

Specifications

FUNCTION

Tape Format	IRIG 1/2-inch standard
Sustained Transfer Rate	0 to 64 Mbits/sec
Burst Transfer Rate	0 to 160 Mbits/sec to buffer capacity
Data Interfaces	Parallel TTL (8 or 16 bits) Parallel Differential (8 or 16 bits) Bit Serial ECL/PECL SCSI-2 Fast/Wide Custom
Latency	Instant "ON"
Scanner Speed	65 rps
Head-To-Tape Speed	497 ips
Recording Density	100,000 bpi
Block Size	128 kBytes
Maximum Recording Time	57 minutes (ST-160) 43 minutes (ST-120)
Record Time Example	122 hours at 500 kbts/sec (ST-1 60)

RELIABILITY

Error Correction	Reed-Solomon code combined with data interleaving
MTBF	4,000 hours at 100% duty cycle
MTTR	30 minutes

ENVIRONMENT

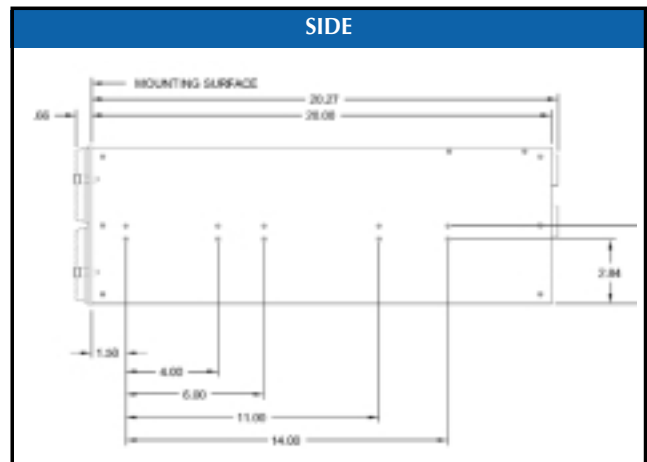
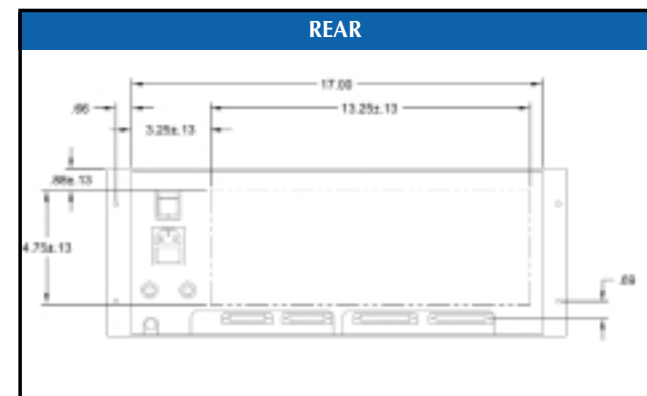
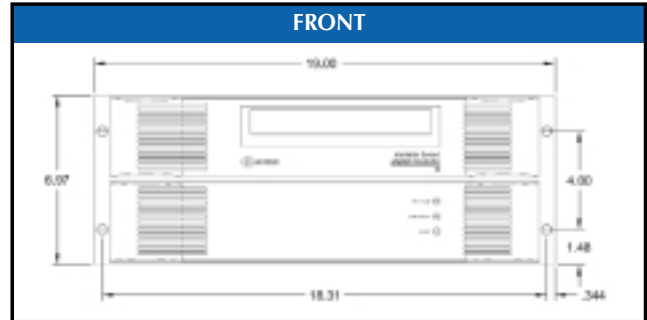
Temperature	5 to 40° C
Humidity	Up to 80% non-condensing
Vibration	5 to 40 Hz, 0.65 g's peak, 40 to 90 Hz, 0.3 g's peak

PHYSICAL

Size	20 H x 17 W x 7 D inches (50.80 x 43.18 x 17.70 cm)
Weight	44 lb (19.96 kg)
Power	90 to 264 Vac
Mounting	Standard 19-inch rack

Specifications subject to change without notice.

Dimensions



Measurements in inches.

