. with S-cassette
Tape speed	59.515mm/s
Track pitch	32µm
Tracks per frame	10 (525/60), 12 (625/50)
Longitudinal tracks	Time code / Control / Aux
Video ancillary data	1 line/field
Extension data	20 byte/frame
Video	
Compression	MPEG2 4:2:2P@ML
Bit rate	18Mbps
Active lines per frame	507 lines (525/60), 608 lines (625/50)
Sampling frequency	Y: 13.5MHz R-Y/B-Y: 6.75MHz
Quantization	8 bits/sample
Audio	
Compression	None
sampling frequency	48kHz
Quantization	16 bits/sample
Channels	4

Betacam SX recordings also preserve 507 active lines per frame, as well as vertical blanking signal information. During recording, powerful ECC (Error Correction Code) corrects data errors caused by burst errors. This allows virtually dropout-free recording of important news program material.

Tape Format



Compatibility with Analog Betacam and Betacam SP Formats

Betacam SX equipment has the capability to play back tapes recorded in current analog Betacam and Betacam SP formats on oxide or metal particle tape.
This means that full access to valuable analog Betacam archives is maintained along with the advantages of digital technology: high-speed non-linear editing, virtually dropout-free recording, and the ability to copy material without picture degradation. As soon as analog video/audio material is played back on the tape transport and loaded onto the hard disk of the Hybrid Recorder, non-linear editing can begin. In reality, the practical effect of using the Sony Hybrid Recorder is of bringing analog tape archives into the digital era.
In addition, current Betacam SP metal particle tapes (BCT-MA/UVWT) can also be used for Betacam SX recording — and with the Betacam SX format, recording time is almost double the stated duration of the tape.

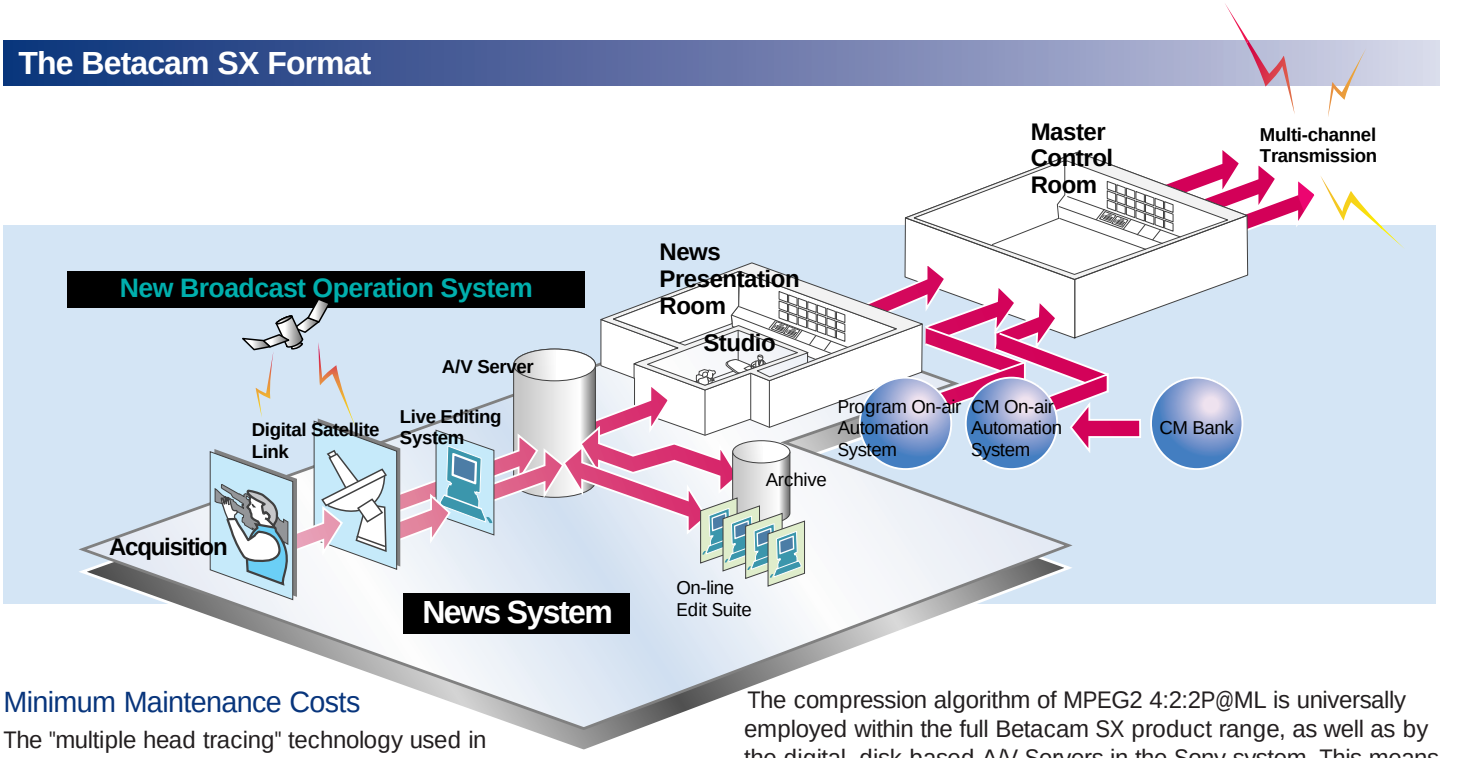
The Cost Efficiencies of Betacam SX Products

The Betacam SX format used in the Hybrid Recorder yields significant economies in both tape and maintenance costs.

