LO-LED64 Latched Output Card

Product ID. : LO-LED64
Rev. : 1.10
Date : May 23, 2010
Firmware Rev. : N/A

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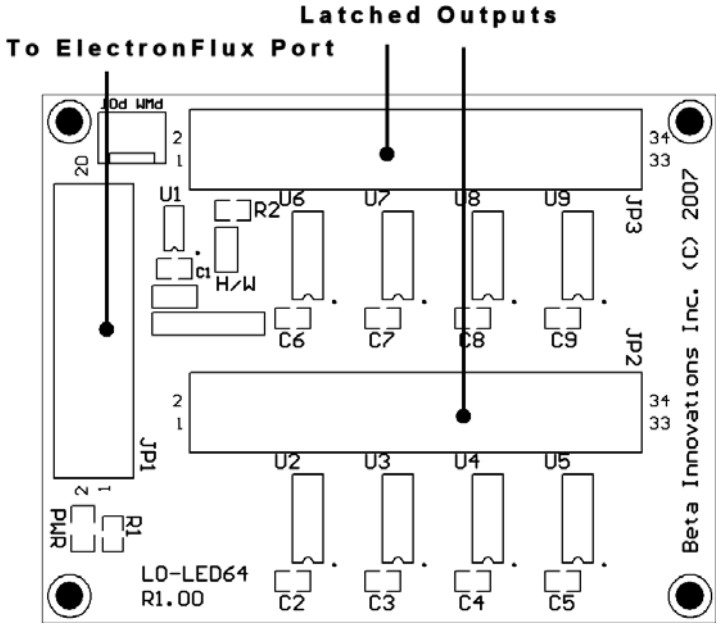
Connecting the LO-LED64 Card

IMPORTANT: DO NOT PLUG the LO-LED64 module into any port while the USB module is powered. Turn off power to the module before installing the LO-LED64 card.

With the module's power turned off, connect the LO-LED64 card to any of the ports using the keyed ribbon cable if supplied with your card. If using your own cable, care must be taken to ensure that the orientations of pin 1 on the cable connectors are matched to pin 1 of the IO port and the LO-LED64 port.



The LO-LED64 card is a passive device and will not be automatically detected by your USB module. You will need to activate the port of your module and set it to *Latched* outputs mode in the Device Manager utility in order to use the LO-LED64 outputs.

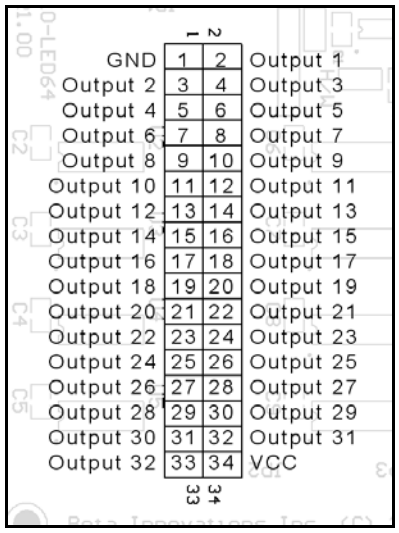
Refer to the Device Manager utility help file for details on activating port features on your USB module.

Latched Outputs

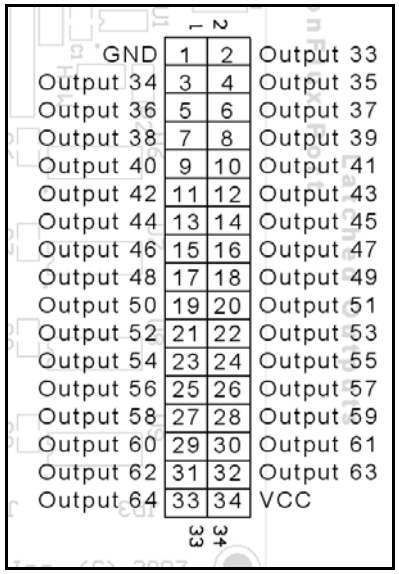
The LO-LED64 output card can provide up to 35mA @ 5VDC on all channels suitable for driving LEDs through a current limiting resistor or TTL compatible circuitry. No additional external power supply is required.

CAUTION: Startup conditions of the ElectronFlux module may cause the channel outputs to toggle momentarily until power is stabilized and the IO port pins are properly initialized.

JP2 Pinout



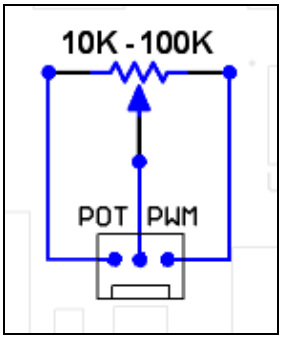
JP3 Pinout



PWM Brightness Control

For R1.00 cards, LED brightness control is achieved via software by pulse width modulating (PWM) the output from ~25% to 100% duty cycle.

Starting with R1.10 cards, LED brightness can be controlled by connecting a pot to the connector labeled *BRIGHTNESS*.



