



SIR-4011

MICROWAVE WIDEBAND DSP RECEIVER



WIDE FREQUENCY RANGE: 0.5 – 18.0 GHz

FEATURES

- Advanced Front Panel Graphics Display
- High Dynamic Range: In band Input IP3 > 0 dBm, NF < 15 dB
- DSP Based AM, FM Video Demodulation
- Optional I/Q Digital Over Ethernet
- Fast Switching Synthesizer with 10 Hz Tuning Resolution
- Sweep and Scan Functions up to 512 Channels per Second
- Optional Streaming Audio over Ethernet
- 500 MHz Bandwidth 1.0 GHz CF L Band IF Output
- 70 MHz IF Output with Selectable Bandwidth from 3.2 kHz to 20 MHz
- 160 MHz IF Output with 80 MHz BW Typical
- Manual and Automatic Gain Control with Adjustable Threshold
- Ethernet 10/100 Base T, RS232, RS 485
- 2U 19" Rack Standard*

APPLICATIONS

- ELINT
- Radio Monitoring of Broadcast Station and IARU-monitoring
- Emission Compliancy Testing
- Direction Finding (DF) Systems
- Telecommunication
- SATCOM
- Radar Receivers



SPECIFICATIONS AT 25°C

FREQUENCY

Frequency Range:	0.5 – 18 GHz
Impedance:	50 Ohms
Tuning Resolution:	10 Hz
Preselector:	YIG Tuned Preselector
Frequency Accuracy vs. Temp (Internal Ref):	< +/- 0.1 PPM
Long Term Aging (Internal Ref):	< +/- 1 PPM per year.
External Reference Input:	10 MHz at 0 +/- 3 dBm, Auto locking
Phase Noise (Typical):	0.5° RMS Integrated from 100 Hz to 10 MHz
Offset 100 Hz:	-70 dBc/Hz
Offset 1 kHz:	-90 dBc/Hz
Offset 10 kHz:	-95 dBc/Hz
Offset 100 kHz:	-104 dBc/Hz
Offset 1 MHz:	-125 dBc/Hz
Offset 10 MHz:	-140 dBc/Hz

SCAN AND SWEEP

Sweep Mode:	F1 to F2 at Selected Frequency Step
List Mode:	Up to 512 Frequencies
Dwell Time:	From 5 millisecond to 60 Seconds, or Stop on Detection
Tuning Speed:	1.25 milliseconds / 100 MHz

RF SECTION

Input VSWR:	2.5 : 1
Input Level:	-35 dBm optimal
Noise Figure @ 1 GHz Output:	14 dB typical
Noise Figure @ 70 MHz IF Output	14 dB typical
RF Input Maximum Level:	+25 dBm with no damage
Conversion Sense:	Non Inverting
RF Gain Variation:	+/- 1.5 dB vs. RF Input Frequency Range

DYNAMIC RANGE

Two Tone SFDR:	65 dB RF to IF, 1 MHz BW, f1-f2 ≤ 25% of BW
Linear Dynamic Range:	≥ 90 dB, RF to IF, 1 MHz BW
Image Rejection:	>70 dB
LO Reradiation:	< -95 dBm max at RF Input
LO Spurious:	< -70 dB



In band Input IP3: 0 dBm at 20 dB Gain Setting
Output P1dB +18 dBm @ 30 dB Gain

WIDEBAND IF OUTPUT

Center Frequency: 1.0 GHz
Bandwidth (3dB): 500 MHz
RF to IF Gain: 30 dB (0 dB Attenuation)
Gain Flatness Over 80%IF BW: ± 1.2 dB max
Group Delay Variation: 3 nsec max over 80% of 3 dB BW (Meet IESS 308 SATCOM Stand)
Manual Gain Control: Programmed 30 dB, 1 dB Resolution
Impedance: 50 ohms
VSWR: 2:1 Max

70 MHz RECONSTRUCTED IF OUTPUT

Bandwidth (3 dB): 3.2 kHz, 6.4 kHz, 10 kHz, 15 kHz, 20 kHz, 30 kHz, 50 kHz, 100 kHz, 200 kHz, 300 kHz, 400 kHz, 1 MHz, 5 MHz, 10 MHz, 20 MHz
Group Delay: Linear phase FIR design for 3.2 kHz to 20 MHz IF BW (all of the above)
Gain Flatness over 80% of IF BW: ± 1.2 dB (Typ.), ± 1.8 dB (Max.)
70 MHz IF Output Level: Adjustable in AGC mode (see below)
Manual Gain Control (MGC): Programmed 70 dB, 1 dB Resolution
Automatic Gain Control (AGC): 70 dB Range, Fast Attack, Programmed Decay
 Fast Attack: 2 msec for 50 dB Change, 2 msec During Sweep or Scan
 Decay Time: Programmed from 1 msec to 1 second
 IF Output Level: Programmed from +7dBm to -35 dBm, 1 dB Step

