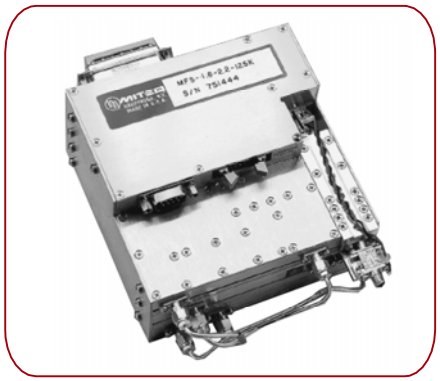
LOW PHASE NOISE SATCOM SYNTHESIZER

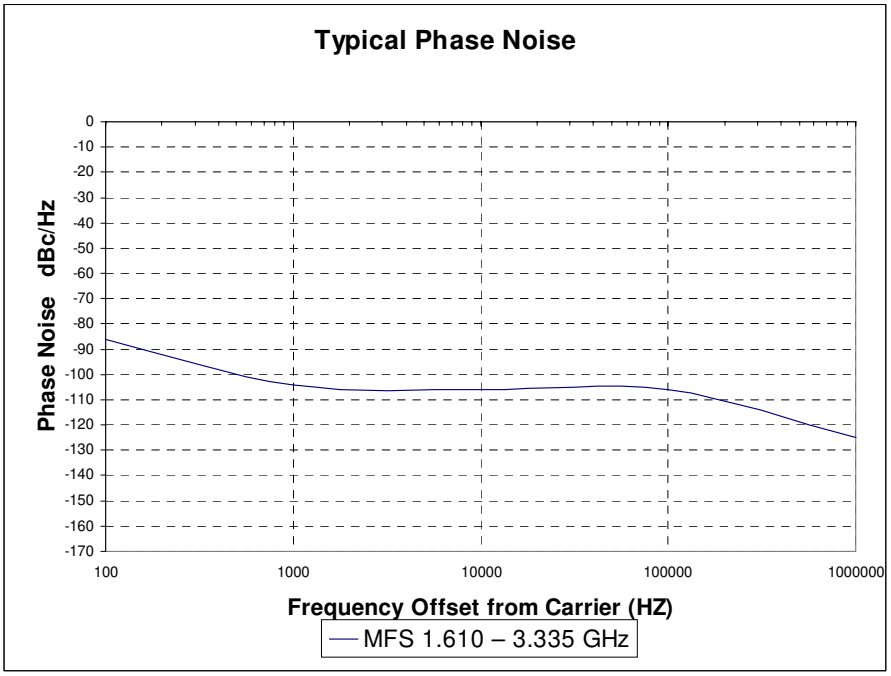
MFS SERIES: <3 GHz

FEATURES

- **Superior phase noise: 20 dB below INTELSAT phase noise mask**
- **100% environmental screening**
- **Options for extended bandwidths**



GUI INTERFACE (for serial programing):
Now available at
http://amps.miteq.com/Amps2007/synthesizers/SynthControl.zip



MECHANICAL SPECIFICATIONS

Outline drawing.....125 kHz step size: 174285, 180502
1 kHz step size: 168386, 180504
Weight
> 125 step size ..... 3 pounds typical
< 125 step size ..... 4.6 pounds typical
RF connectors ..... SMA female
DC power/control connectors ..... Refer to outline drawings

ENVIRONMENTAL SPECIFICATIONS

Temperature
Operating (surface)..... 0 to +60°C
Storage ..... -55 to +95°C

Humidity..... Up to 95% at 40°C noncondensing
Shock (survival) ..... 30 Gs, 10 ms pulse
Vibration (survival) ..... 20 to 2000 Hz random to .04 G^2/Hz
Altitude ..... Up to 13,500 feet
100% testing..... Frequency range
Output power
Discrete power
Spectral purity
Phase bursts
Alarm and monitors
100% screening..... Temperature cycle/monitor

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LOW PHASE NOISE SATCOM SYNTHESIZER

