

RF & MICROWAVE SIGINT INSTRUMENTS

Changing to meet the needs of a changing world!

CS-5040 VXI Microwave Tuner



CS-5020C Microwave Receiver

ISO 9001
Registered

*Communication
Solutions*

A Rockwell Collins Business

Communication Solutions

Com-Sol strives to provide what you, the customer, want and deserve...

QUALITY A continuous, never ending commitment to improvement

VALUE Quality and Performance at minimum cost

CUSTOMER SATISFACTION You will find Respect and Responsiveness when you call Com-Sol

Communication Solutions, known as Com-Sol, designs and manufactures high performance SIGINT electronic instruments and subsystems using microwave, RF and digital signal processing technologies. These instruments and subsystems cover the frequency spectrum of DC to 110 GHz.

Com-Sol develops innovative solutions to meet COMINT and ELINT signal intercept and processing applications for military users, system designers and integrators, and the intelligence community. The company serves customers in the U.S. and allies abroad.

Com-Sol's product base includes:

- Microwave Receivers and Tuners
- Millimeter Wave Receivers and Downconverters
- Up/Down Frequency Translators
- ELINT/ESM Pulse Analyzers
- Demodulators
- Display Digitizers
- Signal Distribution Equipment
- IF-to-Baseband Converters
- Signal Sources and Other Measurement Instruments
- Rack Mount, VXI and VME Product Configuration
- HF Receivers
- VHF/UHF Receivers
- Spectrum Survey Tools

The Com-Sol team is comprised of highly skilled professionals dedicated to ethical business practices, a never ending pursuit of excellence, a "best value", high quality product and customer satisfaction!

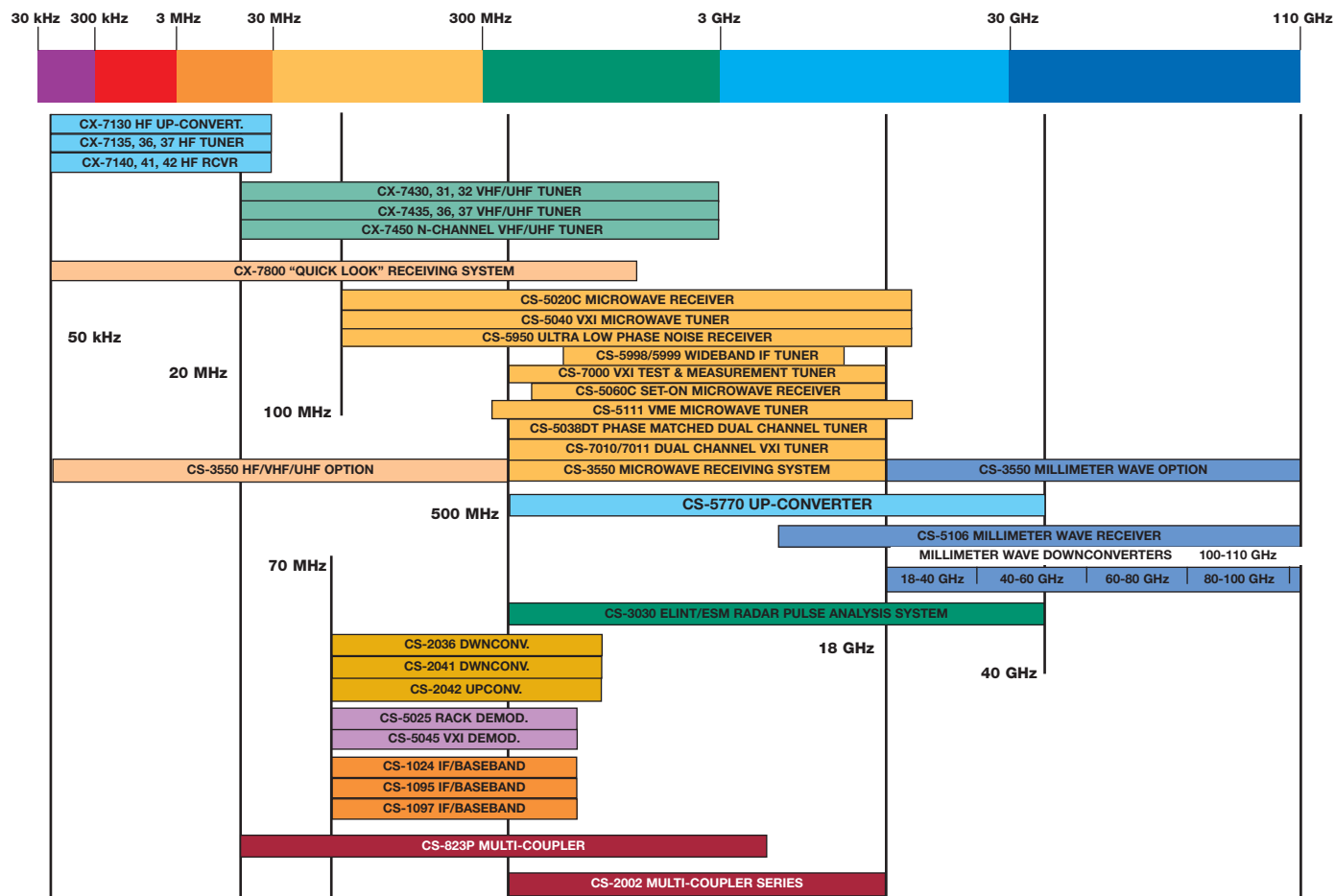
For additional information about the company or products, please visit our Web site at www.comsol-inc.com

Com-Sol can provide customized Java™, Visual C++ or Visual Basic based software to support our customer needs. Contact the factory for further details.

New products are being added as an on-going process at Com-Sol. Please call if you have questions regarding the availability of products not shown in this brochure.

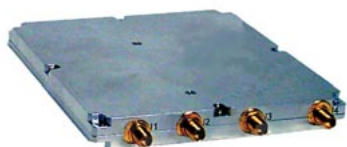
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HF Receivers

CX-7130 HF Up-Converter



CX-7130 Converter Module

- 50 kHz to 30 MHz Frequency Range
- 70 MHz IF Output
- Narrowband Sub-Octave and Wideband Preselection
- IF Output Filter Bandwidth Options
- Fast Tuning Speed
- Can Extend the Range of Com-Sol or OEM VHF/UHF Receivers
- Available as Module Set, VXI, VME or 1U Half-Rack



CX-7136 VXI HF Tuner

CX-7135, CX-7136 and CX-7137 HF Wideband Tuner

- 2U, Half-Rack Chassis (CX-7135), Single Slot VXI Module (CX-7136) and 2-Slot VME Module (CX-7137)
- 50 kHz to 30 MHz Frequency Range
- 70 MHz IF Output with 4 MHz BW
- Optional 6 MHz Cf Baseband Output
- Optional Built-In A/D Converter
- Fast Tuning Speed
- 10 Hz Tuning Resolution
- Low Phase Noise
- Better Than 80 dB Spur Free Dynamic Range



CX-7141 VXI HF Receiver

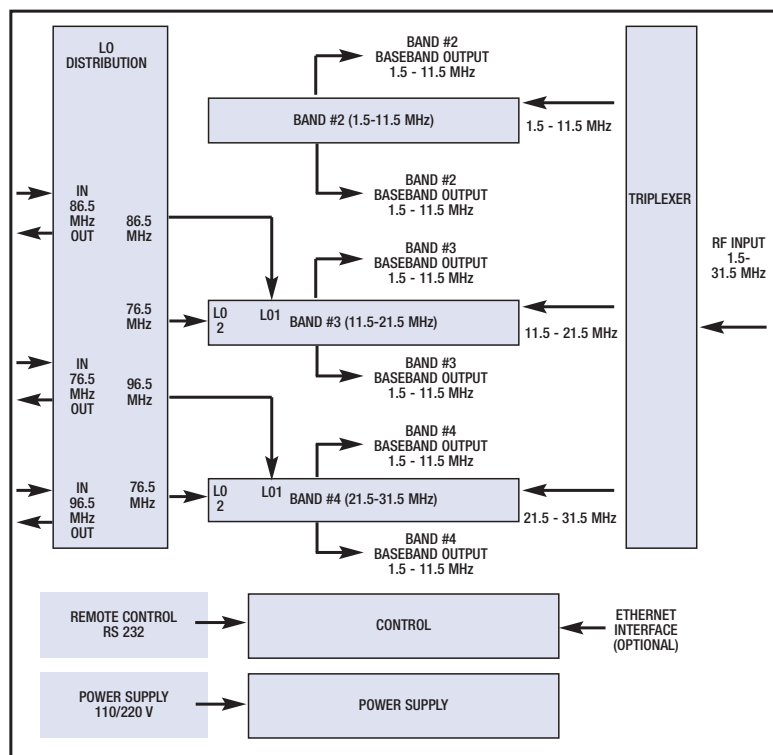
CX-7140, CX-7141 and CX-7142 HF Receiver

