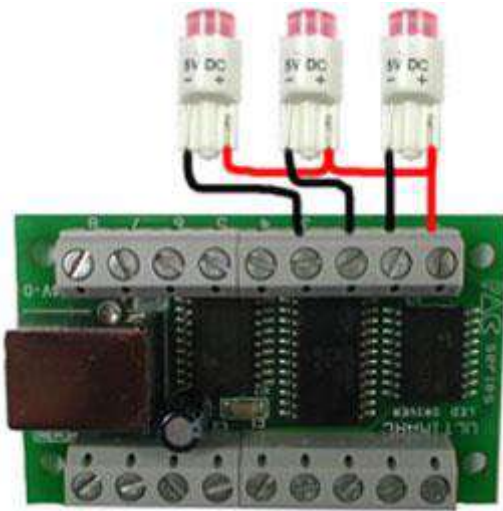### Basic Connection Method

The picture below shows a schematic representation of 3 LEDs connected. These are 5 volt LEDs as used in our UltraLux buttons

In actual usage the connections would be made using quick-disconnects to the button lampholder.

up to 16 can be connected in this way. No external power required.

To simplify connection, for the power "daisy-chain" you can use our pre-made daisy-chain harness.


Advanced Connection Methods

For connecting devices requiring a higher total current than 500mA for all devices, or devices requiring more than 5 volts,

Instead of connecting the red power "daisy chain" to the "+" connection on the PCB, simply connect to an appropriate voltage source.

For example a PC disk power connector will provide 12 volts through the yellow wire.

When powering from a PC, there is no need for a ground wire since the ground return is via the shield of the USB cable.

The diagram below shows how to connect 12 Volt LEDs
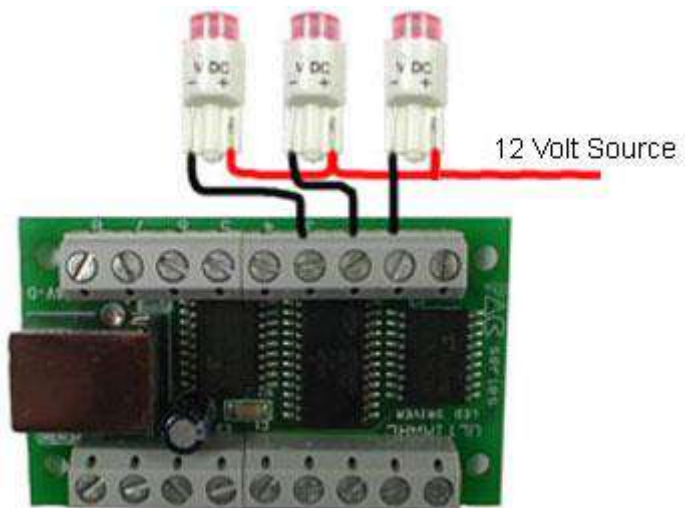
When using 12 Volts DO NOT CONNECT THE 12 VOLT SUPPLY DIRECT TO ANY OF THE BOARD
TERMINALS
IMPORTANT: When connecting solenoids you must connect a diode across each coil to
eliminate "back-EMF" discharge through the driver board. The diode is connected with the
end marked with a line to the power-supply end of the coil. Diodes are not required when
connecting LEDs.

APPLICATION SOFTWARE

Ultimarc LED and output controllers have great software support, including PC and Linux
software and our own SDK which enables easy addition of output control to your own
programs.

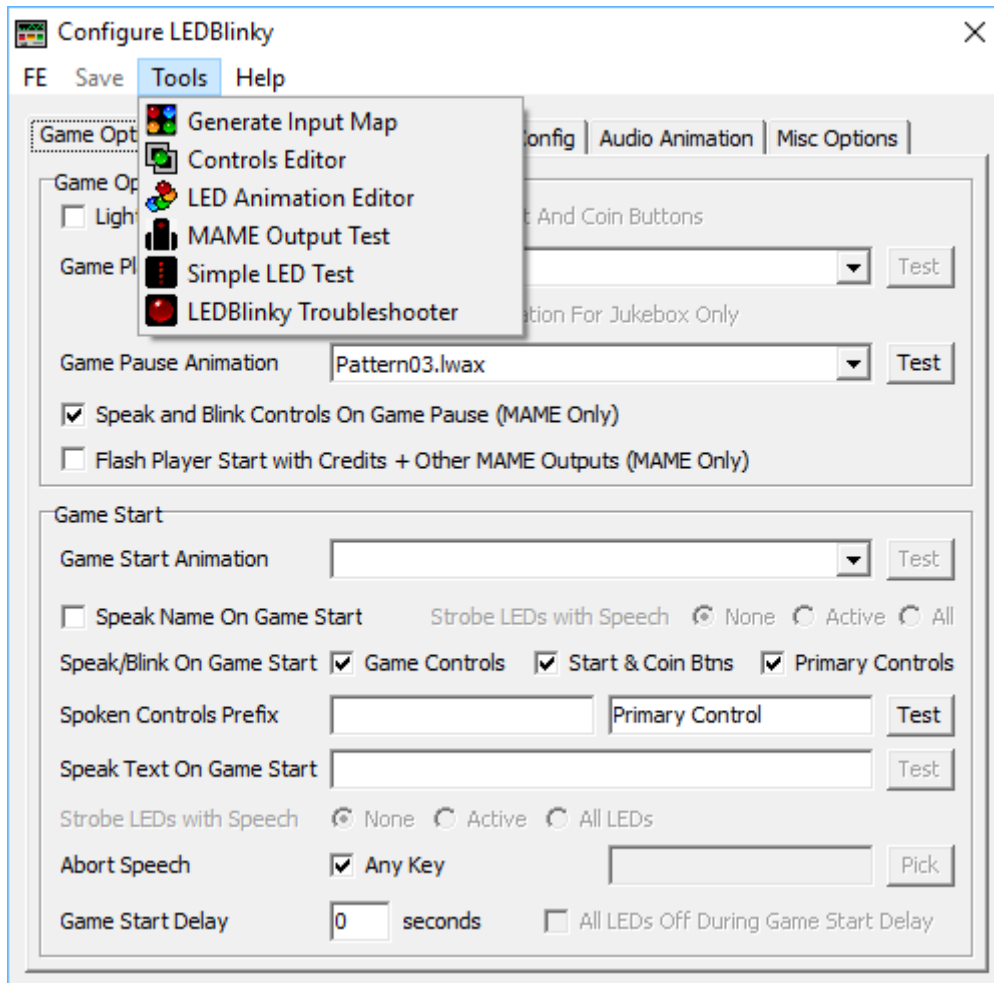Also a Linux library is available. See our Programming tab above.

