

SE7000

PORTABLE DATA RECORDER



- 7, 14, 28, 32, and 42 track configurations
- Simple tape loading
Rugged construction
- Direct to 2MHz
- FM to 500kHz
- HDDR to 4.5Mbps per track
- Integral calibrator with signal monitoring
- Eight tape speeds
120ips - 1⁵/₁₆ ips
- 5000 hour - 5 year wideband head warranty
- All-speed data electronics
- Transport sequencing
- TTL remote/status with IEEE488 and RS232 options
- 95V - 130V, 190V - 250V AC operation
- Optional 20V - 39V DC operation
- Optional programmable shuttle

SE7000 Series is a family of compact, precision portable data recorders designed for both field and laboratory applications.

Model availability covers a comprehensive range of Wideband, Intermediate Band, direct, FM and digital recording requirements. For Instrumentation applications, SE7000 offers compatibility with IRIG Standards to ensure reliable data interchange and provide an important reference for performance verification.

SE7000 High Density Digital recording systems, using Penny & Giles' range of HDDR formatters, offer a versatile capability to accommodate almost any requirement for high-rate or low-rate data, in serial or parallel format, with the advantages of increased recording time, adjustment-free operation and excellent data integrity.

Extensive world-wide operational experience, coupled with a programme of continuing development, supports SE7000 Series' unbeatable reputation as a product which is reliable, rugged, easy to use, needs minimal maintenance, and which offers a level of performance normally associated with larger laboratory recording systems.

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In a world in which advanced technology generally means increased complexity, the **SE7000 Series** IRIG compatible portable/laboratory recording systems offers a refreshingly simple solution to the demands of today's data recording needs without sacrificing performance.

The increasing cost of test and research programmes demands that the user must have absolute confidence in the recorder and the way in which it operates. **SE7000** users require minimal 'hands-on' time to appreciate the operational benefits of the **co-planar tape transport**, **straightforward controls** and **simple calibration procedures**.

With the full range of **direct, FM** and **high density digital** formats, and track configurations up to **42 channels**, this field-proven range of recorders meets the challenges of both data acquisition and data analysis requirements by setting new standards for ruggedness, reliability and data accuracy.

The tape transport configuration allows speedy, no-fuss loading and unloading from both supply and take-up reel positions - an important consideration for applications where time and space are limited. The **co-planar format** gives **minimum stress guidance**, thereby imposing no limitation on the number of possible passes per tape, and the **balanced tension symmetrical open loop** servo system ensures that tape tension is maintained under constant, gentle control.

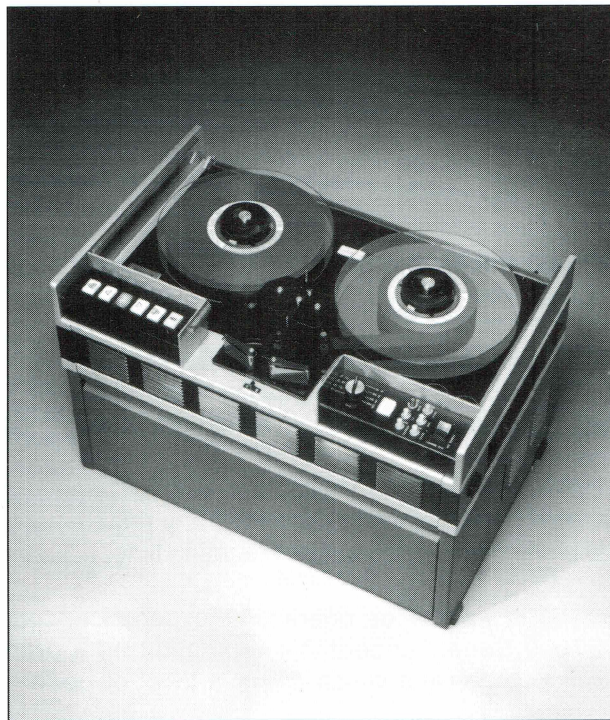
A **practical layout** of the operator controls has been chosen to ensure that both skilled and semi-skilled operator need only spend the minimum of time on familiarisation and setting-to-work. With **SE7000**, only the important controls and status indicators are readily available to the user. Incidental controls and adjustments are protected from inadvertent operation by a hinge-down door on the data electronics housing.

