

# Hardware User's Manual

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## Activity wheel



### References:

LE904 (76-0412), LE905 (76-0413), LE907 (76-0414)

### Publication:

PB-MF-MAN-066-REV1.0

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Some symbols may have more than one interpretation by professionals unaccustomed to their usage.








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## 1. SYMBOLS TABLE

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Recognising the symbols used in the manual will help to understand their meaning:

DESCRIPTION	SYMBOL
Warning about operations that must not be done because they can damage the equipment	
Warning about operations that must be done, otherwise the user can be exposed to a hazard.	
Protection terminal ground connection.	
Warning about a hot surface which temperature may exceed 65°C	
Warning about a metal surface that can supply electrical shock when it's touched.	
Decontamination of equipments prior to disposal at the end of their operative life	
Waste Electrical and Electronic Equipment Directive (WEEE)	

## 2. GOOD LABORATORY PRACTICE

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Check all units periodically and after periods of storage to ensure they are still fit for purpose. Investigate all failures which may indicate a need for service or repair.

Good laboratory practice recommends that the unit be periodically serviced to ensure the unit is suitable for purpose. You must follow preventive maintenance instructions. In case equipment has to be serviced you can arrange this through your distributor. Prior to Inspection, Servicing, Repair or Return of Laboratory Equipment the unit must be cleaned and decontaminated.



### Decontamination prior to equipment disposal

In use this product may have been in contact with bio hazardous materials and might therefore carry infectious material. Before disposal the unit and accessories should all be thoroughly decontaminated according to your local environmental safety laws.

### 3. UNPACKING AND EQUIPMENT INSTALLATION

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**WARNING:** Failure to follow the instructions in this section may cause equipment faults or injury to the user.

- A. No special equipment is required for lifting but you should consult your local regulations for safe handling and lifting of the equipment.
- B. Inspect the instrument for any signs of damage caused during transit. If any damage is discovered, do not use the instrument and report the problem to your supplier.
- C. Ensure all transport locks are removed before use. The original packing has been especially designed to protect the instrument during transportation. It is therefore recommended to keep the original carton with its foam parts and accessories box for re-use in case of future shipments. Warranty claims are void if improper packing results in damage during transport.
- D. Place the equipment on a flat surface and leave at least 10 cm of free space between the rear panel of the device and the wall. Never place the equipment in zones with vibration or direct sunlight.



**WARNING**

**For electrical safety reasons you only can connect equipment to power outlets provided with earth connections** 

This equipment can be used in installations with category II over-voltage according to the General Safety Rules.

The manufacturer accepts no responsibility for improper use of the equipment or the consequences of use other than that for which it has been designed.

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## 5. INTRODUCTION

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The Rodent Activity Wheel provides a simple and intelligent means to register an animal's physical activity in its home cage environment. The use of this high-throughput tool is particularly relevant for research involving circadian rhythms, phenotyping and drug testing.



Figure 1. Activity Wheel.