- 2U, Half-Rack Chassis (CX-7140), Single Slot VXI Module (CX-7141) and 2-Slot VME Module (CX-7142)
- 50 kHz to 30 MHz Frequency Range
- +38 dBm IP3 Performance
- 10 Hz Tuning Resolution (1 Hz with BFO)
- Wideband and Narrowband Modes, 70 MHz IF Output
- Fast Tuning Speed
- DSP IF Filters from 100 Hz to 230 kHz
- DSP Demodulators for AM, FM, USB, LSB and CW
- Analog and Digital Audio/Video Outputs
- Digital, Real and I&Q Outputs

HF Receivers

CX-7235 Wideband HF Tuner

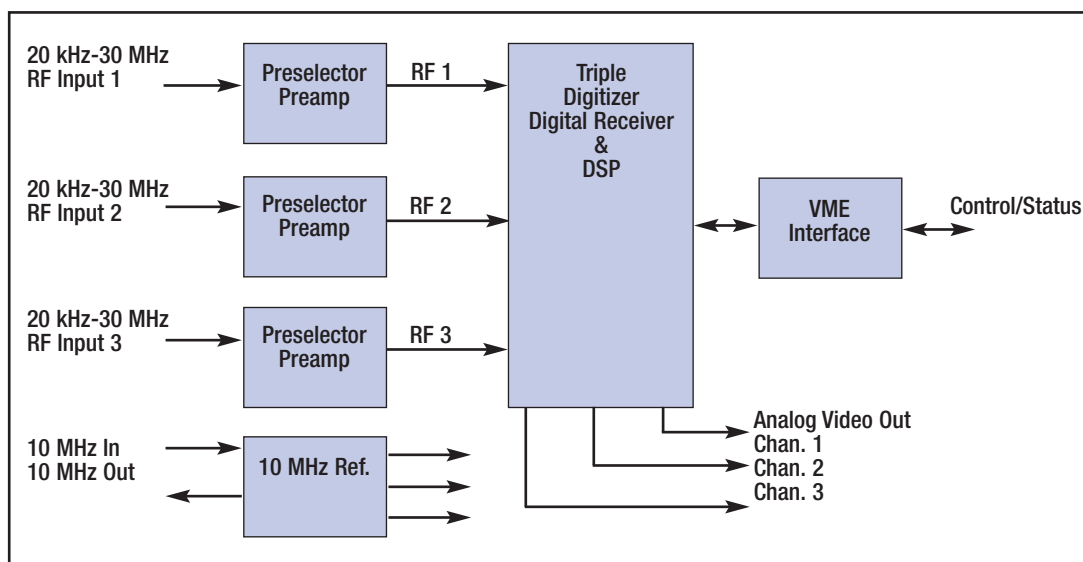
- 1.5 to 31.5 MHz Frequency Range
- Three Paths, Each Covering a 10 MHz Band Segment
- Dual 1.5 to 11.5 MHz Baseband Outputs for Each Path
- Superior Preselection
- Better Than 85 dB Spur Free Dynamic Range
- Better Than 80 dB Path-To-Path Isolation
- -125 dBc/Hz LO Phase Noise at 1 kHz Offset
- Very High Level 3rd and 2nd Order IP's
- Ethernet or RS-232 Interface, Others Optional
- 3U (5.25" High) Full-Rack Mount Chassis
- VLF Channel Option, 10 kHz to 1.6 MHz Coverage



Simplified Block Diagram

CX-7180 Triple Channel VME HF Receiver

- Direct Digital HF Receiver for 20 kHz to 30 MHz
- Better Than 110 dB Dynamic Range
- 12 Preselector Filters in Each Channel
- Four-Channel Configuration as Option
- 200 Microsec. Tuning Speed
- 60 dB Gain Control Range
- AM/FM/LSB/USB/CW DSP Detection Modes
- 100 Hz to 230 kHz Digital IF Bandwidths
- Windows® (Compatible) GUI
- Digital and Analog Audio and Video Outputs
- VME Bus Control Interface



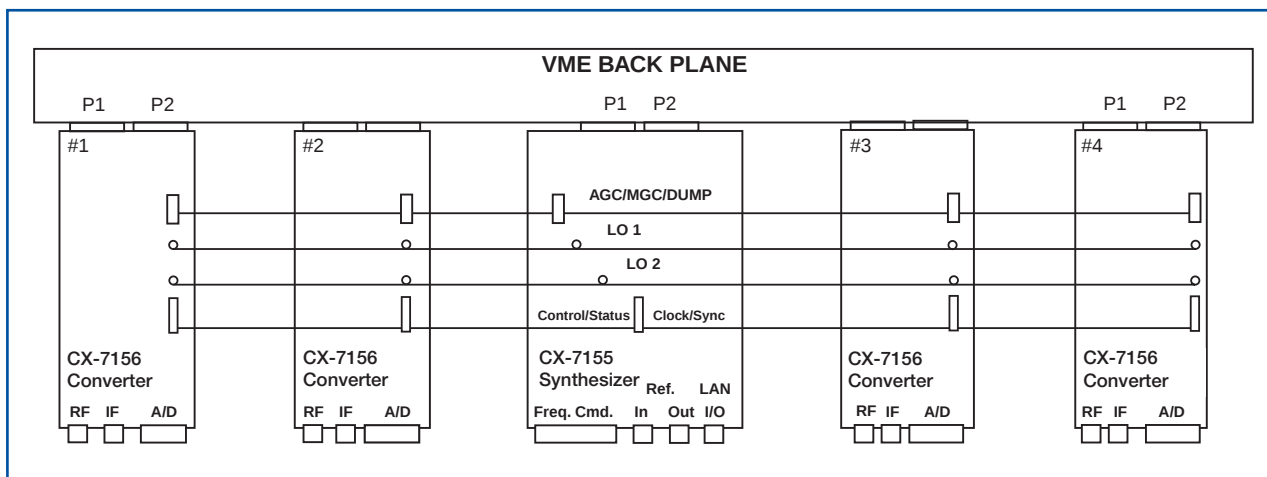
CX-7180 Block Diagram

HF Receivers

CX-7150 Series 'N' Channel HF Receiver

- 50 kHz to 30 MHz Frequency Range
- 2, 4 or 8 Channel Architecture as Standard (other configurations available as option)
- Better Than 85 dB Spur Free Dynamic Range
- 70 MHz IF Outputs with Up to 10 MHz Bandwidth
- Optional Baseband Converters Centered at 6 MHz
- Phase and Gain Matched Channels
- Ultra-Fast Tuning Speed
- Available in Rack Mount, VXI and VME
- Modules Consist of RF/IF Converters, LO Synthesizer, Controller, Remote Interface and LO Distribution
- RS-232, Ethernet, VXI/VME Bus Control

CX-7150 Series 'N' - Channel HF Subsystem



4-Channel VME Configuration Shown

Simplified Block Diagram

CX-7150 Module Table

Function	Model Number				
	Rack Unit	VXI Module	# Slots	VME Module	# Slots
RF/IF Converter	-	CX-7146	1	CX-7156	1
RF/Baseband Converter	-	CX-7146B	1	CX-7156B	1
Synthesizer/Controller	-	CX-7145	1	CX-7155	2
LO Distribution Unit	-	CX-7147	1	CX-7157	1
Complete Receiver	-	-	-	-	-
	CX-7150-xx (-xx denotes number of channels, 2U, Full-Rack Chassis)				

VHF/UHF Receivers

CX-7430, CX-7431, CX-7432 VHF/UHF Receiver

- 20 to 3000 MHz Frequency Range
- 20 Filter Pre-Selection
- Ultra-Fast Tuning Speed
- Low Noise Figure
- +11 dBm Third Order Input IP
- 70 MHz IF Output with Up to 40 MHz Bandwidth
- Built-In Memory Scan and Step Tune Function
- 2U, Half-Rack Chassis (CX-7430), Single Slot VXI Module (CX-7431) and 2-Slot VME Module (CX-7432)
- DSP IF Filters from 100 Hz to 300 kHz (Up to 20 MHz Optional)
- DSP Demodulator for AM, NB/WBFM, USB, LSB, CW
- Analog and Digital Audio/Video Outputs
- Digital, Real and I&Q Outputs