 For Windows
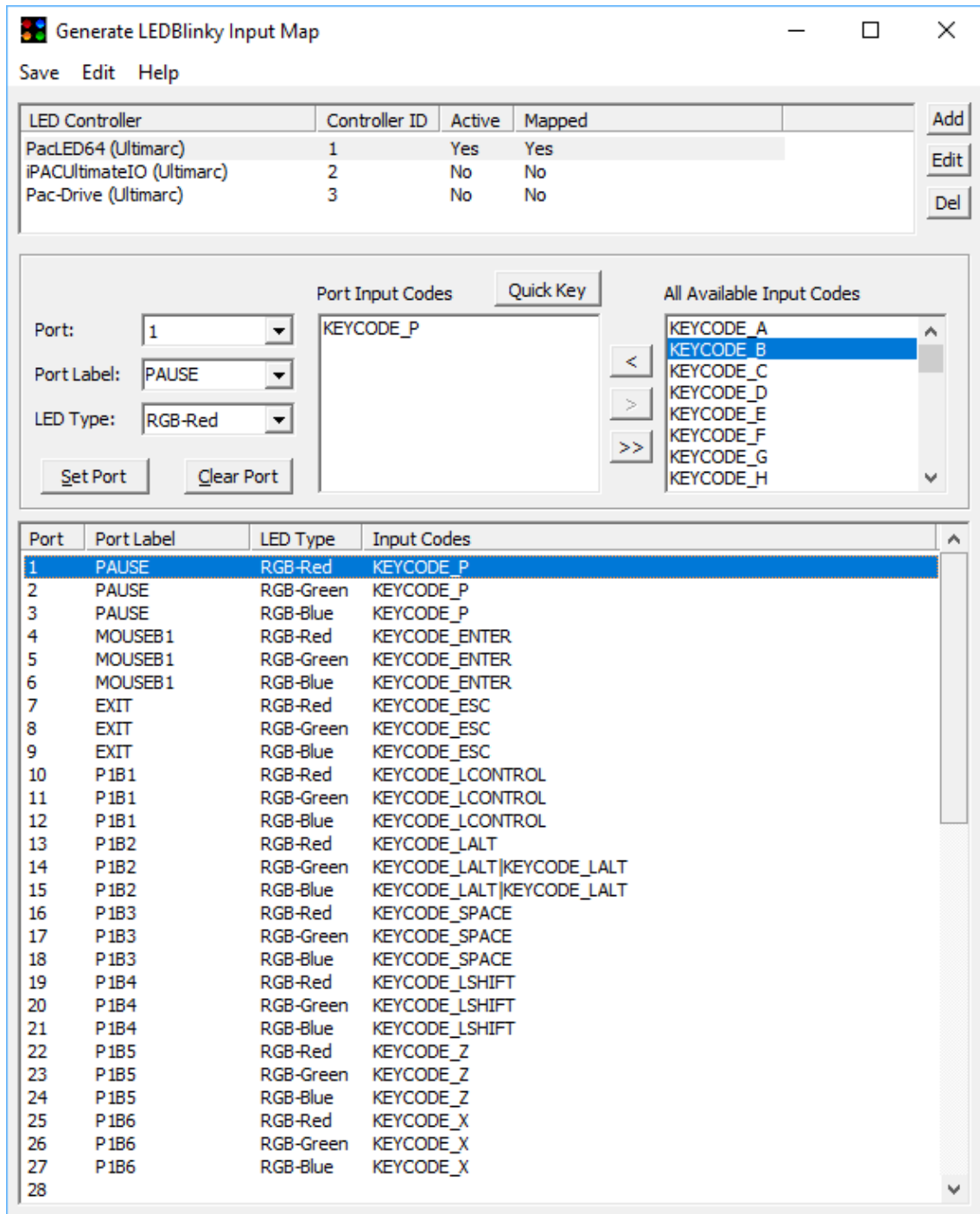
 For Linux

Using the Pac-Drive with LEDBlinky

Open the LEDBlinky Configuration and select the LEDBlinky Tools tab. Select the Generate Input
Map button.

