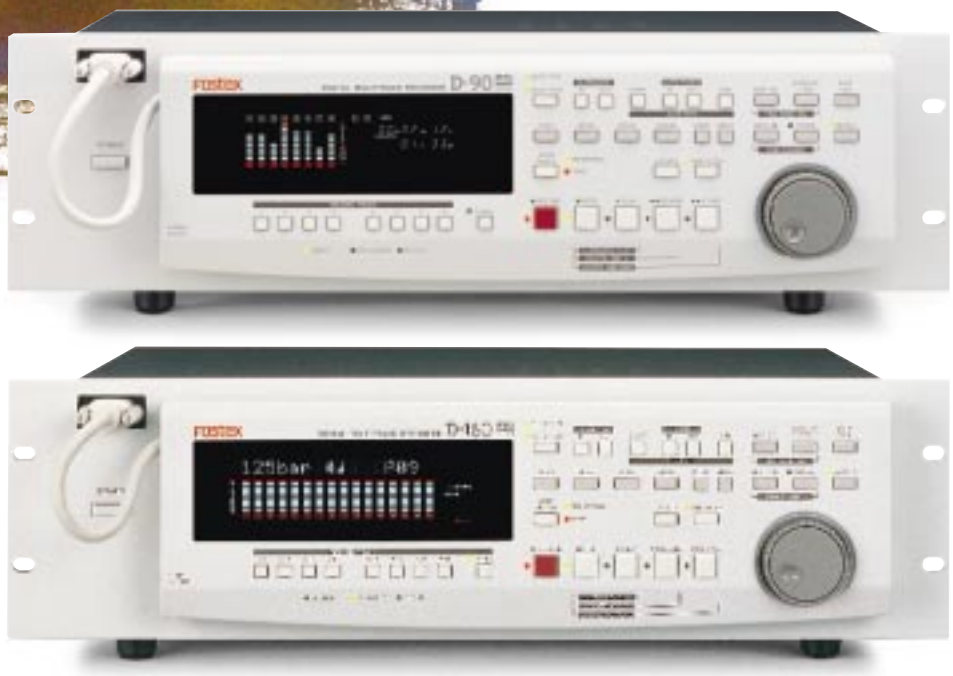
FOSTEX



D-90 & D-160

8 & 16 Track Digital Multitrack

D-90 & D-160

Professional Digital Multitrack Recor

Choosing to 'go digital' is fast becoming one of the easier equipment decisions you have to make when considering a new multitrack.

But choosing the *right* digital multitrack can be somewhat more difficult.

Before this decision can be made, you have to be sure that your chosen recorder excels in four critical areas: audio quality, expansion, synchronisation and editing.

DIGITAL QUALITY

Both the D-90 8 track and the D-160 16 track offer industry standards in digital recording specification. Using a combination of both 18-bit & 20-bit converters, the machines provide for CD-quality audio with a choice of 44.1kHz & 48kHz sample rates. Above all, the audio is non-compressed meaning no compromise in quality.

The optical digital I/O provides dual functionality by offering stereo in & out of any pair of tracks via S/P-DIF plus a full 8 channel I/O via the industry standard ADAT™ format.

This allows for import and export of digital linear recordings to the Fostex non-linear format for ease of editing as well as utilising an ADAT™ compatible multitrack for near real-time backup and restore.

EXPANSION

At the heart of the design philosophy of these two multitracks is the ingenious use of 'caddy-held' hard drives as a recording medium - increasing available recording time is simply a matter of changing and inserting new hard drives.

SCSI-2 devices such as SyQuest, Jaz, MO, etc. can be used as another fast backup and restore solution.

SYNCHRONISATION

Both machines are able to act as master or slave with the ability to chase to incoming MTC; MTC plus S/P-DIF or ADAT™ (optical); or run free after MTC lock. In addition, by adding the optional Model 8345 timecode board the D-160 can chase and lock to incoming LTC with the option of referencing to video or word clock.

EASY EDITING

Being non-linear format machines, full and easy to operate copy, paste, move and erase (with undo & redo) editing is available across all tracks.

