

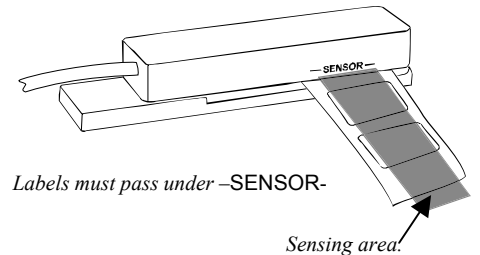
**Introduction:**

The LION PRECISION LRD2100 LABEL REGISTRATION AND DETECTION SYSTEM is an electronic sensor used to monitor label registration and/or count labels. A signal is generated as the edge of the label passes through the sensor. It can be configured to sense the leading or trailing edge.

The sensor may not operate reliably when label gaps are less than 2.5mm (0.1") or when the label or printing media is metallic or if high-carbon black ink is used. Labels with metallic printing media can be sensed if a non-printed portion of the label can be passed under the sensor.

**Mounting the Sensor**

Mount the sensor perpendicular to the web so the web passes through the sensor gap. The back of the web should contact the mounting plate. Labels must pass under sensing area marked [--SENSOR--]. Small labels (3.8cm/1.5") must be centered under the sensing area.



Labels must pass under --SENSOR--

**Electrical Connections**

**Warnings:**

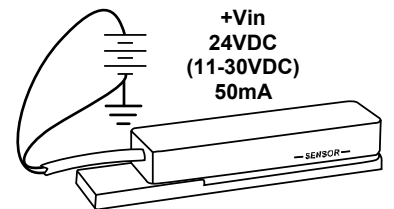
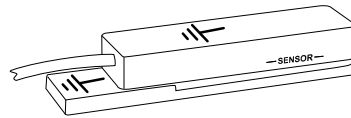
Unused wires must be insulated from contact with other objects.

All power must be off when installing the sensor.

DC Ground is connected to sensor body.

Brown wire must be connected to +V or Ground for reliable operation.

Sensor case is grounded

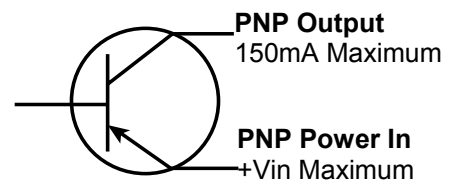
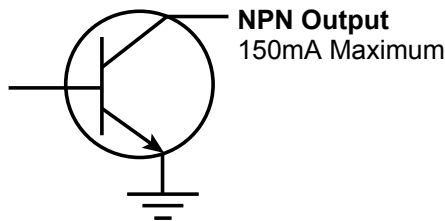


**Power**

Sensor can be powered with 11–30VDC but optimum performance is obtained with 24VDC. Maximum current draw is 50mA. The negative side of the power supply is grounded to the sensor body. It is recommended but not required that the shield wire be connected to ground. *The shield is connected to ground inside the sensor.*

**Outputs**

The NPN and PNP outputs are open-collector outputs. The NPN output can sink up to 150mA and the PNP output can source up to 150mA. Outputs are short circuit protected by self-resetting internal fuses. These fuses will activate if the outputs are connected directly to ground or power. Repeated shorting will eventually cause the sensor to fail.



The PNP POWER IN voltage must be connected to a supply voltage and **must not exceed +Vin.**

**Output Polarity**

Output polarity determines whether the output signal will go low or high on the label edge.

**NOTE:** Output polarity also depends on the direction of label movement through the sensor. (See Figure 2).

**Wiring Table**

Wire Color	Connection	Wire Color	Connection
Red	+Vin (+11-30VDC @ 50mA)	Blue	PNP Output 150mA Maximum
Black	Ground (Sensor body)	White	PNP Power In +Vin Maximum
Green	NPN Output +30VDC/150mA maximum	Brown	Output Polarity Ground or +Vin

Cable Shield should be grounded, but it is not required. **Brown wire must be connected to +V or Ground for reliable operation.**

