

Advanced Research Systems, Inc.

7476 Industrial Park Way, Macungie, PA 18062

Tel: (610)967.2120 Fax: (610)967.2395 E-Mail ARS@arscryo.com

WWW.ARSCRYO.COM

Quotation No: Q5.200

Monday, December 05, 2005

Dr. Peter Kammel
University of Illinois
Department of Physics
Urbana, IL
61801

Displex DE-110



Dear Dr. Peter Kammel;

Thank you for your interest in our [ARS Displex](#) Closed Cycle cryogenic systems. Attached for your review is information, specifications, prices and other data you requested.

The ARS DE-110 Displex has a unique pneumatically driven slim axial valve motor and displacer design. The pneumatically drive makes it highly desirable for cooling applications where low vibrations at the sample are important and the axial physical configuration allows a slim profile geometry which permits easy interface with magnets and spectrometers.

The ARS DE-110 Displex is available in 3 different standard physical configurations – 1) Double o-ring seals to fit various standard vacuum enclosures, 2) true UHV bakeable conflat or 3) Basic flat flange (bare) configuration. Custom flange arrangements are routinely provided along with standard & custom application interfaces and instrumentation for any of the above Displex configurations.

The ARS Displex expander is field serviceable by the user so there is no need to ship it back to ARS saving time, money and shipping costs. The expanders cylinder assemble can remain installed during maintenance so vacuum integrity does not have to be broken leaving the vacuum system and/or equipment setup untouched – for many applications this attribute is advantageous (allows UHV systems to be baked to high temperatures, magnets & detectors stay installed and aligned, etc.).

Finally, ARS manufactures the complete cryocooler & interfaces, provides parts and service directly to the customer. Therefore the customer works directly with the Cryocooler & application interface manufacturer and no third party distributor is between the customer and the actual equipment manufacturer.

Once again thanks for giving us this opportunity to quote the ARS Displex to you. If you have any questions please call me directly or your local technical sales representative any time.

Sincerely,

Lori Bachman
Advanced Research Systems, Inc.
lbachman@arscryo.com
Phone 610.967.2120
www.arscryo.com

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TEL NO: 217-333-5424

Quote Validity: 60 Days

Shipment: 8-10 Weeks (See Notes)

Terms: Net 30

Dr. Peter Kammel
University of Illinois
Urbana, IL 61801

Sales Contact: Vacuum One- Scott Dix

<u>Item</u>	<u>Qty.</u>	<u>Description</u>	<u>Price</u>
1	1	<25 K Single Stage Closed Cycle Cryostat ARS Displex Closed Cycle System Model CS-110 with the following features: <ul style="list-style-type: none">• DE-110F Pneumatically driven with a temperature range of <25K to 355K.• Provides 175 watts cooling capacity @77K• Compressor, heavy duty, built for helium process gas.• Stainless Steel Braided flexible hoses, 10 Ft. (Longer lines optional.) (see 4K "S" upgrade in options section of this quote – link Displex Closed Cycle Closed Cycle Product Matrix)	\$24,500.00
2	1	Instrumentation for temperature control: <ul style="list-style-type: none">• 10 Pin feed through.• 1 Heater for temperature control installed.• 2 ea. Silicon Diode temperature sensors installed, one for control LS-DT-670B-SD and a second sensor LS-DT-670A-SD for accurate sample temperature monitoring. (contact ARS if you require other sensors configurations or need additional instrumentation, wires or feed throughs – link to sensor selection matrix)	\$1,450.00

Temperature Controllers – if you do not already have a controller, see options section of this quote for various controllers offered – please ask if you do not see the controller you desire.

Total US Dollars	\$25,950.00
10% discount	-\$2,595.00
TOTAL	\$23,355.00

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SPECIFICATIONS:

1. Cryostat Temperature Range* & Refrigeration Capacity *

DE-110
Lowest temp. <25K
175 Watts @ 77K
Highest temp. 355K

* at cryocooler cold tip without attachments 60Hz operation.

