

SIGNAL SOLUTIONS

Product Portfolio



Signal Solutions Product Portfolio

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LeonardoDRS.com/SignalSolutions

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PROTECTING OUR NATION AND ALLIES

CONTINUING TO UPHOLD THE WATKINS-JOHNSON COMPANY LEGACY OF RELIABILITY AND INNOVATION.


Leonardo DRS is a leading supplier of intelligence and commercial solutions that protect our nation and allies. Our Signal Solutions products feature high-performance data recording collection systems and radio frequency (RF) tuners, receivers, and subsystems that cover the electromagnetic spectrum from VLF through SHF. We specialize in densely packaged RF hardware with cutting-edge technology, and when integrated into systems, can detect signals of interest that would otherwise go unnoticed.

For more than 60 years, Leonardo DRS has been the leading RF solution provider to military forces, intelligence agencies, prime contractors, and to the test and measurement industry worldwide. We are proud that our Signal Solutions products carry on the legacy of the Watkins-Johnson Company (WJ); a reputation as one of the oldest, most dependable, and innovated RF houses in the world. We carry on that legacy with leading-edge size, weight, and power reduction; high performing software-definable radios; and tools that search, intercept, analyze, and record signals.


When failure is not an option, and RF equipment must perform the most elite capabilities, choose Signal Solutions products from the industry expert who you can rely on for continued innovative technology advancements.

SIGNAL SOLUTIONS' LEGACY


1960 Communication Electronics, Inc. (CEI) was founded by employees of Vitro Electronics under the leadership of Ralph E. Grimm. CEI originated in Bethesda, Maryland.



1964 CEI moved to a larger space in Rockville, Maryland.




1967 CEI was bought by Watkins Johnson (WJ).



1999 WJ sold its Telecommunications division to Marconi North America in August, while at the same time BAE completed its purchase of Marconi in November.

2002 Integrated Defense Technologies (IDT) completed acquisition of BAE Systems' Advanced Systems business unit and called it Signia-IDT.



EXPERTS IN RF DESIGN

LEADING THE WAY IN SIGNALS INTELLIGENCE AND RF TECHNOLOGY.

LOW COST SOLUTIONS

Signal Solutions' proprietary technology and product designs enable more channels to be densely packaged in smaller platforms allowing low cost per channel solutions.

HIGH DYNAMIC RANGE RF FRONT-ENDS

High dynamic range increases the probability of identifying genuine signals of interest in the presence of large interferers. Our radios maximize dynamic range by using sophisticated architectures and a no-compromise design philosophy.

SMALLER PROFILE PLATFORMS

Small profile platforms means equipment can be integrated into smaller systems, and will ultimately decrease the total weight of the system.

OPEN STANDARD SOLUTIONS

Common interfaces allow for easy system integration, control, and data outputs, while also simplifying and extending a system's capability.

MODULAR APPROCHES-RAPID TECHNOLOGY INSERTION


As new signal threats are constantly emerging, RF radios must be capable of handling today's threats, and tomorrow's unknown threats. A modular design means RF modules can be quickly customized to fit specific requirements, saving the customer time and money.

Signal Solutions' background in RF system development provides significant insight into the problems and necessary developments needed to achieve high performance equipment under real-world conditions. Our understanding of system tier problems, combined with extensive experience in the development of high-performance software-definable radios, makes Signal Solutions an ideal partner.


Contact Signal Solutions today to see how our solutions can meet your challenges to protect our nation and allies.

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2003 IDT merged with the wholly-owned subsidiary of DRS Technologies. DRS originally stood for "Diagnostic/Retrieval Systems."




2008 DRS Technologies was acquired by the Italian conglomerate Finmeccanica S.p.A.



2015 The Signal Solutions product line of DRS Technologies moved to Germantown, Maryland.



2017 DRS Technologies is formally renamed "Leonardo DRS" more closely reflecting its parent company heritage.



DRS Technologies
A Finmeccanica Company

WORLD CLASS MANUFACTURING ADVANTAGE



HIGH VOLUME PRODUCTION MEETING FULL SPECIFICATIONS

Standard operating procedures and comprehensive testing enable ramping to high volume production in short periods of time while ensuring each product delivered meets its designed specifications.

SUPERIOR QUALITY

Closed loop feedback system between customer, engineering, and manufacturing have created the highest quality levels resulting in a three-year standard warranty.

RAPID RESPONSE

Enhanced flexibility allowing quick response on custom repackaging of existing technologies into new form factors to fulfill specific customer requirements.

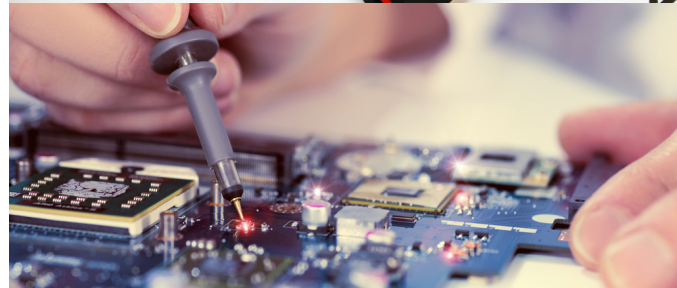
SHORTER TRANSITION TO MANUFACTURING

On-site engineering and manufacturing enables early manufacturing engagement on new products while accelerating learning curves.

ON-SITE CUSTOMER SERVICE

Personable on-site customer service with engineering engagement resulting in quick turnaround times, reliable repairs, and spare depot.

CustomerHelp@drs.com



YOUR IDEAL PARTNER FOR RF SOLUTIONS

CORE APPLICATIONS

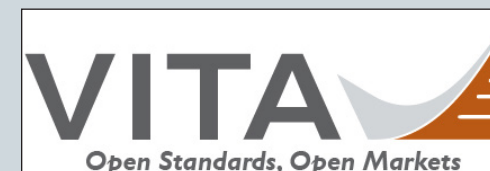
- 01 Signals Intelligence (SIGINT) Including ELINT, COMINT, and FISINT
- 02 Real-time counter measures
- 03 Precision geolocation
- 04 Beam forming and direction finding
- 05 High bandwidth signal recording and real-time processing
- 06 Spectrum monitoring/management, RF test and measurement
- 07 Open software frameworks

