

FEATURES

- Superior Integrated Phase Noise (2kHz - 50 MHz)
- 1 kHz Step Size
- External Reference 1-200 MHz (Optional)
- Excellent Error Vector Magnitude (EVM Performance)
- 5 Line Serial & USB Control

DESCRIPTION

The **ML5G-Series** of YIG-Based synthesizers are ideal as the main local oscillators in receiving systems, frequency converters and test and measurement equipment. They provide 1 kHz frequency resolution over the 6 to 21 GHz frequency range. Power levels of +13 dBm are provided through out the series and full band tuning speed is 7 mSec. The units are 5" x 3" x 1" high and fit a 2 slot PXI chassis.

APPLICATIONS

Test Equipment
Local Oscillators
Frequency Converters


PERFORMANCE SPECIFICATIONS

(Operating Case Temperature: 0° to +60° C Baseplate) (Note 1)

Model No.	ML5G-0618	ML5G-0820	ML5G-1021
RF Specifications			
Output Frequency	6 - 18 GHz	8 - 20 GHz	10 - 21 GHz
Output Power Min.	+12 dBm	+10 dBm	+10 dBm
Po Variation over Freq/Temp	6 dB	6 dB	6 dB
Step Size, Min.	1 kHz	1 kHz	1 kHz
Switching Speed, 100 MHz Step, Typ.	1 mS	1 mS	1 mS
1000 MHz Step, Typ.	3 mS	3 mS	3 mS
Full Band Step, Typ.	6 mS	7 mS	7 mS
Warm-up Time ("Lock") @ 0C (Minutes) (with Internal Crystal Reference)	3.0	3.0	3.0
Output Impedance	50 Ohms	50 Ohms	50 Ohms
Load VSWR	2.0:1	2.0:1	2.0:1
Harmonics	-12 dBc	-12 dBc	-12 dBc
Non-Harmonic Spurious	-60 dBc	-60 dBc	-60 dBc

Phase Noise Performance (dBc/Hz)

(with Internal Crystal Reference)

@ 100 Hz Offset	-72	-70	-70
@ 1 kHz Offset	-89	-87	-87
@ 10 kHz Offset	-90	-88	-88
@ 100 kHz Offset	-115	-118	-118
@ 1 MHz Offset	-138	-138	-138
@ 10 MHz Offset	-154	-153	-153
@ 100 MHz Offset	-164	-163	-163

ML5G PERFORMANCE SPECIFICATIONS (Continued)

Model No.	ML5G-0618	ML5G-0820	ML5G-1021
Intergrated Phase Noise Performance			
@ 18 and 20 GHz (2 kHz to 50 MHz)	-53 dBc	-52 dBc	-50 dBc
RMS Jitter	29 f sec	28 f sec	34 f sec
Reference Oscillator Options			
Option A			
External Reference (Note 2)	50 - 200 MHz	50 - 200 MHz	50 - 200 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability (< +/- 20ppm)	Cust Supplied	Cust Supplied	Cust Supplied
Option B			
External Reference with Internal Crystal (Note 3)	10 - 100 MHz	10 - 100 MHz	10 - 100 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability (Note 5)	Cust Supplied	Cust Supplied	Cust Supplied
Option C			
Internal Reference	100 MHz	100 MHz	100 MHz
Frequency Stability	+/- 1 PPM	+/- 1 PPM	+/- 1 PPM
Supply Voltage & Current (Note 4)			
+15 Vdc (± 0.5) Vdc)	1375 mA	1800 mA	1900 mA
+5 Vdc (± 0.25) Vdc)	300 mA	300 mA	325 mA
Power dissipation	22.1 watts	31 watts	33 watts
Supply Voltage Ripple (Pk-Pk from 60 Hz to 3 MHz)	<50 mV	<50 mV	<50 mV
Control Format	5-Line Serial USB	5-Line Serial USB	5-Line Serial USB
Phase Lock Alarm (P13) (TTL)	1=Locked	1=Locked	1=Locked
Weight	15 oz / 426 g	15 oz / 426 g	15 oz / 426 g

ML5G Options:

