

# SONY®

NTSC

Multi-Cassette System

# FLEXICART



**ISR** Interactive  
Status  
Reporting

## INTRODUCTION

The development of the Sony Betacart and Library Management System (LMS) as well as the Flexicart Multi-cassette Systems has had a profound effect on the efficiency and sophistication of broadcast operations, making possible the automation of critical program transmission tasks and commercial sequences. The proven reliability of these multi-cassette systems has led to their widespread use in many applications where transmission errors can be costly, as well as damaging to a broadcaster's reputation.

Since the introduction of Flexicart, there has been a trend for the advantages of these automated systems to be applied to many different applications. To enhance Flexicart's capacities when used in digital multi-channel operations, Sony has developed the BZC-210W - a new 2-channel playback software with a host interface protocol so that the station host computer can control the entire Flexicart and the BZC-210W system.

The highly modularized system and cassette bin flexibility of the Flexicart further expand its utility, where a range of world-standard formats including Digital BETACAM, D-2, Betacam SX (player only), Betacam SP, and S-VHS can be configured and different cassette sizes are allowed.

With its new application software - the BZC-210W, added to its proven outstanding reliability, performance and features, Flexicart brings clear operational advantages whether it is used as an integral part of a multi-channel broadcasting system or for standalone automated video cassette handling to smaller scale environments.

## FEATURES

### Wide Range of Applicable VTRs

The Flexicart incorporates Sony VTRs which have become de facto standards in professional and industrial fields because of their superb picture quality and high reliability.

For maximum application flexibility, Flexicart can be configured with a wide range of VTRs - broadcast standard digital composite D-2, digital component Digital BETACAM, Betacam SX (player only), analog component Betacam SP and S-VHS formats.

The Flexicart console can accept the following models.

D-2	DVR-28/20/18/10 VTRs DVR-P28/P20 players
Digital BETACAM	DVW-A500/500VTRs DVW-A510/510 players
Betacam SX	DNW-A30/30 players
Betacam SP	BVW-D75/75/70 VTRs BVW-D265/65/60 players PVW-2800 VTR PVW-2600/2650 players UVW-1800VTR UVW-1600 player
S-VHS	SVO-9600 VTR SVP-9000 player

The Flexicart can accept these VTRs without any modification so existing stand-alone VTRs can be directly installed into a Flexicart. Additionally, VTRs of any one format can be installed into a Flexicart console in any combination and are mounted on rails for easy maintenance access.



DVW-A500



DNW-A30

Format	Applicable VTR	VTR Mount Kit	Cassette Bin Unit	Configuration (VTR/Bin Unit ratio)		Cassette capacity**			
				VTRs	Bin Units (4 U high)	S-cassette	ML-cassette		
D-2	DVR-28/18/P28 (8 Unit high)	BKFC-52	BKFC-8D	1	7	56	28		
				2	5	40	20		
				3	3	24	12		
	DVR-20/10/P20 (6 Unit high)			1	7	56	28		
				2	6	48	24		
				3	4	32	16		
Digital BETACAM	DVW-A500/500/A510/510	BKFC-53	BKFC-10B	4	3	24	12		
				1	7	70	35		
Betacam SX (player only)	DNW-A30/30			2	6	60	30		
				3	4	40	20		
Betacam SP	BVW-D75/75/70/D265/65/60 PVW-2800/2800/2650 (5 Unit high + 1 Unit*)			BKFC-53	BKFC-10B	4	3	30	15
						1	7	70	35
		2	6			60	30		
		3	5			50	25		
S-VHS	UVW-1800/1800 (4 Unit high + 1 Unit*)	BKFC-53	BKFC-10S	4	4	40	20		
				1	7	70			
				2	7	70			
				3	6	60			
				4	5	50			
				5	4	40			
				6	4	40			

\*\* Each cassette bin can hold one L/M-cassette or two S-cassettes, except for the BKFC-10S for S-VHS cassette. The cassette capacities shown are those with either all S-size or all ML-size cassettes loaded.

\* Space for air circulation.

## Flexible Configurations

The Flexicart console is designed to be modular and reconfigurable with optional VTRs and cassette bin units to meet differing application requirements. Cassette capacity and the number of VTRs that can be installed are interrelated and the chart shows various cassette capacities corresponding to different arrangements of installed VTRs and cassette bin units.

## Compatible Cassette Bin Units

Three alternative types of cassette bin units are available to match the different formats.