Enter your control and input port maps to your Pac-Drive using the controls as below.

Generate LEDBlinky Input Map

Save   Edit   Help

LED Controller	Controller ID	Active	Mapped		Add
PacLED64 (Ultimarc)	1	Yes	Yes		Edit
iPACUltimateIO (Ultimarc)	2	No	No		
Pac-Drive (Ultimarc)	3	No	No		Del

Port Input Codes   Quick Key   All Available Input Codes

Port: 1

Port Label: PAUSE

LED Type: RGB-Red

Set Port   Clear Port

KEYCODE_P

KEYCODE_A
KEYCODE_B
KEYCODE_C
KEYCODE_D
KEYCODE_E
KEYCODE_F
KEYCODE_G
KEYCODE_H

< > >>

Port	Port Label	LED Type	Input Codes
1	PAUSE	RGB-Red	KEYCODE_P
2	PAUSE	RGB-Green	KEYCODE_P
3	PAUSE	RGB-Blue	KEYCODE_P
4	MOUSEB1	RGB-Red	KEYCODE_ENTER
5	MOUSEB1	RGB-Green	KEYCODE_ENTER
6	MOUSEB1	RGB-Blue	KEYCODE_ENTER
7	EXIT	RGB-Red	KEYCODE_ESC
8	EXIT	RGB-Green	KEYCODE_ESC
9	EXIT	RGB-Blue	KEYCODE_ESC
10	P1B1	RGB-Red	KEYCODE_LCONTROL
11	P1B1	RGB-Green	KEYCODE_LCONTROL
12	P1B1	RGB-Blue	KEYCODE_LCONTROL
13	P1B2	RGB-Red	KEYCODE_LALT
14	P1B2	RGB-Green	KEYCODE_LALT|KEYCODE_LALT
15	P1B2	RGB-Blue	KEYCODE_LALT|KEYCODE_LALT
16	P1B3	RGB-Red	KEYCODE_SPACE
17	P1B3	RGB-Green	KEYCODE_SPACE
18	P1B3	RGB-Blue	KEYCODE_SPACE
19	P1B4	RGB-Red	KEYCODE_LSHIFT
20	P1B4	RGB-Green	KEYCODE_LSHIFT
21	P1B4	RGB-Blue	KEYCODE_LSHIFT
22	P1B5	RGB-Red	KEYCODE_Z
23	P1B5	RGB-Green	KEYCODE_Z
24	P1B5	RGB-Blue	KEYCODE_Z
25	P1B6	RGB-Red	KEYCODE_X
26	P1B6	RGB-Green	KEYCODE_X
27	P1B6	RGB-Blue	KEYCODE_X
28			

