

# ***Activity Wheel Counter and Controller***

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



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## Description

The Model 86070A Activity Wheel Counter/Controller is used to monitor and control the revolutions of Lafayette Instrument Co. Activity Wheels. The Model 86070A uses optical sensors to detect the total revolutions of the wheel. For collection of data from the Model 86070A, the Model 86056A Activity Wheel Monitor (AWM) Starter Interface must be used. The Model 86056A provides power and a serial port computer connection for up to 15 Model 86070A counters. The Model 86070A Counter/Controller can be used with electronic accessories for brake and/or motor control of the activity wheel as well as auxiliary devices.



## Specifications

**Power:** Provided Power Pack +15VDC

**Line Voltage:** 110 - 115 V AC @ 60 Hz

**Revolution Count:** 10,000,000 Maximum

**Cable:**

- 86051-7 Modular Cable, 7' (supplied)
- 86051-14 Modular Cable, 14' (optional - see Accessories)

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

**Dimensions:** 5.625" x 2" x 2.625" (14.29 x 5.0 x 6.67 cm)

**Weight:** 9.6 ounces

## Operating Instructions

1. Connect the Model 86070A counter to any Lafayette Instrument Co. Activity Wheel using the mounts on the wheel. Adjust the cage selector switch as instructed below.
2. Plug the 3.5mm optical sensor phone plug on the wheel into the 3.5mm jack on the Model 86070A counter. Connect your electronically controlled accessory or accessories to the Model 86070A using their respective connectors. Accessory instructions below.
3. Connect the Model 86070A counter to the Model 86056A computer interface using the 6 pin modular cable. It is recommended to connect the counters in sequential jacks beginning with one.
4. Make sure the 9 pin serial cable from the Model 86056A Starter Interface to the computer is connected.
5. Turn power on at the Model 86056A interface.
6. Connect the DC power pack to each Model 86070A, and turn on power to each of the counters. Electronic brakes may engage when power is turned on.

7. Install the AWM software into your computer by placing the AWM CD into your CD-Rom drive, and follow instructions for installation. If you have questions call Lafayette Instrument Co. or see the attached help file.
8. Use the AWM software program to download information from the counter and control your electronic accessories. Refer to the software instructions in the help menu for the Activity Wheel Monitor System for operation.

## **Wheel Selector Switch**

Located on the left side of the counter, the cage selector switch provides use of three different inputs with the Model 86070A. The top position "A" is used for the single mouse wheel Model 80820. The middle position "B" is used for the single rat wheel Model 80850 Wheel. The bottom position "C" is used for the single rat wheel Model 80643. Wheel identification will be shown within the acknowledge command of the AWM software program.



## **Wheel Cleaning**

Make sure the 6 pin modular cable and the 3.5mm plug have been removed and disconnected from the electronics. Remove the Model 86070A from its mounting before cleaning the wheel. If the wheel will be sent through a washer, please remove the sensor must be removed from the wheel before washing. If the sensor needs cleaning, clean the lens of the sensor, and refer to sensor adjustment to correctly mount the sensor.

## **Sensor Adjustment**

**When using the Model 86070A with Model 80820, Mouse Activity wheel:** Sensor adjustment is critical for accurate data collection. If the counter is not incrementing 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. The sensor should be aimed directly towards the center of its' wheel. Use 80820TL Alignment Tool for proper spacing of sensor. On a visual inspection, the lens of the sensor should be mounted slightly higher than the edge of the wheel. It is recommended that the user clean the lens of the optical sensor with a cotton cloth before placing the sensor at a distance of 0.2" from the rungs.

**When using the Model 86070A with the Model 80850 or 80860A Rat Activity Wheels:** The optical sensor is aimed at the reflective tabs on the side of the wheel and the distance from sensor to the reflective surface may be greater than 0.2".

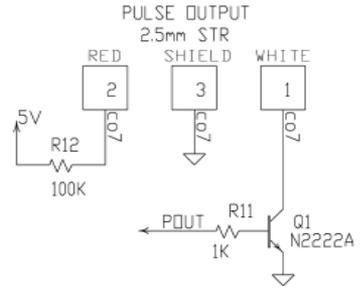
## Pulse Output Instructions

The Model 86070A 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

## Accessory Instructions

The Lafayette Instrument Company Model 86070A Activity Counter & Controller operates several Lafayette accessories. A description of the different accessories is listed below:

**Brake:** Braking applications (Model 86070-B1)

**Output:** cannot be activated simultaneously with Motor 2

**Motor:** Single motorized application for wheel forced exercise & yoked experiments.

**Output:**

- Models 80840, 80851A, 80860A
- Speeds may vary due to motor and power supply cannot be activated simultaneously with Motor 1

**External Initiate Input 86070CBL:** When actuated, this will engage the brake connected to motor 1. When actuated each successive time the brake will toggle between engage and disengage.

**Speed Tolerance:** +/- 0.5m/min

**Auxiliary Output (Motor 3):**

- Dedicated voltage outputs (max current 500ma)
- Output voltage may vary due to power supply tolerances
- Outputs will remain at set voltage until powered off



<b>Setting</b>	<b>Voltage</b>
0	0
1	3vdc
2	6vdc
3	9vdc
4	12vdc

## **Software Instructions for 80840, 80851A, 80860A**

1. Use the model 86070A with the AWM software to program motor speeds for each wheel.
2. Connect the 8 pin motor cable to an 86070A and make sure all the 86070A operating instructions have been followed.
3. Set the switch position on the 86070A counter to position "A" for the 80840, position "B" for the 80851A, and position "C" for the 80860A.
4. Open the AWM software, click on Experiment and then click on Programmable Experiment Download.
5. Then click on Configure Schedule, and a new window will appear.
6. Click on Add Wheel, select a wheel with an 86070A counter and any of the three motors, choose motor start and stop speeds and click ok.
7. Right click on schedule and click on Add/Edit Events.
8. Within this menu, select the motor feature. Choose to enable or disable the motor, pick a conditional for the motor to follow, and select a motor speed from 1 - 25 m/min.
9. For the statement, "Would you like to disable the motor after the delay", Yes will cause the motor to return to 0.0m/min before adjusting to the next speed. If no is selected, the motor will not return to 0.0m/min before adjusting to the next speed.
10. Press F1 for a more comprehensive help program with the AWM software.

Contact Lafayette Instrument Company for further help. (765) 423-1505

## **Notes**



# Terms and Conditions

## LIC Worldwide Headquarters

Toll-Free: (800) 428-7545 (USA only)  
Phone: (765) 423-1505  
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Email: [sales@lafayetteinstrument.com](mailto:sales@lafayetteinstrument.com)  
[export@lafayetteinstrument.com](mailto:export@lafayetteinstrument.com) (Outside the USA)

## Mailing Address:

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PO Box 5729  
Lafayette, IN 47903, USA

## Lafayette Instrument Europe:

Phone: +44 1509 817700  
Fax: +44 1509 817701  
Email: [esales@lafayetteinstrument.com](mailto:esales@lafayetteinstrument.com)

## 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

The U.S. Department of Commerce requires an export license for any polygraph system shipment with an ULTIMATE destination other than: Australia, Japan, New Zealand or any NATO Member Countries. It is against U.S. law to ship a Polygraph system to any other country without an export license. If the ultimate destination is not one of the above listed countries, contact us for the required license application forms.