

FEATURES

- Superior Phase Noise
- 1 kHz Step Size
- External Reference 1-200 MHz (Optional)
- PXI, Compact PCI Size Compatible
- 5 Line Serial & USB Control

DESCRIPTION

The **MLSP-Series** of YIG-Based wideband synthesizers are specifically designed for VSAT applications. They provide 1 kHz frequency resolution over the 600 MHz to 20 GHz frequency range. Power levels of +8 to +13 dBm are provided throughout the series and full band tuning speed is 6 mSec. The units are 5" x 3" x 1" high and fit a 2 slot PXI chassis.



PERFORMANCE SPECIFICATIONS

(Operating Case Temperature: -20° to +70° C Baseplate)

Model No.	MLSP-4214	MLSP-4689	MLSP-1113
RF Specifications			
Output Frequency	4.2-14.2 GHz	4.6-8.9 GHz	11.6-13.9 GHz
Output Power Min.	+13 dBm	+13 dBm	+13 dBm
Po Variation over Freq/Temp	4 dB	3 dB	3 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	5 mS	5 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			
100 Hz f off ≤500 kHz	-60 dBc	-60 dBc	-60 dBc
>500 kHz	-80 dBc	-80 dBc	-80 dBc
Phase Noise Performance (with Internal Crystal Reference)			
@ 100 Hz Offset	72 dBc/Hz	79 dBc/Hz	72 dBc/Hz
@ 1 kHz Offset	89 dBc/Hz	95 dBc/Hz	89 dBc/Hz
@ 10 kHz Offset	91 dBc/Hz	95 dBc/Hz	91 dBc/Hz
@ 100 kHz Offset	115 dBc/Hz	117 dBc/Hz	115 dBc/Hz
@ 1 MHz Offset	138 dBc/Hz	140 dBc/Hz	138 dBc/Hz

MLSP PERFORMANCE SPECIFICATIONS (Continued)

Model No.	MLSP-4214	MLSP-4689	MLSP-1113
Reference Oscillator Options			
Option A			
External Reference (Note 1)	1 - 200 MHz	1 - 200 MHz	1 - 200 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability	Cust Supplied	Cust Supplied	Cust Supplied
Option B			
External Reference with Internal Crystal (Note 2)	1 - 100 MHz	1 - 100 MHz	1 - 100 MHz
External Ref. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
Frequency Stability	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 3)			
+15 Vdc (± 0.5) Vdc	1400 mA	900 mA	1400 mA
+5 Vdc (± 0.25) Vdc	300 mA	300 mA	300 mA
Power dissipation	23 watts	15 watts	23 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

MLSP 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

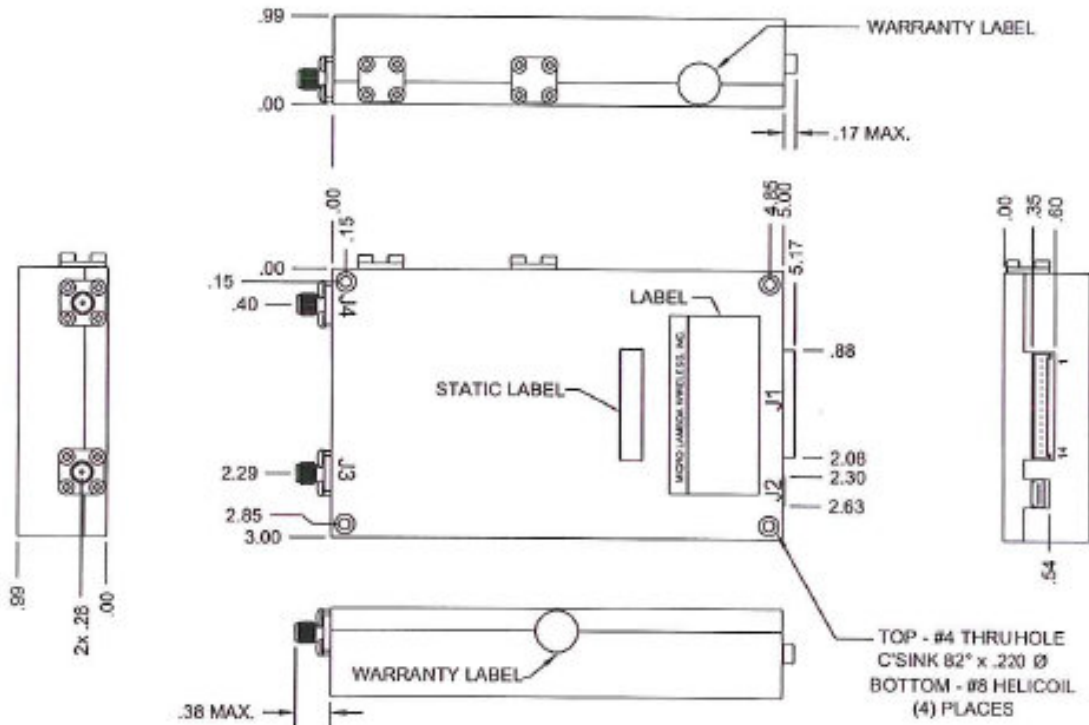
Option D: RF Connectors Front, Drawing 181-001