CORE CAPABILITIES

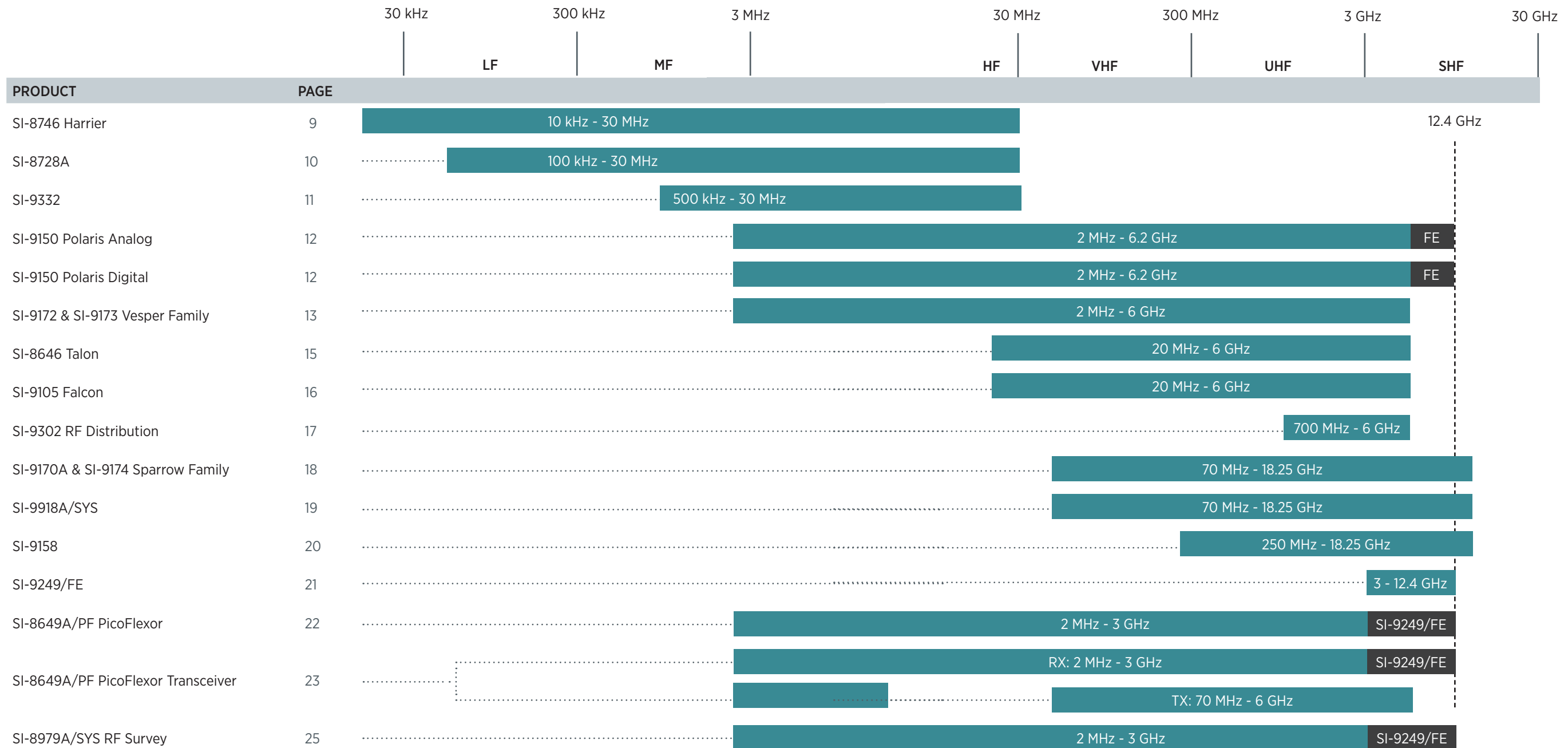
- 01 RF front-ends with high dynamic range that intercept weak signals in dense environments
- 02 Narrowband, wideband, and ultra-wide-band digital signal processing
- 03 Low size, weight, and power (SWAP) design and packaging
- 04 Software-definable radios employing open frameworks
- 05 Multichannel, phase-coherent operations
- 06 Multi-function sensors & transceivers
- 07 Custom design services

COMMITTED TO OPEN STANDARDS

Our commitment to open architecture standards results in low-risk solutions for our customers. We serve as committee chairman for multiple VITA standards and are leading participants of the CMOSS, HOST, and SOSA efforts. This critical involvement ensures our products are interoperable across all military branches, program offices, and commercial entities.



PRODUCT MAPPING TO RF SPECTRUM



“We succeed in designing innovative RF technologies that reduce SWAP by half or more without compromising the dynamic range required for modern surveillance missions.”

*- Ian Hill,
Director of
Signal Solutions
Product Line*

Product	Description	Page	Frequency Range	Instantaneous Bandwidth	IF Output	Tuning Speed Microseconds	Channel Count
SI-8746 Harrier	Tuner/Receiver	9	10 kHz - 30 MHz	30 MHz	VITA 49	<50	4
SI-8728A	Tuner	10	100 kHz - 30 MHz	25 kHz	VITA 49	2500	8
SI-9332	Switch Matrix	11	500 kHz - 30 MHz	-	Analog	-	32
SI-9150 Polaris Analog	Tuner	12	2 MHz - 6.2 GHz	40 MHz	Analog	300	1,2,4
SI-9150 Polaris Digital	Tuner	12	2 MHz - 6.2 GHz	85 MHz	VITA 49	300	2,4,5
SI-9172 3U Vesper	Tuner	13	2 MHz - 6 GHz	100 MHz	VITA 49	50	1-5
SI-9173 6U Vesper	Tuner	13	2 MHz - 6 GHz	100 MHz	VITA 49	50	1-10
SI-8646 Talon	Receiver	15	20 MHz - 6 GHz	40 MHz	VITA 49	50	4
SI-9105 Falcon	Receiver	16	20 MHz - 6 GHz	40 MHz	VITA 49	50	4,8,12,16
SI-9302 RF Distribution	RF Distribution	17	700 MHz - 6 GHz	Various	Analog	-	-
SI-9170A Sparrow	Tuner	18	70 MHz - 18.25 GHz	500 MHz	Analog	40	1-2
SI-9174 Sparrow	Tuner	18	70 MHz - 18.25 GHz	500/80/25/10/5 MHz	Analog or Digital	40	1
SI-9918A/SYS	Subsystem	19	70 MHz - 18.25 GHz	500 MHz	Analog	40	1-8
SI-9158	Tuner	20	250 MHz - 18.25 GHz	500 MHz	Analog	35	1
SI-9249/FE	Frequency Extender	21	3 GHz - 12.4 GHz	-	Analog	400	1
SI-8649A/PF PicoFlexor	Receiver	22	2 MHz - 3 GHz	6 or 25 MHz	VITA 49	500	1-2
SI-8649A/PF PicoFlexor Transceiver	Transceiver	23	RX: 2 MHz - 3 GHz TX: 70 MHz - 6 GHz	RX: 25 MHz TX: 56 MHz	RX: VITA 49 TX: Analog	<500	2
SI-8979A/SYS RF Survey	Subsystem	25	2 MHz - 3 GHz	6 MHz	VITA 49	500	2
RT-3030/SYS	Recorder	26	2 MHz - 6.2 GHz	85 MHz	VITA 49	300	2,4,5
RDA2	Recorder	27	-	Mid - Ultra Wideband	-	-	-

Rugged	Form Factor				SWAP			Applications Supported										Export Control	
	Miniature Brick	VME	VPX	Rack-mount	Size (inches) (w x h x d)	Weight (lbs.)	Power (watts)	COMINT	ELINT	Spectrum Monitoring/Management	Direction Finding/Beam Forming	Electronic Support Measures (ESM)	Geolocation	Threat Warning	Electronic Warfare (EW)	Cyber Capabilities	Software-Definable Receiver/Radio		
Yes				1U Half	8.5 x 1.75 x 22	10	<100	X		X	X		X	X				EAR	
-				1U Full	19 x 1.75 x 22	<18	<100	X		X	X		X	X				ITAR	
-				1U Full	19 x 1.75 x 22	<18	<130	Provides Versatility to Existing System Applications										EAR	
-	X				3 x 5 x 1.7*	2.25*	18*	X	X	X	X	X	X	X			X	EAR	
-	X				3 x 5 x 2.9**	4.3**	42**	X	X	X	X	X	X	X			X	EAR	
-				3U		2	65**	X	X	X	X	X	X	X	X	X	X	EAR	
-				6U		4.5	120***	X	X	X	X	X	X	X	X	X	X	EAR	
Yes				1U Half	8.5 x 1.75 x 22	10	100	X		X	X	X	X	X				ITAR	
-				2U Full	19 x 3.5 x 22	38	600	X		X	X	X	X	X				ITAR	
Yes				¾ ATR Chassis		37	24	X	X	X	X	X	X	X	X	X	X	EAR	
-				3U		<2	32 (1-CH) 42 (2-CH)	X	X	X	X	X	X	X				EAR	
-				3U		<2	50	X	X	X	X	X	X	X				EAR	
-				1U Full	19 x 1.75 x 22	<28	175	X	X	X	X	X	X	X				EAR	
-				6U		4	<50	X	X	X	X	X	X	X				ITAR	
-	X				3 x 5 x 0.5	1	3.2	Extends Existing System's Frequency Range										EAR	
Yes	X				3 x 5.7 x 1.3 (1-CH) 3 x 5.6 x 1.8 (2-CH)	<2.5	<8.5	X	X	X	X	X	X	X			X	EAR	
-	X				3.5 x 5.7 x 1.9	2.5	10	X	X	X	X	X	X	X	X	X	X	EAR	
Yes	X				6.8 x 3.2 x 1.8	2.1	<9	X	X	X		X		X				ITAR	
-					Pelican case	21.5 x 16 x 12	40	180	Survey Recording, Pre-D Signal Detection, Signal Analysis, System Validation & Training										EAR
-					4U Full	19 x 7 x 22	100	600	Survey Recording, Pre & Post-D Signal Detection, Data Management, Signal Analysis & Library Development										EAR

