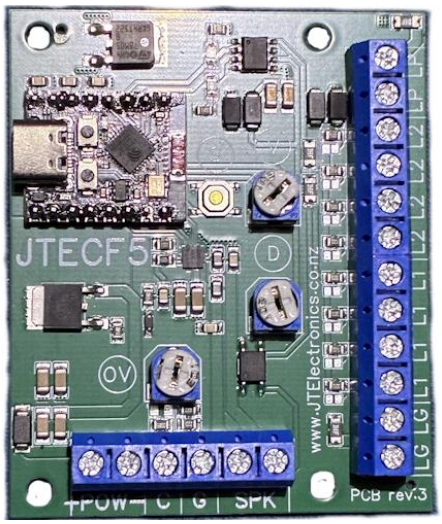
JTElectronics Versatile Crossing Flasher

Model: JTECF5



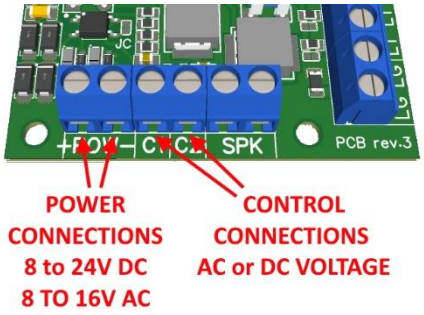
The JTECF5 Crossing Flasher will flash alternate lamps, or LEDs at a fixed rate suitable for model railway level crossing signals. There are also selectable bell sounds and a reasonably loud amplifier.

The JTECF5 can be powered from 8 to 24 volts DC. It will power lamps, or LEDs, with an adjustable output voltage of approximately 6 to 14 volts DC and up to 500 milliamps. This adjustable voltage will allow you some control over the voltage rating and brightness of connected lamps/LEDs. The JTECF5 can supply up to 500 milliamps output current combined over all of the “L1” or all “L2” output terminals. There is an “Output Delay” adjustment to allow the flasher to continue operating for a time after the Control input has been removed – to assist with dirty tracks causing the Control input to fluctuate, or to let the train pass by the crossing sensor with the crossing lights still activated. Apart from the DC power supply and lamps/LEDs, you will need to supply a Control signal from a sensor or switch. Suitable sensors are the JTEILD infra-red sensor, or the JTEDB1 block detector, or reed switches & magnets etc.

The JTECF5 is the successor to our JTECF2 crossing flasher with sound but with some useful improvements:

- Volume is much louder due to the 3-Watt digital amplifier. This will be loud enough for most environments.
- A volume control so you can adjust the volume to the desired level.
- Regulated output voltage adjustment so you can set the output voltage to the LEDs or lamps.
- Four L1 and four L2 terminals so you can directly connect multiple LEDs to each output, with each output terminal having its own 150-ohm current limiting resistor.
- The ability to bypass (short out) individual current limiting resistors so you can connect small lamps directly to the required output terminals.
- Better bell sound quality due to enhanced sound storage and amplifier.

POWER and CONTROL terminal connections

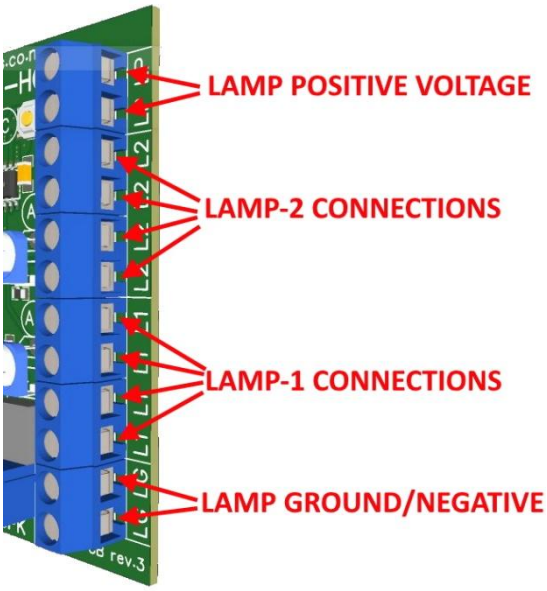


Connect your DC power supply to the power terminal connections as shown in the picture. The power supply can be from 8 to 24 volts DC, and the output voltage fed to the lamps/LEDs is regulated to between about 7 and 15 volts DC to suit your lamp voltage rating, or LED current/voltage rating. You can see how to adjust the lamp/LED voltage later in this document.