Lower Tape Running Costs

The Betacam SX format provides long recording times: up to 62 minutes on a single S-cassette and 194 minutes on a single L-cassette.
The "multiple head tracing" technology used in the Betacam SX format ensures reliable playback by performing powerful error correction on adjacent tracks. This technology enables the Betacam SX format to handle a high bit-rate signal within narrow tracks, allowing the development of low-cost, high-quality Betacam SX tape.
Compared to conventional Betacam SP tapes, tape consumption has been reduced by almost half. In news applications, where tape consumption ratios are high, the Betacam SX recording format has achieved a tape running cost equivalent to the economy of oxide tape.

The Betacam SX Format



Minimum Maintenance Costs

The "multiple head tracing" technology used in the Betacam SX format does not require DT (Dynamic Tracking) heads during still-frame and slow motion playback, thus drastically reducing the cost of a replacement drum.
In addition, the improved head construction and tape contact gives reduced head wear and brings longer head life compared to analog Betacam SP format.
Betacam SX Hybrid Recorders incorporate an Automatic Alignment System, to maximize the accurate tape recording and reproduction of digital data. An Automatic RF Equalizer optimizes the gain and phase of off-tape RF signals. These automatic systems minimize the need for time-consuming manual equalization and servo system adjustments, which can lower maintenance costs.

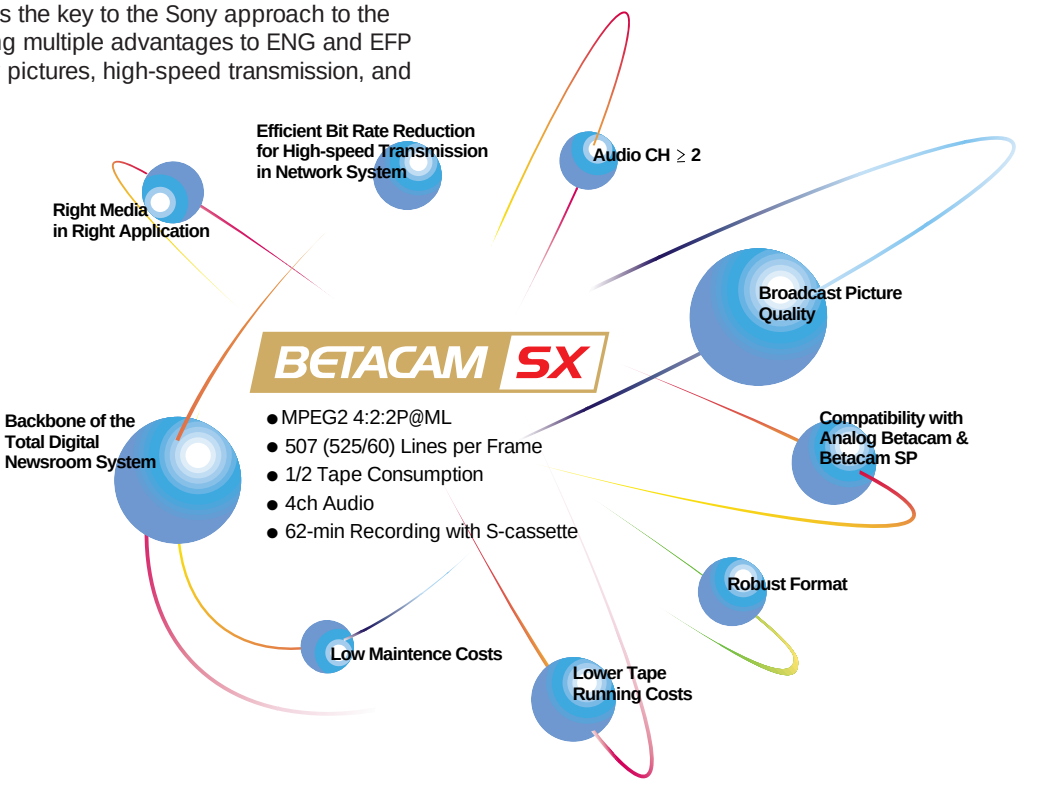
Betacam SX : the Key to the Digital Newsroom

The Betacam SX format is the key to the Sony approach to the digital newsroom, bringing multiple advantages to ENG and EFP applications: high-quality pictures, high-speed transmission, and low-cost operation.

The compression algorithm of MPEG2 4:2:2P@ML is universally employed within the full Betacam SX product range, as well as by the digital, disk-based A/V Servers in the Sony system. This means that, throughout the total newsroom system, no encoding and decoding is needed, so picture quality is not compromised.

The Right Media in the Right Application

Sony expertise in every aspect of video technology has led to a careful evaluation of the running costs, recording times, mobility factors, and industry-wide compatibility of both tape and disk media.
Sony employs tape media for applications requiring low running costs, longer recording time, and higher mobility— and uses disk media when high-speed random access and non-linear operations are required.
Tape and disk, working together harmoniously and efficiently— that is the attraction of the Sony Hybrid Recording approach.



