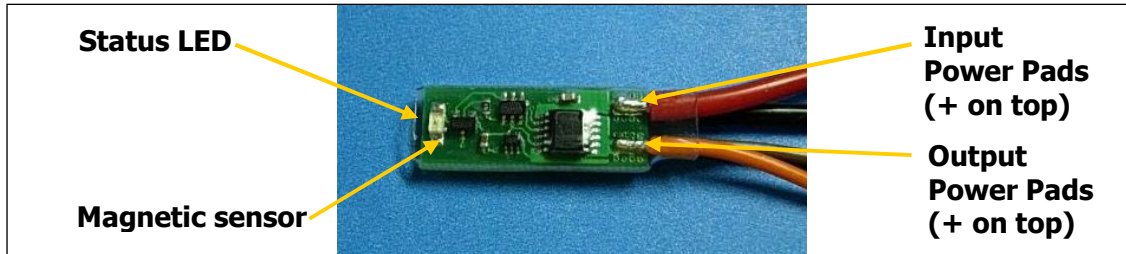


Magnetic Mission Switch 10A

General Layout



Installation

1. Solder power leads from battery and power bus to the MMS-10, cover with supplied heatshrink.
2. If desired secure MMS-10 in a convenient location close to the WTC wall or bulkhead with double sided tape.

Features

- Switches system power ON and OFF using a magnet, acts as a solid-state switch between Input+ and Output+ connections
- May be installed inside a sealed WTC with no additional perforations required in bulkheads.
- Provides over-current “circuit-breaker” protection for batteries/wires – No more fuses necessary!
- Operating voltage range: 4V to 24V. (eg 2S – 5S LiPo. Use with 1S is possible, but as the battery is drawn down control may be lost.)

Operation

The Magnetic Mission Switch 10A (MMS-10) combines the functionality of a magnetic reed switch, a high-current solid-state relay and a resettable 10A fuse all in a compact, all solid-state device. When the MMS-10 is first connected to a battery power is not passed through from the input terminal to the switched output terminal, and the status LED will remain OFF confirming that the MMS is in the STANDBY condition. To switch power ON place a magnet over top of the sensor (the LED will illuminate) and hold for at least half a second, then remove. Battery power will be applied to the output terminal, and the status LED will begin to blink to show that the MMS has changed to an ACTIVE condition. To remove power from the switched terminal hold a magnet over the sensor again for at least a half second, then remove.

Over current protection is automatic – when more than 10A is pulled for an extended period of time the MMS will automatically shut off power to the switched terminal. When the short circuit is removed power will return automatically.

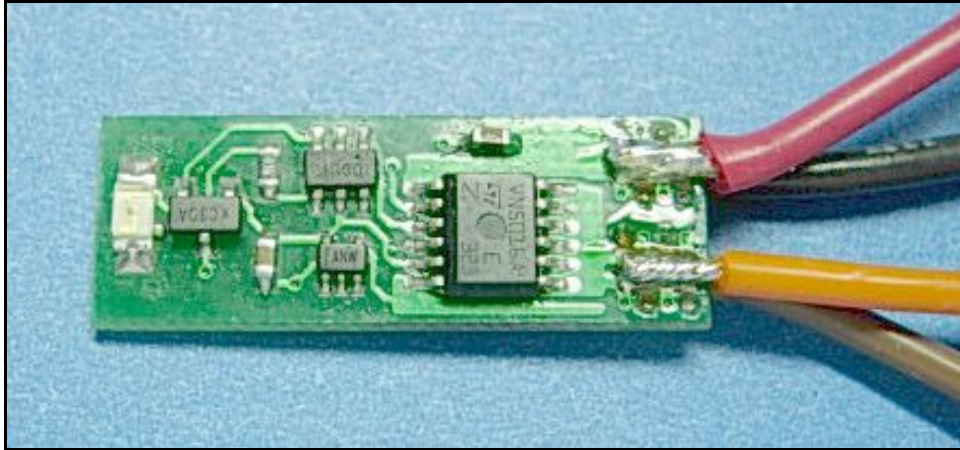
General Notes

- The magnetic sensor on the MMS-10 detects magnetic fields *above* and *below* the sensor best, and fields to the sides of the sensor the least.
- The MMS-10 can only protect the battery from short circuit events that occur on the **power-bus** side of the MMS-10. It cannot protect the battery from a short circuit event that happens between the MMS-10 and the battery. For this reason the MMS-10 should be located as close to the battery as possible, preferably within the battery compartment.
- It is recommend to use 16-14AWG wire to connect the MMS-10 to the battery connector. If your installation permits it is also recommended to use 16-14AWG wire to connect the output terminals of the MMS-10 to your ESC/power bus.
- Do not leave batteries connected to the MMS-5 between runs – In the STANDBY condition the MMS-10 will draw ~0.3mA from the battery.
- It is recommended that the MMS-1- circuit board components not be placed in contact with the wall of your WTC. During an overload condition the solid state relay becomes very hot and could damage your cylinder wall. It may be preferable to leave the MMS “floating” within the WTC with the components facing inwards. (The magnetic sensor works equally well through the board, and the position of the sensor is marked on the back side with a white square.)
- Detection range of the magnetic sensor varies with the size of the triggering magnet. Small magnets must be within 1/4” of the sensor, but larger magnets can be detected at up to 1” away. (With a large enough magnet you can even trigger the switch with your hull completely closed up and ready to run.)
- The circuit breaker function will trip when the average current exceeds 10A. Constant current demands near 10A will cause the breaker function to trip more quickly and at a lower peak current, and may even lead to “nuisance trips”. Short demands in excess of 10A combined with a low average current draw will not trip the breaker function.
- The MMS-10 is suitable for all 3.5” and smaller single-motor and dual-motor Sub-drivers.

Installation Details

In order to ensure many years of trouble-free operation from your MMS-10 it is absolutely essential that good solder joints are made to tie the MMS into the battery and power bus. Poor solder connections may lead to a fault condition that the MMS-10 cannot protect against. The solder joints must hold the wires in the center of the provided connection pads and not have so much solder that it bulges over the sides of the pads.

For maximum fault protection it's recommended that you install the MMS-5 as close to your battery as possible. Before soldering your lead wires to the MMS you should pre-tin the connection pads to prepare them to receive the wires. Make up a connectorized power lead and solder it to the Battery + (red wire) and Battery – (black wire) terminals as shown below. Next solder the Switched Bus + (orange wire) and Switched Bus – (brown wire) terminals to your power bus also as shown below.



The last step in the soldering task is to clean all the solder joints with alcohol to remove any solder flux residue. Use a stiff brush and plenty of alcohol. (A clean acid brush with bristles trimmed to ¼" works really well for this.) Finally, cover up the MMS-10 with the provided heatshrink and apply gentle heat.

Questions?

- If you have questions or concerns about your MMS-10 please contact Kevin McLeod by email at KevinMc.Electronics@gmail.com