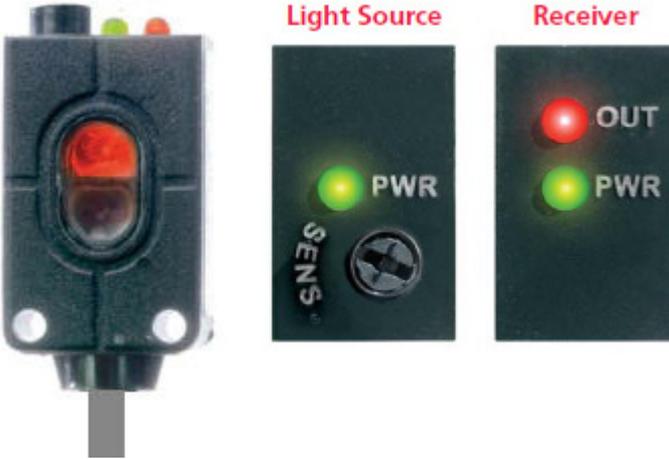


# ***I/R Photo Beam Sensor***



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# Instructions for 81413A Photo Cell Source & Detector using ABET Interface and Mini-Eye™

A reliable infra-red source and detector have been provided for thru-beam applications. The pulse-modulated light source insures high immunity to most ambient light. These units are housed in waterproof high impact plastic housings. LED indicators and a screwdriver sensitivity adjustment are provided to aid in installation and usability over a wide range of applications.

## Features and Benefits

Screwdriver sensitivity adjustment

IR Transmitter light source

NPN Receiver output

Light ON or Dark ON selectable

*(The default configuration is wired for "Dark ON". This generates a "response" to the ABET system when a beam is broken.)*

Diagnostic Indicators:

*Red LED for Output Status*

*Green LED for power "ON"*

## Specifications

Supply Voltage: 10 to 30 VDC (Polarity Protected)

Current Requirements: 30 mA

NPN Output: Sink up to 100 mA

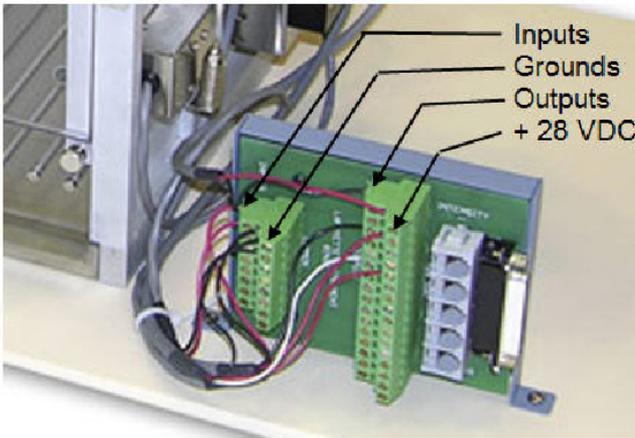
LED Light Source: 850 nm (Infrared)

Hysteresis: Approximately 20% of signal

Ambient Temperature: -40° F to 150° F (-40° to 70° C)

## Using the 81413A I/R Photo Beam Sensor with ABET Interfacing

The light source is easily identified by the presence of the sensitivity (SENS) adjustment potentiometer and a green power LED. The receiver is identified by a green power LED and a red status (OUT) LED.



**Connect the cable from the photo beam package as follows:**

Red: + 28 VDC

Black: Ground

Green: Input Line 1 to 8 or 1 to 16

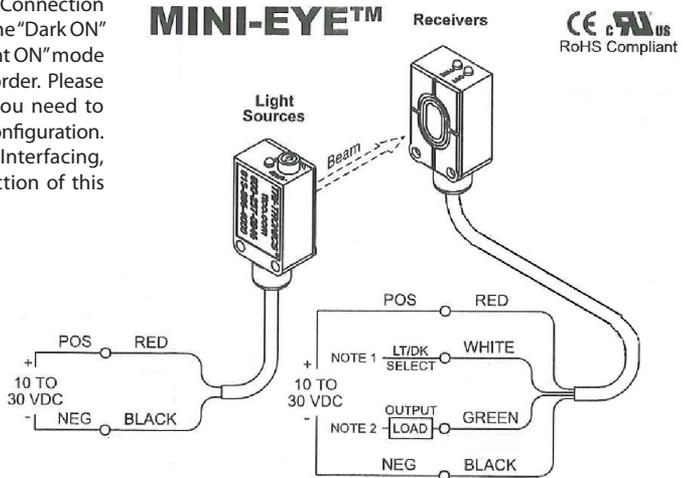
Wires must be inserted above the metal plate and the top of the green plastic housing. The terminal screw pulls this plate up tight against the wire when turned clockwise. Be sure to insert the bare wire only and not the plastic insulation on the wire. Tug gently on the wire to make sure you have a secure connection. Note: the Ground and +28 VDC terminal blocks are taller than the Input and Output terminals.