SPECIFICATIONS

Output frequency range	1.610-1.670 GHz 2.670-2.690 GHz 3.210-3.330GHz
Step size	Down to 1 kHz
Tuning speed (to w/in 10°RMS)	10 ms typical / 100 ms maximum
Output power	+13 dBm minimum
Output power variation	±1.5 dB maximum
Input reference frequency	5 or 10 MHz
Input power level	0 ±3 dBm
Spurious outputs* In-band Out-of-band	 -70 dBc minimum -65 dBc minimum
Phase noise	See graphs
Offset from carrier 100 Hz 1 kHz 10 kHz 1 00 kHz 300 kHz 1 MHz	 -86 dBc -104 dBc -106 dBc -106 dBc -106 dBc -125 dBc
Harmonic output	-20 dBc typical
Output impedance	50 ohm nominal
Load VSWR	1.5:1 maximum, all phases
Regulation	±5%
Noise and ripple	10 mV p-p maximum
Frequency control	BCD, TTL, parallel lines or serial RS422
Summary alarm	In-lock TTL high
VCO lock voltage	2 – 15 volts
DC power requirements > 125 kHz step size < 125 kHz step size	 +20/+15 volts, 1 amp typical +5.2 volts, 0.8 amps typical +20/+15 volts, 1.2 amps typical +5.2 volts, 1.1 amps typical

Notes.

1. Extended bandwidths beyond standards are optional, spurious for extended tuning range:
-60 dBc out-of-band and -15 dBc harmonics.
2. Close in phase noise dependent on reference.

ORDERING INFORMATION

MFS - □□.□□□- □□.□□□ □□□ □ - □□□M _____

Start Freq. GHz	Stop Freq. GHz	Step Size	(MHz/KHz)	Ref. Freq. kHz	Interface (parallel, serial)