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Variable Speed Digital Recorder Model 64



Features/Benefits

- ▲ IRIG standard recording format
 - ▲ 0 to 64 Mbits/sec variable data rate
 - ▲ 160 Mbits/sec burst transfer rate
 - ▲ 27.5 GByte media capacity
 - ▲ 57 minute record time at maximum streaming rate
- ▲ Multiple interface options
 - ▲ Instant "ON" recording
 - ▲ Compatible with all VLDS tape formats
 - ▲ Field-proven helical scan data recording technology
 - ▲ Worldwide service and support

Variable Speed Digital Recorder Model 64

Overview

Model 64 is a high speed IRIG Standard digital cassette-based instrumentation recorder capable of supporting data rates up to 64 Mbits/sec. This model can record data on S-VHS data cassettes at capacities of up to 27.5 GBytes at a linear packing density of 100,000 bits per inch. This capability, along with features such as dynamic speed matching, instant on and turn up/turn down on reproduce, make the Model 64 ideally suited for a wide variety of complex data gathering and data reduction applications.

Model 64 incorporates robust industrial broadcast transport technology as well as a microprocessor-controlled digital servo system for precise tape handling and long-term dependability. The helical scan mechanism contains unique Sypris designed heads that, coupled with our specially designed electronics, achieve exceptional recording density. The entire transport mechanism and housing are ruggedly constructed and are suitable for use in both mobile or laboratory applications.

Typical Applications

- ▲ ASW
- ▲ Telecommunications
- ▲ PCM telemetry recording
- ▲ Flight test
- ▲ Compressed digital video images

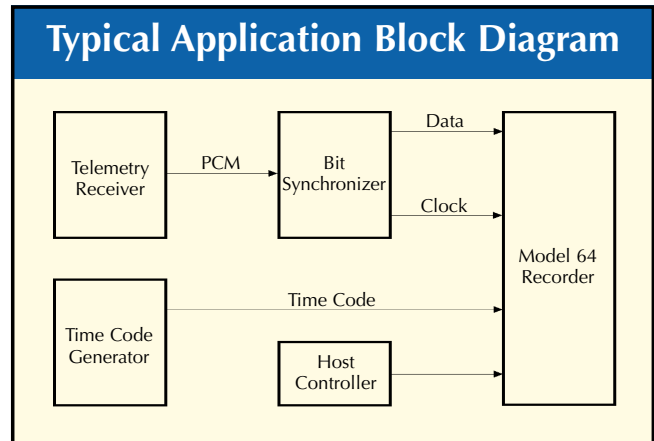
Features

- ▲ IRIG standard recording format
- ▲ Reliable, cost-effective instrumentation recorder for applications with data rates up to 64 Mbits.
- ▲ Media can be degaussed to DOD-approved security levels
- ▲ Field-proven helical scan data recording technology
- ▲ Built-in, high-speed buffer for burst rates to 160 Mbits/sec
- ▲ Dynamic speed-matching without bit stuffing
- ▲ Error performance less than one error event in 10^{11} bits

Sypris Technology

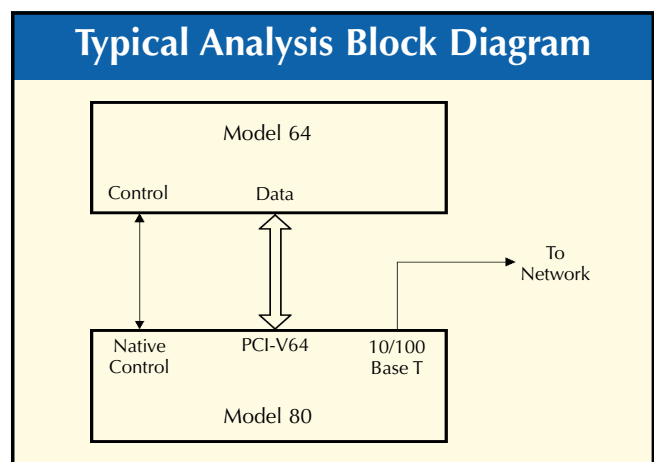
The Model 64 uses high-density recording techniques applied to standard high-energy S-VHS cassettes to achieve data capacities of up to 27 GBytes at a recording density of 100,000 bpi. Burst recording rates of up to 160 Mbits/sec are possible.

