

Hardware User's Manual

Automated 8-arm radial maze with video-tracking



References:

LE767(76-0229), LE769(76-0230)

Version:

Vo6/11/2014

Limitation of Liability

PANLAB does not accept responsibility, under any circumstances, for any harm or damage caused directly or indirectly by the incorrect interpretation of what is expressed in the pages of this manual.

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

PANLAB reserves the right to modify, in part or in total, the contents of this document without notice.

1. EQUIPMENT INSTALLATION



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

- A. 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.



- B. Make sure that the AC voltage in the electrical network is the same as the voltage selected in the equipment. **Never connect the equipment to a power outlet with voltage outside these limits.**



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.

2. MAINTENANCE



WARNING: Failure to follow the instructions in this section may cause equipment fault.

- **PRESS KEYS SOFTLY** – Lightly pressing the keys is sufficient to activate them.
- Equipments do not require being disinfected, but cleaned for removing urine, faeces and odour. To do so, we recommend using a wet cloth or paper with soap (which has no strong odour). **NEVER USE ABRASIVE PRODUCTS OR DISSOLVENTS.**
- **NEVER** pour water or liquids on the equipment.
- Once you have finished using the equipment turn it off with the main switch. Clean and check the equipment so that it is in optimal condition for its next use.
- The user is only authorised to replace fuses with the specified type when necessary.

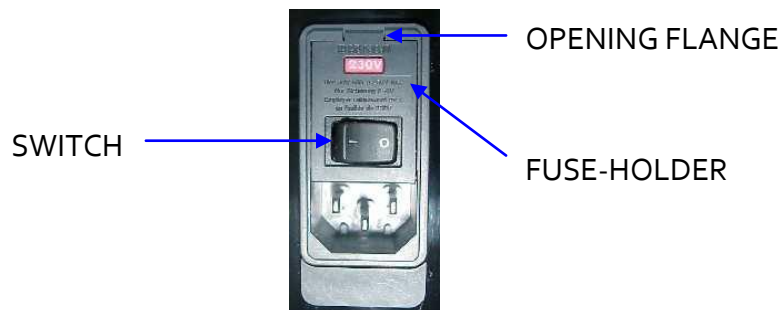


Figure 1. Power inlet, main switch and fuse holder.

FUSE REPLACEMENT

In case of an over-voltage or other incident in the AC net making it impossible to turn on the equipment, check fuses according to the following procedure.

- 1 Remove power cord from the power inlet

- 2 Open fuse-holder by pulling the flange with a regular screwdriver



Figure 2. Open fuse-holder door.

- 3 Extract fuse holder using the screwdriver.



Figure 3. Extract fuse-holder.

- 4 Replace fuses if necessary. Insert fuses in the fuse-holder in the correct position.



CORRECT



INCORRECT

Figure 4. Fuses position.

- 5 Insert again fuse-holder, both possible positions are correct because power supply is universal.
- 6 If the fuses blow again unplug the equipment and contact technical service.



WARNING

For electrical safety, never open the equipment. The power supply has dangerous voltages.

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4. INTRODUCTION

Mazes are commonly used in neuroscience. An eight-arm radial maze makes it possible to study an animal spatial memory.

The animal's position in an LE 767 – LE 769 eight-arm radial maze is detected by a video camera located over the maze that uses the **Smart** software for position detection.



Figure 5. Eight-arm radial maze.

There are two models of 8-arm radial mazes:

CODE	ANIMAL	POSITION DETECTION
LE 767	Rat	Video Camera + Smart software
LE 769	Mouse	Video Camera + Smart software

Each arm in the radial maze has a door activated either manually by means of a switch on the front panel of the control unit or by software using the **Smart** software.



WARNING: If doors are controlled with **Smart** software it is necessary to place all the switches in the front panel of the control unit down. Otherwise the control of doors will be disabled, because when the switch is in the up position the door will always be opened.