Your choice is now more simple.

At least you know it's going to be a Fostex.

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EXPANSION WITH HARD DRIVE CADDIES

Hard drives can be exchanged in a matter of seconds by use of a key-lockable caddy system - just like changing a reel of tape. Important projects can also be archived to DAT, external SCSI-2 media, ADAT™ compatible machines or stored on cost effective E-IDE hard drives - all in native digital format.

D-90 features..

- 8 track digital multitrack with no compression
- 8 track simultaneous recording / playback
- Copy, paste, move & erase editing with undo & redo
- ADAT™ Digital Interface (simultaneous 8 channel)
- ±6% pitch control with no loss in audio quality
- SCSI-2 interface option for fast backup of sessions
- MMC & Fostex Exclusive Message for controlling transport from external MIDI device, e.g. sequencer
- Approx. 150 mins recording to 6.4Gb drive @ 44.1KHz
- 9 'Virtual reels' ■ Versatile chase mode
- Tempo mapping - create up to 64 tempo and signature changes per song ■ Midi clock with song position pointer
- Analogue & Digital I/O (S/P-DIF & ADAT interface)

D-160 features..

- 16 track digital multitrack with no compression
- 8 further 'ghost tracks' for additional takes
- ADAT™ Digital Interface (simultaneous 16 channel)
- ±6% pitch control with no loss in audio quality
- Optional LTC Timecode board with Word & Video sync
- SCSI-2 interface as standard for fast back-up of sessions
- Balanced I/O option (+4dBu I/Os on D-sub 25-pin)
- 44.1kHz and 48kHz sample frequencies
- Up to 99 'Virtual reels'
- Tempo mapping - create up to 64 tempo and signature changes per song
- Midi clock with song position pointer
- MMC & FEX implemented for external MIDI control
- Copy, paste, move & erase editing with undo & redo
- Analogue & Digital I/O (S/P-DIF & ADAT interface)
- True multitrack recording - simultaneous 16 track (8 analogue + 8 digital or 16 track digital) recording

backup in real time to ADAT

SCSI backup across multiple disks

D-90 configured as 2nd machine

Ready to repeat Paste 3 times?

Vari-pitch minus 4.3%

D-90 slave to MTC

Highly visible FL Tube display
To perform a given task only requires you to follow a simple 'question' and 'answer' step by step routine. All of which are clearly shown in the FL tube 'display centre' window in plain English.

HARD DRIVE CAPACITY / TIME CHART	
CAPACITY	TIME x8 TRACKS
1.6Gb	approx 37 minutes
3.2Gb	approx 75 minutes
4.3Gb	approx 100 minutes
6.4Gb	approx 150 minutes
8.6Gb	approx 202 minutes

EASY RECORDING TIME EXPANSION
The chart above gives the total amount of 8 track recording time available for a range of hard drive capacities. Please contact your authorised Fostex dealer for a list of approved hard drives.

D-90
8 Track Digital Multitrack

The D-90 is packed with the professional features, innovation and usability you have come to expect from Fostex.

JUST LIKE TAPE

The transport keys mimic a regular multitrack with the addition of being able to instantly locate to '0' or the end of a 'virtual reel' as well as auditioning the clipboard by holding STOP plus PLAY, REWIND, or F FWD.

Familiar functions available such as 5x fast forward and rewind in play mode with full audio monitoring as well as conventional wind and rewind buttons which "spool" at 30x normal speed.

Six further locate points are derived from Clipboard IN/OUT; Auto Return START/END; and Auto Punch IN/OUT. Once programmed, these allow for Auto Return and Auto Play. Auto Punch IN/OUT has a handy rehearsal mode to audition your 'take' before committing to disk. Cue points can be set by using the jog shuttle wheel to locate a desired point or, 'on-the-fly' by hitting the HOLD/► key while you listen to your track.

INTELLIGENT FEATURES

The D-90 features ±6% vari-pitch enabling precise pitch changes without any loss in audio quality and enhanced synchronisation to the outside world by chasing to incoming MTC for sequencers and computers, with or without external word clock (via S/P-DIF), and with near instantaneous lock-up times.

