
Type of device:

stereo tape recorder

Tape transport:

processor-controlled 3-motor direct drive with 1/4" or 1/2" tape width and international layering

Reel motors: 2 BLDC pancake motors with rotor angle controlled sinusoidal commutation

Capstan motor: 1 BLDC axial flux motor with rotor angle controlled sinusoidal commutation

Electric brakes controlled by tape tension control

BLDC servo drive pinch roller

Hour meter (counts only during recording, playback and spooling)

Operating position: all angles between horizontal and vertical

Tape path:

2 x 44 mm tape stabilizing rollers left and right. Tape tension scales left and right with 1 deflection roller. 14 mm capstan shaft and 25 mm pinch roller with ball bearings

Tape speed:

19.05 cm/s and 38.1 cm/s and 76.2 cm/s

Tolerance of the set speed: < 0.03 %

Variable tape speed: +/- 10 % at all speeds

Variable tape speed at editing: - 95 cm/s to + 95 cm/s

Reel size:

up to a maximum of 300 mm reels (1/4" only), fastening via screw clamps

Minimum core diameter of reel: 60 mm

Wow & Flutter (weighted):

19.05 cm/s < 0.08 %

38.1 cm/s < 0.05 %

76.2 cm/s < 0.04 %

Tape slip (at every reel size):

1/4": < 0.05 %

1/2": < 0.08 %

Spooling time:

3 speeds selectable: 1 m/s (archive), 3 m/s, 10 m/s

Tape tension:

Playback and Record:

1/4": 0.8 N

1/2": 1.4 N

(measured at left reel)

Spooling:

Low and mid speed: 1.2 N

High speed: 0.6 N

(measured at the undriven reel)

Head assembly:

1/4" and 1/2":

Full track 2-gap erase head, recording head and playback head stereo with 2.75 mm or 5.25 mm track width. 2 Tape guides and 1 precision bearing stabilization roller

Head assembly cover with ferromagnetic shielding

Tape transport electronics:

processor-controlled, 2 sensors for tape tension

Real-time counter via high-resolution incremental encoder in time format hrs / min / sec / 100/sec + autolocator function

Autostop can be switched off during play and spooling by leader tape

Audio electronics:

one main board for record section with two separated amplifier PCBs for record and one oscillator-PCB. One main board for playback section with two separated amplifier PCBs for playback and one PCB for digital VU-meter driver. All PCBs plugged on 64 pin female connector on the mainboards

132 kHz oscillator frequency for erase and bias for all speeds

Playback and record amplifier to calibrate via conductive plastic trimmers separately for each equalization

High end headphone amplifier separately adjustable for headphones with an impedance of 16 - 2000 ohms

Level indication:

processor-controlled VU-meter with 100 ms response time and peak-hold function can be activated separately for each channel. Return time from 0 dB to -20 dB with active peak hold 3 sec. One digital LED peak value display with a response time of 5 ms at 0 dB and one digital peak value display at +3 dB with a response time of 5 ms. Hold time of both peak value displays 30 ms

Inputs:

XLR inputs electronically balanced plus RCA inputs unbalanced. To calibrate to +6 dB input level or continuously adjustable between -20 dB to +12 dB by switching via level control. One master level with tandem potentiometer for both channels +/- 6 dB

Input impedance: 2 M Ω balanced, unbalanced 5 M Ω

Outputs:

XLR outputs electronically balanced plus RCA outputs unbalanced. To calibrate to +6 dB or switchable to output level control from -80 dB to +12 dB.

