



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

BFO NUMBER
 LBS11009

PAGE
 1

ADDRESS CORRESPONDENCE TO ATTENTION OF
 ROBERTA WAGNER
 304-558-0067

RFQ COPY
 TYPE NAME/ADDRESS HERE
 Agilent Technologies Inc
 2850 Centerville Road
 Wilmington, DE 19808

SHIP TO
 HEALTH AND HUMAN RESOURCES
 ENVIRONMENTAL CHEMISTRY LAB
 4710 CHIMNEY DRIVE
 CHARLESTON, WV
 25302 304-558-3530

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
06/10/2010				

BID OPENING DATE: 07/15/2010 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		490-55		
LIQUID CHROMATOGRAPH/MASS SPECTROMETER/MASS SPECTROMETER (LC/MS/MS) INSTRUMENT TO MEET THE REQUIREMENTS OF THE PUBLIC HEALTH EMERGENCY PREPAREDNESS COOPERATIVE AGREEMENT WITH THE CENTER FOR DISEASE CONTROL AND PREVENTION (CDC). THE TECHNOLOGY OF THE LC/MS/MS MUST BE CONFIGURED SPECIFICALLY FOR THE STATE DEPARTMENT OF HEALTH LABORATORIES WHO ARE MEMBER OF THE US CENTERS FOR DISEASE CONTROL LRN-C PROGRAM. THE RESOLUTION AND SENSITIVITY CAPABILITY MUST BE ABLE TO MEET OR EXCEED THE LIMITS OF DETECTION AND MINIMUM REPORTING LEVELS REQUIRED FOR THESE AGENTS AS STIPULATED UNDER THE CENTER FOR DISEASE CONTROL OFFICE OF QUALITY CONTROL, QUALITY ASSURANCE PROGRAM, VALIDATION GUIDELINES. THIS INSTRUMENT IS TO BE INSTALLED FOR USE BY THE OFFICE OF LABORATORY SERVICES, CHEMICAL THREAT LABORATORY AT 4710 CHIMNEY DRIVE, SUITE G, CHARLESTON, WV 25302, PER THE ATTACHED DETAILED SPECIFICATIONS.						
>> PLEASE SEE ATTACHED SPECIFICATIONS/COST SHEET. <<						
CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.						

RECEIVED

2010 JUL 12 AM 10:16

WV PURCHASING DIVISION

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE TELEPHONE DATE

TITLE FEIN ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods this Purchase Order/Contract becomes void and of no effect after June 30.
5. Payment may only be made after the delivery and acceptance of goods or services.
6. Interest may be paid for late payment in accordance with the *West Virginia Code*.
7. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
10. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern the purchasing process.
11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
12. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
13. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at www.state.wv.us/admin/purchase/vrc/hipaa.htm and is hereby made part of the agreement. Provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
14. **CONFIDENTIALITY:** The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.
15. **LICENSING:** Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, and the West Virginia Insurance Commission. The vendor must provide all necessary releases to obtain information to enable the director or spending unit to verify that the vendor is licensed and in good standing with the above entities.
16. **ANTITRUST:** In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.
2. Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
4. All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130
5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).



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 Department of Administration
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VENDOR

SHIP TO

HEALTH AND HUMAN RESOURCES
 ENVIRONMENTAL CHEMISTRY LAB
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 CHARLESTON, WV
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<p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.</p> <p>INQUIRIES: WRITTEN QUESTIONS SHALL BE ACCEPTED THROUGH CLOSE OF BUSINESS ON 6/29/2010. QUESTIONS MAY BE SENT VIA USPS, FAX, COURIER OR E-MAIL. IN ORDER TO ASSURE NO VENDOR RECEIVES AN UNFAIR ADVANTAGE, NO SUBSTANTIVE QUESTIONS WILL BE ANSWERED ORALLY. IF POSSIBLE, E-MAIL QUESTIONS ARE PREFERRED. ADDRESS INQUIRIES TO:</p> <p>ROBERTA WAGNER DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION 2019 WASHINGTON STREET EAST CHARLESTON, WV 25311</p> <p>FAX: 304-558-4115 E-MAIL: ROBERTA.A.WAGNER@WV.GOV</p> <p>THE MODEL/BRAND/SPECIFICATIONS NAMED HEREIN ESTABLISH THE ACCEPTABLE LEVEL OF QUALITY ONLY AND ARE NOT INTENDED TO REFLECT A PREFERENCE OR FAVOR ANY PARTICULAR BRAND OR VENDOR. VENDORS WHO ARE BIDDING ALTERNATES SHOULD SO STATE AND INCLUDE PERTINENT LITERATURE AND SPECIFICATIONS. FAILURE TO PROVIDE INFORMATION FOR ANY ALTERNATES MAY BE GROUNDS FOR REJECTION OF THE BID. THE STATE RESERVES THE RIGHT TO WAIVE MINOR IRREGULARITIES IN BIDS OR SPECIFICATION</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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<p>IN ACCORDANCE WITH SECTION 148-1-4(F) OF THE WEST VIRGINIA LEGISLATIVE RULES AND REGULATIONS. VENDOR PREFERENCE CERTIFICATE</p> <p>THIS TEAM EXHIBIT HAS BEEN REPLACED BY THE ONLINE VERSION WHICH IS AVAILABLE HERE: HTTP://WWW.STATE.WV.US/ADMIN/PURCHASE/VRC/VENPREF.PDF</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p> <p>DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130</p> <p>PLEASE NOTE: A CONVENIENCE COPY WOULD BE APPRECIATED.</p> <p>THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:</p> <p>SEALED BID</p> <p>BUYER:-----RW/FILE 22-----</p> <p>RFQ. NO.:-----LBS11009-----</p> <p>BID OPENING DATE:---7/15/2010-----</p> <p>BID OPENING TIME:---1:30 PM-----</p>						