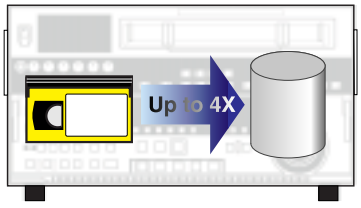
Compact Non-linear Storage

By utilizing newly developed, application-specific LSI circuitry and combining this with the efficient data-handling capacity of the Betacam SX format, the Sony Digital Video Hybrid Recorder can combine both VTR and hard disk drive in the same compact dimensions as those of a current analog Betacam VTR. By combining a tape transport and a hard disk drive into one unit, the Sony Hybrid Recorder acts as a player/recorder — as though there were two VTRs in one unit.

High-speed Playback and Recording from Tape to Disk

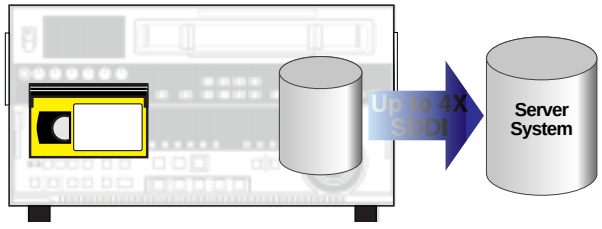
Betacam SX recordings can be copied from tape to disk at up to four times normal play speed.
(Note: This high-speed capability is available for the DNW-A100 only.)

The "multiple head tracing" technology enables the high-speed playback of digital data recorded on Betacam SX tape with reliability and accuracy. This high-speed feature saves time recording material to disk, an indispensable step in non-linear editing.
Analog Betacam recordings can also be copied and digitized on the hard disk of the DNW-A100/A50/A45 at normal play speed. Once on disk, non-linear editing can begin with full editing functionality.



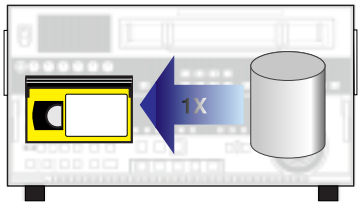
High-Speed Data Transfer from the DNW-A100 to Server

Edited material on the hard disk of the DNW-A100 can be played back and transferred to an A/V Server via an SDDI interface of the DNW-A100 at up to two times normal play speed while non-edited material can be played back and transferred at up to four times normal play speed. Betacam SX tape can also be played back and transferred to A/V Server through an SDDI link.
Connected to a Digital Satellite Link, a compressed digital video signal can be transmitted and recorded at up to two times normal play speed on the DNW-A100.

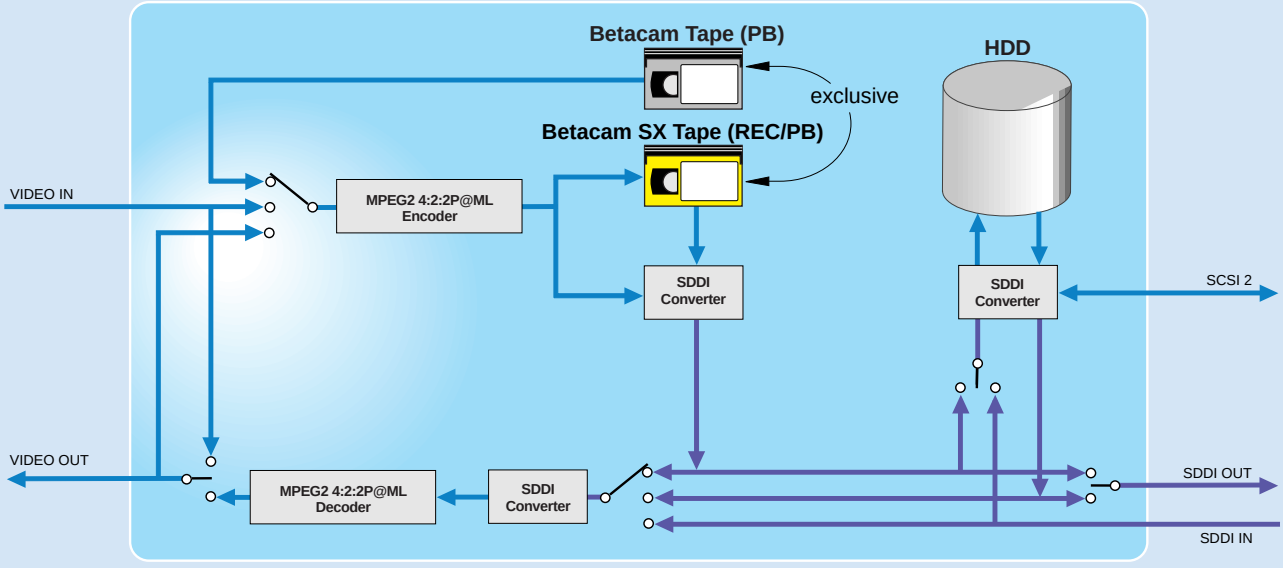


Dubbing from Disk to Tape

Edited material on the hard disk of the Hybrid Recorder can be copied onto Betacam SX tape at normal play speed.



Block Diagram of the DNW-A100



Product Line-up

The Sony Digital Video Hybrid Recorder line-up includes the DNW-A100, DNW-A50, and DNW-A45.

DNW-A100

The DNW-A100 is equipped with a hard disk drive capable of recording approximately 90 minutes of 4:2:2 component digital signals and four channels of 16-bit digital audio, and provides high-speed copying of material from tape to disk.
Through the SDDI interface of the DNW-A100, audio and video material can be transferred to an A/V server or other SDDI-equipped devices at up to four times normal play speed.