CX-7431 VHF/UHF Receiver

CX-7435, CX-7436, CX-7437 VHF/UHF Wideband Tuner

- 20 to 3000 MHz Frequency Range
- Uses CX-7430 RF/IF Converter and Synthesizer
- Wideband/Narrowband Pre-Selector
- 70 MHz IF Output with Four Selectable Bandwidths of 5, 10, 20 and 40 MHz
- Optional Baseband Output with 15, 17 or 24 MHz Center Frequency Choice and Up to 40 MHz BW
- Optional Built-in A/D Converter
- Better Than 75 dB Spur Free Dynamic Range
- 2U, Half-Rack Chassis (CX-7435), Single Slot VXI Module (CX-7436) and 2-Slot VME Module (CX-7437)
- RS-232, Ethernet or VXI/VME Bus Remote Control



CX-7436 VHF/UHF Wideband Tuner

CX-7438 HF/VHF/UHF Receiver

- 50 kHz to 3000 MHz Frequency Coverage
- Uses CX-7130/CX-7430 High Performance Modules
 - Low Noise Figure
 - Superior Pre-Selection
 - Excellent 3rd Order IP and Fast Tuning Speed
- 2U, Half-Rack Chassis with Front Panel Controls
- Available as Tuner or Complete Receiver
- DSP IF Filters and AM/FM/SSB/CW Demodulator
- 70 MHz IF and Audio/Video Outputs
- RS-232 or Ethernet Remote Control



CX-7438 HF/VHF/UHF Receiver

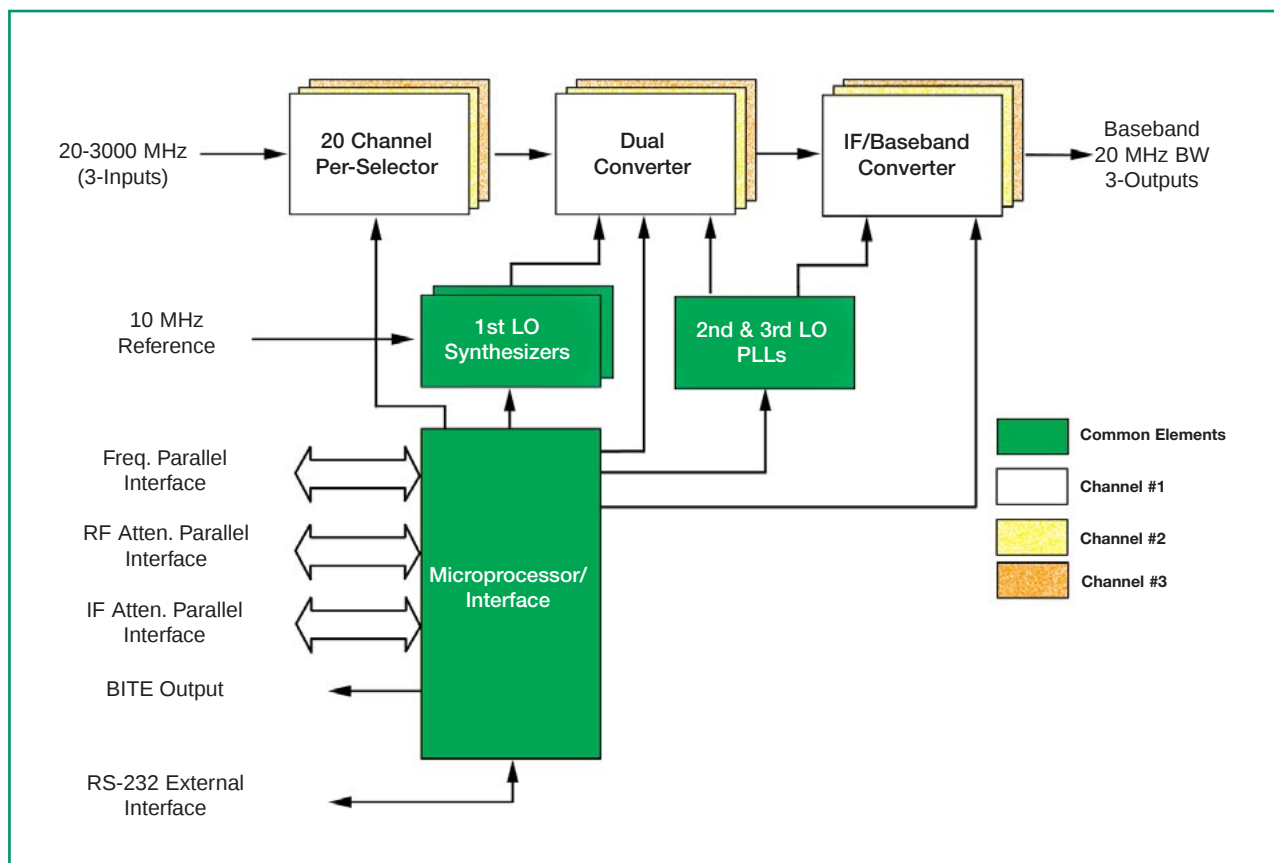
VHF/UHF Receivers

CX-7439 VME Ultra Wideband VHF/UHF Tuner

- 20 MHz to 6 GHz Frequency Range
- 3-Slot Wide VME Module Configuration
- Optional 50 kHz to 30 MHz HF Coverage in Separate 1-Slot Wide CX-7132 VME Module
- 70 MHz IF Output with Up to 40 MHz Bandwidth
- 15, 17 or 24 MHz Center Frequency Baseband Output
- Optional 1-Slot Wide CX-7208 Baseband Filter Module
- Superior Pre-Selection Over the Entire Frequency Range
- High Dynamic Range and Low LO Phase Noise
- Fast Tuning Speed and 10 Hz Tuning Increments
- VME Bus Remote Control

CX-8430S Three Channel VHF/UHF Tuner

- 20 to 3000 MHz Frequency Range
- Three (3) Channel Configuration with Common LO
- Phase and Amplitude Matched for DF Applications
- Excellent Noise Figure and IP3 Performance
- 85 dB Spur Free Dynamic Range
- Fast Tuning via Parallel Binary Interface
- Dual "Ping-Pong" Synthesizers for Ultra-Fast Switching
- 15 MHz Baseband Output with 20 MHz Bandwidth
- RS-232 Remote Control
- Housed in a 3U, Full-Rack Chassis



Simplified Block Diagram

VHF/UHF Receivers

CX-7450 Series 'N' Channel VHF/UHF Tuner

- 2, 4 or 8 Channel Architecture as Standard (other configurations available as option)
- 20 to 3000 MHz Frequency Coverage
- Better Than 80 dB Spur Free Dynamic Range
- 70 MHz IF Outputs with Bandwidths Up to 40 MHz
- Optional Baseband Converter Outputs at 15, 17, 21.4 or 24 MHz with Up to 25 MHz Bandwidth
- Phase and Gain Matched Channels for DF Applications
- Ultra-Fast Tuning Speed
- Available in Rack Mount, VXI and VME
- Complete Subsystems Configured from Module Sets; (RF/IF Converters, LO Synthesizers/Controllers and LO Distribution Units)
- RS-232, Ethernet, VXI/VME Bus Control