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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID: ----- 302-993-5941 ----- CONTACT PERSON (PLEASE PRINT CLEARLY): ----- Rick Browning -----						
***** THIS IS THE END OF RFQ LBS11009 ***** TOTAL:						\$ 309,016.04

SIGNATURE <i>Sandra Deal</i>				SEE REVERSE SIDE FOR TERMS AND CONDITIONS	
TITLE Business Sales Specialist		FEIN 77-0518772		TELEPHONE 800-227-9770	
				DATE July 09, 2011	
ADDRESS CHANGES TO BE NOTED ABOVE					

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SPECIFICATIONS AND REQUIREMENTS

The Threat Preparedness and Response Section, Chemical Threats, of the Office of Laboratory Services (CT) is requesting to purchase a Liquid Chromatograph/Mass Spectrometer/Mass Spectrometer (LC/MS/MS).

1. A LC/MS/MS instrument is needed by CT to meet the requirements of the Public Health Emergency Preparedness cooperative agreement with the Center for Disease Control and Prevention (CDC), Atlanta, Georgia.
2. The technology of this LC/MS/MS instrument must be configured specifically for the State Department of Health laboratories who are members of the US Centers for Disease Control LRN-C Program (Laboratory Response Network – Chemical). The resolution and sensitivity capability must be able to meet or exceed the limits of detection and minimum reporting levels required for these agents as stipulated under the Center for Disease Control Office of Quality Control, Quality Assurance Program, Validation Guidelines.
3. The LC/MS/MS instrument must come equipped with a triple quadrupole mass spectrometer, workstation PC and printer, software with 2 data analysis licenses, installation, and familiarization training.
4. The LC/MS/MS instrument must have an atmospheric pressure chemical ionization (APCI) source with spray chamber, corona discharge needle, nebulizer, APCI vaporizer, and test calibration kit.
5. The LC/MS/MS instrument must come equipped with LC/MS rough pumps compatible with BOC Edwards pumps, or equivalent.
6. The LC/MS/MS instrument must have a nitrogen gas generator and a maintenance kit.
7. The LC/MS/MS instrument must have a binary pump system with solvent cabinet, 2 solvent bottles, connecting capillaries, and CAN cable (cable wire that connects the pump system to the computer). It must also contain a maintenance kit, active seal option, and solvent selection valve option.

8. The LC/MS/MS instrument system package must have a micro degasser which includes a 4-channel micro-vacuum, degasser, remote control cable, and connecting tubing.
9. The LC/MS/MS instrument must be fully compatible with a system controlled auto sampler with a 100uL injection loop, tray for two well plates, 10x 2mL vials, 2x54- vial plates, Rheodyne injection valve (600 bar), and 05 m CAN cable.
10. The LC/MS/MS instrument system must have a Peltier (generic term for any device that uses the Peltier effect to heat or cool materials) type device to control the temperature of the auto samplers/fraction collectors.
11. For rapid resolution LC, the column compartment temperature must maximize to 100°C and pressures up to 600 bar.
12. The LC/MS/MS instrument must come with a high pressure liquid chromatography (HPLC) column oven with a temperature tolerance of +/- 2°C.
13. The LC/MS/MS instrument must come with a column Atlantis HILIC Silica, 2.1 x 50 mm 3µm particles, or equivalent for the Ortho-Phosphate Nerve Agents (OPNA) method.
14. The LC/MS/MS instrument system must include a diode array detector with radio-frequency identification (RFID) tracking technology for flow cells and ultra violet (UV) lamp with one standard flow cell.
15. The LC/MS/MS instrument system must contain a SB-C18, 2.1x100mm, 1.8um, 600 bar, or equivalent column.
16. Consumables to be included with the LC/MS/MS instrument: finger tight polyketone fittings 1/16" in a 10 pack with the maximum pressure capability of 600 bar, rapid resolution liquid chromatography (RRLC) in-line filter, 2 mm, 0.2 um filter with the maximum 600 bar with 3 frits and 70x0.12 mm connecting capillary, and replacement frits, 2mm, 0.2um in a 10 pack what are stainless steel, PEEK encapsulated for use with RRLC in-line filter.
17. The LC/MS/MS instrument must be fully automated for analysis with a system controller that is loaded with the necessary software. System

