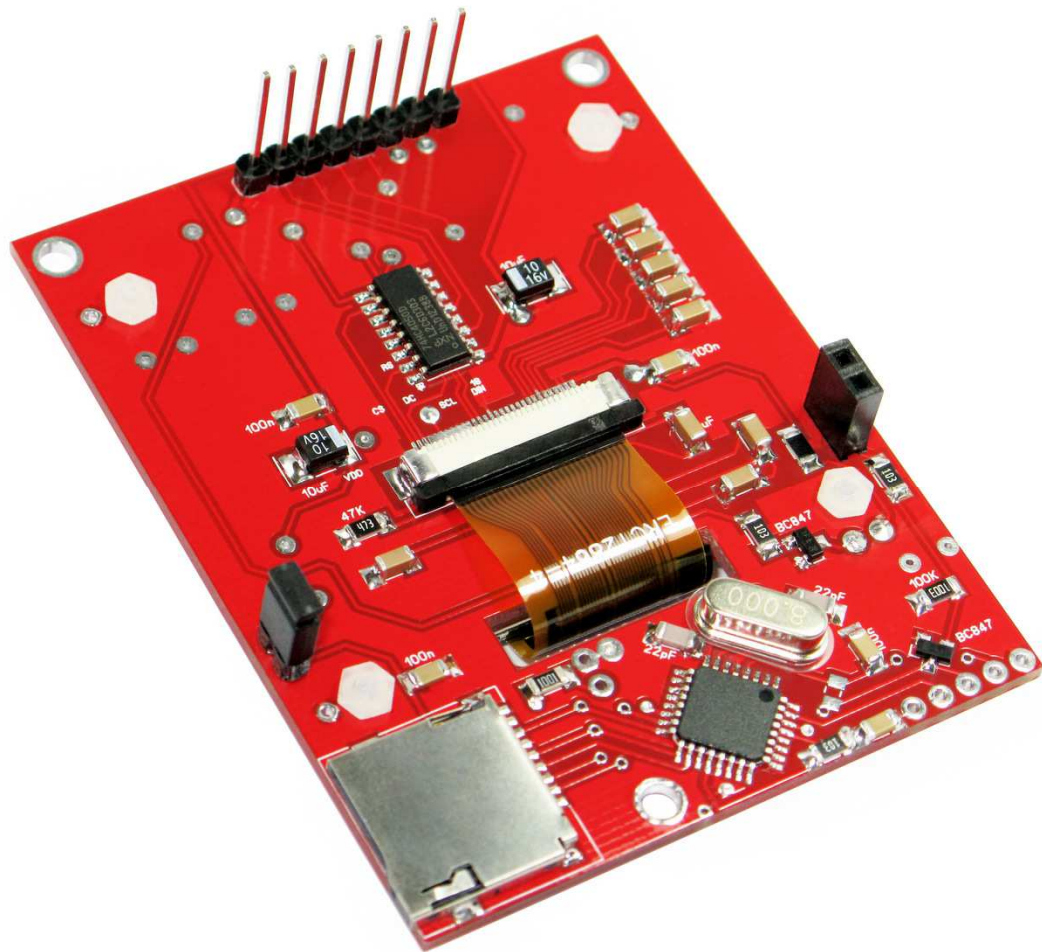


LCD Shield with SD Logger+ For MyGeiger ver.2.00



<http://rhelectronics.net>

Now you can upgrade your MyGeiger ver.2.00 DIY Geiger kit with SD Logger+ LCD Shield. By default, the kit package comes with regular LCD Shield without SD logger circuit, but when you order the kit, you can select advanced shield model "SD Logger+".

SD Logger+ LCD Shield has same dimensions as the regular MyGeiger LCD Shield. Instead of TRRS audio socket it has micro SD card socket and TQFP-32 Atmega-328A processor with preinstalled Arduino boot loader.

When you order MyGeiger kit, and if you need SD logger function, you can pay extra to get SD Logger+ LCD Shield. You also can upgrade your previously purchased MyGeiger kit by buying Logger+ shield separately.