LEDBlinky LED Animation Editor

The LEDBlinky Animation Editor is a program that allows you to create complex LED animations with your Pac-Drive controller board. The program includes a layout editor for designing your arcade control panel and a timeline for creating LED Animation files (called LWAX format).
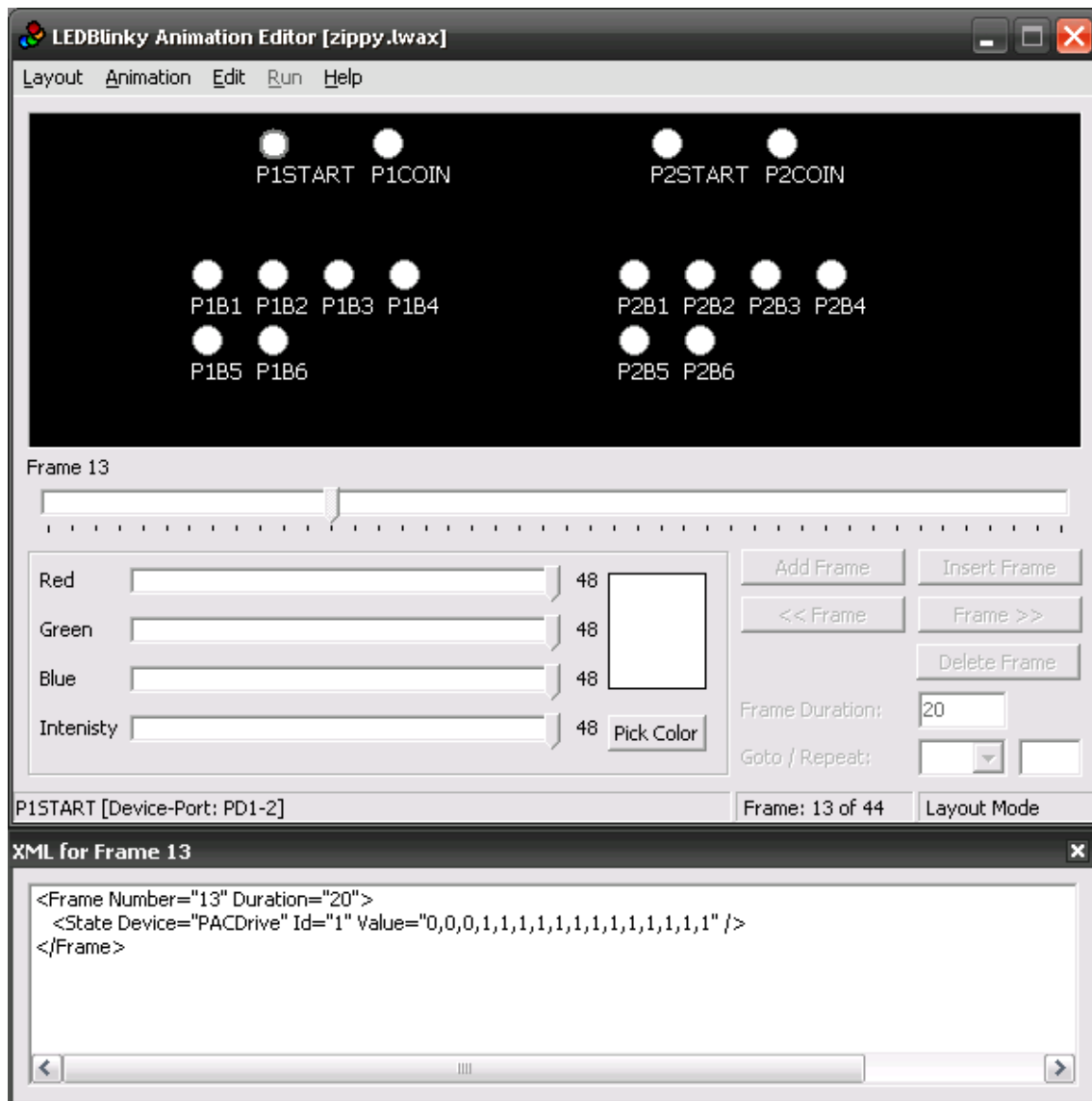
Using the Pac-Drive board with MALA.

MALA is a front-end menu system for MAME and other emulators. It can be found Here. This front-end supports the Pac-Drive board without the need for any plugin.To see how easy it is to add illuminated-button LEDs using this front-end and the Pac-Drive, see below:

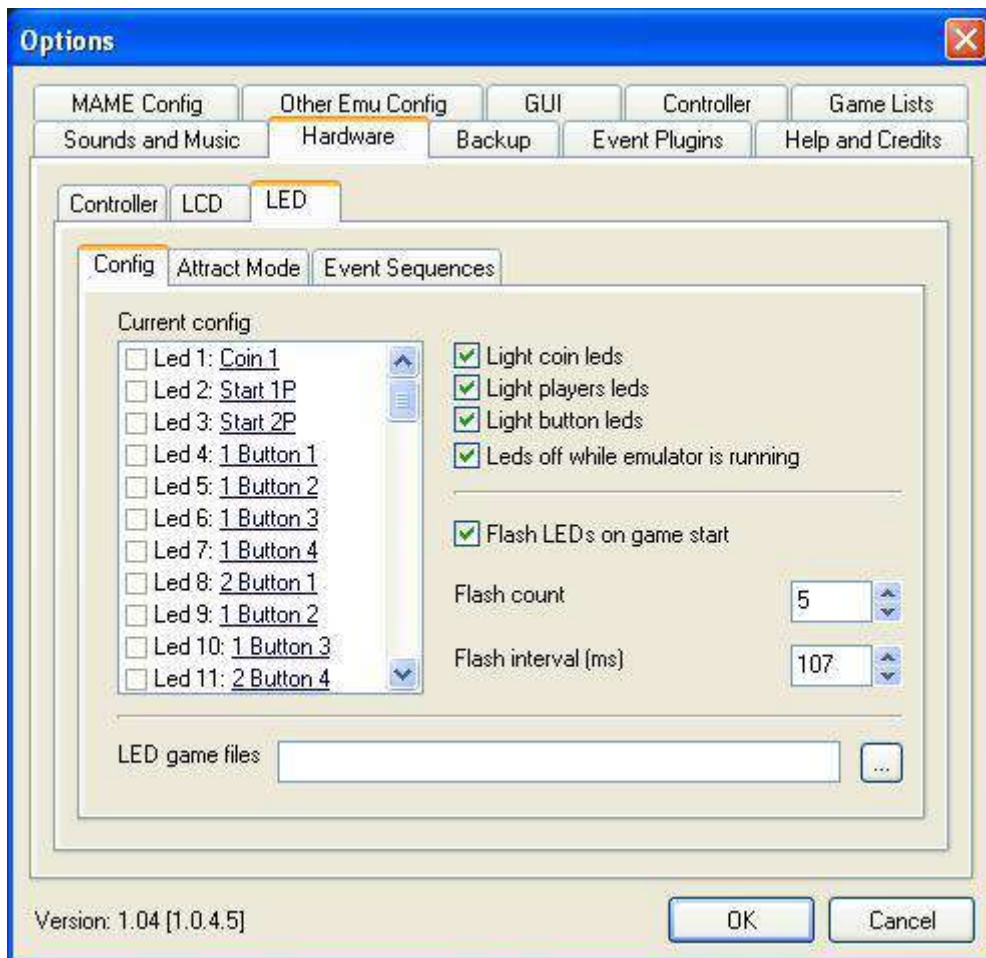First, right-click on the MALA screen and select "options"

Then, in the menu, select "Hardware".