The development of Penny & Giles **high-efficiency wideband heads** has resulted in Wideband and High Density Digital models being offered with a 5000 hour head warranty. Further enhancement will result in the availability of a **double density** (4MHz direct, 1MHz FM) capability.

Although the recorder is a precision instrument, calibration procedures are surprisingly simple. The minimal effort required for performance verification and alignment of data channels is complemented by the **high intrinsic stability** of the data electronics. This stability has revolutionised user expectations by extending the period between routine calibrations from a matter of hours or days to months.

The integral **semi-automatic calibrator**, facilitates check-out of a complete FM record/reproduce system in a matter of minutes. For channel alignment, **crystal referenced carrier frequencies** are automatically switched with tape speed. The **integral voltmeter** also permits direct record sensitivities to be set without the need for external patching or equipment.

SE7000 is available with a comprehensive selection of options and accessories to suit individual requirements. **Penny & Giles** also offers the engineering experience to support the design of custom variants, application specific configurations and complete data recording systems.

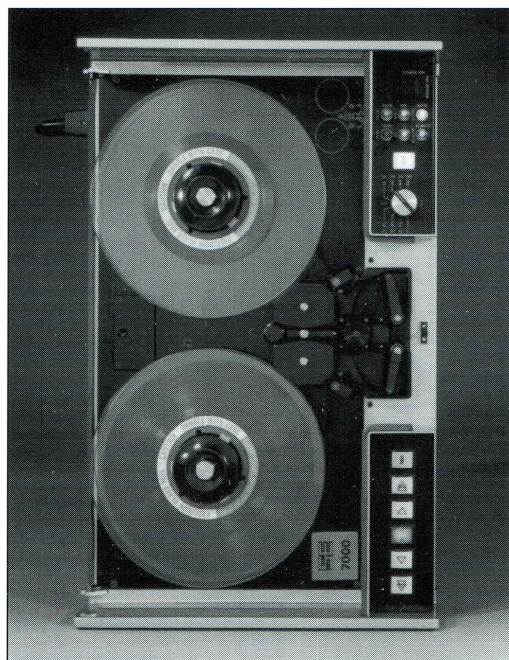


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Control And Indicators

Ergonomically designed for simple operation, all major system controls are conveniently positioned for both horizontal, vertical and rack mounting operation.



- Major controls illuminated
- 5-digit LED footage/meterage counter
- Hand-held remote control option
- Programmable shuttle with desk/rackmount remote control option
- Transport sequencing

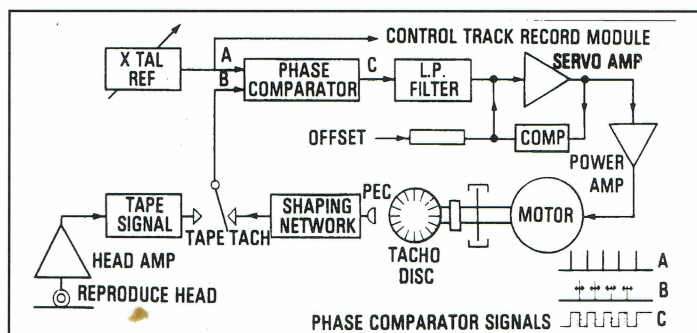
Tape Transport

The SE7000 **balanced tension co-planar** format minimises inter-channel timing errors and avoids the build-up of tape edge stress normally associated with concentric tape drives. Tape **loading and unloading on either reel** position is simplified by the use of single-action hub clamps.