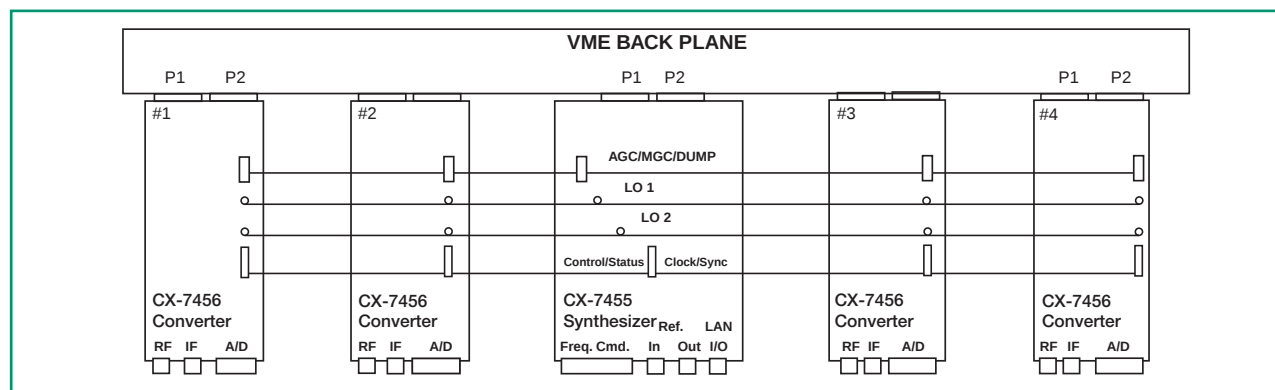


L. CX-7455 VME Synthesizer Module

R. CX-7456B VME RF/IF Converter Module

CX-7450 Series 'N' - Channel VHF/UHF Subsystem

Frequency Commands to SYNTHESIZER via LAN, RS-232, or Separate Front Panel Parallel Port



4-Channel VME Configuration Shown

Simplified Block Diagram

CX-7450 Module Table

Function	Model Number				
	Rack Unit	VXI Module	# Slots	VME Module	# Slots
RF/IF Converter	-	CX-7446	1	CX-7456	1
RF/Baseband Converter	-	CX-7446B	1	CX-7456B	1
Synthesizer/Controller	-	CX-7445	1	CX-7455	2
LO Distribution Unit	-	CX-7447	1	CX-7457	1
Complete Receiver	CX-7450-xx (-xx denotes number of channels, 2U, Full-Rack Chassis)	-	-	-	-

Spectrum Survey Tools

CX-7800 "QUICK LOOK" KIT



CX-7800 System in Pelican case

- Portable, Notebook Computer Based Signal Intercept and Collection System
- Low Cost Survey Tool Using Various PCMCIA Cards and Small External Functional Modules to Build a Complete System
- Self-Contained Using Light Weight, Rugged "Pelican" Case with Required Accessories for "Field" Assignments
- Configured for Manual or Unattended Operation

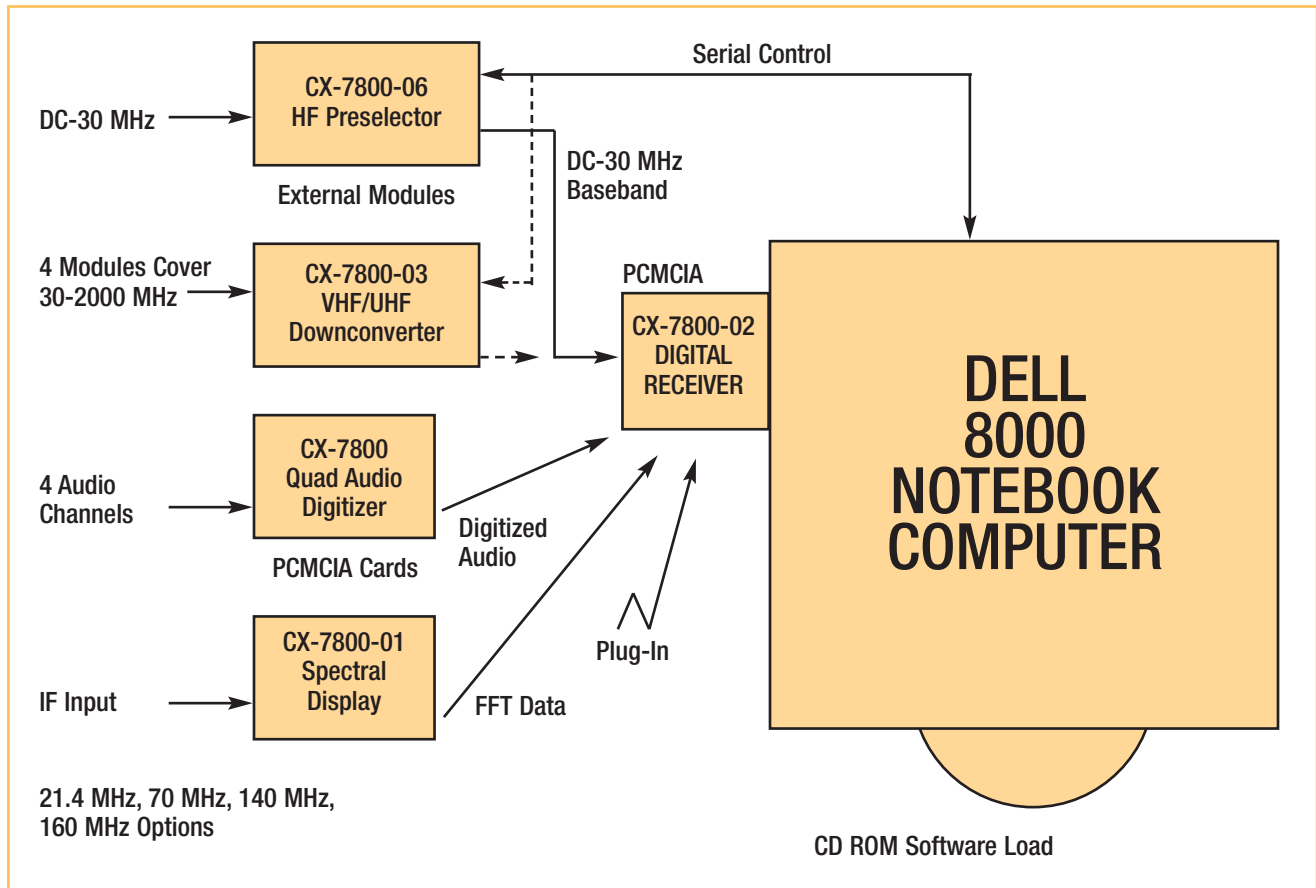
- Windows® (Compatible) GUI Screens
- Spectrum Sweep, Monitor and Scan with Threshold/Dwell Modes of Operation
- RF and "Zoom" FFT Spectral Displays
- Multi-Color Waterfall Histograms
- Time Tagged Signal Event Log
- "Scheduler" Signal Search Against SOI List
- Stores FFT Displays in Notebook
- Records Up to 25 Hours of Received Audio Into Notebook Hard Drive
- Frequency, Detection Mode and Gain Controls via Keyboard or GUI Buttons



CX-7800 with -02 Baseband FFT PCMCIA Card and -06 HF Pre-selector and Antenna

- Multiple Frequency Ranges
 - HF, 50 kHz to 30 MHz
 - VHF/UHF, 20 to 2000 MHz in 3 Bands
- Direct Digital HF Receiver with Pre-Selection
- Tunable VHF/UHF Downconverter Modules
- DSP IF Filters BW's from 100 Hz to 300 kHz
- AM/FM/LSB/USB/CW Demodulation Modes
- Special Purpose Functions
 - IF Spectral/FFT Generation
 - 17:1 Audio Compression
 - Quad Audio Digitizer
 - E1 Storage and Playback
 - FSK/PSK Demodulation Options

Spectrum Survey Tools



Simplified Block Diagram

CX-7800 Model Numbers

PCMCIA Cards and External Modules		
Model Number	Type	Function
CX-7800-01	Type 3 PCMCIA Card	IF Spectral Display; 21.4, 70, 160 MHz Input
CX-7800-02	Type 1 PCMCIA Card	Baseband/FFT, DC-30 MHz, Direct HF Rcvr
CX-7800-03	External Module	VHF/UHF RF to Baseband Downconverter
CX-7800-04	Type 3 PCMCIA Card	E1 Storage and Playback
CX-7800-05	Type 1 PCMCIA Card	17:1 Audio Compressor
CX-7800-06	External Module	HF Pre-Selector
CX-7800-07	Type 1 PCMCIA Card	Quad Audio Digitizer

Typical Configurations: -02 and -06 used together as HF Receiver, or -02 and -03 as VHF/UHF Receiver

Microwave Receivers and Tuners

CS-5020C Microwave Receiver



CS-5020C Microwave Receiver

- 0.5 to 18 GHz Standard Frequency Range
- Extension Option Down to 100 MHz and Up to 22 GHz
- Low Phase Noise, <0.5 Degrees RMS
- COMINT/ELINT Applications (SEI Certified)
- Search/Set-On Modes
- AM/FM/LOG Audio/Video and 8 IF BW's
- 70/140/160 MHz and 1 GHz/500 MHz BW IF Outputs
- Available Millimeter Wave Extenders to 110 GHz
- 2U, Half-Rack Chassis
- Front Panel and RS-232/Ethernet Remote Control
- I&Q Outputs

