



Narrow Gap Magnet Cryostat: Non-Optical

The CS204*E-FMX-3AL offers a wide range of flexibility at a low cost, making it an excellent choice for most sample and device testing. This system is well suited for optical, electrical, and magnetic sample testing.

Applications

- Resistivity/Hall Probe Experiments
- Thermal, Electrical and Magnetic Susceptibility
- Heat Capacitance
- Seebeck Effect
- DLTS

Features

- Cryogen Free, Low Power
- Low cost aluminum construction
- Can operate in any orientation
- Fully customizable

Typical Configuration

- Cold head (DE-204AE)
- Compressor (ARS-4HW)
- 2 Helium Hoses
- Aluminum vacuum shroud with 4 window ports for electrical experiments (FMX-3)
- Aluminum radiation shield
- Instrumentation for temperature measurement and control:
 - 10 pin hermetic feed through
 - 36 ohm thermfoil heater
 - Silicon diode sensor curve matched to ($\pm 0.5K$) for control
 - Calibrated silicon diode sensor (± 12 mk) with 4 in. free length for accurate sample measurement.
- Wiring for electrical experiments:
 - 10 pin hermetic feed through
 - 4 copper wires
- Sample holder for electrical experiments
- Temperature Controller

Options and Upgrades

- 4K Coldhead (0.2W @ 4.2K)
- 5.5K Coldhead (2W @ 10K)
- 450K High Temperature Interface
- 800K High Temperature Interface
- Turbo upgrade for faster cooldown times
- Custom temperature sensor configuration (please contact our sales staff)
- Custom wiring configurations (please contact our sales staff)
- Window material upgrades (custom materials available)
- Sample holder upgrades (custom sample holders available)



The above picture shows a cryocooler with no vacuum shroud or radiation shield. A bulkhead with 2 SMA connectors are shown. This has the upgrade instrumentation skirt.



The above picture shows the vacuum shroud and radiation shield for the cryostat.



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Cooling Technology

DE-204	Closed Cycle Cryocooler
Refrigeration Type	Pneumatically Driven GM Cycle
Liquid Cryogen Usage	None, Cryogen Free

Temperature*

DE-204AE	< 9K - 350K
DE-204SE	< 4.2K - 350K
DE-204PE	< 5.5K - 350K
With 800K Interface	(Base Temp + 2K) - 700K
With 450K Interface	(Base Temp + 2K) - 450K
Stability	0.1K
*Based on bare cold head with a closed radiation shield, and no additional sources of experimental or parasitic heat load	

Sample Space

Diameter	60.2 mm (2.37 in.)
Height	96.7 mm (3.81 in.)
Sample Holder Attachment	1/4 - 28 screw
Sample Holder	www.arscryo.com/sample-holders

Optical Access

Window Ports	N/A
Diameter	N/A
Clear View	N/A
#/F	N/A
Window Material	N/A

Temperature Instrumentation and Control (Standard)

Heater	50 ohm Thermofoil Heater anchored to the coldtip
Control Sensor	Curve Matched Silicon Diode installed on the coldtip
Sample Sensor	Calibrated Silicon Diode with free length wires
Contact ARS for other options	

Instrumentation Access

Instrumentation Skirt	Bolt-On, Aluminum
Pump out Port	1 - NW 25
Instrumentation Ports	2
Instrumentation Wiring	Contact sales staff for options

Vacuum Shroud

Material	Aluminum
Length	385 mm (15.19 in)
Diameter	82.5 mm (3.25 in) at the sample space
Width	32.5 mm (3.25 in) at the sample space

Radiation Shield

Material	Aluminum
Attachment	Bolt On
Optical Access	N/A

Cryostat Footprint

Overall Length	602 mm (23.7 in)
Motor Housing Diameter	114 mm (4.5 in)
Rotational Clearance	200 mm (8 in) with "G" Configuration