Output impedance: 100 Ω balanced, unbalanced 25 Ω

Equalizing:

Playback (switchable NAB/CCIR):

19.05 cm/s: CCIR (IEC 1) 70 μ s
38.1 cm/s: CCIR (IEC 1) 35 μ s
76.2 cm/s: AES (IEC 2) 17.5 μ s

19.05 cm/s: NAB (IEC 2) 50-3180 μ s
38.1 cm/s: NAB (IEC 2) 50-3180 μ s
76.2 cm/s: CCIR (IEC 1) 35 μ s

Record:

19.05 cm/s: CCIR (IEC 1) 70 μ s
38.1 cm/s: CCIR (IEC 1) 35 μ s
76.2 cm/s: AES (IEC 2) 17.5 μ s

Frequency response (rec-repro measured with RTM SM 900):

1/4":

19.05 cm/s: 30 Hz - 13000 Hz +/- 1 dB
19.05 cm/s: 30 Hz - 18000 Hz +/- 2 dB
38.1 cm/s: 50 Hz - 20000 Hz +/- 1 dB
38.1 cm/s: 30 Hz - 20000 Hz +/- 2 dB
76.02 cm/s: 60 Hz - 20000 Hz +/- 1 dB
76.02 cm/s: 40 Hz - 22000 Hz +/- 2 dB

1/2":

19.05 cm/s: 30 Hz - 13000 Hz +/- 1 dB
19.05 cm/s: 30 Hz - 18000 Hz +/- 2 dB
38.1 cm/s: 40 Hz - 20000 Hz +/- 1 dB
38.1 cm/s: 30 Hz - 20000 Hz +/- 2 dB
76.02 cm/s: 60 Hz - 20000 Hz +/- 1 dB
76.02 cm/s: 40 Hz - 22000 Hz +/- 2 dB

Distortion (1 kHz rec-repro measured with RTM SM 900 valid for all tape widths):

19.05 cm/s 250 nWb/m < 1 %
19.05 cm/s 320 nWb/m < 1 %

38.1 cm/s 320 nWb/m < 1 %
38.1 cm/s 510 nWb/m < 1 %

76.2 cm/s 320 nWb/m < 1 %
76.2 cm/s 510 nWb/m < 1 %

Signal to noise ratio rec-repro (measured with RTM SM 900, RMS weighted):

1/4" (track width 2.75 mm):
19.05 cm/s 320 nWb/m > 63 dB
19.05 cm/s 510 nWb/m > 67 dB

38.1 cm/s 320 nWb/m > 66 dB
38.1 cm/s 510 nWb/m > 70 dB

76.2 cm/s 320 nWb/m > 67 dB
76.2 cm/s 510 nWb/m > 71 dB

1/2" (track width 5.25 mm):
19.05 cm/s 320 nWb/m > 66 dB
19.05 cm/s 510 nWb/m > 70 dB

38.1 cm/s 320 nWb/m > 70 dB
38.1 cm/s 510 nWb/m > 74 dB

76.2 cm/s 320 nWb/m > 71 dB
76.2 cm/s 510 nWb/m > 75 dB

Crosstalk:

1/4" (0.75 mm sep. track) > 62 dB at 1000 Hz
1/2" (2.00 mm sep. track) > 64 dB at 1000 Hz

Crackling disorder:

> 56 dB (at start and stop of recording for all tape width)

Erase efficiency (1kHz/510 nWb/m):

1/4":
> 84 dB at 1000 Hz, 19.05 cm/s
> 80 dB at 1000 Hz, 38.1 cm/s
> 76 dB at 1000 Hz, 76.2 cm/s

1/2":
> 82 dB at 1000 Hz, 19.05 cm/s
> 80 dB at 1000 Hz, 38.1 cm/s
> 77 dB at 1000 Hz, 76.2 cm/s

Power supply:

PSU with toroidal transformers shielded between the reel motors with 36 V DC unregulated and 12 V DC regulated and 2 x +/- 18 V precision audio power supply

Connection via IEC connector 3-pole
Protection class 1
240 V / 50 Hz European standard

Power consumption:

Stand by: 35 W
Play/Record: 45 W
Spooling: 90 W
160 W maximum power consumption

Operating ambient conditions:

Air humidity: 30 - 80 % relative humidity (non-condensing)
Ambient temperature: 5 - 45°C

Weight and dimensions:

30 KG, 480 mm x 500 mm x 250 mm (W x H x D)
