Fuses

Fusible Links:

Automotive Style In-Line Fuses

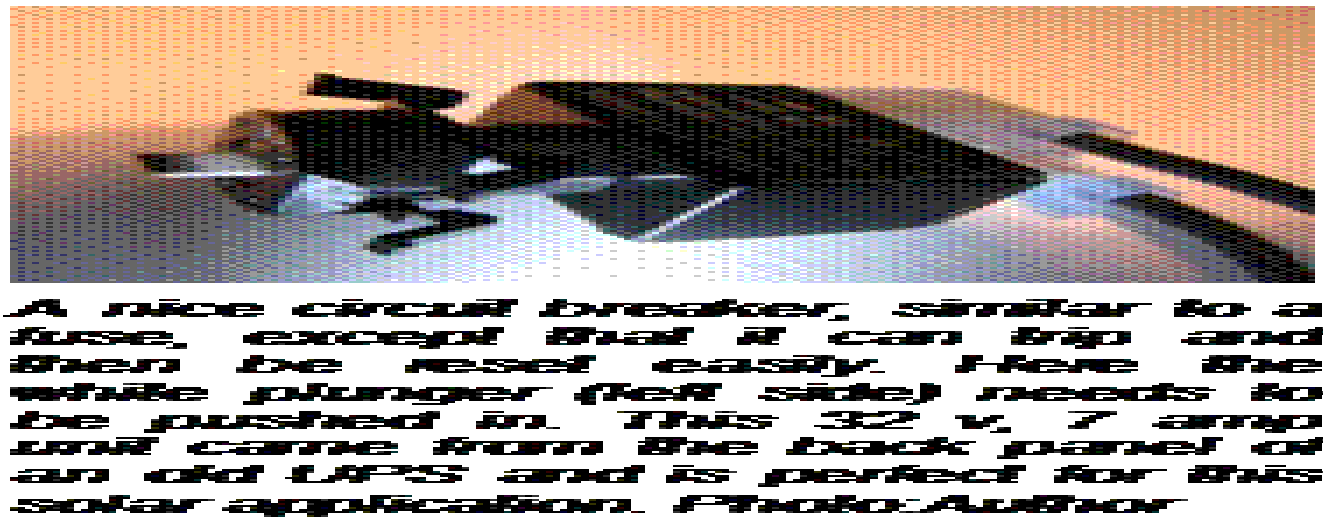
Inline fuses are similar to what you see in automotive fuse panels. There is typically a style of holder with wires that can be attached. They are relatively common, but once they are broken in the process of protecting equipment from overload or electrical shorts or fires, **they must be replaced with spares.** Not having a spare available, encourages one to bypass the fuse altogether with a simple wire and to carry on with the work. This scenario is not recommended for sustainable, national coworker systems, with limited understanding of electrical systems. If a fuse can be bypassed easily, it will happen for sure. One can count on this happening.

Hidden Thermal Fuses

The better systems, like the GTIS "Half-Pint" 72 Ah battery bank, has internal fuses that "trip out" thermally, and save the user from problems, but they are internal to a mostly sealed box, and the user cannot easily get at them. The user simply waits a short period of time for the fuse/breaker to reset. Of course, before a reset can occur the electrical fault condition must be removed, first.

Circuit Breakers

Circuit Breakers are designed to interrupt the circuit when a short-circuit of some kind has occurred. An example would be a wrench or screw-driver falling into powered electrical equipment. Or perhaps a short across the exposed Morningstar Controller connectors. Usually they are wired in series near the battery's positive terminal.



A nice circuit breaker, similar to a fuse, except that it can trip off and then be reset easily. Here the white plunger (left side) needs to be pushed in. This 32 V, 7 amp unit came from the back panel of an old UPS and is perfect for this solar application. Photo: Author

A nice circuit breaker, similar to a fuse, except that it can trip off, and then be reset easily. Here the white plunger (left side) needs to be pushed back in. This 32 V, 7 Amp unit came from the back panel of an old UPS unit and is perfect for small solar applications, where load currents would never exceed 5 amps. This was greedily redeemed before heading to the rubbish dump.

The circuit breaker is good in that it discourages one from by-passing a fuse when there are no more spares in the village. However, circuit breakers are normally quite expensive over a common automotive fuse holder (above), and greatly increase the overall cost of the system. The first generation, Villager-N systems from GTIS, came with extra fuses taped near the fuse holders. This was a far less expensive option.