

# ***Activity Wheel Counter***

## ***User's Manual***



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## Description

The Activity Wheel Counter Model 86060 is used to monitor the revolutions of the Single Mouse Activity Wheel Model 80820, Single Rat Activity Wheel Model 80850, 80859 (or 80859L), or the Single Rat Activity Wheel Model 86043. The Activity Wheel Counter Model 86060 uses an optical sensor to detect the total revolutions of the wheel. For data collection from the Activity Wheel Counter Model 86060 to a computer, the Animal Wheel Monitor (AWM) USB Interface Model 86056A must be used along with the AWM Software Model 86065. Up to (15) Activity Wheel Counters Model 86060 may be connected to the Animal Wheel Monitor USB Interface Model 86056A and up to 120 total counters may be connected to the same computer. For large numbers of wheels, the Counter Model 86061 for computer output only is recommended.

The Activity Wheel Counter Model 86060 provides standalone operation with a 10V power pack with battery backup and an LCD display. When battery backup power is used, battery life is two days.

## Specifications

**Power:** 10VDC power pack or provided through the Animal Wheel Monitor USB Interface Model 86056A

**Battery Type:** (2) 2/3A Lithium 3VDC

**Battery Life:** 48 hours of back-up life, un-used life is 5 years

**Total Revolutions:** Unlimited - counter rollover value at 9,999,999

**External Interface:** USB interface to computer through Animal Wheel Monitor USB Interface Model 86056A

**Dimensions:** 2.5" x 4.3" x 1.5"

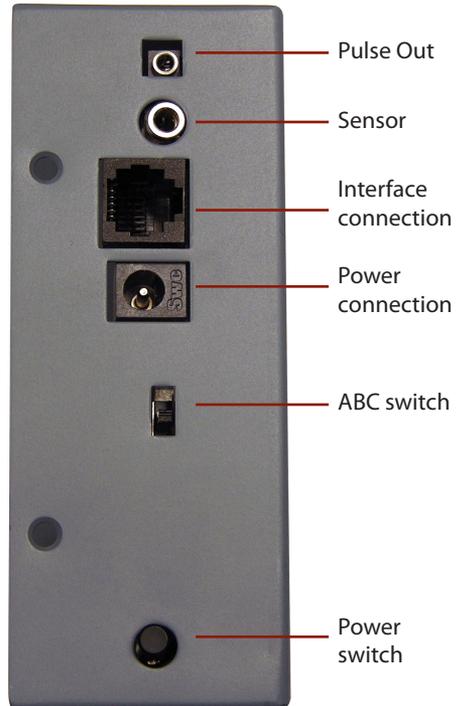
**Weight:** 9.6 ounces

## Operating Instructions

1. Remove the four bottom screws, open the Activity Wheel Counter Model 86060 and place the supplied batteries into the battery holders.
2. Connect the Activity Wheel Counter Model 86060 to any appropriate wheel using the mounts on the wheel. Adjust the cage selector switch as instructed below.
3. Plug the 3.5mm phone plug into the 3.5mm Sensor Jack on the Activity Wheel Counter Model 86060.

## Interface Power Instructions

1. If data will be collected through a computer, connect the Activity Wheel Counter Model 86060 to the Animal Wheel Monitor USB Interface Model 86056A using the 6 pin modular cable. It is recommended to connect the counters in sequential jacks beginning with one. In this scenario, power will be delivered through the interface. The power on/off switch on the Activity Wheel Counter Model 86060 should be switched to the on position.
2. Make sure the USB cable from the Animal Wheel Monitor USB Interface Model 86056A is connected to the computer.
3. If you are using the Animal Wheel Monitor USB Interface Model 86056A, turn power on at the interface and use the software program provided to download the information from the counter. Refer to the software instructions for the Activity Wheel Monitor System for operation.
4. Connect the 10VDC power pack if using a Counter 86060 as a standalone device without interface. **Do not use the 10VDC power pack with the Activity Wheel Counter Model 86060 when connected to an interface.**
5. If the LCD contrast needs adjustment, refer to LCD Contrast adjustment (pg. 6).
6. When an interface provides power to the Activity Wheel Counter Model 86060, the display may remain on.
7. With interface power, the reset button and store button can be used. Refer to the *Power Pack/ Battery Power Instructions* (pg 5) for the reset button operation.



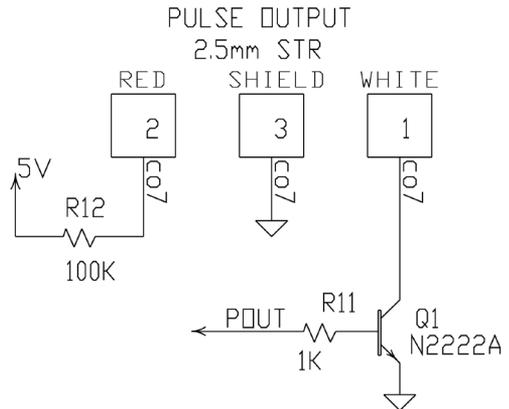
## Power Pack/Battery Power Instructions