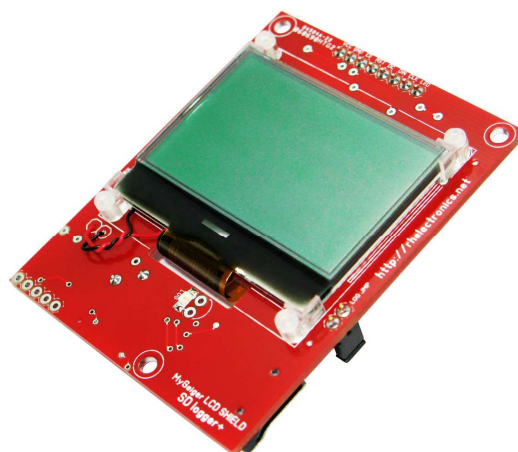
Technical specifications for Logger+ LCD Shield:

- Independent logging operation, Logger+ processor can be activated with jumper/button
- Low power consumption of the Logger+ processor; 1.5mA – 2.0mA idle
- Open Source Arduino code, log files structure is configurable
- Support Micro SD Card 2Gb-8Gb
- 128x64 Graphic LCD
- Backward compatibility with all MyGeiger ver.2.00 PCB's and firmware's
- Status LED

To keep MyGeiger project compact, Logger+ PCB has two independent circuits: the first is a LCD shield for MyGeiger, the second circuit is micro SD logger part with Atmega328 processor. Both circuits installed on one Shield PCB. Logger circuit is independent part of MyGeiger project. The idea was to create logger add-on that will log data exactly as it comes from main MyGeiger board. This implementation allowed backward compatibility with older MyGeiger boards and eliminated firmware modifications for the main PIC18F2550 processor.

SD Logger will write to micro SD all data exactly as it comes from MyGeiger DIY Geiger Kit. Depend on MyGeiger UART output settings, the kit sends CPM value each 5 seconds or Bq/cm2 results each 5 seconds. You can modify Logger+ software and configure how the final log files will look like. Only standard 8.3 file names are supported. Up to 100 log files can be created before you'll have to transfer the data to the computer and clean the card. Default sketch can be downloaded from RH Electronics website.

Because most of the operating time Atmega328 enter idle sleep mode, the power consumption of whole MyGeiger kit is still stay low as before. SD Logger adds only 1.5mA-2.0mA to the total kit consumption. When serial data is transferred from the main board to the USB output, Atmega328 enter active state for several micro seconds and writes data to the card. If SD card is missing, or if you do not need SD log function, you can power down SD logger by removing LOG JMP jumper.



How to prepare micro SD card:

We recommend to use only branded microSD cards. You need to format the SD card before usage. Please follow Adafruit formatting guide here:

<http://learn.adafruit.com/adafruit-micro-sd-breakout-board-card-tutorial/format>

Download SD Formatter software https://www.sdcard.org/downloads/formatter_4

Do not format with default Windows tool! Insert or remove the SD card only then card-reader or MyGeiger are disconnected from power source.



