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Information for the MicroSD Card Module

Introduction

- The MicroSD Card module is an electronic device that stores data from a microcontroller into a microSD card.
- Any microcontroller can control this sensor. However, this guide and the associate codes use an Arduino Uno or an Arduino Mega to operate the device.
- Communicating with the device is performed via the SPI method.
- The module is compatible with any microSD card.

Important Notes

- Only insert/remove a microSD card when no power supply is connected. Doing so while power is active may result in errors or damage.
- This module has six pins that need to be connected to an Arduino microcontroller. If any pin is slightly disconnected, then the module will not operate. If a module is not working, the most likely reason is a loose pin.
- The SD card file must be safely closed before power is disconnected. A Toggle Switch can be implemented to do this, which will be explained in the Wiring section.

Links

- Product Search for Module:
  https://www.amazon.com/s?k=micro+sd+card+module+arduino&crid=24MLFBXJ18ZYD&sprefix=micro+sd+card+module+arduin%2Caps%2C214&ref=nb_sb_noss_2
- Product Info for Level Converter:
  https://www.sparkfun.com/products/12009
- Arduino Library:
  https://www.arduino.cc/reference/en/libraries/sdfat-adafruit-fork/
- Arduino Code:
  https://github.com/RiceAllDay22/EGI_Arduino_Collection/tree/main/SDCardModule

Wiring

- In the following sections, four different examples are shown:
  - Arduino Uno without Logic Converter
  - Arduino Uno with Logic Converter
  - Arduino Mega without Logic Converter
  - Arduino Mega with Logic Converter
- Each example contains an Arduino board, a MicroSD card module, and a Toggle Switch.
  - The Toggle Switch is used to close the SD file safely.

- o When the switch is positioned "left" towards the 5V line, then the file remains open.
- o When the switch is positioned "right" towards the GND line, then the file closes.
- Two of the examples use a Logic Converter module.
  - o This converter ensures that the MOSI, SCK, and CS pins are operating at 3.3 V, as required by the datasheet.
  - o Those three pins can still operate at 5.0 V; however, doing so may result in errors or damage to the module and/or the SD card.
  - o Therefore, it is highly recommended that a Logic Converter is implemented when using the microSD card module.
- The operating procedure, which applies to all the examples, is shown below:
  - o 1. Assemble the circuit using one of the methods shown further in the guide
  - o 2. Insert a microSD card into the slot
  - o 3. Flip the switch to the "left" position
  - o 4. Connect the power supply
  - o 5. Upload the Arduino software
  - o 6. The microSD card module boots up
  - o 7. The circuit continuously stores data into the microSD card
  - o 7. Flip the switch to the "right" position to close the file
  - o 8. Disconnect the power supply
  - o 9. Eject the microSD card from the slot
- The Arduino code is the same across all four examples.
  - o The inclusion of the Logic Converter does not change the software.
  - o No Arduino Mega-specific features are used in these examples. Therefore, the code is compatible with both the Uno and the Mega.

Wiring – Arduino Uno Method #1 (Simpler but NOT recommended)

