AE9000-50/25/12 Rugged 2-Channel Disk Recorder

- Two wideband channels (IF and/or baseband)
- IFs: 160, 140, 70 and 21.4 MHz centre frequencies (menu-selectable)
- Three menu-selectable recording bandwidths (50, 25 and 12.5 MHz)
- 8 and 16-Bit Recording Modes (menu-selectable)
- Optimised Input / Output Filtering

- 8 TB removable Disk Crate as standard (16TB optional)
- Built-in down/up-shifting (IF paths)
- Intuitive Graphical User Interface
- Data extraction direct to workstation/network
- Community-standard headers supported
- Longer record durations optional

Avalon AE9000-50/25/12 Two-Channel SIGINT Disk Recorder (front view).

TECHNICAL OVERVIEW

The compact, self-contained **Avalon AE9000-50/25/12 SIGINT Disk Recorder** is designed to record, reproduce and export up to, two channels of wideband signals at a total bandwidth of up to 50 MHz. The recording channel can be configured to record either an IF or a baseband (video) signal. Two user-selectable recording resolutions are offered: 8-bits for routine data collection tasks and 16-bits for high-resolution applications. User-selectable IFs include 160, 140, 70 and 21.4 MHz. Three user-selectable recording bandwidths are supported: 50, 25 and 12.5 MHz. The unit's hot-swappable Disk Crate (SSD standard) is able to store up to 40 hours of mission data in 1 Ch x 25 MHz (8-bit) recording rates. Record times are proportionally longer or shorter at different resolutions or bandwidths. The primary means of local control is by means of a monitor, mouse and keyboard attached to the recorder's rear panel. The unit can also be controlled remotely.
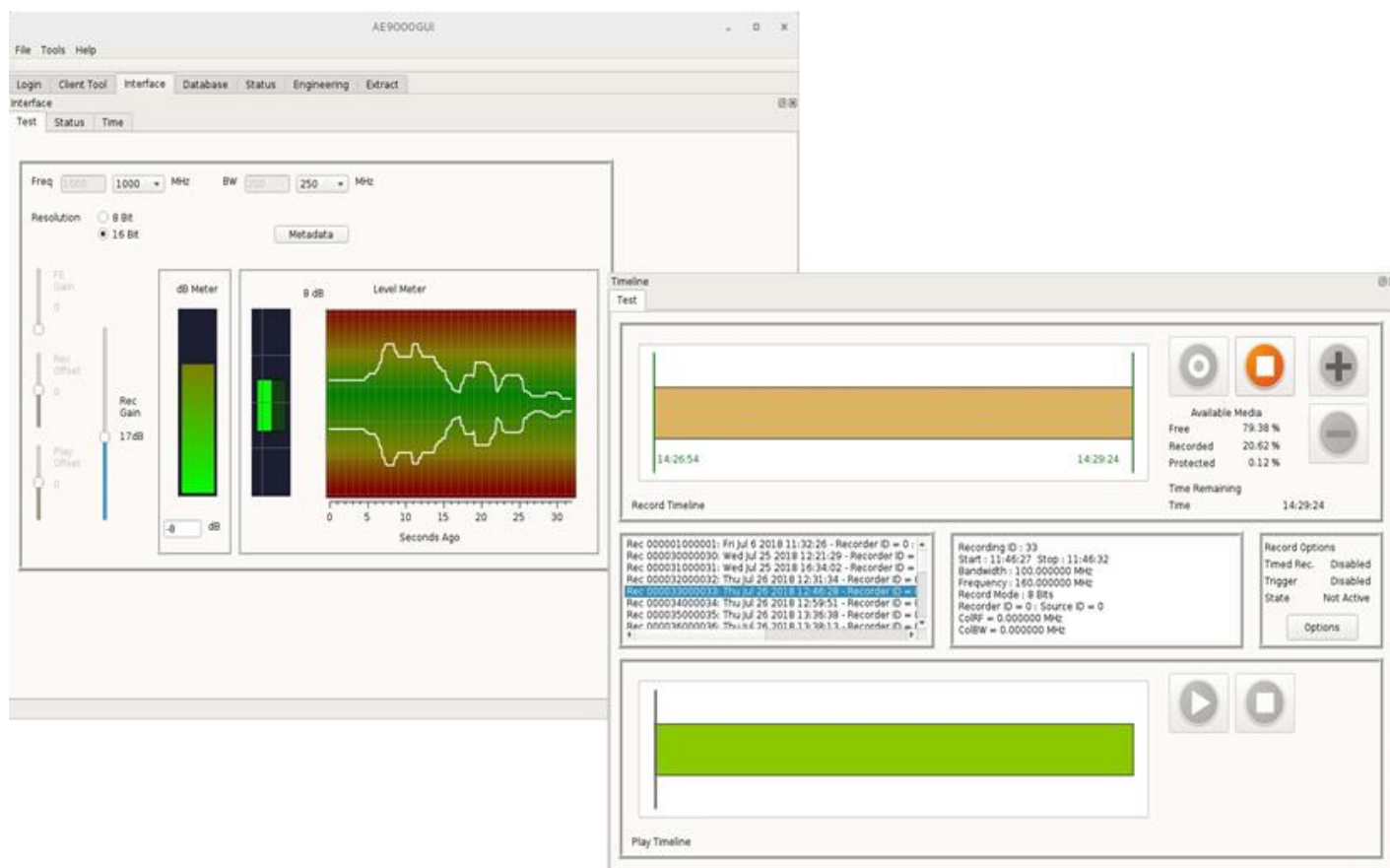
As with all Avalon SIGINT recorders, the AE9000-50/25/12 incorporates high-precision anti-alias input filtering and advanced, custom-designed analog-to-digital conversion techniques in order to provide the signal quality required by critical applications such as LPI (low probability of intercept) and SEI (specific emitter identification). 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-conversion during replay. Baseband signals are recorded as 'real' samples.