2. Pneumatic Displacer, axial motor combination for lower vibrations at the sample. Vibration is <35 microns axial displacement (see optional low vibration GMX-20-1 interface for <15 nm displacement)
3. Expander is field serviceable by user – no need to ship it back to ARS for scheduled maintenance. ARS manufactures the expander & interface, provides parts and service directly to customers (Customer works directly with the manufacture - no third party is between customer and actual expander manufacturer).
4. ARS-10HW - Water cooled compressor designed for helium.
5. Warranty – 1 year
6. All systems are fully tested prior to shipment and test data is supplied.

Notes:

1. The attached sales conditions (Cp.010601) are hereby made part of this quotation.
2. The information and pricing contained in this quote is proprietary and for the use of recipient only.
3. No verbal changes allowed. All changes must be supported with a revised quote. ARS is not responsible for omissions not documented in final quote.
4. In the event there is a discrepancy between itemized prices and the total price. The itemized prices are deemed correct and the total price will be modified accordingly.
5. In case of unavailability of certain quoted components, ARS reserves the right to substitute in the order with equal or better quality components
6. This quotation is not an offer and is not binding on ARS unless and until ARS accepts in writing the customers order.
7. Delivery commitment begins after receipt of purchase order, or receipt of approved drawings from user for customized systems.
8. Order cancellation after PO has been issued to ARS will result in cancellation charges at least 50% of the order value.
9. These prices are Exworks unless otherwise stated on quotation.
10. Title passes to the buyer when the system ships from ARS shipping Dock.
11. Payment Terms, Net 30 Days.
12. Late payment in violation of the terms will negate warranty obligations.
13. Additional shipping charges may apply due to selection of certain options.
14. This product must be exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to US Laws is Prohibited

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	<u>Options</u>	
1	<u>Low Vibration Interface for DE-110 – GMX-20-1 or GMX-20B-1 UHV</u> <ul style="list-style-type: none">• Provides vibration level ~ 10 to 15 nanometers• Available with optical setup or UHV	Contact Factory
2	Instrumentation for temperature control: <ul style="list-style-type: none">• 10 Pin feed through.• 1 Heater for temperature control installed.• 2 ea. Silicon Diode temperature sensors installed, one for control LS-DT-670B-SD and a second sensor LS-DT-670A-SD for accurate sample temperature monitoring. (contact ARS if you require other sensors configurations or need additional instrumentation, wires or feed throughs – link to sensor selection matrix)	\$1,450.00
3	Bolt on instrumentation skirt provides two instrumentation ports, one vacuum port & Double O-Rings seals to interface with the vacuum shroud to allow shroud rotation.	\$2,520.00
4	<u>Temperature Controller; Lakeshore Model 331E</u> two channel controller is integrated with system and interconnecting cables are supplied. Link to LS-331	\$2,920.00
5	<u>Temperature Controller; SI Model 9700-1-1</u> two channel controller is integrated with system and interconnecting cables are supplied. Link to SI-9700	\$2,680.00
6	<u>Temperature Controller; Lakeshore Model 331S</u> two channel controller is integrated with system and interconnecting cables are supplied. Link to LS-331	\$3,310.00
7	<u>Temperature Controller; Model 340/3464</u> from Lake Shore four channel controller is integrated with system and interconnecting cables are supplied. Link to LS-340	\$6,230.00
8	<u>2 Year Extended Warranty</u>	\$1,100.00
9	Vacuum Pumping System <u>VPS-1</u> . Includes two stage, direct drive mechanical pump (2002I), valve & 1 Meter Stainless Steel bellows vacuum hose.	\$2,640.00
10	Vacuum Pumping System <u>VPS2</u> . Includes two stage, direct drive mechanical pump (2005SD), Valve, 1 meter stainless steel bellows vacuum hose, pump filter, oil trap & vacuum gauge.	\$4,180.00
11	Vacuum Pumping System <u>VPS-3</u> . UHV. TW70H Dry oil free pump, diaphragm backing pump, valve, 1 Meter Stainless Steel bellows vacuum hose, vacuum manifold - <5*E-9 Torr.	\$10,890.00

Attachments – DE-110

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DE110 with heater mount

