



## A2Z Tech WA2IVD Mini Bar Crowbar Circuit Basic Kit User Guide

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## Introduction

The MiniBar crow-bar circuit is designed to protect electronic equipment from damage because of over-voltage in the event of a power supply failure. It is designed for equipment that operates nominally at 13.8 Volts DC. It is designed to trip and blow the on-board fuse at approximately 15 Volts DC. This is well within the safe operating range for most radio equipment and is still above the maximum output for regulated power supplies and automotive charging systems.

Revision C of the circuit includes an additional filter capacitor on the SCR gate to prevent inadvertent tripping from voltage spikes that may occur if it is connected to a live power source, such as a battery and charger combination.

The MiniBar Basic includes a circuit board with all surface mount components mounted. This provides a fully functional crowbar circuit. You can provide your own connectors and fuse holder, or you can hardwire the MiniBar into your own project without using separate connectors.

The MiniBar is designed to trip nominally at 15 volts. The actual trip voltage can vary from 14.6 to 15.4 volts.

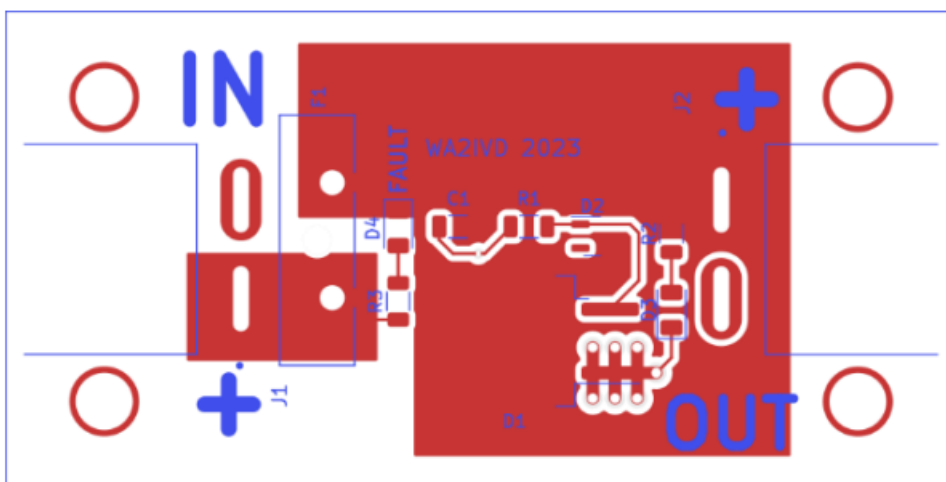
Multiple connection options are possible. The MiniBar can be used with its own internal fuse or with a separate external fuse. The MiniBar can be connected with power running through it. For higher power applications, it can be used for the crowbar function only with primary power running external to the MiniBar.

**NOTE:** REV C of the MiniBar includes capacitor C2 in the SCR gate circuit to prevent trips from voltage spikes when connecting to a live DC power source.

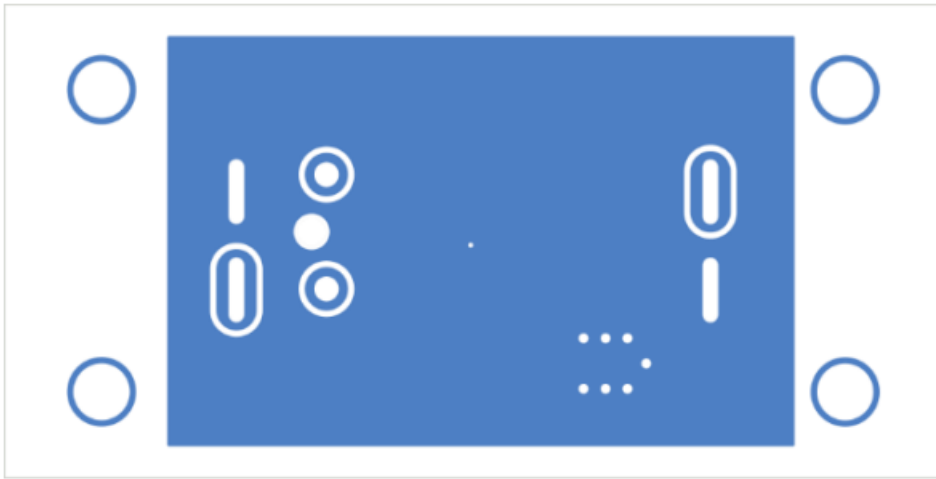
However, it is still good practice to turn power off whenever possible before connecting power sources, loads, or other equipment.

## Board Layout and Schematic

When wired in its normal configuration, the positive load current goes through the fuse and solid copper planes on the front side of the board. Negative load current goes through a solid copper plane on the back side of the board.



