

Wet DR Series

Wet Dilution Refrigerator Systems

000111100010

➤ Overview

FormFactor's wet dilution refrigerators has two series of products: the Wet DR-50/250/500 and Wet DR-50-TL/250-TL/500-TL.

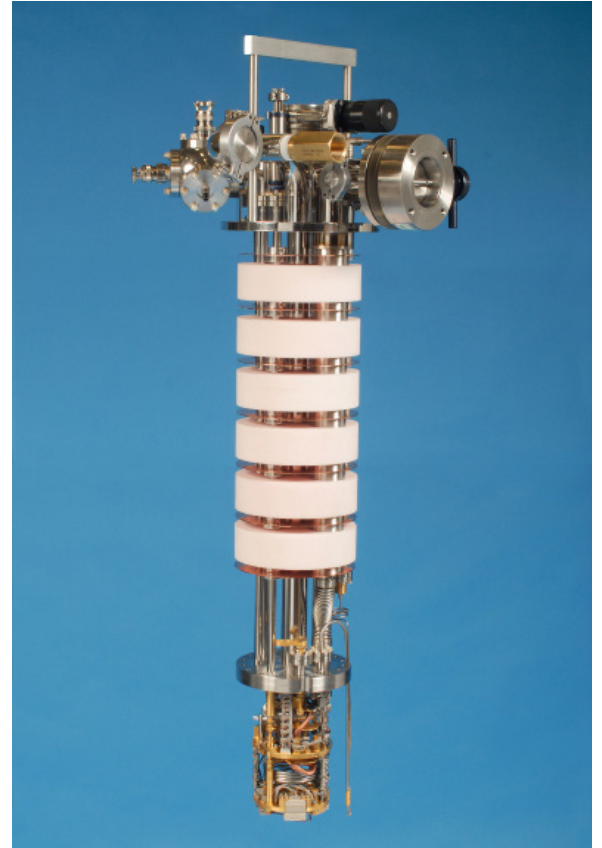
Both series of dilution refrigerators enable easy and cost-effective cooling to temperatures between 35 to 10 mK.

The sample of Wet DR-50/250/500 systems is located in a normal vacuum (HV) space. It can be loaded when the system is warm with the vacuum can open.

The TL series has been optimized for scanning tunneling microscopy (STM) applications. The sample can be loaded into the ultra-high vacuum (UHV) space from the top of the dilution refrigerator insert when the cryostat is cold.

Custom wiring is available.

Both fully automated and manually operated gas handling systems are available.



Wet DR 50-TL top-loading dilution refrigerator with sample in UHV space for STM research

➤ Features / Benefits

Proven technology	<ul style="list-style-type: none">• Designed in conjunction with several top STM groups in the world
Less vibration	<ul style="list-style-type: none">• Rigid assembly; quiet, low vibration operation
Low noise	<ul style="list-style-type: none">• Joule-Thomson mixture condenser
Low running costs and reduced maintenance	<ul style="list-style-type: none">• Mechanical heat-switch for precooling (TL models only*)
Large convenient experimental access	<ul style="list-style-type: none">• Easy operation and fast cool-down; load sample when the system is cold for TL models
Mixing chamber temperature measurement	<ul style="list-style-type: none">• Calibrated RuO and CMN thermometry read by model 372S resistance bridge are installed on the mixing chamber plate
Sample environment	<ul style="list-style-type: none">• High vacuum (HV) for standard models**, ultra-high vacuum (UHV) for TL models

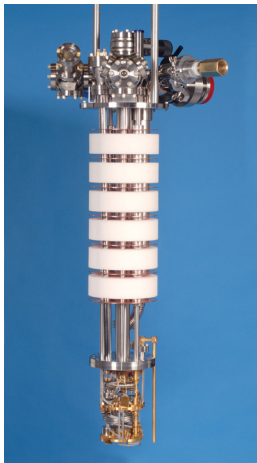
*Mechanical heat-switch can be added to standard models upon request.

**Ultra-high vacuum sample space customization available upon request.

Design Specifications

	Wet DR 50	Wet DR 50-TL	Wet DR 250	Wet DR 250-TL	Wet DR 500	Wet DR 500-TL
Base Temperature	35 mK		15 mK		10 mK	
Cooling Power at 100 mK	50 μ W	39 μ W	220 μ W	180 μ W	450 μ W	300 μ W
Central Port Clear Bore Diameter to STM Area	N/A	1.2 in	N/A	1.4 in	N/A	1.7 in
Sample Space	Depends on magnet bore					
Sample Environment	HV*	UHV	HV*	UHV	HV*	UHV
Maximum Baking Temperature	50°C for HV, 90°C for UHV					
Amount of He-3	8 L		15 L		25 L	

*Ultra-high vacuum (UHV) sample space available upon request.



Wet DR 50-TL insert for STM



Wet DR 500-TL insert for STM



Wet DR 250 insert



Side by side comparison of Wet DR 250 and Wet DR 500 dilution refrigerator stages



Wet DR 500 stage for UHV applications

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