CS-5950 Ultra-Low Phase Noise Microwave Receiver (NEW)



CS-5950 Ultra-Low Phase Noise Microwave Receiver

- Very Low Phase Noise, <0.25 Degrees RMS
- Specifically Tailored for High Data Rate, Complex, Digital Format Signals
- Very Low RF-to-IF Group Delay & Bandpass Ripple
- 0.5 to 18 GHz Frequency Range, Options to 0.1 and 22 GHz
- Same package as CS-5020C
- Can be Configured as Receiver or Tuner
- 70/140/160 MHz and 1 GHz/500 MHz BW IF Outputs
- Millimeter Wave Downconverters for 18 to 110 GHz

CS-5040 VXI Microwave Tuner



CS-5040 VXI Microwave Tuner

- Three (3) Slot-Wide VXI Module
- Low Phase Noise, <0.5 degrees RMS
- Search/Set-On Modes with Auto-Stop
- COMINT/ELINT Applications
- 70/140/160 MHz and 1 GHz/500 MHz BW IF Outputs
- Available Millimeter Wave Extenders to 110 GHz
- Front Panel LED Status Display

CS-5998/CS-5999 Ultra-Wideband Microwave Receiver (NEW)



CS-5998 Ultra-Wideband Microwave Receiver

- Available in 2U, Half-Rack Chassis (CS-5998) and Three (3) Slot-Wide VXI Module (CS-5999)
- Standard Frequency Range of 1.1 to 17 GHz, Option Down to 100 MHz (Restricted BW) and Up to 22 GHz
- 100 Hz Tuning Resolution
- 3 GHz Center Frequency IF Output/2 GHz Bandwidth
- Search/Set-On Modes with Auto-Stop
- COMINT/ELINT Applications
- Low Phase Noise, <0.5 Degrees RMS

CS-5020DSP Microwave Receiver (NEW)

- 0.5 to 18 GHz Coverage Standard
- RF/IF Spectrum Display
- Search & Set-On Modes
- 0.1 to 110 GHz Coverage Available
- 1 GHz/500 MHz BW IF Out Standard
- COMINT/ELINT Applications (SEI Certified)

Microwave Receivers and Tuners

CS-7000 VXI Low-Cost Microwave Tuner

- 2 to 18 GHz Frequency Range, Options to 0.1 & 22 GHz
- Test & Measurement Applications
- Low Group Delay, <3 ns over 40 MHz BW
- 25-31.5 GHz LMDS Option
- Three (3) Slot-Wide VXI Module
- Low-Phase Noise, <0.5 degrees RMS
- 125 kHz Standard Tuning Resolution, 10 kHz Tuning Step Size Option
- 70/140 MHz and 1 GHz IF Outputs



CS-7000 VXI Low-Cost Microwave Tuner

CS-7010/CS-7011 VXI Dual Channel Microwave Tuner

- Separate Synthesizer and RF/IF Converter Modules (2-Slot Wide Synthesizer and 3-Slot Wide Tuner)
- Amplitude and Phase Matched Channels
- High Dynamic Range
- 1 GHz/500 MHz BW or 480 MHz/250 MHz BW IF's
- 2 to 18 GHz Frequency Range, Option Down to 0.5 GHz
- Chebychev or Gaussian IF Filter Selection for COMINT or ELINT Applications
- Designed for Airborne and Shipboard Installations
- "N" Channel Configuration Available



CS-7010/CS-7011 VXI Dual Channel Microwave Tuner

CS-5060 Set-On Microwave Receiver

- 0.8 to 6 GHz or 0.8 to 18 GHz Frequency Range
- Frequency Extension Options to 20 GHz, 26.5 GHz or 40 GHz
- Configure as Complete Receiver or Tuner
- Specifically Designed for FDM and PCM Applications
- Housed in 1U, Full-Rack Chassis
- Full Front Panel Control with Rotary Shaft Encoder
- 4 IF Filters, AM/FM Demodulator, Audio/Video Outputs
- Less Than 0.5 degrees RMS Phase Noise
- Very Low Group Delay and Bandpass Ripple



CS-5060 Set-On Microwave Receiver

CS-5111 VME ELINT Microwave Tuner (NEW)

- 0.4 to 20 GHz Frequency Range
- 10 kHz Tuning Resolution
- Fast Synthesizer Switch Speed, <1 Millisecond
- 1 GHz/500 MHz BW and 160 MHz/80 MHz BW IF's
- ELINT Applications, Use with CS-3001 Pulse Analyzer
- Built-In Blanking and Attenuator Options
- CS-5110 COMINT Version Available



CS-5111 VME ELINT Microwave Tuner

Microwave Receivers and Tuners

CS-5038 Dual Channel Matched Tuner



CS-5038 Dual Channel Matched Tuner

- 0.5 to 18 GHz Frequency Range
- Amplitude and Phase Matched Channels
- Housed in 2U, Full-Rack Chassis
- Front Panel and RS-232 or Ethernet Remote Control
- 1 GHz and 160 MHz IF Outputs
- I&Q Outputs with 100 MHz BW
- High Dynamic Range
- LOG Video Outputs
- AGC/MGC with 50 dB Gain Control



CS-3550 Microwave Signal Collection System

CS-3550 Microwave Signal Collection System

- 0.5 to 40 GHz Frequency Range
- Can be Extended Down to 50 kHz using Com-Sol HF/VHF/UHF Receivers and Up to 110 GHz
- Automatic and Manual Search Routines
- Windows® (Compatible) Operator Screens
- VXI Plug'N'Play Format and RS-232 or Ethernet Interface
- Signal Hand-Off and Monitoring
- RF and IF Spectral Displays
- Analog and Digital Baseband Outputs

Millimeter Wave Receivers & Downconverters

CS-5106C Low Cost Millimeter Wave Receiver



CS-5106C Low Cost Millimeter Wave Receiver

- Frequency Range from 4 to 110 GHz
- Select Plug-In Heads to Cover 3 or 6 GHz Widebands
- Remote Tuning Head Option
- Very Low Phase Noise and 1 kHz Tuning Resolution
- Windows® (Compatible), GUI and Device Driver Software Provided
- Configure as Tuner or Complete Receiver
- 70 MHz/50 MHz BW or 140 MHz/80 MHz BW IF's
- FM Video Output
- 1U, Half-Rack Chassis

Millimeter Wave Downconverter



Millimeter Wave Downconverters

- Extends Range of CS-5020C, CS-5020DSP, CS-5040, CS-5950, CS-7000, CS-5111 and CS-5038 Receivers/Tuners
- Standard Bands of 18-40 GHz, 40-60 GHz, 60-80 GHz, 80-100 GHz and 100-110 GHz
- Small Size, Suitable for Mounting at Antenna
- Waveguide "K" or "V" RF Input Connection Options
- Low Noise Figure and High Dynamic Range
- +20 dBm Input Protection
- Optional Low Noise Preamplifier

Frequency Converters

CS-2036 VXI Dual Downconverter

- 750 to 1250 MHz Input Frequency
- 70 MHz, 140 MHz or 160 MHz IF Output
- Dual Channels in a 1-Slot Wide VXI Module
- Independently Tuned Channels
- Synthesized 100 Hz Step Size
- Low Phase Noise and Excellent Group Delay
- VXI Bus or Front Panel RS-232 Control
- High Dynamic Range, +9 dBm Third Order IP
- Low Noise Figure, Less Than 9 dB



CS-2036 VXI Dual Downconverter

CS-2041 Downconverter

- 750 to 1250 MHz Input Frequency
- 100 Hz Tuning Resolution
- 70 MHz, 140 MHz or 160 MHz IF Output
- 1U, Full-Rack Chassis
- Front Panel and RS-232 Control
- Second Independently Tuned Channel Option
- Low Phase Noise and Excellent Group Delay
- High Dynamic Range and Low Noise Figure
- External and Internal 10 MHz Reference



CS-2041 Downconverter

CS-2042 Upconverter

- 750 to 1250 MHz Output Frequency
- 100 Hz Tuning Resolution
- 70 MHz, 140 MHz or 160 MHz Input Frequencies
- 1U, Full-Rack Chassis
- Front Panel and RS-232 Control
- Second Independently Tuned Channel Option
- Low Phase Noise and Excellent Group Delay
- High Dynamic Range and Low Noise Figure
- External and Internal 10 MHz Reference