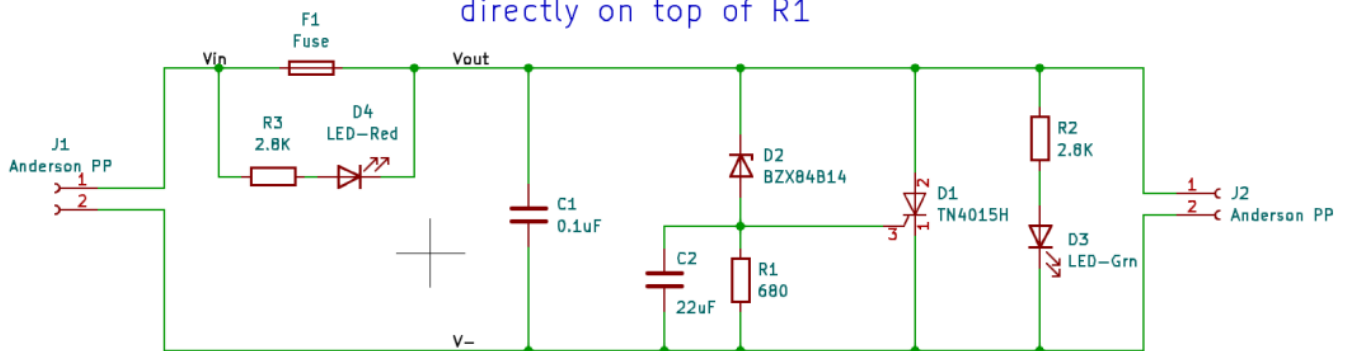
### PC Board Front side Copper & Silkscreen



## PC Board Back side Copper (viewed from front)

NOTE:

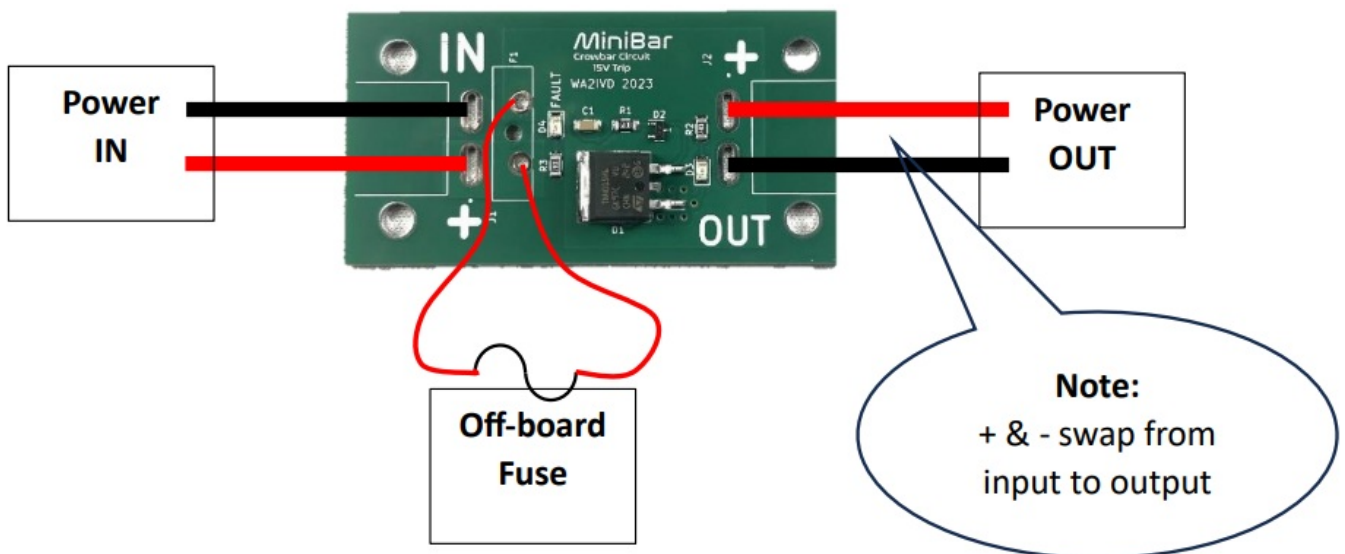
On early REV C units, C2 is soldered directly on top of R1



