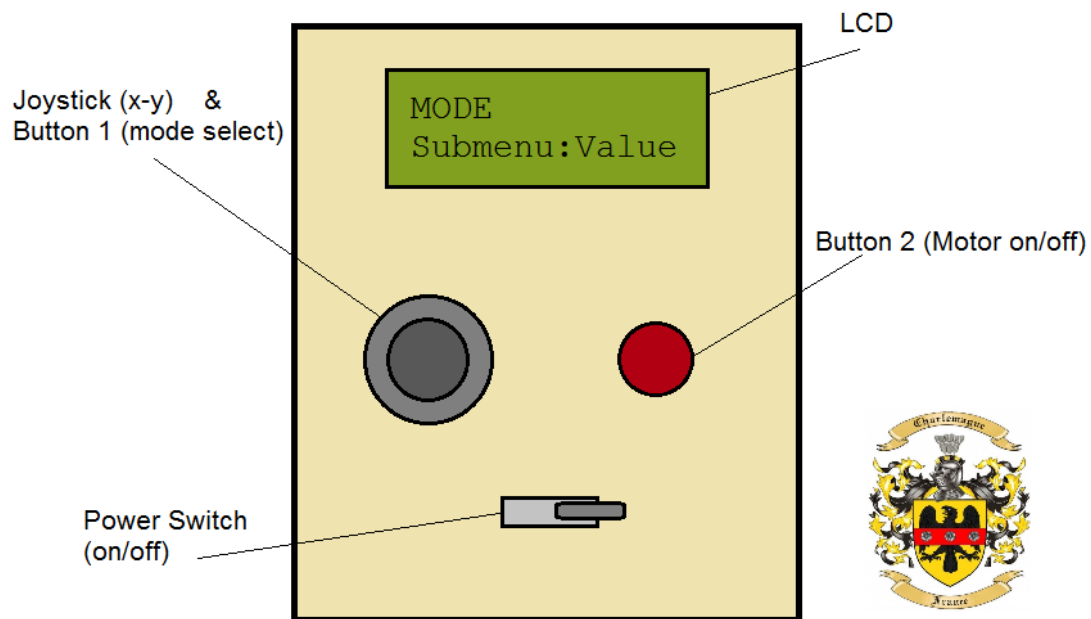


Commander Design



User Operation (the short version):

- When power switch is turned on, by default, commander turns on in MENU mode. Commander (and Robot) run in two main modes, MENU and RUN. These modes are accessed by pressing Button 2 which toggles between them subject to safe delays.
 - The type of RUN mode (Manual, Assisted, Auto) depends on the mode selected in MENU
- In MENU mode:
 - Robot cannot be moved
 - RUN mode (or type) can be selected (Manual, Assisted, Auto) and FACTORY MODE can be accessed. This is done by pressing Button 1 which toggles through these modes, changing also the first line of the LCD.
 - Using the Y-axis of the joystick (Only in FACTORY MODE) user cycles through the variable they want to change (e.g. Max Speed, IR Sample Rate, etc.). Using the X-axis, user changes value in increments; left for decrease, right for increase. These changes are displayed on the second line of the LCD.
- In RUN mode:
 - Settings cannot be altered
 - When initiated a starting delay and notification on LCD is initiated. Motors will turn on straight after.
 - Robot will not move in MANUAL mode until user input is given
 - Robot will move after this delay in AUTO
 - When Button 2 is pressed again, all motor actions stop and a safety delay and LCD notification is initiated to prevent accidental restarts.
- Emergency stops:
 - Implicitly the design works so that Button 2 acts as an urgent response stop measure, however further safety is added through the power switch which will halt all operation in both robot and commander upon being switched off.