

Rheion® Thermal Switch 150

Precise thermal control for large space applications.

Designed for large telecommunications satellites and other demanding, long-duration space missions, the Rheion® Thermal Switch 150 enables precise, active control of thermal conductance between two surfaces. By decoupling radiators exposed to sunlight while coupling those in shadow to maximise heat rejection, the switch makes it possible to add more radiator surface area, increasing the thermal budget for payload power and supporting higher data throughput. The Rheion® Thermal Switch uses non-conductive, fire-proof, dielectric fluid, has no moving parts and operates silently and without vibration, thereby eliminating mechanical wear.

Benefits

Increased payload capacity

Enables up to 20% more thermally supportable payload power through selective coupling of available radiator surfaces.

No power in OFF mode

Power consumption in OFF mode is 0 W. ON/OFF control from standard bus voltage, 100V or 28V.

Long operational lifetime

Driven by an electrohydrodynamic pump with no moving parts, the switch is free of vibration and mechanical wear, validated to operate reliably under radiation and vacuum for a lifetime of 20+ years.

Ground-testable

Limited influence from gravity enables validation testing on the ground before flight.

Fast response in all conditions

Quick start and stop time at any operating temperature.

Precise temperature control

Duty-cycle operation allows fine-tuned regulation of thermal conductance, keeping sensitive components within their optimal temperature range regardless of external conditions.

Developed with leading space agencies

Developed and validated in collaboration with NASA, ESA and Airbus for spacecraft thermal management.



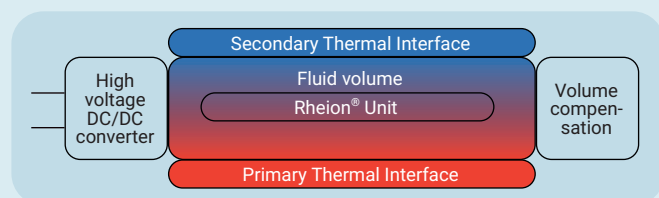
Applications

Rheion® Thermal Switch 150 is suited for surfaces facing large shifts in sun exposure during a mission. It controls conductance to the radiators throughout orbit to maintain stable temperatures across the spacecraft, and provides precise thermal control of sensors and other thermally sensitive equipment regardless of operating environment.

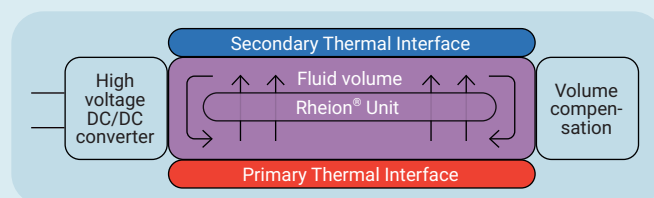
Technical Data

Heat transport (W)	150
On-conductance (W/K)	12
Off-conductance at RT (W/K)	0.45
Power consumption in ON (W)	2
Thermal interface area (cm ²)	145
Operating temperature (°C)	-50 to +90
Weight (g)	1960

OFF-state: No power applied, stationary fluid and low thermal conductivity



ON-state: Power applied, moving fluid and high thermal conductivity



About APR

APR Technologies is a Swedish deep tech company, developing and producing high-performance liquid cooling solutions for applications in chip cooling, batteries, space and defence. The technology directs cooling liquid flow directly to the heat source using no moving parts and is protected by more than 70 granted patents in 22 countries. APR Technologies is headquartered in Enköping, Sweden.