

Unmanned Aircraft Flight Manual

SDO 50 V2



4.2.3.3	Record Black-box data and telemetry	☐
4.2.3.4	Check if the engine temperature on EDT is above or equal to 800 degrees Celsius	☐
4.2.3.5	If not done yet, turn OFF the machine and disconnect the battery box	☐
4.2.3.6	Do not try to restart the turbine	☐
4.2.3.7	Check if the turbine temperature sensor is disconnected or broken	☐
4.2.3.8	Check the condition of the turbine	☐
4.2.3.9	Contact SwissDrones for the next steps: EGT sensor and/or turbine might need to be replaced	☐

4.2.4 Engine Failure: EGT Sensor Disconnected or Damaged

Note that the ECU measures temperatures above 1150°C when the EGT sensor is disconnected. However, the GCS cannot show temperatures above 999°C.

4.2.4.1	If the UA is on Idle and the temperature stays above 1150°C more than 5 seconds: i. Turbine shutdown with error message “toIF” ii. Too high temperature has been reached or the EGT sensor is broken or disconnected iii. Do not restart the turbine	☐
4.2.4.2	If the UA is on 100% throttle (in flight) and the “ECU Lost” alarm turns on, there might be an error with the EGT sensor. The indicated temperature may rise above 700°. i. Turbine continues to run in LIMP mode with detection of an EGT sensor error. ii. Only 92 to 95% of the maximum power / speed is available for the rest of the flight iii. Stop all flight operations (do not climb, flight forward, or any other maneuvers) iv. Keep the UA hovering v. Select Home waypoint and land the UA vi. If needed, switch to manual assisted mode (or if equipped remote control) vii. Land the UA as soon as possible Flight time SHALL be kept as minimum as possible after entering LIMP mode	☐
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4.2.5 Engine Failure: Power Loss

The rotor RPM value on the Command Control Display (CCD) drops and the alert becomes red. Rapid decent will happen, collective limiter overrides altitude controller (autorotation)

4.2.5.1	Rotor RPM drops by 25RPM	☐
4.2.5.2	Collective limiter automatically engages	☐
4.2.5.3	If necessary select manual mode	☐



4.2.6 Fire: Engine

The engine rpm on the Command Control Display (CCD) drops, shows high temperature and alert becomes red

4.2.6.1	Land as soon as possible within designated area	☐
4.2.6.2	Shut down engine after landing	☐
4.2.6.3	Proceed to extinguish fire	☐

4.2.7 System Failure: Autopilot Remains in Status "Not Ready"

4.2.7.1	Cycle electrical power	☐
4.2.7.2	Do not move or touch the UA while system powers up	☐
4.2.7.3	GPS not valid: position the aircraft in open area away from interference of buildings	☐

4.2.8 System Failure: Generator Failure

In the energy tab, it will be visible that the generator is not charging anymore since there is no current coming from it. In that case, land as soon as possible in a safe location.

The batteries are able to supply the aircraft with energy for continued airworthiness. Depending on its payload configuration, the remaining flight time will be different. Flight times with the original capacity from the batteries are:

With maximum payload: 62min

Without payload: 150min

Due to the loss of capacity in the older batteries, the calculated remaining flight time might be lower. Flight times with a safety margin for the capacity of the batteries are:

With maximum payload: 31min

Without payload: 75min

4.2.9 System Failure: Flight Controls Jammed or Restricted

One of the flight controls is jammed or restricted, aircraft will have strange behavior (not following the control inputs). If the joystick is jammed or restricted: use the mouse and control the UAV SDO 50 in precision control.

4.2.9.1	If manual mode joystick is defective, use the software sliders on manual control tab.	☐
4.2.9.2	Check flight data & alerts on GCS	☐
4.2.9.3	Select "return to home"	☐
4.2.9.4	If needed, switch to manual mode	☐
4.2.9.5	Land at nearest suitable location	☐
4.2.9.6	Land as soon as possible in the designated area.	☐

4.2.10 System Failure: On-Board Generator Failure

Flight Control System (FCS) battery value on the display starts to drop quicker than usual and becomes yellow. Also, in the Energy tab the operator can see the generator value to be zero. The system automatically runs out of battery power.

4.2.10.1	Abort mission	☐
4.2.10.2	Land as soon as possible in the designated area	☐

