

LION PRECISION LRD2000 LABEL REGISTRATION AND DETECTION INSTRUCTION SHEET

M014-3030.10

INTRODUCTION:

The LION PRECISION LRD2000 LABEL REGISTRATION AND DETECTION SYSTEM is an electronic module and probe combination used to monitor label registration and/or count labels. It does this by measuring the change in capacitance produced by the probe and web/label combination. The probe also incorporates a temperature sensor to insure stable operation.

NOTE:

The LRD2000 and LRD2212 probe have been factory adjusted for temperature stability. To maintain this stability the LRD2000 should always be used with the LRD2212 probe to which it was calibrated. A sticker on the rear of the LRD2000 lists the serial number of the LRD2212 probe to which it was calibrated.

SYSTEM COMPONENTS

PART DESCRIPTION	PART NUMBER
LRD2000 Driver	P014-3030
LRD2212 Probe	P014-3171
LRD2212 Probe Cable	P015-3106

PREPARING FOR OPERATION

Note: Refer to Figure 1 for part location and connection references.

The LRD2000 is factory set for 110VAC operation unless otherwise specified. The output is selected for NPN type and is a logical '0' when the web plus label is under the probe. Instructions on altering these settings are included in the **Output Polarity** section.

Accessing Internal Connections

To remove the top cover the LRD2000, remove the two screws located on the sides of the front bezel and remove the bezel. Then pull the top cover up and out from the rear bezel; the rear bezel may have to be loosened in order to remove the top cover.

Power Connection

The LRD2000 requires either 110VAC or 220VAC. Unless specified otherwise, the unit will be shipped for 110V operation. Power connections are made through the three position connector, J8, on the circuit board. The LRD2000 uses a 5X20 mm fuse, identified F1, rated at 0.5 amp and is located on the underside of the circuit board near J8.

Insert the power cable through one of the strain relief's and place the "Hot" wire into the "LINE" terminal, place the "Common" wire into the "COM" terminal, and place the "Earth Ground" into the "GND" terminal of J8. Tighten the screw located above each terminal opening.

110/220VAC Operation

Desired line voltage is normally specified when ordered. Should a change be necessary, the input voltage is set by soldered-in jumpers on JP3.

INPUT VOLTAGE	JP3
110VAC	1-2, 3-4
220VAC	2-4

Output Connection

Note: Refer to Figure 1 for part location and connection references.

The output is available on connector J9 and is identified as "OUT". Ground or common is also available and is identified as "GND" on the same connector. A second strain relief is provided on the rear panel for the output wiring.

Output Transistor Type

The open-collector output can be configured to be NPN or PNP. Selecting output transistor type is done with jumper JP5.

Output Transistor	JP5 Jumper Pins
NPN	1-2
PNP	2-3

The NPN output (current sinking) is internally pulled up to +15VDC through a 3.01K resistor R77. If a different output voltage is desired the internal pull up resistor R77 must be removed. R77 is socketed to allow easy removal. Once removed the output can be pulled up externally up to +40VDC.

The PNP output (current sourcing) requires external power (identified as "PWRIN" on J9) and ground (identified as GND on J9) connections. The PNP collector is internally pulled down to GROUND through a 3.01K resistor R78 and is socketed to allow easy removal if necessary.

The maximum current through the outputs is 200mA.

Output Polarity

The output polarity can be configured to be a logical "1" (output voltage high) or a logical "0" (output voltage low). This is configured with jumpers on header JP2.

NPN	Digital Output	
JP2	LABEL	GAP (WEB)
1-2	"0"	"1"
2-3	"1"	"0"

PNP	Digital Output	
JP2	LABEL	GAP (WEB)
1-2	"1"	"0"
2-3	"0"	"1"

MOUNTING

Mount the electronics on a stable platform within reach of the probe's 6 foot cable and an AC power outlet or conduit for direct wiring.

Mount the probe such that the web will pass smoothly through the probe's gap and will always touch the against the steel mounting plate. Connect the probe cable to the 6 pin connector labeled "PROBE" located on the back panel of the LRD2000.

In the case where the cable is damaged, it is possible to remove the cable from the probe by removing the nut and pulling the cable out.

Because the probe measures electrical capacitance and because capacitance is a function of the distance between the probe and a electrically conductive surface as well as the dielectric material between the gap, it is recommended to use the mounting plate provided. In applications where the mounting plate can not be used, be sure to mount the probe to a very rigid and strong fixture.

SETUP FOR LABEL REGISTRATION (Non-Metallic Label)

Note: Refer to Figure 1 for part and connection references. In most cases labels with metal or electrically conductive materials will not be sensed properly with the LRD2000.

