**Control board notes**

The control board conditions the main DC supply voltage into the various supply rails for the rest of the platform. The main power input port is protected against reverse voltage polarity. There is also a resettable fuse and a clamp to protect against overvoltage (18V nominal) and prolonged overcurrent conditions. Operating the platform with supply voltages outside the nominal range (12-18VDC) will require modifications to the power chain.

The control board circuitry provides the option of shutting off different parts of the power supply chain to mitigate interference during signal acquisition. As of now, this feature has not been implemented, either in hardware or in firmware.

The control board has a 10 pin JTAG header which is used to program the MCU. For our purposes we used the JTAG ICE-3 programmer from Atmel in order to program and debug the platform firmware.

**Some notes on uSD cards:** Standard SD cards can operate in two modes: SD mode and SPI mode. Most electronic devices use SD mode; however, this requires a specialized peripheral interface from the host system, which was not available on our selection of MCU. Therefore we used SPI mode, which uses a simple SPI port found on most MCUs, including ours.

One implication of using the SD card in SPI mode is that the listed specifications for a given SD card are valid only for SD mode, and therefore performance in SPI mode is not guaranteed. We have discovered that in SPI mode, different card models and manufactures give vastly different performance results, independent of the label specifications. Certain SD card model (such as the SDSDQY-004G-A11A from SanDisk) performed quite well using SPI mode and our custom SD card firmware, and therefore we recommend using this model.

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