- Constant balanced tension control
- Adjustment-free tape path
- Optical low tape sensing
- Single action non-detachable reel locks
- Minimum stress tape guidance
- 120ips - ¹⁵/₁₆ips operation
- 10 1/2 in and 8 in reel diameters
- Low inter-channel time displacement error (ITDE)
- Standard and thin-base tapes accommodated

Servo System

Wideband phase-lock servo system compares crystal reference frequencies with output from the capstan's optical tachometer. Optional off-tape servo control track gives **very high timebase accuracy**.

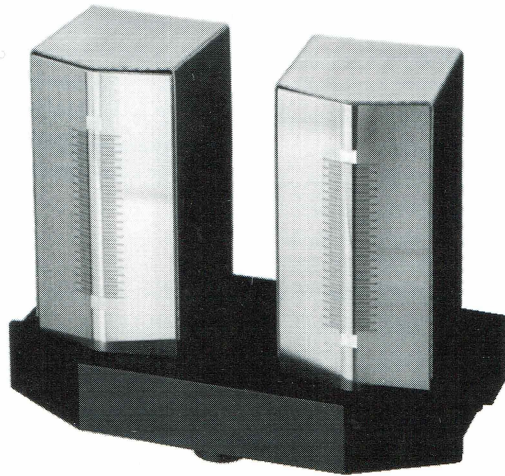


- Low time base error (TBE)
- Wideband phase-lock capstan servo
- Differential DC torque reel drive

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Headstacks

Wideband heads to an all-new high efficiency design allow Penny & Giles to offer extended life warranty without the limitations placed on some alternative systems. Wideband and Intermediate Band heads are **adjustment-free** except for wideband reproduce azimuth.



- 5000 hour 5 year wideband head warranty
- Simple access for cleaning and replacement
- Un-pro-rated warranty covers all tape operating modes
- IRIG wideband 2MHz and Intermediate Band 600kHz
- 7+1, 14+2, 28, 32 and 42 track formats

Calibration

The **semi-automatic calibrator** with either digital or analogue voltmeter (depending upon SE7000 model) gives a display of peak measurement without the need for patching cables. **Front mounted BNC sockets** also provide a convenient means of injecting and monitoring test signals.



- FM centre frequencies and deviations
- Wideband Group II, Wideband Group I and Intermediate Band
- FM input sensitivity
- Direct record sensitivity
- Electronics-to-electronics without patching cables
- Convenient external test signal input and reproduce monitor output sockets

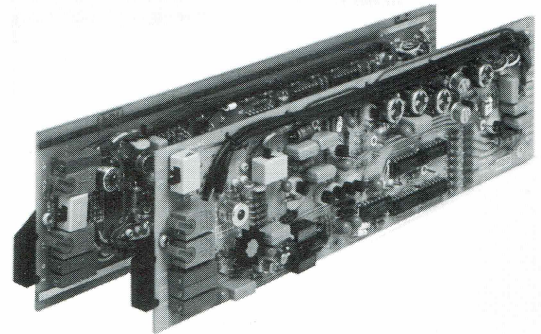
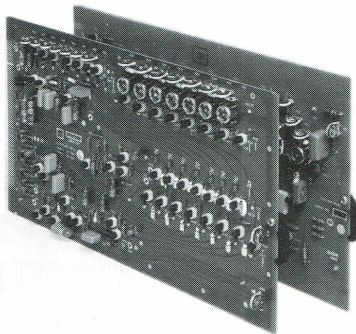
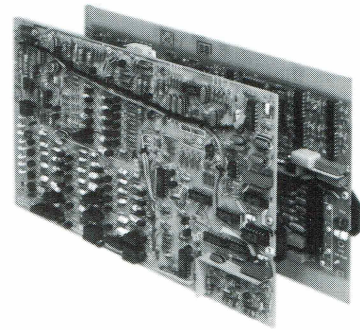
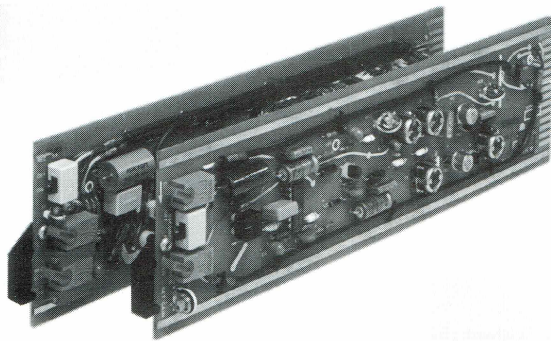
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Data Electronics