*4-Channel Configuration **5-Channel Configuration ***10-Channel Configuration

SI-8746 HARRIER

4-Channel, 10 kHz - 30 MHz BW Tuner/Receiver

Harrier's very low phase noise allows it to detect very weak signals in strong signal environments. With the ability to continuously stare at the entire HF spectrum and to perform precision tuning in multiple sub-bands, Harrier meets challenges posed by a range of COMINT missions. Harrier provides exceptional dynamic range, clearly exceeding the performance of conventional narrowband and wideband digital HF radios.

Harrier is superior in its class for low size, weight, power, and cost per received signal. In a 1U half-rack form factor, Harrier weighs approximately 10 pounds and consumes less than 100 watts of power, or about 25 watts per channel. Each of Harrier's four channels directly digitizes the entire HF spectrum from 10 kHz to 30 MHz. By digitizing the entire HF spectrum, every signal is collected and no signal is lost. The digitized IF of each channel is precision time-stamped in VITA 49 format and transmitted over a 1-Gig or 10-Gig Ethernet link.



KEY FEATURES & BENEFITS

- With a continuous stare band of 10 kHz to 30 MHz and exceptional dynamic range, Harrier captures the entire HF spectrum, even the weakest of signals
- Its phase-coherent tuning between channels allows direction finding of intercepted signals or antenna beamforming
- Up to three Harrier units can be connected providing a 12 channel solution
- Standard load of 28 DDC channels of 4.27 MHz bandwidth each across four channels providing the convenience of a narrowband tuner without sacrificing the ability to digitize the entire HF spectrum at once
- Supports geolocation of emitters by sensor networks using interferometry or time difference of arrival
- Multiple RF inputs eliminates the need for an antenna switch matrix for simple applications
- Easy system integration with its 8.5-inch half-rack form factor, standard control interface and data networking
- Easy to operate graphical user interface

COMMERCIAL APPLICATIONS SUPPORTED

- Spectrum Monitoring/Management
- Emergency Public Safety and Security
- Commercial Spectrum Compliance

GOVERNMENT APPLICATIONS SUPPORTED

- COMINT
- Direction Finding/Beam Forming
- Geolocation
- Threat Warning

SI-8728A

8-Channel, 100 kHz - 30 MHz, 25 kHz BW Tuner

The SI-8728A is operationally proven with several hundred units deployed on program platforms. The unit is capable of continuous 1 Hz tuning resolution over the frequency range of 100 kHz to 30 MHz, while each of its eight tuner channels provides an instantaneous IF bandwidth of 25 kHz.

The SI-8728A's very high density design, high dynamic range, VITA 49 precision time-stamped I/Q data, and non-blocking switch options, coupled with an easy-to-use graphical user interface, make the unit a high-performing HF narrowband tuner.



KEY FEATURES & BENEFITS

- Eight high-performance HF narrowband tuners in a compact 1U rack-mount chassis
- Optional 8 x 8 non-blocking RF switch, internal to the unit, allows any tuner channel to connect to any RF input
- Electromagnetic pulse protection protects tuner from damage due to continuous RF overload and high voltage transients
- Low jitter phase-coherent and/or independent tuning
- Built-in self test

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9332 32 x 32 HF Switch Matrix: Offers a fully non-blocking switch matrix to deliver any of up to 32 HF inputs to any or all of its 32 outputs for flexible system operation
- HF Receiver Software: A client/server application that provides traditional receiver capabilities for eight HF tuners, such as demodulation, IF bandwidth filtering, manual, and automatic gain control, audio squelch, tuning from a list of signals, and frequency scanning with a choice of step sizes

APPLICATIONS SUPPORTED

- COMINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Geolocation
- Threat Warning



The SI-8728A (top) and SI-9332 (bottom) fit perfectly together allowing for easy system integration.

SI-9332

32 x 32 HF Switch Matrix

The SI-9332 non-blocking switch matrix receives up to 32 narrowband HF inputs in the 500 kHz to 30 MHz range and delivers any or all of its 32 outputs to a connected HF receiver network. With four SI-8728A units, each configured with an internal 8 x 8 input switch matrix, any of the 32 SI-8728A channels can access any of the 32 SI-9332 inputs, allowing for operational flexibility for changing mission requirements.

The SI-9332 switch matrix provides near unity (0 dB) gain so that it is virtually transparent in system operation. The unit offers excellent intermodulation, noise figure and internal spurious performance.



KEY FEATURES & BENEFITS

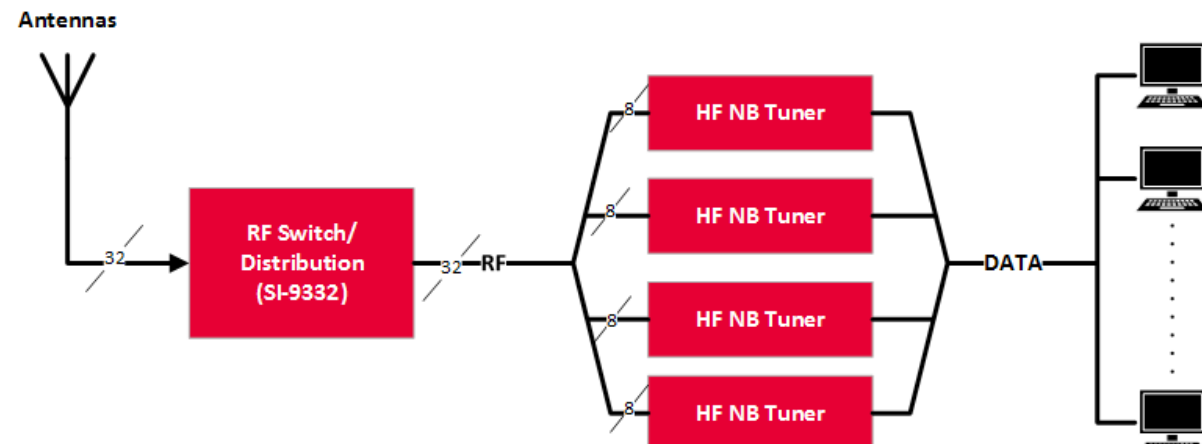
- 500 kHz to 30 MHz frequency range
- Exceptionally small size and weight
- 10/100 Base-T Ethernet interface
- Built-in test continuously measures signal path integrity

APPLICATIONS SUPPORTED

- Provides versatility to the existing system's applications

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-8728A: 8-Channel HF Narrowband Tuner



One SI-9332 HF Switch and four SI-8728A narrowband tuners provides the basis for a highly scalable receiver network when combined with instances of the Sceptre client/server application and graphical user interface.

