



MICRO LAMBDA WIRELESS, INC.

YIG TUNED OSCILLATORS WITH MILITARY DIGITAL DRIVERS MD SERIES

FEATURES

- 700 MHz to 20 GHz
- Compensation for Temperature Drift
- Input Regulators for Improved Stability
 - Versus Power Supply Variations
- 12 Bit Tuning Resolution
- -40° C to +85° C Temperature Range

DESCRIPTION

MICRO LAMBDA YIG Oscillators, model type **MLOB**, **MLOS**, **MLXB**, **MLXS** and **MLXS-T Series** units are available with integrated digital driver circuits.

MICRO LAMBDA drivers eliminate the need for customers to design or develop their own driver circuits and sophisticated test and alignment procedures. Integrating a driver at MICRO LAMBDA's factory ensures that peak performance will be achieved at the time of manufacture. Alignment and compensation with the particular YIG oscillator can be maximized down to the component level.

All drivers in this series provide input voltage regulators, and compensation circuits to improve frequency drift.

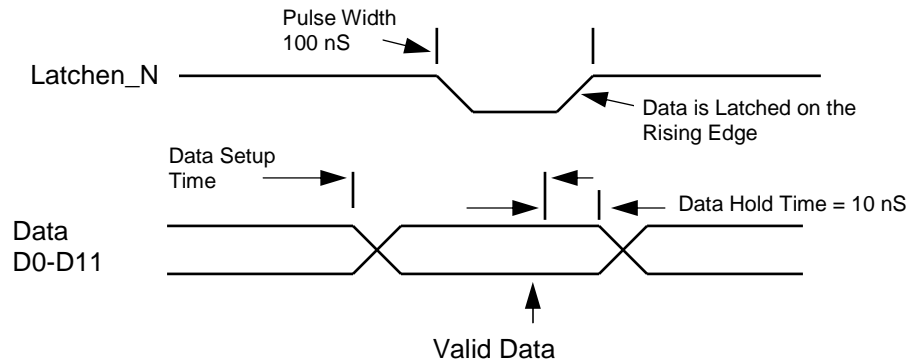


STANDARD POSITIVE INPUT DIGITAL DRIVER SELECTION GUIDE: MD SERIES

YIG TUNED OSCILLATORS WITH DIGITAL DRIVERS

DRIVER INPUT & RESPONSE	SPECIFICATION (-40 to + 85 deg. C)
Tuning Command	Start Word (all 0's) = Lowest Frequency Stop Word (all 1's) = Highest Frequency
Tuning Resolution	12 BIT Positive Logic (Fmax-Fmin)/4095 Bit Resolution All Data Bits have Internal 10k ohm Pull-up Resistor to +5V
Frequency Accuracy (excluding hysteresis)	See Table
Tuning Speed	2 mSec for 1 GHz step to within +/-10 MHz.
Main Driver Inputs	
Supply Voltage & Current (includes YIG device)	+15 V +/- .5 V @ Oscillator Tuning Current + 50 mA, Max. -15 V +/- .5 V @ 50 mA, (Plus Oscillator -5 Vdc Current if any) Max.
Supply Voltage Pushing	+/- .5 Vdc , 0.1 MHz Max.
Supply Voltage Ripple	10 mV Ripple Pk-Pk from 2 kHz to 3 MHz
Ground	Chassis Ground
YIG Heater Voltage & Current	+24 Vdc ±4 Vdc @ 300 mA surge for 2 seconds, 25 mA steady state Polarity independent : ±12 Vdc or ±15 Vdc acceptable
Latch Enable	LATCHEN_N is a TTL, 5V CMOS control line. It has an internal 10k-ohm pull-up resistor to +5 V. It is used to transfer the data on the bus to the digital driver circuit. TTL high = data ignored. Connect to Ground if enable is not required. If the unit is to be used on a computer data bus, the below timing Diagram applies. (All times = Minimum) 10 nS rise/fall latch transitions.

