Stratoware/Miltech Simulations Bo105

Electrical System

Power generation, distribution, and monitoring across the Bo 105's two buses.

The electrical system of the Bo 105 provides 28V DC power to all aircraft systems. It consists of two engine-driven generators rated at 150 amperes each, a 24V nickel-cadmium battery, and an external power unit (EPU) for ground operations.

Each generator feeds into the main power bus, which then supplies power to all downstream systems through power distribution relays and circuit breakers. The battery provides power to essential systems during engine start and serves as a backup power source in the event of a double generator failure. An EPU can be connected on the ground for engine start and pre-flight system checks.

The electrical system is managed primarily from the switch panel, please refer to Switch Panel.

Power Distribution

Electrical power in the Bo 105 is distributed through two buses:

Main Bus

The primary distribution point for the helicopter. It receives power from the alternators, battery, or external power unit, and supplies all primary aircraft systems including fuel pumps, fuel valves, lighting, flight instruments, pitot heat, and engine anti-icing.

Avionics Bus

Fed directly from the Main Bus and supplies the entire avionics stack: NAV1/NAV2, COM1/COM2, the transponder, the ADF/DME, marker beacon, audio controller, and the GTN750. Because the Avionics Bus is downstream of the Main Bus, all avionics depend on Main Bus power; if the Main Bus loses power, the avionics will also drop offline.

Power Sources

Generators

Two engine-driven units, one per engine, each rated at 150 amperes. They operate in parallel to share electrical load. Each generator is controlled by a corresponding switch on the switch panel. The GEN 1 and GEN 2 warning lights on the warning light panel indicate when the respective generator is offline. In this addon, generator failures themselves are not simulated due to SDK limitations.

Battery

A 24V nickel-cadmium battery supplying power to the Main Bus when the Battery Switch is in the BAT ON / EPU OFF position. The battery provides power for engine starts and serves as an emergency power source.

External Power Unit (EPU)

This is a 28V DC ground power source that can be connected to the aircraft via a socket in the nose compartment. The EPU allows the helicopter's electrical system to be powered without using the battery, which is recommended for cold-and-dark starts to preserve battery charge for engine starts.

To request an external power unit, click the EPU ON warning light on the warning light panel. A red GPU cart will spawn outside the aircraft and connect to the battery compartment, after which the EPU ON light will illuminate to confirm power is being supplied.



To use external power, place the Battery Switch in the BAT OFF / EPU ON position. The EPU then powers the Main Bus, which in turn supplies the Avionics Bus. Clicking the EPU ON light again disconnects the cart and removes it from the scene.

Monitoring

Voltmeter

Displays the DC voltage output of the Main Bus during generator, battery, or external power operation. Normal indication is 27-29V with generators online.

Ammeter

Displays current flow in the electrical system. The CURRENT IND selector switch on the switch panel determines the source: BUS BAR shows total current consumption on the Main Bus, while GEN 1 and GEN 2 show the individual output of each generator. The ammeter responds to changes in electrical load and generator selection, making it useful for monitoring system health and balancing generator loads during normal operations.

Circuit Protection

Higher-amperage circuits and primary systems (fuel pumps, fuel valves, lighting, pitot heat, engine anti-icing, and the avionics feeds) are protected by circuit breakers on the switch panel.

In this addon, most circuit breakers are modelled and functionally pull/reset to interrupt their respective circuits. A small number of circuits are not simulated (for example, N_2 trim and a few others are INOP).