To activate (turn on) the crossing flasher lamps you need to apply a ground/ zero volts/negative signal to the "C" Control input terminal via a switch, or sensor, or another switch type device. For testing purposes, you can just connect the "C" and "G" terminals together, and you will see your lamps/LED's start to flash (and hear the bell sounds) as soon as the JTECF5 is powered up. Also, you will see two green LEDs on the JTECF5 board start to flash alternately as well when the Control input is grounded.

Connect your speaker to the SPK terminals

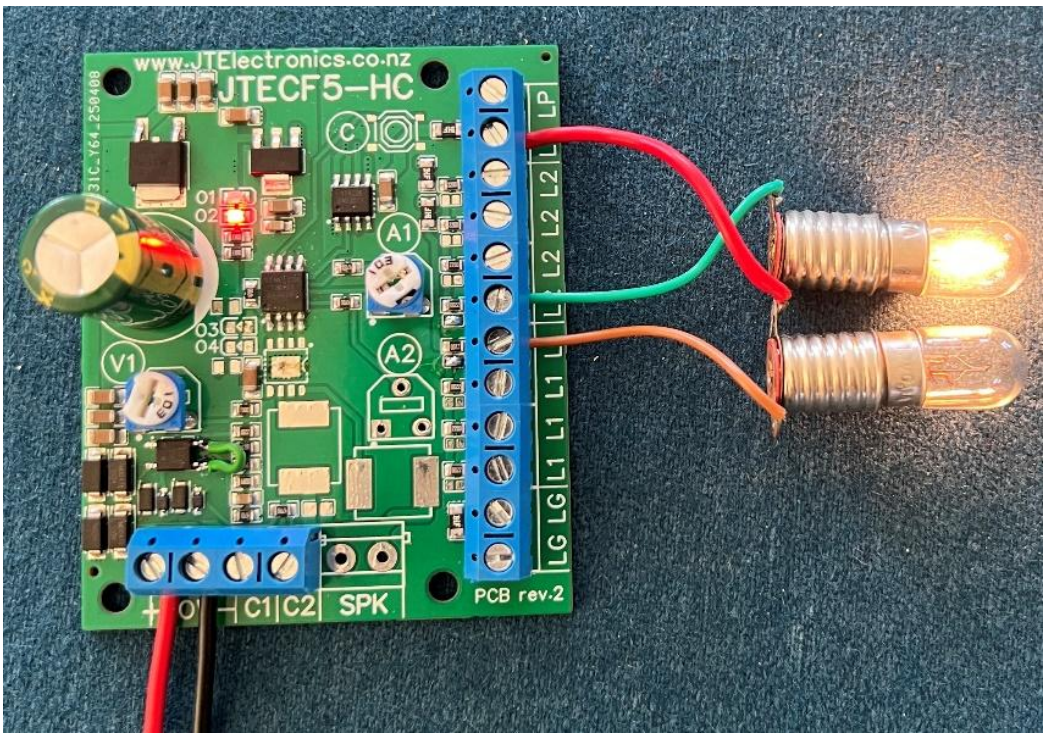
Lamp / LED terminal connections



You can connect lamps or LEDs to the "L1" Lamp-1 or "L2" Lamp-2 terminals and connect the other lamp wire to either the "LP" Lamp Positive, **or** the "LG" Lamp Ground terminals. The LP or LG terminals can be used to suit various LED wiring configurations – including common anode/positive (LP) or common cathode/negative (LG). Lamps won't care which polarity they are connected…