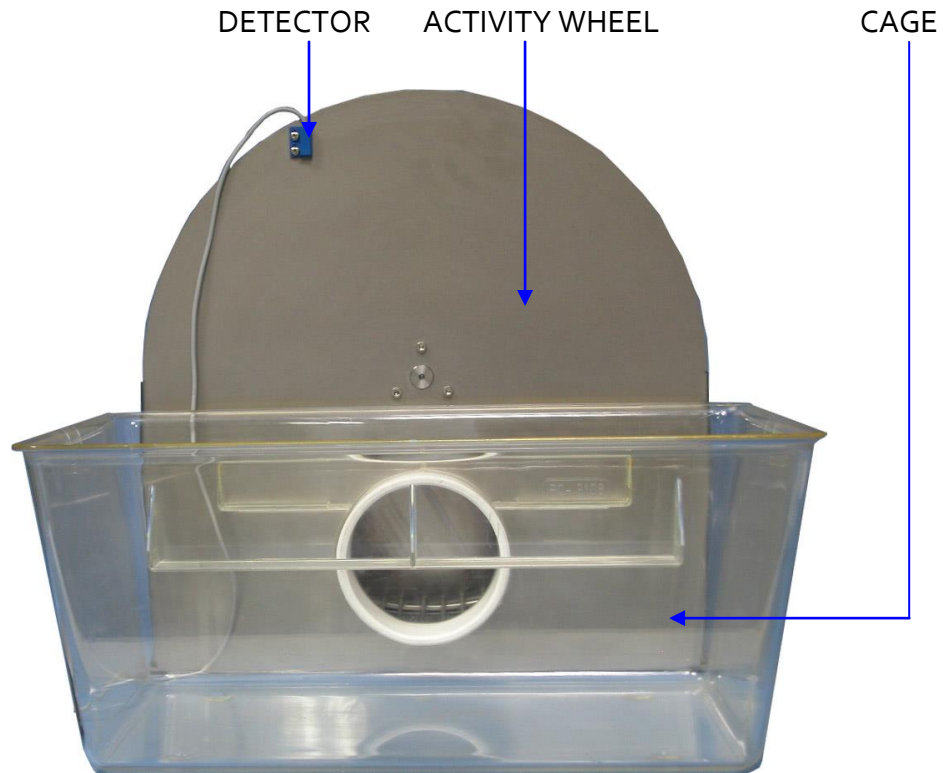
Basically, animals are housed individually in the home cages equipped with running wheels. The total number of wheel rotations made by the animal is displayed on the external LE907 individual counter or the LE3806 Multicounter devices.

The LE3806 Multicounter allows data to be stored at user-defined time intervals and to export it to the **Sedacom** PC interface (through the RS 232 serial port) in an Excel-compatible format. The **Sedacom** report provides additional data such as: R.P.M., Speed and Distance covered.

All components of the wheel assembly (wheel, wheel hub and support) are made of stainless steel and are used with standard ACE (Allentown Caging Equipment) polycarbonate rodent cages provided with a wire lid. The wheel is mounted outside the home cage to preserve animal living space. All non-electrical cage components are autoclavable.

## 6. EQUIPMENT DESCRIPTION

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**Figure 2. Activity wheel.**

The activity wheel is mounted on a stainless steel support and is placed outside the cage, so as to not reduce the space the animal has in the cage. The cage is connected with the activity wheel through a cylindrical hole in one side of the cage. There is a detector in the support that detects when the wheel turns using magnets glued to the activity wheel.

There are two models of activity wheel:

- LE904, model for rats.
- LE905, model for mice.

## 7. EQUIPMENT CONNECTION

### 7.1. LE3806

Up to 30 Activity Wheels can be connected to the LE3806. To simplify the illustration, only 2 activity wheels are shown connected in the next figure.