controller software must be able to export data to the existing Laboratory Information Management System (LIMS), STARLIMS Sunrise version 9, resides on a Microsoft Windows Server 2003 file server. The ability for the equipment to place a results data file into a shared folder on the LIMS server in a format that can be imported is required.

18. The LC/MS/MS instrument system controller software must be able to fulfill all of the analytical and quality control requirements stated in the CDC Office of Quality Control, Quality Assurance Program, Validation Guidelines. The LRN-C validation guidelines as published by the CDC on the LRN-C, the information is not for public distribution and is considered "sensitive" to the point that we are forbidden to pass on uncontrolled copies.

Installation Requirements:

1. Vendor must install the LC/MS/MS instrument system in the Threat Preparedness Laboratory in the Elk Office Center building at 4710 Chimney Drive, Suite G, Charleston, WV, 25302.
2. Vendor must provide to the Threat Preparedness (TP) Program Manager all relevant information concerning the installation in a documented form at least 2 weeks prior to the scheduled installation.
3. At the time of the LC/MS/MS instrument installation, Vendor must provide to the TP Program Manager: All relevant system manuals for hardware components: system and application software documentation: and a parts, supplies, and accessories catalog.
4. Vendor must include all necessary cables and fittings and other costs for installation in the submitted bid price.
5. Installation and on-site training must be completed within 90 days of delivery date.

Training Requirements

1. Vendor must provide, upon completion of installation, two days of on-site training for the Threat Preparedness personnel on the operation and user maintenance requirements of the LC/MS/MS instrument system.

2. All costs incurred by the Vendor including travel, lodging, and living expenses necessary to provide this basic training shall be included in the bid price.

Warranty Requirements

1. Vendor must include in the total price of the equipment at least a one-year factory warranty covering all system components.
2. Software support must be included as part of the one-year warranty.
3. Warranty must include on-site service including labor, travel time, and expenses with a 72-hour on-site response time at no extra cost to maintain the specifications listed in the bid and the Vendor's product specifications. (Vendor should include a copy of the warranty).
4. Warranty must begin upon acceptance of the completed installation and training.

Delivery Requirements

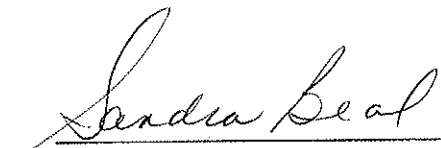
1. The LC/MS/MS instrument and its components must be shipped for "inside delivery" by a freight delivery company and must be delivered within 90 days of receipt of order.
2. The LC/MS/MS instrument and its components must be shipped "F.O.B. Destination" unless otherwise stated in quote by Vendor. Any shipping and handling requirements must be stated in Vendor's quote.

RFQ COST SHEET

Bidders shall provide a cost for the following:

Liquid Chromatograph/Mass Spectrometer/Mass Spectrometer (LC/MS/MS)	\$ <u>309,016.04</u>
On-Site User Training (at installation of equipment)	\$ <u>included</u>
Freight/Shipping Charge	\$ <u>No Charge</u>
Total Cost	\$ <u>309,016.04</u>

The award will be made to the vendor with the lowest overall total cost of the equipment which meets all requested specifications and requirements. Payment will be made in arrears.



Vendor Signature

*

July 09, 2010
Date

* Agilent Technologies, Inc. is bidding solely in accordance with Quotation no 963912 which is attached and hereby incorporated by reference. Agilent's offer is in accordance with Agilent's Terms and Conditions of Sale Exhibit E16 (01-May-2007). Please reference quote number 963912 on any resultant award. The above pricing does not include tax. If tax applies, please add appropriate tax amount to any resultant award. If you have any questions regarding our products, please contact Rick Browning at 304-840-4752.

RFQ No. LBS11009

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

EXCEPTION: The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

Under penalty of law for false swearing (*West Virginia Code* §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: Agilent Technologies Inc

Authorized Signature: _____ Date: July 09, 2010

State of Delaware

County of New Castle, to-wit:

Taken, subscribed, and sworn to before me this ___ day of _____, 20__.

My Commission expires _____, 20__.