ANALOG IF OUTPUT

Frequency: 160 MHz
Bandwidth (3 dB): 80 MHz
Gain Flatness over 80% of IF BW: ± 0.6 dB (Typ.), ± 0.8 dB (Max.)
RF to IF Gain 30 dB max
Manual Gain Control (MGC): Programmed 50 dB, 1 dB Resolution
IF Output Impedance: 50 ohm
Group Delay Variation: 6 nsec over 80% of BW
VSWR: 2.0:1 Max

LOG VIDEO OUTPUT

	<u>160MHz / 70MHz</u>	<u>1GHz</u>
Dynamic Range:	70 dB	60 dB
Output Level:	2 VDC Full Scale	2 VDC Full Scale
Linearity:	± 1.5 dB	± 1.5 dB
Impedance:	50 Ohms	50 Ohms



FM VIDEO DEMODULATOR

Output Level:	1 Vp-p for 2/3 of selectable IF Bandwidth
Video Response (3 dB):	50% of IF Bandwidth
FM Gain:	0.1 to 1 Vpp
Connector Type:	BNC-F
Impedance:	50 ohms

AM VIDEO DEMODULATOR

Output Level:	1 Vp-p for 2/3 of selectable IF BW
Coupling:	DC
Video Response(3 dB):	50% of Reconstructed IF Bandwidth
Video Gain:	0.1 to 1 Vp-p
Connector Type:	BNC-F
Impedance:	50 ohms

AM AUDIO OUTPUT

Level:	1 Vrms for -10 dBm IF Output
Response:	300 Hz to 3.3 kHz, -3 dB
Attenuation Range:	30 dB, 1 dB Step
Connector Type:	BNC-F
Impedance:	600 ohms
Phone Output:	1/8" Phone Jack, Front Panel

FM AUDIO OUTPUT

Level:	1 Vp-p
Response:	300 Hz to 3.3 kHz, -3 dB
Attenuation Range:	0.1 to 1 Vp-p
Connector Type:	BNC-F
Impedance:	600 ohms
Phone Output:	1/8" Phone Jack, Front Panel

STREAMING AUDIO:

64 KBPS

BUILT IN TEST (BIT):

Power Supply Voltages, Three Phase Lock Alarms, Over Temp

CONTROL

Local Manual Control:	Keyboard & Display
Remote Programming	Ethernet 10/100 Base T, RS 422/RS 485 and RS 232



ENVIRONMENTAL

Operating Temp Range:	-10° C to +55 ° C, MIL-STD-810E Method 501.3, 502.3
Non Operating:	-30° C to +85° C, MIL-STD-810E Method 501.3, 502.3
Relative Humidity:	Up to 95%, Non Condensing, MIL-STD-810E Method 501.3, 502.3
Altitude:	13,000 Feet
Shock:	MIL-STD-810G, Method 516.6, Procedure VI
Vibration:	MIL-STD-810G, Method 514.6, Procedure I
AC Power:	95 to 265 VAC, 47-440 Hz, 150 Watts

