

# ADR Kit for PPMS<sup>®</sup>

Quantum Design introduces a compact Adiabatic Demagnetization Refrigerator (ADR) designed for the PPMS platform as co-development work with the Institute for Materials Research, Tohoku University Japan. The ADR extends the PPMS temperature range down to  $\sim 100$  mK from room temperature in less than 3 hours, and holds temperature below 1.9 K for more than 2 hours. This enables DC resistivity and electrical transport measurements down to  $\sim 100$  mK.



## Features

- Extends the PPMS temperature range to  $\sim 100$  mK in 3 hours
- Compatible with QD PPMS, EverCool II and DynaCool
- DC Resistivity and Electrical Transport measurements
- Two samples can be measured simultaneously
- Simple operation principle without mechanical movement



## PPMS Requirements

- High vacuum option
- DC Resistivity (ETO puck)

# Specification

Temperature range	300 K to 100 mK (typical - guaranteed spec. = 150mK)
Time to base temp	3 hours (from room temp. to ADR base temp.)
Temperature sensor	1000 $\Omega$ Ru <sub>2</sub> O
Number of leads	8 (Allows for two samples to be measured simultaneously)
Sample mounting	PPMS He <sup>3</sup> DC resistivity sample stage
System requirement	High vacuum option DC resistivity

## ADR Process

1. Set sample puck in ADR and insert into PPMS
2. Cool down PPMS to 1.9K
3. Apply 3 T magnetic field
4. Vacuum PPMS to high-vacuum state
5. Set zero magnetic field
6. Temperature decreases to ~100 mK

## Temperature sweep data