CS-2042 Upconverter

CS-5770 Microwave Upconverter

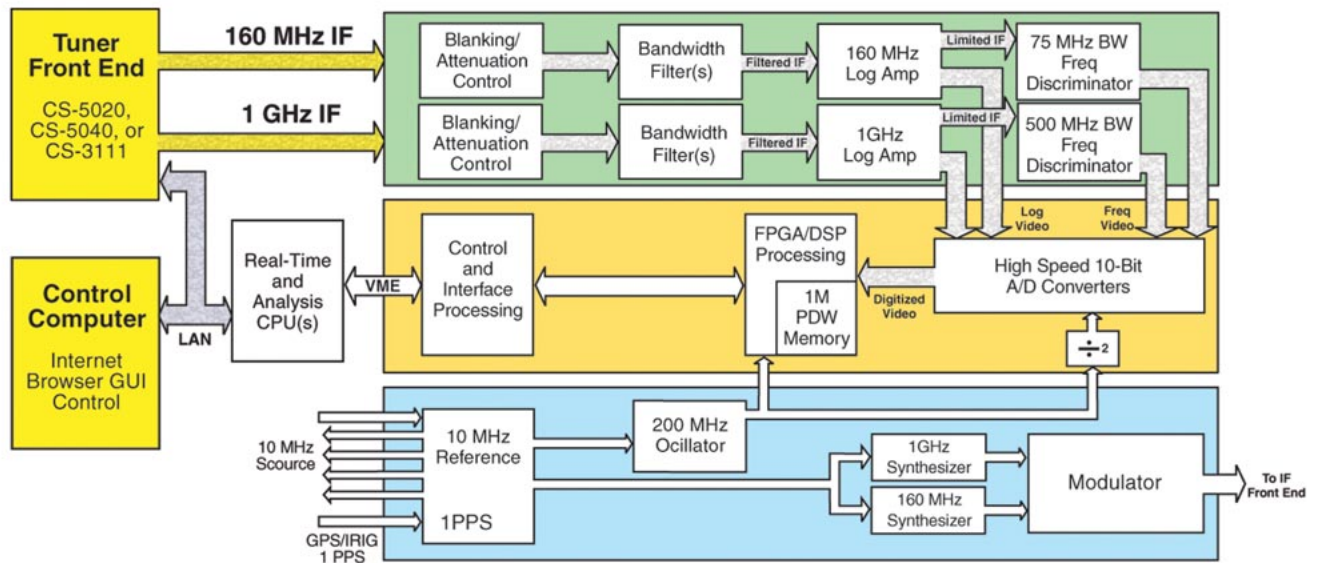
- Converts 70/140/160 MHz or 1 GHz Input Up to any Frequency in the 0.5 to 20 GHz Range
- 100 Hz Tuning Resolution
- Up to +10 dBm Output Level
- Low Phase Noise, <0.5 Degrees RMS
- >100 dB Output Level Control
- Millimeter-Wave Frequency Extension Options to 40 and 60 GHz
- Excellent Group Delay
- 2U, Half-Rack Chassis



CS-5770 Microwave Upconverter

CS-3001 Pulse Analyzer (NEW)

- Accepts 160 MHz and 1 GHz IF Inputs
- Provides De-Interleaved 160-Bit Pulse Descriptor Words (PDW's)
- Uses a Mixture of Analog Hardware, High-Speed Digitizers and Advanced DSP
- Available as a VME Card SET, or Complete Self-Contained Analyzer in VME Enclosure
- Java™/Browser-Based, Operator GUI Screens
- Automated and Very Comprehensive Manual Operating Modes

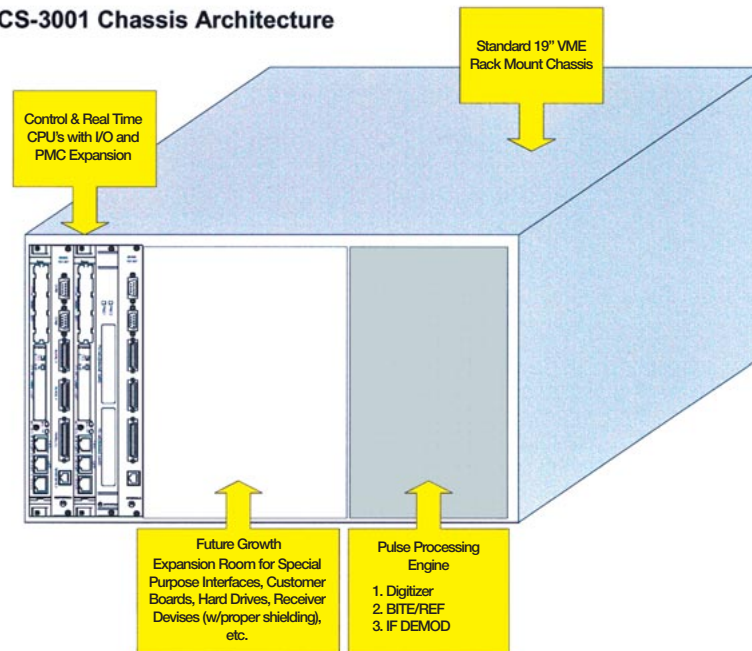


CS-3001 Block Diagram

- Performs Intrapulse Measurements, Generates Intrapulse Descriptor Words (IDW's)
- Pulse Accuracy to +/- 20 nsec
- 5 ns TOI Hardware Resolution
- 1 ns PW and PRI Display Resolution
- 1 Million On-Board PDW Storage
- Processes Up to 3 Million Pulses per Second
- AMOP, FMOP and PMOP Flags
- Continuous RTR (PRI vs. Time) Displays
- +5 to -75 dBm Display Amplitude Range
- 24 kHz Frequency Resolution in 25 MHz BW
- DF Resolution (12-Bits/360 Degrees)
- Precision Graphic Analysis, Visualization and Statistical Data Displays

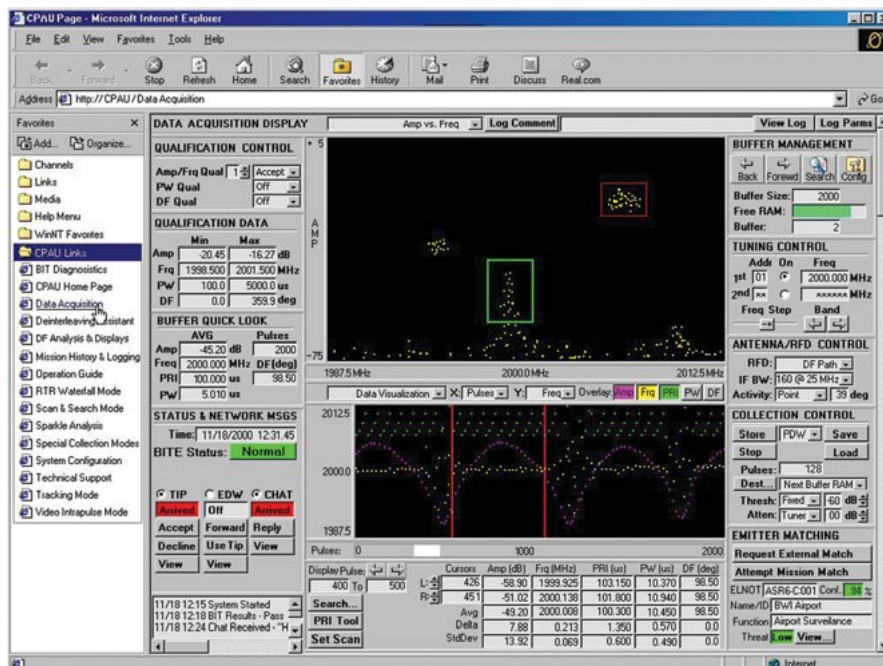
CS-3001 Pulse Analyzer (NEW)

Basic CS-3001 Chassis Architecture



CS-3001 VME Enclosure Layout

- Pulse Analysis Engine Comprised of:
 - IF Demodulator for 160 MHz/1 GHz IF Inputs
 - Proprietary High-Speed Digitizer
 - Dual High Performance CPU's for Control and Analysis Functions
 - BITE and Timing Module
- Occupies 7 VME Slots
- Optional Interfaces for NAV/GPS Inputs
- 1, 10, 25, 75 and 500 MHz IF Bandwidths
- Measures Frequency, Amplitude, Pulse Width, PRI, TOI and Latched DF Angle