DNW-A50

The DNW-A50 is a cost-effective Hybrid Recorder without SDDI interfacing and high-speed tape/disk operation, which can be utilized in the applications not requiring a high-speed copying capability.
The DNW-A50 is equipped with a hard disk drive capable of 90 minutes of recording.

DNW-A45

The DNW-A45 is also a cost-effective Hybrid Recorder without SDDI interfacing and high-speed tape/disk operation.
The DNW-A45 gives 45 minutes of recording on its built-in hard disk drive.

BKNW-116 Sony Disk Unit

The BKNW-116 Sony Disk Unit is an external Hard Disk Drive for the DNW-A100/A50/A45 Hybrid Recorders. The BKNW-116 gives the maximum of 6 hours (72 GB) of additional recording time.
This Disk Unit is connected to the DNW-A100/A50/A45 Hybrid Recorders through the SCSI interfaces.

Simple,
User-friendly Operation

The DNW-A100/A50/A45 provides simple, VTR-like operation from the control panel. The control panel operates basic editing functions on both hard drive and tape transport, with a familiar Jog/Shuttle dial to give editors a "hands-on" feel.

Playback Capability of Analog
Betacam and Betacam SP

Analog Betacam and Betacam SP recordings made on oxide or metal particle tape can be played back on the DNW-A100/A50/A45.

Betacam SX Tape
Plus Use of Current Metal Particle Tape

Conventional Betacam SP metal particle tape (BCT-MA/UVWT) can be used in Betacam SX recording with the DNW-A100/A50/A45— and recording time is almost double the stated duration of the tape.
To maximize the digital performance at reduced cost, a new metal particle tape has also been developed for Betacam SX recording.

Long
Recording Time

Both S-size cassettes and L-size cassettes can be used with the DNW-A100/A50/A45. For Betacam SX recording, a single S-cassette records up to 62 minutes of audio/video signals while an L-cassette records for up to 194 minutes.

Comprehensive
Indication Display

In addition to the LED indicators, various information on the operating status of the Hybrid Recorder can be displayed digitally on the front control panel. Time code, CTL, user-bit data, duration and time remaining of both tape and disk area, error messages and set-up menus are displayed.

High-speed
Picture Search

Speed search with VTR: ±50 times normal play speed.
Speed search with HDD: ±100 times normal play speed.

Jog
Speed Control

Smooth jog speed control is available over a range of -1 to +1 times normal play speed.

Remote Control
Interface

Through its Sony 9-pin remote interface, the DNW-A100/A50/A45 can be remotely controlled from the DNE-700 Digital Editing System and the DLE-110 Live Editing System, providing GUI-based non-linear editing. Current BVE Series editing controllers can also control the tape transport of the DNW-A100/A50/A45 as a player.

DNW-A100 Front Panel

525/60 or 625/50 Versatility

SDDI, SDI and component I/O and composite outputs are all switchable from 525/60 to 625/50. When playing back Betacam SX recordings, the DNW-A100/A50/A45 operates in 525/60 mode without an external adapter.

Equipped for ISR

The DNW-A100/A50/A45 all incorporate the Sony Interactive Status Reporting (ISR) system to provide error/warning reports on the equipment, enabling engineers to take appropriate action to correct the situation.

DNW-A100 Front Sub-panel

Versatile System Interface

SDI Interface

The DNW-A100/A50/A45 is equipped with SDI I/O, allowing easy interfacing with existing SDI systems.

SDDI Connections

For high-speed transfer of video/audio material at faster than normal play speed, SDDI outputs are provided with the DNW-A100. Various output speeds can be selected. An SDDI input can be added as an option (BKNW-103).

Analog Composite/Component Input

Either a BKDW-506 analog composite input board or a BKNW-104 analog component input board can be fitted as an option.

Analog Composite/Component Output

The DNW-A100/A50/A45 is equipped with three analog composite outputs (one monitor output with character superimposition) and one component output.

Analog 4ch Audio Input/Output

AES/EBU Input/Output

AES/EBU digital audio inputs/outputs can be fitted as an option (BKNW-105) in place of analog 4ch audio inputs/outputs.

Time Code Input/Output

SCSI I/F

The DNW-A100/A50/A45 is equipped with an SCSI output to an external disk drive, BKNW-116.

Remote Control

Editors can remotely control the DNW-A100/A50/A45 through a Sony 9-pin interface.

RS-232C Remote Control

Various parameters can be set up and monitored via this port using the Sony ISR system.

DNW-A100 Rear Panel

Versatile Editing Features to Enhance Productivity and Creativity

The DNW-A100/A50/A45 Hybrid Recorder can be utilized for on-line editing offering excellent editing functionality.

Two Editing Modes

Two editing modes are available during editing with the Hybrid Recorder.
Full Edit mode: for audio/video split editing and voice-over recording. Video and four channels of audio can be edited independently. Material edited in the Full Edit mode is played back from the hard disk at normal play speed.
Simple Edit mode: for assemble editing of audio/video material. The DNW-A100 plays back the material edited in the Simple Edit mode at up to two times normal play speed, while DNW-A50/A45 plays at normal speed.

Voice-over Recording

Voice-over audio recording is available using the audio insert mode of the Hybrid Recorder. Through a line audio input, a voice-over audio file is created on the hard disk of the Hybrid Recorder.
A specified part of the audio track is replaced by this audio file during playback.