ADAT™ Digital Interface or 'Lightpipe' is fitted allowing real-time transfer of ADAT format recordings to be loaded into the D-90 for non-linear editing and of course the easy interfacing with the latest digital mixers.

The optional Model 8338 SCSI-2 interface card provides for fast backup and restore to a large range of SCSI-2 removable cartridge devices such as MO, PD, Jaz, SyQuest, etc.

Finally, there's the option of adding balanced I/Os at +4dBu with the Model 5040 card to complement the standard -10dBV connections on RCA connectors.

SCSI INTERFACE
For ultra-fast backup & restore to removable media

True CD quality digital recording direct to hard disk

Unlike many digital recorders available today which insist on using compression techniques as a trade-off for extended recording time, the D-90 uses 18-bit & 20-bit converters at sample rates of 44.1kHz & 48kHz to offer 8 tracks of true CD-quality recording and playback demanded by professional users.

All to and from caddy-held standard E-IDE hard drives.

Being a non-linear format, the D-90 offers easy to use non-linear editing via the extensive front panel controls and highly visible FL tube display.

PROFESSIONAL EDITING

Dedicated keys for Copy, Paste, Move & Erase when used with edit points programmed via the jog/shuttle wheel or 'on-the-fly', make intricate edits easy. In addition, clipboard data can be pasted to the same, another or multiple tracks and automatically repeated up to 99 times.

The D-90 offers enhanced synchronisation and can chase to incoming MTC, with or without external word clock (via S/P-DIF), and with near instantaneous lock-up times.

ABS - Absolute Time

MTC - Midi Time Code

Midi Bar/Beat/Clock

3 Time Base Operations
The 10-digit, 7 segment display shows the current time base in 3 user-selectable modes.

INSTANT SEARCH
Unlike conventional analogue multitracks, or for that matter tape based digital recorders, the D-90 has instantaneous search to ZERO, ABS END or any of the in-built 6 cue points.

VERSATILE DIGITAL I/O
The optical S/P-DIF provides for stereo digital IN & OUT of source signals; DAT connection for archive & restore; and offers Word Clock for sample accurate synchronisation.

MULTIPLE 16 AND 24 TRACK MACHINE SET-UP
Use a D-90 to control further D-90s and/or D-80s (backwards compatible) all from one remote control, locked to sample accuracy.

MODEL 5040 BALANCED I/O OPTION
The optional Model 5040 expansion board provides for 8 balanced inputs and 8 balanced outputs at +4dBu on D-sub 25-pin connectors for connection to professional level studio equipment. These inputs and outputs work simultaneously with the standard RCA connectors which provide -10dBV inputs and outputs.

D-160

16 Track Digital Multi

Using technology and ergonomics successfully proven in previous Fostex digital multitracks, combined with the Fostex hallmarks of innovation and clear ergonomics, the D-160 sets new standards in affordable professional digital multitracking.
The D-160 records true CD-quality uncompressed digital audio using 18-bit & 20-bit converters to caddy-held standard E-IDE hard drives - all under the full control of Fostex's new Disk Management System - FDMS-3 (meaning that, for example, up to 615 minutes of mono recording is possible on a 3.2Gb drive).

REAL USABILITY

Usability plays a major role in the design of the D-160 with features present such as a removable front-panel, which doubles as a remote control, a further 8 'ghost tracks' for multiple takes of one or more tracks, three time bases (ABS, MTC & bar/beat/clock) and the ability to have up to 64 tempo and signature changes per song.

PROFESSIONAL EDITING

Naturally, being a digital non-linear system, full Copy, Paste, Move & Erase with Undo & Redo is achievable via the extensive front panel controls and highly visible, 'plain english' FL tube display.
And when used with edit points programmed via the jog/shuttle wheel or 'on-the-fly', intricate edits are easy.
In addition, clipboard data can be pasted to the same, another or multiple tracks and automatically repeated up to 99 times.

