SI-8728A

Eight-Channel Narrowband HF Tuner Subsystem

OPERATIONALLY PROVEN WITH SEVERAL HUNDRED UNITS DEPLOYED ON PROGRAM PLATFORMS

The SI-8728A high-performance tuner subsystem features eight independent HF tuner modules. Each tuner module accepts an RF input in the range of 100 kHz to 30 MHz and provides tuning resolution to 1 Hz. The tuner subsystem allows for independent or phase-coherent tuner operation supporting a variety of system applications. IF outputs of all tuner modules are digitized by 24-bit A/D converters with high dynamic range then processed digitally and made available as baseband in-phase and quadrature-phase (I/Q) data via a single Ethernet interface.

The processed data outputs are packaged according to the packet structure of the VITA 49.0 (VITA Radio Transport) standard for output via the Ethernet interface. It is through this same interface that the HF tuner subsystem is configured and controlled. A real-time clock, which may be synchronized to a 1 PPS reference input, is maintained for time-stamping the processed data.

The subsystem is packaged in a 1U rack-mount chassis and designed to allow stacking of units for very high-density systems. The rear panel includes SMA connectors for the RF inputs and for the 1PPS and 10 MHz REF inputs. A duplex SC socket serves as the fiber optic 1000BASE-SX Ethernet physical interface, while a duplex RJ-45 connector serves as the 1000 Base-T copper Ethernet physical interface. For applications requiring fewer than eight tuner modules, the SI-8728A may be optionally populated with any fewer number of tuner modules.

The 8728A/MULTI option adds an 8x8 matrix switch internal to the SI-8728A chassis. Switching is controlled through the same 1000Base-SX interface as the tuner.

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EIGHT-CHANNEL NARROWBAND HF TUNER SUBSYSTEM

HIGHLIGHTS

- 8 x 8 non-blocking RF switch allows any tuner channel to connect to any RF input
- EMP protection protects tuner from damage due to continuous RF overload and high-voltage transients
- Eight high-performance HF tuners in a compact 1U rack-mount chassis
- Gigabit Ethernet digital interface (1000BASE-SX)
- VITA-49.0 time-stamped I/Q data with up to 25 kHz nominal IF bandwidth
- Time stamp of data synchronous to 1 PPS input
- Designed to operate in EMC-sensitive environments
- 100 kHz to 30 MHz frequency coverage in 1 Hz steps
- Low-jitter phase-coherent or independent tuning
- Built-in self-test
- High-density, HF monitor system with high dynamic range
- Tuner front end and digital data generation for super-resolution DF systems

COMPANION PRODUCTS

SI-8728A/SW/RCVR	Client/server application that provides unit control and parses individual data streams to receiver clients on one or more PC's
SI-9332	32X32 full matrix HF switch that allows up to 32 HF antennas to be connected to up to 32 receiver inputs

OPTIONS

8728A/STD	The 8728A/STD option designates the tuner without the 8728A/MULTI installed
8728A/MULTI	A non-blocking 8x8 full matrix switch which allows any combination of eight antennas to be connected to eight receiver channels

SPECIFICATIONS

TUNING	
Frequency Range	
8728A/STD	100 kHz to 30 MHz
8728A/MULTI	2 to 30 MHz
Tuning Step Size	1 Hz
Tuning Speed	< 2.5 ms to within 1 Hz of final frequency

OPERATING FEATURES	
Output Sample Data Format	Baseband I/Q, 32-bit signed data
Output Data Packet Format	Packetized according to VITA-49.0
Subsystem Data and Control Interfaces	1000 Base-SX fiber optic Ethernet and 1000 Base-T copper interface
Connector Types	SC socket (fiber optic) and RJ-45 jack (copper)
Protocol	TCP/IP IPv4
Addressing	Single IP address per subsystem chassis
Time Stamping Reference Inputs	10 MHz, 1PPS via SMA connectors on rear panel
Time-stamp Resolution	Better than 7 microseconds
Calibration test mode	10 MHz reference directed into tuner input

SWAP	
Size (H x W x D)	1.72 x 19 x 18 inches, excluding connectors and handles
Weight	< 18 lbs.
Power Requirements	100 to 250 Vac; 47 to 63 Hz
Power Consumption	
8728A/STD	80 watts maximum; 75 watts typical
8728A/MULTI	92 watts maximum; 87 watts typical

ENVIRONMENT	
Operational Temperature Range	-20°C to +60°C
Storage Temperature Range	-40°C to +70°C
Transportation (non-operational)	Basic transportation per MIL-STD-810E, Method 514.4-1 Procedure 1, Figure 514.4-1 for all three axes

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