BKFC-8D for D-2 cassette tapes

BKFC-10B for Digital BETACAM, Betacam SX and Betacam SP cassette tapes

BKFC-10S for S-VHS cassette tapes



VTRs, cassette bin units and cassette tapes are optional.

The BKFC-8D and BKFC-10B allow users to maximize tape storage irrespective of cassette size, the BKFC-8D accepting large, medium and small D-2 cassette tapes and the BKFC-10B holding both large and small Digital BETACAM, Betacam SX or Betacam SP cassettes.

Equipped with optical cassette sensors, the cassette bin units allow for constant monitoring of cassette position by updating the application controller with information on bin occupancy and cassette size.

A red LED adjacent to each bin lights when the corresponding cassette is required for the current program. This allows an operator to confirm at a glance which cassettes are being used.

## Precision Elevator Mechanism

Cassette handling within the Flexicart console is executed by an universal robotics hand which has an x-y-z coordinate positioning mechanism, transferring cassettes between bins or between a bin and a VTR with high precision.



Because the Flexicart console can be configured with different combinations of VTRs and cassette bin units, their locations are marked with adjacent shutter plates which the robotic system senses. This positioning information is stored in the Versatile Cart Controller (VCC) during initializing and will be updated if the console configuration is changed.

## Barcode Reader

For improved operating efficiency and reliability, an optional Barcode Reader Unit BKFC-200 is available. With source cassettes carrying barcodes, the automatic operation of playback and record programs is simplified and the possibility of operator error is significantly reduced. The BKFC-200 uses a semiconductor red laser, fitted into the cassette handling robotics, to provide stable scanning performance. The BKFC-200 can read both the Sony format interleaved 2 of 5 and the industry standard 3 of 9 format to meet various applications. The interleaved 2 of 5 format is also used for the Sony Betacart and LMS, therefore, existing tape archives for these other multi-cassette systems can be directly used in the Flexicart. The 3 of 9 format is supported for generic use in various application.

With the use of this barcode reader, each cassette is identified by its unique barcode ID. Each source tape required for use is reserved in a playback or record list and identified by this ID code, not by a corresponding bin number as in the standard method. This provides highly reliable operation, with source tapes positively assigned to a list. Additionally Tape Title, SOM (Start Of Message), Duration and Segment mode are also encoded in the Sony barcode format (interleaved 2 of 5). This data can be automatically input to a playback list by entering the desired tape ID code.

## Versatile Interface

The Flexicart console has a built-in Versatile Cart Controller (VCC) which interfaces an external application controller to operate the entire Flexicart system.

The VCC communicates with each of the system components including the cassette handling robotics, cassette bin units, internal VTRs and an external routing switcher - continually monitoring their status. On command from the application controller, the VCC organizes and controls those devices to perform the required event at the scheduled time.

An optional protocol manual for the VCC interface is provided for users to create customized application software.

For versatile connection between the VCC and an application controller, the Flexicart console is equipped with an RS-232C and RS-422A selective communication port. Furthermore, a parallel communication port is also provided through which basic operation of the Flexicart can be controlled by triggering the VCC from an external piece of equipment or system.

## Interactive Status Reporting (ISR) Interface

The Interactive Status Reporting (ISR) system, recently developed by Sony, provides centralized status monitoring of an entire installation - a significant advantage in the efficient management of a broadcast operation. With the optional BKFC-110 fitted, Flexicart can be integrated into an ISR system. The BKFC-110 incorporates an RS-232C port, through which operating status and equipment information are monitored on the ISR terminal.

## SPECIFICATIONS

### GENERAL

Power requirements	AC100/120/220/230/240V 50 to 60Hz
Power consumption (without VTRs)	600VA
Operating temperature	5°C to 35°C (41°F to 95°F)
Operating humidity	25% to 80% (non-condensing)
Weight (without VTRs, cassette bin units and cassettes)	250kg (551 lb 2.5 oz)
Dimensions (W x H x D)	600 x 1980 x 1090mm (23 5/8 x 78 x 43 inches)

### CONNECTIONS

Remote control interface	REMOTE-1 RS-422A D-SUB 9-pin REMOTE-2 RS-232C D-SUB 25-pin
Parallel interface	D-SUB 50pin
Reference video in	BNC Black burst or Composite video
Time code in	BNC