Option A: External Reference / No Internal Reference

Option B: Internal Reference / External Reference

Option C: Internal Reference / No External Reference, Drawing 181-003 & 181-004

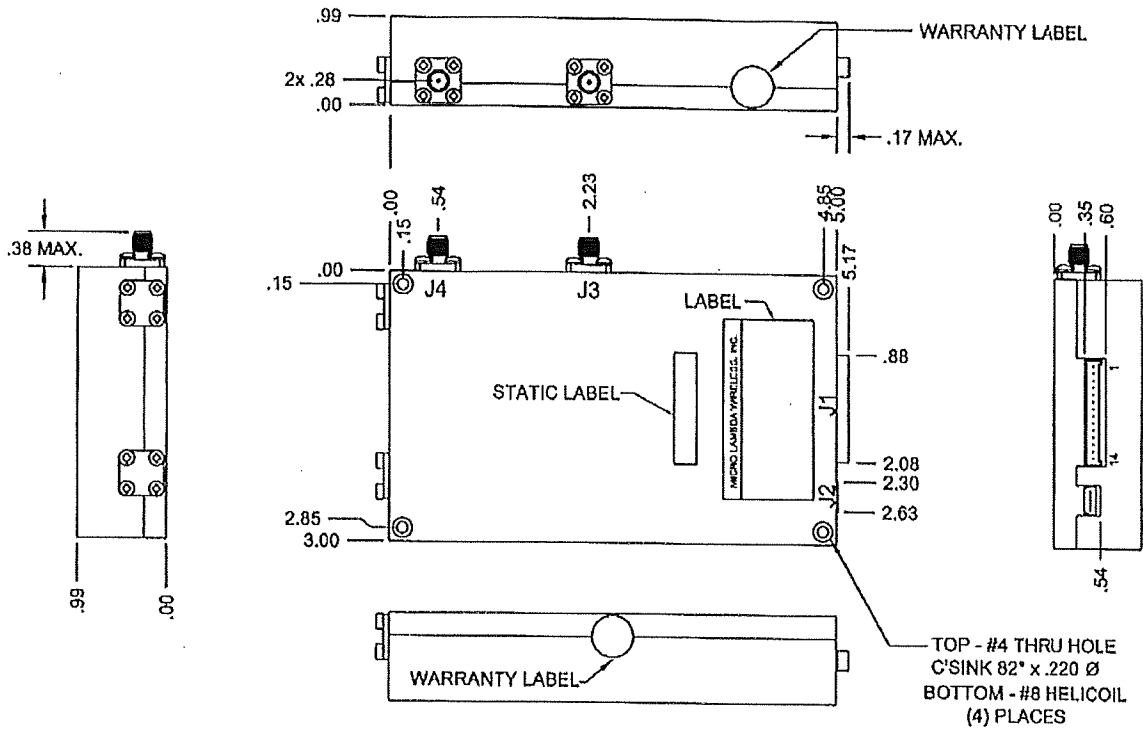
Option D: RF Connectors Front, Drawing 181-001

Option E: RF Connectors Side, Drawing 181-002

Part Number Example: ML5G-0820BD 8 GHz to 20 GHz with Internal Reference and External Reference with RF connectors on front.

Notes:

- 1) Special operating temperature range available.
- 2) 50-100 MHz OCXO recommended for best phase noise performance. External reference directly effects phase noise performance.
- 3) Output phase noise performance is not dependent on external reference phase noise.
- 4) All values stated for units with external reference. For internal reference add 125mA on the +15 Vdc line.
- 5) Frequency accuracy must be within exact reference frequency selected, +/- 5ppm.



NOTES :

- J1 MALE: - MOLEX# 35363-1460
- J1 MATES WITH: - MOLEX# 35507-1400
- CRIMP PIN: - MOLEX# 50212-8000
- J1 POWER SUPPLY INPUTS REQUIRED FOR USB OPERATION
- J1 RECOMMENDED WIRE SIZE = A.W.G. 22-24
- (*) ACTIVE LOW

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J1	35363-1460	1	+15 VDC, +12V OPT.
J1	35363-1460	2	+15 VDC, +12V OPT.
J1	35363-1460	3	GROUND
J1	35363-1460	4	GROUND
J1	35363-1460	5	+ 5 VDC
J1	35363-1460	6	+ 5 VDC
J1	35363-1460	7	N/C
J1	35363-1460	8	N/C
J1	35363-1460	9	CLOCK
J1	35363-1460	10	DATA IN
J1	35363-1460	11	SELECT (*)
J1	35363-1460	12	BUSY
J1	35363-1460	13	LOCK ALARM
J1	35363-1460	14	DATA OUT

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J2	USB MINI-B	1	+V
J2	USB MINI-B	2	D-
J2	USB MINI-B	3	D+
J2	USB MINI-B	4	GND
J2	USB MINI-B	5	GND
J3	SMA-FEMALE	1	REF. INPUT
J4	SMA-FEMALE	1	RF OUTPUT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE FRACTIONS DECIMALS ANGLES
 .125 .015 .010
 .005 .002 .001
 WEIGHT 15 Oz. / 425gr
 FINISH
 DO NOT SCALE DRAWING

CONTRACT NO.
 APPROVALS DATE
 DRAWN H. NGUYEN 3/12/12
 ENGR DS 3/12/12
 MANT.
 QA



MICRO LAMBDA WIRELESS, INC.

MLSP SYNTHESIZER, EXT. REF. (SIDE)

SIZE	CAGE NO. ORN63	DWG. NO. 181 - 002	REV. B
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