SI-9150 POLARIS

Multi-Channel, 2MHz - 6.2 GHz, 40 or 85 MHz BW Tuner

Today's signal challenges require next-generation hardware solutions. Polaris was designed to extract weak signals of interest from dense signal environments, and/or weak signals that are hidden in the shadow of strong signals. With a frequency range of 2 MHz to 6.2 GHz, the scope of signals that Polaris can intercept from its multiple channels is extensive. Its small size, light weight and low power consumption make it ideal for a wide range of environments where SWAP must be optimized.

As an RF front-end to a SIGINT system, Polaris has the capability to enhance a number of commercial and government applications. With its dual-use technology, Polaris helps close existing gaps in current capabilities in order to mitigate emerging threats within RF communications.

KEY FEATURES & BENEFITS

- Available as an analog or digital tuner
- Analog tuner available in one, two, or four channel configurations
- Digital tuner available in two, four, or five channel configurations
- Each channel has an instantaneous bandwidth of 40 MHz (analog), or 85 MHz (digital)
- Channels operating independently and/or phase-coherently
- Excellent intermodulation and phase noise performance
- Designed to operate in harsh environments
- Excellent phase and amplitude tracking between channels
- Built-in GPS or IRIG-B123 for time-stamping of VITA 49 IF data output

COMMERCIAL APPLICATIONS SUPPORTED

- Spectrum Monitoring/Management
- Test and Measurement of Radio Frequencies
- Wideband Spectral Sensing
- Commercial Spectrum Compliance
- Enabling Technology for Cognitive Radio Systems

GOVERNMENT APPLICATIONS SUPPORTED

- COMINT/ELINT
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9249/FE Frequency Extender: Increases the frequency coverage up to 12.4 GHz
- Modular Scout: With its complement of analog and digital I/O options, the Modular Scout can record, playback, or transfer data outputs from any Polaris Analog configuration
- RDA2 Record and Playback Library: Supports long-term storage and playback of wideband Polaris data that is transferred via a Modular Scout

Contact Leonardo DRS Airborne & Intelligence Systems for the complete list of Polaris configurations.

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5-Channel Digital Polaris (SI-9150/D5)
3"W x 5"D x 2.9"H



2-Channel Digital Polaris (SI-9150/D2)
3"W x 5"D x 1.8"H



4-Channel Analog Polaris (SI-9150/A4)
3"W x 5"D x 1.7"H

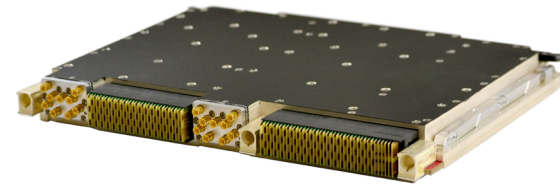
VESPER FAMILY OF TUNERS/EXCITERS

2 MHz - 6 GHz, 100 MHz BW

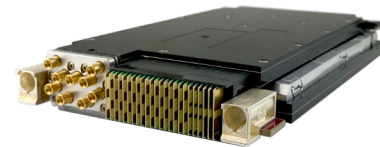
The Vesper product line can be flexibly configured to support multiple customer requirements, and packs more features in a small, standard form factor than any other solution available today. Equipped with exceptional RF signal fidelity, low spurious content and high dynamic range, critical missions can be confident that weak signals will be detected and not masked by spurious artifacts in congested signal environments.

Vesper's modular and open architecture design is a low-risk approach when integrated into a system's final design. Vesper employs VITA 67.3 blindmate connectors for reduced mean time to repair and improved modularity. Vesper's compliance of VITA standards allows it to be easily integrated into larger systems.

Vesper can be easily integrated into systems performing military and commercial operations such as SIGINT, ESM, EW, spectrum monitoring, spectrum analysis, and test and measurement. Vesper is optimal for operations requiring high channel density, such as direction finding and beam forming.



SI-9173 Vesper 6U VPX Tuner/Exciter
Multiple configurations of up to 9 RF receive channels
Optional RF exciter channel



SI-9172 Vesper 3U VPX Tuner/Exciter
Multiple configurations of up to 4 RF receive channels
Optional RF exciter channel

KEY FEATURES & BENEFITS

- RF receive and exciter channels each with 2 MHz to 6 GHz frequency range
- 100 MHz digitized IF bandwidth per channel
- On-board processing resources for additional customer capability
- Independent and phase-coherent tuning among all channels and between other Vesper 3U or 6U VPX cards
- Phase coherency supports up to 54 channels from six 6U VPX cards and up to 16 channels from four 3U VPX cards
- Optional DDC & DUC loads
- Multiple slot profile supports
- Conduction-cooled

PRODUCT PAIRINGS & ENHANCEMENTS

- Sparrow Family of Tuners: 70 MHz - 18.25 GHz
- Vesper Development Platform
- COTS test fixtures for lab installation and development

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning
- Electronic Warfare (EW)
- Cyber Capabilities
- Software-Definable Receiver/Radio

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VESPER ACCESSORIES

For Application Development

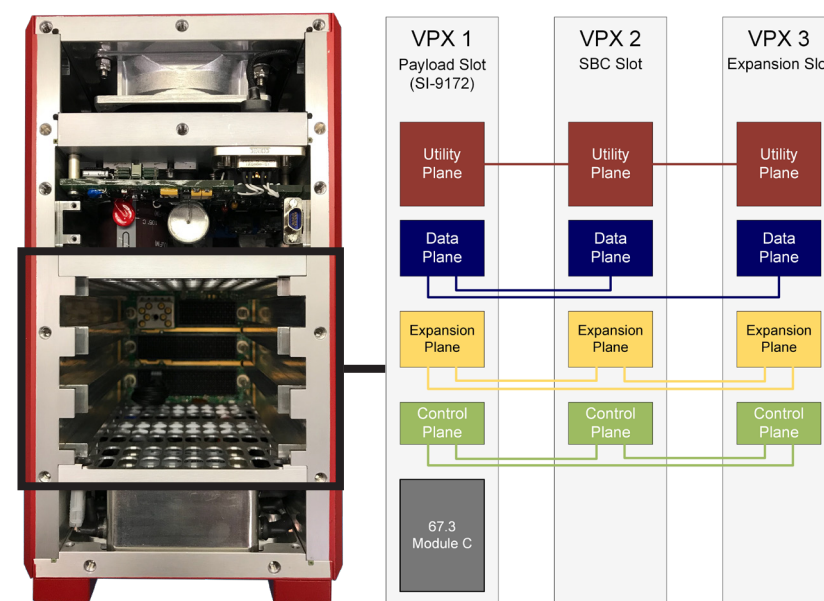
A selection of test fixtures are available to enable application development in a lab environment without the need for a full VPX compliant chassis with associated cooling. However, a full 3U VPX chassis is also available.

The 3U VPX Vesper Development Platform (VDP) allows for rapid development capabilities without the hurdles of designing a VPX system. The VDP utilizes the innovative Vesper Tuner and COTS processing cards to create a high-performance and modular laboratory platform. This proven hardware enables users to deploy applications quickly and efficiently. Real, analytical results are now possible without the concerns of hardware integration.

The 3U 3-Slot VDP is a small, ATR chassis that facilitates early development in laboratory environments. The commercially based hardware interface was designed with the user in mind and eliminates the need for costly custom cables. The OpenVPX compliant backplane provides a flexible and scalable platform to support a wide array of missions and user applications. The VDP is equipped with an SI-9172/CC-X 3U VPX Vesper Tuner/Exciter, a high performance processing slot, and configurable expansion slot. The expansion slot may contain a single board computer, solid state drive, graphics processing unit, or additional RF capabilities as required. The chassis' power is supplied by standard 120 VAC or 28 VDC depending on customer needs.



The Vesper Development Platform has a COTS front panel interface for rapid integration and ruggedized for early deployment.



When the top panel is removed, the 3U VPX slots are revealed. The VDP can be expanded to hold up to seven slots.