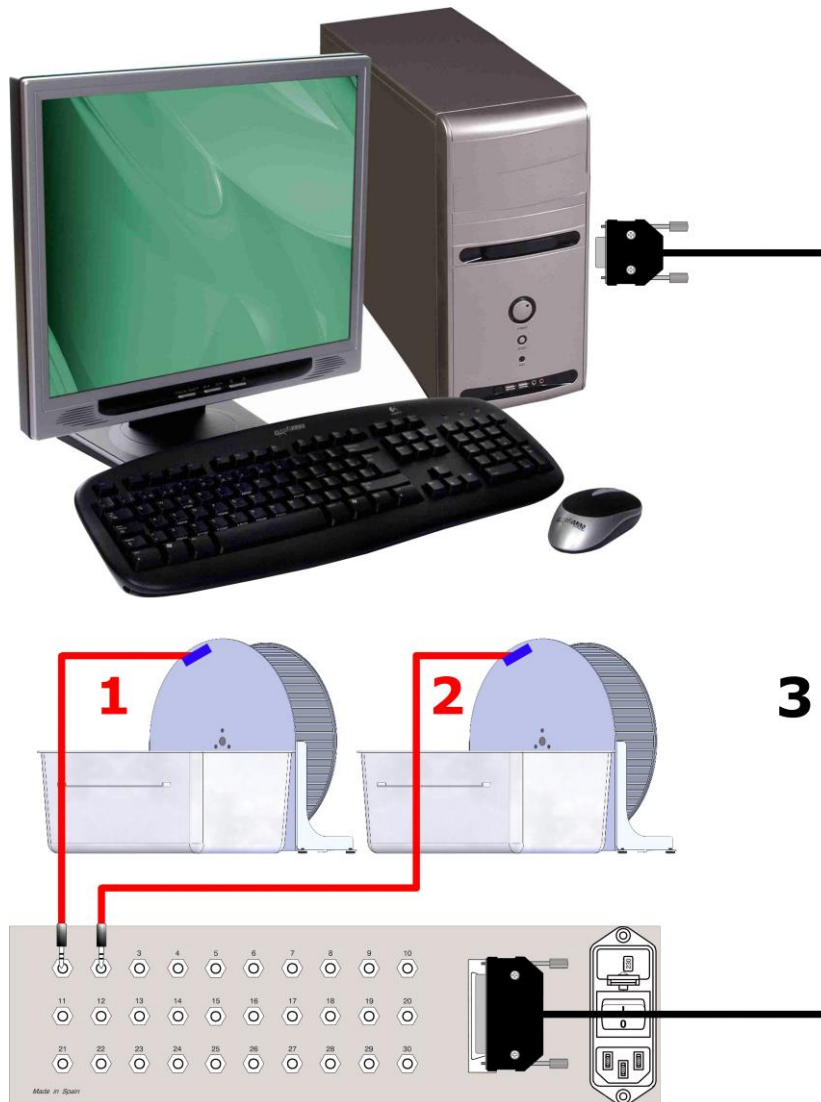


Figure 3. Example of 2 Activity Wheels connected to the LE3806 Multicounter.

The necessary cables and connections are listed in the following table:

	FROM	TO	CABLE
1	LE3806 Input 1	Activity wheel 1	Stereo jack 3.5mm
2	LE3806 Input 2	Activity wheel 2	Stereo jack 3.5mm
3	LE3806 RS-232	PC serial port	DB25 to DB9 cable



## 7.2. LEg07 COUNTER

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The Activity Wheel can be connected to an individual LEg07 counter.