TIMING DIAGRAM



MD SERIES – CONTINUED

FM Coil (MG Option)

Input Voltage	+/- 10V
Input Impedance	1 k Ohms
Sensitivity (Note 1)	+/- 2.5 MHz/V
Frequency Deviation	+/- 25 MHz
Current @ Max. Deviation	+/- 100 mA

Note: 1. Sensitivity Adjustment Available. Sensitivity Stated is Average Over Frequency Range.

1.25" Cube YIG Oscillators with Positive Input Digital Drivers (-40° C to +85° C)

Model Number	Frequency GHz	Accuracy (MHz) *	Current +15 V (mA)	Current -15 V (mA)	Outline Drawing	Outline Drawing (MG Option)
Octave Bands						
MLOB-0102MD	1-2	+/- 3	200	50	11-091	11-108
MLOB-0204MD	2-4	+/- 6	300	50	11-091	11-108
MLOB-0408MD	4-8	+/- 8	550	50	11-091	11-108
MLOB-0812MD	8-12.4	+/- 12	780	50	11-091	11-108
MLOB-1218MD	12-18	+/- 14	1050	50	11-091	11-108
Multi-Octave Bands						
MLOB-0702MD	.7-2	+/- 6	250	50	11-091	11-108
MLOB-0704MD	.7-4	+/- 8	350	50	11-091	11-108
MLOB-0306MD	3-6	+/- 6	450	50	11-091	11-108
MLOB-0208MD	2-8	+/- 12	550	50	11-091	11-108
MLOB-0212MD	2-12.4	+/- 15	780	100	11-091	11-108
MLOB-0310MD	3.5-10.5	+/- 15	675	100	11-091	11-108
MLOB-0412MD	4-12.4	+/- 15	780	100	11-091	11-108
MLOB-0716MD	7-16	+/- 18	900	50	11-091	11-108
MLXB-0618MD	6-18	+/- 25	1050	100	11-091	11-108
MLOB-0818MD	8-18	+/- 18	1050	50	11-091	11-108
MLOB-0820MD	8-20	+/- 30	1175	50	11-091	11-108
MLXB-0820MD	8-20	+/- 30	1175	50	11-091	11-108

Cylindrical YIG Oscillators with Positive Input Digital Drivers (-40° C to +85° C)

Model Number	Frequency GHz	Accuracy (MHz) *	Current +15 V (mA)	Current -15 V (mA)	Outline Drawing	Outline Drawing (MG Option)
Octave Bands						
MLOS-0102MD	1-2	+/- 3	200	50	11-130**	11-131**
MLOS-0204MD	2-4	+/- 6	300	50	11-130**	11-131**
MLOS-0408MD	4-8	+/- 8	550	50	11-130**	11-131**
MLOS-0812MD	8-12.4	+/- 12	780	50	11-088	11-102
MLOS-1218MD	12-18	+/- 14	1050	500	11-088	11-102

* Accuracy includes frequency drift and linearity errors over the temperature range.

** Outline Drawing Available from Factory or Web-site.

MD SERIES – CONTINUED

Cylindrical YIG Oscillators with Positive Input Digital Drivers (-40° C to +85° C)