Option E: RF Connectors Side, Drawing 181-002

Part Number Example: MLSP-4214BD 4.2 GHz to 14.2 GHz with Internal Reference and RF connectors on front.

Notes:

- 1) 50-100 MHz OCXO recommended for best phase noise performance. External reference directly effects phase noise performance.
- 2) Output phase noise performance is not dependent on external reference phase noise.
- 3) All values stated for units with external reference. For internal reference add 125mA on the +15 Vdc line.



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 $\overline{}$
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

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE:</small> FRACTIONS DECIMALS ANGLES ± ± MDA ± 5D WEIGHT 15 Oz. / 425gr FINISH	CONTRACT NO.	
	APPROVALS	DATE
	DRWN N NGUYEN	3/12/12
	ENGR DS	3/12/12
MADE IN CHINA	DATE	
DA		

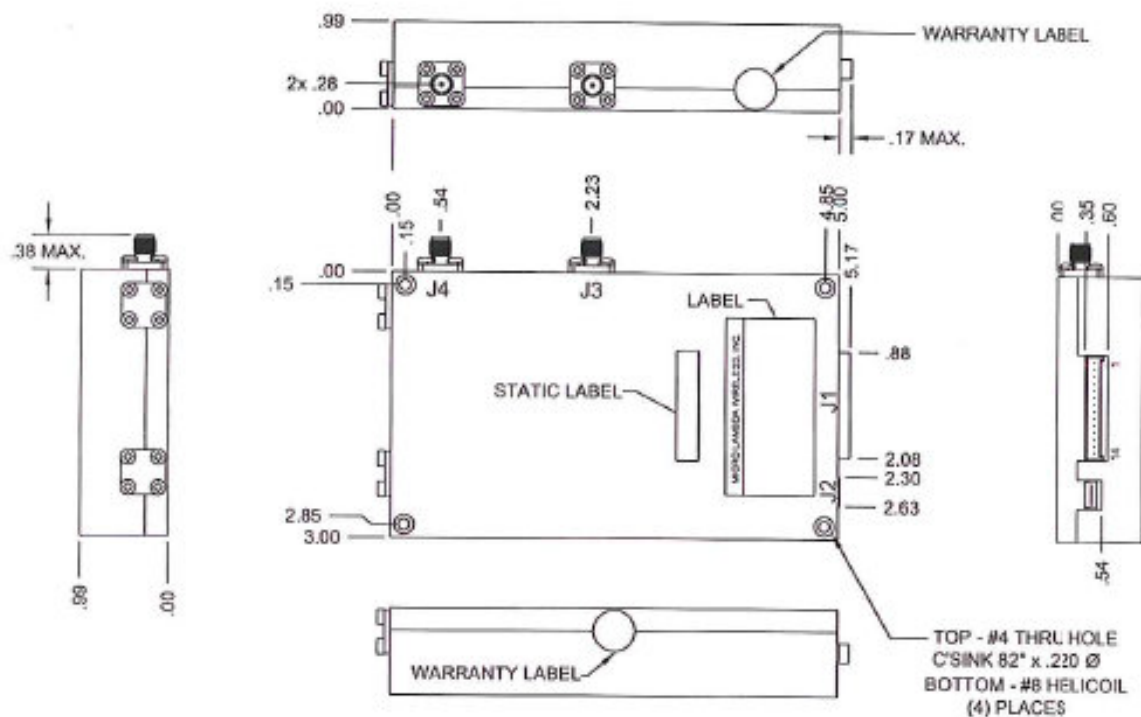


MICRO LAMBDA WIRELESS, INC.