The use of an on-board data buffer enables the Model 64 to provide features such as speed matching, instant "ON" and Turn UP/Turn Down for a wide variety of complex data gathering and data reduction applications.



The Model 64 incorporates industrial and broadcast transport technology with a microprocessor-controlled digital servo system, for precise tape handling and long-term dependability. The data path electronics designed by Sypris are a technological spin-off from longitudinal recorder products, a technology proven and refined over the last 40 years.

The Model 64 has a helical scan recording mechanism that uses MIG recording heads to ensure stable and long-lasting performance. All tape movement and scanner/head positioning are controlled by a servo system. The transport mechanism and housing are ruggedly constructed and suitable for use in mobile and field applications.



The tape is routed from the cassette supply reel to the cassette take-up reel in a path that wraps 180° around the scanner/head assembly.

Data Buffering

The Model 64 incorporates a high-speed data buffer used during record and reproduce operations and provides the following features:

Buffer

Standard 64 MBytes buffer.

Speed Matching

Allows the Model 64 to match the rate at which data is accepted and delivered.

Burst Operation

Permits the Model 64 to accept data rates from 0 to 160 Mbits/sec.

Instant "ON"

Permits the Model 64 to begin data transfer within 5 milliseconds.

Turn UP/Turn Down

Allows the user to reproduce data at a rate different from the rate used for recording data.

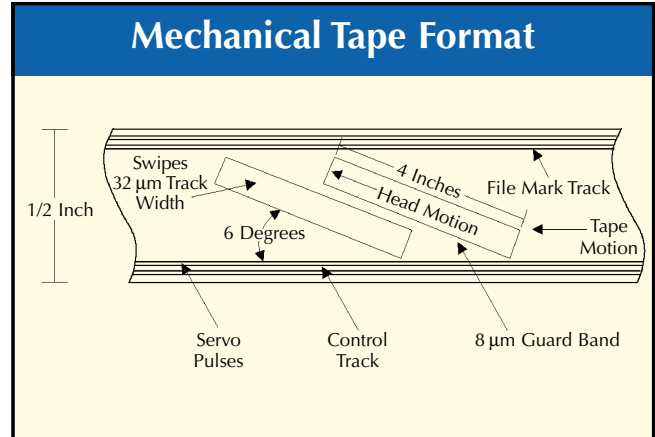
User-selectable buffer thresholds manage the capacity levels of the data buffer. Two threshold levels are used, one for record and one for reproduce. Once set, these threshold levels are preserved, even in the event of power cycles.

By adjusting the buffer thresholds, the stop/start performance of the tape transport mechanism can be optimized, to achieve maximum responsiveness while still meeting the data throughput requirements of a specific application.

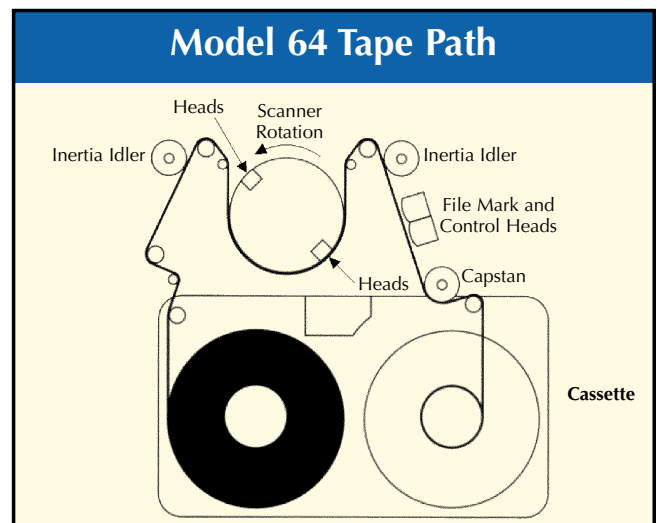
The Direct Channel feature of the Model 64 allows voice annotation, time code or other user identification data to be recorded continuously with the data stream. Analog input to the Direct Channel is digitized and then interleaved with the incoming digital data prior to the data being sent to the buffer. This maintains time correlation between the input digital data and the Direct Channel data. During reproduce, the digitized Direct Channel data is converted back to its original form.