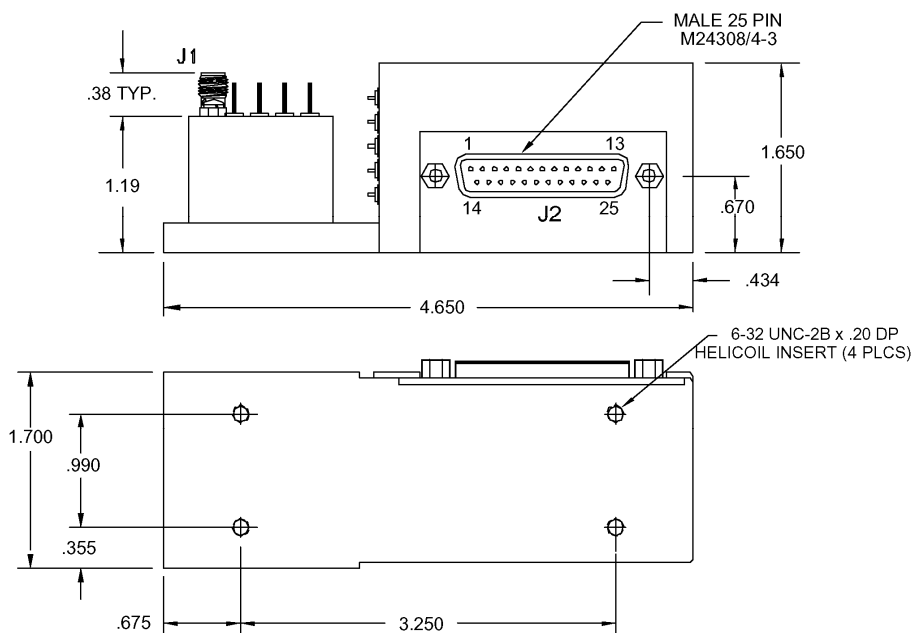
Model Number	Frequency GHz	Accuracy (MHz) *	Current +15 V (mA)	Current -15 V (mA)	Outline Drawing	Outline Drawing (MG Option)
Multi-Octave Bands						
MLOS-0702MD	.7-2	+/- 6	250	50	11-130**	11-131**
MLOS-0704MD	.7-4	+/- 8	350	50	11-130**	11-131**
MLOS-0306MD	3-6	+/- 6	450	50	11-130**	11-131**
MLOS-0208MD	2-8	+/- 12	550	50	11-130**	11-131**
MLOS-0310MD	3.5-10.5	+/- 15	675	100	11-130**	11-131**
MLOS-0212MD	2-12.4	+/- 15	780	100	11-130**	11-131**
MLOS-0412MD	4-12.4	+/- 15	780	100	11-130**	11-131**
MLOS-0716MD	7-16	+/- 18	900	50	11-088	11-102
MLXS-0618MD	6-18	+/- 25	1050	100	11-088	11-102
MLOS-0818MD	8-18	+/- 18	1050	50	11-088	11-102
MLOS-0820MD	8-20	+/- 30	1175	50	11-088	11-102
MLXS-0820MD	8-20	+/- 30	1175	50	11-088	11-102
MLXS-0218MD	2-18	+/- 35	1150	100	11-088	11-102
MLXS-0218TMD ***	2-18	+/- 35	1150	100	11-068	11-169**
MLXS-0220MD	2-20	+/- 35	1175	100	11-088	11-102
MLXS-0220TMD ***	2-20	+/- 35	1175	100	11-068	11-169**

* Accuracy includes frequency drift and linearity errors over the temperature range.

** Outline Drawing Available from Factory or Web-site.

*** Units are Switched Band Dual units.

OUTLINE DRAWING: 11-091



Weight: 21 oz.

