



### FEATURES

- 2 GHz to 22 GHz
- Compensation for Temperature Drift
- Voltage Regulators for Improved Stability
- 12 Bit Tuning Resolution



### DESCRIPTION

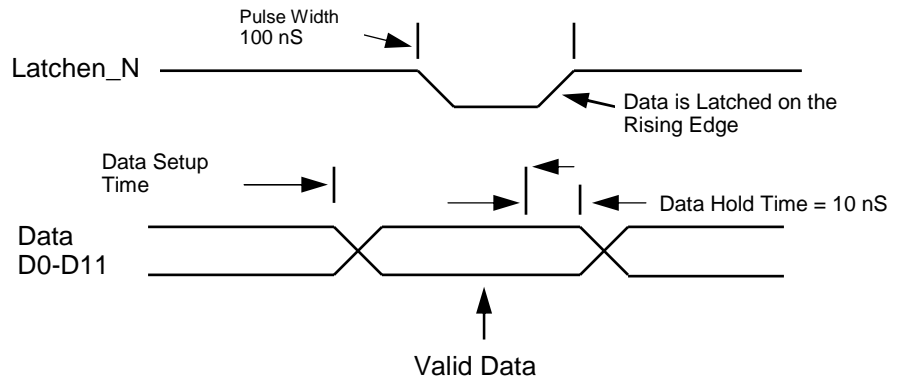
Micro Lambda **MLPM Series** Permanent Magnet YIG Oscillators are available with integrated digital driver circuits. These drivers eliminate the need for customers to design or develop their own driver circuits and sophisticated test and alignment procedures. Integrating a driver at Micro Lambda's factory ensures peak performance. 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. All voltages required by the YIG oscillator, except the heater inputs are supplied by the voltage regulators.

COMMERCIAL DIGITAL DRIVERS DRIVER INPUT & RESPONSE	Permanent Magnet YTO's, BD & BG SERIES SPECIFICATION ( 0 to + 65 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 resistors to +5V
Tuning Accuracy (excluding hysteresis)	+/- 10 MHz
Tuning Speed (Note 1)	10 mSec for 1 GHz step to within +/-10 MHz. (residual FM is 10 kHz Pk-Pk)
<b>Main Driver Inputs</b>	
Supply Voltage & Current (Note 2)	+12 V or +15 V +/- .5 V @ 265 mA, Max. -12 V or -15 V +/- .5 V @ 165 mA, Max.
Supply Voltage Pushing	+/- 100 kHz, Max. @ +/- .5 Vdc
Supply Voltage Ripple	10 mV Ripple Pk-Pk over 2 kHz to 3 MHz
Ground	Chassis Ground
YIG Heater Voltage & Current	+15 Vdc ±4 Vdc @ 300 mA surge for 2 seconds, 50 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.

Note 1. Optional 1mS Tuning Speeds Available.  
2. Some YIG devices require higher voltages - Check with factory.

### TIMING DIAGRAM



## BD-SERIES — CONT.

### FM Coil Driver (BG Option)

Voltage	+/- 10 V
Current	+/- 100 mA
Input Impedance	10 k-Ohms
Sensitivity (Note 3)	+/- 2.5 MHz/V
Frequency Deviation	+/- 25 MHz

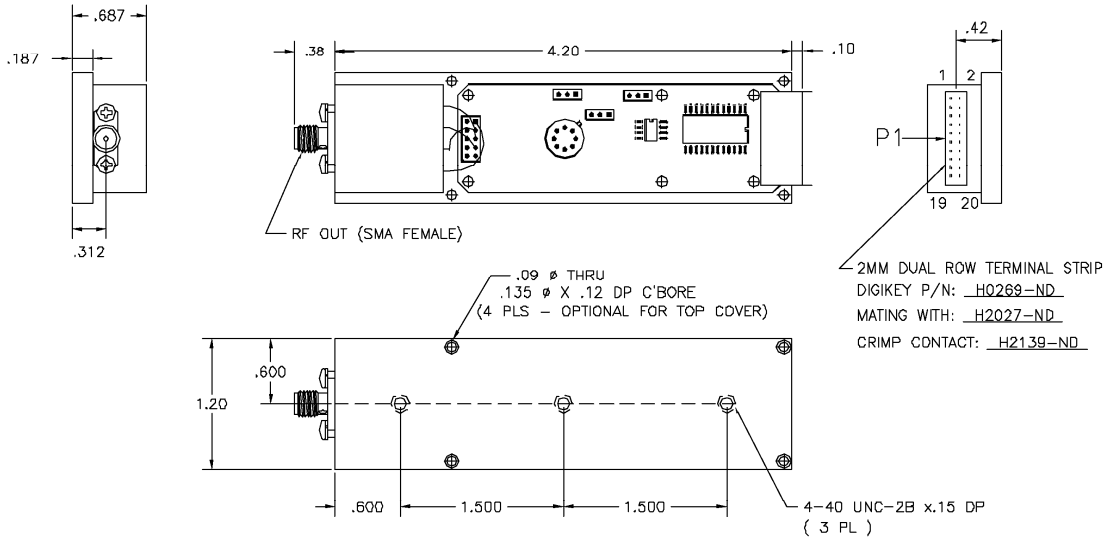
Note 3: Sensitivity Adjustment Available. Sensitivity Stated is Average Over Frequency Range.