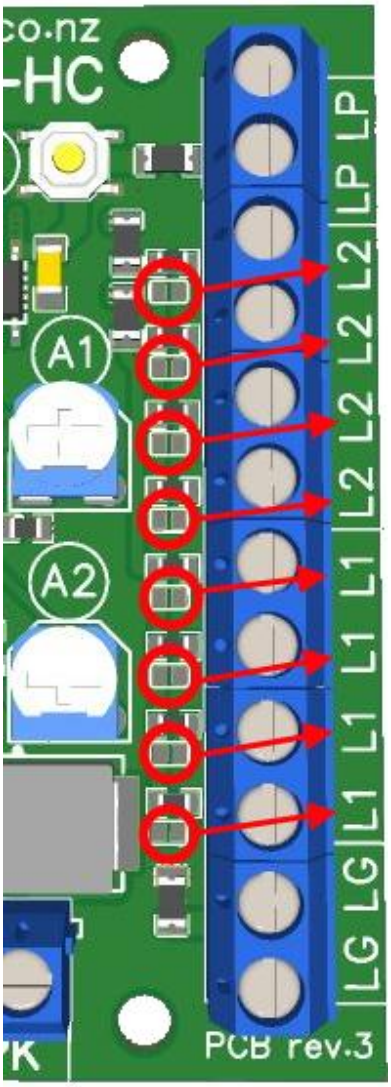
Connect your first lamp/LED to L1 and either the LP or LG terminal. Connect your second lamp/LED to L2 and either the LP or LG terminal.

There are multiple L1 and L2 output terminals and each of the four L1 terminals, and each of the four L2 terminals have an individual on-board 150-ohm series current limiting resistor to help prevent destroying LEDs due to excessive current. The value of an external resistor (if required) will depend on the output voltage setting. It is suggested to set the output voltage to the minimum of approximately 6 volts (the "OV" adjustment control fully anticlockwise) to minimise damage to external LEDs until you are familiar with additional external LED current limiting resistor requirements. You will need to "Disable" these current limiting resistors if you want to use lamps or high current LEDs etc. - details are later in this document.



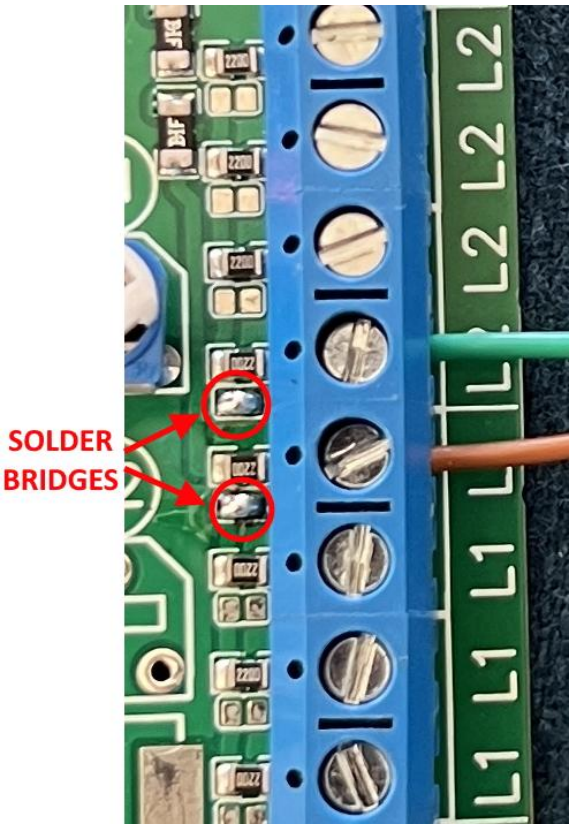
This picture shows lamps connected to the middle L1 and L2 terminals with the common lamp wire connected to the LP terminal. If you look closely, you can see the solder bridges that disable the corresponding current limiting resistors.

!!NOTE: To use lamps or other high current devices on the lamp terminal connections **you must disable (short out) the on-board current limiting resistor**, or it is very likely the lamp won't get enough current to light up properly. You can disable the current limiting resistor for the corresponding lamp terminal by carefully soldering a solder bridge (blob of solder) as shown in the following pictures. There are 8 solder bridge positions corresponding to each of the four L1 and four L2 terminals. You can use any combination of solder bridges, or not, on the L1 or L2 terminals to disable the current limiting resistor as required on each individual L1 or L2 terminal to allow the possibility of both lamp and LED connections at the same time but to different L1 and L2 terminals.

