

Aircraft Environmental Installation

Revision 2 06/21/20

The TPS-28D-xxB is designed to be installed in the avionics bay that is some what temperature controlled and pressurized up to 15,000 feet. So even aircraft that fly well over 15,000 feet can use the TPS-28D in all normal applications commercial aircraft fly and general aircraft fly.

The TPS-28D is designed to meet all DO-160 specifications for general and commercial aircraft. It is up to the user to determine if it meets there needs.

Due to the TPS-28D having so many voltage and current options it is impossible for Executive Engineering to test aircraft frames for all the DO-160 test options needed.

The following DO-160 specifications the TPS-28D should be able to pass.

Note 1: All DO-160 tests should only be conducted in the “voltage output range” you are using the unit in. 0-5 / 0-14 / 0-28 output. You should take care to match the current range used by your aircraft needs. ie. Lamp's and there current or LED's and there current. Do not short circuit the TPS-28D in any tests as it is designed to blow the input fuse if shorted to long.

Note 2: The TPS-28D is a buck switcher supply, meaning that if the input voltage drops the output voltage my drop also in the 28 volt range. However in the other 2 ranges of the TPS-28D this will not happen do to there lower voltage range. It is normal for a buck switcher power supply to have a 1 to 2 volt drop from the power input voltage to the upper high end of the 28 volt range.

Note 3: Since lighting in an aircraft is “Not Considered” a primary flight function by the FAA, you may only have to do an EMI test to see if the units interferes with other avionic equipment.

Note 4: The case of the TPS-28D needs to be mounted to the aircraft plating to help in heat dissipation of the unit, no shock mounts are needed.

DO-160: Testing

Temperature and Altitude (Section 4.3, Category A3)

TPS-28D Option Z Military Operation Temperature: -40 to +85C special order

TPS-28D Option Z Military Storage Temperature: -40 to +85C special order

Temperature and Altitude (Section 4.3, Category A2)

TPS-28D Option B Commercial Operation Temperature: 0 to +70C

TPS-28D Option B Commercial Storage Temperature: -40 to +85C

Please note: Executive Engineering cold soaks each unit for -15C cold start test.

Humidity (Section 6, Category A 6.2 Standard Humidity Environment)

Operational Shock and Crash Safety (Section 7.2 Category A, Normal upright 15 G's Crash Safety)

DO-160: Testing

Vibration (Section 8.2.1 Standard Vibration 8.5 No Isolators, Fuselage Y, C, L, M)

Explosion Proof (Section 9.3.1, Intrinsically Safe 9.3.2,)

Waterproofness (Section 10.2, Category X) N/A

Fluids Susceptibility (Section 11.3 Category X) N/A

Sand and Dust (Section 12.2 Category X) N/A

Fungus Resistance (Section 13.3 Category X) N/A

Salt Spray (Section 14.2 Category X) N/A

Magnetic Effect (Section 15.2 Equipment Class X)

Please refer to note 1.

Power Input (Section 16.2 Category B) (19-32 Volts Normal Operation)

Please note Executive Engineering offers a high surge input. TPS-28D Option X (80 Volts)

Power Current Output reduction required for option X. Special Order

Voltage Spike (Section 17.2 Category B Point A (+48 Volts)) (19-32 Volts Normal Operation)

Please note Executive Engineering offers a high surge input. TPS-28D Option X (80 Volts)

Power Current Output reduction required for option X. Special Order

Audio Frequency Conducted Susceptibility (Section 18.3.1 Category B)

Please refer to note 1 for testing.

Induced Signal Susceptibility (Section 19.3.1, Category B)

Please refer to note 1 for testing.

Radio Frequency Susceptibility (Section 20.3, 20.4, 20.5 Category T)

Please refer to note 1 for testing.

Emission of Radio Frequency Energy (Category B)

Please refer to note 1, note 3 for testing.

Lighting Induced Transient Susceptibility (Section 22.2 Category X)

Lighting Direct Effects N/A

Icing N/A

Environmental Test Identification N/A

FAA & DC Power Supply Operation

On Aircraft - TSO & DO-160

TSO specifications for DC Power Supplies have been closed by the United States Congress for many years now. That means that there are no current specifications that are valid or in use at the current time. Only open TSO's are valid guide lines for use by a manufacture. Closed TSO's are considered obsolete by the FAA. TSO-C71 is obsolete and it is a closed TSO.

TSO's are now only issued for Transmitters and Receivers by United States Congress for the FAA. Only the United States Congress can issue a TSO.

FAA & DO-160 -- The FAA inspector may ask you for an EMI test of the aircraft after the install. Just because a power supply meets DO-160 does not mean it works in that aircraft type. All aircraft with a new type DC Power Supply product/s may require an EMI test.

If you have questions about this please feel free to call Executive Engineering.

"NO - DC Output Power Supply - have NO TSO" No DC Power supply of any kind that goes in any aircraft has no valid TSO {There are NO TSO's for DC Power Supplies}, any one that tells you different is wrong!!! This information was give to us by the FAA out of Alanta Georga.

DC to AC inverter power supplies do have TSO's they have an output frequency of 60 or 400HZ that must be meet, these power supplies are considered a frequency device just like a transimtter.