5. EQUIPMENT DESCRIPTION

5.1. Control Unit Front Panel

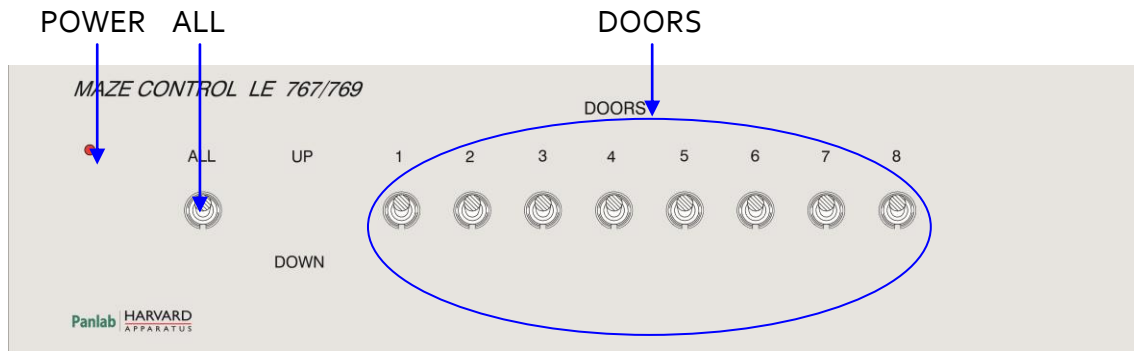


Figure 6. Front panel.

- **DOOR:** There are 8 switches, one for each arm of the radial maze.
 - UP: The door opens when the switch is in the up position.
 - DOWN: The door closes when the switch is in the down position.
- **ALL:** This switch controls all 8 doors at the same time.
- **POWER:** Red coloured LED that comes on while the control unit is on.

5.2. CONTROL UNIT REAR PANEL

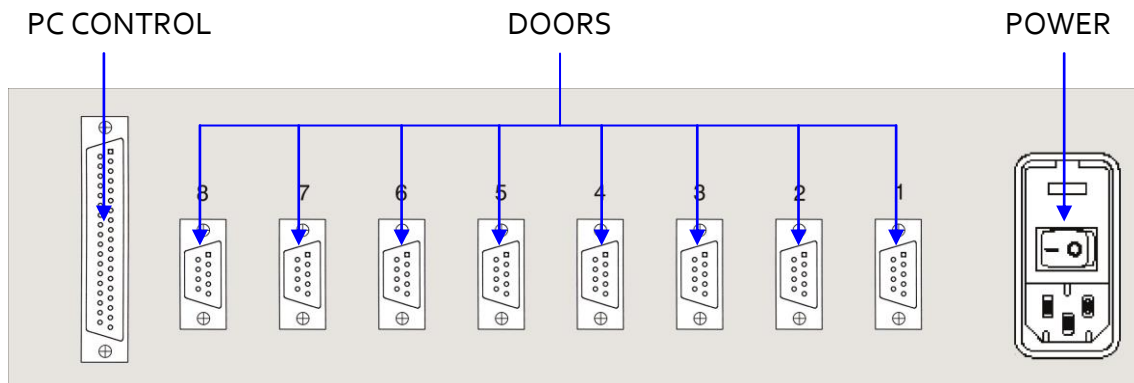


Figure 7. Rear Panel.

- **DOORS:** There is a DB9 female connector for each arm. It is used to control the door.
- **POWER:** Power inlet, main switch and fuse holder.
- **PC CONTROL:** DB37 female connector used to connect the control unit to the PCI7200 board installed on your PC. Through this connector the signals to open or close the doors with the software are transmitted to the radial maze.

5.3. MAZE



Figure 8. Eight-arm radial maze.

The radial maze has 8 arms and a central area. Each arm has a manually operated door. The animal's position is detected by a video camera and the **Smart** software. There is a cylindrical container for food at the end of each arm.

6. INSTALLING PCI 7200 BOARD

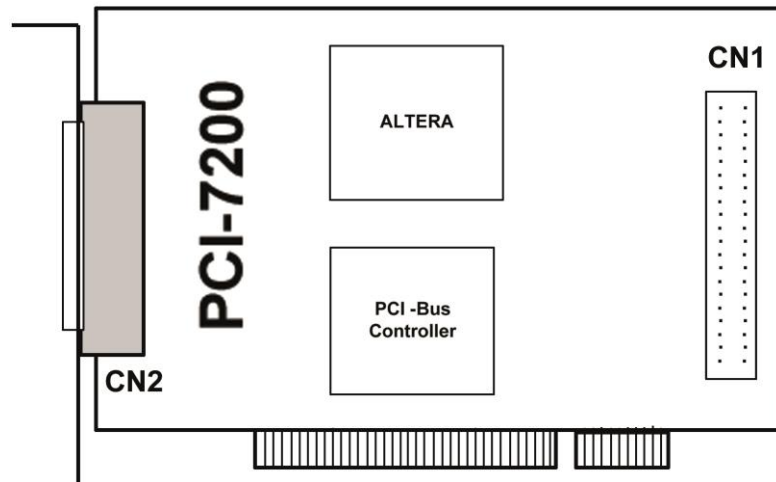


Figure 9. PCI 7200 Board.