MLSP SYNTHESIZER, EXT. REF. (FRONT)

SIZE	CASE NO ORN63	DWS NO 181 - 001	REV. B
------	-------------------------	----------------------------	------------------

DO NOT SCALE DRAWING



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
 ± .005 ± .010 ± .015
 WEIGHT 15 Oz. / 425gr
 FINISH
 DONT SCALE DRAWING

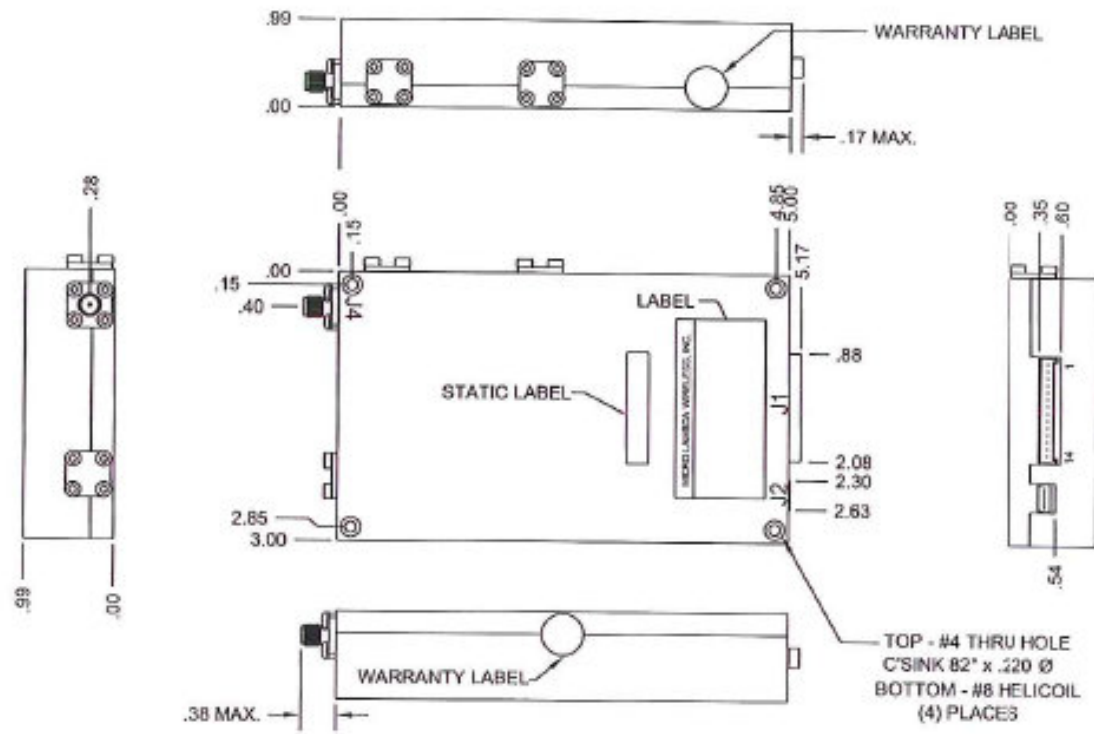
CONTRACT NO.	
APPROVALS	DATE
DRAWN N NGUYEN	3/12/12
CHK DS	3/12/12
MANUF.	
QA	



MICRO LAMBDA WIRELESS, INC.