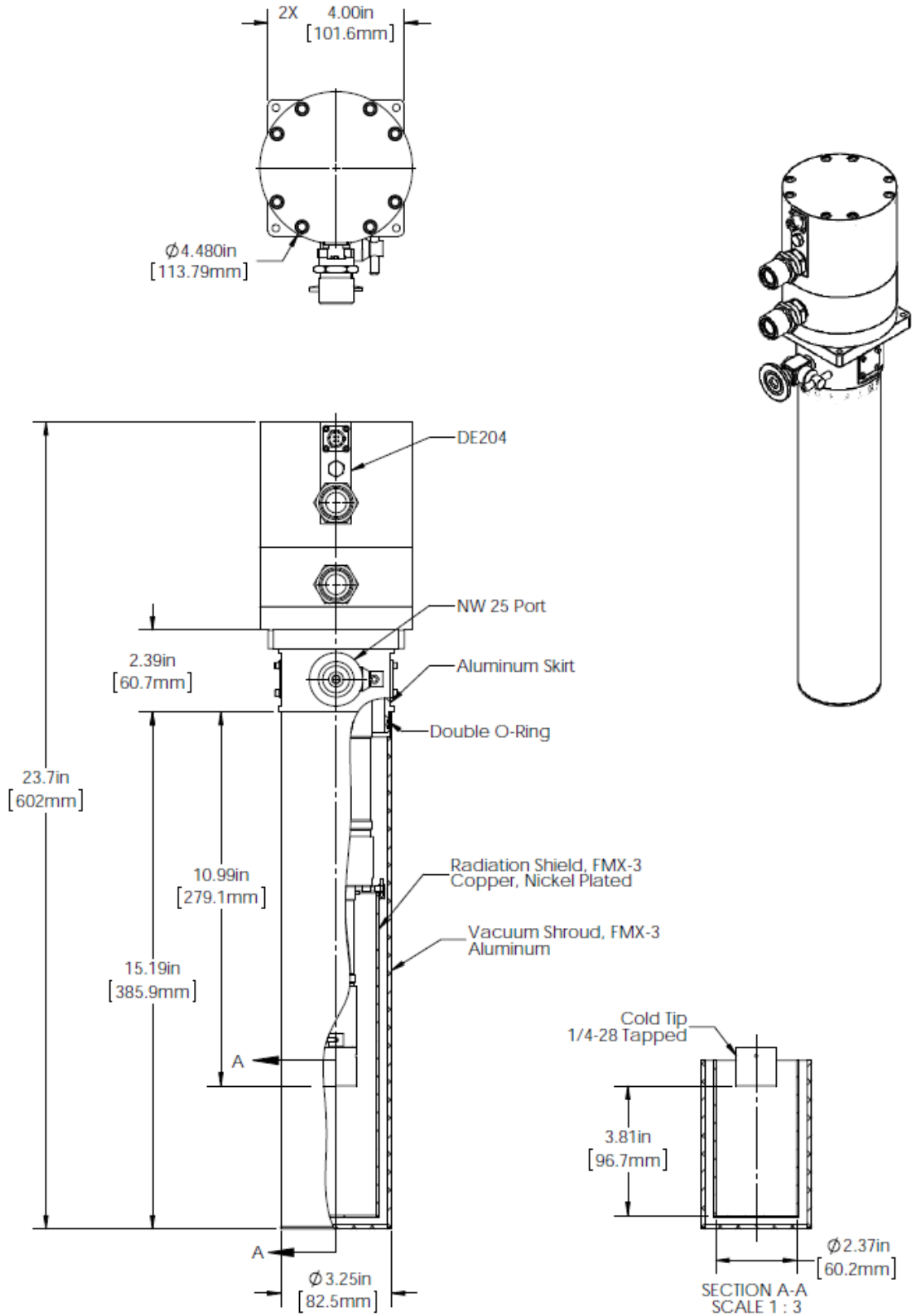
Cryocooler Model

		DE-204AE		DE-204A(T)E		DE-204PE		DE-204SE	
	Frequency	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz
Base Temperature		<9K	<9K	<9K	<9K	<5.5K	<5.5K	<4.2K	<4.2K
Cooling Capacity	4.2K	-	-	-	-	-	-	0.2W	0.16W
	10K	2W	1.6W	2.7W	2.2W	3.5W	2.8W	4W	3.2W
	20K	9W	7.2W	12W	9.6W	8W	6.4W	8W	6.4W
	77K	17W	14W	23W	18.4W	14W	11W	14W	11W
Radiation Shield Cooling Capacity		18W	14W	24W	19W	18W	14W	18W	14W
Cooldown Time	20K	30 min	36 min	25 min	30 min	40 min	48 min	40 min	48 min
	Base Temperature	60 min	72 min	50 min	60 min	80 min	102 min	90 min	108 min
Compressor Model		ARS-4HW		ARS-4HW		ARS-4HW		ARS-4HW	
Typical Maintenance Cycle		12,000 hours		8,000 hours		12,000 hours		12,000 hours	



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DE204AE-FMX-3AL Outline Drawing



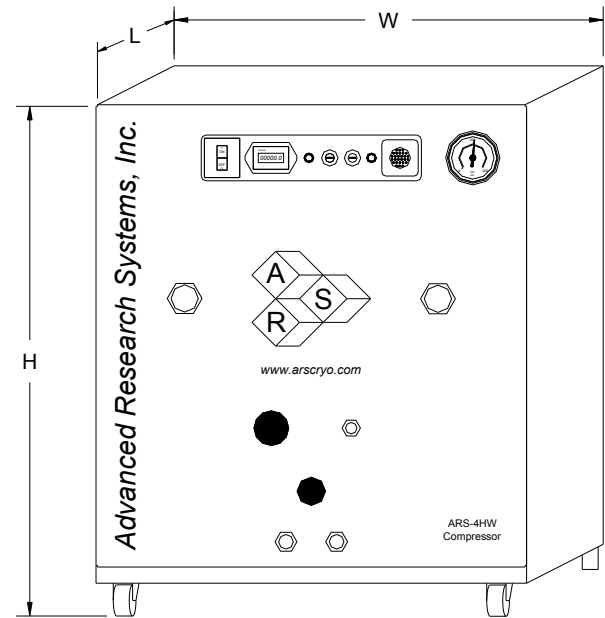


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Narrow Gap Upgrade



ARS-4HW Compressor



		Compressor Model	ARS-4HW
	Frequency	60 Hz	50 Hz
Standard Voltage	Min	208 V	190 V
	Max	230 V	210 V
Transformer Options	10%		220 V, 230 V
	15%		240 V
Power Usage	Single Phase	3.6 kW	3.0 kW
Refrigerant Gas		99.999% Helium Gas, Pre-Charged	
Noise Level		60 dBA	
Ambient Temperature			
Cooling Water	Consumption	2.3 L / min (0.6 Gal. / min)	
	Temperature	10 - 35 C (50-95 F)	
	Connection	3/8 in. Swagelok Fitting	
Dimensions:	L	483 mm (19 in)	
	W	434 mm (17.1 in)	
	H	516 mm (20.3 in)	
Weight		72 kg (160 lbs)	
Typical Maintenance Cycle		12,000 hours	
Water Recirculation Option		CoolPac Compatible	