"Good Shot Marker" Handling

Good Shot Markers and REC Start Markers recorded on tape by Betacam SX camcorders can be read and recorded on the hard disk of the DNW-A100/A50/A45, which helps to speed the edit search process. The DNW-A100/A50/A45 can search and cue up the next/previous mark recorded on tape. When the DNE-700 Digital Editing System is connected to the DNW-A100/A50/A45, "picture stamps" are highlighted at these markers on the GUI screen of the DNE-700.

Insert Edit/Overlay Edit

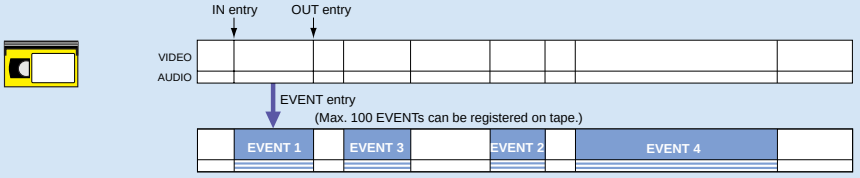
During non-linear editing on disk, there are two methods to edit the events.
Insert edit: places an event at the selected IN point so as to move following events that already exist. Duration of the total story becomes longer.
Overlay edit: places an event at the IN point so as to keep the total duration as before. Any existing events are overwritten by the new event.

Editng Workflow of the Hybrid Recorder

ex.) from Tape to HDD using the front control panel

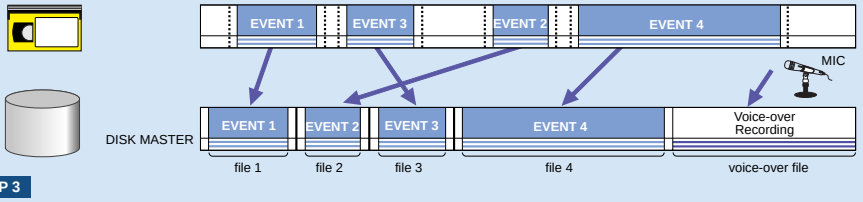
STEP 1

Select and mark the IN/OUT points of the required scenes on tape.



STEP 2

Record selected scenes from tape to hard disk. (Create files on DISK MASTER)



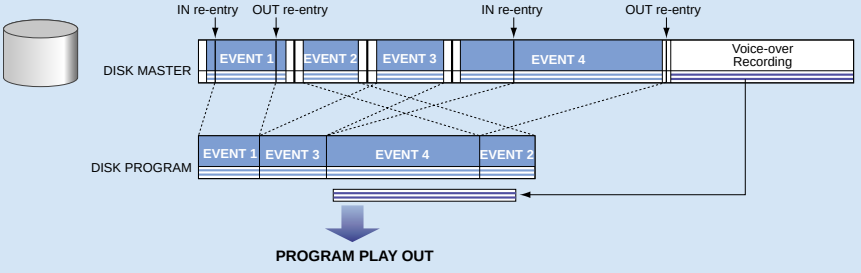
When recording EVENTs from tape to DISK MASTER, extended portion of audio/video data can be added to EVENTs automatically, which enables trimming of EVENTs during editing.

Files are arranged along with the selected order.

Voice-over files can be created on DISK MASTER through the line-audio input of the Hybrid Recorder.

STEP 3

Trim and rearrange the EVENTs if required.



DISK PROGRAM refers to editing data which determines the sequence in which video and audio data recorded on hard disk is to be played back.

IN/OUT points of each EVENT can be changed, and EVENTs can be rearranged by copying, deleting the EVENTs.

Voice-over audio will replace PROGRAM audio CH1, 2, 3, or 4 during playback.

A System Approach to Non-linear Editing

Combining tape and disk in a single unit brings all the many benefits to ENG and EFP applications.
Once material has been recorded onto the hard disk of the Hybrid Recorder, non-linear editing functions may be performed within the recorder. By connecting the Hybrid Recorder to a Sony Digital Editing System, even more advanced non-linear editing functions can be controlled with a simple "drag-and-drop" graphical user interface.

