

AE3000-series Microwave Receivers

- Up to 26.5GHz maximum input frequency
- Main IF output: up to 1GHz
- Selectable secondary IF outputs: including 70MHz & 160MHz.
- Optional demodulator – AM/Log AM/FM
- Selectable bandwidths – up to 500MHz
- Ethernet & RS422/RS485 connectivity
- Real-time FFT / waterfall display
- Spectrum inversion selectable for all bandwidths
- Internal precision reference with external ref. in/out.
- SWaP-C optimised
- Rugged enclosures



Avalon AE3028 Microwave Receiver (example front view).

TECHNICAL OVERVIEW

The new Avalon AE3000-series microwave receivers are designed to accept a microwave input up to 26.5GHz; to provide fixed and user-controlled conditioning and conversion as desired; then to provide IF or, optionally, demodulated outputs.

In base models, the system settings in are controlled by an external controller, via RS485/422. Optionally, a controller can be built in to provide front panel local control. This controller is supplied with an Ethernet interface for external connectivity.

The receivers have an internal precision frequency reference with external 10MHz in/out (auto changeover). They also feature a powerful, real-time FFT function that can be used to visualise the incoming signal.

The AE3000-series receivers are supplied with a fully featured, graphical user interface (GUI), accessible from a remote laptop/PC via Ethernet. The GUI can be compiled to run under most popular operating systems, including Debian, Windows, etc.). The fundamental settings can also be viewed or altered from the front panel, if this option has been specified.

In common with Avalon recorders, our receivers are designed for a wide range of 'platform' applications including, laboratory, mobile, field-portable, surface ships, submarines, and jet/turboprop 'passenger' aircraft.

Several other options are available, including a demodulator function and several chassis form-factors. We also offer a customisation consultancy.