### Permanent Magnet YIG Oscillators with Positive Input Digital Drivers ( 0° C to +65° C )

Model Number	Frequency GHz	Accuracy ( MHz ) *	Current +12 V (mA)	Current -12 V (mA)	Outline Drawing	Outline Drawing (BG Option)
<b>Bi-Polar</b>						
MLPM-0204BD	2-4	+/- 10	265	165	61-058	61-058-4
MLPM-0305BD	3-5	+/- 10	265	165	61-058	61-058-4
MLPM-0406BD	4-6	+/- 10	265	165	61-058	61-058-4
MLPM-0507BD	5-7	+/- 10	265	165	61-058	61-058-4
MLPM-0608BD	6-8	+/- 10	265	165	61-058	61-058-4
MLPM-0709BD	7-9	+/- 10	265	165	61-058	61-058-4
MLPM-0810BD	8-10	+/- 10	265	165	61-058	61-058-4
MLPM-0911BD	9-11	+/- 10	265	165	61-058	61-058-4
MLPM-1012BD	10-12	+/- 10	265	165	61-058	61-058-4
MLPM-1113BD	11-13	+/- 10	265	165	61-058	61-058-4
MLPM-1214BD	12-14	+/- 10	265	165	61-058	61-058-4

Model Number	Frequency GHz	Accuracy ( MHz ) *	Current +15 V (mA)	Current -15 V (mA)	Outline Drawing	Outline Drawing (BG Option)
MLPW-0812BD	8-12	+/- 10	315	215	61-072	61-098
MLPW-1014BD	10-14	+/- 10	315	215	61-072	61-098
MLPW-1418BD	14-18	+/- 10	315	215	61-072	61-098
MLPW-1822BD	18-22	+/- 10	315	215	61-072	61-098

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



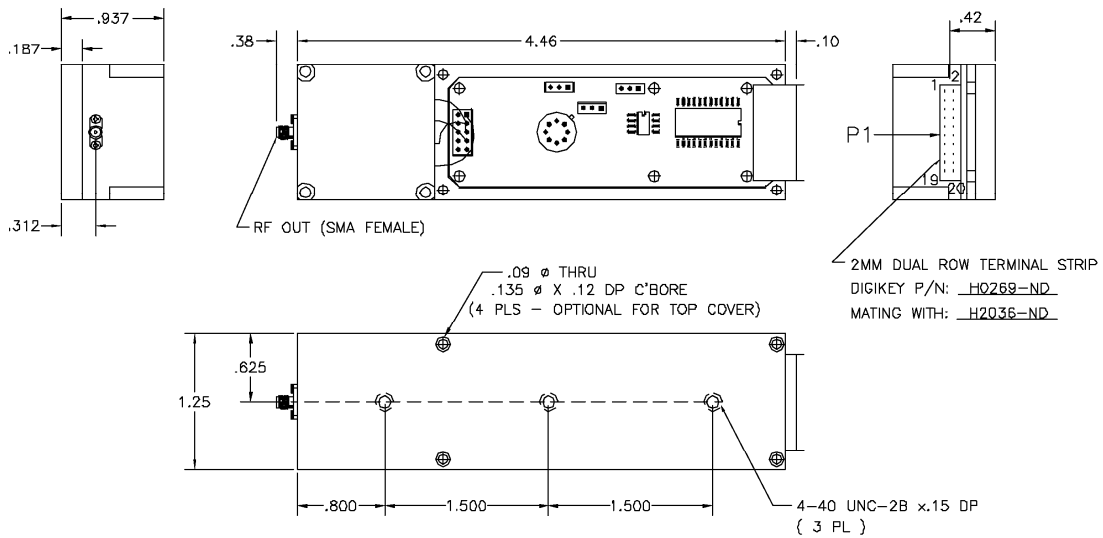
P1 - PIN CONNECTIONS

PIN NO	FUNCTION	PIN NO	FUNCTION
1	DATA BIT 0	11	DATA BIT 10
2	DATA BIT 1	12	DATA BIT 11(MSB)
3	DATA BIT 2	13	LATCHEN_N
4	DATA BIT 3	14	GND
5	DATA BIT 4	15	+ SUPPLY
6	DATA BIT 5	16	- SUPPLY
7	DATA BIT 6	17	HEATER (+ V)
8	DATA BIT 7	18	HEATER (GND)
9	DATA BIT 8	19	FM +
10	DATA BIT 9	20	FM -

