Installation.

**Connecting LEDs**

Each LED must have its negative connection (cathode) connected to one of the numbered pins 1-64.

Each LED must also have its positive (anode) connection connected to one of the supply pins marked "+". Note it does not matter which of the "+" pins you use as they are all connected together on the board.

You can daisy-chain multiple LED + connections and connect to one + pin.

The picture below shows a schematic representation of three LEDs connected to channels 31-33
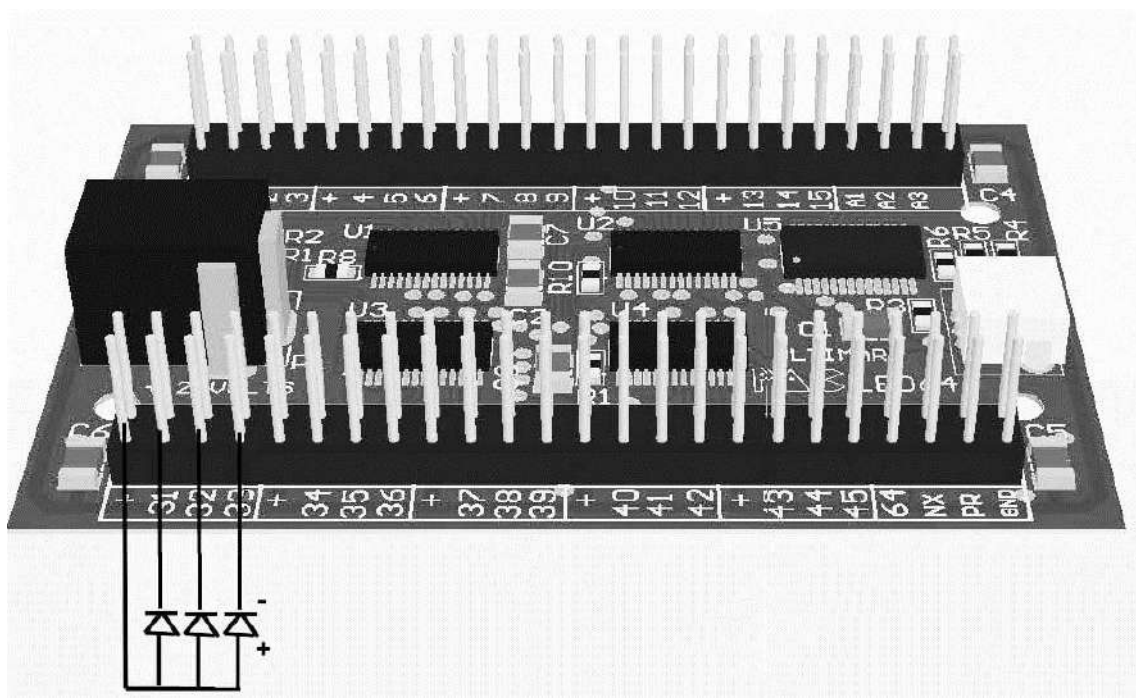
Note that if using Ultimarc Ultralux RGB pushbuttons, no additional connectors nor wiring is required. These have built-in wiring and connectors available in 2 lengths.

The pins labeled A1-A6, PR, NX and GND are for future customized OEM versions of the board and are not used in the standard version.

Connecting Power and USB

The PacLED64 is supplied with a power cable which plugs onto a spare PC power supply hard drive power connector. This supplied 5 volts to the board.

Also, connect the USB cable to a USB port on the PC.

Alternative Power Options

The LED power connector can be powered from another source such as a wall-plug power supply. The voltage required depends on LEDs being used but all LEDs supplied by Ultimarc require 5 volts and the supplied power cable is pinned for 5 volts.

Current requirement is 0.02 amps X number of LEDs. Note each RGB LED counts as 3 LEDs.

Ensure CENTER pin on the connector is 5V, BARREL is ground.

Connector is 5.5mm diameter. 2.1mm pin.

Power-on

When you power on the PC, the board will immediately run a script which is pre-loaded in flash. If you have overwritten this with your own script, this will run. The pre-loaded script causes all LEDs to sequence in a fade up/down "wave" from 1 to 64. Scripts are repeated continuously.