AFFIX SEAL HERE

NOTARY PUBLIC _____

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with West Virginia Code, §5A-3-37. (Does not apply to construction contracts). West Virginia Code, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the West Virginia Code. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

- 1. Application is made for 2.5% resident vendor preference for the reason checked: Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or, Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or, Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. Application is made for 2.5% resident vendor preference for the reason checked: Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. Application is made for 2.5% resident vendor preference for the reason checked: Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
4. Application is made for 5% resident vendor preference for the reason checked: Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked: Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked: Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: _____ Signed: _____

Date: _____ Title: _____

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

WV-96
Rev. 10/07

AGREEMENT ADDENDUM

In the event of conflict between this addendum and the agreement, this addendum shall control:

1. **DISPUTES** - Any references in the agreement to arbitration or to the jurisdiction of any court are hereby deleted. Disputes arising out of the agreement shall be prosecuted to the West Virginia Court of Claims.
2. **HOLD HARMLESS** - Any clause requiring the Agency to indemnify or hold harmless any party is hereby deleted in its entirety.
3. **GOVERNING LAW** - The agreement shall be governed by the laws of the State of West Virginia. This provision replaces any references to any other State's governing law.
4. **TAXES** - Provisions in the agreement requiring the Agency to pay taxes are deleted. As a State entity, the Agency is exempt from Federal, State, and local taxes and will not pay taxes for any Vendor including individuals, nor will the Agency file any tax returns or reports on behalf of Vendor or any other party.
5. **PAYMENT** - Any references to prepayment are deleted. Payment will be in arrears.
6. **INTEREST** - Should the agreement include a provision for interest on late payments, the Agency agrees to pay the maximum legal rate under West Virginia law. All other references to interest or late charges are deleted.
7. **RECOUPMENT** - Any language in the agreement waiving the Agency's right to set-off, counterclaim, recoupment, or other defense is hereby deleted.
8. **FISCAL YEAR FUNDING** - Service performed under the agreement may be continued in succeeding fiscal years for the term of the agreement, contingent upon funds being appropriated by the Legislature or otherwise being available for this service. In the event funds are not appropriated or otherwise available for this service, the agreement shall terminate without penalty on June 30. After that date, the agreement becomes of no effect and is null and void. However, the Agency agrees to use its best efforts to have the amounts contemplated under the agreement included in its budget. Non-appropriation or non-funding shall not be considered an event of default.
9. **STATUTE OF LIMITATION** - Any clauses limiting the time in which the Agency may bring suit against the Vendor, lessor, individual, or any other party are deleted.
10. **SIMILAR SERVICES** - Any provisions limiting the Agency's right to obtain similar services or equipment in the event of default or non-funding during the term of the agreement are hereby deleted.
11. **ATTORNEY FEES** - The Agency recognizes an obligation to pay attorney's fees or costs only when assessed by a court of competent jurisdiction. Any other provision is invalid and considered null and void.
12. **ASSIGNMENT** - Notwithstanding any clause to the contrary, the Agency reserves the right to assign the agreement to another State of West Virginia agency, board or commission upon thirty (30) days written notice to the Vendor and Vendor shall obtain the written consent of Agency prior to assigning the agreement.
13. **LIMITATION OF LIABILITY** - The Agency, as a State entity, cannot agree to assume the potential liability of a Vendor. Accordingly, any provision limiting the Vendor's liability for direct damages to a certain dollar amount or to the amount of the agreement is hereby deleted. Limitations on special, incidental or consequential damages are acceptable. In addition, any limitation is null and void to the extent that it precludes any action for injury to persons or for damages to personal property.
14. **RIGHT TO TERMINATE** - Agency shall have the right to terminate the agreement upon thirty (30) days written notice to Vendor. Agency agrees to pay Vendor for services rendered or goods received prior to the effective date of termination.
15. **TERMINATION CHARGES** - Any provision requiring the Agency to pay a fixed amount or liquidated damages upon termination of the agreement is hereby deleted. The Agency may only agree to reimburse a Vendor for actual costs incurred or losses sustained during the current fiscal year due to wrongful termination by the Agency prior to the end of any current agreement term.
16. **RENEWAL** - Any reference to automatic renewal is hereby deleted. The agreement may be renewed only upon mutual written agreement of the parties.
17. **INSURANCE** - Any provision requiring the Agency to insure equipment or property of any kind and name the Vendor as beneficiary or as an additional insured is hereby deleted.
18. **RIGHT TO NOTICE** - Any provision for repossession of equipment without notice is hereby deleted. However, the Agency does recognize a right of repossession with notice.
19. **ACCELERATION** - Any reference to acceleration of payments in the event of default or non-funding is hereby deleted.
20. **CONFIDENTIALITY** - Any provision regarding confidentiality of the terms and conditions of the agreement is hereby deleted. State contracts are public records under the West Virginia Freedom of Information Act.
21. **AMENDMENTS** - All amendments, modifications, alterations or changes to the agreement shall be in writing and signed by both parties. No amendment, modification, alteration or change may be made to this addendum without the express written approval of the Purchasing Division and the Attorney General.