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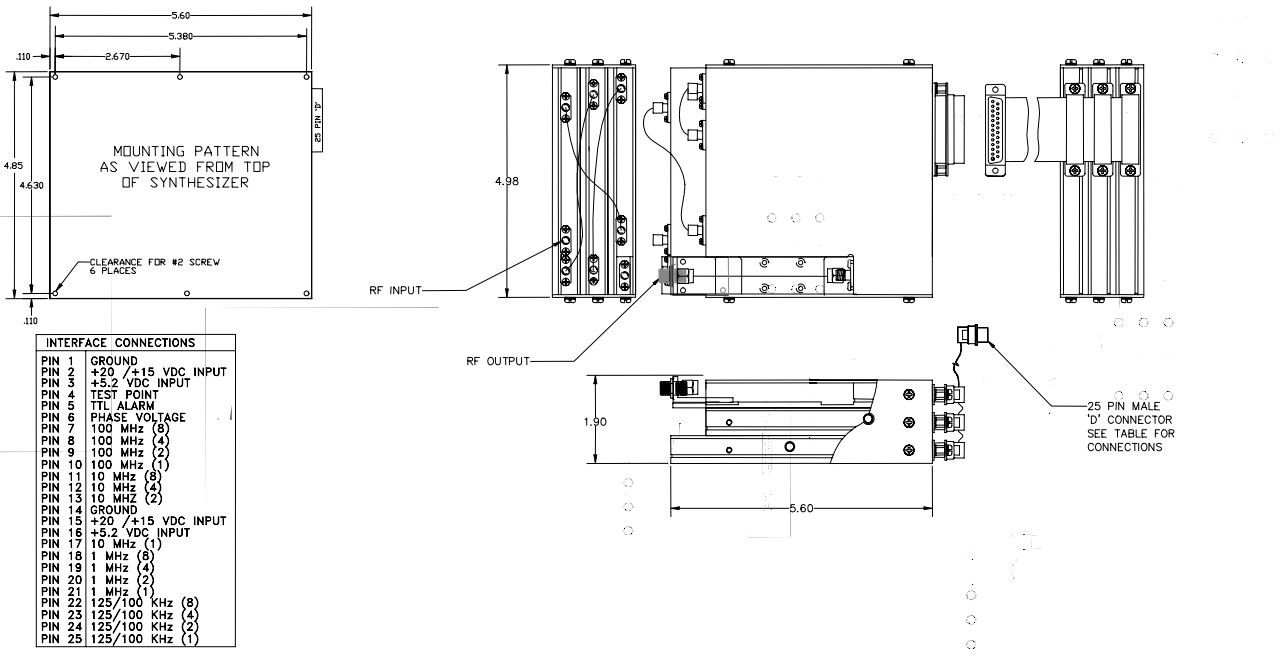
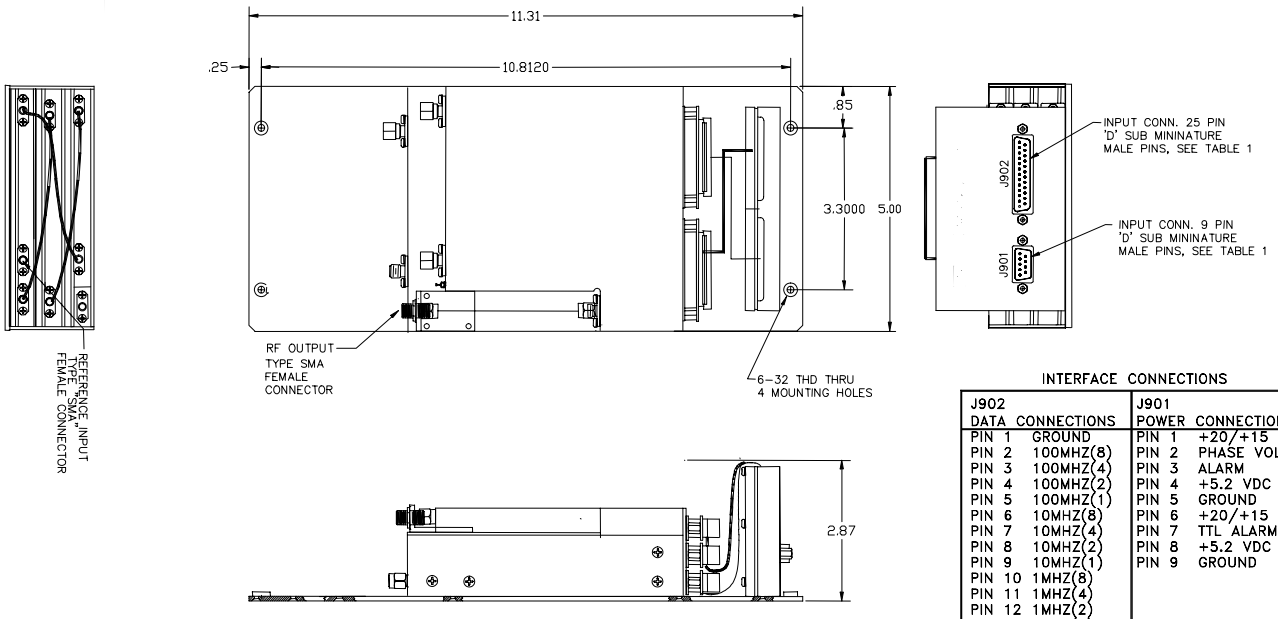
OUTLINE DRAWINGS

180502
MFS SERIES (125kHz STEP SIZE)



INTERFACE CONNECTIONS	
PIN 1	GROUND
PIN 2	+20 /+15 VDC INPUT
PIN 3	+5.2 VDC INPUT
PIN 4	TEST POINT
PIN 5	TTL ALARM
PIN 6	PHASE VOLTAGE
PIN 7	100 MHz (8)
PIN 8	100 MHz (4)
PIN 9	100 MHz (2)
PIN 10	100 MHz (1)
PIN 11	10 MHz (8)
PIN 12	10 MHz (4)
PIN 13	10 MHZ (2)
PIN 14	GROUND
PIN 15	+20 /+15 VDC INPUT
PIN 16	+5.2 VDC INPUT
PIN 17	10 MHz (1)
PIN 18	1 MHz (8)
PIN 19	1 MHz (4)
PIN 20	1 MHz (2)
PIN 21	1 MHz (1)
PIN 22	125/100 KHz (8)
PIN 23	125/100 KHz (4)
PIN 24	125/100 KHz (2)
PIN 25	125/100 KHz (1)

