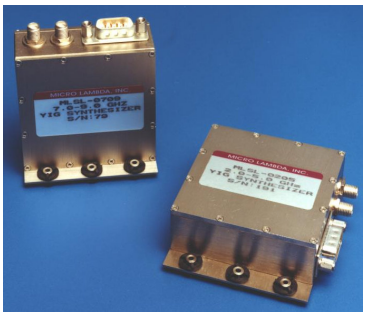
MICRO LAMBDA WIRELESS, INC.

MLSL SERIES
PMYTO BASED SYNTHESIZERS
2-12 GHz 2 GHz TUNING



FEATURES

- 2-12 GHz Frequency Coverage
- 2 GHz Tuning Ranges
- Superior Phase Noise
- Small Size and Low Power Consumption

DESCRIPTION

Micro Lambda's new MLSL Series of permanent magnet YIG (PMYTO) based synthesizers. These synthesizers provide superior phase noise, typically –98 dBc/Hz @ 10 kHz offset, in X-Band and are available in 2 GHz tuning bandwidths between 2 GHz and 12 GHz. Frequency doublers are optional through 24 GHz. Spurious performance is -70 dBc and switching speed is 100 mS. Micro Lambda's **MLSL** Series PMYTO based synthesizers are 2.5" x 2.5" x 1.0" and consume less than 6 watts. The micro-controller utilized in the MLSL synthesizers is non-volatile and remembers the tuned frequency after a power down incident.

PERFORMANCE SPECIFICATIONS

(Operating Case Temperature: 0º to +60º C Baseplate) (Note 5)

Model No.	MLSL-0305 (Note 1)	MLSL-0406	MLSL-0507	MLSL-0608
RF Specifications				
Output Frequency (Note 2)	3-5 GHz	4-6 GHz	5-7 GHz	6-8 GHz
Output Power Min. (Note 3)	+12 dBm	+12 dBm	+12 dBm	+10 dBm
Po Variation Over Temp./Freq.	+/-2 dB	+/-2 dB	+/-2 dB	+/- 2 dB
Step Size, Min. (Note 4)	500 kHz	500 kHz	500 kHz	500 kHz
Switching Speed, 100 MHz step.	100 mS, Typ.	100 mS, Typ.	100 mS, Typ.	100 mS, Typ.
Output Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Load VSWR	2.0:1	2.0:1	2.0:1	2.0:1
Harmonics	-12 dBc	-12 dBc	-12 dBc	-15 dBc
Spurious > 10 kHz	-70 dBc	-70 dBc	-70 dBc	- 70 dBc
Phase Noise @ 100 Hz Offset, Typ.	-53 dBc/Hz	-53 dBc/Hz	-53 dBc/Hz	-53 dBc/Hz
@ 1 kHz Offset, Typ.	-65 dBc/Hz	-62 dBc/Hz	-62 dBc/Hz	-60 dBc/Hz
@ 10 kHz Offset	-98 dBc/Hz	-98 dBc/Hz	-96 dBc/Hz	-96 dBc/Hz
@ 100 kHz Offset	-122 dBc/Hz	-122 dBc/Hz	-120 dBc/Hz	-120 dBc/Hz
@ 1 MHz Offset	-144 dBc/Hz	-144 dBc/Hz	-142 dBc/Hz	-142 dBc/Hz
External Ref. Osc. - Fixed Freq. (Standard)	10 MHz	10 MHz	10 MHz	10 MHz
External Ref. Osc. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
External Ref. Osc. - Fixed Freq. (Optional)	1-50 MHz	1-50 MHz	1-50 MHz	1-50 MHz
Supply Voltage & Current				
+15 Vdc (+5%,-2%), Max	300 mA	300 mA	300 mA	300 mA
+ 5 Vdc (+5%,-2%), Max	100 mA	100 mA	100 mA	100 mA
Supply Voltage Ripple (Pk-Pk from 2 kHz to 3 MHz)	10 mV	10 mV	10 mV	10 mV
Digital Control Format	3-Line Serial	3-Line Serial	3-Line Serial	3-Line Serial
Phase Lock Alarm	High=Locked	High=Locked	High=Locked	High=Locked
Connections				
Reference Input	SMA-F	SMA-F	SMA-F	SMA-F
RF Output	SMA-F	SMA-F	SMA-F	SMA-F
Control/Alarm/Supply	DB9	DB9	DB9	DB9
Case Style				
Horizontal H-Option	151-002	151-002	151-002	151-002
Vertical V-Option	151-003	151-003	151-003	151-003

Notes: 1) 2-4 GHz available.
2) Units can be set to a customer selected fixed frequency. No control interface is required.
3) Higher output power available on special order.
4) Smaller step size available.

