

# LION PRECISION LRD4100 LABEL DETECTOR INSTRUCTION SHEET

M014-4850.012

## Introduction:

The LION PRECISION LRD4100 LABEL DETECTOR is an electronic sensor used to monitor label registration and/or count labels. The NPN and PNP type outputs will indicate the leading or trailing edge of the label. Output polarity is wire selectable. The sensor uses changes in the amount of material to detect label edges.

Changes in the gap between the sensor and backing plate due to vibration can cause false triggering.

The sensor gap distance must be held constant for good detection of labels. Gaps between labels of less than 2.5 mm (0.1") may not be detected reliably. Metal labels or labels with no gap will not be detected.

## Mounting the Sensor

Mount the sensor so the active end of the sensor is parallel to a mechanically stable, electrically conductive reference plate. The distance from the sensor to the plate should be  $0.813 \pm 0.076\text{mm}$  (0.032 +/- 0.003") and parallelism should be within .051mm (0.002"). The mounting hardware should be stiff so the above specs are maintained throughout the operating environment range. There must be electrical conductivity between the sensor and reference plate.

Be sure the sensor is positioned so that label material completely covers the active area of the sensor.

## Electrical Connections

- Be sure all unused wires are insulated from each other and any other conductive object.
- All power **must** be off when installing the sensor.
- **WARNING:** DC Ground is connected to sensor body.
- Brown wire must be connected to +V or Ground for reliable operation.

## Power

Optimum performance is obtained with 24VDC but the sensor can be powered with 11–30VDC. Maximum current draw is 50mA. It is recommended but not required that the shield wire be connected to ground. The shield is connected to ground inside the sensor.

## Output

The NPN and PNP outputs are both open-collector outputs. The NPN output can sink up to 150 mA and can be pulled-up to +90 Volts maximum.

Damage to the sensor will occur if this output is connected directly to a power supply. The PNP output can source up to 150 mA. The PNP POWER IN must be connected to a power source for the desired high logic voltage.

## Output Polarity

Output polarity determines whether the output signal will be low or high on the leading or trailing edge of the label.

Output polarity is determined by whether the output polarity connection (brown) is connected to GND or +V.

**NOTE:** Output polarity also depends on the direction that the labels are moving through the sensor. (See Figure 2).

WIRE COLOR	SIGNAL
RED	POWER IN (+Vin) +11-30VDC @ 50mA Max
BLACK	GND (CASE)
GREEN	NPN OUTPUT +90VDC/150mA Max
BLUE	PNP OUTPUT 150mA Max
WHITE	PNP POWER IN +Vin Max
BROWN	OUTPUT POLARITY GND or +V
SHIELD	CABLE SHIELD GND recommended