- This example does not include the Logic Converter.
- If the application involves long-term use, then do not use this method because the chances for errors and damage are high.
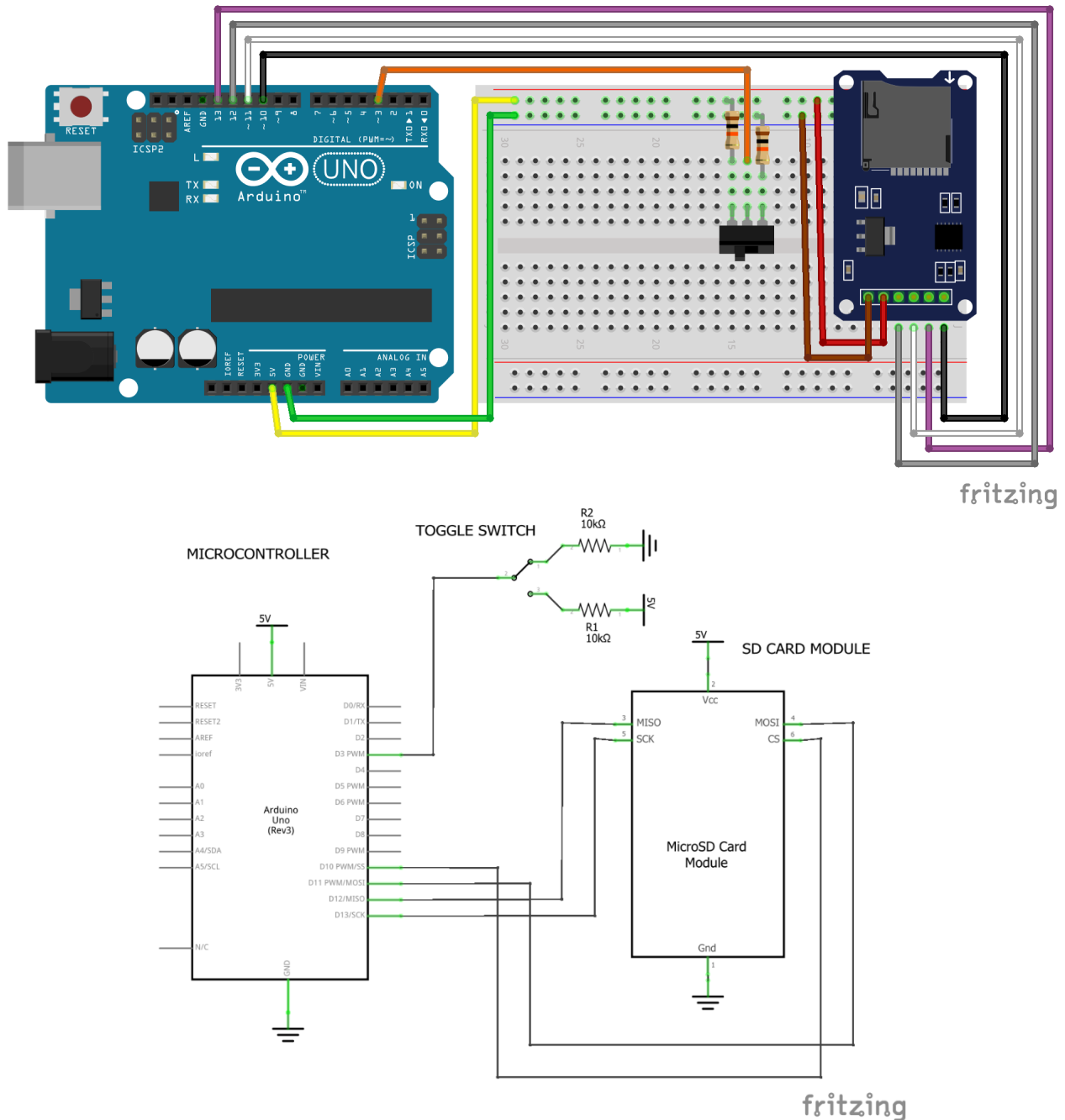

Figure 1. Wiring and Schematic diagrams for the module via an Uno without a Logic Converter

Wiring – Arduino Uno Method #2 (Recommended for reliability)