When a command is sent by the PC via USB, the script stops running and the command is processed. The script is then not run again until the next power-on.

Using the Supplied configuration/test application

Download the application here

This app is used for the following:

- Testing LEDs and connections by turning LEDs on/off or setting to a specified brightness.

- Creating simple "attract mode" scripts and storing in the on-board flash ROM

- Assigning an ID to board, when using more than one board

Settings Tab

Start/Stop/Run Script

When clicked, all subsequent commands will be stored in on-board flash. Next time the board is powered on, the script will run and loop forever until a command is sent from the host via USB.

Clicking "Stop Recording" will end the script storage.

Clear Flash

This will cause any stored script to be deleted, so on next power-on, nothing will happen until the host sends commands via USB.

Fade Time

This adjusts the time taken to perform a fade. A fade occurs whenever the state of a LED changes, ie its brightness is changed or switched off/on. This setting affects all subsequent state changes. This can be stored in scripts.

Script Step Delay

This adjusts the time interval when scripts are being executed. This can be stored in a script. This is not relevant when sending direct commands from the host.

Brightness tab

On this screen, the brightness of any of the 64 LEDs can be set. The command is executed immediately by the board, and if you are storing a script, is also added to the script.

On the latest version (requires latest firmware) the LED(s) can also be set to flash at one of 3 rates on this screen.

Off/On Tab

On this screen, a group of 8 LEDs is set to a pattern. The LEDs are either fully off or fully on. There are 8 groups of 8 LEDs. Also, all LEDs can be set to a random pattern.

The command is executed immediately by the board, and if you are storing a script, is also added to the script.

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

There are more details and screenshots of third party software on our PacDrive page

LEDBlinky overview

This is a third-party application available in free or paid versions. It is actually a suite of programs enabling configurations to be stored, animations to be created, and has special MAME features.

Note that LEDBlinky supports direct control of the board via USB only. It does not support creation of scripts for storing on the board.

Version 5.0 required.

- With RGB LEDs, you can specify colors for individual controls or using a pre-defined colors.ini file. Colors or intensities can also be customized on a game-by-game basis.

- Use audio output (music or game sounds) to blink, fade, or animate LEDs – great for use with Jukebox software.

- Blink and speak front-end UI controls by pressing a pre-defined "Help" button.

- Blink and speak controls when pausing a game and/or play a LED animation (selected, random, random montage) or use audio output (music) to animate the LEDs. This is a MAME only feature.

- Flash start buttons when credits are available - this is a MAME only game dependent feature.

- Light start and coin buttons based on active player count for the current game.

- Flash all or active buttons when any is pressed.

- Full support for other MAME Outputs - light LEDs based on any output. Outputs can be linked to controls (P1_Button1, P2_Button2, etc.) or directly linked to a Device/Port.

- Extensive audio animation options let you completely customize how the LEDs blink to music or game sounds.

- When starting a game, LEDBlinky can play a LED animation (selected or random), speak the game name, speak each button "action" while blinking the button in its correct color, speak the primary controls, and speak a custom message. When speaking the game name or custom message, LEDs can blink in sync with the speech.

- While playing a game, LEDBlinky can play a continuous LED animation (selected, random, or random montage) or use audio output (game sounds) to animate the LEDs. The LED animation will only effect unused controls.

- See the LEDBlinky website for all details.

Controlling LEDs from your own programs

An SDK is available which includes a DLL to provide an API to enable LED control in your programs. The SDK includes the DLL, plus example source code showing its use. A test program for checking operation of the DLL is also included.

The SDK is detailed on our Programming tab above.

Third-PartySoftware and SDK Support

As most third-party software and our SDK is cross-product, we have placed all details on this page.

PacLED64 vs PAC-Drive Comparison Chart

Our PAC-Drive board can also be used for simple low-cost On/Off LED control.

	No of Channels	Dimming	Current	Can control	Voltage	Flash Storage
PacLED64	64	Yes	20mA constant	LEDs only	12 v max	Yes
PAC-Drive	16	No	500mA (max) not constant	All devices	48v max	No