If you do not wish to use vary the brightness control on any of the output channels and maintain maximum brightness at all times, place jumper across the pins as illustrated below.

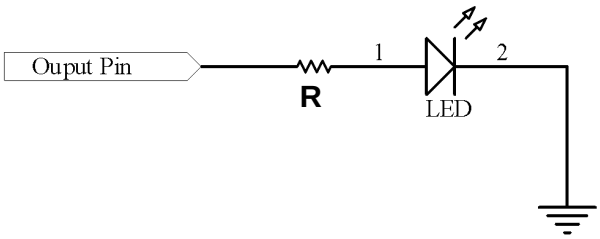
CAUTION: PWM may not be suitable for all peripherals connected to the outputs such as relays.

Connecting LEDs

Up to 64 LEDs can be connected as follows to *JP3* through current limiting resistors *R*. Adjust the value of *R* for desired brightness. Do not exceed LED manufacturer's recommend current limit when selecting the value of resistor *R*.

This method employs positive logic. Logic 1 on the output pin will turn ON the LED; logic 0 will turn OFF the LED.

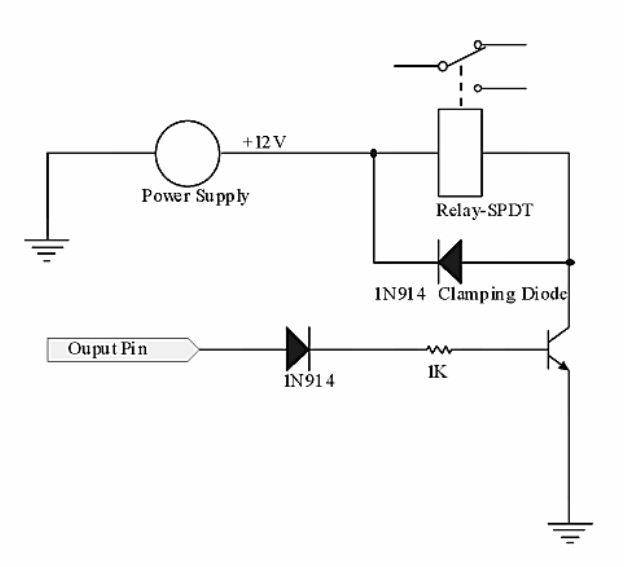
$$R = (VCC - V_{led})/ I_{led}$$



R current limiting resistor (Ohms)
VCC supply voltage (5VDC)
$\mathbf{V_{led}}$ Max rated LED voltage (2 - 3.4V typ.)
$\mathbf{I_{led}}$ Max rated LED current (15 - 25mA typ.)

IMPORTANT: DO NOT exceed 35mA current.

Connecting Relays

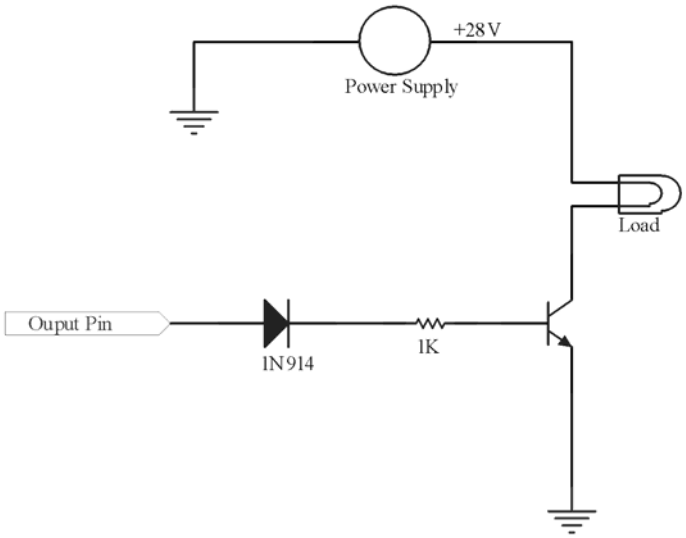


Since the output pins cannot provide sufficient supply for a relay coil (approx. 100+mA is required; output pins can provide up to 35mA), a transistor is used to provide the current necessary to drive a relay coil. A logical 1 delivered to the transistor base will activate the relay.

Use of an external power supply is necessary if the relay requires more than 12VDC. Relay coils that can be driven by the 5VDC supplied by the module. Selection of the transistor depends largely on the current required to the drive the coil in the relay. Typically a 2N3904 can be used which is rated at 60V, 200MA.

IMPORTANT: the clamping diode is used to eliminate "kickback" from the charged coil once power is removed. This clamping diode must be used at all times.

