

## **24K Single-Stage Coaxial PulseTube Cryocooler without Double-Inlet Phase Shifter**

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Several 40K pulse tube cryocoolers(PTCs) have been developed to meet the demand of long wavelength infrared detectors. Traditionally, the multi-bypass or double-inlet arrangement is often employed to realize temperatures below 40K for PTC. To minimize the complexity and guarantee the required long-term stability of PTC, for our designed cooler, the inertance tubes together with the reservoir become the only phase-shifter. At present, the cooler prototype has achieved a no-load temperature of 24 K and can typically provide 2.1W cooling power at 40K with 150W electric input power rejecting at 300K. The relative Carnot efficiency is up to 9.1% at 40K. The key parameters and performance of the designed PTC are presented at details.