Circuit Documentation

Summary

This circuit design involves a microcontroller (PicoW) interfacing with multiple seven-segment displays, push buttons, rotary encoders, and a switch. The circuit is designed to control and display information on the seven-segment displays based on inputs from the push buttons and rotary encoders. The PicoW microcontroller serves as the central processing unit, managing inputs and outputs to the various components.

Component List

1. **Seven Segment Display**
   - **Description**: A display device that uses seven LEDs to display decimal numerals and some alphabetic characters.
   - **Pins**: CS, CLK, DIN, GND, VCC
2. **PicoW Microcontroller**
   - **Description**: A microcontroller unit with multiple GPIO pins for interfacing with other components.
   - **Pins**: GP0 to GP28, GND, VBUS, 3V3 OUT, 3V3_EN, VSYS, RUN
3. **Push Button**
   - **Description**: A simple switch mechanism for controlling some aspect of a machine or process.
   - **Pins**: pin1, pin2
4. **Switch (Switch Off)**
   - **Description**: A switch used to open or close an electrical circuit.
   - **Pins**: 1, 2
5. **EC11 Rotary Encoder**
   - **Description**: A rotary encoder used to convert the angular position or motion of a shaft to an analog or digital code.
   - **Pins**: GND, SW, DT, CLK

Wiring Details

Seven Segment Display

- **GND**: Connected to GND of PicoW and other components.
- **VCC**: Connected to VBUS of PicoW.
- **CLK**: Connected to GP28 of PicoW.
- **DIN**: Connected to GP27 of PicoW.
- **CS**:
  - First Display: Connected to GP0 of PicoW.
  - Second Display: Connected to GP21 of PicoW.
  - Third Display: Connected to GP14 of PicoW.

PicoW Microcontroller

- **GND**: Common ground connection with all components.
- **VBUS**: Supplies power to the VCC of the seven-segment displays.
- **GP0**: Connected to CS of the first seven-segment display.
- **GP1**: Connected to pin 1 of the switch.
- **GP2**: Connected to SW of the first rotary encoder.
- **GP11**: Connected to SW of the third rotary encoder.
- **GP12**: Connected to CLK of the third rotary encoder.
- **GP13**: Connected to DT of the third rotary encoder.
- **GP14**: Connected to CS of the third seven-segment display.
- **GP15**: Connected to pin1 of the third push button.
- **GP16**: Connected to pin1 of the second push button.
- **GP17**: Connected to pin1 of the first push button.
- **GP18**: Connected to SW of the second rotary encoder.
- **GP19**: Connected to CLK of the second rotary encoder.
- **GP20**: Connected to DT of the second rotary encoder.
- **GP21**: Connected to CS of the second seven-segment display.
- **GP22**: Connected to CLK of the first rotary encoder.
- **GP26**: Connected to DT of the first rotary encoder.
- **GP27**: Connected to DIN of all seven-segment displays.
- **GP28**: Connected to CLK of all seven-segment displays.

Push Button

- **pin1**:
    - First Button: Connected to GP17 of PicoW.
    - Second Button: Connected to GP16 of PicoW.
    - Third Button: Connected to GP15 of PicoW.
- **pin2**: Common ground connection with PicoW and other components.

Switch (Switch Off)

- **1**: Connected to GP1 of PicoW.
- **2**: Connected to GND of PicoW.

EC11 Rotary Encoder

- **GND**: Common ground connection with PicoW and other components.
- **SW**:
    - First Encoder: Connected to GP2 of PicoW.
    - Second Encoder: Connected to GP18 of PicoW.

    - Third Encoder: Connected to GP11 of PicoW.
- **DT**:
    - First Encoder: Connected to GP26 of PicoW.
    - Second Encoder: Connected to GP20 of PicoW.
    - Third Encoder: Connected to GP13 of PicoW.
- **CLK**:
    - First Encoder: Connected to GP22 of PicoW.
    - Second Encoder: Connected to GP19 of PicoW.
    - Third Encoder: Connected to GP12 of PicoW.

Code Documentation

There is no embedded code provided for this circuit. The microcontroller's functionality would typically be defined by a program that reads inputs from the push buttons and rotary encoders and controls the seven-segment displays accordingly.