



## SIDC-6100 Series

**MICROWAVE WIDEBAND DOWNCONVERTER / TUNER UP TO 40 GHz**



**WIDE FREQUENCY RANGE:  
0.1 - 40 GHz**

### FEATURES

- High Dynamic Range
- Fast Switching Synthesizer with 20 Hz Tuning Resolution
- Excellent Phase Noise Performance:  $< 0.5^\circ$  RMS
- Wideband Output: 1.8 GHz CF Output, with 1000, 500, 200 and 100MHz BWs
- IF Output: 160 MHz CF IF Output with selectable BW
- Manual Gain Control with Adjustable Threshold
- Advanced Front Panel Alphanumeric Display
- Ethernet 10/100 BaseT, RS 232, RS 485
- 2 U, 19" Rack

### APPLICATION

- ELINT
- Synthetic Instrumentation
- Emission Compliancy Testing
- SATCOM
- Radar Warning Receivers (RWR)



## SPECIFICATIONS AT 25°C

### FREQUENCY

Frequency Tuning Range:	0.1 – 40 GHz (see ordering matrix page 5 for input frequency options)	
Tuning Resolution:	20 Hz	
Synthesizer Tuning Speed:	50 usec	
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 (Typ.):	0.5°RMS Integrated from 100 Hz to 10 MHz	
	<u>&lt;26.5GHz</u>	<u>26.5-40GHz</u>
Offset 100 Hz:	-68 dBc/Hz	-68 dBc/Hz
Offset 1 KHz:	-87 dBc/Hz	-87 dBc/Hz
Offset 10 KHz:	-95 dBc/Hz	-95 dBc/Hz
Offset 100 KHz:	-101 dBc/Hz	-100 dBc/Hz
Offset 1 MHz:	-117 dBc/Hz	-112 dBc/Hz
Offset 10 MHz:	-130 dBc/Hz	-125 dBc/Hz

### SCAN AND SWEEP

Sweep Mode:	F1 to F2 at Selected Frequency Step
Sweep Rate:	<500 usec in-band
Dwell Time:	From 0 to 60 sec, 1 sec step or Stop on Detection
Adjustable Threshold Detection:	1 dB step from -15 dBm to -150 dBm at IF Output
External Trigger:	Strobe Input

### RF SECTION

Input VSWR:	2.5 : 1
RF Preselector:	10 Bands (GHz): 0.1-1.33, 1.33-1.75, 1.75-2.0, 2.0-6.0, 6.0-7.5, 7.5-10, 10-13.5, 13.5-18, 18-26.5 and 26.5-40
Noise Figure (30dB Gain):	15 dB (Max.) from 0.1-26.5GHz 17 dB (Max.) from 26.5-40 GHz
Max Input Level (without damage):	+20 dBm (0.1 - 26.5GHz), +10 dBm (26.5 – 40GHz)
Max Input Level (operating):	-15 dBm (20 dB gain)
Conversion Sense:	Non Inverting
RF Gain Variation:	+/- 1.5 dB vs. RF Input Frequency Range



## SPECIFICATIONS AT 25°C

### DYNAMIC RANGE

Linear Dynamic Range:	80 dB with 1 MHz BW
Image Rejection:	< -70 dB
LO Re-radiation:	< -80 dBm at RF Input
Input IP3:	-5 dBm @ 20 dB Gain
Input 1 dB Compression:	-15 dBm @ 20 dB Gain
Output 1 dB Compression:	+15 dBm @ 30 dB Gain
In Band Spurious, Carrier Dependent (30dB Gain with -15 dBm output level):	-60 dBc typical, -50 dBc max
Internally Generated with 20 dB Gain:	-85 dBm typical, -75 dBm max (equivalent to Input)

### WIDEBAND L BAND OUTPUT

Center Frequency:	1.8 GHz
Bandwidth ( 3dB):	1000MHz, 500MHz, 200MHz, 100MHz selectable (2-40GHz) 200MHz (1.33-2GHz) and 100MHz (0.1-1.33GHz)
RF to IF Gain:	30 dB
Gain Ripple Over 80% IF BW:	+/- 2 dB (Typ), +/- 2.4 dB (Max) from 0.1-40GHz
Gain Slope over 80% IF BW:	< 2.5 dB
Group Delay Variation:	3 nsec max over 80% of 3 dB BW (1000, 500 MHz BW) 6 nsec max over 80% of 3 dB BW (200 MHz BW)
Manual Gain Control (MGC):	Settable 0 to 30 dB, 1 dB Resolution
Impedance:	50 ohms
VSWR:	2:1 Max
Wideband Signal Monitor:	-20 dBc Typical

### IF OUTPUT

Center Frequency :	160 MHz
Bandwidth (3 dB):	1, 5, 10, 20, 40 & 80 MHz selectable
Gain Flatness Over 80% IF BW:	+/- 0.8 dB (Typ.), +/- 1.2 dB (Max.)
RF to IF Gain:	30 dB
Manual Gain Control (MGC):	Settable 0 to 30 dB, 1 dB Resolution
IF Output Impedance:	50 ohm
VSWR:	2.0:1 Max
IF Signal Monitor:	-20 dBc (Typ.)