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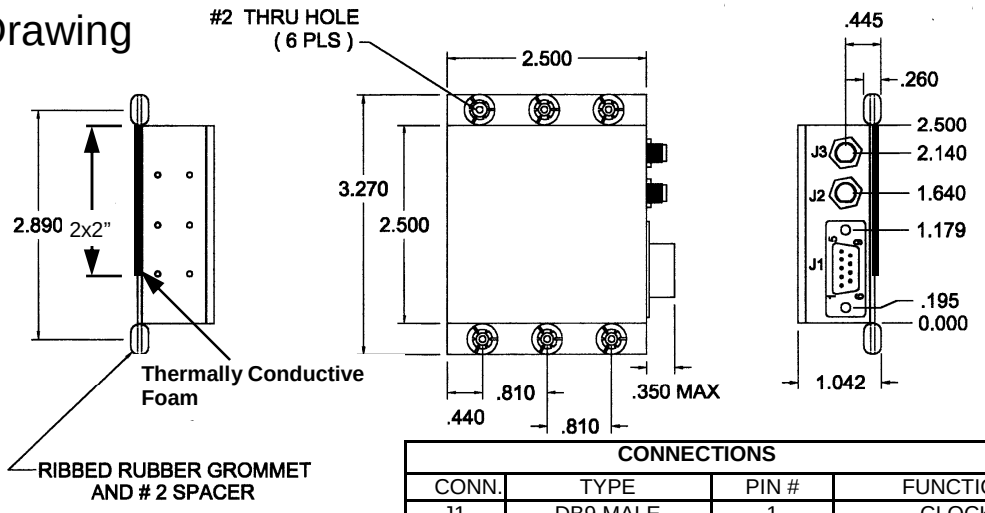
MLSL PERFORMANCE SPECIFICATIONS

(Operating Case Temperature: 0º to +60º C Baseplate) (Note 5)

Model No.	MLSL-0709	MLSL-0810	MLSL-0911	MLSL-1012
RF Specifications				
Output Frequency (Note 2)	7-9 GHz	8-10 GHz	9-11 GHz	10-12 GHz
Output Power Min. (Note 3)	+10 dBm	+10 dBm	+10 dBm	+10 dBm
Po Variation Over Temp./Freq.	+/-2 dB	+/-2 dB	+/-2 dB	+/- 2 dB
Step Size, Min. (Note 4)	500 kHz	500 kHz	500 kHz	500 kHz
Switching Speed, 100 MHz step	100 mS, Typ.	100 mS, Typ.	100 mS, Typ.	100 mS, Typ.
Output Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Load VSWR	2.0:1	2.0:1	2.0:1	2.0:1
Harmonics	-15 dBc	-15 dBc	-15 dBc	-15 dBc
Spurious > 10 kHz	-70 dBc	-70 dBc	-70 dBc	- 70 dBc
Phase Noise @ 100 Hz Offset, Typ.	-53 dBc/Hz	-53 dBc/Hz	-53 dBc/Hz	-53 dBc/Hz
@ 1 kHz Offset, Typ.	-60 dBc/Hz	-60 dBc/Hz	-60 dBc/Hz	-60 dBc/Hz
@ 10 kHz Offset	-94 dBc/Hz	-93 dBc/Hz	-87 dBc/Hz	-87 dBc/Hz
@ 100 kHz Offset	-118 dBc/Hz	-117 dBc/Hz	-110 dBc/Hz	-110 dBc/Hz
@ 1 MHz Offset	-140 dBc/Hz	-139 dBc/Hz	-133 dBc/Hz	-133 dBc/Hz
External Ref. Osc. - Fixed Freq. (Standard)	10 MHz	10 MHz	10 MHz	10 MHz
External Ref. Osc. Input Power	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm	0 +/- 3 dBm
External Ref. Osc. - Fixed Freq. (Optional)	1-50 MHz	1-50 MHz	1-50 MHz	1-50 MHz
Supply Voltage & Current				
+15 Vdc (+5%,-2%),Max	300 mA	350 mA	350 mA	350 mA
+ 5 Vdc (+5%,-2%), Max	100 mA	100 mA	100 mA	100 mA
Supply Voltage Ripple (Pk-Pk from 2 kHz to 3 MHz)	10 mV	10 mV	10 mV	10 mV
Digital Control Format	3-Line Serial	3-Line Serial	3-Line Serial	3-Line Serial
Phase Lock Alarm	High=Locked	High=Locked	High=Locked	High=Locked
Connections				
Reference Input	SMA-F	SMA-F	SMA-F	SMA-F
RF Output	SMA-F	SMA-F	SMA-F	SMA-F
Control/Alarm/Supply	DB9	DB9	DB9	DB9
Case Style				
Horizontal H-Option	151-002	151-002	151-002	151-002
Vertical V-Option	151-003	151-003	151-003	151-003

Notes. 2) Units can be set to a customer selected fixed frequency. No control interface is required.
3) Higher output power available on special order.
4) Smaller step size available.
5) Special operating temperature range available.

Outline Drawing 151-002



Weight: 7 Ounces

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J1	DB9 MALE	1	CLOCK
J1	DB9 MALE	2	DATA
J1	DB9 MALE	3	ENABLE
J1	DB9 MALE	4	LOCK ALARM
J1	DB9 MALE	5	N/C
J1	DB9 MALE	6	+15 Vdc
J1	DB9 MALE	7	+5 Vdc
J1	DB9 MALE	8	COMMON
J1	DB9 MALE	9	LOGIC COMMON
J2	SMA FEMALE	1	REF. IN (OPT)
J3	SMA FEMALE	1	RF OUT