INTERFACING

A SCSI-2 interface is provided for the fast backup and restore of sessions to external cartridge systems such as Jaz, PD, SyQuest and MO with the ability to store sessions across multiple cartridges.
In addition, ADAT™ Digital Interface In/Out x 2 is provided for all 16 channels.

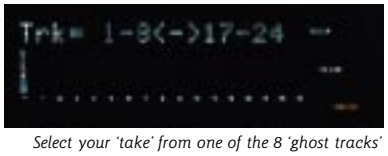
SCSI-2 INTERFACE AS STANDARD
The standard SCSI-2 interface allows for the ultra-fast archive and restore of sessions to and from external SCSI-2 cartridge systems such as Jaz, SyQuest, MO, etc.

8345 TIMECODE/SYNC CARD OPTION
The optional 8345 board allows the D-160 to chase to incoming LTC with the option of resolving to Video or Word Clock. LTC converted from internal MTC can be output.
Set-up is simplified by the addition of 'sync presets' which allow you to select from a number of preset combinations - TC only ANA / ADAT, Word Free ANA / ADAT, Video Vari ANA / ADAT, Video Free ANA / ADAT.

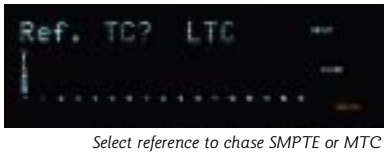
5041 BALANCED I/O OPTION
The optional Model 5041 board provides for 8 balanced inputs and 16 balanced outputs at +4dBu on D-sub 25-pin connectors for connection to professional level studio equipment.

Full alpha / numeric titling of track names

Originate Word clock from MTC, LTC or ADAT



Select your 'take' from one of the 8 'ghost tracks'



Select reference to chase SMPTE or MTC

Highly visible FL tube display
To perform a given task only requires you to follow a simple 'question' and 'answer' step by step routine. All of which are clearly shown in the FL tube 'display centre' window in plain English.

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This can be used for importing and exporting of ADAT™ compatible material, archiving D-160 sessions to the ADAT format and, when interfaced with the new breed of digital mixing consoles, realising a complete digital recording/mixing solution.

VIRTUAL REELS

The internal hard disk can be partitioned with up to a total of 99 programme areas known as 'virtual reels'. Each virtual reel holds its own timing and edit information just like lacing up a new reel of tape but with just a couple of button presses.

TIMECODE

The optional Model 8345 allows the unit to chase and lock to incoming LTC with the option of referencing to video or word clock. The timebase can be displayed in ABS, MTC and Bars & Beats with a programmable offset of up to 24 hours.

JOG SHUTTLE WHEEL
This dual function control lets you 'fast forward' or 'rewind' through a recording with full audio monitoring. And unlike lesser machines it achieves this without altering the pitch.

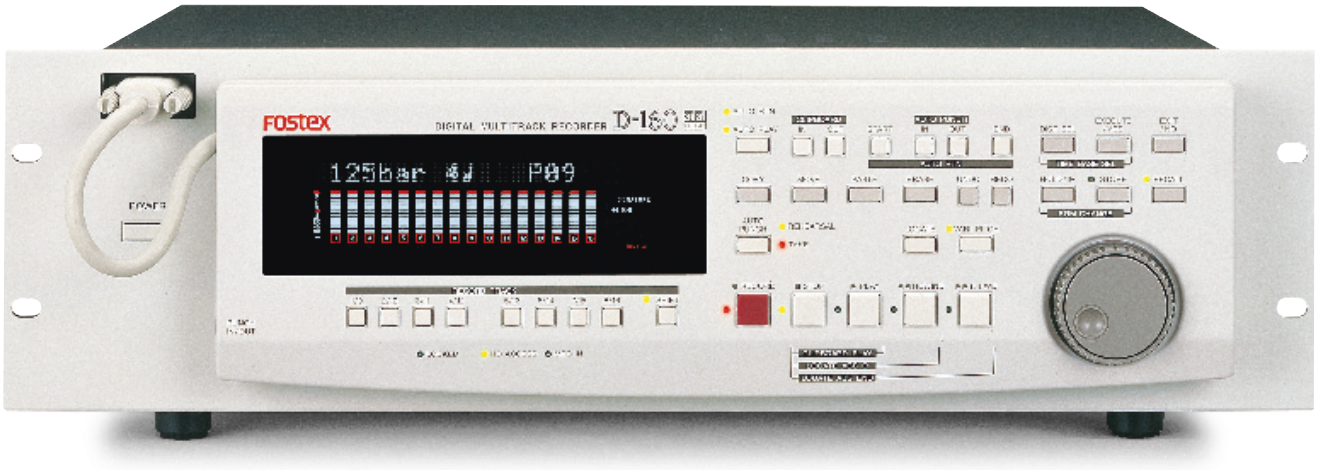
Dual Function
When using the inner wheel, the audio scrub continuously loops around a very small section of audio allowing you to pinpoint an edit start point precisely.