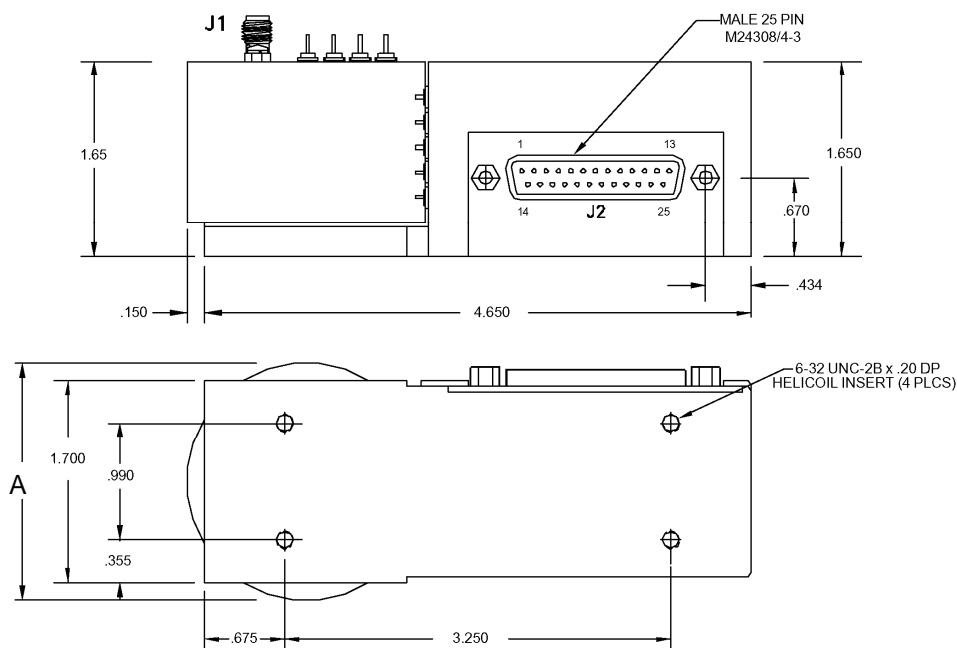
NOTES:

1. - DIMENSIONS ARE IN INCHES
 2. - SUPPLY & GROUND WIRES = 20-22 GAUGE
ALL OTHER WIRES = 24-26 GAUGE
 3. - THERMAL COMPOUND REQUIRED BETWEEN
BASE PLATE AND MOUNTING SURFACE
 4. - LATCH/STROBE TTL 0 = DATA ACTIVE
TTL 1 = DATA LATCHED
- (*) - TTL BAND SEL 0 = 8 F max. ; 1 = 2—8 GHz
* 000 = 26 GHz 5FF = 8 GHz ; FFF = F max.

CONNECTIONS			
Conn	Type	PIN#	Function
J1	SMA	THO	RF OUT
J2	DB25 Male	1	DATA BIT 0 (LSB)
J2	DB25 Male	2	DATA BIT 1
J2	DB25 Male	3	DATA BIT 2
J2	DB25 Male	4	DATA BIT 3
J2	DB25 Male	5	DATA BIT 4
J2	DB25 Male	6	DATA BIT 5
J2	DB25 Male	7	DATA BIT 6
J2	DB25 Male	8	DATA BIT 7
J2	DB25 Male	9	DATA BIT 8
J2	DB25 Male	10	DATA BIT 9
J2	DB25 Male	11	DATA BIT 10
J2	DB25 Male	12	DATA BIT 11 (MSB)
J2	DB25 Male	13	N/C
J2	DB25 Male	14	N/C
J2	DB25 Male	15	N/C
J2	DB25 Male	16	N/C
J2	DB25 Male	17	LATCH/STROBE
J2	DB25 Male	18	GROUND
J2	DB25 Male	19	+SUPPLY VOLTAGE
J2	DB25 Male	20	-SUPPLY VOLTAGE
J2	DB25 Male	21	HEATER VOLTAGE
J2	DB25 Male	22	HEATER RETURN
J2	DB25 Male	23	+ FM
J2	DB25 Male	24	- FM
J2	DB25 Male	25	TTL BAND SELECT *

