

Rugged 14-bit SIGINT IF Disk Recorder

- Three IF paths plus one baseband path
- IFs: 160, 140, 70, 60 and 21.4 MHz (menu-selectable)
- Seven menu-selectable recording bandwidths (50 MHz to 781 kHz)
- 14-bit recording*
- Optimised input/output filtering
- AGC on IF paths
- Built-in down- and up-conversion (IF paths)
- Audio & IRIG-B channels (inc. 1PPS support)
- Hot-swappable disk crate
- Ethernet remote control
- Data extraction direct to workstation/network
- Optional Windows and Linux GUIs for remote control and data extraction

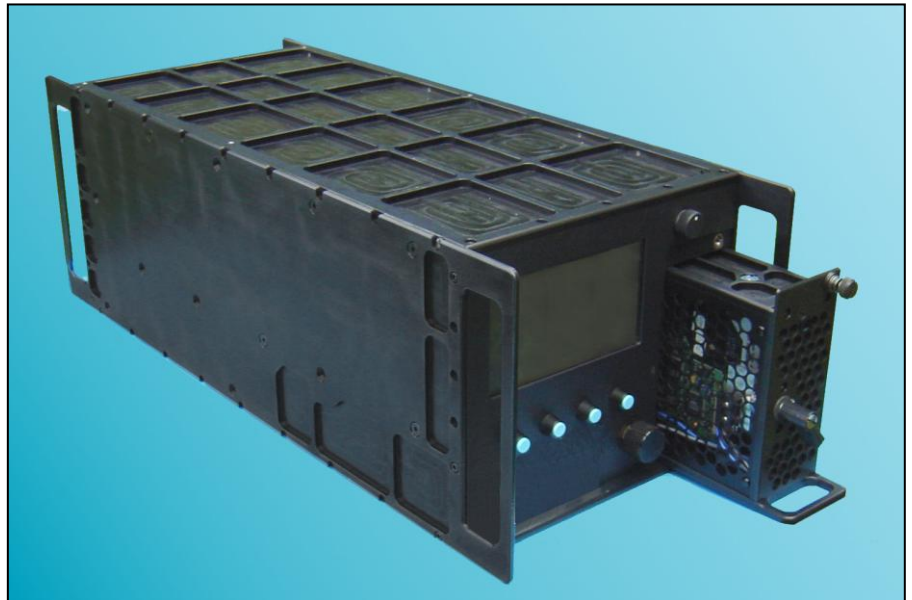


Figure 1: Avalon AE8250-MM60 SIGINT Disk Recorder with interchangeable disk crate exposed.

* 8-bit recording in 50 MHz mode.

Introduction

The compact, self-contained **Avalon AE8250-MM60 SIGINT Disk Recorder** is designed to record and play a single channel of wideband SIGINT data from any one of four permanently connected signal sources. Standard menu-selectable IFs include 160, 140, 70, 60 and 21.4 MHz. IF paths have menu-selectable Automatic Gain Control (AGC) and can accept signal levels from -75 to +5 dBm. A baseband (video) path is provided for use with legacy IF-to-baseband converters and other baseband signal sources. AE8250-MM60 offers seven menu-selectable record/play bandwidths as standard: 50, 25, 12.5, 6.25, 3.125, 1.5625 and 0.781 MHz. Auxiliary channels are provided for Voice and IRIG-B, and the GSP 1 PPS input is supported.

Inputs signals are filtered and digitised at 14-bit bit resolution. IF signals are down-converted to the selected recording bandwidth using fast digital signal processing (DSP) techniques and recorded as IQ (complex) pairs of samples for easy up-shifting during replay. Baseband signals are recorded as 'real' samples. Recordings are made at the full 14-bit resolution at all bandwidths except 50 MHz where 8-bit recording is used.

In addition to normal analog replay in IF and baseband form, recorded data can be exported digitally in several convenient ways. First, it is possible to BACKUP data to an Ultrium LTO-3 tape drive connected directly to the recorder's SCSI data port using software utilities running on the recorder itself. LTO-3 tapes can also be RESTORED from an LTO-3 tape to the same or another AE8250-MM60 for analog replay, if required. This represents an extremely convenient and low cost method of archiving or transferring data from one location to another. Second, data can be EXTRACTED to an attached PC via the recorder's SCSI and USB-2 data ports using software tools running on the host PC. This technique permits data to be transferred to any convenient local or networked storage device. For large scale data transcription tasks, the **Avalon AE2602 Disk Crate Reader** is designed to transcribe data from the disk crate to a range of external storage devices (LTO-3 tape, hard disk, RAID, etc.) at the maximum possible speed. Windows (W2000, XP and Vista) and Linux-based platforms are supported.