Finally, with the option of the Model 5041, the D-160 gets a full complement of balanced inputs & outputs at +4dBu on three D-sub 25-pin connectors in addition to the standard -10dBV connections which are provided on RCA connectors.

HARD DRIVE CAPACITY / TIME CHART

CAPACITY	TIME x16 TRACKS
1.6Gb	approx 18 minutes
3.2Gb	approx 37 minutes
4.3Gb	approx 50 minutes
6.4Gb	approx 75 minutes
8.6Gb	approx 100 minutes

EASY RECORDING TIME EXPANSION
The chart left gives the total amount of 16 track recording time available for a range of hard drive capacities. Note, the total times are calculated with audio on all 16 tracks. With 'FDMS-3', hard disk space is utilised more effectively and can increase recording times depending on how many tracks are used.



Optional extras for use with the D-90 and D-160

8051 FOOTSWITCH
Footswitch for remote Punch In/Out operation.
Comes complete with 2m cable.

9040B EMPTY HARD DRIVE CADDY
Robust empty D-90 / D-160 caddy for housing 3rd party IDE hard drives.

COP-1
Optical S/P-DIF to coaxial S/P-DIF converter for archiving or digital mastering to non-optical equipped DAT machines.

D-90 Specification

RECORDER SECTION	
Recording medium	3.5inch, E-IDE type hard disk (option)
Sampling frequency	44.1kHz, 48kHz (selectable)
Quantization	16 bit linear
A/D converter	18bit Delta-Sigma 64 times over sampling
D/A converter	20bit Delta-Sigma 128 times over sampling
Recording time	Approx. 60 min. 8 track fixed
	to 2.55Gb hard disk drive*
No. of recording tracks	8 (8 tracks of simultaneous
	recording/reproducing)
Pitch control	± 6%
Crossfade	10msec.
R/P frequency response	20Hz - 20kHz

INPUT/OUTPUT	
Input (1-8)	
Connector	RCA Pin jack x 8
Input impedance	10kΩ or more
Input level	-10dBV
Output (1-8)	
Connector	RCA Pin jack x 8
Load impedance	10kΩ or more
Output level	-10dBv
Data In/Out	Optical x 2
Format	IEC958 Part 2 (=S/P-DIF), Alesis Proprietary
	Multichannel Optical Digital Interface
	(selectable by setup mode)
Midi In / Out / Thru	
Connector	DIN 5 pin x 3
Format	MIDI standard
Punch In/Out	Phone jack x 1

PHYSICAL	
Dimensions (mm)	482 (w) x 148 (h) x 328.5 (d)
Weight	Approx. 7.5kg (without hard drive)
Power requirements	120VAC, 60Hz
	230V, 50/60Hz
	28W

Model 5040

INPUT/OUTPUT	
INPUT (1-8)	
Connector	D-Sub 25 pin x 1
Input impedance	10kΩ or more
Input level	+4dBu
OUTPUT (1-8)	
Connector	D-Sub 25 pin x 1
Optimum load impedance	600Ω or more
Output level	+4dBu
POWER SUPPLY	Supplied from the D-90 main unit DC ±15V