Before working with the equipment you must install the PCI 7200 board in your computer. In order to install the board proceed as follows.

- 1) Turn off the computer.
- 2) Remove the computer box lid by unscrewing the necessary screws.
- 3) Remove 1 lid of the PCI slots and keep the screws
- 4) Plug the PCI 7200 board to a free PCI slot and check that it is correctly located.
- 5) Fix the PCI 7200 board with screws
- 6) Place again the computer box lid and fix it with the screws

7. EQUIPMENT CONNECTION

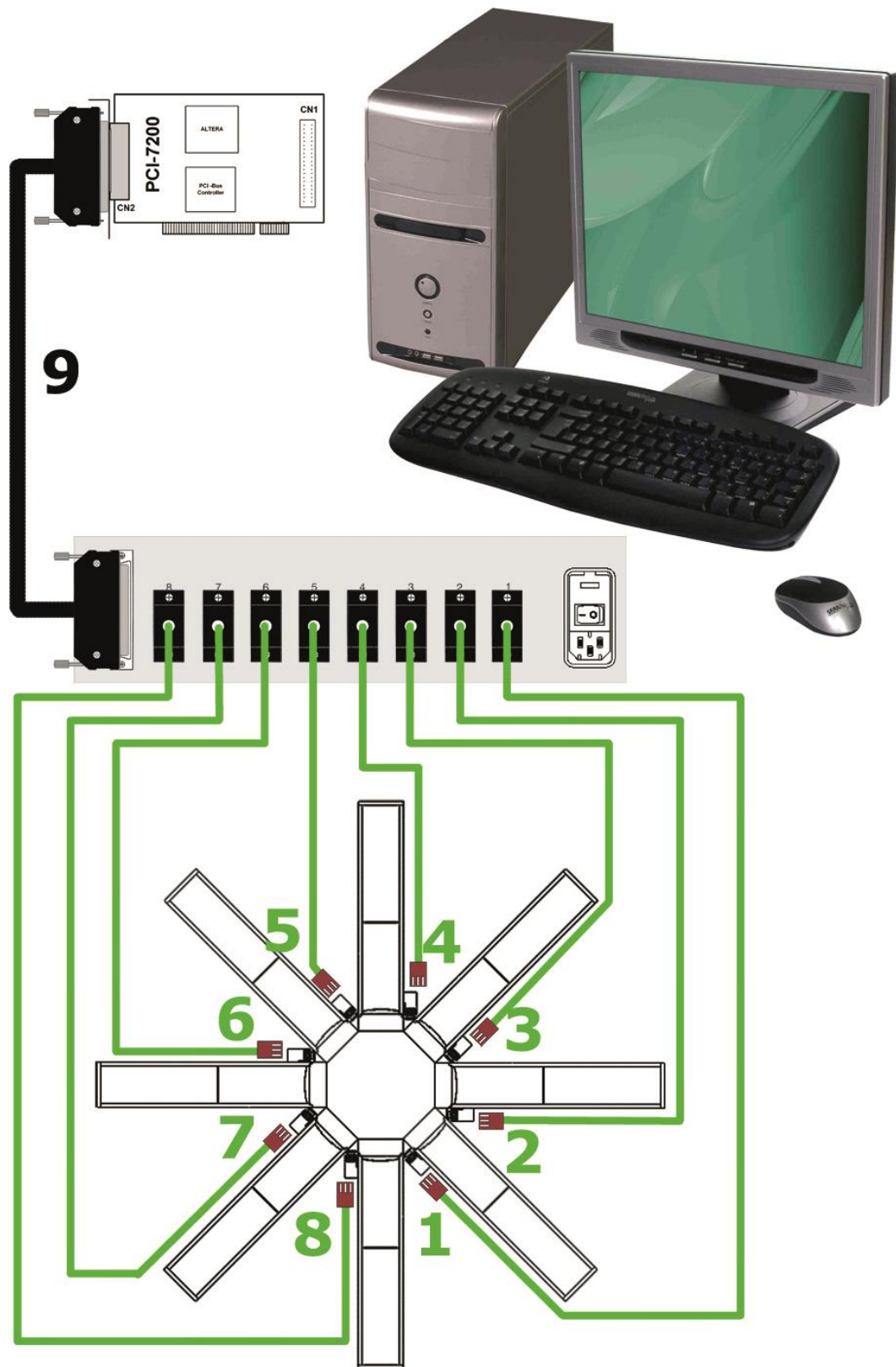


Figure 10. Equipment connection.