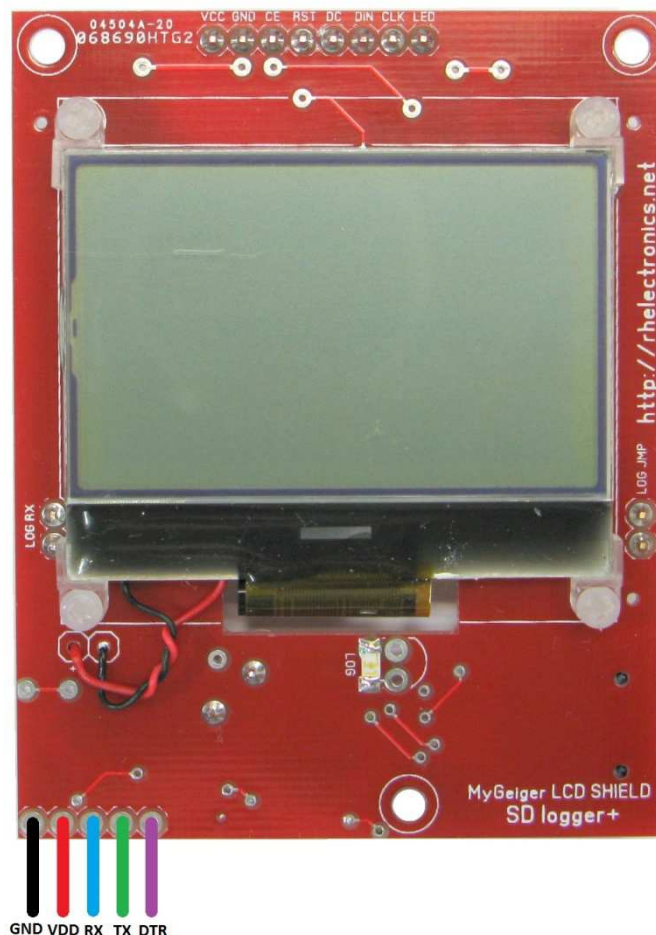
Logger+ firmware:

Logger+ program is open source and can be modified with Arduino IDE for Arduino Pro Mini 3.3V w/Atmega328 settings. Processor has pre-installed Arduino bootloader with default logger sketch.

To update the Logger+ firmware you'll need USB-TTL module with 5 pins: VDD, GND, RX, TX, DTR. To modify or update Logger+ firmware you need to have basic Arduino IDE skills.

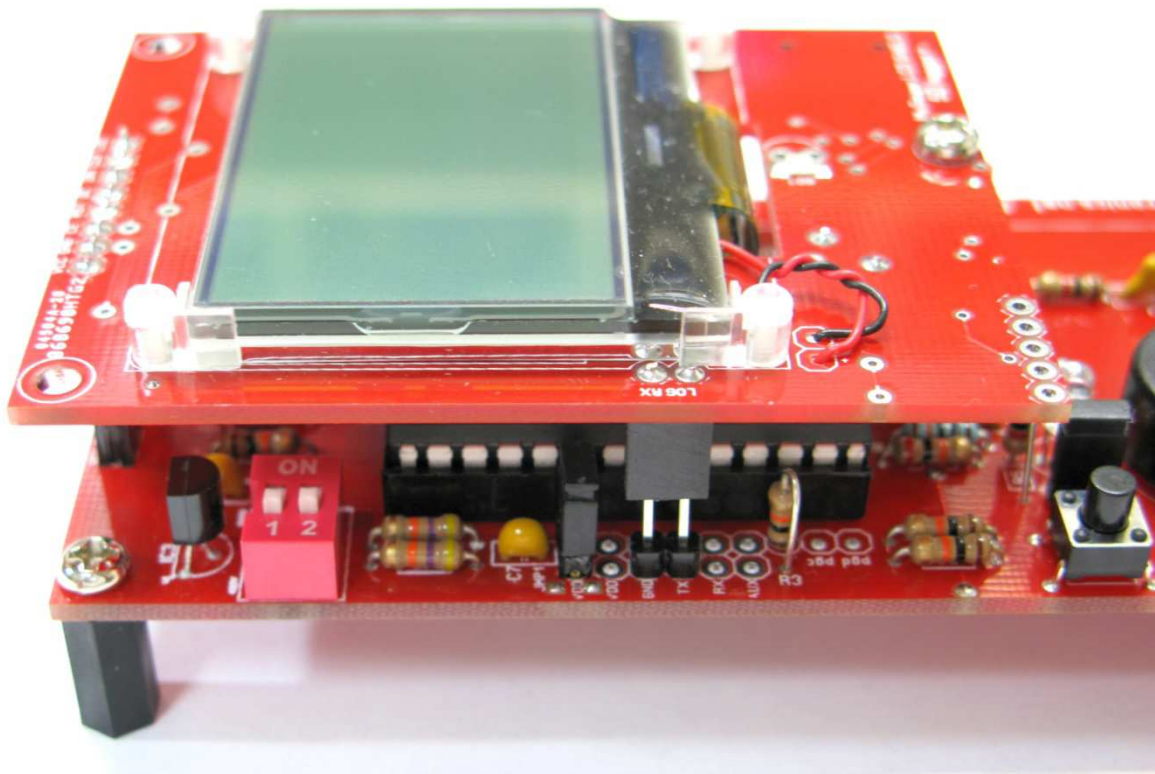


Remove LOG JMP jumper before you connect TTL module!