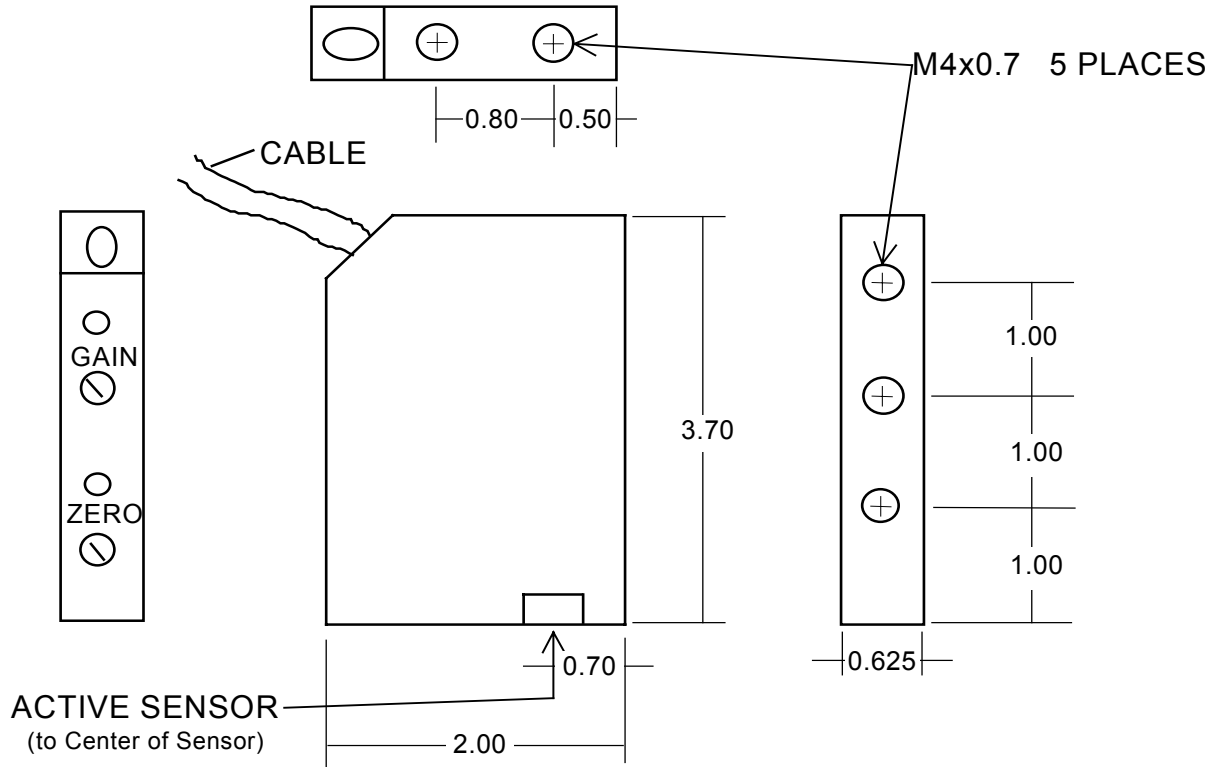
**Warning: Brown wire must be connected to +V or Ground for reliable operation.**

## Adjusting Gain and Zero

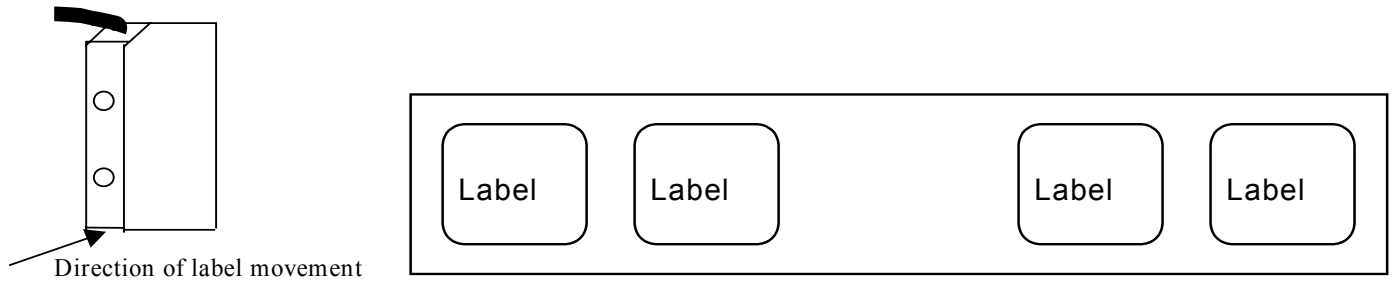
These adjustments are not usually required unless the sensor is powered with a voltage other than +24V.

1. Remove all material from sensor.
2. Turn GAIN pot four (4) turns counter clockwise.
3. Turn GAIN pot two (2) turns clockwise.
4. Turn ZERO pot until ZERO LED just turns on. ( if LED is on, rotate counter clockwise, if LED is off rotate clockwise)
5. Insert material into sensor. Move material through sensor and observe the GAIN LED. If the GAIN LED flashes between gap and label, setup is complete. If LED fails to flash, turn GAIN pot clockwise while moving labels through, until the LED flashes then continue turning ½ turn. Sensor is now ready to run.

## LABEL DETECTOR DIMENSIONAL DATA -- FIGURE 1



## LRD SIGNAL OUTPUT DIAGRAM -- FIGURE 2



NPN output with **POLARITY INVERT** connected to +24V

NPN output with **POLARITY INVERT** connected to GND

PNP output with **POLARITY INVERT** connected to +24V

PNP output with **POLARITY INVERT** connected to GND

