Spectrum Defender®

Model SD-3863

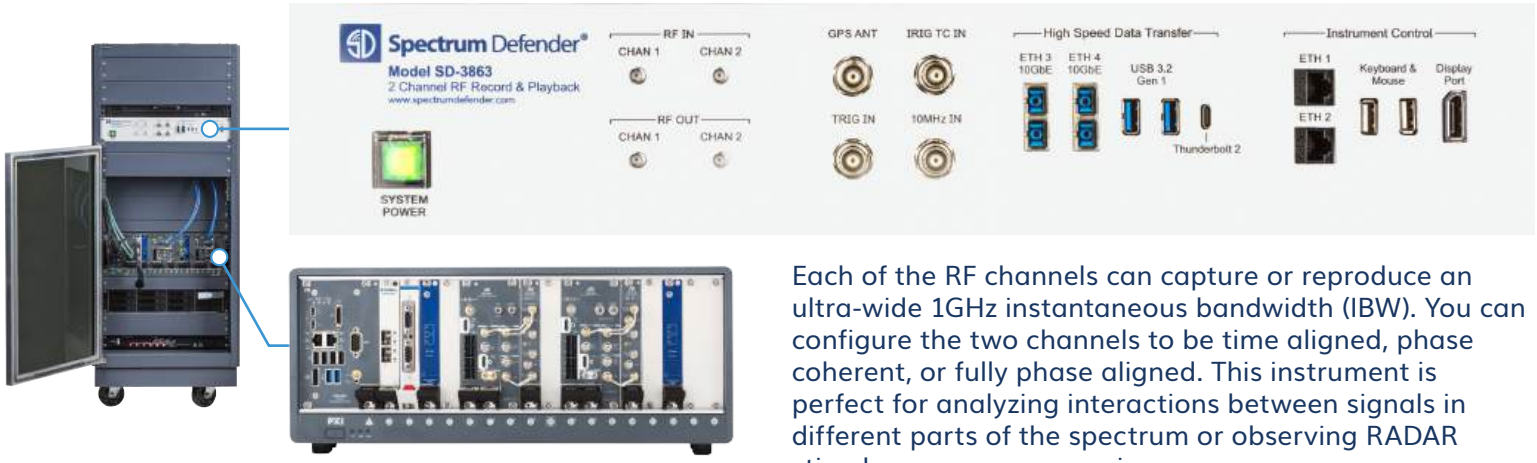
by Spectra Lab™

Spectrum Defender® Model SD-3863

Model SD-3863, part of Spectra Lab's Spectrum Defender family, is an RF Record and Playback instrument that allows you to **capture and reproduce two synchronized RF channels anywhere in the spectrum between 30MHz and 26.5GHz**.

Model SD-3863 captures every single pulse and transient signal with the highest fidelity and dynamic range, including all signals, noise, interference, and jamming. Unlike traditional RF Recorders, you can immediately review your recordings on screen and check the quality of the signals you've captured. You can also easily share recordings with your colleagues with multiple options for high-speed data export and offload.

Applications for this model include: stimulus – response observation of RADAR signals, Electronic Warfare (EW) signal characterization, academic research and collaboration, and SATCOM and radio astronomy.



Each of the RF channels can capture or reproduce an ultra-wide 1GHz instantaneous bandwidth (IBW). You can configure the two channels to be time aligned, phase coherent, or fully phase aligned. This instrument is perfect for analyzing interactions between signals in different parts of the spectrum or observing RADAR stimulus-response scenarios.

Model SD-3863 can be ordered in a rollaround rack for easy transport between test areas. This portability allows you to share a single instrument across multiple test programs and applications, ensuring you get maximum return from your investment.