Hybrid Recorder + DNE-700 Digital Editing System

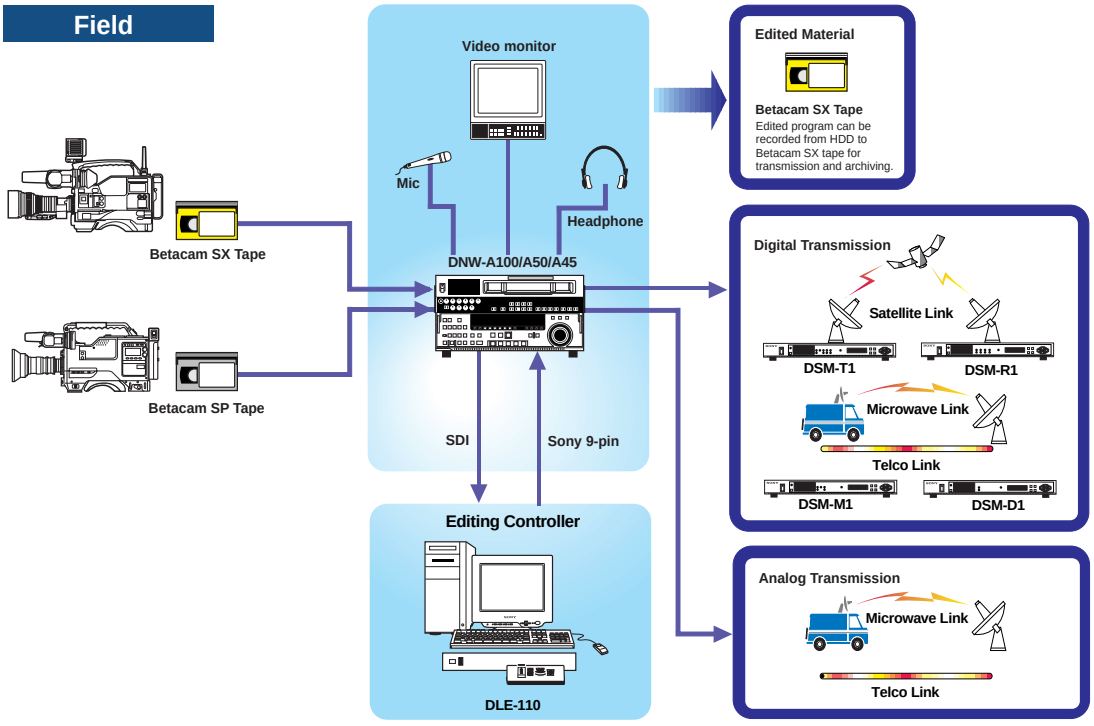
Combining the DNW-A100/A50/A45 with the Sony DNE-700 Digital Editing System gives the speed and productivity of picture-based drag-and-drop editing.
Simple graphical user interface of the DNE-700 allows the control of non-linear editing functions with ease and creativity. The DNE-700 can also access various functions of the DNW-A100/A50/A45, including setting up video parameters of the Hybrid Recorder and copying material from tape to disk and disk to tape.
Together, the DNW-A100/A50/A45 and DNE-700 create a compact non-linear editing system than can be easily integrated into any current broadcast facility.

Hybrid Recorder + DLE-110 Live Editing System

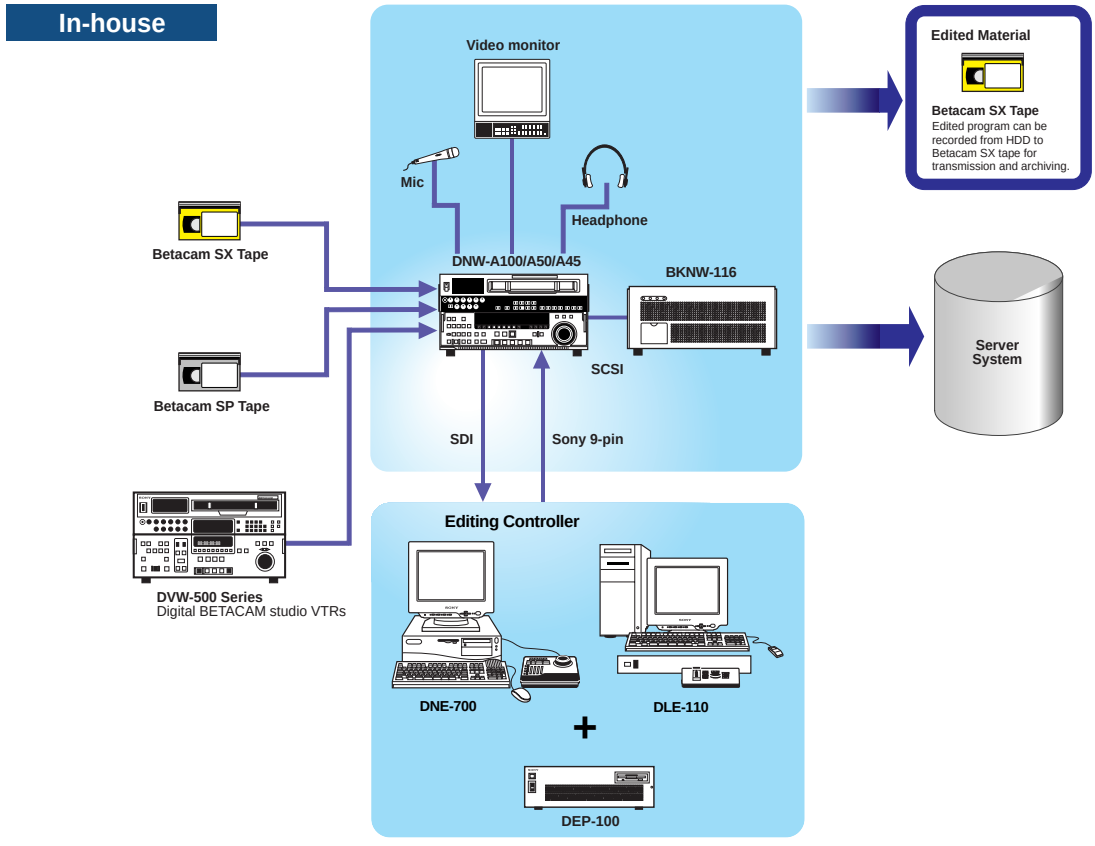
When a DNW-A100/A50/A45 is connected to the Sony DLE-110 Live Editing System, GUI-based non-linear editing can be performed on-line. The combination of DNW-A100/A50/A45 and DLE-110 enables simultaneous recording and playback, which can be utilized for live applications such as sports programs. This allows editing of highlight scenes, slow-motion replay and random access replay at the same time as the live feed is being continuously recorded on tape.
In addition, continuous loop recording on the hard disk of the Hybrid Recorder is available while editing. This enables highlight sequences to be prepared while recording, and to be aired during breaks in the sports action.
Necessary scenes reserved and used for highlight editing are saved as MASTER files on the hard disk and are not erased during continuous loop recording.