The optional **Avalon Recorder Utility (ARU)** can be used both to control the recorder remotely and as a convenient means of extracting selected passages of data to a host computer and/or data network. Please refer to the Avalon brochure *Avalon Recorder Utility (ARU)* for a full description of this GUI software tool.

Technical Specifications (AE8250-MM60)

Number of Channels:	One.
Recording Modes:	AE8250-MM60 is able to record a single channel of analog data in any one of six menu-selectable IF and or baseband (video) modes: IF Modes: 160, 140, 70, 60 and 21.4 MHz (other IFs can be supplied to order). Baseband Mode: IF down-and up-conversion can be disabled in order to record baseband (video) signals directly.
Channel Bandwidths/:	50, 25, 12.5, 6.25, 3.125, 1.5625, 0.7812 MHz (menu-selectable).
Frequency Response:	IF paths: +/-2 dB with optimised (internal) anti-alias filters. Baseband path: DC to band-edge +/- 2 dB.
Recording Duration:	50 MHz mode: 40 minutes (8-bit recording). 25 MHz mode: 40 minutes (14-bit recording). 12.5 MHz mode: 80 minutes (14-bit recording). 6.25 MHz mode: 160 minutes (14-bit recording). 3.125 MHz mode: 320 minutes (14-bit recording). 1.5625 MHz mode: 640 minutes (14-bit recording). 0.7812 MHz mode: 1280 minutes (14-bit recording).
Recording Format:	IF sources: IQ pairs, 2s complement . Baseband: real samples, 2s complement.
Backup / Transfer / Archive:	BACKUP/RESTORE to/from optional attached Ultrium LTO-3 tape drive. EXTRACTION to any suitable storage device (LTO-3, USB hard disk drive, RAID, etc.) using the Avalon Recorder Utility (ARU) suite of software tools running on a host PC.
Replay (analogue):	Same format and bandwidth as recording (with automatic detection of recording mode) plus parallel 'Common IF' output at 30 MHz +/-BW/2 (IF recordings only).
Replay (digital):	Binary files for computer analysis (using Avalon Recorder Utility software tools).
Input Levels for Full-scale Recording:	IF sources: -75 to +5 dBm from 50 Ω source (AC coupled). Baseband sources: -30 to +10 dBm from 50 Ω source (AC/DC coupled).
Input & Output DC Offset:	+/- 0.5 x Full Scale Deviation (baseband path only).
Output Levels from Full-scale Recording:	Normal IF: 0 dBm into 50 Ω load (AC coupled). Common IF: 0 dBm into 50 Ω load (AC coupled). Baseband: +4 dBm into 50 Ω load (DC coupled).
Spur Free Dynamic Range:	50 MHz mode: >50 dB. Other BW modes: >60 dB.
Reference Frequency:	Stable internal 10 MHz clock, or external 10 MHz source.
Remote Control:	Ethernet Base 10/100.
LOOP recording:	The recording media can be configured as a simulated 'endless loop' for record and play.
SKIP mode:	Permits the user to tag selected passages of data with SKIP flags to avoid accidental overwriting. SKIP flags can be set either while recording or when the recorder is stopped.
IRIG-B channel:	Yes. System time automatically locks to valid external IRIG-B source, with optional 1 PPS.
Voice Channel:	Yes.
Data Extraction Ports:	SCSI Ultra-320 and USB-2.
Graphical User Interfaces:	Local colour screen and pushbuttons/encoder. Optional Avalon Recorder Utility (ARU) - a fully-featured Windows™ software utility supporting both remote control and data extraction.
Power:	85 –240 VAC, 50- 60 Hz, 150 VA.
Physical:	178 mm (h*) x 215 mm (w) x 536 mm (d) [*without rubber feet]. 12.5 kg. Optional single-recorder and side-by-side Rack-Mounting Kits available.
Environmental:	EMC to MIL-STD-461E. Shock and Vibration to MIL-STD-810E.

These specifications are provisional and subject to change without notice. Please contact Avalon for full technical details.

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