1. Adjust THRESHOLD near 5.0.
2. Position the label under the probe and turn the SETUP adjustment until neither light is on. (Note, if the WEB light is on, turn the SETUP adjustment CW; if the LABEL light is on, turn the adjustment CCW). This adjustment is a coarse threshold adjustment and does not need to be precise. This adjustment will only need to be changed for significantly different labels or

if a change in the probe gap is made. If the LABEL light cannot be made to turn on, the probe gap must be decreased. If the LABEL light cannot be made to turn off, the probe gap must be increased.

3. While stepping labels through the probe, adjust the THRESHOLD control until the WEB light is consistently off. Note the THRESHOLD control setting.

4. Now continue to step labels through the probe and adjust the THRESHOLD control CCW until the LABEL light is consistently off. Note the THRESHOLD control setting.

5. Readjust the THRESHOLD control half-way between the two noted values. This is the optimum operating point for label gap detection. For optimum performance, the difference between the two values should be at least 1 1/2 turns of the THRESHOLD adjustment. (Making the probe gap smaller will increase this difference).

SETUP FOR LABEL REGISTRATION (Metallic/Foil Label)

1. Adjust THRESHOLD near 5.0.
2. While stepping labels through the probe, adjust the SETUP adjustment until the WEB light no longer comes on. This is a coarse threshold adjustment and does not need to be precise. If the WEB light cannot be made to turn off, the probe gap must be increased.

3. Continue to step labels through the probe and adjust the THRESHOLD control until the web light just comes on as each gap of the labels passes under the probe.

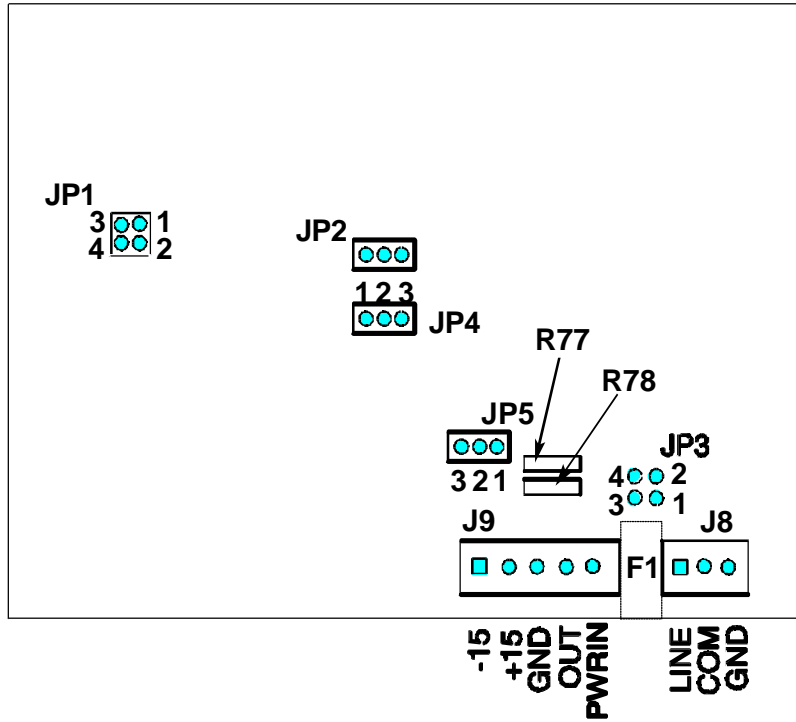
4. Now turn the THRESHOLD control two full turns CCW. Observe the consistent, single flash of the GAP light as each gap of the label pass through the probe. Faulty operation can be detected when more than one flash or no flash of the web light occurs for each label gap.



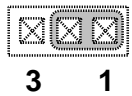

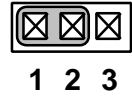
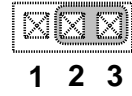
Note: Some foil labels will not work with the LRD2000. Consult the factory if unable to achieve proper setup.

Changing Probe Gap

The LRD2212 probe is shipped with a .032" spacer shim installed. To change the spacer, remove the two screws holding the probe onto the mounting plate. Remove and replace the .032 shim with the desired .025 or .040 shim, which can be found on the rear panel of the LRD2000, and re-assemble the probe. Setup adjustment will have to be made after a shim is changed.