Recording Data

Unlike multi-track longitudinal tape recorders, the Model 64 records data on a path (or swipe) oriented at a 6° angle across the 1/2-inch tape. This shallow angle provides a path four inches long in which to record 32 kBytes of user data. Four of these comprise a fixed recording block of 128 kBytes.



Each data block is assigned a principal block number (PBN), which is recorded in the swipe and is used to locate and recall specific data blocks. The data blocks are numbered sequentially along the tape, allowing the Model 64 to search in fast mode in either direction. This feature provides for efficient tape searches.



Transfer Rates

The Model 64 supports sustained data transfers at streaming rates from 0 to a maximum of 64 Mbits/sec. The data rate in this range is continuously variable for the duration of a cassette.

The Model 64 also accepts data transfers at rates higher than the maximum streaming rate. Burst data rates range from 0 to 160 Mbits/sec, up to the capacity of the buffer. As a result, the Model 64 is well-suited for a wide range of applications.

Media

The Model 64 records data onto low cost, broadcast quality, high-density Sypris ST-120 or ST-160 S-VHS cassettes. Each ST-160 cassette stores up to 27.5 GBytes and costs the user less than 1/4 cent per MByte recorded.

Sypris tape is constructed from the highest broadcast quality material, and its data-packing capacity is enhanced by high-energy ultra-fine particles and an anti-static back-coating. For further data protection, the tape is encased in a high-impact plastic cassette. Sypris tape cassettes undergo certification to ensure cleanliness and minimize data drop-outs.

Unlike low-energy, nine-track tapes, these high energy cassettes are immune to self-erasure and print-through. Periodic repacking is eliminated due to the low tape tension used.



Sypris data recording cassettes are universally accepted and available worldwide. Similar in design to standard VCR cassettes, Sypris cassettes are easy to handle, identify, bar code, ship and store. They have an expected shelf life of 20 years when properly stored.

Enhance Data Integrity

To combat occasional tape flaws or surface contamination, the Model 64 incorporates powerful Reed-Solomon error correction codes and interleaving techniques, enabling the system to recover from data drop-outs as large as 2,048 Bytes. This translates into less than one error event in 10^{11} bits.

Interfaces

The Model 64 interfaces are contained on a "personality" circuit card. This allows for interfaces to be easily changed and to accommodate a variety of standard interface options.

Available interfaces:

- ▲ Parallel TTL (8 or 16 bits, software-selectable)
- ▲ Parallel Differential (8 or 16 bits, software-selectable)
- ▲ Bit Serial ECL/PECL
- ▲ SCSI-2 Fast/Wide

The personality slot also accepts user-defined or user-developed custom interfaces. For system integrators, adapter kits and device drivers are available.

High Speed Tape Copy

High-speed tape copy allows the user to make duplicates of existing tapes quickly and easily.

Accessories

Touch Screen Control Panel

Allows local or remote control and status monitoring of the Model 64 using an easy-to-operate rack mount touch-screen control panel.

RS-232 Control Adapter

Allows control of the Model 64 via RS-232.

Multiplexer/Demultiplexer (ARMOR)

Allows recording of multiple asynchronous data streams, analog and digital.

RS-5 Cassette Loader

Allows up to five cassettes to be sequentially loaded and recorded unattended.

PCI-V64 Interface Kit

Links Sypris 1/2-inch digital cassette recorders, Buffered VLDS and Model 64 recorder to PC-compatible computers for data transfer and control.

Rack Slides

Rack slide mounting hardware is available for mounting the Model 64 in a RETMA 19-inch rack.

Interconnect Cables

Interconnect cables for both data and control are available from Sypris.

Diagnostic and Control Kit

Software and hardware are available for controlling and performing diagnostics on the Model 64 via an IBM-compatible PC.