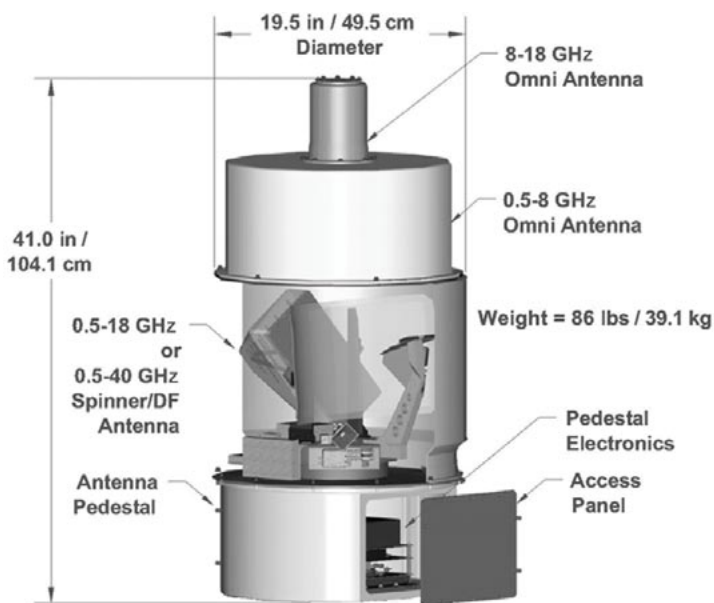
Typical GUI Screen

CS-3030 ELINT/ESM System (New)

- 0.5 to 18 GHz Frequency Range, Options 0.1 to 0.5, 18 to 40 GHz
- Mobile, Airborne and Shipboard Applications
- 360 Degree Azimuth Coverage, DF Spinner/Omni Antennas
- 3 Degrees RMS DF Accuracy
- Automated and Manual Operating Modes
- Precision ELINT Collection and Analysis Functions
- Algorithmic/Visual De-Interleaving Enhances Signal Separation in Dense Radar Environment
- 500 MHz BW for High Probability of Intercept
- Supports 32 Stagger Levels with 10% Jitter
- Real-Time Amplitude Vs. Frequency Displays
- Matches Local Mission with External Centralized Database
- 10,000 Emitter Entries/Modes for Local Database
- Video Intrapulse Collection Capability



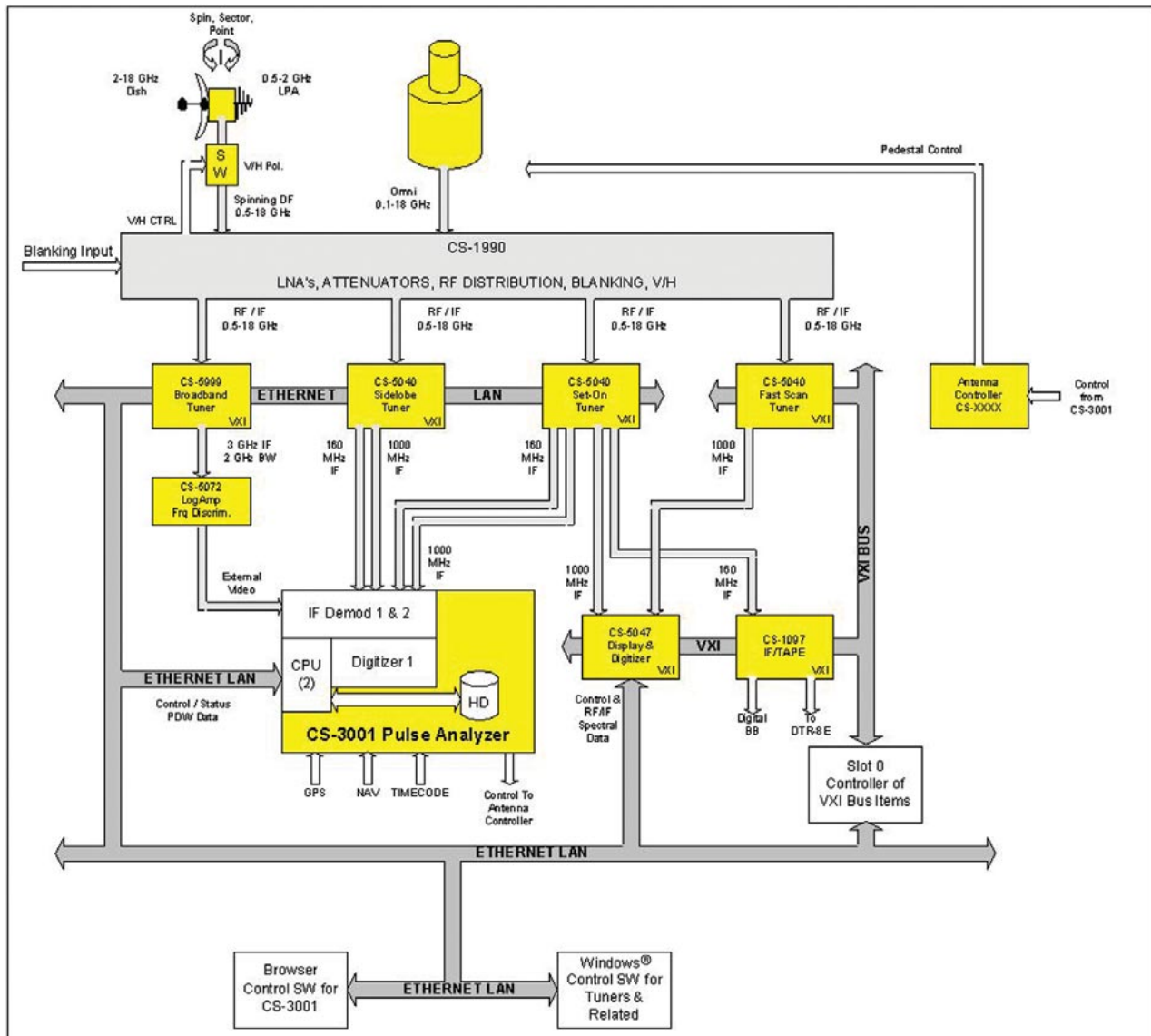
CS-3001 VME Pulse Analyzer



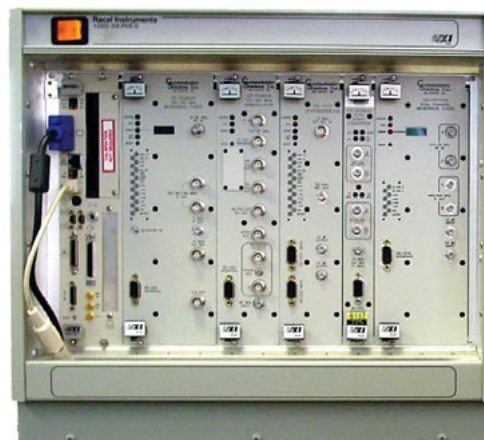
CS-1018 DF Antenna

- Compatible with CS-5020C, CS-5040 VXI and CS-5111 VME Microwave Tuners
- Additional Tuner Provides Sidelobe Suppression Capability
- Additional Tuner Performs Fast Scan Search Function With Comprehensive RF and IF Spectral Display (Allowing Simultaneous Search and Acquisition)
- CS-5999/CS-5072 Ultra-Wide (2 GHz BW) Tuner Option
- CS-1097 IF/Tape Converter for Real-Time Record
- RFD Unit Accepts External Blanking
- Optional Step Attenuators and Limiters Available

CS-3030 ELINT/ESM & Block Diagram System (New)



