

LPT6510 Pulse-tube Cryocooler



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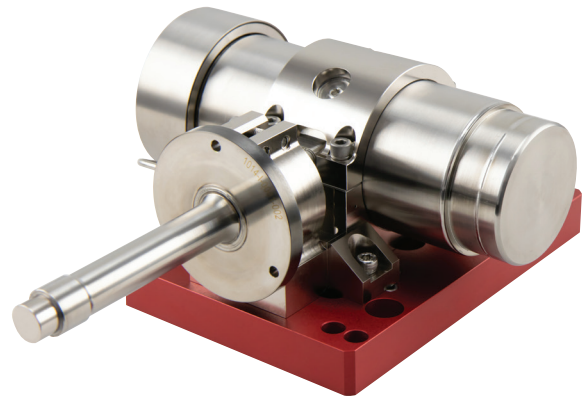
With the LPT6510 cryocooler, Thales Cryogenics has partnered with Absolut System to provide a designed-for-manufacturability pulse-tube cooler for the institutional as well as new-space industry.

The LPT6510 design and processes are derived from flight-proven cooler designs, such as the LPTC compressor. The LPT6510 cryocooler is based on the Thales Cryogenics MPTC compressor, developed under ESA funding, and the Absolut System SSC80 pulse-tube cold finger. The cooler was developed to address all needs for cost-effective designed-for-space cryocoolers for 60 K and above.

The LPT6510 cooler design leverages lessons learned from Thales series production pulse-tube coolers. Compressor and cold finger both incorporate an all-welded design, and all MAIT procedures are streamlined to reduce manufacturing complexity while still adhering to space standards. As such, it can be built in the frame of traditional space program requirements; including all the documentation, evidence, and additional verification steps during MAIT to ensure desired performance and reliability. In addition to the traditional Space approach, it can be built cost-effectively in a manner similar to off-the-shelf cryocoolers, without making any compromise on hardware design or performance.

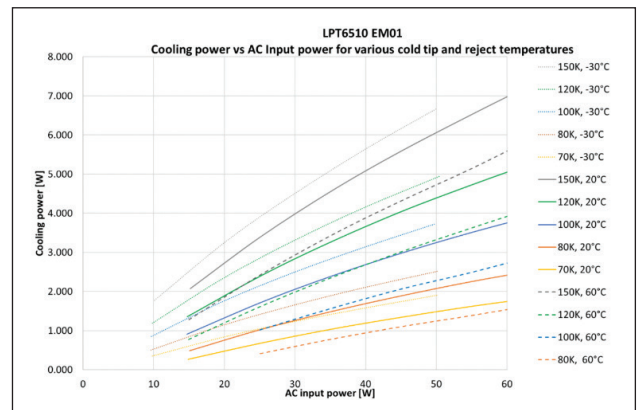
The LPT6510 is designed as an integral product with a single mechanical and thermal interface. However, a split configuration with the cold finger and compressor in custom relative positions can be made available on request.

As-measured performance curves from the first Engineering Model are shown in table:



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Datasheet

Parameter	Value
Max input	60 W (AC) Higher-power versions on request
Induced Vibration	<2 N RMS in-axis
Operating temperature	-30 to + 50 C excl qual margin
Off-state parasitic loss	Typical: 0.45 W between 80 K and room temperature
Mass	< 3.2 kg
Mechanical Robustness	Robust against launch vibration (15.5 g _{RMS}) without requiring a cold finger launch support tube. Passive launch lock for compressor required only.
Documentation	Data pack based on ECSS standards, including: <ul style="list-style-type: none"> ■ PMP lists ■ ABCL ■ CIDL ■ Qualification evidence
Configuration	Integral, split available on request

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