180504
MFS SERIES (1 kHz STEP SIZE)

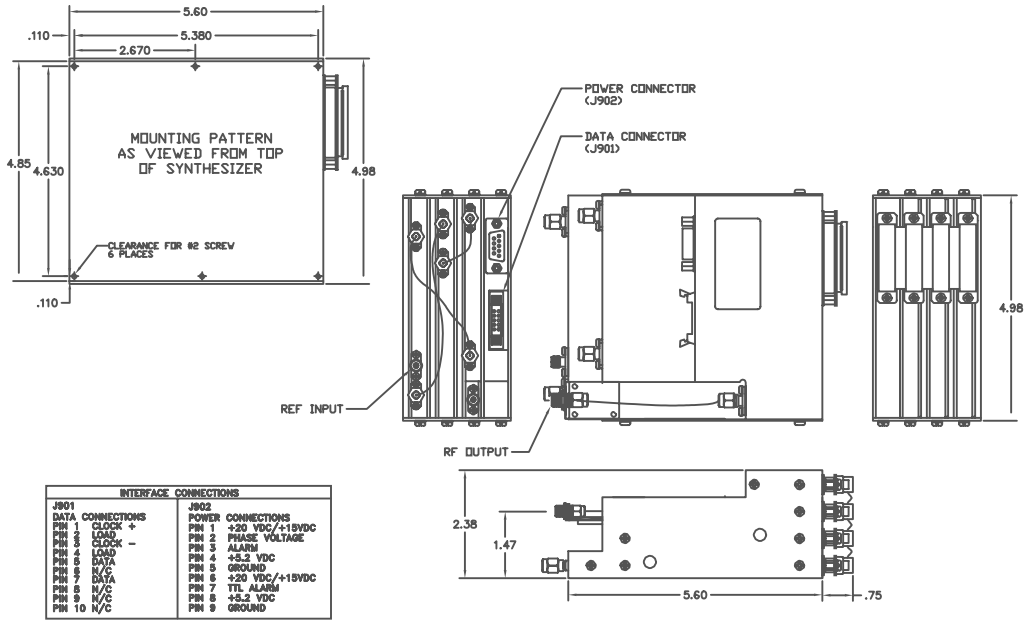


INTERFACE CONNECTIONS

J902 DATA CONNECTIONS		J901 POWER CONNECTIONS	
PIN 1	GROUND	PIN 1	+20/+15 VDC
PIN 2	100MHZ(8)	PIN 2	PHASE VOLTAGE
PIN 3	100MHZ(4)	PIN 3	ALARM
PIN 4	100MHZ(2)	PIN 4	+5.2 VDC
PIN 5	100MHZ(1)	PIN 5	GROUND
PIN 6	10MHZ(8)	PIN 6	+20/+15 VDC
PIN 7	10MHZ(4)	PIN 7	TTL ALARM
PIN 8	10MHZ(2)	PIN 8	+5.2 VDC
PIN 9	10MHZ(1)	PIN 9	GROUND
PIN 10	1MHZ(8)		
PIN 11	1MHZ(4)		
PIN 12	1MHZ(2)		
PIN 13	1MHZ(1)		
PIN 14	100KHZ(8)		
PIN 15	100KHZ(4)		
PIN 16	100KHZ(2)		
PIN 17	100KHZ(1)		
PIN 18	10KHZ(8)		
PIN 19	10KHZ(4)		
PIN 20	10KHZ(2)		
PIN 21	10KHZ(1)		
PIN 22	1KHZ(8)		
PIN 23	1KHZ(4)		
PIN 24	1KHZ(2)		
PIN 25	1KHZ(1)		