Benefits

- Know everything that's happening in the spectrum
- Bring complex and dynamic field signals into a controlled lab environment
- Capture signals for offline analysis, characterization, and classification
- Explore and collect wide swaths of spectrum
- Collect and share signals to certify system performance
- Share captured RF signals with colleagues

Key Features

- Two channel RF Record and Playback
- 30 MHz to 26.5 GHz tuning range
- 1GHz/channel continuous IQ streaming
- 2GHz/channel short duration IQ capture/generation
- Time aligned, phase-coherent, and phase-aligned inter-channel sync modes
- Start trigger on external pulse or IRIG/GPS/PC time
- Signal Trove™ storage option for 12 hours of rec/play at 1GHz/channel
- Operator control via Graphical User Interface (GUI)
- Programmatic control via Application Programming Interface (API)

Specifications

Instrument Modes	
Mode 2R	Record from two RF input channels simultaneously
Mode 2P	Playback to two RF output channels simultaneously

Instrument Operations	
RF Record Preview	Virtual spectrum analyzer(s) for incoming signals
RF Record	Gap-free, continuous recording of 32-bit IQ words
QC Review	File playback to on-screen virtual spec analyzer
RF Playback	Reproduce signals on RF output port(s)
Archive & Share	Offload recordings to alternate storage devices

RF Acquisition & Recording		
RF Channel Count	2	
Center Frequency Tuning Range	30.0MHz – 26.5GHz	Each channel tuned independently 1Hz tuning resolution
Instantaneous Bandwidth (max)	1GHz	Valid for any tuned center frequency Lower band edge must be >= 30MHz
Instantaneous Bandwidth (min)	100kHz	Bandwidth adjustable in 1Hz increments

RF Generation & Playback		
RF Channel Count	2	
Center Frequency Tuning Range	30.0MHz – 26.5GHz	
Instantaneous Bandwidth (max)	1GHz	Valid for any tuned center frequency Lower band edge must be >= 30MHz
Instantaneous Bandwidth (min)	100kHz	Auto-adjusts to sample rate of signal file

Signal Trove™ Signal Storage		
Signal Storage Format	32-bit IQ words	Open file format
Signal Storage Capacity	30.4 TB	
Signal Storage Duration (min)	48 minutes	@ 1GHz IBW, 2 channels active
Signal Storage Bandwidth (min)	10GBytes/ sec	Aggregate, online SSD storage
Nearline storage for offload & archive of recordings	192TB	Can record/play directly to this array only for RF bandwidths <= 160MHz.
Import/export filters	X-COM	Compatible with IQC9100A, 5000

Control Interfaces	
Operator Interfaces	Graphical User Interface (GUI), local or remote
Programmatic Interfaces	Universal TCP/IP API, LabVIEW native API

Trigger Sources	
Manual Trigger Sources	Operator button press on Graphical User Interface
Time of Day Trigger Sources	IRIG GPS Local PC clock
Pulse Triggers	Positive or negative edge (+3.3V TTL levels; +5V tolerant)

Timing Sources	
Internal Timebase	Internal 10MHz OCXO
External Timebase	External 10MHz sinewave Additional external timebase possible (contact factory)
Time of Day	GPS antenna (L1 only, non-contested/clear sky) IRIG-B 12X(AM) or IRIG-B 00X(DC), per IRIG 200-04 standard IEEE-1588 Ethernet possible (contact factory)

Input/Output Connectors	
RF Inputs and Outputs	N-Type Female (4x) SMA and other connector types possible (contact factory)
10MHz Input	BNC Female (1x)
IRIG-B	BNC female (1x)
GPS Antenna	TNC female (1x)
Ext Pulse	BNC female (1x)
Gigabit network	RJ45 Jack (2x)
10GigE network	SFP+ and fiber (2x) Contact factory to specify single or multimode fiber
Primary display/video	Display Port 1.2 (1x)
Keyboard, mouse, other PC peripherals	USB 2.0 (Qty 4x) USB 3.2 Gen 1 (Qty 2x)
Other PC peripherals	RS-232 on DB9 Thunderbolt 3, Type C (2x) IEEE-488 GPIB, mini-GPIB (1x)

Contact the factory when ordering to customize connector types.

Power	
Connection	NEMA 5-15 Plug
Voltage/frequency	120VAC/60Hz

Environmental	
Operating Temperature	0 deg. C to +40 deg. C

Spectra Lab™

17873 Main Street, Suite C
Dumfries, VA 22026 USA

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