Vesper test fixtures are available for any 3U and 6U VPX configuration to support custom application development.



SI-8646 TALON

4-Channel, 20 MHz - 6 GHz, 40 MHz BW Receiver

The Talon is a smaller version of the SI-9105 Falcon receiver, but it is just as fierce. With four channels operating in a 1U half-rack, the Talon's size, weight, and power are reduced while still meeting the most demanding application requirements.

The Talon has a wide range of uses in environments where visibility is low or non-existent, including multi-static radar applications. From fixed ground sites to mobile airborne platforms, the Talon can be used almost anywhere.

The Talon's ultra-low phase noise keeps its noise floor low and enhances its dynamic range, allowing the detection of small signals of interest in the presence of large interferers. Small signals are hidden in the noise floors of other sensors with poor phase noise performance. The Talon's low intermodulation distortion and exceptionally fast tuning speed further round out a performance that significantly exceeds current industry standards.

KEY FEATURES & BENEFITS

- 20 MHz to 6 GHz tuning range with 2 MHz to 20 MHz bypass
- Four independent or phase-coherent RF channels support advance functions such as signal search, direction finding and beam forming
- Ultra-fast tuning speed of <50 microseconds allows the receiver to rapidly tune to different frequency channels for detecting pulsed and frequency agile signals
- 10-Gig Ethernet interface allows for high-speed data transfer

APPLICATIONS SUPPORTED

- COMINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning



SI-8646-1 is a 2U rack-mount Talon designed for high-dust environments that accepts an 85 to 265 Vac operating voltage

SI-9105 FALCON

4, 8, 12, or 16-Channel, 20 MHz - 6 GHz, 40 MHz BW Receiver

The Falcon is a SIGINT subsystem designed to provide RF and digital signal processing performance between 20 MHz and 6 GHz. The Falcon houses either 4, 8, 12, or 16 channels all in a 2U x 19-inch x 23-inch rack-mount chassis utilizing low power per channel. Superlative dynamic range, tuning speed, and phase noise performance significantly exceeds the industry standard.

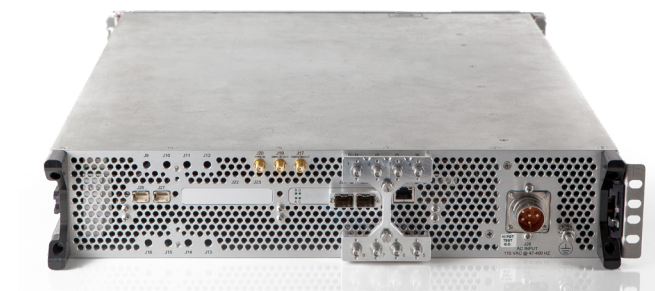
The Falcon provides dynamically selectable independent or phase-coherent operation. Its low-noise synthesizers and channel-to-channel phase tracking make the receiver an ideal solution for direction finding or beam forming applications.

KEY FEATURES & BENEFITS

- 2 MHz - 6 GHz frequency range and tunable to 2 MHz
- Selectable pre-digitization bandwidths of 3, 10, 25, and 40 MHz
- 50 microsecond tuning speed
- FPGA-based signal processing functions including channelization, demodulation, and VRT data formatting
- Supports user-defined programming of FPGA signal processing resources for development of customer applications
- Gigabit Ethernet interface for control/command and 10-Gig Ethernet interfaces for high-speed data transfer

APPLICATIONS SUPPORTED

- COMINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning



SI-9302 RF DISTRIBUTION

700 MHz - 6 GHz Frequency Range

The SI-9302 is an RF distribution system that allows connection of eight low band inputs, and eight high band inputs to be routed to 16 outputs. In addition, three auxiliary inputs can be routed to a 17th and 18th output. It is designed to allow two antenna arrays to be connected to two 9-channel receivers such as the SI-9173 6U VPX Vesper.

The SI-9302 allows the user to configure each antenna path with three sets of eight diplexers in the field through the removable boards. These can then be selected by command to use the system as an eight channel interferometer in both low band and high band.

The SI-9302 is housed in a ¾ ATR chassis. Connections are through water tight MIL STD circular connectors and three SMA female connectors.



KEY FEATURES & BENEFITS

- Covers wireless bands from 700 MHz to 6 GHz
- Sixteen filtered antenna inputs
- Two sets of eight channels available for DF usage
- Three sets of filters per antenna input can be loaded depending on the mission requirements and then selected by software control
- Excellent SWAP without compromising high performance
- User has the ability to change the filters installed at depot
- ATR chassis with MIL-STD circular connectors

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning
- Electronic Warfare (EW)
- Cyber Capabilities
- Software-Definable Receiver/Radio

PRODUCT PAIRINGS & ENHANCEMENTS

- Any Signal Solutions tuner, receiver or exciter.

SPARROW FAMILY TUNERS

1 or 2-Channel, 70 MHz - 18.25 GHz

The high-performance Sparrow Microwave Tuners can search for and identify sources of electromagnetic energy in order to detect threats. Sparrow Tuners are the ideal RF front ends for systems conducting surveillance and commercial monitoring operations as well as ELINT, electronic support measures, and electronic warfare missions.

A Sparrow Tuner is highly scalable, but the foundation is comprised of an input frequency range of 70 MHz - 18.25 GHz (per channel) and exceptional SWAP in a 3U VPX 1-inch package weighing two pounds. The SI-9170A variant has an IF output frequency of 1 GHz with 500 MHz bandwidth and can be configured with one or two channels. The SI-9174 variant is only available in a single channel, but is configurable with wideband or narrowband output, 500/80/25/10/5 MHz selectable bandwidth, and analog or digital format.

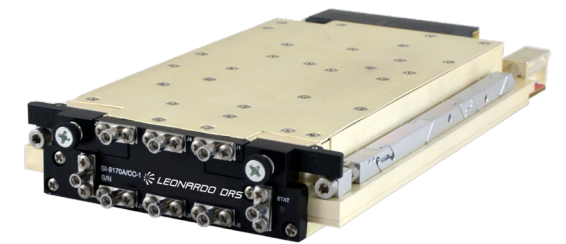
Each tuner configuration consists of a high-performance multi-stage downconverter, a microwave synthesizer, and a digital control processor that interface directly to cover the unit's tunable frequency range supporting fast tuning and rapid spectral scanning. Boasting low phase noise and high dynamic range, the tuners provide 1 MHz tuning resolution with a nominal tuning speed of 40 microseconds.

KEY FEATURES & BENEFITS

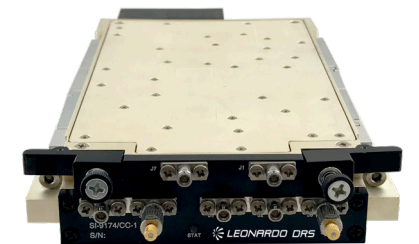
- Input frequency range of 70 MHz to 18.25 GHz
- Independent or phase-coherent operation between other Sparrow 3U VPX cards without recabling
- Fast tuning speed of less than 40 microseconds and fully integrated synthesizer support quick and turnkey spectral scanning
- High signal fidelity and low phase noise support complex signal demodulators
- Conduction-cooled

PRODUCT PAIRINGS & ENHANCEMENTS

- Vesper Family of Tuners/Exciters: 2 MHz - 6 GHz, 100 MHz BW Tuner
- SI-9918A/SYS 1U VPX Equipment Frame



The SI-9170A Sparrow is available in a single or dual channel configuration with 500 MHz bandwidth per channel



The SI-9174 Sparrow is available in a single configuration with 160 MHz and/or 500 MHz bandwidth per channel

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning

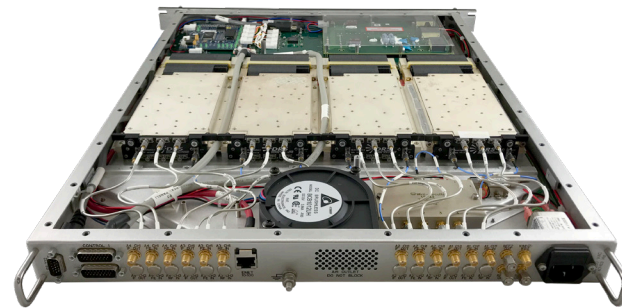
Contact Leonardo DRS Airborne & Intelligence Systems for the complete list of Sparrow configurations.

