Circuit Documentation

Summary

This circuit integrates various components controlled by an Arduino Mega 2560 microcontroller to perform a set of functions. The circuit includes a rotary encoder with a button for user input, a graphic LCD display (GLCD 128x64) for visual output, a LIN to TTL converter for communication, and a power management module (LM2596 Step Down Module) to regulate the voltage supplied by a 12V battery. The LIN to TTL converter is also connected to an alligator clip cable for external interfacing.

Component List

Arduino Mega 2560

- Microcontroller board based on the ATmega2560
- Provides numerous digital and analog I/O pins
- Features PWM, communication, and power supply pins

LM2596 Step Down Module

- Voltage regulator module
- Steps down input voltage to a lower output voltage

Rotary Encoder with Button

- Provides rotational input and a push-button interface
- Typically used for navigating menus or adjusting settings

Graphic LCD Display (GLCD 128x64)

- Monochrome display with a resolution of 128x64 pixels
- Used for displaying text, graphics, and user interface elements

12V Battery

- Provides the power source for the circuit
- Typically used for portable and standalone applications

LIN to TTL

- Interface module for LIN bus communication
- Converts LIN level signals to TTL level for microcontroller interfacing

Alligator Clip Cable (Green)

- Used for making temporary electrical connections
- Features an alligator clip on one end and a pin on the other

Wiring Details

Arduino Mega 2560

- GND connected to the GND of the Rotary Encoder, GLCD, and LIN to TTL
- 5V connected to the 5V of the Rotary Encoder and Vdd of the GLCD
- VIN connected to the OUT+ of the LM2596 Step Down Module
- D2 PWM connected to the S1 of the Rotary Encoder
- D3 PWM connected to the S2 of the Rotary Encoder
- D4 PWM connected to the KEY of the Rotary Encoder
- D10 PWM connected to the D/I of the GLCD
- D11 PWM connected to the R/W of the GLCD
- D13 PWM connected to the Enable of the GLCD
- 3V3 connected to the A(+) of the GLCD
- D19/RX1 connected to the RX of the LIN to TTL
- D18/TX1 connected to the TX of the LIN to TTL

LM2596 Step Down Module

- OUT- connected to the GND of the Arduino Mega 2560
- OUT+ connected to the VIN of the Arduino Mega 2560
- IN- connected to the GND of the 12V Battery and LIN to TTL
- IN+ connected to the + of the 12V Battery and VIN +12 of the LIN to TTL

Rotary Encoder with Button

- GND connected to the GND of the Arduino Mega 2560
- 5V connected to the 5V of the Arduino Mega 2560
- S1 connected to the D2 PWM of the Arduino Mega 2560
- S2 connected to the D3 PWM of the Arduino Mega 2560
- KEY connected to the D4 PWM of the Arduino Mega 2560

Graphic LCD Display (GLCD 128x64)

- 20 K(-) and 1 Vss connected to the GND
- 2 Vdd connected to the 5V of the Arduino Mega 2560
- 4 D/I connected to the D10 PWM of the Arduino Mega 2560
- 5 R/W connected to the D11 PWM of the Arduino Mega 2560
- 6 Enable connected to the D13 PWM of the Arduino Mega 2560
- 19 A(+) connected to the 3V3 of the Arduino Mega 2560

LIN to TTL

- GND connected to the GND of the Arduino Mega 2560 and the - of the 12V Battery
- VIN +12 connected to the + of the 12V Battery
- RX connected to the D19/RX1 of the Arduino Mega 2560
- TX connected to the D18/TX1 of the Arduino Mega 2560
- LIN connected to the Pin of the Alligator Clip Cable

Alligator Clip Cable (Green)

- Pin connected to the LIN of the LIN to TTL

Documented Code

Arduino Mega 2560 Code (sketch.ino)

```
void setup() {
  // put your setup code here, to run once:

}

void loop() {
  // put your main code here, to run repeatedly:

}
```

The provided code is a template with empty setup() and loop() functions, which are the entry points for Arduino sketches. The setup() function is called once when the sketch starts and is used for initializing settings, while the loop() function runs repeatedly, allowing the microcontroller to perform operations based on the circuit's design and requirements. The actual implementation details would be added to these functions based on the desired behavior of the circuit.