In addition to normal analog replay, recorded data can be exported in digital form directly to an analysis computer via a 10 Gbit LAN.

The Recorder is typically controlled from either an external PC/Laptop using an Avalon-developed GUI Application or from the pre-loaded version stored on the Recorder. The Avalon GUI Application may be compiled to run under a range of Windows and Linux operating systems.

The GUI provides control over all the Recorder functionality, including: RECORD, PLAY, STOP, Data selection (for extraction/forwarding, etc.), Data handling, including transcription to networked storage media and control, and monitoring of Input Signals and Levels.

GUI examples

www.avalonelectronics.com

TECHNICAL SPECIFICATIONS

Number of Channels:	1 or 2 channel operation (user-selectable).
Recording Modes:	2 channels of IF data, or) 2 channels of baseband (video) data, or) user-selectable. 1 channel of IF plus one channel of baseband (video)) IF Modes: 160, 140, 70 and 21.4MHz (user-selectable).

Bandwidths/Resolution:	Bandwidth	8-bit	16-bit	All Bandwidths are user-selectable
	50 MHz	YES	N/A	
	25 MHz	YES	YES	
	12.5 MHz	YES	YES	

Frequency Response:	IF paths: +/-2 dB (typical) with optimised (internal) anti-alias filters. Baseband path: DC to band-edge +/-2dB.
Recording Duration:	50 MHz (8-bit) mode: 160 minutes:- 8TB Disk Crate. 25 MHz (8-bit) mode: 40 hours:- 16 TB Disk Crate.
Recording Format:	IF sources: IQ pairs (centred on 0 Hz), 2s-complement. Baseband: Real samples, 2s-complement.
Data Transfer/Archive:	To a remote server via 10 Gbit Ethernet port.
Replay (analogue):	Same format and bandwidth as recording (with automatic detection of recording mode).
Replay (digital):	Binary files for computer analysis, c/w Midas Blue headers.
Input Levels for Full Scale record:	IF source: -30 to +10 dBm from 50 Ω source (AC coupled). Baseband sources: -30 to +10 dBm from 50 Ω source (DC coupled).
Output Levels from Full Scale record:	Normal IF: 0 dBm into 50 Ω load (AC coupled). Baseband: 1V pk/pk into 50 Ω load (DC coupled).
Spur Free Dynamic Range:	Typical figures: ~50 dB (8-bits), ~70 dB (16-bits).
Group Delay Variation:	2 nanoseconds pk/pk.
Reference Frequency:	Stable internal 10 MHz clock, or external 10 MHz source.
Local Control:	Avalon GUI running on recorder, with attached monitor/mouse/keyboard.
Remote Control:	Via 10/100/1000BASE-T Ethernet), using Avalon GUI (or user-furnished equivalent) running on remote laptop/PC. Most popular OS's (including Windows) supported. APIs also available from Avalon.
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.
Media Life:	2,500 hours warranted minimum life at maximum bandwidth. Typical media life more than 10,000 hours.
Data Extraction Ports:	LAN 10Gbit Ethernet.
Dimensions:	217mm (19" Half-width) x 4u x 545 mm deep.
Weight:	~ 15 Kg.
Power:	90 to 264 Volts, 47 to 63 Hz, 360 Watts.
Temperature:	0 to +55 ℃ (operating), -20 to +70 ℃ (storage). Values established with SSD drives.
Environmental:	EMC/RFI: Designed to conform to the applicable sections of MIL-STD-461. Shock/Vibration: Designed to conform to the applicable sections of MIL-STD-810, and US Navy specifications. Similar construction approved for flight in USAF Rivet Joint and other military and civilian turbo-jet and propeller aircraft.
System Control:	Stand-alone, fully-featured Avalon-designed GUI (graphical user interface) running on an external laptop/PC (via Ethernet port).
File Format:	Midas Blue (Platinum 2.0).

OPTIONS

- 16TB (total capacity) removable Disk Crate.
- Extra-long-life SSDs – refer to Avalon Electronics Ltd. for details.