

The purpose of this qualification summary is to facilitate specification of thermal switches for aircraft applications. We chose a practical combination of sections from RTCA DO-160C which represents the harshest conditions you are likely to encounter in an application. The following outlines the sections of RTCA DO-160C to which all CPI thermal switches have been qualified.



Vibration

Section 8

Category D, standard figure 8-1

Chatter monitored per MIL-S-24236, Rev. B, paragraph 4.7.16(e)

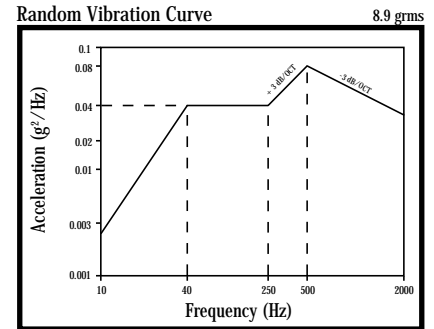
1. 3 axes
2. 10 Hz - 2000 Hz, 1 hour each axis, 8.9 grms overall level

Humidity

Section 6

Para 6.2, Category B (severe humidity environment, 240 hours)

1. Steam pH value 7.0 ± 5 when measured at 25°C (77°F)
2. 65°C (149°F) at 95% relative humidity, 10 cycles
Each Cycle
2 hour adjustment
6 hours maintained
Gradual change over 16 hours to 38°C (100°F)
Relative humidity 85%



Sand & Dust

Section 12

Category D

1. 97% to 99% silicon dioxide
2. Dust diameter < 0.045 mm
3. 25°C & 55°C chamber temperature, 6 hours each temperature
4. 30% relative humidity
5. 0.5 to 2.5 m/second air velocity, 3.5 to 8.8 g/m³ dust concentration, 1 hour per side
6. Six sides exposed

Salt Spray

Section 14

Category S

1. 5% salt solution of sodium chloride
2. 35°C (95°F) chamber temperature
3. Atomized fallout rate of 0.5 - 3.0 ml / hr per 80 cm² for 50 hours
4. 48 hour dry

Temperature & Altitude

Section 4

Para. 4.3, Category E1 (non-pressurized, non-temp- controlled)

Up to 70,000 ft / 21,300 m)max. temp: 85°C (185°F)

Excluding paragraph 4.5.4 (Loss of Cooling test)

1. Ground Survival / Operating Low Temperature
 -55°C (-66°F) - 3 hours non-energized; 30 minutes energized
2. Ground Survival / Short-time Operating High Temperature
 85°C (185°F) - 3 hours non-energized, 30 minutes energized
3. Operating High Temperature
 85°C (185°F) - 2 hours energized
4. Altitude
70,000feet (6.5 psia) at room ambient, 2 hours energized

Operational Shocks & Crash Safety

Section 7 (non-operating)

1. Shock

waveform: half sine
duration: 11 milliseconds
level: 15 G
total shocks: 18

2. Crash Safety

waveform: half sine
duration: 11 milliseconds
level: 30 G
total shocks: 12

Fungus Resistance

Section 13

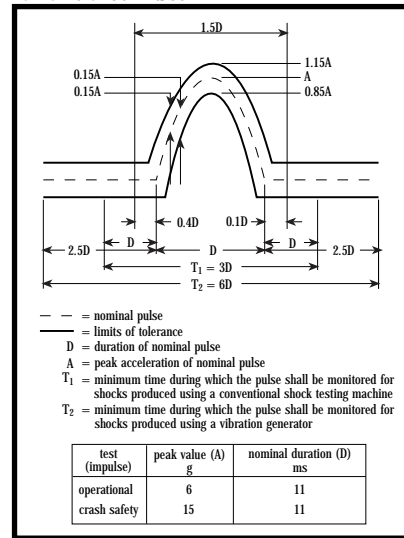
Category F

1. 30°C (86°F) 97% relative humidity, 4 hour preconditioning

2. Fungus spores used: *Aspergillus niger*, *Aspergillus flavus*, *Aspergillus versicolor*, *Chaetomium globosum*, and *Penicillium funiculosum*

3. Duration: 28 days

Half Sine Shock Pulse



CPI has supplied reliable thermal switching solutions to nearly every major aircraft manufacturer worldwide. Below are a few examples of our wide range of applications.

Application Description	CPI Switch	Program
Compressors	M2 (Plugstat)	747, L1011
Heat Exchangers	M2 (Plugstat)	L1011
Ducts	M2 (Plugstat)	DHC7
Gear Box	M2 (Plugstat) X1 (Rod and Tube) S2 (Plugstat)	S-76, Blackhawk, Apache CH53E YU60
Ram Air Inlet	X1 (Rod and Tube) S2 (Plugstat)	CH53E YU60
Lube Oil on APU	M2 (Plugstat) W1 (Rod and Tube)	Blackhawk
Fuel System	M2 (Plugstat) AD (Snapstat) AD (Snapstat)	A6E, A6, EA6, EA6B 1E831
Galley	X1 (Rod and Tube)	747
Alternator	M2 (Plugstat)	C140
ECS	M2, S (Plugstat) AB (Rod and Tube)	747, S-76, SF340, YU60, C5A, 767