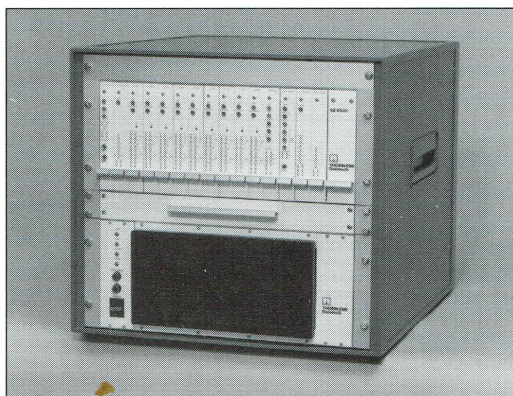
Plug-in, interchangeable record and reproduce modules are available for IRIG direct and FM modes plus optimised electronics for high density digital recording. The **high-stability designs** maintain long-term data accuracy and avoid the need for frequent re-adjustment.

- Direct wideband 2MHz
- Direct Intermediate Band 600kHz
- FM Wideband Group II 500kHz
- FM Wideband Group I 80kHz and Intermediate Band 40kHz
- Optimised HDDR 4.5Mbps per track using Penny & Giles formatters



High Density Digital Recording

SE7000 High Density Digital recording systems can be specified with any combination of SE9502, SE9503 and SE9510 'low' rate and 'high' rate formatters. **The 3PM Format** provides reliable data with guaranteed crossplay and low error rate. For ease of use and system integration, the formatters feature **automatic bit-synchronisation**, clock regeneration, remote control/status and are user configurable for **serial, parallel and word-serial** data input formats.

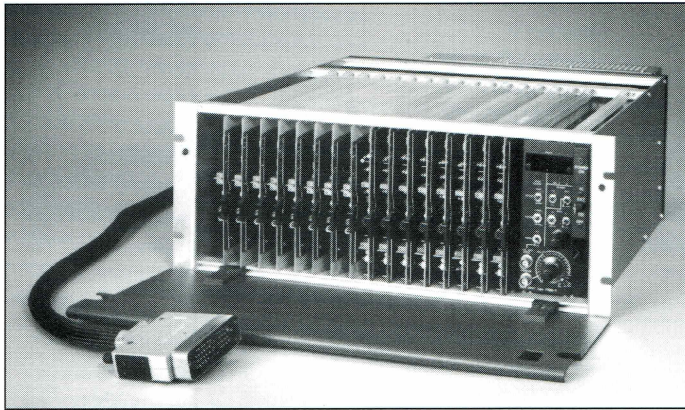


- Synchronous and asynchronous multiple data streams
- 4.5Mbps per recorder track
- Up to 144Mbps data transfer at 120ips
- Remote and local error status
- Serial, parallel and word-serial, user configurable
- Integral clock regeneration
- Automatic bit-synchronisation from 40kbps to 144Mbps