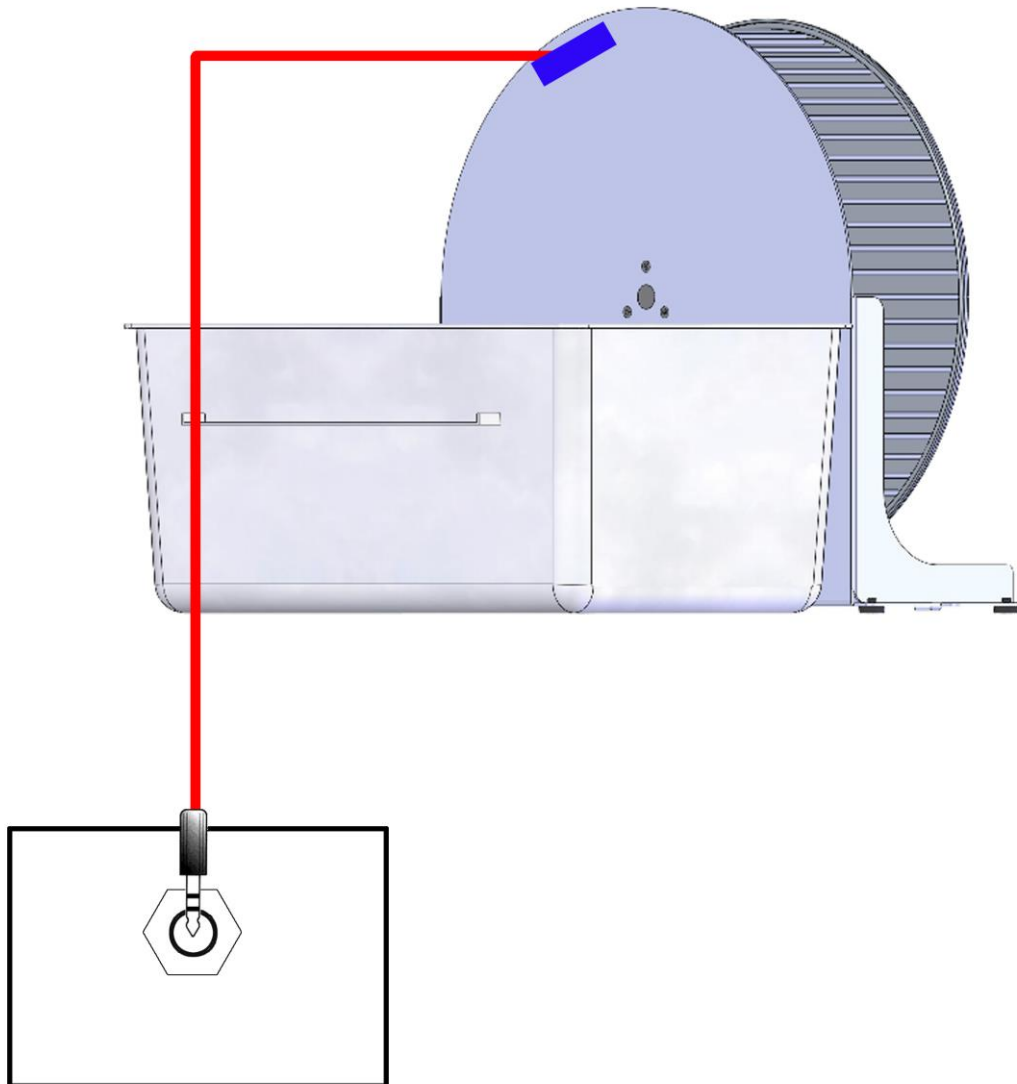


Figure 4. Connection of Activity Wheel to an LEg07 counter.

The necessary cables and connections are listed in the following table:

FROM	TO	CABLE
Counter input	Activity wheel	Stereo jack 3.5mm

## 8. WORKING WITH THE EQUIPMENT

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### 8.1. CONDUCTING AN EXPERIMENT

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1. Connect the activity wheel to the counter as seen in chapter 7.
2. Place the animal in the cage.
3. During the experiment the counter will count the number of turns of the activity wheel.
4. Once the experiment has ended remove the animal from the cage.
5. Afterwards proceed to clean the cage and the activity wheel so that they are in good conditions for the next experiment.

### 8.2. CLEANING THE CAGE

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Accumulated urine and faeces in the cage should be cleaned. To clean the cage a soapy solution should be used, followed by a rinse with water. Finally the cage should be dried with a dry cloth.

### 8.3. ACTIVITY WHEEL CLEANING

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The bedding between the activity wheel and the cage should be removed so that the wheel can move freely.

To clean the activity wheel a slightly wet cloth should be used and then it should be dried with a dry cloth. If the cage is too dirty a cloth soaked in a soapy solution should be used, then the foam should be removed with a wet cloth and finally dried with a dry cloth.

## 9. TROUBLESHOOTING

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This table features instructions to solve the most frequent problems.