### SUPPLIED ACCESSORIES

Power cable	(1)
Operation manual	(1)
Maintenance manual	(1)
Installation manual	(1)

### OPTIONAL SYSTEM COMPONENTS

BKFC-8D	Bin Unit for D-2 cassettes
BKFC-10B	Bin Unit for Digital BETACAM/ Betacam SX/Betacam SP cassettes
BKFC-10S	Bin Unit for S-VHS cassettes
BKFC-52	VTR Rack Mount Kit for DVR-28/P28/18/20/P20/10
BKFC-53	VTR Rack Mount Kit for DVW-A500/500/A510/510 DNW-A30/30 BVW-D75/75/70/D265/65/60 PVW-2800/2650/2600 UVW-1800/1800 SVO-9600, SVP-9000
BKFC-10D	RS-422A Serial Interface Expansion Board for two VTRs (Required with more than two VTRs installed.)
BKFC-110	ISR Interface Board
BKFC-200	Barcode Reader Unit
PC with MS-DOS (Ver. 5 and higher) and Windows (Ver. 3.1, 386 enhanced mode) or Windows NT	

\* ISR (Interactive Status Reporting) is an equipment management system developed by Sony Corporation.

\* "MS-DOS" and "MS-Windows" are trademarks of Microsoft Corporation.

\* "SQLBase" and "SQLWindows/Run" are trademarks of Gupta Corporation.

\* "Netware" is a trademark of Novell Corporation.

\* "Ethernet" is a trademark of Xerox Corporation.

\* "Betacam", "Library Management System" and "Flexicart" are trademarks of Sony Corporation.

\* "Digital BETACAM", "Betacam SX" and "Betacam SP" are trademarks of Sony Corporation.

\* Features and specifications subject to change without notice

### OPTIONAL ACCESSORIES

BVS-V1212	Analog Video Routing Switcher
BVS-A1212	Analog Audio Routing Switcher
DVS-V1616	Serial Digital Routing Switcher
DSU-V210	D-2 Parallel Digital Video Routing Switcher
DSU-A210	AES/EBU Digital Audio Routing Switcher
DAD-A210	Audio AD/DA Converter

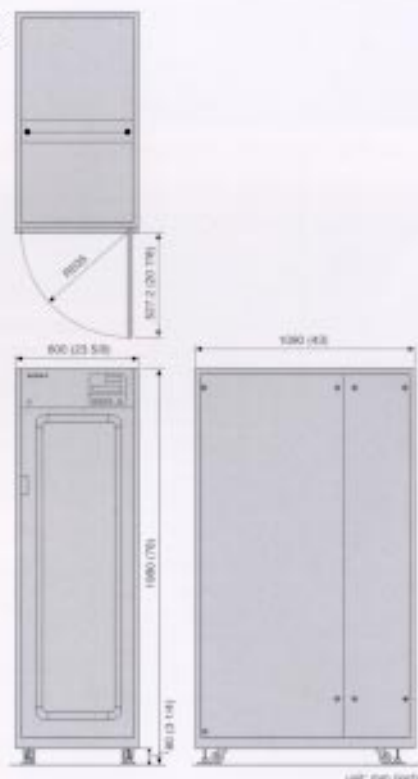
#### Application Software Packages

BZC-100:	Remote Control Software
BZC-110A:	Playback Software
BZC-210W:	2-CH Playback Software
BZC-120:	Record Software
BZC-180:	Data Registration Software
BZC-110B:	Playback Software for use with BZC-180

#### Flexicart VCC Interface Protocol Manual

D-2 cassette	D2S-6M/12M/22M/32M/6MNP D2M-6M/12M/22M/34M/64M/94M D2L-105M/126M/156M/186M/206M
Digital BETACAM cassette	BCT-D6/D12/D22/D32/D40 BCT-D34L/D64L/D94L/D124L
Betacam SX cassette	BCT-12SX/22SX/32SX/60SX BCT-64SXL/94SXL/124SXL/184SXL
Betacam SP cassette	BCT-5MA/10MA/20MA/30MA BCT-5MLA/10MLA/20MLA/30MLA/ 60MLA/90MLA BCT-5G/10G/20G/30G BCT-5GL/10GL/20GL/30GL/60GL/ 90GL UVWT-10MA/20MA/30MA UVWT-60MLA/90MLA
S-VHS cassette	VXST-60V/120V/140V/160V

### Dimensions



### Distributed