REV	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE : FRACTIONS DECIMALS ANGLES ± .005 ± .02 *** ± .010	CONTRACT NO.		 <b>MICRO LAMBDA, INC.</b> PMO W/DIGITAL DRV. (OPEN BOARD)
	APPROVALS	DATE	
MATERIAL	DRAWN N.NGUYEN	10/9/98	SIZE CAGE DWG. NO. REV.
FINISH	CHECKED	ISSUED	ORN63 61-058
DO NOT SCALE DRAWING	SCALE	SCALE	SHEET



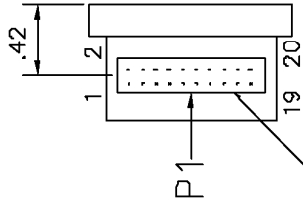
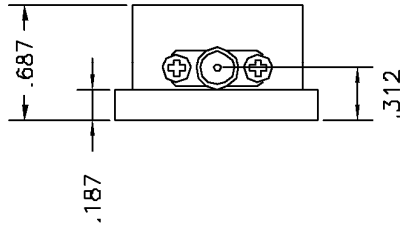
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2	DATA BIT 1	12	DATA BIT 11(MSB)
3	DATA BIT 2	13	LATCHEN_N
4	DATA BIT 3	14	GND
5	DATA BIT 4	15	+ SUPPLY
6	DATA BIT 5	16	- SUPPLY
7	DATA BIT 6	17	HTR (+V) or N/C
8	DATA BIT 7	18	HTR (GND) or N/C
9	DATA BIT 8	19	FM +
10	DATA BIT 9	20	FM -

REV	DESCRIPTION	DATE	APPROVED

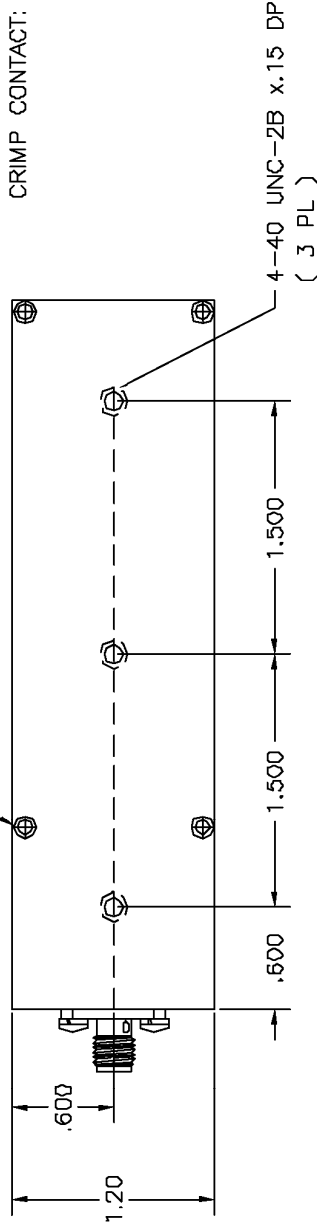
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE : FRACTIONS DECIMALS ANGLES ± .005 ± .02 *** ± .010	CONTRACT NO.		 <b>MICRO LAMBDA WIRELESS, INC.</b> 1.25" PMO W/DIGITAL DRIVER
	APPROVALS	DATE	
MATERIAL	DRAWN N.NGUYEN	8/27/02	SIZE CAGE DWG. NO. REV.
FINISH	CHECKED	ISSUED	ORN63 61-072 A
DO NOT SCALE DRAWING	SCALE	SCALE	SHEET



RF OUT (SMA FEMALE)

.09  $\phi$  THRU  
.135  $\phi$  X .12 DP C'BORE  
(4 PLS - OPTIONAL FOR TOP COVER)

2MM DUAL ROW TERMINAL STRIP  
DIGIKEY P/N: H0269-ND  
MATING WITH: H2027-ND  
CRIMP CONTACT: H2139-ND



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1	DATA BIT 0	11	DATA BIT 10
2	DATA BIT 1	12	DATA BIT 11(MSB)
3	DATA BIT 2	13	LATCHEN_N
4	DATA BIT 3	14	GND
5	DATA BIT 4	15	+ SUPPLY
6	DATA BIT 5	16	- SUPPLY
7	DATA BIT 6	17	HEATER (+ V)
8	DATA BIT 7	18	HEATER (GND)
9	DATA BIT 8	19	FM INPUT $\pm$ V
10	DATA BIT 9	20	FM (GROUND)

REV	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCE ARE :  
FRACTIONS DECIMALS ANGLES  
+ .00 +.02  
- .00 - .010

MATERIAL

FINISH

CONTRACT NO.