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SI-9918A/SYS

1U VPX Equipment Frame with Integrated Sparrow Tuners

The SI-9918A/SYS is a 1U VPX equipment frame that mounts into a standard EIA 19-inch equipment rack. The SI-9918A/SYS is designed to hold up to four single-slot SI-9170A 3U VPX Sparrow cards. This highly configurable system will allow the user a level of RF performance, capability, and flexibility that is unattainable with systems of larger magnitude. This configurable system accomplishes this while maintaining simple to use, standard open architecture interfaces for command and control. The Sparrow 3U VPX cards are factory installed within the equipment frame. Each unit's signal input, output, and control interfaces are routed to connections on the rear of the equipment frame.



When the top panel is removed, four Sparrow tuners are shown installed into the equipment frame

KEY FEATURES & BENEFITS

- One to eight channels are available in the same 1U rack instantiation providing flexibility to suit specific applications
- Reduced life cycle cost associated with the implementation of open architecture standard interfaces
- A more easily serviced and lower cost approach to maintenance since each 1U chassis is composed of individual standalone modules
- An upgrade path to allow multiple 1U chassis to be configured in coherent, scalable, multi-channel architectures for other applications such as direction finding
- A modular internal architecture that significantly reduces the effort and risk for other upgrades and variants needed in the future

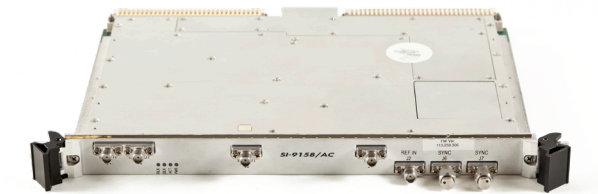
PRODUCT PAIRINGS & ENHANCEMENTS

- Sparrow Family of Tuners: 70 MHz - 18.25 GHz

SI-9158

1-Channel, 250 MHz - 18.25 GHz, 500 MHz BW Tuner

The SI-9158 microwave tuner's high-performance and flexibility qualify it for both SIGINT and electronic support measure operations. Covering the UHF/SHF spectrum from 250 MHz to 18.25 GHz, the SI-9158 can be remotely configured for independent operation or phase-coherent operation when part of a system utilizing additional tuners. Features are designed to optimize SIGINT operations including two simultaneous IF outputs (centered at 1 GHz and 160 MHz), a switchable log video output (one wideband and one narrowband), and multiple tuning approaches.



By providing two IF outputs with unique center frequencies and bandwidths, the SI-9158 enables simultaneous processing of ELINT, COMINT, and FISINT signals. The SI-9158 provides four methods to tune a signal: fixed frequency, sweep (continuous coverage from a start frequency to a stop frequency), step tuning (through two tables, each with up to 4,865 re-programmable channels), and RF PAN mode for very fast spectral monitoring.

The SI-9158's superior dynamic range allows for intercept of weak signals in the presence of strong signals in dense environments. High signal fidelity and low phase noise support complex signal demodulators. The SI-9158 delivers industry-leading single-tone and two-tone spurious performance.

KEY FEATURES & BENEFITS

- Input frequency range 250 MHz to 18.25 GHz
- 6U VME 64X form factor
- High signal fidelity and low phase noise support complex signal demodulators
- Fast tuning rate supports quick spectral scanning

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9158-2 has a single IF output with an increased bandwidth of 2 GHz centered at 4 GHz

Contact [Leonardo DRS Airborne & Intelligence Systems](mailto:SSsales@drs.com) for the complete list of SI-9158 configurations.

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SI-9249/FE

1-Channel, 3 GHz Microwave Frequency Extender

The SI-9249/FE is a single-channel frequency extender designed to expand the frequency range of receivers and tuners operating in the VHF/UHF band to 3 GHz through 12.4 GHz, enabling the intercept of microwave signals.

The SI-9249/FE combines small size and light weight while consuming less than 3.2 watts of power. The unit can be controlled remotely via its multi-drop RS-232 interface or manually via its bottom panel DIP switches. In combined operation, it can be daisy-chained to other units via a multi-drop RS-232 connection and 10 MHz reference output, eliminating complex cabling. The SI-9249/FE features a built-in low-noise amplifier that, when used with VHF/UHF receivers, can improve receiver system noise performance.

KEY FEATURES & BENEFITS

- Extends the tuning range of VHF/UHF receivers and tunes to 3 GHz through 12.4 GHz
- Operates via a multi-drop RS-232 interface for multi-channel applications or via DIP switch control for single-channel manual control
- Switchable post-amplifier improves system noise performance
- Very low power, compact size, and interconnection kits for easy system integration

COMPATIBLE PRODUCTS

- SI-9150 Polaris: Multi-Channel, 2 MHz - 6.2 GHz Wideband Analog or Digital Tuner
- SI-8649A Picoceptor: 1 or 2-Channel, 2 MHz - 3 GHz Narrowband Receiver
- SI-8649A/PF PicoFlexor: 1 or 2-Channel, 2 MHz - 3 GHz SDR
- SI-8649A/PF PicoFlexor Transceiver: 2-Channel, 2 MHz - 6 GHz Wideband SDR/EW Platform
- SI-8979A/SYS RF Survey: 2-Channel, 2 MHz - 3 GHz Rugged SDR Platform



SI-8649A/PF PICOFLEXOR

1 or 2-Channel, 2 MHz - 3 GHz, 6 or 25 MHz BW SDR

The PicoFlexor's high RF performance over a 2 MHz to 3 GHz frequency range, its state-of-the-art FPGA-based digital processing, and its simple development interface make it a best-in-class SIGINT software-definable radio (SDR). The rugged and low-SWAP PicoFlexor has incomparable operating temperature, as well as shock and vibration parameters allowing it to withstand the harshest environments.

PicoFlexor is a miniature, tactical receiver designed for both application development and deployment in the field. Its design leverages power reduction and performance gains of next-generation digital technology. The PicoFlexor's software-definable architecture means it can be deployed for a signal intercept/analysis application, then re-deployed for threat warning and again re-deployed to other mission critical applications, such as precision geo-location. The architecture is optimized to integrate with open SDR standards such as REDHAWK and GNURADIO by simply swapping a secure digital (SD) card.