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

	FROM	TO	CABLE
1	LE 767 Door 1	Arm 1	Cable DB9 to LUCAS 3
2	LE 767 Door 2	Arm 2	Cable DB9 to LUCAS 3
3	LE 767 Door 3	Arm 3	Cable DB9 to LUCAS 3
4	LE 767 Door 4	Arm 4	Cable DB9 to LUCAS 3
5	LE 767 Door 5	Arm 5	Cable DB9 to LUCAS 3
6	LE 767 Door 6	Arm 6	Cable DB9 to LUCAS 3
7	LE 767 Door 7	Arm 7	Cable DB9 to LUCAS 3
8	LE 767 Door 8	Arm 8	Cable DB9 to LUCAS 3
9	Le 767 PC CONTROL	PCI 7200 board	DB37 cable

8. MOUNTING THE RADIAL MAZE

1. Insert the structure arm into the circular base using the corresponding orifices.



Figure 11. Inserting the arm in the circular base.

2. Screw the Allen screws into the base to fix the structure arms.



Figure 12. Screwing the Allen screws.

3. Secure the screws with a hexagonal key.

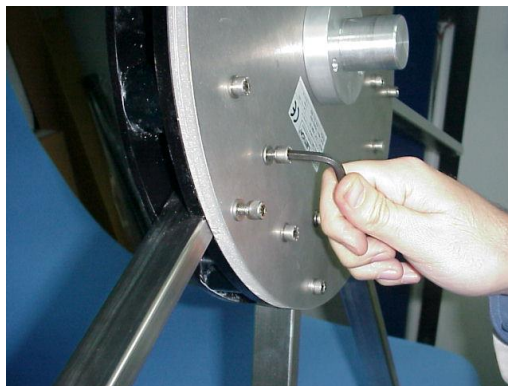


Figure 13. Securing the screws.

4. Fit the platform with the 8 structure arms to the tripod.

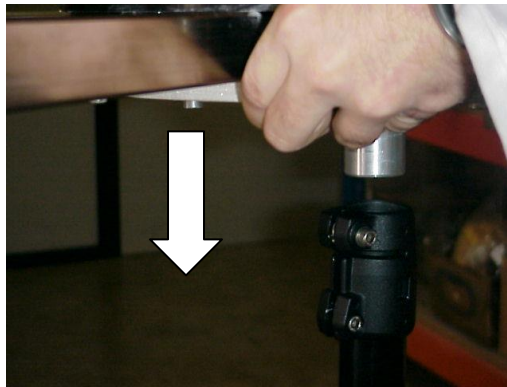


Figure 14. Placing the platform on the tripod.

5. Secure the platform to the tripod with a hexagonal key.

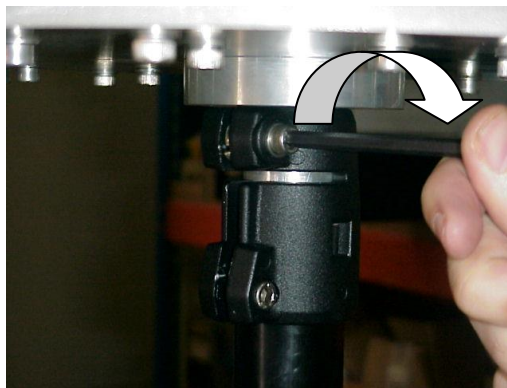


Figure 15. Securing the platform to the support.

6. Place the maze arm in the structure arm and push it until it reaches the central area.

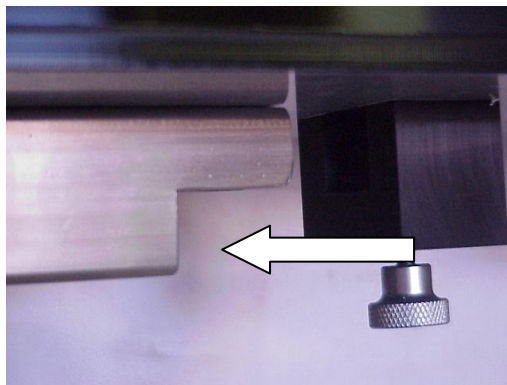


Figure 16. Placing the maze arm.