- This example contains the Logic Converter, making the module more reliable and less likely to fail.
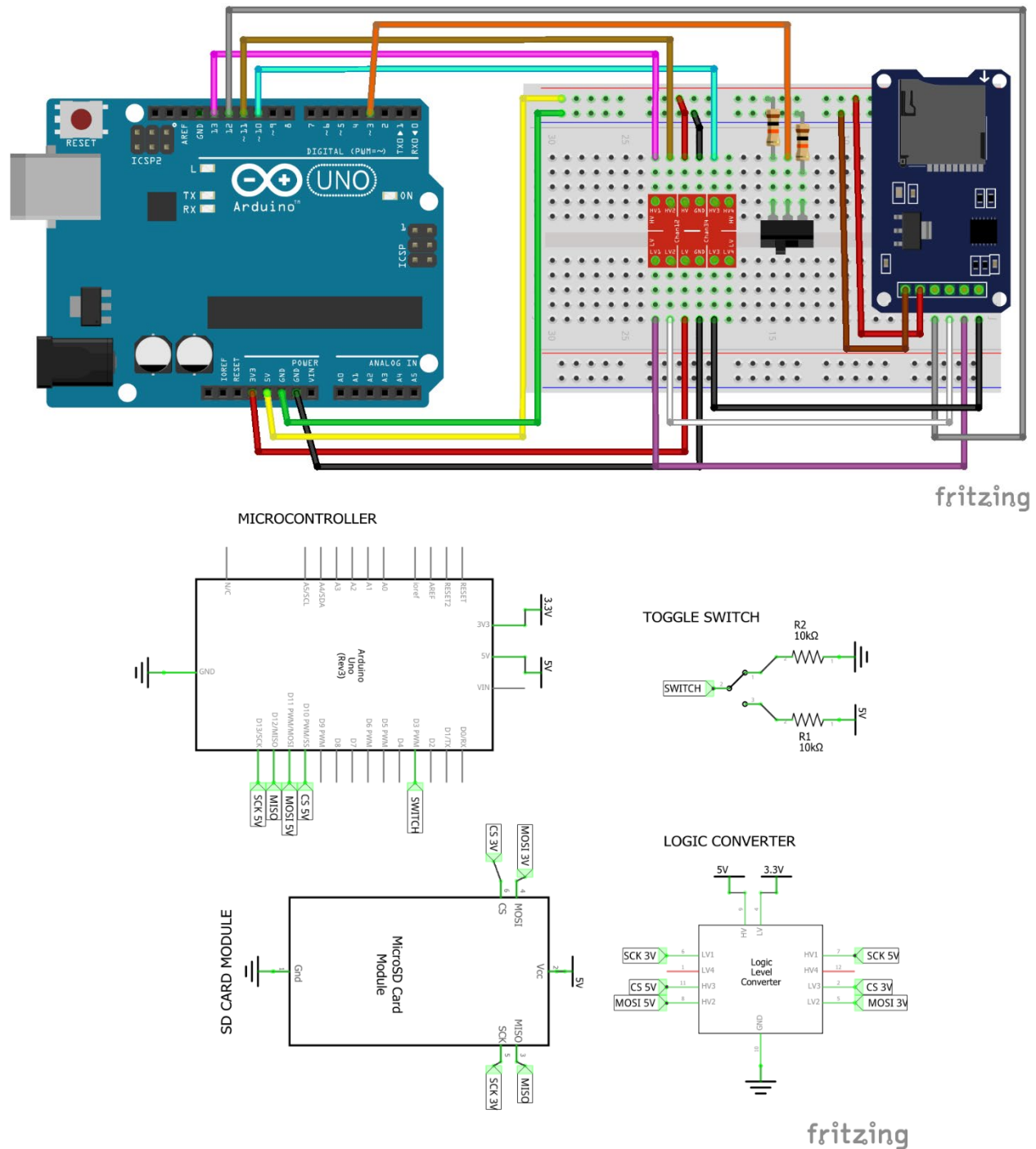

Figure 2. Wiring and Schematic diagrams for the module via an Uno with a Logic Converter

Wiring – Arduino Mega Method #1 (Simpler but NOT recommended)