KEY FEATURES & BENEFITS

- Ruggedized with extended temperature and high vibration tolerance to survive real-world environments
- Low SWAP for small platform integration
- Advanced digital processing capability addresses all signal types from simple to the most complex in one small package
- Best-in-class RF performance allows increased standoff distance from tactical threats, and intercepts even the weakest signals in the most dense signal environments
- Open source platform allows for full customization
- Flex DDCs are ideal for processing modern communication signals

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures (ESM)
- Geolocation
- Threat Warning
- Software-Definable Radio/Receiver

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9249/FE Frequency Extender: Increases the frequency coverage to 3 GHz through 12.4 GHz
- Aft-End Processor (AEP) Module: Provides high-speed backplane for application development and adds standard 1-Gig Ethernet and JTAG I/O interfaces
- PicoFlexor Software Loads



Single-channel PicoFlexor with optional high-speed backplane AEP Module provides application development through standard 1-Gig Ethernet and JTAG I/O interfaces



Single-channel PicoFlexor's AEP Module removed for deployment



Dual-channel PicoFlexor's AEP Module removed for deployment

SI-8649A/PF PICOFLEXOR TRANSCEIVER

2-Channel, 2 MHz - 6 GHz, Wideband SDR/EW Platform

The PicoFlexor Transceiver is a miniature, tactical, software-definable radio (SDR) platform that integrates a transmitter with a high-performance SIGINT superheterodyne receiver in a single low SWAP package. As a superheterodyne receiver, the PicoFlexor Transceiver can convert a received signal to a fixed intermediate frequency which is more conveniently processed than the original radio carrier frequency. As an SDR, the unit can be used for application development and field deployment. The unit can be deployed for one application, and then redeployed for another application by simply swapping a secure digital (SD) card.

The PicoFlexor Transceiver's SIGINT receiver supports a frequency coverage of 11 MHz to 3 GHz with an instantaneous 25 MHz bandwidth. Its transmitter provides VHF/UHF/SHF coverage with excellent wideband transmit performance in an instantaneous 56 MHz bandwidth at center-tuned frequencies of 70 MHz to 6 GHz and transmit performance at center-tuned frequencies down to 48 MHz, providing coverage down to 20 MHz within its instantaneous bandwidth. The unit features an internal GPS receiver and a VITA 49 digital IF output that provide a means to time stamp collected data for re-transmission.

KEY FEATURES & BENEFITS

- One receive channel with 25 MHz bandwidth and one transmit channel with 56 MHz bandwidth
- Frequency agility to quickly shift operating frequency in order to tune and transmit anywhere across its 2 MHz through 6 GHz spectrum
- Pre and post filtering for precision RF performance
- Best-in-class RF performance increases the standoff distance from threats and discerns signals in the midst of other signals
- Open source platform allows for full customization
- Increased digital processing capability allows processing from simple signals to complex signals in one small package
- Rugged to survive real-world environments
- Low SWAP for small platforms

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9249/FE Frequency Extender: Increases the frequency coverage to 3 GHz through 12.4 GHz
- Aft-End Processor (AEP) Module: Provides high-speed backplane for application development and adds standard 1-Gig Ethernet and JTAG I/O interfaces



PicoFlexor Transceiver with AEP Module for application development



PicoFlexor Transceiver AEP Module removed for deployment



PicoFlexor Transceiver paired with the SI-9249/FE Frequency Extender to increase coverage up to 12.4 GHz

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Direction Finding/Beam Forming
- Electronic Support Measures
- Geolocation
- Threat Warning
- Electronic Warfare (EW)
- Cyber Capabilities
- Software-Definable Radio/Receiver

PICOFLEXOR SOFTWARE

Compatible Software and Firmware Loads

SOFTWARE DEVELOPER'S KIT

The PicoFlexor Software Developer's Kit constitutes a Linux virtual machine complete with source code and tools required to perform FPGA application development, software application development, debugging and deployment for the PicoFlexor within a graphical development environment. It supports rebuilding of operating system kernels, kernel modules and file systems for full customization of the execution environment for target applications.

REDHAWK & GNURADIO SOFTWARE/FIRMWARE LOAD

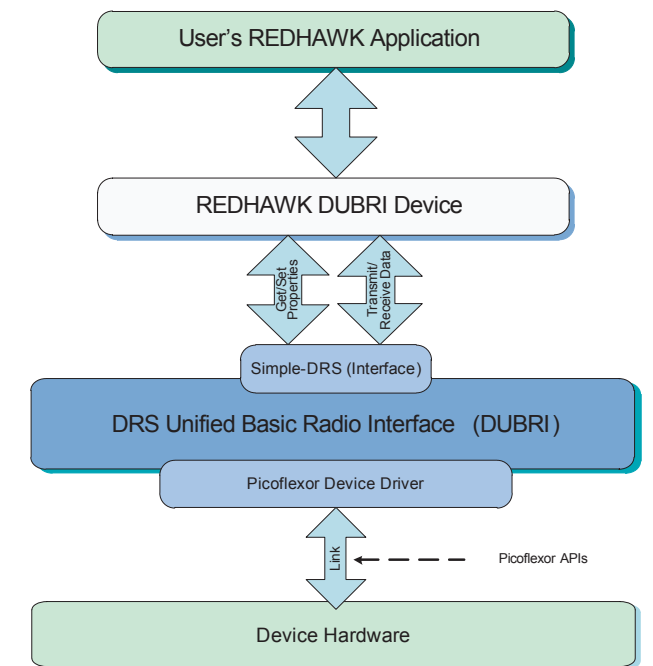
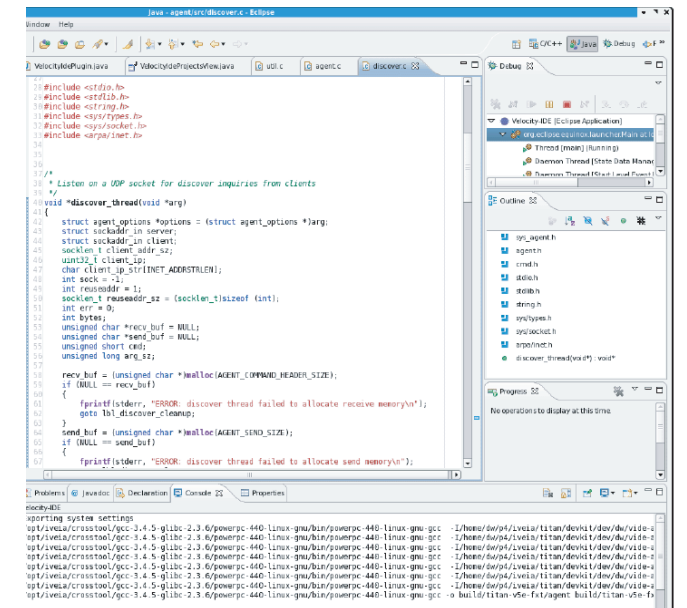
The REDHAWK & GNURADIO software/firmware loads for the PicoFlexor & PicoFlexor Transceiver provide a plug-in to the free, open standard in order to develop applications on the software-definable radio (SDR). These loads consist of a toolkit that provides software blocks to implement digital signal processing of communication signals and to control the SDR. The software is delivered on an easily-installed SD card that makes the SDR ready for development upon powering up.

FLEXIBLE FAST FOURIER TRANSFORM (FLEX-FFT) SOFTWARE

The software performs fast fourier transforms on signal sources at any of four selectable input channels. Source selections are from either the analog-to-digital converter or digital-drop-converter. The signals are processed in the SDR's FPGA and output as VITA Radio Transport spectrum packet streams of power spectral density data. A user can display the power spectral data in the VITA Radio Transport datagrams for analysis. Signal information shown in the display may indicate frequency ranges that deserve closer analysis.

FLEXIBLE DIGITAL DROP RECEIVER (FLEX-DDR) SOFTWARE

The Flex-DDR filters and down-converts ADC samples from the PicoFlexor Tuner. The output sample rate can be an integer or fractional multiple of the ADC clock due to the built-in fractional resampler. The output from the resampler can be sent to a demodulator (AM, FM, PM, CW, USB, LSB) and/or packetized in a VITA-49 packet for user consumption. The output sample rate ranges from 23.333333 Msps to 356 Msps. The filter bandwidths are selectable from 20% to 80% of the sample rate.



SI-8979A/SYS RF SURVEY

2-Channel, 2 MHz - 3 GHz, 6 MHz BW Rugged SDR System

The core of the RF Survey System is a dual-channel, low SWAP, ruggedized Picoceptor receiver that is capable of rapid spectrum scanning for collecting, cataloging, and analyzing signals between 2 MHz and 3 GHz.