ACCEPTED BY:

STATE OF WEST VIRGINIA

Spending Unit: _____

Signed: _____

Title: _____

Date: _____

VENDOR

Company Name: Agilent Technologies Inc

Signed: _____

Title: Business Sales Specialist

Date: July 09, 2010

ATTACHMENT
P.O.# LBS11009

This agreement constitutes the entire agreement between the parties, and there are no other terms and conditions applicable to the licenses granted hereunder.

Agreed

Signature Date

Business Sales Specialist

Title

Agilent Technologies Inc

Company Name

Signature Date

Title

Agency/Division



Quotation

Roberta Wagner
 State of West Virginia
 2019 Washington St E
 Charleston WV 25311-2214

Quote No.	Create Date	Delivery Time	Page
963912	07/08/2010	3 Weeks	1 of 11
Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

State of West Virginia LBS11009 07-15-10

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G6430AA 6430 Triple Quadrupole LC/MS system. Includes: 6430 Triple Quad, workstation PC and printer, MassHunter software with 2 data analysis licenses, installation, familiarization training, and PC image recovery service. With the following configuration: Ship-to Country : USA Installation (44K) Familiarization at Installation (44L) 1 Year SW Update/Phone Assist (44W) Training (44P) 1YR PC Repair Recovery Service (0TP)	1.000 EA	270,000.00 USD	54,000.00-	216,000.00
Item Total				216,000.00
Special discount of 20.00 % is applied.				



Quotation

Roberta Wagner
 State of West Virginia
 2019 Washington St E
 Charleston WV 25311-2214

Quote No.	Create Date	Delivery Time	Page
963912	07/08/2010	3 Weeks	2 of 11
Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G1947B LC/MS APCI Source Includes APCI spray chamber, corona discharge needle, nebulizer, APCI vaporizer, and test calibration kit. With the following configuration: Configuration for usage with : Triple Quad Ship-to Country : USA Installation (44K) Familiarization at Installation (44L)	1.000 EA	12,231.00 USD	2,446.20-	9,784.80
Item Total				9,784.80
Special discount of 20.00 % is applied.				



Quotation

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 State of West Virginia
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Quote No.	Create Date	Delivery Time	Page
963912	07/08/2010	3 Weeks	3 of 11
Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G1312B 1260 Infinity Binary Pump Maximum pressure 600 bar. Includes binary pump, column, connecting capillaries, solvent cabinet and CAN cable.	1.000 EA	17,319.00 USD	3,463.80-	13,855.20
With the following configuration:				
Add Tool Kit (001) ; Tool Kit included				
Ship-to Country : USA				
HPLC System Tool Kit	1 EA	286.00 USD	57.20-	228.80
HPLC Starter Kit incl. 0.17mm id cap	1 EA	899.00 USD	179.80-	719.20
HPLC Starter Kit incl. 0.12mm id cap	1 EA	1,199.00 USD	239.80-	959.20
Agilent Lab Advisor	1 EA	1,200.00 USD	240.00-	960.00
Active Seal Wash	1 EA	1,391.00 USD	278.20-	1,112.80
Solvent Selection	1 EA	1,820.00 USD	364.00-	1,456.00
Installation (44K)				
Familiarization at Installation (44L)				
		Item Total		19,291.20
Special discount of 20.00 % is applied.				



Quotation

Roberta Wagner
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Quote No.	Create Date	Delivery Time	Page
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Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G1379B 1260 Infinity Micro Degasser. Includes 4-channel micro-vacuum degasser, remote control cable and connecting tubing. With the following configuration: Ship-to Country : USA Installation (44K)	1.000 EA	4,098.00 USD	819.60-	3,278.40
Item Total				3,278.40
Special discount of 20.00 % is applied.				
G1367E 1260 Infinity High Performance Autosampler. Low carryover design. Up to 600 bar. Includes tray for 2 well-plates and 10x2mL-vials, and 100 uL loop. Optional cooling. With the following configuration: Ship-to Country : USA Installation (44K) Familiarization at Installation (44L)	1.000 EA	21,050.00 USD	4,210.00-	16,840.00
Item Total				16,840.00
Special discount of 20.00 % is applied.				



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Rick Browning	304-840-4752	09/06/2010	
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G1330B 1290 Infinity Thermostat Use with all Agilent autosampler/fraction collector/spotter. Features Peltier device to control the temperature with humidity control. With the following configuration: Ship-to Country : USA Installation (44K)	1.000 EA	5,405.00 USD	1,081.00-	4,324.00
Item Total				4,324.00
Special discount of 20.00 % is applied.				
G1316B 1200 Series Thermostatted Column Compartment SL. For rapid resolution LC, temperatures up to 100 degree C and pressures up to 600 bar. With the following configuration: Ship-to Country : USA Installation (44K) Familiarization at Installation (44L)	1.000 EA	5,006.00 USD	1,001.20-	4,004.80
Item Total				4,004.80
Special discount of 20.00 % is applied.				