## Step by Step Procedures for Alignment

1. Mount the Receiver across the area to be monitored.
2. Connect the 28 V DC supply to the ABET Interface. The green power LED's on the Receiver and the Light Source should now be ON. If not recheck all connections and make sure the interface power light is ON.
3. Check the preliminary setting of the sensitivity adjustment. As wired, the source may be placed as far as 12 feet from the receiver, but greater distances are possible if needed. For most behavioral applications with distances from a few inches to perhaps no more than 12" (30 cm) the setting may be turned to it's full CCW position. The range of adjustment is approximately 270 degrees. At 12 feet (3.6 meters) begin with the setting at mid range.
4. This procedure is for "Dark ON" mode only. Monitor the red output LED indicator on the Receiver while moving the light beam emitted from the Light Source in a scanning motion, first from left to right and then up and down. If the output LED does not turn OFF, increase the sensitivity setting by turning the screw to the maximum CW setting. Locate the center of these scans for the most desirable mounting location. At short distances you should be able to align the units left to right using physical measurements, but use the scanning method to determine the best height as the source and receiver are above or below the center line depending on orientation. Once the Receiver and Light Source are aligned and mounted, you can turn the Sensitivity fully CCW if it has been turned up. If the red LED comes ON, turn the sensitivity screw CW 10 – 15 degrees past the point where it first turns OFF. Recheck the alignment to determine the point of maximum sensitivity.
5. Test the functionality of the beam by blocking the beam with an opaque object. Depending on distance and sensitivity it is possible for the I/R beam to pass through a finger. As wired the red LED will come ON when the beam is blocked and turned OFF when it is not.
6. See the ABET II Manual for configuring your environment and use the Environment test for final beam testing. Note that with a latched interface, the screen display will pulse when the beam is broken regardless of how long the "broken" state is held. With a non-latched interface, the screen display will indicate the presence of the input for as long as the "broken" state is held.

## Custom Setup Procedures

The light source and detector used for the Model 81413 Mini-Eye™ package have been wired to a single three conductor cable for easy connection to the ABET I/O Connection Panel (Model 81408 or 81409). The "Dark ON" mode is provided standard. "Light ON" mode may be requested at the time of order. Please refer to the drawing above if you need to make any changes to the wired configuration. When using non-latched ABET Interfacing, you may easily "invert" the function of this unit in software.



Note 1: Dark "ON" Operation: Terminate To Positive  
Light "ON" Operation: Terminate To Negative

Note 2: NPN (Sink) Output Models: Terminate Load To Positive  
PNP (Source) Output Models: Terminate Load To Negative

# Terms and Conditions

## LIC Worldwide Headquarters

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## Phone, Fax, Email or Mail-in Orders

All orders need to be accompanied by a hard copy of your purchase order. All orders must include the following information:

- Quantity
- Part Number
- Description
- Your purchase order number or method of pre-payment
- Your tax status (include tax-exempt numbers)
- Shipping address for this order
- Billing address for the invoice we'll mail when this order is shipped
- Signature and typed name of person authorized to order these products
- Your telephone number
- Your email address
- Your FAX number

## Domestic Terms

There is a \$50 minimum order. Open accounts can be extended to most recognized businesses. Net amount due 30 days from the date of shipment unless otherwise specified by us. Enclose payment with the order; charge with VISA, MasterCard, American Express, or pay COD. We must have a hard copy of your purchase order by mail, E-mail or fax. Students, individuals and private companies may call for a credit application.

## International Payment Information

There is a \$50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfers to our account; charge with VISA, MasterCard, American Express, or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

## Exports

If ordering instrumentation for use outside the USA, please specify the country of ultimate destination, as well as the power requirements (110V/60Hz or 220V/50Hz). Some model numbers for 220V/50Hz will have a "C" suffix.