1. When using battery backup power, **max battery life is 2 days continuous operation.**
2. The power on/off switch on the Activity Wheel Counter Model 86060 should be switched to the on position.
3. Total revolutions will be displayed on the LCD. If the LCD seems faint, the LCD contrast needs adjustment, refer to LCD Contrast adjustment.
4. The reset button will reset the total revolutions to 0.
  - a) To reset: Press the reset button until the LCD displays 0 counts.
  - b) If "Reset?" is displayed and the revolutions do not want to be reset, **do not** press the reset button. Wait 3 seconds for the counts to be displayed again.
5. The store button will store the current total revolution count.
  - a) To store: Press the store button when the message "STORE?" is displayed, the current value of the revolution count will be stored.
  - b) If "STORE?" is displayed and the current value does not want to be stored, **do not** press the store button. Wait 3 seconds for the counts to be displayed again.
  - c) If a value has been stored in the counter, and power to the counter is turned off. The value stored will be displayed when power is turned on, and counting will resume at the stored value. If the value stored has not been reset to 0 and stored at 0, the previous stored value will be displayed when the Activity Wheel Counter Model 86060 is turned on.
6. Low battery indication is given by an "!". If it is displayed, refer to *Battery Replacement and Removal* (pg 7).
7. If the Activity Wheel Counter Model 86060 is not in use, make sure the power is turned off.

## Pulse Output Instructions

The 86060 pulse output function is a 20ms active low pulse that is given for every revolution of an activity wheel. The open collector output can be connected to any monitored input and data is captured through the supplied 2.5mm stereo cable. Use the following to configure your output.

**Red** = 5v through 100k pull-up  
**White** = open collector output, no pull-up  
**Shield** = ground



**Pulse output applications using the supplied cable:**

1. No external pull-up resistor available:
  - a) Connect the white wire to the red wire and connect to monitored input.
  - b) Connect the shield to the ground.
2. External pull-up resistor available:
  - a) Connect the white wire to external pull-up and connect to monitored input.
  - b) Connect the shield to ground

## **LCD Contrast Adjustment**

The contrast may need adjustment if the LCD has become faint. When the LCD contrast has been turned up to it's maximum, it is a good indication that your batteries are running low and will need to be replaced. The low battery indicator "!" may appear.

1. Remove the counter from the wheel.
2. Remove the four screws holding the back cover on the counter.
3. Remove the back cover and slowly adjust the potentiometer until the LCD contrast is satisfactory.
4. Replace the back cover and screws.

## **Wheel Selector Switch**

Located on the left side of the counter, the wheel selector switch, provides use of three different wheels with the Activity Wheel Counter Model 86060. The top position "A" is used for the Single Mouse Activity Wheel Model 80820. The middle position "B" is used for the Single Rat Activity Wheel Model 80850 or 80859. The bottom position "C" is used for the Single Rat Activity Wheel Model 86043 or Single Rat Activity Extra Large Wheel Model 80850L and Model 80859L. Wheel identification will be shown on the LCD to tell the user the position of the switch. Identification corresponds to the following chart:



- A. Single Mouse Activity Wheel Model 80820
- B. Single Rat Activity Wheel Model 80850 or Single Rat Activity Wheel and Living Chamber Model 80859
- C. Lafayette Instrument Co. Models 86043, 80850L, 80859L and all custom wheel applications. The default Input:Count ratio is 1:1, but is adjustable via the AWM Software Preferences menu.

When using the Activity Wheel Counter Model 86060 with the Single Rat Activity Wheel Model 86043, the Activity Wheel Counter 86060C cable must be used.

## Wheel/Cage Cleaning

Make sure the 6 pin modular cable and the 3.5mm plug have been removed and disconnected from the Activity Wheel Counter Model 86060. Remove the Activity Wheel Counter Model 86060 from its mounting, and clean the wheel and cage accordingly. If the wheel will be sent through a washer, please remove the sensor before washing. If the sensor needs cleaning, clean the lens of the sensor with a clean soft cotton cloth, and refer to the *Sensor Adjustment* instructions (below) to correctly mount the sensor.

## Sensor Adjustment

Use the 80820TL Sensor Adjustment Tool as pictured, to assist in correctly adjusting the optical sensor. Sensor adjustment is critical for accurate data collection. If it is noticed that the LCD count is not increasing as the wheel is spinning, the optical sensor may need adjustment. To achieve maximum results, the sensor should be mounted at a distance of 0.2" from the rungs of the respective wheel. On a visual inspection, the lens of the sensor should be mounted slightly higher than the edge of the wheel. The sensor should be aimed directly towards the center of its wheel. It is recommended that the user clean the lens of the optical sensor with a clear soft cotton cloth before adjusting the sensor.

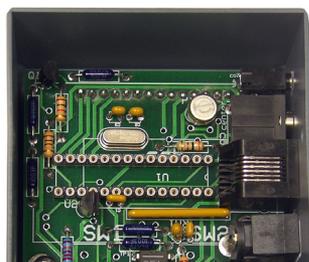


80820TL Sensor Adjustment Tool

When using the Activity Wheel Counter Model 86060 with the Single Rat Activity Wheel Model 80850, 80850L, 80859, or 80859L the optical sensor will be aimed at the reflective surface. With these wheels the distance from sensor to the reflective surface may be greater than 0.2", for optimal reflection.

## Battery Removal and Replacement

1. Turn power off.
2. Remove the counter from the wheel.
3. Remove the four screws holding the back cover on the counter.
4. Remove the back cover and remove the batteries.
5. If new batteries are needed, insert the new batteries into the battery holders with the correct polarity. The new batteries should be any DL123A or compatible 3-volt lithium battery.
6. Replace the back cover and screws.



## **Notes**

# Terms and Conditions

## LIC Worldwide Headquarters

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Email: [sales@lafayetteinstrument.com](mailto:sales@lafayetteinstrument.com)

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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.

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