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 25ºC (77ºF)  
2. 65ºC (149ºF) at 95% relative humidity, 10 cycles  
   Each Cycle  
   2 hour adjustment  
   6 hours maintained  
   Gradual change over 16 hours to 38ºC (100ºF)  
   Relative humidity ≥ 85%

**Sand & Dust**
Section 12  
Category D  
1. 97% to 99% silicon dioxide  
2. Dust diameter < 0.045 mm  
3. 25ºC & 55ºC 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. 35ºC (95ºF) 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: 85ºC (185ºF)  
Excluding paragraph 4.5.4 (Loss of Cooling test)  
1. Ground Survival / Operating Low Temperature  
   -5ºC (-23ºF) - 3 hours non-energized; 30 minutes energized  
2. Ground Survival / Short-time Operating High Temperature  
   85ºC (185ºF) - 3 hours non-energized; 30 minutes energized  
3. Operating High Temperature  
   85ºC (185ºF) - 2 hours energized  
4. Altitude  
   70,000 feet (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

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.

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