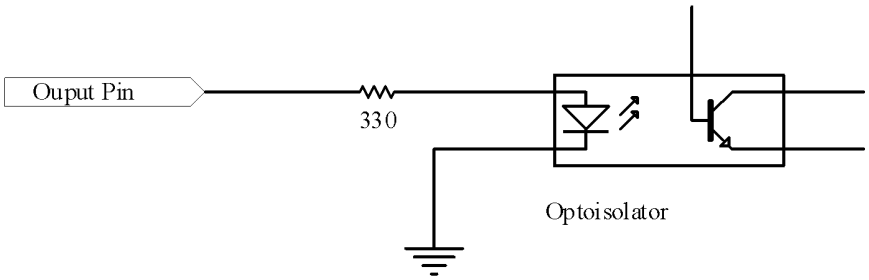
Connecting Lamps



Since the output pins cannot provide sufficient supply for high voltage lamps, a transistor is used to provide the current necessary to drive the lamp. A logical 1 delivered to the transistor base will activate the lamp.

Use of an external power supply is necessary if the lamp requires more than +12V. Lamps rated for 5V can be driven by the power supplied by the module, eliminating the need for the protection diode. Selection of the transistor depends largely on the current required to the drive the Lamp.

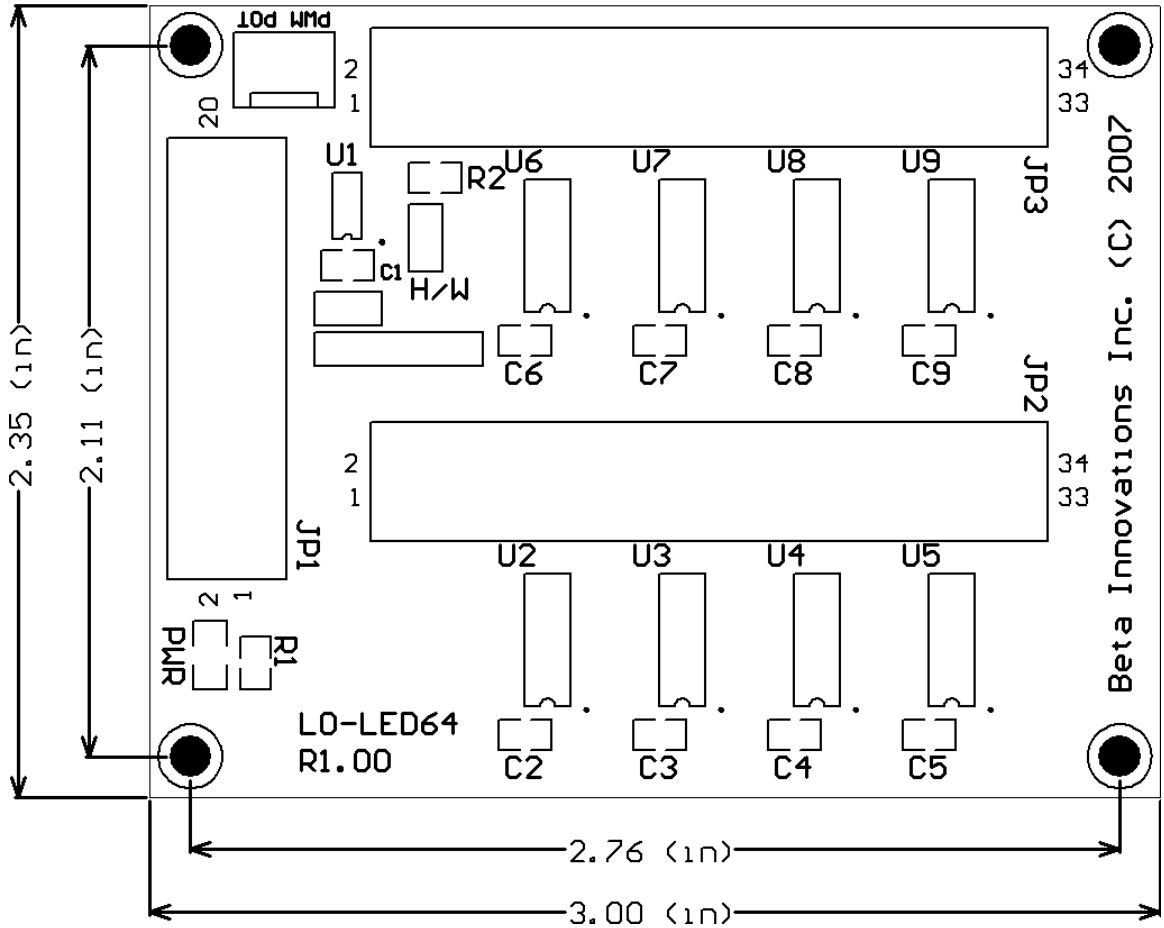
Connecting Optoisolators



Optoisolators can be employed to completely isolate the module from any external circuitry and can be connected directly to the output pins. A current limiting resistor must be connected in series. This value is typically 330 Ohms. See manufacturer's specs.

This method employs positive logic. Logic 1 on the output pin will turn ON the optocoupler LED, in turn activating the transistor. Logic 0 will turn OFF the optocoupler LED, turning off the transistor.

Mechanical Specifications



Visit www.betainnovations.ca for the availability of expansion modules and accessories.