You should see the window below:
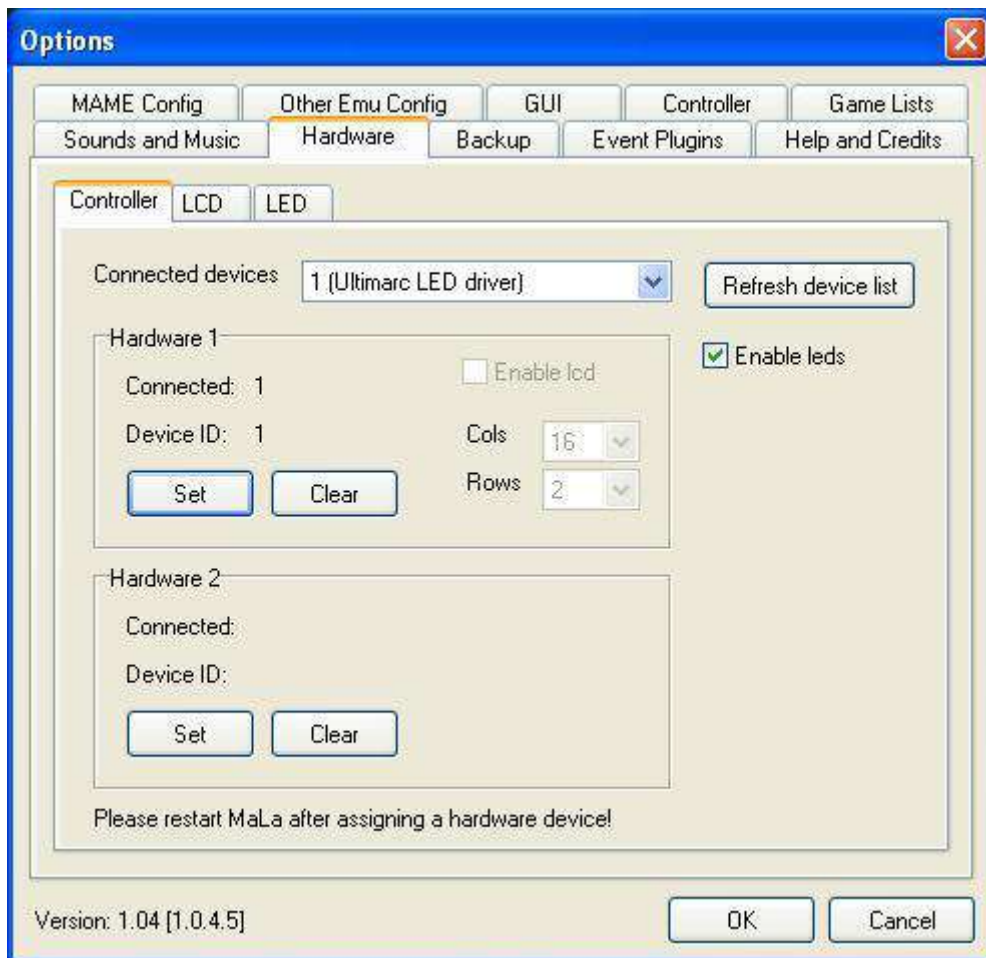
In this window, the detected Pac-Drive board should be shown. Click on "set" to use this board.

Then click the LED tab and the window below should be displayed:

In this window, in the left-hand area, you can click in the tick-boxes to test each LED. (the tick-boxes are for testing only and don't affect the saved configuration). Then, for each LED, click on the description text (which will be "not used" if you have not yet configured). Assign each LED to a button in the resulting drop-down selection.

In the right-hand area, the tick-boxes enable the LEDs to be illuminated for controls which are used in each game. If you enable these, you will see the LEDs change as you scroll through the game list in the main MALA game menu.