- This example does not include the Logic Converter.
- If the application involves long-term use, then do not use this method because the chances for errors and damage are high.
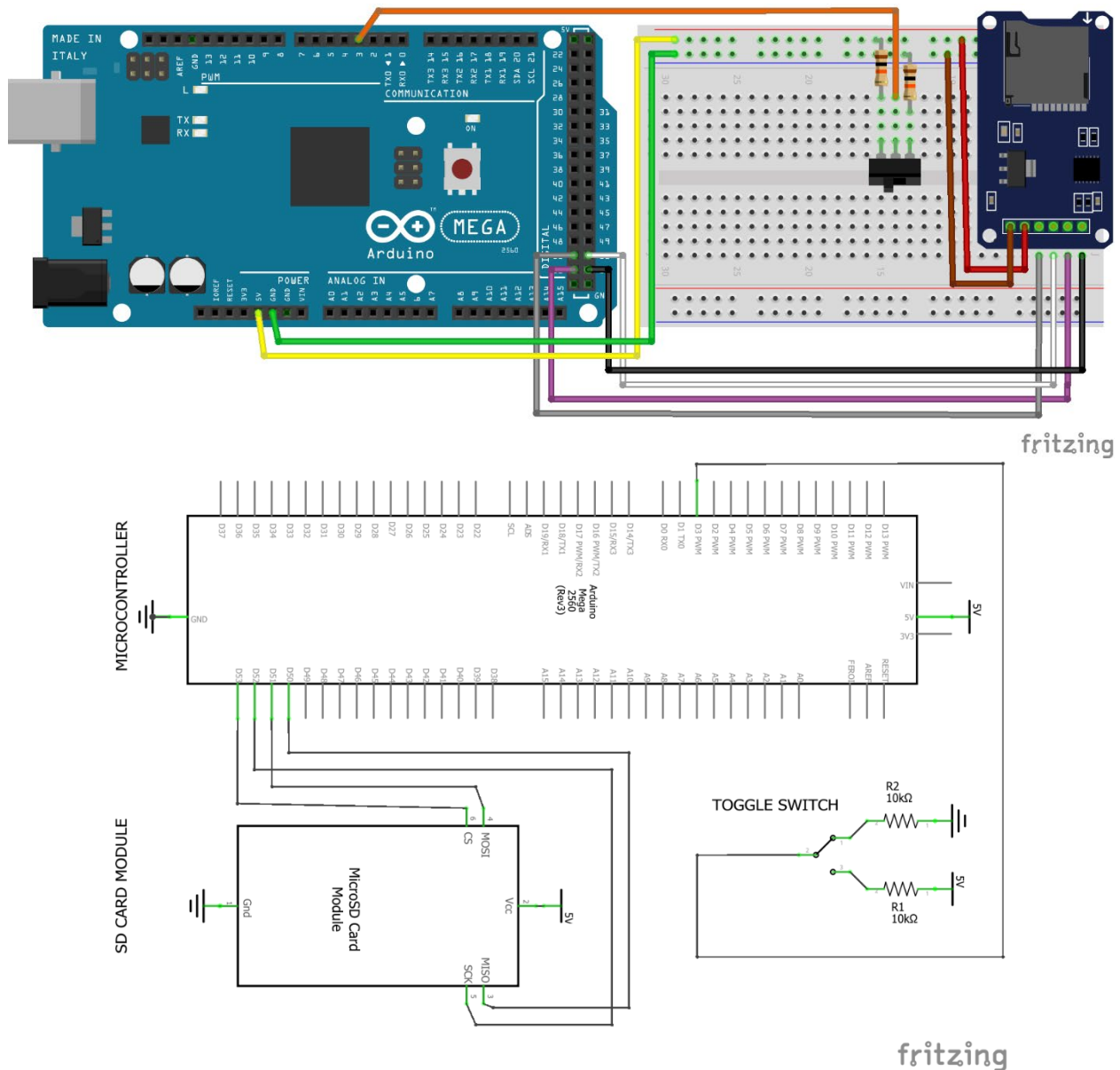

Figure 3. Wiring and Schematic diagrams for the module via a Mega without a Logic Converter

Wiring – Arduino Uno Mega #2 (Recommended for reliability)