## Schematic

## Wiring Options

Standard connection with power running through MiniBar



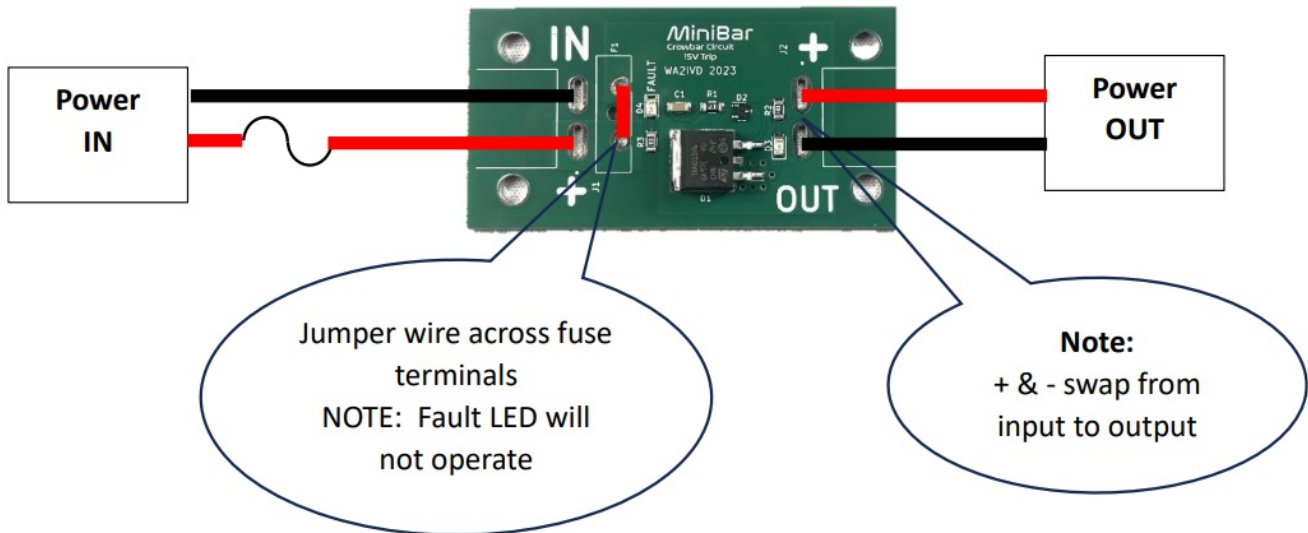
**NOTE:** Max of 15 Amps Continuous or 25 Amps @ 50% or less duty cycle (30 seconds) Maximum fuse size: 30 Amps

You can also solder a Littelfuse blade fuse holder, or equivalent onto the board and put the fuse on the board.

Littelfuse p/n: 178.6164.001

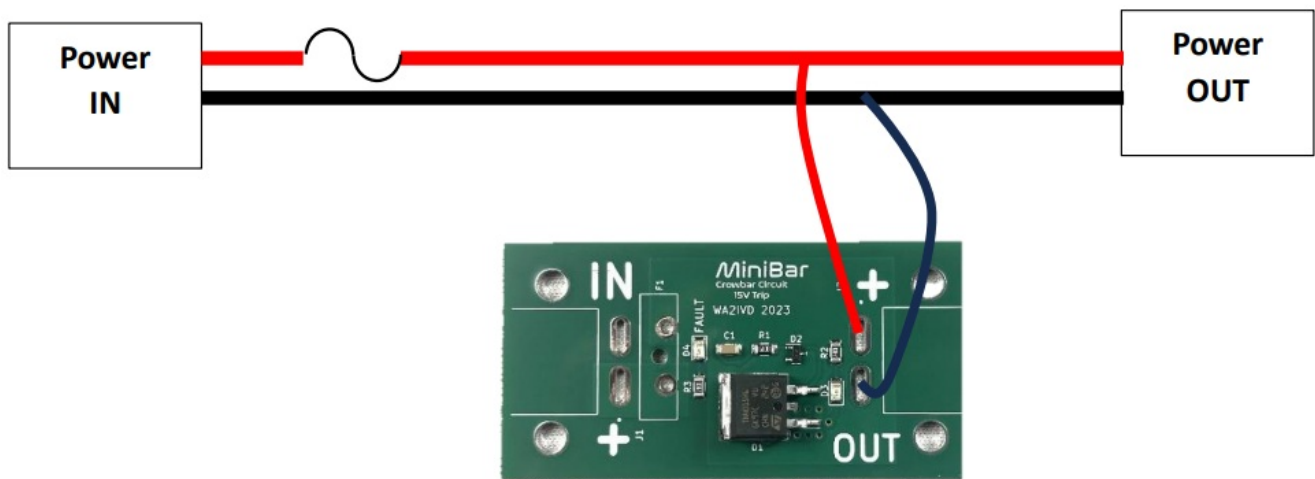
Digi-Key p/n: F5195-ND

Standard connection with external fuse at power source



**NOTE:** Max of 15 Amps Continuous or 25 Amps @ 50% or less duty cycle (30 seconds) Maximum fuse size: 30 Amps

### MiniBar for crowbar function only



**NOTE:** Red Fault LED will not operate when crowbar trips.

**Important:** Use heavy gauge wire to connect MiniBar to power circuit if input fuse is large. The MiniBar may be damaged if fuse sizes larger than 40 Amps are used.

**CAUTION:** If Power source cannot supply sufficient current to blow the fuse quickly, the MiniBar may be damaged by sustaining a short circuit across the supply.

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