Quotation

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Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
G1315D 1260 Infinity Diode Array Detector VL Includes RFID tracking technology for flow cells and UV lamp. No flow cell included.	1.000 EA	16,196.00 USD	3,239.20-	12,956.80
With the following configuration: Ship-to Country : USA				
Standard flow cell Installation (44K) Familiarization at Installation (44L)	1 EA	1,055.00 USD	211.00-	844.00
		Item Total		13,800.80
Special discount of 20.00 % is applied.				
H2149A Chemical Analysis Application Consulting Provides on-site assistance. For consulting, training, documentation and implementation services. Requires option.	1.000 EA			
With the following configuration: Ship-to Country : USA				
Two Day On-site (Includes Travel)	1 EA	5,200.00 USD		5,200.00
		Item Total		5,200.00



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Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
NON AGILENT PROD Nitrogen Generator Includes: LCMS20-1W Parker domnick hunter N2 generator with built-in compressor Curtain Flow: 20L/min of 99% N2 at 100psig 120v/60Hz 60-627-2251 8,000Hr Filter Kit for LCMS range generators 60-627-2261 8,000Hr Compressor Kit for LCMS option 1 120/60Hz	1.000 EA	15,439.50 USD		15,439.50
Item Total				15,439.50
<p>Please note that above product Nitrogen Generator is not manufactured by Agilent Technologies which hereby disclaims any liability for the performance, quality, reliability or delivery of the items. The standard warranty, INCLUDING INDEMNIFICATION FOR INTELLECTUAL PROPERTY INFRINGEMENT, is to be supplied by manufacturer unless otherwise specified on the Agilent Technologies quotation.</p>				



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To place an order: Call 1-800-227-9770 Option 1
 For Instruments Fax : 302-633-8953
 For Consumables Fax : 302-633-8901
 Email : LSCAinstrumentsales@agilent.com
 For additional instructions, see last page

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
959743-901 ZORBAX HILIC Plus, 2.1x50mm, 3.5um	1.000 EA	358.00 USD	71.60-	286.40
Item Total				286.40
Special discount of 20.00 % is applied.				
828700-902 SB-C18, 2.1x100mm, 1.8um, 600bar	1.000 EA	620.00 USD	124.00-	496.00
Item Total				496.00
Special discount of 20.00 % is applied.				
5067-1551 RRLC In-line filter,2mm,0.2um filter max 600 bar with 3 frits & 70 x 0.12 mm connecting capillary.	1.000 EA	167.00 USD	33.40-	133.60
Item Total				133.60
Special discount of 20.00 % is applied.				



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Contact		Phone no.	Valid to
Rick Browning		304-840-4752	09/06/2010
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

Product/Description	Qty/Unit	Unit List Price	Discount Amount	Extended Net Price
5067-1555 Replacement frits,2 mm,0.2um,10/pk Stainless steel,PEEP encapsulated for use with 5067-1551	1.000 EA	103.00 USD	20.60-	82.40
		Item Total		82.40
Special discount of 20.00 % is applied.				
5042-8957 Fingertight Polyketone fitting 1/16 10pk Max pressure 600 bar	1.000 EA	67.67 USD	13.53-	54.14
		Item Total		54.14
Special discount of 20.00 % is applied.				
		Gross Amount	: \$	381,110.17
		Total Discount	: \$	72,094.13
		Total	: \$	309,016.04



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963912	07/08/2010	3 Weeks	10 of 11
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Rick Browning	304-840-4752	09/06/2010	
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			

TO PLACE AN ORDER, Agilent offers several options:

- 1) Visit <http://www.agilent.com/chem/supplies> to place online orders using a purchase order or credit card.
- 2) Call 1-800-227-9770 (option 1) any weekday between 8am and 8 pm Eastern time in the U.S., Canada & Puerto Rico.
- 3) To place an order for Consumables, please fax the order to 302-633-8901.
To place an instrument and/or software order, please fax the order to 302-633-8953.
- 4) Or you can mail your order to:
Agilent Technologies
North American Customer Contact Center
2850 Centerville Road BU3-2
Wilmington, DE 19808-1610

To place an order, the following information is required:

- Purchase order number or credit card, delivery date, ship to, invoice to, end user, and quote number.
- GSA customers please provide GSA contract #.

EXCLUSIVE OFFERS FOR NEW INSTRUMENT CUSTOMERS, go to www.agilent.com/chem/exclusiveoffers

TO CHECK THE STATUS OF AN ORDER:

- 1) Visit <http://www.agilent.com/chem/supplies> to check the status of your order.
- 2) Call 1-800-227-9770 (option 1) any weekday between 8 am and 8 pm Eastern time, in the U.S., Canada & Puerto Rico. You will need to know the purchase order or credit card number the order was placed on.