System configurations

Field



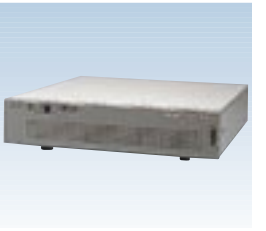
In-house



Optional Accessories

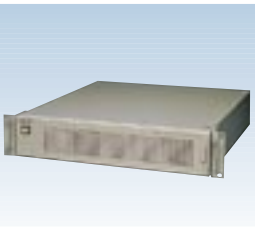
Video Processor Controller
BVR-50

Digital Rate Converter
DFX-2101



Digital Rate Converter
DFX-1201

Digital Audio Delay Unit
DDU-2100



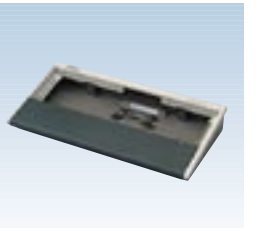
Digital Colour Corrector
BVX-D10

Digital Video Interface Unit
PFV-D300/D100A/D50/D20

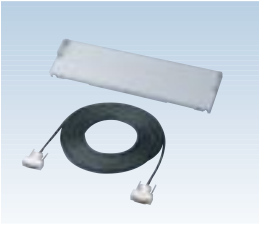
Audio Converter Unit
DAF-1500

Sony Disk Unit
BKNW-116

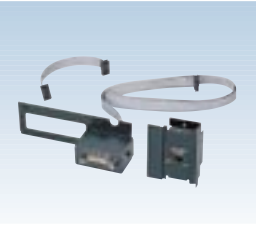
Control Panel
BKNW-120



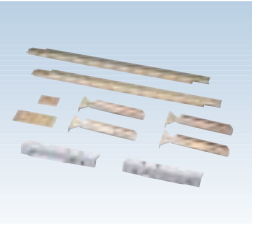
Control Panel Case
BKNW-121



Control Panel Extension Kit
BKNW-122



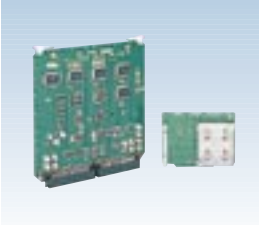
Modification Kit
BKNW-123



Rack Mount Kit
RMM-111

SDDI Input Kit
BKNW-103
(for DNW-A100)

Analog Component Input Board
BKNW-104



AES/EBU I/F Kit
BKNW-105

Analog Composite Decoder Board
BKDW-506

Betacam SX Video Cassette
BCT-12SX/22SX/32SX/60SX/62SXLA
(Small Cassette)
BCT-64SXL/94SXL/124SXL/184SXL/194SXLA
(Large Cassette)