MLSP SYNTHESIZER, EXT. REF. (SIDE)

REV	DATE	BY	REV
	0RN63		181 - 002
			B




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
J4	SMA-FEMALE	1	RF OUTPUT

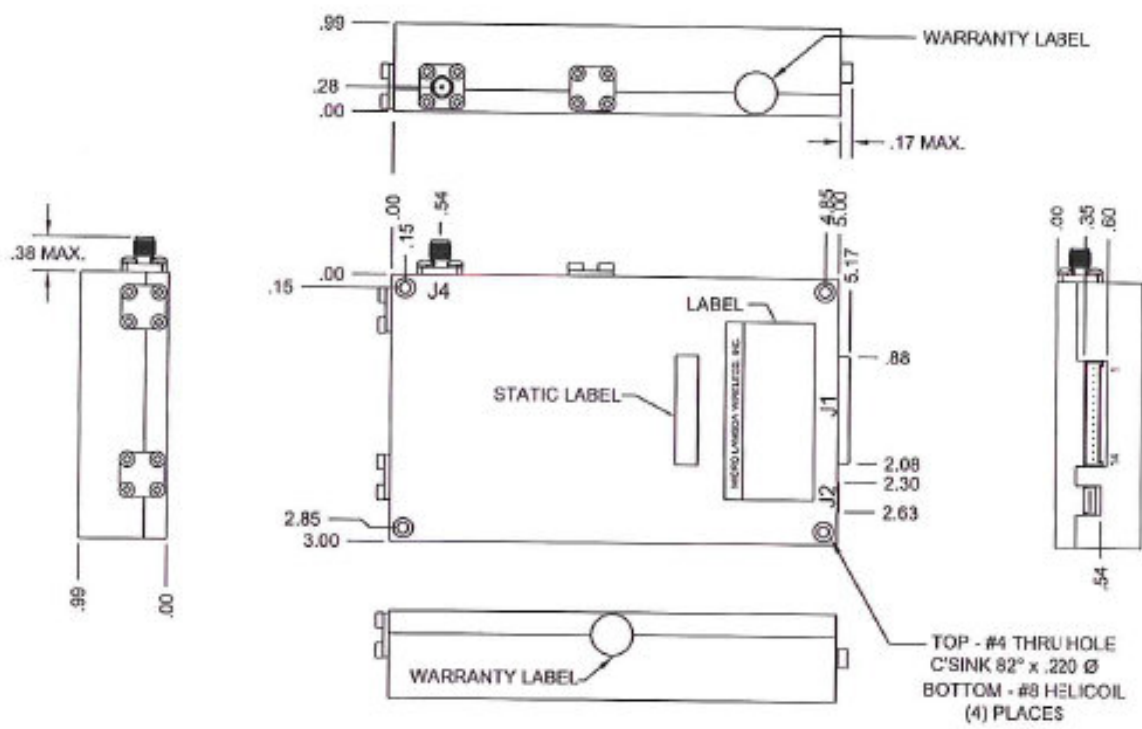
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE</small> <small>FRACTIONS DECIMALS ANGLES</small> <small>± .010 ± .005 ± .010</small>	<small>CONTRACTING</small> <small>APPROVALS</small>	
	<small>DRWVN</small> <small>ENGR</small> <small>NAME</small> <small>QA</small>	<small>DATE</small> <small>3/12/12</small> <small>3/12/12</small>
<small>WEIGHT</small> 15 Oz. / 425gr	<small>DATE</small> <small>3/12/12</small>	
<small>FINISH</small>	<small>DATE</small>	
<small>DO NOT SCALE DRAWING</small>	<small>DATE</small>	



MICRO LAMBDA WIRELESS, INC.

MLSP SYNTHESIZER, INT. REF. (FRONT)

SIZE	CAGE NO.	QTY NO.	REV.
ORN63	181 - 003		B



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
J4	SMA-FEMALE	1	RF OUTPUT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE ARE:

FRACIONS	DECIMALS	ANGLES
1/16	.001	1/16
1/32	.0005	1/16

WEIGHT: 15 Oz. / 425gr

FINISH: ENGR. DS 3/22/12

DO NOT SCALE DRAWING

MICRO LAMBDA WIRELESS, INC.

MLSP SYNTHESIZER, INT. REF. (SIDE)

DATE	CAGE No	DWG No	REV.
	ORN63	181 - 004	B