- This example contains the Logic Converter, making the module more reliable and less likely to fail.
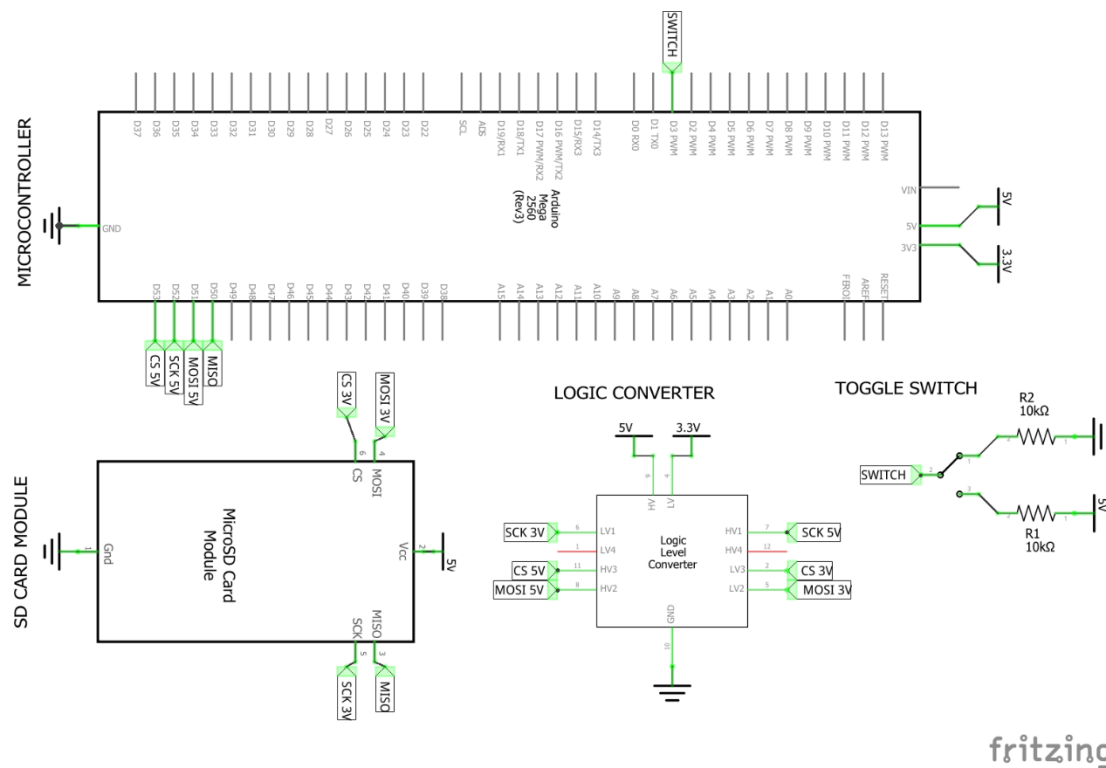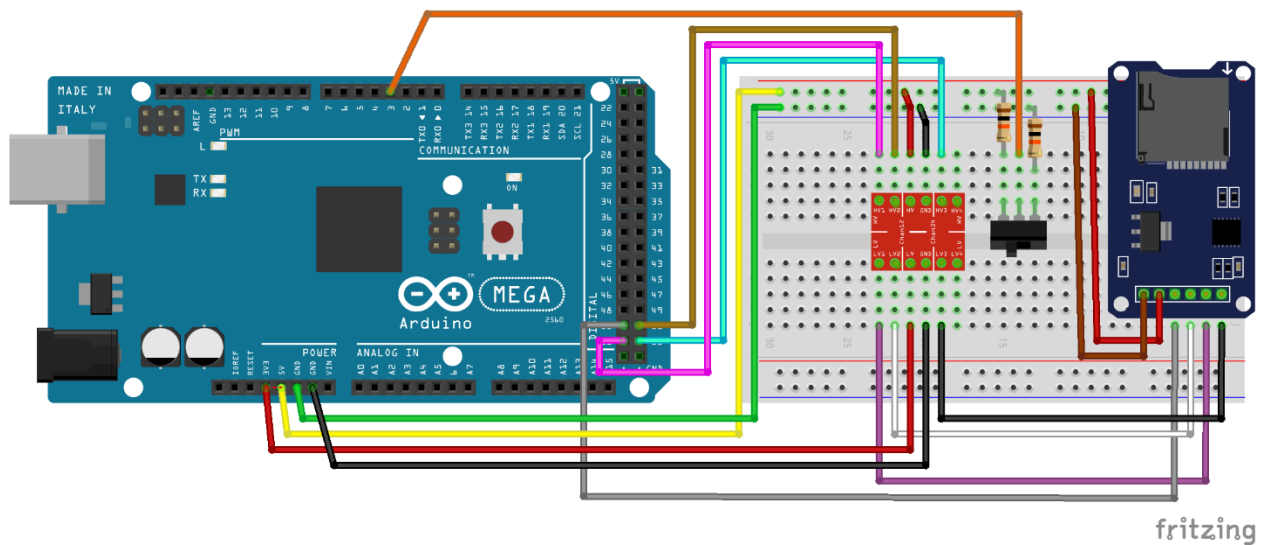
Figure 4. Wiring and Schematic diagrams for the module via a Mega with a Logic Converter

Contact

For any questions or assistance, email Adriann Liceralde at adriann8399@gmail.com.