PROBLEM	SOLUTION
The equipment does not count turns.	<ul style="list-style-type: none"> <li>• Check that the magnet has not fallen of the activity wheel.</li> <li>• Make sure the detector is properly aligned with the magnet.</li> <li>• If the detector and magnet are in correct position, the detector is probably damaged. You can check this by changing the wheel counter or LE3806 channel.</li> </ul>
The activity wheel is slowed or blocked.	<ul style="list-style-type: none"> <li>• Check for bedding between the activity wheel and the cage.</li> <li>• Slightly loosen white plastic screw that keeps the wheel in position on the rotation axis.</li> </ul>

## 10. PREVENTIVE MAINTENANCE

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	EXPERIMENT	MONTHLY	ANNUALLY
CLEAN THE CAGE	<input checked="" type="checkbox"/>		
CHECK THE ACUMULATION OF BEDDING BETWEEN THE CAGE AND ACTIVITY WHEEL		<input checked="" type="checkbox"/> <sup>1</sup>	
CHECK THE ALIGNMENT BETWEEN THE CAGE AND THE ACTIVITY WHEEL		<input checked="" type="checkbox"/> <sup>2</sup>	
CHECK MAGNET STATE			<input checked="" type="checkbox"/>

<sup>1</sup> Bedding accumulation can slow or block the free movement of the wheel.

<sup>2</sup> If the wheel touches somewhere can be braked.

## 11. SPECIFICATIONS

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Specs.	Ø Wheel	Lane Width	ACE* Cage Size
LE904	36 cm	10 cm	42 x 26 x 19(h)
LE905	16 cm	6 cm	36 x 20 x 14(h)

\* Other brands available on request

**DECLARACIÓN DE CONFORMIDAD  
DECLARATION OF CONFORMITY  
DECLARATION DE CONFORMITÉ**

Nombre del fabricante: **Panlab s.l.u.**  
 Manufacturer's name: [www.panlab.com](http://www.panlab.com)  
 Nom du fabricant: [info@panlab.com](mailto:info@panlab.com)

Dirección del fabricante: **Energía, 112**  
 Manufacturer's address: **08940 Cornellà de Llobregat**  
 Adresse du fabricant: **Barcelona SPAIN**

Declaro bajo su responsabilidad que el producto: **RUEDA DE ACTIVIDAD**  
 Declares under his responsibility that the product:  
 Déclare sous sa responsabilité que le produit:

Marca / Brand / Marque: **PANLAB**

Modelo / Model / Modèle: **LE 904 – LE 905**

Cumple los requisitos esenciales establecidos por la Unión Europea en las directivas siguientes:  
 Fulfils the essential requirements established by The European Union in the following directives:  
 Remplit les exigences essentielles établies pour l'Union Européenne selon les directives suivantes:

**2011/65/EU** Restricción de ciertas Sustancias Peligrosas en aparatos eléctricos y electrónicos (ROHS) / Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (ROHS) / Restriction de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques (ROHS)

Analisis de riesgos / Risk assessment / Analyse des risques

Para su evaluación se han aplicado las normas armonizadas siguientes:  
 For its evaluation, the following harmonized standards were applied:  
 Pour son évaluation, nous avons appliqué les normes harmonisées suivantes:

En consecuencia, este producto puede incorporar el marcado CE:  
 Consequently, this product can incorporate the CE marking:  
 En conséquence, ce produit peut incorporer le marquage CE:



En representación del fabricante:  
 Manufacturer's representative:  
 En représentation du fabricant:

  
 Carme Canalís  
 General Manager  
 Panlab s.l.u., a division of Harvard BioScience

Cornellà de Llobregat, Spain  
 30/04/2014

**(GB) Note on environmental protection:**



After the implementation of the European Directive 2002/96/EU in the national legal system, the following applies:

Electrical and electronic devices may not be disposed of with domestic waste. Consumers are obliged by law to return electrical and electronic devices at the end of their service lives to the public collecting points set up for this purpose or point of sale. Details to this are defined by the national law of the respective country. This symbol on the product, the instruction manual or the package indicates that a product is subject to these regulations. By recycling, reusing the materials or other forms of utilising old devices, you are making an important contribution to protecting our environment.