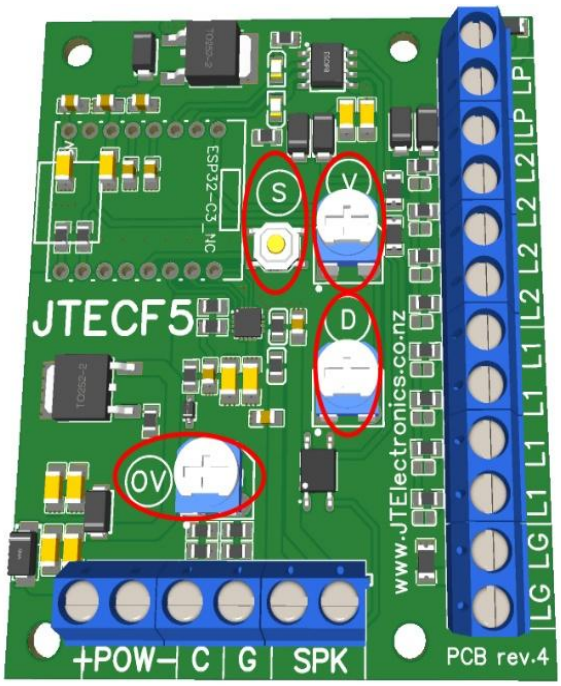


The picture on the left shows the location of the solder bridge locations and the corresponding L1 and L2 terminal

The picture on the right shows solder bridges in place for the middle L1 and L2 terminals for connection of lamps the corresponding L1 and L2 terminals



Adjustments



The JTECF5 has some configuration adjustments to suit your requirements:

S: The “S” button sets the type of crossing bell sound. Just press the button, while the LEDs are flashing, to change the sound type to your preference

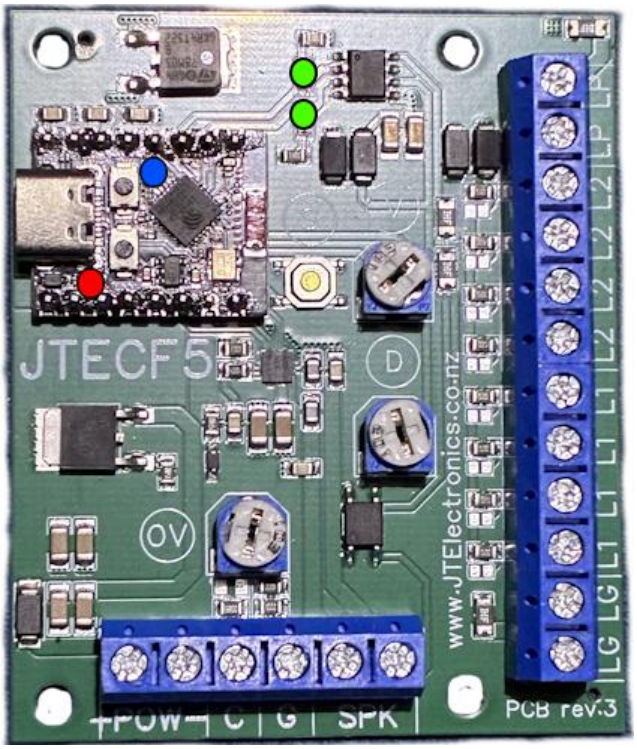
V: The “V” adjustment sets the output volume. Use it to set the required bell sound volume level.

OV: The “OV” adjustment sets the output voltage to the lamps/LEDs so you can use a lower lamp or LED voltage specification with a much higher power supply voltage. The output voltage is adjustable via the “OV” adjuster from about 7 volts to about 15 volts – with the maximum voltage depending on the voltage of your power supply less about 3 volts. When setting the output voltage, measure it by putting your DC voltmeter between the LP and LG terminals and set the required output voltage.

D: The “D” adjustment sets the Output Delay time which can be used to keep your crossing lights flashing for a time after the control input power has been removed. This can be used to assist with dirty tracks causing the Control input signal to fluctuate, or to let the train pass by the crossing sensor, with the crossing lights still activated for a while. Can be adjusted from 0 to about 30 seconds.

Status LED Indicators

These status indicator LEDs will give you a visual indication of what the JTECF5 is doing:



RED – Power LED – "ON" indicates power is connected. Should always be "ON" …

BLUE – "OFF" When Control input is not activated. Steady "ON" when the Control input is activated. Flashing when Control input has been removed but Output Delay timer is active. Returns to "OFF" when the Output Delay time has expired.

GREEN – These two green LEDs mimic what is happening on the LED output terminals. When the Control input is activated, or the Output Delay timer is still active, they will alternately flash – exactly like LEDs or lamps connected to the output terminals.