FINANCING AND LEASING - A wide range of options are available from Agilent's preferred financing partner, Leasing Group Inc. (LGI).

For more information or to discuss how monthly payments could suit your operational or budgetary requirements, contact your Agilent Account Manager or contact LGI at 800-944-1370.

TERMS AND CONDITIONS:

- Pricing: Web prices are provided only for the U.S. in U.S.dollars. All phone prices are in local currency and for end use. Applicable local taxes are applied.
- All Sales Tax is subject to change at the time of order.
- Shipping and Handling Charges: Orders with a value less than \$2000 or those requiring special services such as overnight delivery may be subject to additional shipping & handling fees. Some of these charges may be avoided by ordering via the Web
- Payment Terms: Net 30 days from invoice date, subject to credit approval.

* Quotation Validity: This quotation is valid for 60 days unless otherwise indicated.

* Warranty period for instrumentation is 1 year. The Warranty period for columns and consumables is 90 days.

It is Agilent Technologies intent to ship product at the earliest available date unless specified otherwise.

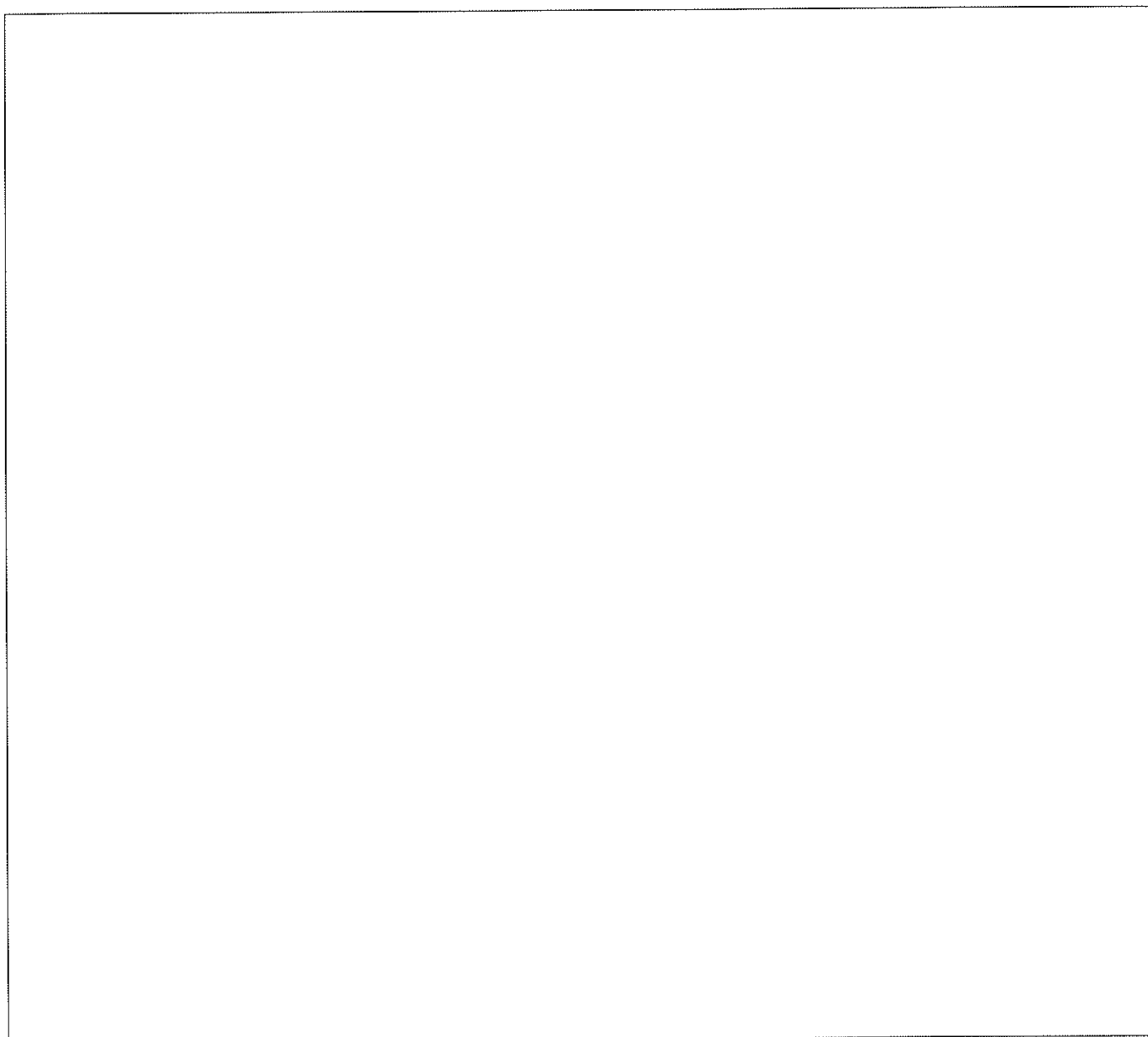
The sale of standard Products and Services referenced in this quotation is subject to the then current version of Agilent's Terms of Sale, and any LSCA Supplemental Terms or other applicable terms referenced herein. If any Products or Services are manufactured, configured or adapted to meet Customer's requirements, the sale of all Products and Services referenced in this quotation is subject to the then current version of Agilent's Terms of Sale for Custom Products and any LSCA Supplemental Terms or other applicable terms referenced herein. A copy of Agilent's Terms of Sale, Agilent's Terms of Sale for Custom Products and the LSCA Supplemental Terms is either attached or has been previously provided to you. Please contact us if you have not received a copy or require an additional copy. If you have a separate agreement in effect with Agilent covering the sale of Products and Services referenced in this quotation, the terms of that agreement will apply to those Products and Services. Agilent expressly objects to any different or additional terms in your purchase/sales order documentation, unless agreed to in writing by Agilent. Product and Service availability dates are estimated at the time of the quotation. Actual delivery dates or delivery windows will be specified at the time Agilent acknowledges and accepts your purchase order. The above conditions shall apply to the fullest extent permitted by the law. You may have other statutory or legal rights available. Commodities, technology or software exported from the United States of America ("U.S.") or from other exporting countries will be subject to the U.S. Export Administration Regulations and all exporting countries' export laws and regulations. Diversion contrary to U.S. law and the applicable export laws and regulations is prohibited.