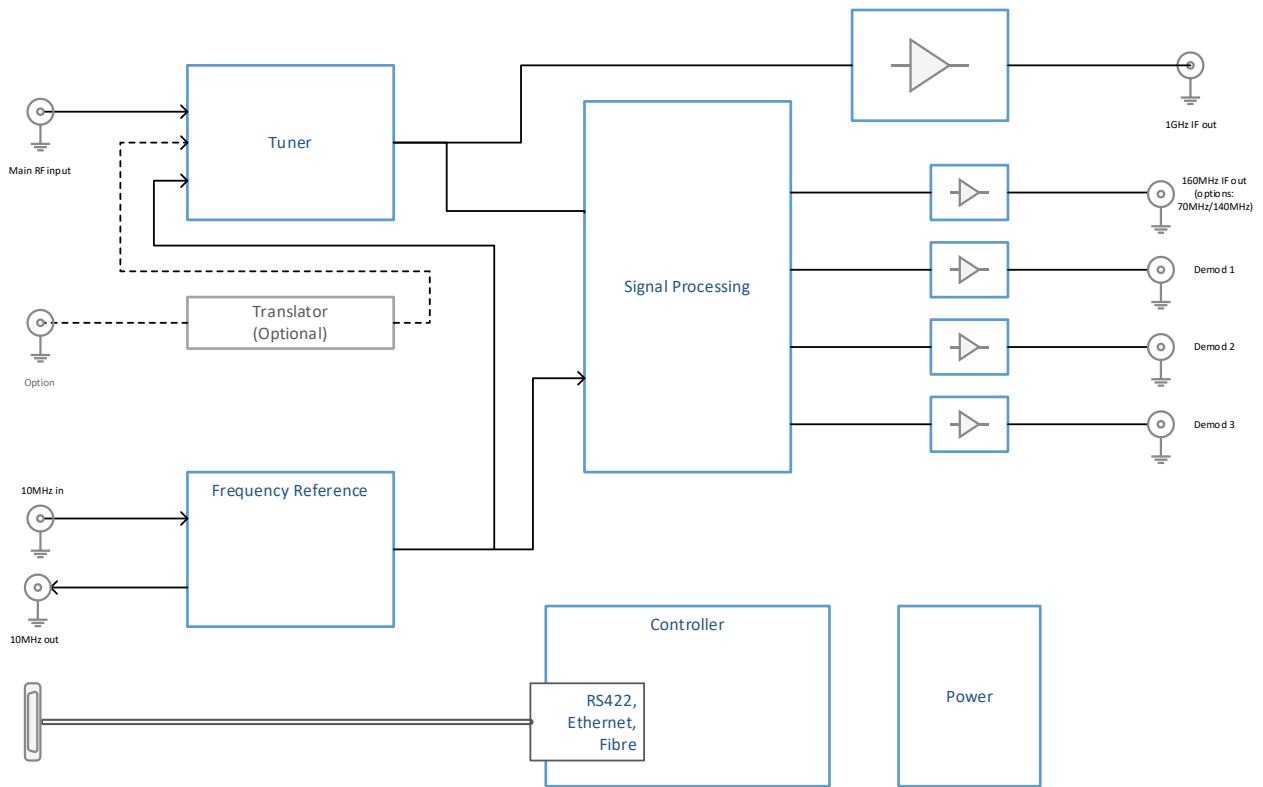


Figure 1 - example system block diagram, single channel versions

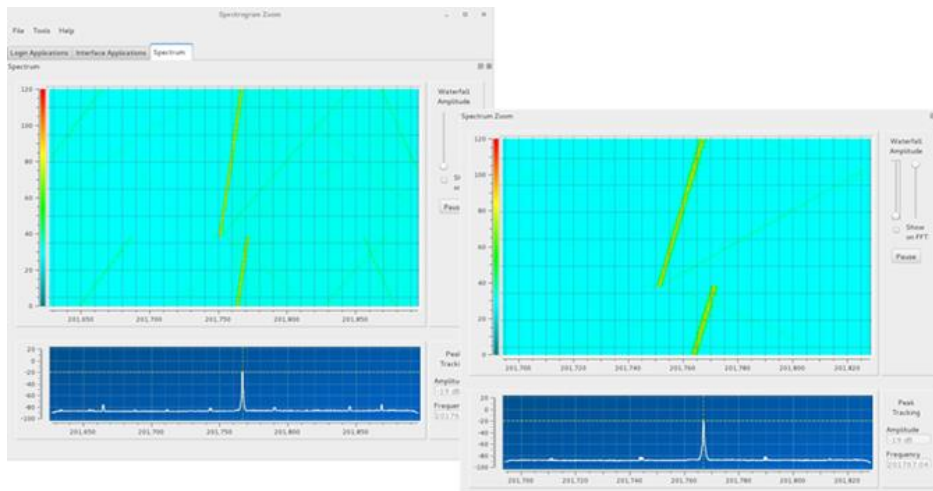


Figure 2 - example waterfall/FFT displays.

TECHNICAL SPECIFICATIONS

Product order code(s):	AE3x1x	AE3x2x	AE3x8x	Notes
Number of RF Channels	1	2	8	
RF input socket type	2.92mm/SMA, 50 ohms			Other types optionally available
Product order code(s):	AE30xx	AE31xx	AE32xx	
RF input frequency	2MHz to 6GHz	0.4GHz to 18GHz	0.4GHz to 26.5GHz	
Maximum RF input level	+17.5dBm	+20dBm	+20dBm	
Bandwidth	80MHz, max.	12.5, 25, 50, 100MHz @ 160MHz IF 62.5, 125, 250 & 500MHz @ 1GHz IF		+/-3dB (500MHz); +/-2dB (others)
IF outputs - frequencies	60MHz	160MHz and 1GHz		
IF outputs - amplitude	TBD	TBD	TBD	
IF rejection	70dBm			
Gain control/attenuation range	60dB (1dB steps)			
SFDR	>53dB (with two -35dBm tones)			
Group delay variation	5nS maximum			
Tuning speed	100µS/step	200µS/step		
Tuning resolution	10KHz			
Phase noise (typical)	-90dBc/Hz	-90dBc/Hz	-90dBc/Hz	1KHz offset
	-98dBc/Hz	-100dBc/Hz	-100dBc/Hz	10KHz offset
	-98dBc/Hz	-100dBc/Hz	-100dBc/Hz	100KHz offset
	-109dBc/Hz	-118dBc/Hz	-118dBc/Hz	1MHz offset
	-135dBc/Hz	-132dBc/Hz	-132dBc/Hz	10MHz offset
Frequency reference	Internal Reference Oscillator 10 MHz/100MHz +/- 100ppb, or external 10 MHz source: +6 to +13dBm +/-0.5ppm to lock			
Demodulation	FM & AM (video/audio)			Optional
Spectrum Display Output	Optional. With full sweep waterfall display feature			
Control	Via 10/100/1000BASE-T Ethernet), using Avalon GUI (or user-furnished equivalent) running on remote laptop/PC. Most popular operating systems (inc. Windows) supported. Automation and control software also available from Avalon.			Fibre-optic control interface also available.
Local control	Local control via front panel available as an option, in addition to main control.			

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Specifications, continued		
Operating temperature range	-10°C to +85°C	Different limits available on request
Storage temperature range	-40°C to +140°C	
Environmental conformity	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 turbojet and propeller aircraft.	
Size	Various configurations and form-factors available, including rugged rackmount (19") and ATR	
Weight	17 to 28Kg	
Power	90 to 264 Volts AC, 47 to 63 Hz, TBD Watts.	DC supply versions optionally available

OPTIONS

- TBD