MECHANICAL

Required Package:	19" 2U (3.50" H X 22" D X 17" W)
Weight:	20 Pounds

REAR PANEL CONNECTORS

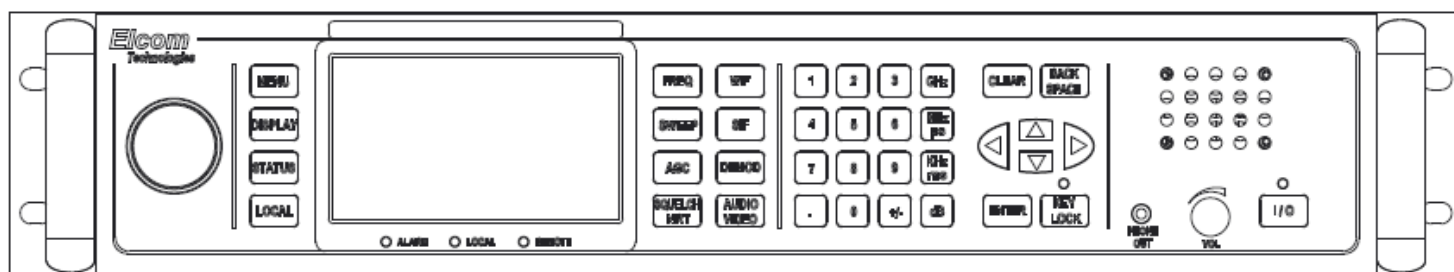
0.5 to 18 GHz RF Input:	SMA-F
Trigger Input:	BNC-F
Switchable AM Video, FM Video Output:	BNC-F
Switchable AM, FM Audio Output:	BNC-F
70MHz IF Output	SMA-F
70MHz Log Video Output:	BNC-F
160MHz IF Output:	SMA-F
160MHz IF Log Video Output:	BNC-F
WB 1 GHz IF Output:	SMA-F
WB 1 GHz IF Log Video Output:	BNC-F
External REF Input:	BNC F
REF Output:	BNC F
Ethernet	RJ 45
Remote Interface	DB-9-F
Summary Alarm	DB-9-M

OPTIONS

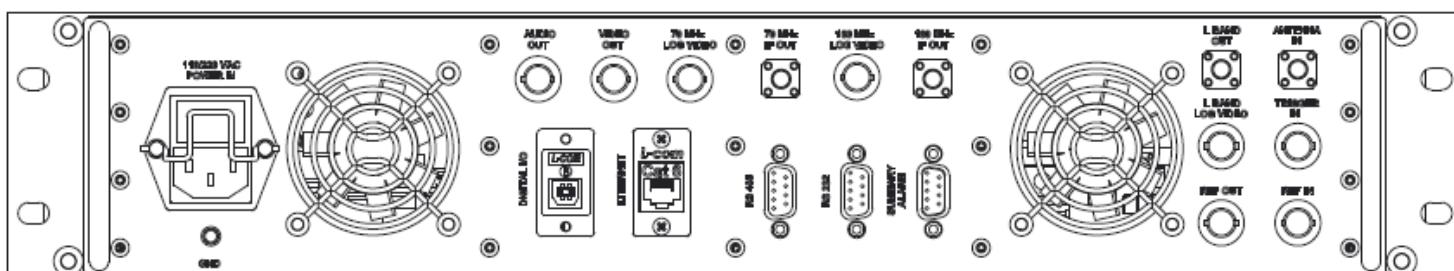
OPT-112	Operating Temp Range (-20° to 60° C)
OPT-124	Streaming Audio over Ethernet 64 KBPS
OPT-126	Aircraft Power Supply: 115 VAC, 400 Hz, 100 Watts
OPT-127	CW Chopping
OPT-137	Airborne (RTCA/DO-160E). Contact Factory for Details.
OPT-140	GUI with Panoramic IF 20 MHz plus swept spectral display 0.5 to 18 GHz

* For other form factors contact factory

Specifications are subject to change without notice.



UNIT FRONT VIEW



UNIT REAR VIEW

REAR PANEL CONNECTORS

ANTENNA INPUT	SMA-F
TRIGGER INPUT	BNC-F
REFERENCE INPUT	BNC-F
L BAND OUTPUT	SMA-F
L BAND LOG VIDEO OUTPUT	BNC-F
REFERENCE OUTPUT	BNC-F
160 MHz IF OUTPUT	SMA-F
160 MHz LOG VIDEO OUTPUT	BNC-F
70 MHz IF OUTPUT	SMA-F
70 MHz LOG VIDEO OUTPUT	BNC-F
VIDEO OUTPUT	BNC-F
AUDIO OUTPUT	BNC-F
SUMMARY ALARM	DB-9,M
RS232, REMOTE INTERFACE	DB-9,F
RS485, REMOTE INTERFACE	DB-9,F
ETHERNET 10/100	RJ-45
DIGITAL I/O	USB, TYPE B
AC POWER INPUT	IEC 60320-1 C14

ABOUT FEI-ELCOM TECH, Inc

Elcom designs and manufactures instruments and modules in the RF and Microwave frequency spectrum for broadband and narrow band applications in ATE, Aerospace/Defense, SIGINT and commercial communications. Proprietary technologies include low phase noise fast switching direct analog synthesis, low noise indirect PLL designs, and RF DSP up to 40GHz.

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