## Adjusting Gain and Zero

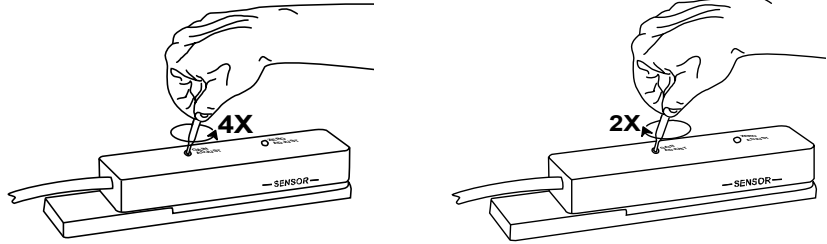
These sensors are extremely stable and should **not require re-adjustment** after the initial setup. Re-adjustment will only be required for significant changes in label shape or thickness, or changes in power supply voltage.

1. **Remove all material from sensor.**

2. **Center GAIN ADJUST**

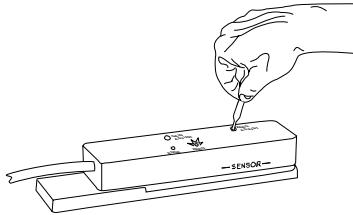
Turn GAIN ADJUST four (4) turns counter clockwise.

Turn GAIN ADJUST two (2) turns clockwise.



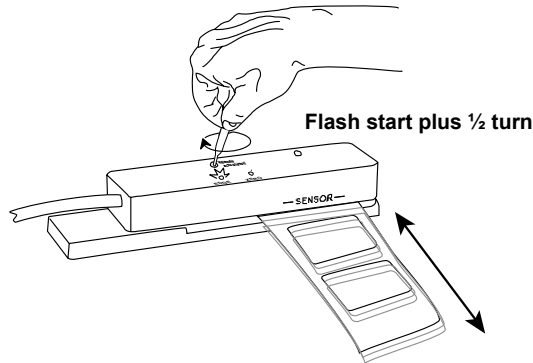
3. **Set ZERO ADJUST**

Set ZERO ADJUST to the point where the ZERO light starts to come on.



4. **Set GAIN ADJUST**

Insert material into sensor. While moving labels through the sensor, Set GAIN ADJUST to the point where the EDGE light starts to flash. Then continue turning 1/2 turn clockwise.



5. **Sensor is now ready.**

## Figures

Figure 1: LRD2100 Dimensions

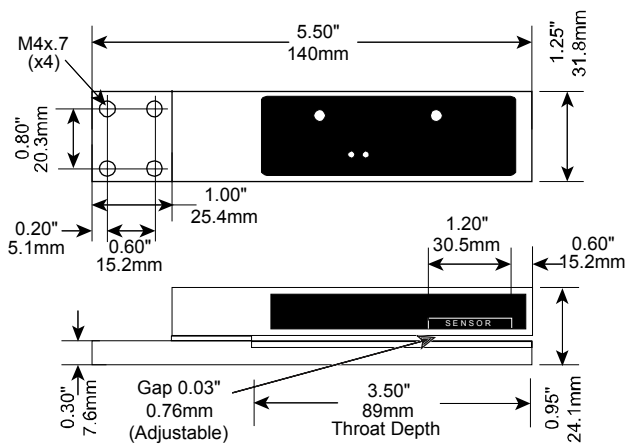
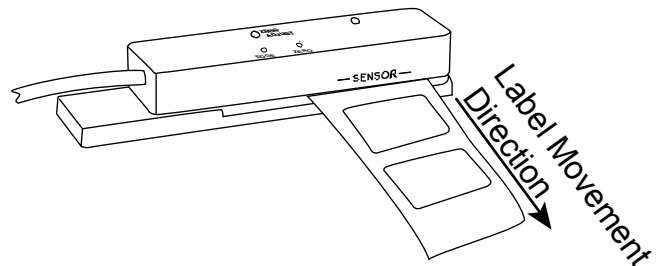


Figure 2: Output Polarity and Signal Waveforms

Output polarity is effected by the direction of label movement. Waveforms shown are for label movement shown in diagram. Reversing label direction will invert waveforms.



Output	OUTPUT POLARITY	Waveform
NPN	Ground	
NPN	+Vin	
PNP	Ground	
PNP	+Vin	