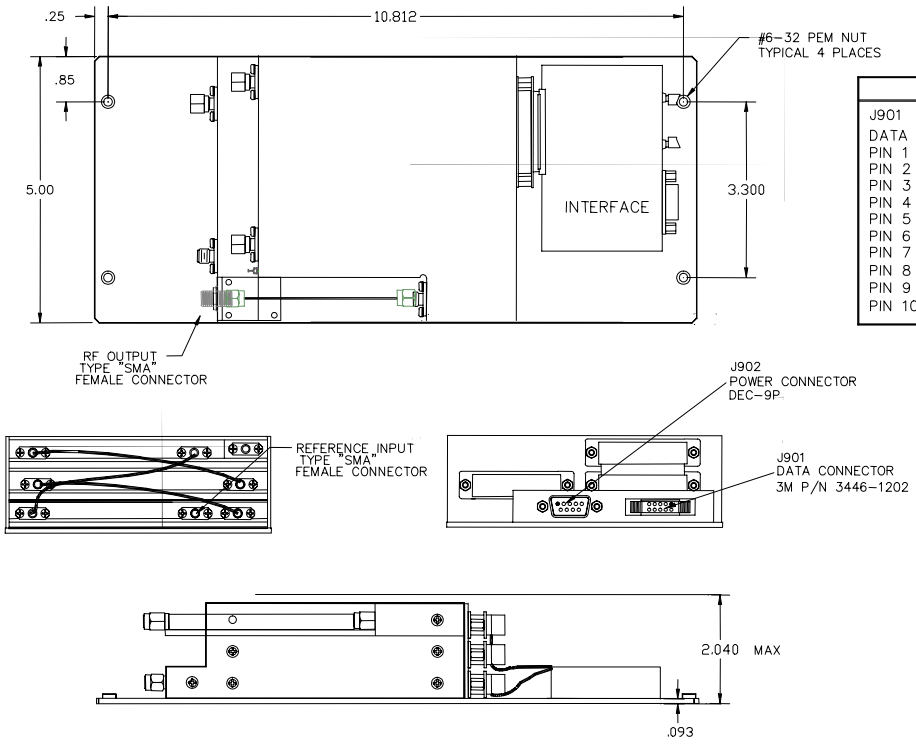
OUTLINE DRAWINGS

174285
MFS SERIES (125 kHz STEP SIZE)



INTERFACE CONNECTIONS	
J901 DATA CONNECTIONS PIN 1 CLOCK + PIN 2 LOAD – PIN 3 CLOCK – PIN 4 LOAD + PIN 5 DATA – PIN 6 N/C PIN 7 DATA + PIN 8 N/C PIN 9 N/C PIN 10 N/C	J902 POWER CONNECTIONS PIN 1 +20 VDC/+15VDC PIN 2 PHASE VOLTAGE PIN 3 ALARM PIN 4 +5.2 VDC PIN 5 GROUND PIN 6 +20 VDC/+15VDC PIN 7 TTL ALARM PIN 8 +5.2 VDC PIN 9 GROUND

168386
MFS SERIES (1 kHz STEP SIZE)



INTERFACE CONNECTIONS	
J901 DATA CONNECTIONS PIN 1 CLOCK + PIN 2 LOAD – PIN 3 CLOCK – PIN 4 LOAD + PIN 5 DATA – PIN 6 N/C PIN 7 DATA + PIN 8 N/C PIN 9 N/C PIN 10 N/C	J902 POWER CONNECTIONS PIN 1 +20 / +15 VDC PIN 2 PHASE VOLTAGE PIN 3 ALARM PIN 4 +5.2 VDC PIN 5 GROUND PIN 6 +20/ +15 VDC PIN 7 TTL ALARM PIN 8 +5.2 VDC PIN 9 GROUND