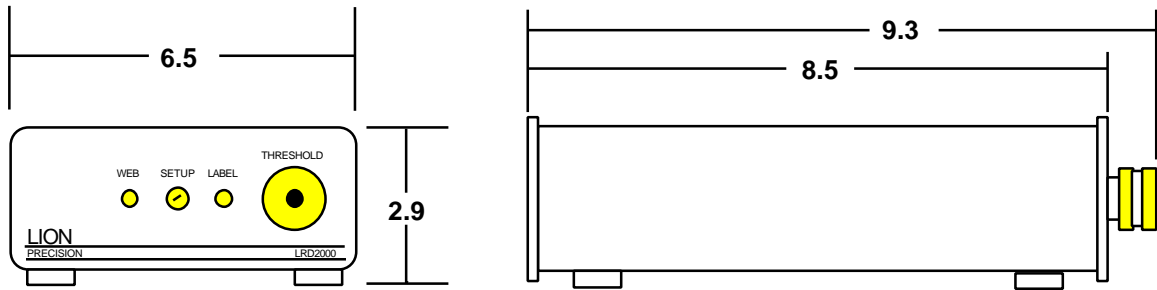
LRD2000 CONFIGURATION OPTIONS -- FIGURE 1



INPUT	OUTPUT	DIGITAL POLARITY (NPN)
<p style="text-align: center;">110VAC</p>  <p style="text-align: center;">220VAC</p> 	<p style="text-align: center;">NPN</p>  <p style="text-align: center;">PNP</p> 	<p style="text-align: center;">JP2 LABEL = "0"</p>  <p style="text-align: center;">JP2 LABEL = "1"</p> 

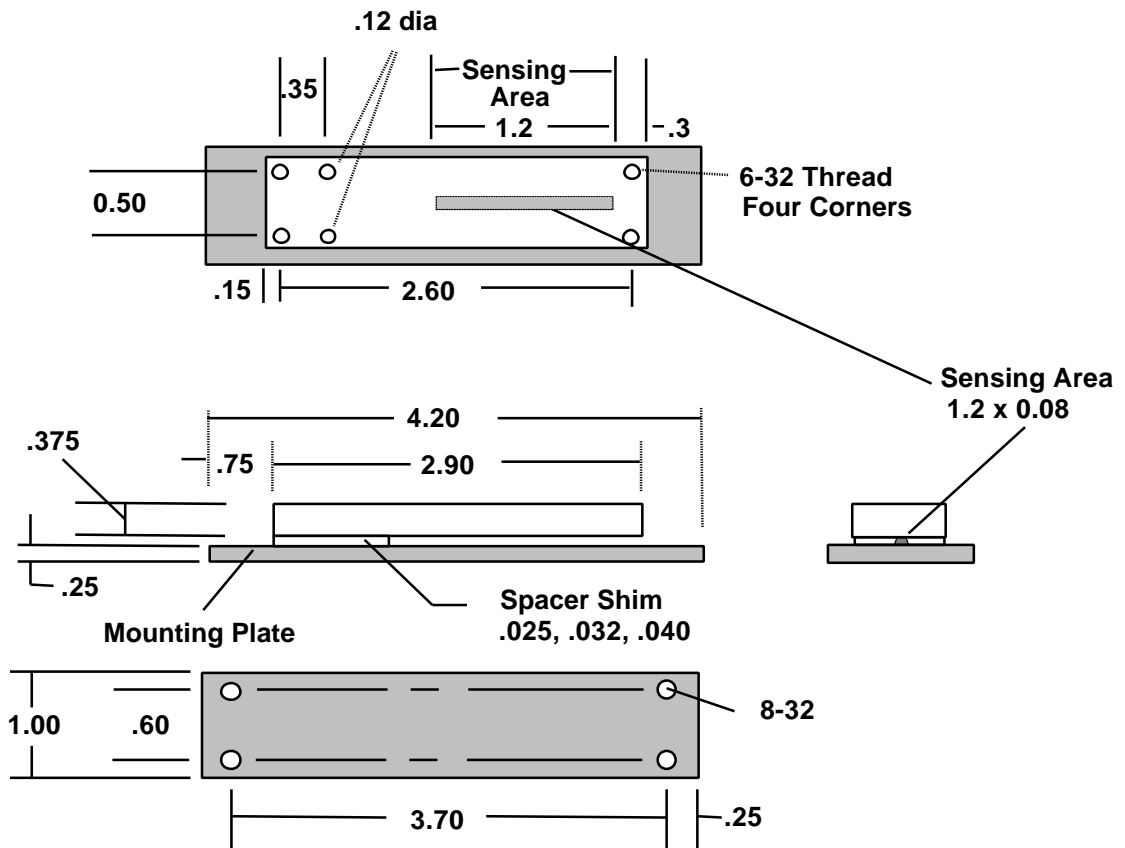
WARNING: All other configuration jumpers are factory set and should not be changed.

LRD2000 and LRD2212 DIMENSIONAL DATA



LRD2000 Electronics Module

(Dimensions in Inches)



LRD2212 Probe

(Dimensions in Inches)