

FlashGenie 5 V SD-Card Adapter

To enable accessing SD flash memory cards with any SPI-capable microprocessor, this small circuit board provides the SD card connector and 5V-to-3.3V level translation circuitry as well as a low-drop-out 3.3 Volt regulator to supply the operating voltage for the SD-card from a 5V-powered mcu board.

For additional versatility, a real time clock chip and a holder for a 3 V Lithium battery is installed on the reverse side, to provide a permanent calendar when the mcu is powered down.

Communication with the SD card is done with the SPI protocol and requires four data lines:

CS : Chip Select

CLK : Data Clock

MOSI : master out - slave in

MISO : master in - slave out

For a detailed description of the SPI protocol and the command codes needed to get the SD card talking see the SanDisk reference manual at <http://www.sandisk.com/pdf/oem/ProdManualSDCardv1.9.pdf> (section 5).

The SD connector is of the “push-push” type: to remove the SD card, don’t pull it out but push it in.

There are two more optional connectors for detecting card insertion and sensing the position of the write-protect switch (both have pull-up resistors and are active-low), and one data line that toggles two leds for giving user feedback under MCU control (a high signal lights one led, a low signal lights the other led, a floating line lights both leds dimmly).

Communication with the DSI340 clock chip is accomplished via the I2C protocol using two lines:

SDA - serial data

SCL - serial clock

See the DSI340 datasheet for the command code definitions:

<http://pdfserv.maxim-ic.com/en/ds/DSI340.pdf>

To maintain the clock calendar when powered down, a CR2032 or CR2025 Lithium cell (3 volt) can be installed in the battery holder on the reverse side of the module (with the + side facing away from the pcb, so the stamped code on the battery is visible when inserted).

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- 1 • Led
- 2 • detect
- 3 • write-protect
- 4 • i2c-data
- 5 • i2c-clk
- 6 • spi-select
- 7 • spi-clk
- 8 • mosi
- 9 • miso
- 10 • gnd
- 11 • 5V