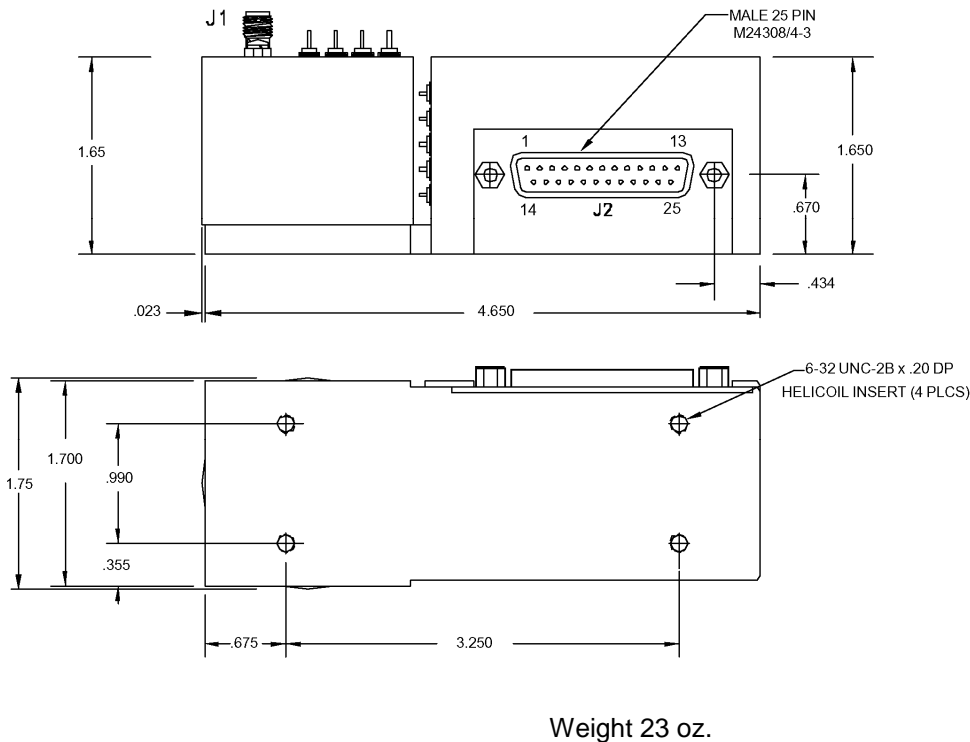
* REQUIRED FOR DUAL OSC. ONLY

OUTLINE DRAWING: 11-068 & 11-088



CASE	A	Weight
11-068	2.00	23 oz.
11-088	1.75	23 oz.

