EMX INDUSTRIES, INC.

NIR™

Retroreflective Photoeye

Instruction Manual

The NIR retroreflective infrared photoeye is an external entrapment protection device Type B1, non-contact sensor for use with automatic gates and doors. Since the reflector directs the beam back to the photoeye, wiring to the other side of the roadway is not needed. The NIR operates up to 30 feet over a voltage range of 12-240 VDC and 24-240 VAC. Two LED indicators provide status information at a glance making set-up and alignment easy.

Cautions and Warnings

This product is an accessory or part of a system. Install the NIR according to instructions from the gate or door operator manufacturer. Comply with all applicable codes and safety regulations.

Retroreflective photoeyes rely on a reflective surface (a reflector) for proper operation. In some cases, a vehicle with a reflective surface at a given distance can act as a reflector and allow the gate to close on a vehicle.

Specifications

Operating Range	0.5 ft (0.1 m) to 30 ft (9.1 m)
Power	12-240 VDC, 24-240 VAC
Current Draw	28 mA standby / 15 mA detected @ 12 VDC
Relay Output	Form C contacts (NO, COM, NC) 24 VDC, 2 A / 220 VAC, 0.6A
Response Time	10 mS
Operating Temperature	-4° to 140°F (-20° to 60°C)
Dimensions (L x W x H)	1.6” (41 mm) x 0.8” (21 mm) x 2.6” (66 mm)
Environmental Rating	IP 66

Ordering Information

- NIR — Retroreflective photoeye, includes mounting bracket with hardware and reflector
- Reflector-O — Reflector, 3” diameter, white plastic
- Reflector-O-HD — Protective hood for reflector, gray plastic
- NIR-HD — Protective hood for NIR, black powder coated steel

Installation

- Determine the mounting location of the NIR photoeye.
- Deactivate the gate or door before photoeye installation.
- The NIR cannot be used for a detection area less than 0.5 feet.

1. Wire the NIR according to the configuration table and wiring diagram on the next page.

2. Set the sensitivity adjustment to 1/3 of the maximum setting.

3. Mount the NIR at the desired location. Hold the reflector and stand at least 1 foot away from the photoeye. Align the reflector and slowly back up to the opposite end of the detection zone where it will be mounted. Move the reflector left, right, up and down to find the detection pattern. (The typical installation will have a 2 foot diameter pattern.)

LED Indicators	
Yellow and Red On	Relay is energized and signal is aligned and stable
Yellow Off and Red On	Relay is energized, reflector is on the edge of the signal path
Yellow and Red Off	Beam is obstructed or photoeye is not aligned with the reflector

TIP: If it is necessary to reposition the photoeye, repeat these steps to properly position the reflector. Ensure that both the yellow and red LED are on to guarantee alignment in the stable area of the signal.

4. Mount the reflector as close to the center of the pattern as possible to ensure the strongest signal. Increase the sensitivity adjustment to maximum. Place an obstruction (ex. hand) between the NIR and reflector. The yellow and red LEDs will turn off. Remove the obstruction and the yellow and red LEDs will turn on. Test the beam with an obstruction between the NIR and reflector at multiple distances to confirm proper operation.

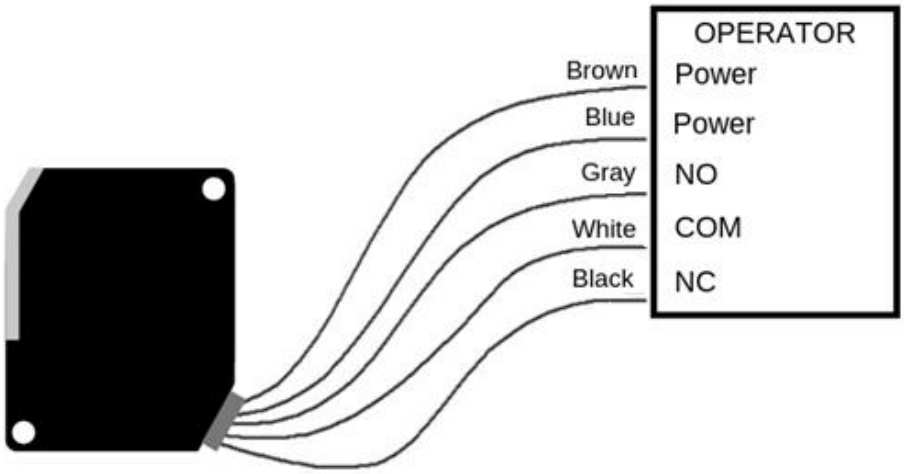
5. Check the operator control board and verify that the safety input is recognized by the operator.

6. Follow the gate or door operator manufacturer's installation instructions and safety checks to verify that the photoeye is operating properly.

Configuration Settings and Wiring Diagrams

Wire Color	Description
Brown	Power (12-240 VDC or 24-240 VAC)
Blue	Power (12-240 VDC or 24-240 VAC)
Gray	Relay – NO (normally open contact)
White	Relay – COM (common contact)
Black	Relay – NC (normally closed contact)

The relay contacts labeled on the wiring diagram are shown in the energized state, aligned with the reflector and no obstruction.



Troubleshooting

Symptom	Possible Cause	Solution
Does not detect obstruction	Signal is reflecting off another surface	Check area for highly reflective surfaces such as a shiny vehicle. Possible solutions are to move the photoeye farther away from the roadway or adjust the sensitivity to the minimum setting.
Red or yellow LED not on	Sensitivity is too low Photoeye is not aligned with reflector	Adjust sensitivity to the maximum setting. Realign reflector according to installation instructions.
Photoeye activates but does not transmit signal to operator	Faulty connection between photoeye and operator control input	Verify all wire connections to operator.

Warranty

EMX Industries, Inc. products have a warranty against defects in materials and workmanship for a period of two years from date of sale to our customer.