## **BUILT IN TEST (BIT)**

Power Supply Voltages, Three Phase Lock Alarm, Over Temp.  
IF Output Level monitor

## **CONTROL**

Local Manual Control: All Functions, via Alphanumeric Display Keyboard and Rotary Knob  
Remote Programming: Ethernet 10/100 base T , RS 485 and RS232

## **ENVIRONMENTAL**

Operating Temp Range: 0° to +50 °C  
Non Operating: -30° to +85°C  
Relative Humidity: Up to 95%, Non-Condensing  
Altitude: 10,000 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, 47-63 Hz, 170 Watts (40GHz) or 140 Watts (18GHz)

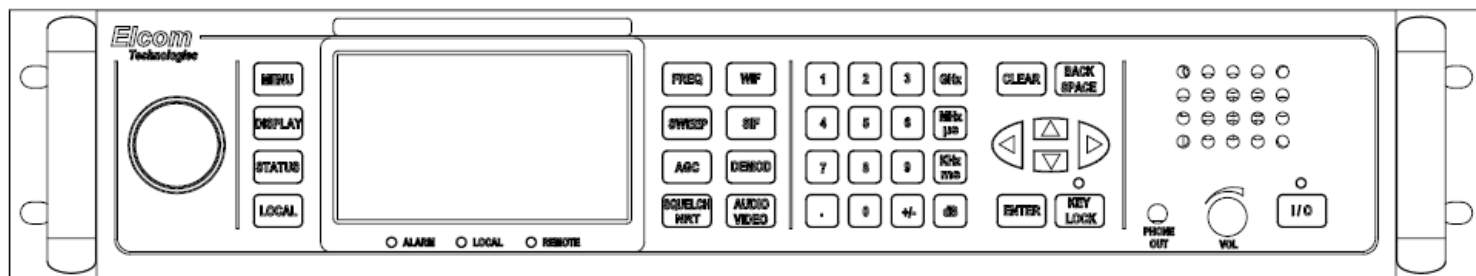
## **MECHANICAL**

Size: 19", 2U (3.5" H X 23" D X 17" W)  
Weight: 35 Pounds

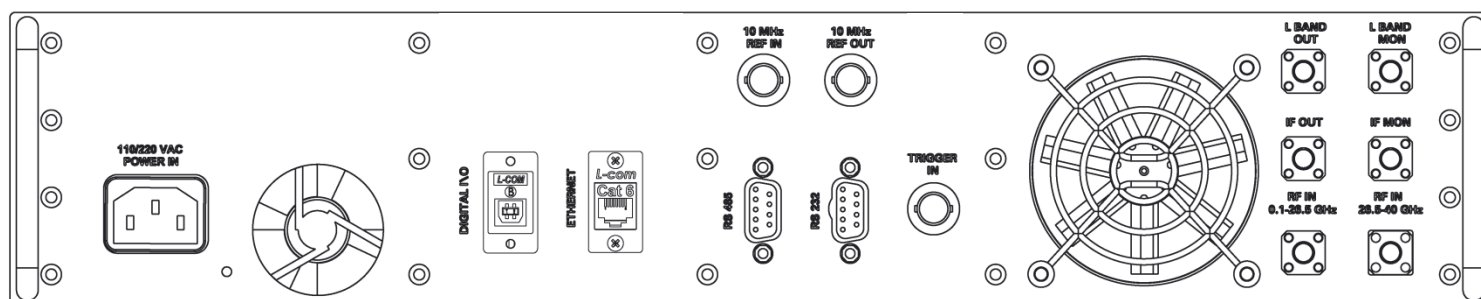
## **REAR PANEL CONNECTORS**

0.1 to 26.5 GHz RF input: SMA-F  
26.5 to 40 GHz RF input: SMA-F  
160 MHz IF Output, IF Monitor: SMA-F  
1.8GHz L Output, L Monitor: SMA-F  
External REF IN, Out: BNC-F  
Strobe Input: BNC-F  
Ethernet: RJ 45  
RS 232: DEM – 9S  
RS 485: DEM – 9S

\*Specifications are subject to change without notice.



UNIT FRONT VIEW



Connector positions subject to change

### Ordering Matrix

Frequency Range	Wideband Output Freq.	Wideband BW	FEI-Elcom Part Number
0.1 - 18 GHz	1.8 GHz	1 GHz	SIDC-6100-118
0.1 - 26.5 GHz	1.8 GHz	1 GHz	SIDC-6100-126
0.1 - 40 GHz	1.8 GHz	1 GHz	SIDC-6100-140
2 - 18 GHz	1.8 GHz	1 GHz	SIDC-6100-218
2 - 26.5 GHz	1.8 GHz	1 GHz	SIDC-6100-226
2 - 40 GHz	1.8 GHz	1 GHz	SIDC-6100-240

REAR PANEL CONNECTORS	
RF INPUT (0.1 TO 26.5 GHz)	SMA-F
RF INPUT (26.5 TO 40 GHz)	SMA-F
IF OUTPUT	SMA-F
IF MONITOR	SMA-F
L-BAND OUTPUT	SMA-F
L-BAND MONITOR	SMA-F
TRIGGER INPUT	
10 MHz REFERENCE INPUT	BNC-F
10 MHz REFERENCE OUTPUT	BNC-F
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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