In addition, you can set up an "attract-mode (idle mode) LED flash display. Click on the Attract Mode tab and you will see the window below:
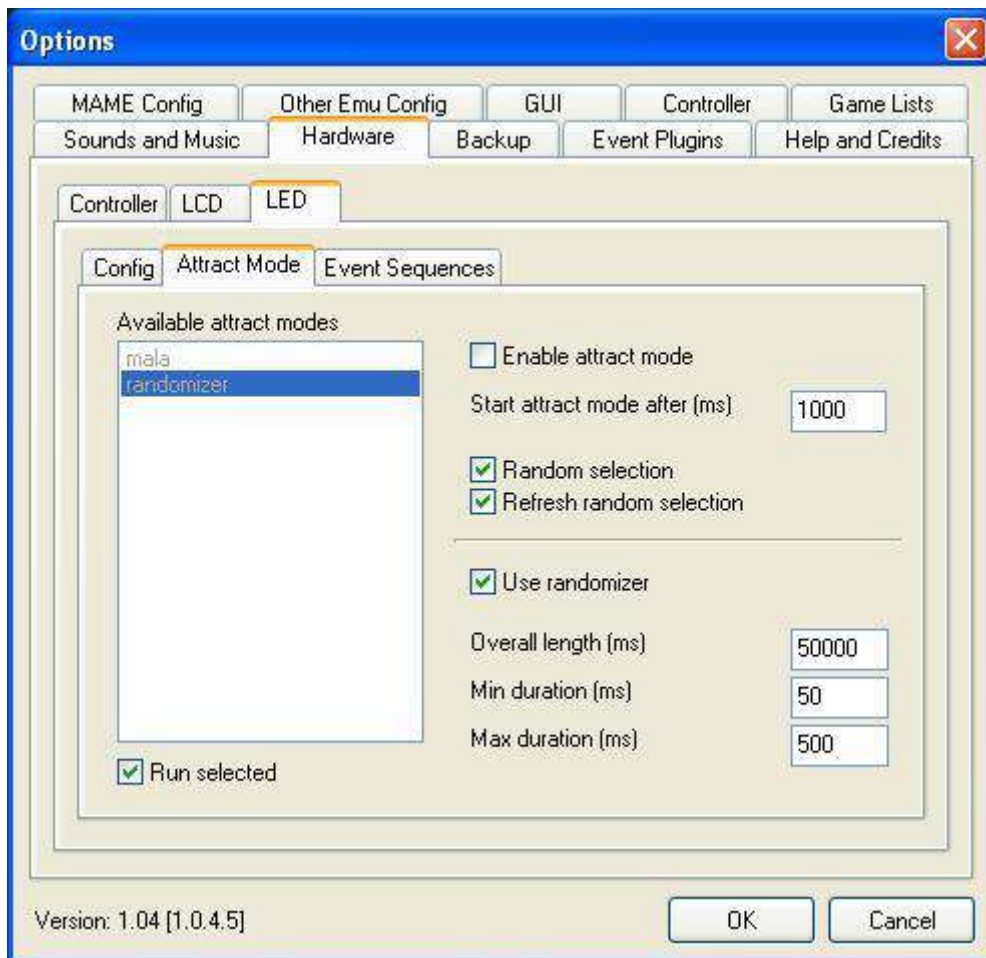
Here, you can choose to have a random LED flash pattern during idle mode. Or you can use a pre-defined flash pattern. You can define and save patterns for use here, using the MALA Attract Mode Editor which is a separate program. The screen is shown below:
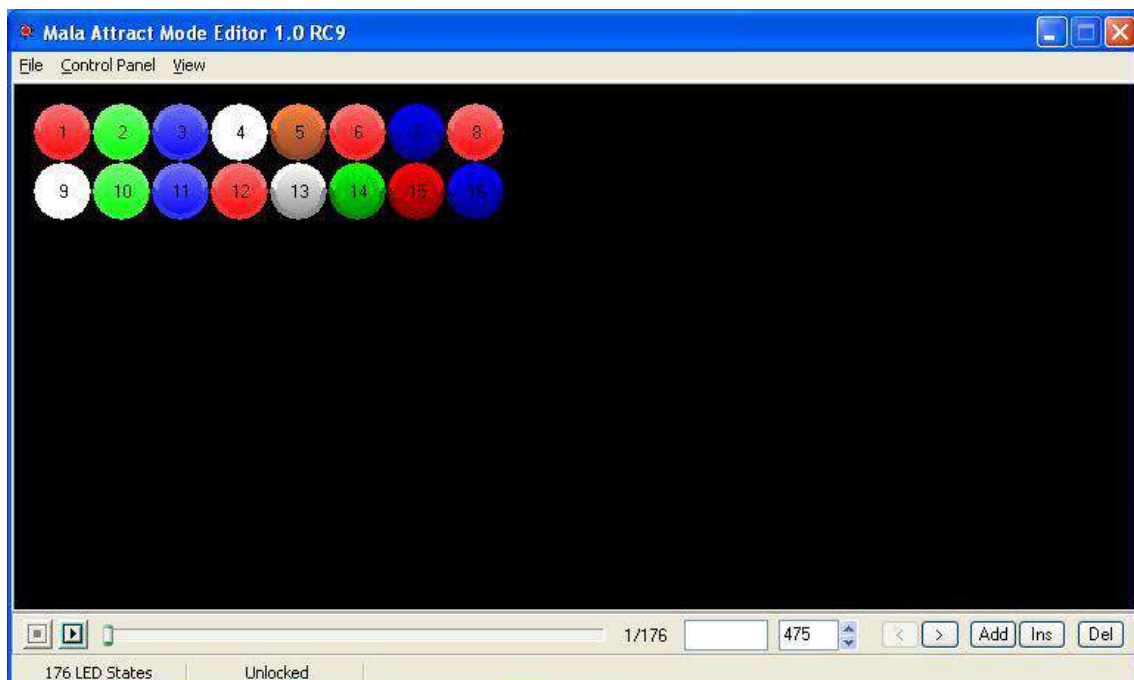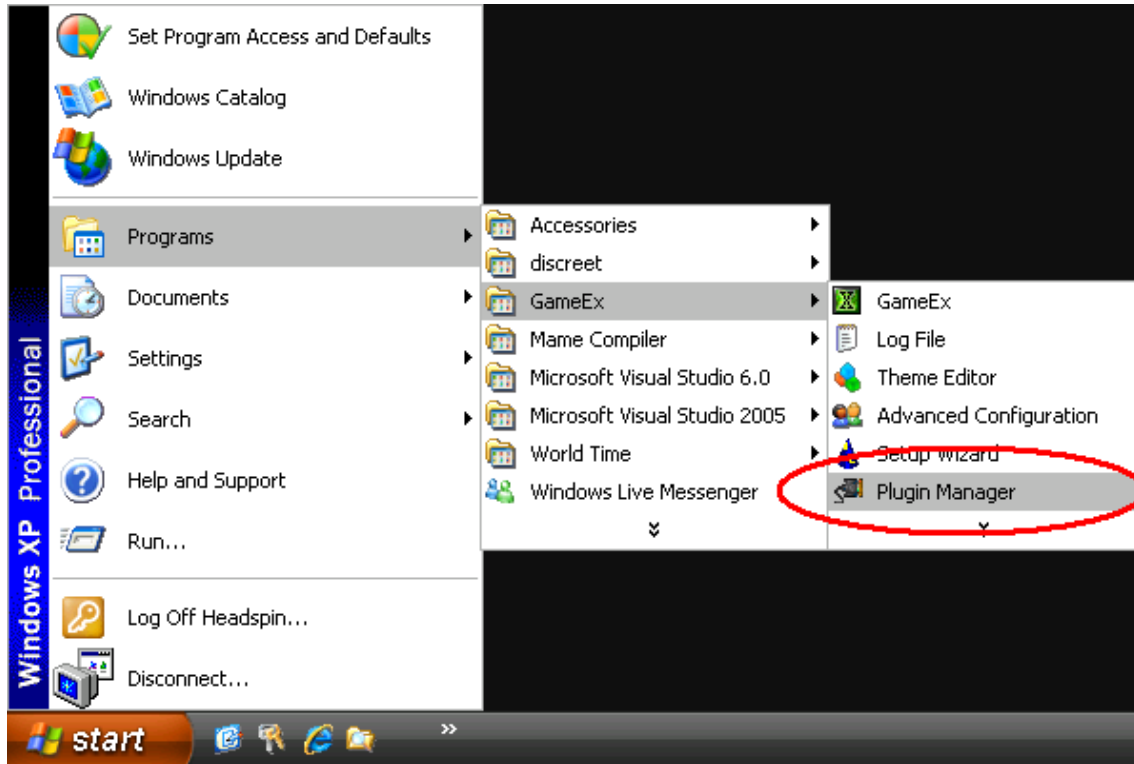

