

# MULTI-OCTAVE FREQUENCY SYNTHESIZER

**MOS SERIES: .1-20 GHz**

## FEATURES

- Low cost
- 1/3 rack space
- Multi-octave
- Standard step size: 1 kHz
- INTELSAT phase noise compliant
- Field-tested reliability
- Low power dissipation
- MIL-STD-188-164A microphonic compliant
- ETSI 300019-1-4 compliant

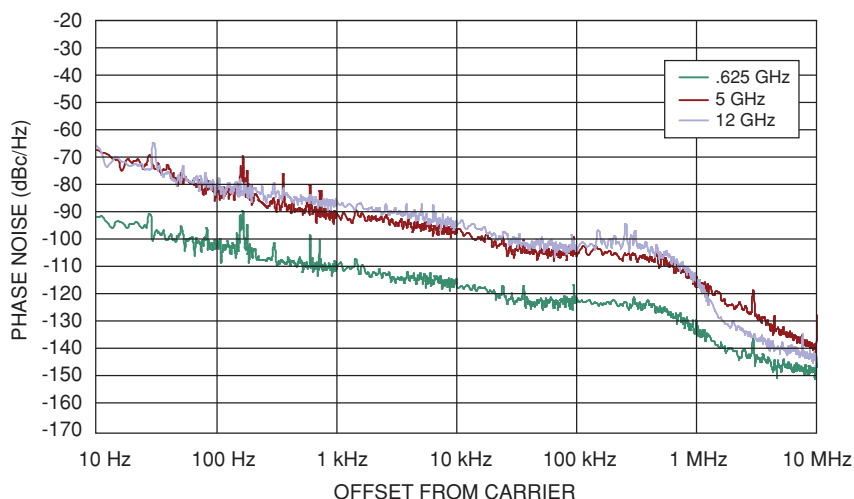
## OPTIONS

- Fast switching
- Custom frequency bands
- Fixed LO frequencies
- Custom step sizes
- Custom packaging
- Low phase noise option
- Available in modular form (MOSM)



MITEQ's MOS Series of multi-octave wide, low phase noise synthesizers offer an economical solution for lab and communication test applications. Band coverage is from 100 MHz to 20 GHz. The MOS Series has a standard 1 kHz step size, with optional full-band fast switching available. The field-tested design and low power dissipation proves to demonstrate higher MTBF and higher reliability. These synthesizers are available in either one third-rack mounted chassis with front panel control, or a modular 5" x 8" x 1.25" package with either serial or parallel control.