OUTLINE DRAWING: 11-102

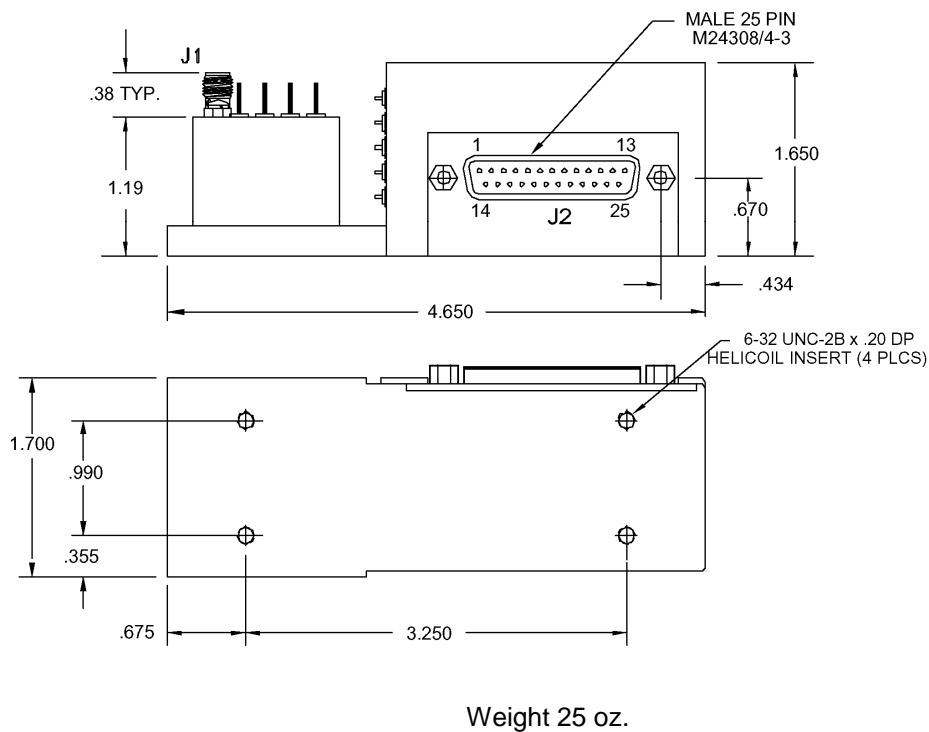


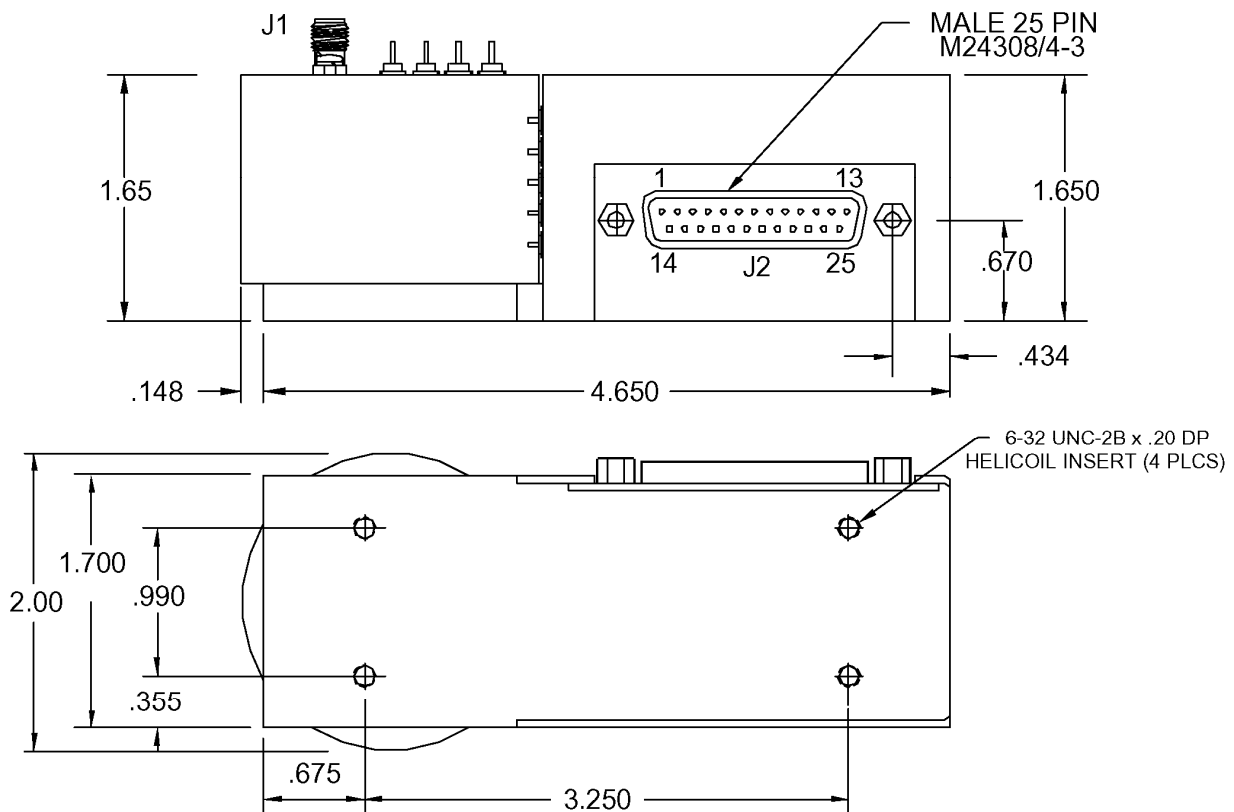
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 3. - THERMAL COMPOUND REQUIRED BETWEEN BASE PLATE AND MOUNTING SURFACE
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 TTL 1 = DATA LATCHED
- (*) - TTL BAND SEL 0 = 8 F max. ; 1 = 2—8 GHz
 * 000 = 26 GHz 5FF = 8 GHz ; FFF = F max.