Using the Pac-Drive board with GameEx.

GameEx is a front-end for MAME and other emulators. You can download it from http://www.gameex.net/.

GameEx supports the Pac-Drive using a plugin that is available in the official GameEx download. To setup your PC to use the plugin follow these instructions.
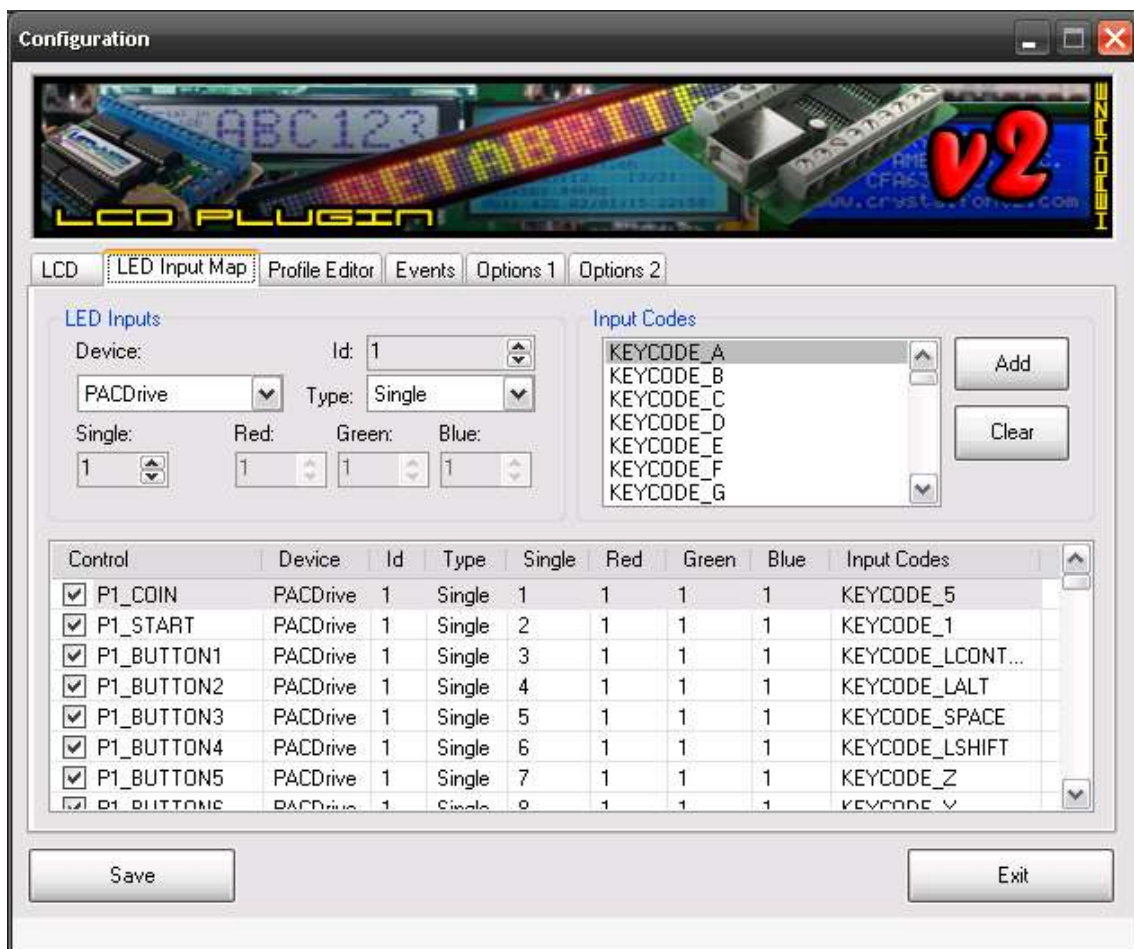
First select Start > Programs > GameEx > Plugin Manager.