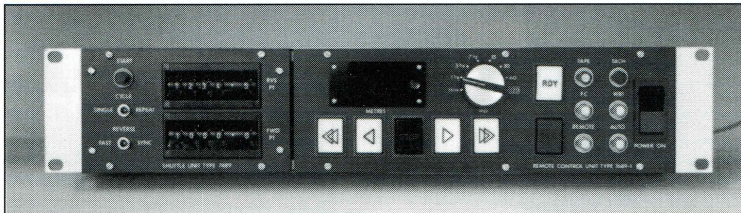
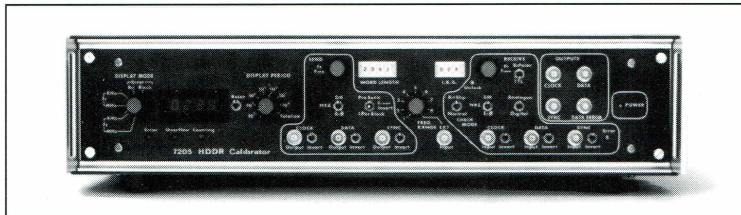
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Options And Accessories

A selection of **standard options and accessories** is available to suit most user needs. Penny & Giles also offers the capability to support individual, non-standard requirements with **custom options** and complete application specific SE7000 variants.



- IEEE488 and RS-232 remote control/status
- Hand-held remote control/status
- Desk/rack mounting remote control/status with programmable shuttle
- Rack mounting frame kit
- Portable and rack mounting reproduce housings for 28, 32 and 42 track systems
- SE7205 PCM/HDDR calibrator
- Ruggedised door kit
- Padded protective cover
- Bulk erasers
- Signal monitoring
- Time code sub-systems



Systems

In addition to the many standard features which are available, Penny & Giles offer the additional support of its applications engineering team to cater for individual requirements.

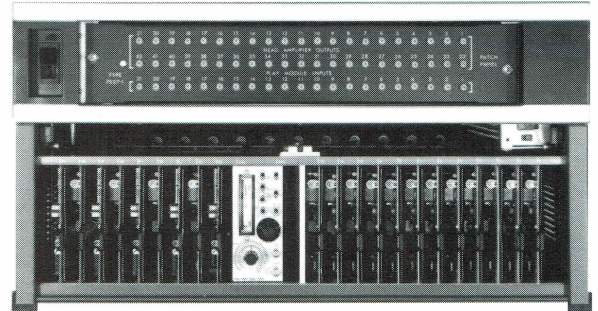
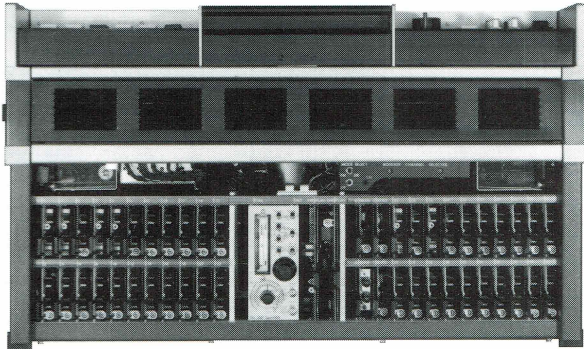
This service can range from application-specific modifications, to the supply of complete custom recording systems including interfaces, software, installation, commissioning, training, etc.

Penny & Giles recognises the importance of effective Project Management to ensure successful performance from initial system design, through to production, delivery and technical support. The use of computer Project Management aids efficiently tailors this process to meet the individual needs of customers worldwide.

Through a combination of experience and customer oriented thinking, Penny & Giles continues to develop its reputation as a supplier of high performance, high quality and high reliability recording systems, which meet the exacting requirements of users in a broad spectrum of applications.

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Penny & Giles Data Systems is Europe's leading manufacturer of advanced instrumentation and high density digital data recording systems.

Designed for data acquisition, data archive and data analysis, the Company's products are used extensively in defence, aerospace and industrial applications.

The range of high-capacity analogue and digital recording systems includes portable and laboratory recorders for research, development, testing and operational environments.

Product development and custom systems capabilities are supported by in-house technologies which include: wideband heads; precision tape drives and motors; advanced servo designs; high speed digital processing and interfacing; analogue data electronics; and mathematical modelling.

As the European Centre of Excellence for Data Recording Systems, Penny & Giles Data Systems supplies European and other national space agencies with systems for recording downlink data

from ERS-1, SPOT and Landsat earth resources satellites; rocket motor development; vibration testing; and electronics systems check-out.