CONNECTIONS			
Conn	Type	PIN#	Function
J1	SMA	THO	RF OUT
J2	DB25 Male	1	DATA BIT 0 (LSB)
J2	DB25 Male	2	DATA BIT 1
J2	DB25 Male	3	DATA BIT 2
J2	DB25 Male	4	DATA BIT 3
J2	DB25 Male	5	DATA BIT 4
J2	DB25 Male	6	DATA BIT 5
J2	DB25 Male	7	DATA BIT 6
J2	DB25 Male	8	DATA BIT 7
J2	DB25 Male	9	DATA BIT 8
J2	DB25 Male	10	DATA BIT 9
J2	DB25 Male	11	DATA BIT 10
J2	DB25 Male	12	DATA BIT 11 (MSB)
J2	DB25 Male	13	N/C
J2	DB25 Male	14	N/C
J2	DB25 Male	15	N/C
J2	DB25 Male	16	N/C
J2	DB25 Male	17	LATCH/STROBE
J2	DB25 Male	18	GROUND
J2	DB25 Male	19	+SUPPLY VOLTAGE
J2	DB25 Male	20	-SUPPLY VOLTAGE
J2	DB25 Male	21	HEATER VOLTAGE
J2	DB25 Male	22	HEATER RETURN
J2	DB25 Male	23	FM ±10V
J2	DB25 Male	24	FM GROUND
J2	DB25 Male	25	TTL BAND SELECT *

* REQUIRED FOR DUAL OSC. ONLY

OUTLINE DRAWING: 11-108





NOTES :

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BASE PLATE AND MOUNTING SURFACE
 4. - LATCH/STROBE TTL 0 = DATA ACTIVE
TTL 1 = DATA LATCHED
- (*) : TTL BAND SEL. 0=8-Fmax ; 1=2-8 GHz
* 000=2GHz ; 5FF=8GHz ; FFF=Fmax

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J1	SMA	THD	RF OUT
J2	DB25 MALE	1	DATA BIT 0 (LSB)
J2	DB25 MALE	2	DATA BIT 1
J2	DB25 MALE	3	DATA BIT 2
J2	DB25 MALE	4	DATA BIT 3
J2	DB25 MALE	5	DATA BIT 4
J2	DB25 MALE	6	DATA BIT 5
J2	DB25 MALE	7	DATA BIT 6
J2	DB25 MALE	8	DATA BIT 7
J2	DB25 MALE	9	DATA BIT 8
J2	DB25 MALE	10	DATA BIT 9
J2	DB25 MALE	11	DATA BIT 10
J2	DB25 MALE	12	DATA BIT 11 (MSB)

CONNECTIONS			
CONN.	TYPE	PIN #	FUNCTION
J2	DB25 MALE	13	N/C
J2	DB25 MALE	14	N/C
J2	DB25 MALE	15	N/C
J2	DB25 MALE	16	N/C
J2	DB25 MALE	17	LATCH/STROBE
J2	DB25 MALE	18	GROUND
J2	DB25 MALE	19	+SUPPLY VOLTAGE
J2	DB25 MALE	20	-SUPPLY VOLTAGE
J2	DB25 MALE	21	HEATER VOLTAGE
J2	DB25 MALE	22	HEATER RETURN
J2	DB25 MALE	23	FM $\pm 10V$
J2	DB25 MALE	24	FM GND
J2	DB25 MALE	25	TTL BAND SELECT *

* REQUIRED FOR DUAL OSC. ONLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS
ARE IN INCHES
TOLERANCE ARE :

FRACTIONS DECIMALS ANGLES
 $\frac{1}{16}$.005 $\frac{1}{8}$.010 $\frac{3}{16}$.015

WEIGHT 24 oz.

FINISH

DO NOT SCALE DRAWINGS

CONTRACT NO.

APPROVALS

DRAWN N NGUYEN

ENGR

MANUF

Q.A.

DATE

5/25/04



MICRO LAMBDA WIRELESS, INC.

2.0" OSC. WITH MILITARY 12 BIT DIC. & FM DRIVER

SIZE CAGE No. ORN63

DWG NO. 11 - 114

REV. A