

User's Guide
for the
LRD4100 Label Sensor
from
Lion Precision



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Document Number: M014-4850.015

The LION PRECISION LRD4100 LABEL SENSOR 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.

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.

The LRD4100 missing label sensor has very stringent mounting requirements to assure reliable operation. An unvarying parallelism between the sensor surface and the baseplate over which the web travels is critical.

Mounting the Sensor

Mount the sensor with the active end parallel to a mechanically stable, electrically conductive reference plate. The distance from the sensor to the plate must be $0.813 \pm 0.076\text{mm}$ ($0.032 \pm 0.003\text{"}\text{}$) and parallelism must be within 0.05mm ($0.002\text{"}\text{}$). The mounting hardware must be stiff enough to maintain these specifications throughout the operating environment thermal range. There must be electrical conductivity between the sensor body and reference plate. For more detail, see Lion Precision TechNote LT04-0020 Mounting LRD4100 Label Sensors available at www.lionprecision.com

Mount the sensor so label material completely covers the active area of the sensor.

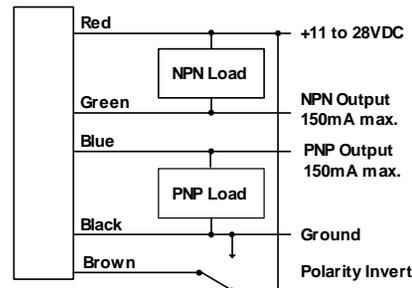
Warnings:

Sensor body is connected to Ground.
Sensors must not be attached to voltages in excess of 30VRMS or 60VDC
All power must be off when installing the sensor.
Use of the equipment in any other manner may impair the safety and EMI protections of the equipment.

LRD4100 Wiring

Wire Color	Connection	Notes
Red	Vin (11-28V $\overline{\text{---}}$)	50mA max.
Black	Ground	Connected to sensor body
Green	NPN Output	150mA max.
Blue	PNP Output	150mA max.
Brown	Output Polarity (light/dark switching)	+V or Ground See detail on back

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



Setup Procedure

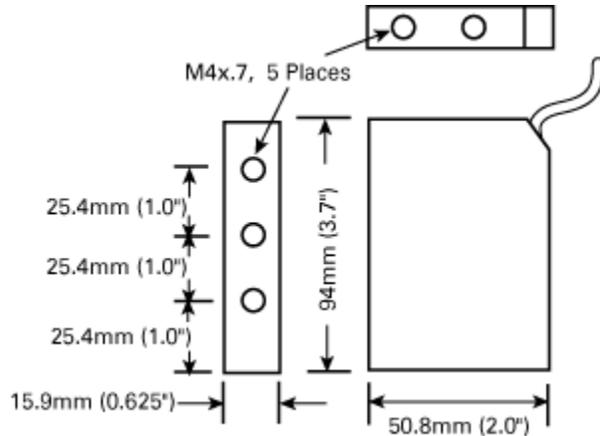
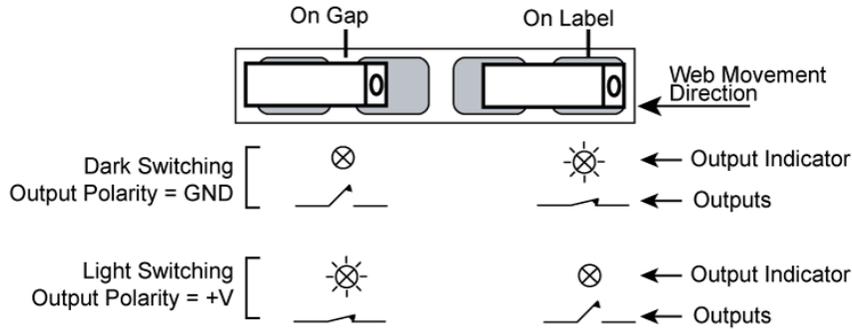
1. Remove all material from sensor.
2. Turn GAIN pot four (4) turns counter-clockwise.
3. Turn GAIN pot two (2) turns clockwise.
4. Turn ZERO pot until ZERO LED just turns on. (if LED is on, rotate counter clockwise, if LED is off rotate clockwise)
5. Insert material into sensor. Move material through 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.

Notes:

- 1) Some inks, usually black, have a high carbon content. These inks behave like metal and may not work reliably with the LRD4100.

Output and Mechanical Detail

Light/Dark switching is affected by the direction of label movement and the Output Polarity connection. Output descriptions below are for web direction indicated in the illustration and **are reversed** for web movement in the other direction.



Specifications

Power supply	Voltage	11-28 V _{DC} (reverse polarity protected)
	Current	50mA
Response time	on or off	20μs max
	Switching Frequency	10kHz max
Output	Output Current (sinking or sourcing)	150mA max (overload protected)
	Switching output	PNP (sourcing) or NPN (sinking), Dark or light switching
Temperature	Operating Range	40°F to 140°F (4°C to 60°C)
Protections	Supply	Inverse Polarity Protection

Switching output

Short Circuit and Overload Protection

Two-Year Warranty details at: www.lionprecision.com/warranty.html