The Plugin Manager will now open on screen.
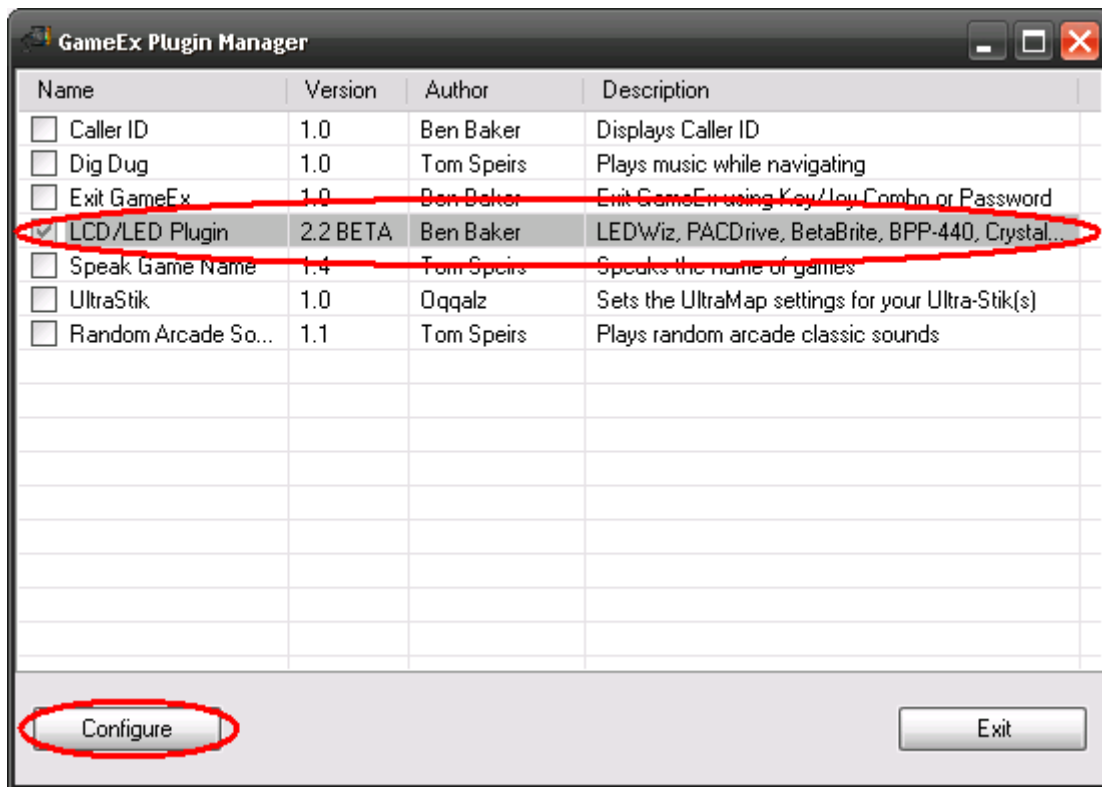
Select the LCD/LED Plugin from the list and put a tick next to it to enable the plugin. Then select Configure.

Go to the LED Input Map page and assign the inputs associated with your PacDrive including the Input Codes for use in MAME. You should see the LED's light in realtime as you configure your ports.

That is all you need to configure the plugin for use with the Pac-Drive in GameEx. This plugin also support's Arzoo's LED Animation Editor which is used to create LWAX files which are animation files for the Pac-Drive.