



This board was designed for:

- Controlling the power input of the robot with a push button.
- Select the power source between a battery or an external alimentation.

The power sources are protected with:

- A fuse (20-30A)
- A diode to prevent polarization inversion.

The power source selection system use a LTC4353.

By default, the LTC4353 is in ideal diode mode, so it will choose automatically the power source by comparing the voltage.

We can override the ideal diode mode using a 3 state switch to select manually the power source.

The push button control system uses a LTC2950.

To turn on the robot, press the push button 2s. If the Raspberry hasn't turned on in 5s, the robot will turn off.

To turn off the robot, there are 2 ways:

- Press the push button less than 5s. The Raspberry PI will confirm the shutdown and the robot will turn off after 5s.
- Press the push button more than 5s. It will turn off the robot after the 5s.

The selected push button has 3 leds (Red, Green and Blue).

- It will blink red when the system is turning on and off.
- It will be green when the selected power source is the battery.
- It will be blue when the selected power source is the external alimentation.

An INA219 is used to measure the output current/voltage.

List of ICs:

- LTC2950: push button controller.
- LTC4353: power source selector.
- NCP718: 3.3V regulator.
- TPS3808: current supervisor used for delaying shutdown delay.
- NE555: precision timer used for blinking the red led.

Important signals:

- VCC1/VCC2: Input power (14-18V).
- VDD: Logical power (14-18V).
- VCC: Output power (14-18V).
- SDA/SLC: INA219 I2C (3.3V).
- INT: output signal of the LT2950 when the push button was pressed.
- PH: output signal of the Raspberry if we need to hold the power.
- KILL: delayed signal of PH.
- EN: enable signal of the system
- BLINK: blinking signal for the red led.

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