**TYPICAL PHASE NOISE**



# MULTI-OCTAVE FREQUENCY SYNTHESIZER

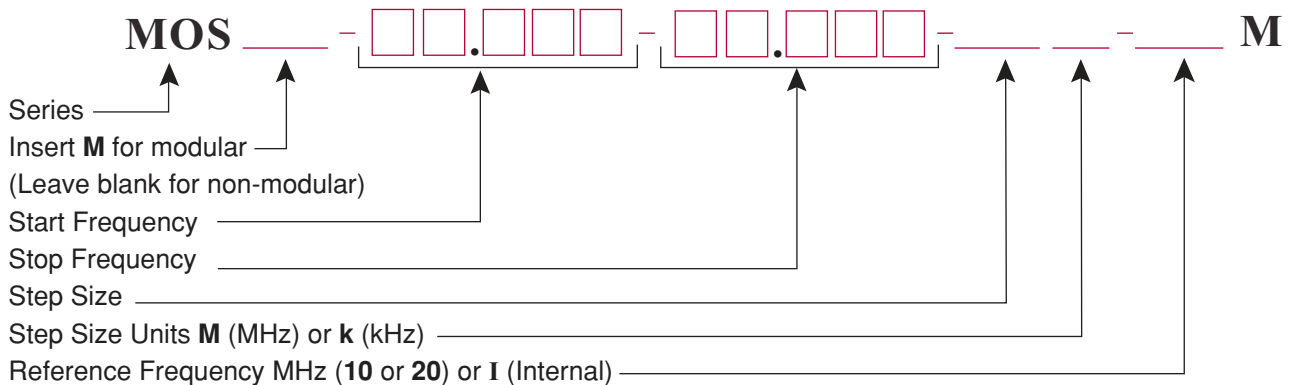
## ELECTRICAL SPECIFICATIONS

	Tunable
Output frequency range (Note 1, 2)	.1 – 20 GHz
Step size (Note 3, 4)	1 kHz
Output power	+13 dBm minimum
Output power variation	±2 dB maximum
Input reference frequency (Note 5)	10 MHz
Input power level	0 ±3 dBm
Output spurious In-band Out-of-band	-60 dBc minimum -60 dBc minimum
Phase noise	See graph
Offset from carrier 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz 10 MHz	At 20 GHz -55 dBc -65 dBc -75 dBc -85 dBc -90 dBc -100 dBc -120 dBc
Output harmonic	-15 dBc typical
Output impedance	50 ohm nominal
Load VSWR	2.0:1 maximum, all phases
Acquisition time (to phase lock)	300 us typical, 750 us maximum
Summary alarm	In lock TTL 1
DC power requirements MOS MOSM	+90 volts to +250 VAC, 12 W Typical +5.2 @ 2 amps, 15.2 @ 900 mA, -15.0 @ 50 mA
Outline drawing Third rack Module User interface (Note 6)	175415 185134 Front panel

**Notes:**

1. Custom frequency bands available, please contact MITEQ.
2. Frequency accuracy  $\pm 2.95 \times 10^{-9}$ .
3. Custom step size available, please contact MITEQ.
4. Other reference frequency option available, please contact MITEQ.
5. Close in Phase Noise dependent on reference.
6. Rear panel ethernet interface option available, please contact MITEQ.
7. MOSM available with RS485 9700 or parallel interface.
8. For serial interface, 9700 serial protocol, visit [www.miteq.com](http://www.miteq.com)

### ORDERING INFORMATION



Note: Consult factory for additional rear parallel interface.

EXAMPLE: Part Number MOS-0.1-13.0-1k-10M for frequency synthesizer covering 0.1 to 13 GHz with a step size of 1 kHz and a reference frequency of 10 MHz.

# MULTI-OCTAVE FREQUENCY SYNTHESIZER

## MECHANICAL SPECIFICATIONS

Outline drawing  
Third rack ..... 175415  
Module ..... 185132  
Size ..... 1.34" x 5.71" x 20"  
Weight ..... 8 pounds typical in third rack  
RF connectors ..... SMA female  
Control connector ..... Modular 34-pin header for parallel operation. Third rack, Ethernet, through RJ45 or 9-pin D for RS485.

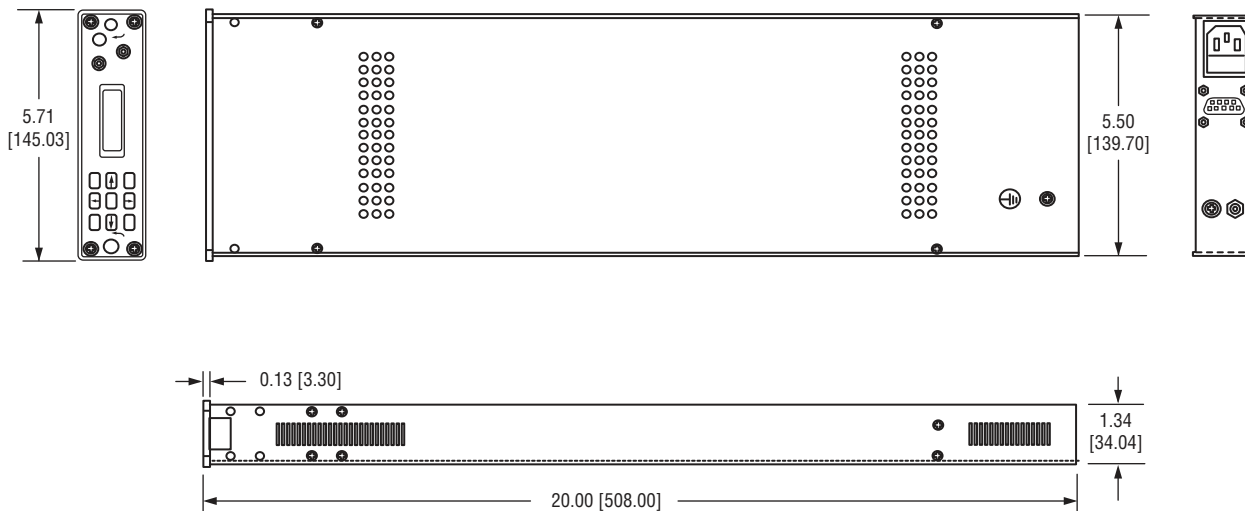
## ENVIRONMENTAL SPECIFICATIONS

Temperature  
Operating ..... 0 to 60°C  
Storage ..... -50 to +100°C  
Humidity ..... Up to 95% at 40°C noncondensing  
Shock (nonoperating) ..... 30 g's, 10 ms pulse  
Vibration (survival) ..... 20 to 2000 Hz random to .04 G<sup>2</sup>/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

Note: Wider operating temperatures are available, please contact MITEQ.