**(E) Nota sobre la protección medioambiental:**



Después de la puesta en marcha de la directiva Europea 2002/96/EU en el sistema legislativo nacional, Se aplicara lo siguiente:

Los aparatos eléctricos y electrónicos, así como pilas y baterías, no se deben tirar a la basura doméstica. El usuario está legalmente obligado a llevar los aparatos eléctricos y electrónicos, así como pilas y baterías, al final de su vida útil a los puntos de recogida municipales o devolverlos al lugar donde los adquirió. Los detalles quedaran definidos por la ley de cada país. El símbolo en el producto, en las instrucciones de uso o en el embalaje hace referencia a ello. Gracias al reciclaje, a la reutilización de materiales i a otras formas de reciclaje de aparatos usados, usted contribuirá de forma importante a la protección de nuestro medio ambiente.

**(F) Remarques concernant la protection de l'environnement :**



Conformément à la directive européenne 2002/96/CE, et afin d'atteindre un certain nombre d'objectifs en matière de protection de l'environnement, les règles suivantes doivent être appliquées.

Elles concernent les déchets d'équipement électriques et électroniques. Le pictogramme "picto" présent sur le produit, son manuel d'utilisation ou son emballage indique que le produit est soumis à cette réglementation. Le consommateur doit retourner le produit usager aux points de collecte prévus à cet effet. Il peut aussi le remettre à un revendeur. En permettant enfin le recyclage des produits, le consommateur contribuera à la protection de notre environnement. C'est un acte écologique.

**(D) Hinweis zum Umweltschutz:**



Ab dem Zeitpunkt der Umsetzung der europäischen Richtlinie 2002/96/EU in nationales Recht gilt folgendes:

Elektrische und elektronische Geräte dürfen nicht mit dem Hausmüll entsorgt werden. Der Verbraucher ist gesetzlich verpflichtet, elektrische und elektronische Geräte am Ende ihrer Lebensdauer an den dafür eingerichteten, öffentlichen Sammelstellen oder an die Verkaufsstelle zurückzugeben. Einzelheiten dazu regelt das jeweilige Landesrecht. Das Symbol auf dem Produkt, der Gebrauchsanleitung oder der Verpackung weist auf diese Bestimmungen hin. Mit der Wiederverwertung, der stofflichen Verwertung oder anderer Formen der Verwertung von Altgeräten leisten Sie einen wichtigen Beitrag zum Schutz unserer Umwelt.

**(I) Informazioni per protezione ambientale:**



Dopo l'implementazione della Direttiva Europea 2002/96/EU nel sistema legale nazionale, ci sono le seguenti applicazioni:

I dispositivi elettrici ed elettronici non devono essere considerati rifiuti domestici. I consumatori sono obbligati dalla legge a restituire i dispositivi elettrici ed elettronici alla fine della loro vita utile ai punti di raccolta collerici preposti per questo scopo o nei punti vendita. Dettagli di quanto riportato sono definiti dalle leggi nazionali di ogni stato. Questo simbolo sul prodotto, sul manuale d'istruzioni o sull'imballo indicano che questo prodotto è soggetto a queste regole. Dal riciclo, e re-utilizzo del material o altre forme di utilizzo di dispositivi obsoleti, voi renderete un importante contributo alla protezione dell'ambiente.

**(P) Nota em Protecção Ambiental:**



Após a implementação da directiva comunitária 2002/96/EU no sistema legal nacional, o seguinte aplica-se:

Todos os aparelhos eléctricos e electrónicos não podem ser despejados juntamente com o lixo doméstico. Consumidores estão obrigados por lei a colocar os aparelhos eléctricos e electrónicos sem uso em locais públicos específicos para este efeito ou no ponto de venda. Os detalhes para este processo são definidos por lei pelos respectivos países. Este símbolo no produto, o manual de instruções ou a embalagem indicam que o produto está sujeito a estes regulamentos. Reciclando, reutilizando os materiais dos seus velhos aparelhos, esta a fazer uma enorme contribuição para a protecção do ambiente.