

# Specification for DVCPRO-50 Edit/Studio Recorder & Player

Specification No.: SD-2001/247(M)

Dated: 29/05/2002

## 1 SCOPE :

The performance requirement of Digital Studio/Edit Recorder and Player VTRs, based on DVC-PRO-50 digital studio recording format, for PAL(625/50) STANDARD, is laid down in this Specification. The equipment should be of rugged design, modular in construction and easy for operation & maintenance. The equipment should conform to the specification given here as under. All essential accessories are required to be quoted separately.

## 2 GENERAL SPECIFICATION:

### 2.1 Essential Features:

- (a) The system should be able to Record & Play 4:2:2 Digital Component video of 8 bits quantization with a data rate up to 50 Mbps. System should accept 270 Mbps SDI input.
- (b) The Video Tape recording/playback (VTR) equipment should be capable of accepting all range of the DVC-PRO 50 format 1/4" Cassettes of duration 12 to 92 minute.
- (c) The system should be rugged, Compact, modular in construction and easy for operation. It should fit into 19" rack occupying 4U size. It should have user friendly menu operation.
- (d) It should have 4 channel Analogue audio inputs (XLRx4) and 4 channel Digital Audio 48 KHz/16 bit AES/EBU, which can be controlled independently with separate record/Playback.
- (e) The intended system should be able to detect any of the DVC PRO format recorded tape automatically like DV (Mini), DVCPRO-25 etc., and switch accordingly.
- (f) It should have a JOG/ SHUTTLE search facility. The equipment should have auto-tracking facility. Edit recorder should have direct access control panel.
- (g) Edit recorder/player should have full scale editing functions in 50 Mbps mode like INSERT, ASSEMBLE etc. It should have linear editing with "To-the-Frame" precision.
- (h) Equipment should have full front panel TBC control for adjustment of Video Gain, Chrominance gain, Video phase, Sync phase, Set-up etc..
- (i) The equipment should have built in LTC, VITC, User bit generator and reader.

2.2 Items/facility required to be quoted as optional:

- a. System should support SDTI (SMPTE 305 M) interface for loss less native data recording/dubbing. This should be quoted as add on optional item.
- b. One set of Alignment tapes, Extension Boards, and Alignment tool kit must be quoted separately as an optional items.
- c. System should also accept Analog Component and Composite PAL video input signals. For this facility the required equipment must be quoted separately as an optional items to be added in the system.
- d. The firm must also quote for the Media/Cassettes 10 nos. each of various durations up to 92 Mnts.

**3. TECHNICAL SPECIFICATION:**

**3.1 General technical Specification:**

- |   |  |
|---|--|
| (a) Digital recording format                  | : DVCPRO-50 switch able to DVCPRO-25         |
| (b) Error correction                          | : Read Solomon                               |
| (c) Tape                                      | : 1/4 inch Metal Particle                    |
| (d) Tape speed                                | : 67.708 mm./sec.                            |
| (e) Tape Time Accuracy                        | : $\pm 1$ Frame (Continuous CTL)             |
| (f) Recording/Playback Time in DVCPRO-50 Mode | : About 90 to 92 minutes                     |
| (g) Fast Forward/Rewind Time                  | : Less than 3 min. with 92 Min of Tape       |
| (h) Search Speed                              | : $\pm 32$ times visible Colour picture      |
| (i) Digital Slow Motion                       | : -0.43X to +0.75X                           |
| (j) Edit accuracy                             | : $\pm 0$ frame                              |
| (k) Servo lock Time                           | : Within 0.5 sec (Colour framing/Standby ON) |
| (l) Power requirement                         | : AC 220 Volts $\pm 10\%$ 50Hz               |
| (m) Power consumption                         | : About 300 Watts                            |
| (n) Operating Temperature                     | : +5 deg. to 40 deg. C.                      |
| (o) Storage Temperature                       | : 0 deg. to 60 deg. C.                       |
| (p) Relative Humidity                         | : Less than 90%                              |
| (q) Weight                                    | : About 20 to 25 Kg.                         |

**3.2 General Video performance on record & playback with metal particle tapes:**

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|----------------------------------|--|
| (a) Sampling Freq.               | : Y:13.5 MHz, Pb/Pr:6.75 MHz.  |
| (b) Compression                  | : DCT & Variable length Coding, 3.3:1 DV compression.                              |
| (c) Bit Rate                     | : Up to 50 Mbps  |
| (d) 625 line Luminance Bandwidth | : 25 Hz. to 5.75 MHz $\pm 0.5$ dB,<br>(For Component in/Component out: $\pm 1$ dB) |

- (e) 625 line Colour Difference : 25 Hz. to 2.75 MHz.  $\pm 0.5$  dB,  
Bandwidth (For Component in/Component out:  $\pm 1$  dB)
- (f) 625 Line Bandwidth for Composite : 25 Hz. to 5.5 MHz  $\pm 1$  dB  
in/ Composite out 5.75 MHz. -3 dB,
- (g) S/N ratio : 60 dB or better,  
(For Component in/ Component out :  $\geq 55$  dB)
- (h) Differential Gain : Less than 3 %
- (i) Differential Phase : Less than 3 deg.
- (j) K-factor : Less than 1%
- (k) Y/C delay : Less than 10 nsec. (For all type of in/out)

### 3.3 Audio Performance:

- (a) System : 4-Channel 48 Khz, 16- bit each channel (Synch.  
With Video)
- (b) Headroom : 18 dB
- (c) Frequency response : 20 Hz. To 20 KHz.  $\pm 1.0$  dB.  
(20 db. below peak level)
- (d) S/N Ratio at peak level : More than 60 dB  
(weighted CCIR 468-3)
- (e) Distortion (at 1Khz at operational : Within 0.05%  
level(+4 dbm)
- (f) Wow & flutter : Less than 0.15 %
- (g) Dynamic range : More than 90 dB.