Other typical data recording applications include telemetry, sonar, radar, acoustics, noise, vibration, communications, high-capacity data archive and high-rate data transfer.

Penny & Giles Data Systems Ltd, and the US subsidiary Penny & Giles Data Systems Inc, are part of the Data Technology product grouping of Penny & Giles International plc which is based in Christchurch, Dorset, England.

With a turnover of £28M, the Penny & Giles group of companies design and manufacture ranges of measurement, control and display instrumentation, control systems, data recorders and data recording systems.

The group's products are used worldwide in aerospace, defence, computer, marine, medical, process control and broadcasting industries.

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Product Selection Guide

MODEL	SE7000A	SE7000MI	SE7000MW	SE7000BW	SE7000C	SE7000CM
Channel Capacity	7 or 14 tracks	7 or 14 tracks	7 or 14 tracks	28 tracks	28, 32 or 42 tracks	28, 32 or 42 tracks
Tape width	1/2 in. or 1 in.	1/2 in. or 1 in.	1/2 in. or 1 in.	1 in.	1 in.	1 in.
Tape speed range	120 ips - 15 ⁵ / ₁₆ ips	120 ips - 15 ⁵ / ₁₆ ips	120 ips - 15 ⁵ / ₁₆ ips	120 ips - 15 ⁵ / ₁₆ ips	120 ips - 15 ⁵ / ₁₆ ips	120 ips - 15 ⁵ / ₁₆ ips
Maximum reel diameter	10 ¹ / ₂ in.	10 ¹ / ₂ in.	10 ¹ / ₂ in.	10 ¹ / ₂ in.	10 ¹ / ₂ in.	10 ¹ / ₂ in.
Maximum Tape Capacity	7,200 ft.	7,200 ft.	7,200 ft.	7,200 ft.	7,200 ft.	7,200 ft.
RECORD/REPRODUCE MODE:						
Direct Wideband	-	-	up to 2MHz	up to 2MHz	-	up to 2MHz
Direct Intermediate Band	up to 600kHz	up to 600kHz	-	-	up to 600kHz	-
FM Wideband Group II	-	-	up to 500kHz	up to 500kHz	-	-
FM Wideband Group I	up to 80kHz	up to 80kHz	up to 80kHz	up to 80kHz	up to 80kHz	up to 80kHz
FM Intermediate Band	up to 40kHz	up to 40kHz	up to 40kHz	up to 40kHz	up to 40kHz	up to 40kHz
Digital	up to 1.25 Mbps/track *	up to 1.25 Mbps/track *	up to 1.25 Mbps/track *	up to 4.5 Mbps/track *	up to 4.5 Mbps/track *	up to 4.5 Mbps/track*
REMOTE CONTROL:						
IEEE488	option	option	option	option	option	option
RS232	option	option	option	option	option	option
Parallel TTL	standard	standard	standard	standard	standard	standard
POWER REQUIREMENTS:						
AC PSU	95V-130V, 48Hz-420Hz 190V-250V, 48Hz-62Hz	95V-130V, 190V-250V 190V-250V, 48Hz-62Hz	95V-130V, 190V-250V 190V-250V, 48Hz-62Hz	95V-130V, 190V-250V 190V-250V, 48Hz-62Hz	95V-130V, 190V-250V 190V-250V, 48Hz-62Hz	95V-130V, 190V-250V 190V-250V, 48Hz-62Hz
DC PSU	20V-39V	20V-39V	20V-39V	-	-	-
Typical Weight	14 channel system: 43kg./95lb.	14 channel system: 43kg./95lb.	14 channel system: 43kg./95lb.	28 channel system: 43kg./95lb.	42 channel system: 43kg./95lb.	28 channel system: 41kg./90lb.

* In conjunction with SE9502 / SE9503 / SE9510 Series HDDR Formatters

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Penny+Giles
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