Cleaning Cassette
BCT-D12CL

Cleaning Cassette
BCT-5CLN

Specifications

			DNW-A100	DNW-A50	DNW-A45
General					
Power requirements				AC 100V to 240V, 50/60Hz	
Power consumption			320W	300W	
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			25% to 80% (relative humidity)		
Mass			35kg (77 lb 3 oz)		
Dimensions (W x H x D)			427 x 237 x 524mm (16 7/8 x 9 3/8 x 20 3/4 inches)		
Tape transport system					
Recording format			Betacam SX		
Tape speed	Betacam SX		59.515mm/s		
	Betacam playback		118.6mm/s		
Digital record/playback time			Max. 194 min with BCT-194SXLA cassette		
Fast forward/rewind time			Approx. 3 min with BCT-194SXLA cassette		
Smooth JOG speed range			-1 to +1 times normal playback speed		
Search speed range (shuttle mode)			±50 times normal playback speed		
Servo lock time			0.5s or less (from standby on)		
Load/unload time			6s or less		
Disk system					
Record/playback time			90 min		45 min
Smooth JOG speed range			-1 to +1 times normal playback speed		
Search speed range			±100 times normal playback speed		
Minimum duration of Edit EVENT			0.5s		
Maximum record/feed speed			4 times normal playback speed	1 times normal playback speed	
Inputs/Outputs					
Video inpu	tSDI		BNC (x1) with active through out, SMPTE259M, 270Mbits/s		
	SDDI (option)		BNC (x1), with use of optional BKNW-103 input board		
	Analog component (option) *		BNC (x3 for 1 set, Y/R-Y/B-Y), with use of optional BKNW-104 input board Y: 1.0Vp-p, 75Ω, sync negative R-Y/B-Y: 0.7Vp-p, 75Ω		
	Analog composite (option) *		BNC (x2 in loop through), 1.0Vp-p, 75Ω, sync negative with use of optional BKDW-505		
	Reference		BNC (x2 in loop through), 0.3Vp-p, 75Ω, sync negative		
Video output	SDI		BNC (x2), SMPTE259M, 270Mbits/s		
	SDDI		BNC (x2)		
	Analog component		BNC (x3 for 1 set, Y/R-Y/B-Y), Y: 1.0Vp-p, 75Ω, sync negative, R-Y/B-Y: 0.7Vp-p, 75Ω		
	Analog composite		BNC (x3, including one character out), 1.0Vp-p, 75Ω, sync negative		
Audio input	Digital (CH 1/2, 3/4)	SDI-embedded	BNC (x1, video & audio), SMPTE259M, 270Mbits/s		
		AES/EBU **	BNC (x 2), stereo mode, with use of optional BKNW-105 board		
	Analog (CH 1,2,3,4) **		XLR-3-31 type (x4) LOW OFF: -60dBu, high impedance, balanced HIGH OFF: +4dBu, high impedance, balanced HIGH ON: +4dBu, 600Ω termination, balanced		
Audio output	Digital (CH 1/2, 3/4)	SDI-embedded	BNC (x1, video & audio), SMPTE259M, 270Mbits/s		
		AES/EBU **	BNC (x 2), stereo mode, with use of optional BKNW-105 board		
	Analog (CH 1,2,3,4) **		XLR-3-32 type (x4), +4dBu at 600Ω load, low impedance, balanced		
	Headphones		JM-60 stereo phone jack, -∞ to -12dBu at 8Ω load, unbalanced		
	Monitor L/R		XLR-3-32 type (x2), +4dBu at 600Ω load, low impedance, balanced		
Time code	Input		XLR-3-31 type (x1), 0.5 to 18Vp-p, 10kΩ, balanced		
	Output		XLR-3-32 type (x1), 2.2Vp-p, low impedance, balanced		
Remote	Remote 1 (In/Out)		D-sub 9-pin, Sony 9-pin interface		
	RS-232C		D-sub 25-pin, RS-232C interface		
	SCSI		68-pin, female		
	Video control		D-sub 15-pin (for the optional BVR-50 Remote Controller)		
Processor adjustment range					
Video level			±3dB/-∞ to 3dB selectable		
Chroma level			±3dB/-∞ to 3dB selectable		
Set up/Black level			±30IRE/±210mv		
Chroma phase/hue			±30°		
System sync phase			±15µs		
System SC phase			±200ns		
Y/C delay			±100ns (Betacam/Betacam SP playback only)		
Composite input			±3dB		
Digital video performance					
Sampling frequency			Y: 13.5MHz, R-Y/B-Y: 6.75MHz		
Quantization			8 bits/sample		
Error correction			Reed-Solomon code		
Digital input to analog component output			K-factor (2T pulse):1% or less		
Analog component input (option) to analog component output			Input A/D quantization:8 bits/sample K-factor (2T pulse):1% or less LF non-linearity:3% or less		
Analog composite input (option) to analog composite output			Differential gain:2% or less Differential phase:2°or less Y/C delay:15ns or less K-factor (2T pulse):1% or less		
Digital audio performance					
Sampling frequency			48kHz (synchronized with video)		
Quantization			16 bits/sample		
Analog input to output A/D and D/A quantization			16 bits/sample		
Frequency response (0dB at 1kHz)			20Hz to 20kHz +0.5dB/-1.0dB		
Dynamic range (at 1kHz, emphasis ON)			More than 90dB		
Distortion (at 1kHz, emphasis ON, reference level)			Less than 0.05%		
Cross talk (at 1kHz, between any two channels)			Less than -80dB		
Wow & flutter			Below measurable level		
Head room			20dB (18dB selectable)		
Emphasis (ON/OFF selectable in REC mode)			T1=50µs , T2=15µs		

* Either analog component or composite input can be selected as an option.

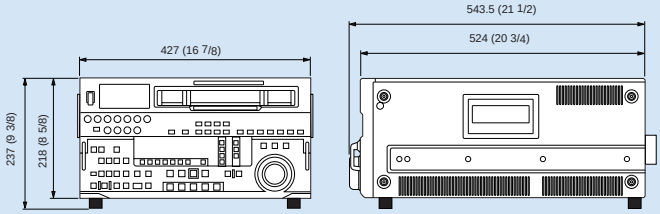
** AES/EBU audio input can be selected as an option to replace analog audio.

Specifications

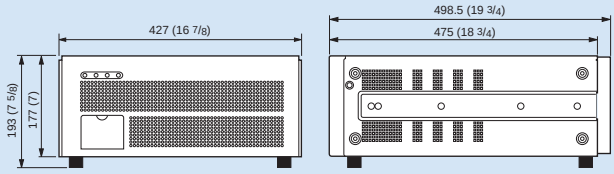
	BKNW-116
General	
Power requirements	AC 100 to 240 V 50/60 Hz
Power consumption	3 to 1.5 A
Operating temperature	5 to 40 °C (41 F to 104 °F)
Storage temperature	-20 to +60 °C (-4 F to +140 °F)
Operating humidity	25 to 80 %
Storage humidity	25 to 80 %
Dimensions (W x H x D)	427 x 177 x 475 mm (16 7/8 x 7 x 18 3/4 inches) (excluding projections)
Weight	Approx. 23 kg (50 lb. 11oz.)
Characteristics	
Total capacity	9 GB x 8 = 72 GB (6 hours)
SCSI interface	SCSI-2 FAST/WIDE Differential (LVD)
Input/Output connectors	
SCSI	SCSI-2 68-pin, female (differential type) (2)

Dimensions

DNW-A100/A50/A45



BKNW-116



Supplied Accessories

DNW-A100/A50/A45
- AC Power code (1)
- RCC-5G 9-pin remote control cable (1)
- PSW 4 x 16 screws for rack mounting (1)
- Operation manual (1)

BKNW-116
- SCSI cable (1)
- Installation Manual (1)
- Operation Manual (1)

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