### 3.4 Signal Inputs Specifications (Mainly for recorder):

- (a) Reference in : BNC x 2 (Loop through), 0.3 Vp-p 75  $\Omega$ ,
- (b) Serial Digital Component (SDI) : BNC x 2 (active through), 270 Mbps.  
(With embedded Audio facility)
- (c) SDTI in : BNC x 2 (active through)  
(For optional facility)
- (d) Video in Composite : BNC x 2 (loop through), 1 Vp-p 75  $\Omega$  (Sync  
(For optional facility) negative)
- (e) Video in Component :  
(For optional facility)  
Luminance : BNC, 1 Vp-p, 75  $\Omega$   
Colour Difference :  
R-Y : 0.7 Vp-p, 75  $\Omega$   
B-Y : 0.7 Vp-p, 75  $\Omega$
- (f) Audio Channel Analog : 4 Ch. (XLR 3 pin connector,) +4/0/-20 dBu switch able, 600 $\Omega$  balanced /10 k  $\Omega$  selectable
- (g) Audio Channel AES/EBU : 2 x XLR
- (h) RS-422A /RS232C : D-sub 9 pin/ D-sub 25 pin
- (i) Time Code : 1 x XLR, 0.5 V to 8 vp-p, 10 K ohms

### 3.5 Signal Output for Recorder & Player:

- (a) Serial Digital Component : 3x BNC (Super On/OFF)  
(With embedded Audio facility)
- (b) Composite Video out : 1 Vp-p, 75 ohms Sync negative, 2 x BNC  
- Minimum
- (c) Component out : BNC x 3 (Y/PB/PR),  
Luminance : 1 Vp-p, 75 ohms, (Sync negative),  
Colour Difference : R-Y: 0.7 Vp-p, 75 ohms  
: B-Y: 0.7 Vp-p, 75 ohms
- (d) SDTI out : BNC x 2  
(For optional facility)
- (e) Audio Channel Analog : 4 Ch. (XLR 3 pin connector),  
+4/0/-20 dBu switch able,
- (f) Audio Monitor output : 2 x XLR, +4/0/-20 dbu at 600 ohms balanced.
- (g) Time code out : 1x BNC, 1.2 Vp-p
- (h) Remote Control Interface : D-sub, RS 422A & RS232C (All prevailing  
protocol).  
It should control all major parameters from  
remote location.

### 4. COMPLIANCE

A point by point compliance statement from the principal manufacturer in respect of all the points laid down in this specification is to be enclosed along with the offer in the format given below.

- a. Offers may not be accepted if the compliance statement is not signed by the manufacturer.

Sr.no. of DD specs.	DD specs.	Compliance (Yes/No)	Performance Fig. of eqpt. Offered.	Deviations, in case of non-compliance	Optional items if any reqd. to make the sys. Compliant to DD specs.	Features in the sys. Offered - Which exceed DD specs.

- b. Mere signature on a copy of our specification shall not be accepted as a compliance statement. Compliance statement in the format mentioned below shall only be accepted.
- c. The manufacturer should also record the performance figures of their equipment offered in the quote for which the compliance statement is enclosed.

- d. The figures so mentioned should be supported by record of these in the technical literature enclosed with the tender.
- e. Offers without the compliance statement may be rejected.
- f. Any deviation from the specification detailed in the compliance statement is to be highlighted separately.

#### 5. ACCESSORIES & OPTIONAL ITEMS

- a. All the essential accessories & Cables required for dubbing/Control etc., should be separately quoted in the offer.
- b. Any other optional items which are not covered in the above specification and if the firm feels it necessary to complete the system, must also be quoted separately. Firm must provide enough detail about such optional item to decide its utility.

#### 6. SPARES

Firms should quote for all the essential spares that are required for the smooth functioning of the system at least for one year after the expiry of the guarantee period. The total cost of spares should not exceed to 5% of total value of the equipment.

#### 7. DOCUMENTATION:

The equipment should be supplied along with one copy each of the technical Operation and Maintenance manuals. One copy of the above manuals should be supplied along with the tender for technical evaluation of the equipment.

#### 8. GUARANTEE:

The equipment should be guaranteed at least for two year of trouble free operation. Any failure within the guarantee period should be repaired free of cost by the supplier.

#### 9. INSPECTION:

Equipment shall be subjected to inspection at New Delhi. The complete configuration is to be wired up & demonstrated for complete working as per specifications.

#### 10. TRAINING:

Maintenance & operation training for two engineers per unit will have to be carried out at the designated location in India. Experienced instructor from manufacturer is required to be deputed to impart training to Doordarshan staff for two working days. The complete cost of this training should be quoted separately.