APPROVALS

DATE

DRAWN N. NGUYEN 10/9/98

CHECKED

ISSUED

SCALE

DO NOT SCALE DRAWING

MICRO LAMBDA, INC.

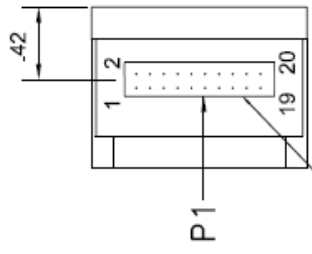
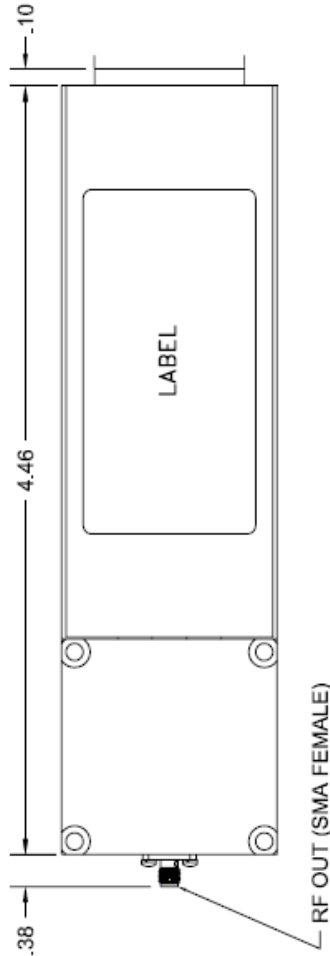
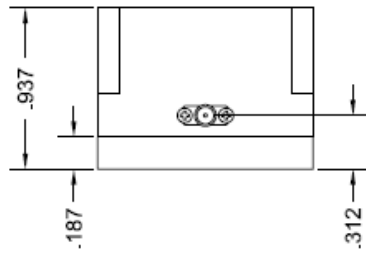
PMO W/DIGITAL & FM DRV.  
( OPEN BOARD )

SIZE ORN63

DWG. NO. 61-058-4

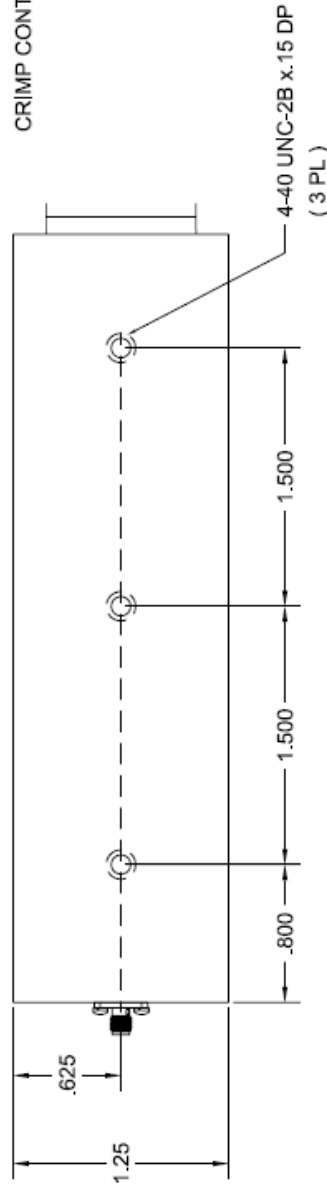
REV.

SHEET



2MM DUAL ROW TERMINAL STRIP  
 DIGIKEY P/N: H2069-ND  
 MATING WITH: H2027-ND  
 CRIMP CONTACT: H2139-ND

RF OUT (SMA FEMALE)



**P1 - PIN CONNECTIONS**

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1	DATA BIT 0	11	DATA BIT 10
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5	DATA BIT 4	15	+ SUPPLY
6	DATA BIT 5	16	- SUPPLY
7	DATA BIT 6	17	HEATER (+ V)
8	DATA BIT 7	18	HEATER (GND)
9	DATA BIT 8	19	FM INPUT ± V
10	DATA BIT 9	20	FM GROUND

REV	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 TOLERANCE ARE :

FRACTIONS DECIMALS ANGLES  
 . . . . .  
 . . . . .  
 . . . . .

CONTRACT NO. MICRO LAMBDA WIRELESS, INC.  
 APPROVALS DRAWN N. NGUYEN 7/17/06 DATE 7/17/06  
 CHECKED ISSUED  
 MATERIAL 1.25" PMO W/DIGITAL, FM DRIVER & COVER  
 FINISH CAGE SIZE DWG. NO. REV.  
 ORN63 61 - 098 A  
 DO NOT SCALE DRAWING SCALE SHEET