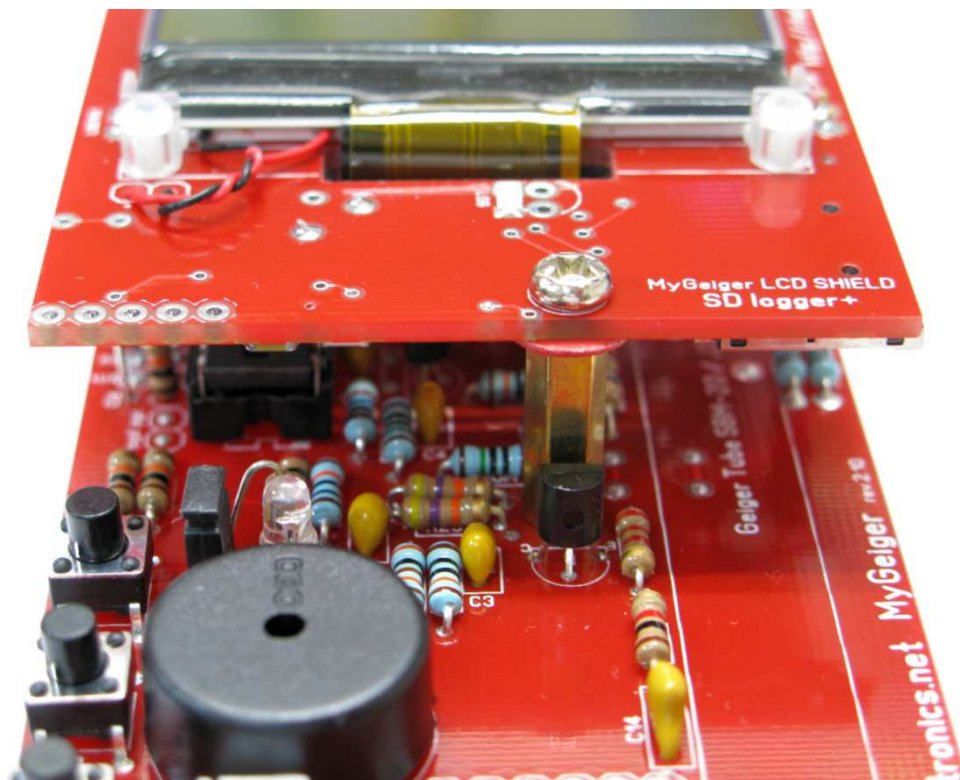


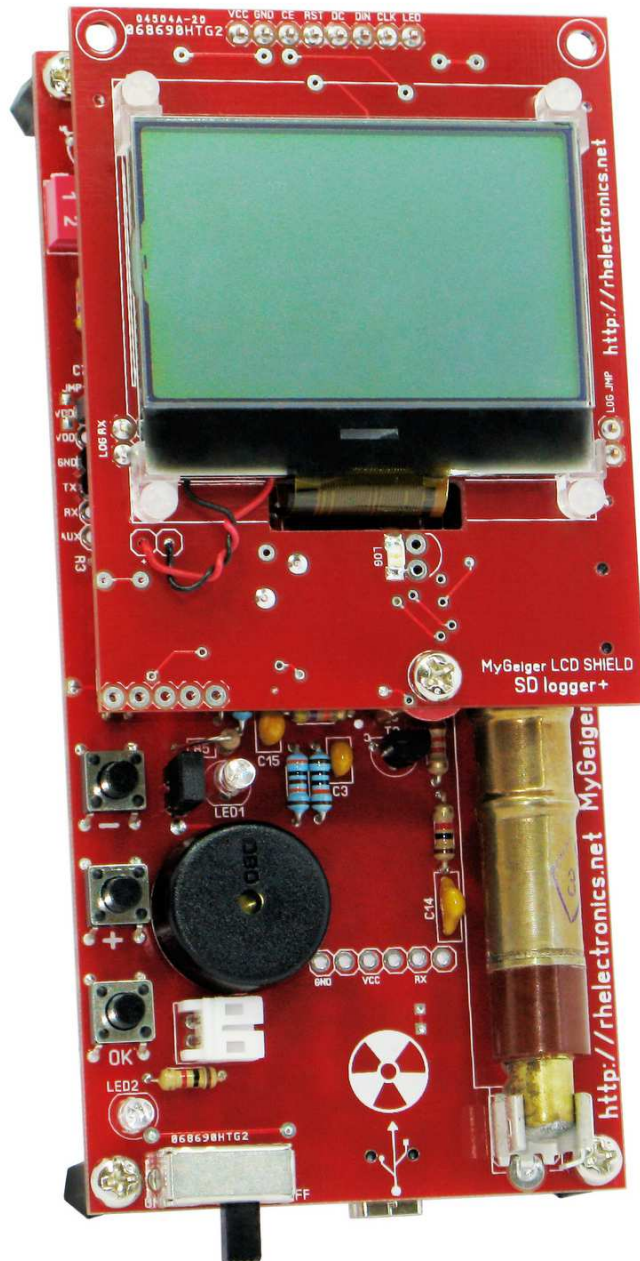
Logger+ PCB Shield installation:

Logger shield installed over main MyGeiger board in similar way like the regular LCD Shield. Be sure you add 2 additional male pins as it shown on the photo. These pins connect serial output of the PIC18F2550 to the Logger+ serial input LOG RX.



Two pins male header soldered on TX GND on the main MyGeiger board. Additional washer required between Logger+ and the standoff.



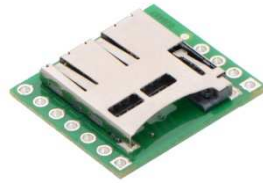


Log status LED:

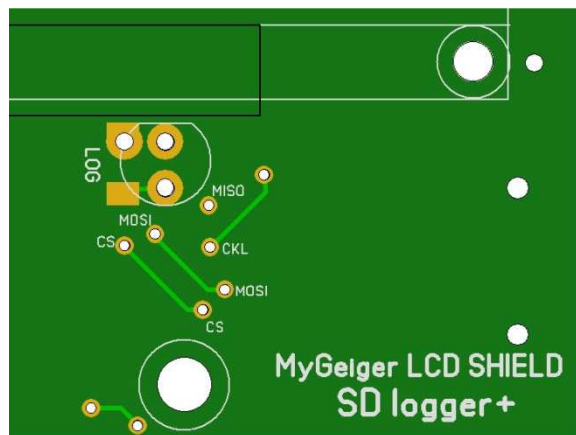
On the front side of the Logger+ Shield installed SMD status LED. If you use enclosure for MyGeiger project then you can place log status led outside Logger+ PCB. In this case it's recommended to remove stock SMD LED.

External SD Card breakout board:

If your enclosure does not allow using stock microSD socket on the SD Shield PCB, then you can use Pololu breakout module: <http://www.pololu.com/product/2597>



Be sure to wire it correctly: CS, MISO, MOSI, 3.3V, GND and CKL. See zoomed part of PCB layout below with marked microSD connections pads:



VDD 3.3V and GND can to be taken from front side TTL connector. The interconnection wires length should not exceed 15cm! The stock on-board SD socket is preferred over external breakout board for better performance and reliability.

USB logging during SD card logging:

SD Logger+ shield and MyGeiger main PCB includes hardware buffer stages to allow simultaneous logging to microSD card and to USB. You can use both logging functions in the same time if you need.

For purchasing SD Logger+ LCD Shield for MyGeiger please visit RH Electronics website:

<http://rhelectronics.net> ©