7. Secure the maze arm to the structure arm with the screw.

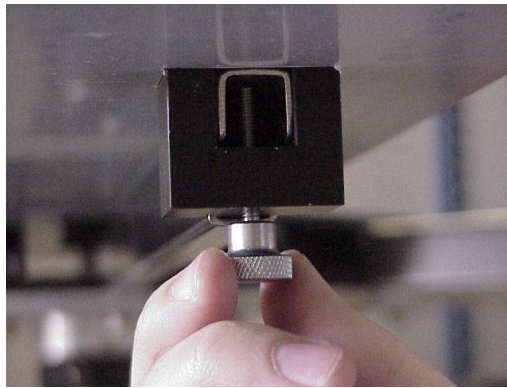


Figure 17. Securing the maze arm.

8. Affix the motor mechanism lid.

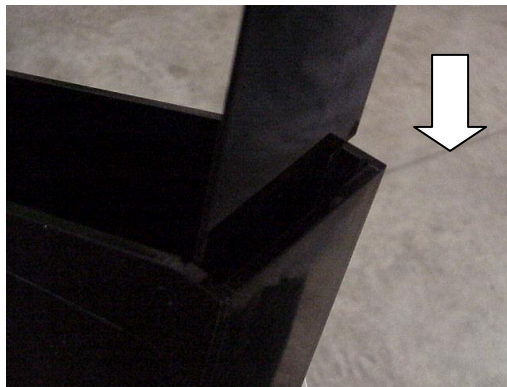


Figure 18. Introducing the motor mechanism lid

9. SPECIFICATIONS

POWER SUPPLY						
Input voltage:		Universal input 90 Vac to 264 Vac				
Frequency:		50 /60 Hz				
Fuse:		2 fuses 5mm*20mm 2A 250V				
Maximum Power:		18 W				
Conducted Noise:		EN55022 /CISPR22/CISPR16 class B				
ENVIRONMENTAL CONDITIONS						
Operating Temperature:		10° C to +45°C				
Operating Relative Humidity:		0% to 85% RH, non-condensing				
Storage Temperature:		0°C to +50°C, non-condensing				
DOOR						
Time open-closed:		0.6s (mouse) , 0.75s (rat)				
Regulation open:		Potentiometer P2				
Regulation closed:		Potentiometer P1				
CONNECTOR DOOR (DB9 female)						
<u>Pin</u>		<u>Function</u>				
1		Door				
5		+ 5V DC				
6		GND				
CONNECTOR PC CONTROL (DB37 female)						
<u>Pin</u>		<u>Function</u>				
20		Door 1				
21		Door 2				
22		Door 3				
23		Door 4				
24		Door 5				
25		Door 6				
26		Door 7				
27		Door 8				
36		GND				
DIMENSIONS(CONTROL UNIT)						
Width x Height x Depth:		340mm x 110mm x 340mm				
Weight:		5.44 kg				
DIMENSIONS (CAGE) ¹ :						
MODEL	ANIMAL	ARM DIMENSIONS [Width x Height x Depth]	BASE [Diameter x Height]	DOOR [Height]	WALLS [Height]	TRIPOD [Height]
LE767	Rat	144X345X715	Ø 1249X114.5	90	From 294 to 41	850
LE769	Mice	357X201X102	Ø 616X116	50	From 150 to 26	850

¹ Dimensions are expressed in millimetres

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

Nombre del fabricante: **Panlab s.l.u.**
 Manufacturer's name: www.panlab.com
 Nom du fabricant: info@panlab.com

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

Declara bajo su responsabilidad que el producto: **RADIAL MAZE**
 Declares under his responsibility that the product:
 Déclare sous sa responsabilité que le produit:

Marca / Brand / Marque: **PANLAB**

Modelo / Model / Modèle: **LE 767 – LE 769**

Cumple los requisitos esenciales establecidos por la Unión Europea en las directivas siguientes:
 Fulfills 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:

D.C.73/23/CEE	Directiva de baja tensión / Low Voltage / Basse tension
D.C.89/336/CEE	Directiva de compatibilidad electromagnética y su modificación D.C.92/31/CEE. EMC
D.C.93/68/CEE	Modificaciones y marcado CE
D.C.2002/96/CE	Residuos de aparatos eléctricos y electrónicos

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:

Seguridad / Safety / Sécurité **EN 61010-1:2001**
 EMC: **EN 61326:1997/A1:1998**
EN 61000-3-2, EN 61000-3-3
EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5,
EN 61000-4-6, EN 61000-4-8, EN 61000-4-11
EN 55022/ CISPR22 Clase B / Class B / Classe B

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:



Patricia Carranza
 Responsable de Calidad /
 Quality Responsible / Responsable de Qualité

Cornellà de Llobregat, 9/01/2007