## OUTLINE DRAWINGS

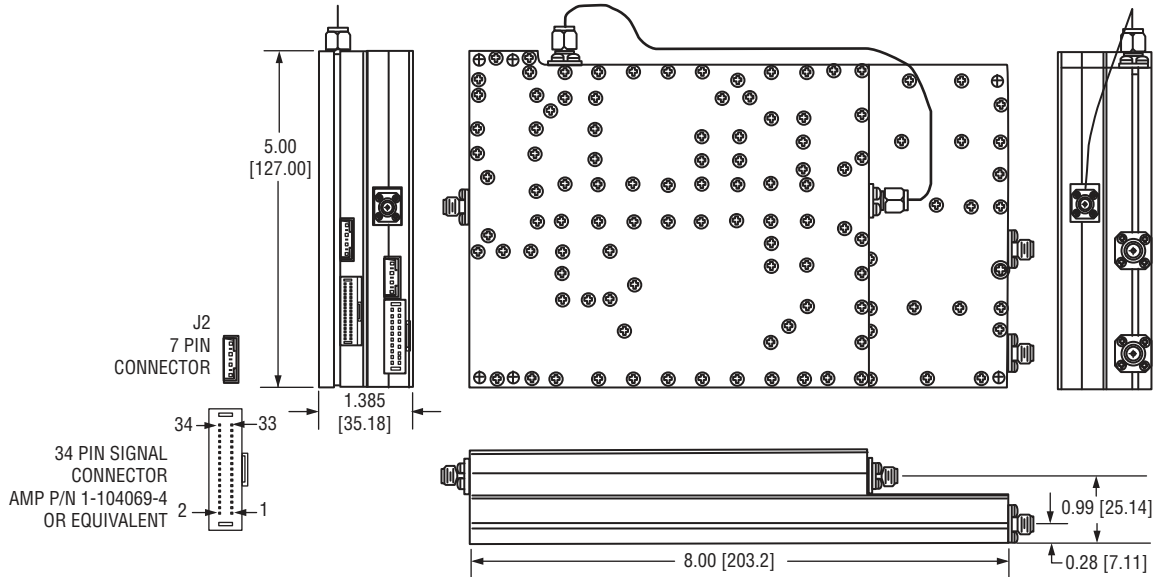
### 175415 MOS SERIES



NOTE: DIMENSIONS SHOWN IN BRACKETS [ ] ARE IN MILLIMETERS.

# OUTLINE DRAWINGS (CONT.)

## 185132 MOSM SERIES



### DATA CONNECTIONS - BCD INTERFACE

PIN 1	10 GHz (8)	PIN 2	10 GHz (4)
PIN 3	10 GHz (2)	PIN 4	10 GHz (1)
PIN 5	1 GHz (8)	PIN 6	1 GHz (4)
PIN 7	1 GHz (2)	PIN 8	1 GHz (1)
PIN 9	100 MHz (8)	PIN 10	100 MHz (4)
PIN 11	100 MHz (2)	PIN 12	100 MHz (1)
PIN 13	10 MHz (8)	PIN 14	10 MHz (4)
PIN 15	10 MHz (2)	PIN 16	10 MHz (1)
PIN 17	1 MHz (8)	PIN 18	1 MHz (4)
PIN 19	1 MHz (2)	PIN 20	1 MHz (1)
PIN 21	100 kHz (8)	PIN 22	100 kHz (4)
PIN 23	100 kHz (2)	PIN 24	100 kHz (1)
PIN 25	10 kHz (8)	PIN 26	10 kHz (4)
PIN 27	10 kHz (2)	PIN 28	10 kHz (1)
PIN 29	1 kHz (8)	PIN 30	1 kHz (4)
PIN 31	1 kHz (2)	PIN 32	1 kHz (1)
PIN 33	STROBE	PIN 34	GND

### POWER CONNECTIONS

PIN 1	+5.2 VDC
PIN 2	GND
PIN 3	+15 VDC
PIN 4	GND
PIN 5	PHASE VOLTAGE
PIN 6	GND
PIN 7	-15 VDC

### DATA CONNECTIONS BINARY INTERFACE

PIN 1	NOT USED
PIN 2	NOT USED
PIN 4	NOT USED
PIN 5	NOT USED
PIN 8	NOT USED
PIN 9	MSB
THRU	
PIN 32	LSB
PIN 33	STROBE
PIN 34	GND

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