

# JDry-250

## Cryogen-free Dilution Refrigerator

### Overview

FormFactor's JDry cryogen-free dilution refrigerators enable easy and cost-effective cooling to temperatures below 10 mK. The JDry models have been optimized for quantum computing applications and can accommodate up to 54 semirigid cables. General-purpose configurations and astronomy/detector cooling are also provided.

The JDry cryogen-free dilution refrigerator series includes multiple standard models. All are available with easy push-button cooling using the robust and fully-automated NI LabVIEW™-based "JACoB" gas-handling system (GHS).

The JDry-250 model is fitted with a cold-plate of 305 mm (12") diameter, and provides a cooling power of more than 250  $\mu$ W at 100 mK.



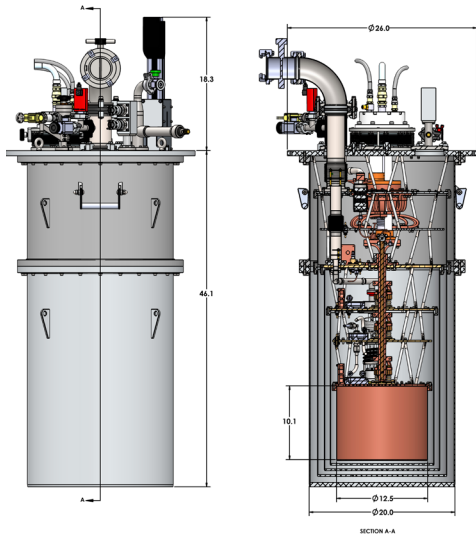
JDry-250 Cryogen-Free Dilution Refrigerator Under Test

### Features / Benefits

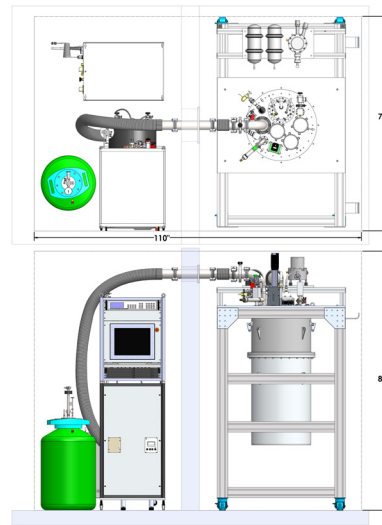
<b>Proven technology</b>	<ul style="list-style-type: none"><li>• Special light-tight design features</li></ul>
<b>Low running costs, less vibration, less noise, reduced maintenance</b>	<ul style="list-style-type: none"><li>• 10 K plate to thermalize experimental services</li><li>• Single Pulse Tube Cryocooler</li><li>• Mechanical heat-switch for precooling</li><li>• Quiet, low vibration condensation with no external booster/compressor required</li></ul>
<b>Large convenient experimental access</b>	<ul style="list-style-type: none"><li>• Up to 2 line-of-sight ISO100 ports located on perimeter of plates</li><li>• CMN calibrated thermometry on MC plate</li></ul>
<b>Operation via touch panel controller</b>	<ul style="list-style-type: none"><li>• Remote operation via ethernet interface</li><li>• API programming for 3rd party access to key functions</li><li>• Option for automatic operation via preconfigured scripts</li></ul>

## Design Specifications

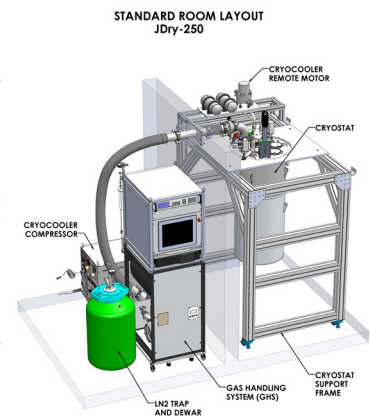
Base Temperature	Guaranteed: 12 mK Expected: 9 mK
Cooling Power	Guaranteed: 200 $\mu$ W @ 100 mK; 6 $\mu$ W @ 20 mK Expected: 250 $\mu$ W @ 100 mK; 8 $\mu$ W @ 20 mK
Mixing Chamber Plate Diameter	304.8 mm (12 inches)
Cooldown Time (Room Temp to 20 mK)	With LN2 precooling: $\leq$ 24 hours; Without LN2 precooling: $\leq$ 46 hours
Top Flange NW-100 to Experimental Wiring	2 * 100 mm diameter (NW ports)
User Control Interface	Touch Panel Operation; Fully- or Semi-automatic; Secured Remote Access



Drawing of Model JDry-250 Dilution Refrigerator



Standard Room Layout for Model JDry-250 Dilution Refrigerator



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