Typical Application Block Diagram

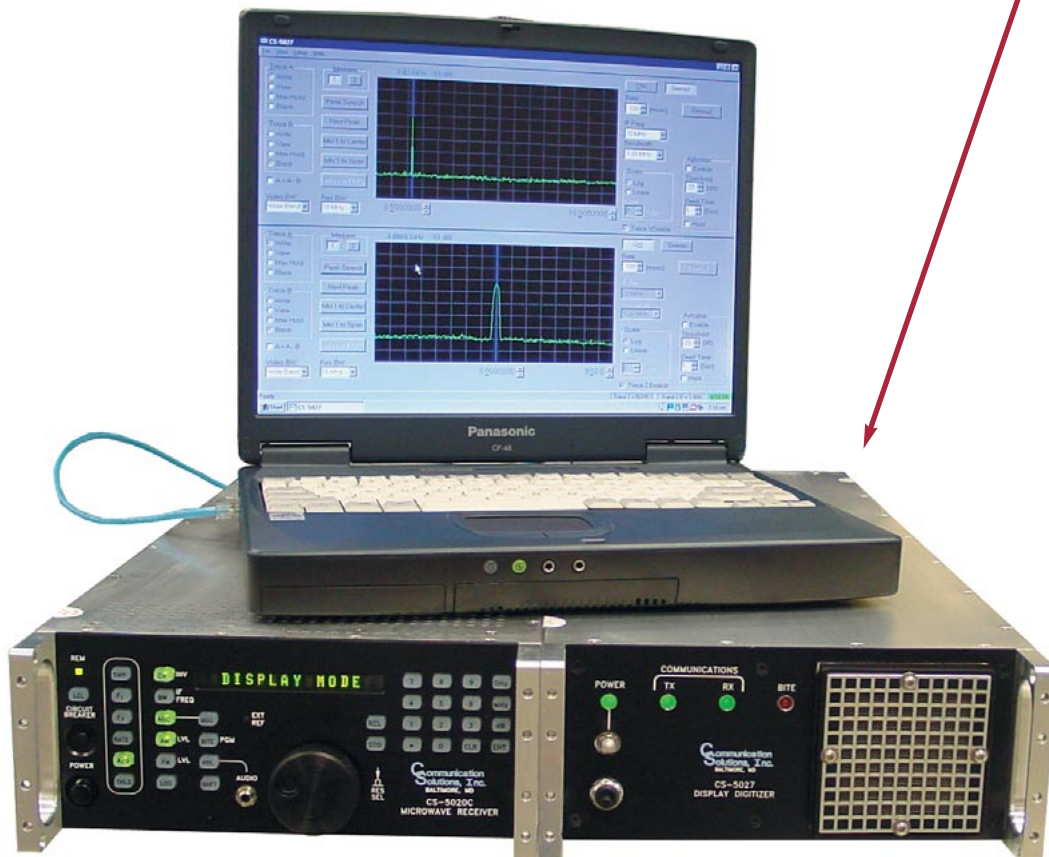


VXI Portion of CS-3030 System

Display Digitizers and Demodulators

CS-5027 Display Digitizer

- CS-5020C Receiver Compatible
- Sweep, Auto-Stop and SDU modes
- 21.4, 70, 140, 160 MHz and 1 GHz IF Inputs
- Full-Band RF and IF Pan Spectral Displays
- Single Sweep Channel and Six (6) IF Input Channels
- Second Sweep Channel Option Available
- Optional 1 kHz to 40 MHz Baseband Input
- Ethernet Control/Spectral Data Port
- Serial Control Interface to Tuner
- Shown with CS-5020C Receiver
- Windows® (Compatible), GUI and Device Driver Software Provided



Shown with CS-5020C Receiver and CS-5020-K/Ka Downconverter

Display Digitizers and Demodulators

CS-5025 Demodulator

- 1U, Half-Rack Chassis with Front Panel Controls
- RS-232 Remote Control
- 70, 140, 160 MHz and 1 GHz IF Inputs
- Up to Eight IF Bandwidths from 250 kHz to 50 MHz
- AM/FM/LOG Video Outputs
- AM/FM Audio Outputs
- Low Group Delay
- Pre-Detected Filtered IF Output
- RS-232/IEEE - 488/Ethernet Interfaces Available



CS-5025 Demodulator

CS-5045 Demodulator

- VXI Version of CS-5025
- 2-Slot Wide VXI Module
- Control via VXI Bus or Front Panel RS-232 Port
- Use with CS-5040 VXI Microwave Tuner
- 70, 140, 160 MHz and 1 GHz IF Inputs
- Up to Eight IF Bandwidths from 250 kHz to 50 MHz
- Low Group Delay
- AM/FM/LOG Video Audio Outputs
- I/Q Outputs



CS-5045 Demodulator

CS-5047 Display Digitizer

- VXI Version of CS-5027
- 2-Slot Wide VXI Module
- CS-5040 Tuner Compatible
- Front Panel Ethernet Port
- Front Panel Tuner Control Serial Port
- Graphical User Interface in Windows® (Compatible)
- Designed for PC Workstation/Notebook Computer
- On Screen Alphanumerics/Symbols for Signal Level, Frequency and Markers
- Log and Linear Displays



CS-5047 Display Digitizer

IF-to-Baseband Converters

CS-1024 IF-to-Baseband Converter



CS-1024 IF-to-Baseband Converter

- Accepts 70, 140, 160 MHz IF Inputs
- Option for 1 GHz or Tunable 21.4 to 160 MHz Input
- Very Low Differential Group Delay
- Up to 5 Standard Bandwidths from 2 to 40 MHz
- Optional BW's Down to 250 kHz and Up to 80 MHz
- 75 dB AGC/MGC Gain Control Range
- 1U, Full-Rack Chassis
- Front Panel and RS-232 Remote Control
- Perfect Match for New Wideband Analog Recorders

CS-1095 IF-to-Baseband Converter



CS-1095 IF-to-Baseband Converter

- Accepts 70, 140, 160 MHz IF Inputs
- Option for 1 GHz or Tunable 21.4 to 160 MHz Input
- Up to 7 Standard DSP Bandwidths from 2 to 20 MHz
- "Brick Wall" Filter Shape Factor with Excellent Repeatability Over Time and Temperature
- Extremely Low Group Delay (<10 ns)
- Optional Narrowband DSP Filters from 3 to 375 kHz
- 1U, Full-Rack Chassis
- Optional "Snapshot" Digitizer and Playback Feature



CS-1097 IF-to-Baseband Converter

CS-1097 IF-to-Baseband Converter

- VXI Version of CS-1095
- Housed in 2-Slot Wide VXI Module
- High Dynamic Range
- High Signal-to-Noise Ratio, >50 dB
- Low Noise Figure, <15 dB
- Group Delay <10 ns Over 85% of the Bandwidth
- Standard DSP Bandwidths Between 2 and 20 MHz
- Real Digital or I&Q Digital Outputs
- 0.2 to 1.2 Vrms Analog Output
- Control via VXI Bus and Front Panel RS-232 Port
- CS-1098 Low Cost Analog IF-to-Baseband Converter Available in Single-Slot VXI Package. Contact Factory for More Information

Peripheral Products

CS-801 Broadband Linearizer-Amplifier

- 2 to 18 GHz Broadband or Band Segments
- Matched Cable (Up to 50') and Amplifier
- Corrects for the Negative Gain Slope of Long Coaxial Cable Runs
- Low Noise Figure, 6 dB Typical
- 0 dBm Third Order IP
- Increases System Dynamic Range
- Small Size, 2"H x 3"W x 0.5"D
- 0 to 50 Degree C Operating Temperature



CS-801 Broadband Linearizer-Amplifier

CS-2002 Series Microwave Multi-Coupler

- Models C Through I for Different Band Segments from .01 to 18 GHz
- 70 dB Typical Output to Output Isolation
- 90 dB Typical Output to Input Isolation
- 10 dB Maximum Noise Figure
- 0 dBm, 1 dB Compression Point
- +7 dBm Typical Third Order IP
- 0 dB, +/- 3 dB Gain
- 1U, Half-Rack Chassis



CS-2002 Series Microwave Multi-Coupler

CS-824 VXI RF Multi-Coupler

- 1 Input and 16 Outputs
- Single-Slot VXI Package
- 50 kHz to 1 GHz Frequency Range
- SMA RF Connectors
- 10 dB Noise Figure
- High Dynamic Range
- Optional Units Available for Coverage Up to 3 GHz



CS-824 VXI RF Multi-Coupler

STS-1881A, Rugged VXI Mainframe

- 11-Slot, C-Sized
- Mil-Spec Rugged Version of VXI Mainframe
- Exceptional EMI/RFI Shielding
- 2000 Watts of Usable Power
- High Peak and Dynamic Currents
- Form Factor-Rack Mountable in 19" Width
- Multiple Cooling Configurations Allow Flexible Rack Configurations in Restricted Spaces
- Features DC OK Indicator
- Distributor of



STS-1881A



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