## Quotations

Quotations are supplied upon request. Written quotations will include the price of goods, cost of shipping and handling, if requested, and estimated delivery time frame. Quotations are good for 30 days, unless otherwise noted. Following that time, prices are subject to change and will be re-quoted at your request.

## Cancellations

Orders for custom products, custom assemblies or instruments built to customer specifications will be subject to a cancellation penalty of 100%. Payment for up to 100% of the invoice value of custom products may be required in advance. Cancellation for a standard Lafayette Instrument manufactured product once the product has been shipped will normally be assessed a charge of 25% of the invoice value, plus shipping charges. Resell items, like custom products, will be subject to a cancellation penalty of 100%.

## Exchanges and Refunds

Please see the cancellation penalty as described above. No item may be returned without prior authorization of Lafayette Instrument Company and a Return Goods Authorization (RGA#) number which must be affixed to the shipping label of the returned goods. The merchandise should be packed well, insured for the full value and returned along with a cover letter explaining the reason for return. Unopened merchandise may be returned prepaid within thirty (30) days after receipt of the item and in the original shipping carton. Collect shipments will not be accepted. Product must be returned in saleable condition, and credit is subject to inspection of the merchandise.

## Repairs

Instrumentation may not be returned without first receiving a Return Goods Authorization Number (RGA). When returning instrumentation for service,

please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to:

Lafayette Instrument Company

3700 Sagamore Parkway North

Lafayette, IN 47904, USA.

Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence for non-warranty repairs.

## Damaged Goods

Damaged instrumentation should not be returned to Lafayette Instrument prior to a thorough inspection. If a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. If damage is not detected at the time of delivery, contact the carrier/shipper and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for repair or replacement of the damaged merchandise.

## Limited Warranty

Lafayette Instrument Company warrants equipment manufactured by the company to be free of defects in material and workmanship for a period of one year from the date of shipment, except as provided hereinafter. The original manufacturer's warranty will be honored by Lafayette Instrument for items not manufactured by Lafayette Instrument Company, i.e. resell items. This assumes normal usage under commonly accepted operating parameters and excludes consumable products.

Warranty period for repairs or used instrumentation purchased from Lafayette Instrument is 90 days. Lafayette Instrument Company agrees either to repair or replace, at its sole option and free of part charges to the customer, instrumentation which, under proper and normal conditions of use, proves to be defective within the warranty period. Warranty for any parts of such repaired or replaced instrumentation shall be covered under the same limited warranty and shall have a warranty period of 90 days from the date of shipment or the remainder of the original warranty period whichever is greater. This warranty and remedy are given expressly and in lieu of all other warranties, expressed or implied, of merchantability or fitness for a particular purpose and constitutes the only warranty made by Lafayette Instrument Company.

Lafayette Instrument Company neither assumes nor authorizes any person to assume for it any other liability in connection with the sale, installation, service or use of its instrumentation. Lafayette Instrument Company shall have no liability whatsoever for special, consequential, or punitive damages of any kind from any cause arising out of the sale, installation, service or use of its instrumentation. All products manufactured by Lafayette Instrument Company are tested and inspected prior to shipment. Upon prompt notification by the Customer, Lafayette Instrument Company will correct any defect in warranted equipment of its manufacture either, at its option, by return of the item to the factory, or shipment of a repaired or replacement part. Lafayette Instrument Company will not be obliged, however, to replace or repair any piece of equipment, which has been abused, improperly installed, altered, damaged, or repaired by others. Defects in equipment do not include decomposition, wear, or damage by chemical action or corrosion, or damage incurred during shipment.

## Limited Obligations Covered by this Warranty

1. In the case of instruments not of Lafayette Instrument Company manufacture, the original manufacturer's warranty applies.
2. Shipping charges under warranty are covered only in one direction. The customer is responsible for shipping charges to the factory if return of the part is required.
3. This warranty does not cover damage to components due to improper installation by the customer.
4. Consumable and/or expendable items, including but not limited to electrodes, lights, batteries, fuses, O-rings, gaskets, and tubing, are excluded from warranty.
7. Failure by the customer to perform normal and reasonable maintenance on instruments will void warranty claims.
8. If the original invoice for the instrument is issued to a company that is not the company of the end user, and not an authorized Lafayette Instrument Company distributor, then all requests for warranty must be processed through the company that sold the product to the end user, and not directly to Lafayette Instrument Company.

## Export License

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