D-160 Specification

RECORDER SECTION	
Recording medium	3.5inch, E-IDE type hard disk x 1 (option)
Sampling frequency	44.1kHz, 48kHz (selectable)
Quantization	16 bit linear
A/D converter	18bit Delta-Sigma 64 times over sampling
D/A converter	20bit Delta-Sigma 128 times over sampling
Recording time	240 track - min. (FS 44.1kHz 1.3Gb hard disk drive)
No. of recording tracks	16 plus 8 additional tracks
	(8 tracks of simultaneous recording)
Pitch control	± 6%
Crossfade	10msec.
R/P frequency response	20Hz-20kHz

INPUT/OUTPUT	
Input (1-8)	
Connector	RCA Pin jack x 8
Input impedance	10kΩ or more
Input level	-10dBv
Output (1-16)	
Connector	RCA Pin jack x 16
Load impedance	10kΩ or more
Output level	-10dBv
Data In / Out	Optical x 4
Format	IEC958 Part 2 (=S/P-DIF) Alesis Proprietary
	Multichannel Optical Digital Interface
	(selectable by setup mode)
MIDI In / Out / Thru	DIN 5 pin x 3
Format	MIDI standard
Punch In / Out	Phone jack x 1
SCSI Port	D-SUB 25 pin (compatible with Apple SCSI-2)

PHYSICAL	
Dimensions (mm)	482 (w) x 148 (h) x 381 (d)
Weight	Approx. 8Kg (without hard drive)
Power requirements	120VAC, 60Hz
	230V, 50/60Hz
	28W

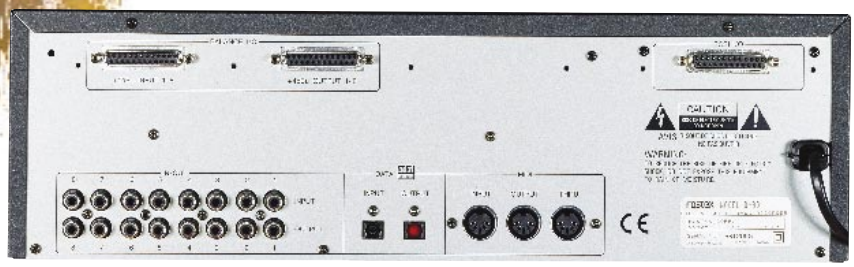
Model 5041

INPUT (1-8)	D-Sub 25 pin x 1
Input impedance	10kΩ or more
Input level	+4dBu
OUTPUT (1-16)	D-Sub 25 pin x 2
Optimum load impedance	600Ω or more
Output level	+4dBu
POWER SUPPLY	Supplied from the D-160 main unit DC ±15V

Model 8345

TIMECODE IN	
Format	SMPTE/EBU
Connector	XLR-3-31 type x 1 (pin 2 = HOT)
Ref. input level	2Vp-p
Minimum input level	0.25V p-p
Input impedance	20kΩ or more
TIMECODE OUT	
Format	SMPTE/EBU
Connector	XLR-3-32 type x 1 (pin 2 = HOT)
Ref. output level	2Vp-p
Output impedance	Less than 1kΩ
Optimum load impedance	600Ω or more
VIDEO INPUT	BNC type x 1
Format	Composite
Reference input level	1Vp-p
Input impedance	75Ω ON/OFF (switchable)
VIDEO THRU	BNC type x 1
Output level	Direct output of Video input
WORD INPUT	BNC type x 1
Reference input level	TTL level
Input impedance	75Ω ON/OFF (switchable)
WORD OUTPUT	BNC type x 1
Connector	BNC type x 1
Reference output level	TTL level
Output load impedance	75Ω
POWER SUPPLY	Supplied from the D-160 main unit
	DC+5V, DC+19V, DC-15V

D-160
Back panel fitted with Model 8345 Timecode and Model 5041 balanced I/O options.



D-90
Back panel fitted with Model 8338 SCSI-2 and Model 5040 balanced I/O options.

* Drive not included

FOSTEX®

Distributor / Authorised D-90 & D160 Dealer

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