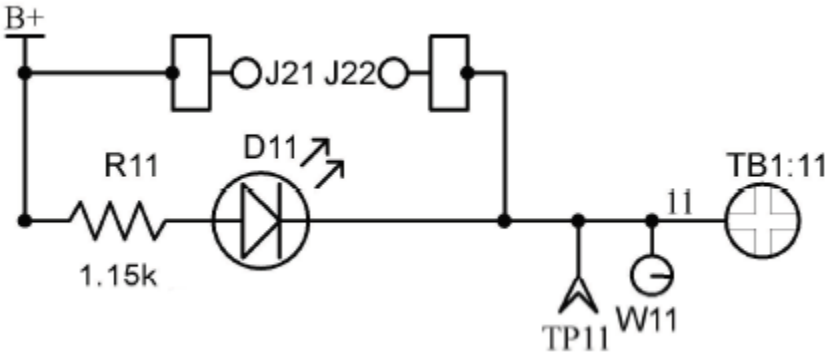
OPEN FUSE DETECTION CIRCUIT

Description and operation of the OPEN FUSE DETECTION CIRCUITS

Standard open fuse detection



B+; Converter or battery voltage.
J21/J22; Fuse clips.
TB1:11; Terminal output to 12vdc accessory.
R11/D11; Open fuse indicator circuit.

Normal Operation:

With the fuse installed in the fuse clips, B+ is routed to the accessory through the TB1:11 terminal output.
R11 and D11 are shorted out by the fuse and the LED will not illuminate.

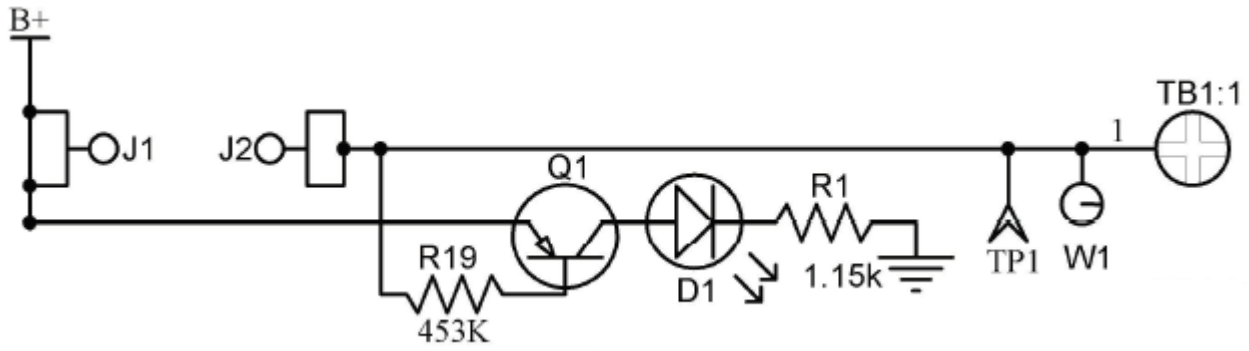
Open Fuse Operation:
When the fuse is open or removed, R11 and D11 are in line from B+ through the accessory to ground.
D11 will illuminate to indicate an open fuse.

Note:

In order for this circuit to work properly, the path from the terminal output to ground must be complete in order for the LED to illuminate. In other words the accessory is installed and turned on.
This is why unused branches do not illuminate the LED.
Also, you will read voltage at the terminal due to an open ground path.
The current draw of this circuit is between 10-13 milliamps.

OPEN FUSE DETECTION CIRCUIT

Low current open fuse detection.



B+; Converter or battery voltage.
J1/J2; Fuse clips.
TB1:1; Terminal output to 12vdc accessory.
R19/Q1/D1/R1; Open fuse indicator circuit.

Normal Operation:

With the fuse installed in the fuse clips, B+ is routed to the accessory through the TB1:1 terminal output.
Q1 is shorted emitter to base by the fuse and Q1 is turned off, the LED will not illuminate.

Open Fuse Operation:
When the fuse is open or removed, Q1 is forward biased via R19 through the accessory to ground allowing current flow through D1 and R1 illuminating the LED to indicate an open fuse.

Note:

In order for this circuit to work properly, the path from the terminal output to ground must be complete in order for the LED to illuminate. In other words the accessory is installed and turned on.
This is why unused branches do not illuminate the LED.
Also, you will read voltage at the terminal due to an open ground path.
The current draw of this circuit is between 2.5-3.2 micro amps.