The RF Survey System is also comprised of a mission-optimized RF survey firmware application, a Windows graphical user interface control application, a cable interface for control and I/O connections, and an Android smartphone to store and execute the mission parameters and to store mission data.

The RF Survey System is adaptable for specific mission requirements. The system can be connected to a PC for stationary missions with limited or no operator interaction, or connected to its Android Smartphone for mobile operations when parameter adjustments are required on the fly.

Stationary Operation

- Scan, intercept, record: Define frequency bands to sweep with a search channel; analyze signal activity with spectrum analyzer display tools; use the handoff channel to demodulate intercepted signals and record audio
- Create mobile-operation missions: Specify frequencies to monitor with frequency sweeps or a list of specific frequencies, then store on Android Smartphone
- Collect and analyze files and information captured during mobile missions

Mobile Operation

- Carry RF sensor and cabling in a battle-dress uniform pocket with the Android Smartphone attached to forearm
- Operate in a vehicle or leave unattended; operator interaction is optional
- Use one channel to search and the second channel to tune, demodulate and record audio files to Android Smartphone

KEY FEATURES & BENEFITS

- Frequency coverage from 2 MHz to 3 GHz
- Can be operated from a PC or from an Android Smartphone for mobile operations
- Runs for about six hours on a fully-charged battery
- GPS receiver provides location and accurate timing
- Android Smartphone is capable of storing audio recordings

APPLICATIONS SUPPORTED

- COMINT
- ELINT
- Spectrum Monitoring/Management
- Electronic Support Measures (ESM)
- Threat Warning

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9249/FE Frequency Extender: Increase the frequency coverage to 3 GHz through 12.4 GHz



Android smartphone, rugged Picoceptor, antennas, and graphical user interface application make up the core of the RF Survey System



Custom packaged RF Survey System in a 1510 Pelican Case

RT-3030/SYS

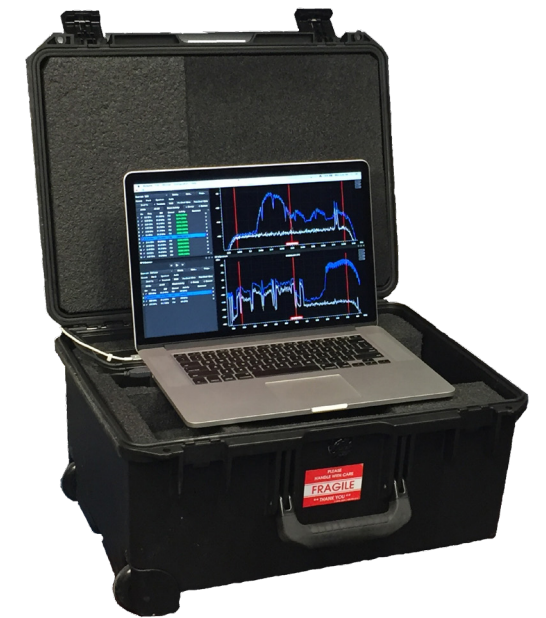
Spectral Survey Systems with Integrated Tuner Recorder

The RT-3030/SYS family of spectral survey systems combines an SI-9150/D2 Polaris two-channel, or an SI-9150/D4 Polaris four-channel, or an SI-9150/D5 Polaris five-channel digital tuner with a high-performance laptop that employs solid-state RAID storage and spectral survey software for signal monitoring and integrated command and control of the tuners.

In addition, to control the Polaris tuners, the integrated spectral survey software supports user-configured stepped frequency sweeps with programmable dwell times and the recording of raw IQ samples, as well as the high-speed spectral scanning with recording of spectral data. A rugged transit case is provided for the storage and transport of the system and includes all required cables and accessory items, including a 12 Vdc to 110 Vac inverter for operation from battery or vehicle power.

INTEGRATED SYSTEM CONSISTING OF:

- Apple MacBook Pro 15-inch Retina Laptop
- Dual 10 Gb Ethernet-to-Thunderbolt interface
- Thunderbolt Mini-RAID with four 1 TB SSDs in software RAID-O for 4 TB of storage
- Two, four, or five-channel digital Polaris tuner
- DC-to-AC Power Inverter for operation from 12 V battery or vehicle power
- Powered GPS antenna provided for time-tagging of Polaris digitized RF data
- Rugged transit case with all required cables and accessories
- Integrated control software application



APPLICATIONS SUPPORTED

- Survey Recording
- Pre-demodulation (Pre-D) Signal Collection
- Signal Analysis
- System Validation & Training

PRODUCT PAIRINGS & ENHANCEMENTS

- SI-9249 Frequency Extender: Increase the frequency coverage to 3 GHz through 12.4 GHz

RDA2

2nd Generation Record Playback Library

The RDA2 series of record and playback libraries is the 2nd generation of the popular Recorded Data Access (RDA) product. These platforms provide high-capacity long-term storage, rapid offload of data from Leonardo DRS recorders, and direct record and playback of up to four channels of differential emitter-coupled logic (DECL). Recorded data may be directly accessed through the open Linux operating system or the built-in 100/1000/10GBase-T Ethernet network interfaces.

KEY FEATURES & BENEFITS

- Supports 24 hard disk drives in RAID-6 architecture
- System storage capacities of 22, 44, 66 or 88 TB
- Supports two or three PCI express I/O expansion cards depending on configuration
- Simultaneous record/playback of up to four channels of DECL at either 70 or 96 Msps each

APPLICATIONS SUPPORTED

- Survey Recording
- Pre-Demodulation (Pre-D) Signal Collection
- Data Management
- Signal Analysis
- Signal Library Development
- System Validation & Training

PRODUCT PAIRINGS & ENHANCEMENTS

- Universal Playback Module: Adds a flexible analog playback capability to the RDA2, supporting all current and legacy Leonardo DRS analog recorders



A 4U 19-inch rackmount configuration weighing approximately 100 lbs.



The RDA2 without the front cover shows 24 hard disk drives in a RAID-6 disk architecture for maximum data integrity

TRIED & TRUE

Our tried and true products are of the highest quality and still play important roles in many customer applications. While Leonardo DRS has superseded these vintage products with newer technologies to meet new challenges, they may be more than equal to many requirements. These products are still available for purchase and are fully supported by repair services for the foreseeable future.



Modular Scout Solid State Recorder

The Modular Scout solid state recorder is an ultra-small, rugged, tactical data recorder designed for unique recording requirements. The system can capture up to 200 MByte of data per second streaming for 168 minutes. A removable flash storage pack supports quick and easy installation and replacement of storage media; and removable I/O modules can be swapped to adapt the unit for specific data capture.



SI-8614 Nanoceptor Subminiature VHF/UHF Receiver

Superseded by Polaris, the Nanoceptor is a low-SWAP, general-purpose, surveillance receiver that tunes from 20 MHz to 3 GHz, making the unit ideal for portable, narrowband, surveillance applications where weight and power reduction are crucial.



SI-8649A Picoceptor 1 & 2 Channel, 2 MHz - 3 GHz Receiver & SDR

A small receiver providing high-speed spectrum analysis, while also realizing the power and flexibility of a software-definable radio. Available as a single or dual channel receiver with 6 or 25 MHz of instantaneous bandwidth. Compatible software and firmware loads are also available.



SI-9136BN 2-Channel 6U VME VHF/UHF Tuner

This tuner family provides 10 configuration options that offer a range of IF outputs and independent and phase-coherent conversions of RF signals between 20 MHz and 3 GHz in a 6U VME single-slot module.

SIGNAL SOLUTIONS PRODUCT PORTFOLIO

RF tuners and receivers that are ready to integrate and empower RF system performance.

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