Quotation

Roberta Wagner
State of West Virginia
2019 Washington St E
Charleston WV 25311-2214

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963912	07/08/2010	3 Weeks	11 of 11
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Rick Browning	304-840-4752	09/06/2010	
To place an order: Call 1-800-227-9770 Option 1 For Instruments Fax : 302-633-8953 For Consumables Fax : 302-633-8901 Email : LSCAinstrumentsales@agilent.com For additional instructions, see last page			



AGILENT TERMS AND CONDITIONS OF SALE AND SERVICE

Exhibit E16

These Terms and Conditions of Sale and Service ("Terms") govern the sale of Products and Support and the license of Software by Agilent Technologies, Inc. and its subsidiaries ("Agilent").

1. DEFINITIONS

- a) "Applicable Trade Term" means the term defined in Incoterms 2000, agreed by the parties, and documented in the quotation.
- b) "Customer's Personal Data" means Customer's personal data or other personal data in Customer's control, including but not limited to names, telephone numbers and e-mail addresses.
- c) "Delivery" means the date when Agilent places the Product(s) at Customer's or Customer's representative's disposal at the address agreed to by Agilent in accordance with the Applicable Trade Term.
- d) "Product(s)" means any hardware sold or Software licensed under these Terms. "Custom Products" means Products manufactured or configured to meet Customer requirements.
- e) "Software" means one or more computer programs in object code format, whether stand-alone or bundled with other Products, and related documentation provided to Customer under these Terms.
- f) "Specifications" means specific technical information about Products which is published by Agilent in effect on the date Agilent ships Customer's order.
- g) "Support" means any standard service such as hardware maintenance, calibration and repair; Software updates and maintenance; or education and training. "Custom Support" means Support adapted to meet Customer requirements.

2. PRICES

- a) Unless otherwise indicated on the quotation, prices include shipping and handling charges to the address agreed to by Agilent in accordance with the Applicable Trade Term. Prices are valid for the period indicated on the quotation. Support prices, except for prepaid and Custom Support, may be changed by Agilent upon sixty (60) days written notice.
- b) Prices exclude any sales, value added or similar tax which will be payable by Customer in addition to the purchase price if applicable. If exemption from taxes is claimed, Customer must provide a certificate of exemption.

3. ORDERS, CANCELLATIONS AND RETURNS

- a) All orders are subject to acceptance by Agilent. Product orders must specify Delivery within six (6) months from order date.
- b) Customer may cancel orders for Products (except Custom Products) prior to shipment at no charge. Cancellation of orders or rescheduling shipment for Custom Products will be subject to Agilent's approval. Cancellation of a Support order will be subject to applicable charges. Information regarding applicable Support cancellation charges is available upon request.
- c) Product returns will also be subject to Agilent's approval and return/refurbishment charges.

4. SHIPMENT, TITLE AND RISK OF LOSS

- a) Agilent will make reasonable efforts to meet Customer's Delivery and shipment requirements. If Agilent is unable to meet Customer's Delivery and shipment requirements, alternative arrangements may be agreed. In the absence of such agreement, Customer's sole remedy is to cancel the order.
- b) Title to hardware Products and risk of loss and damage will pass to Customer at the address agreed to by Agilent in accordance with the Applicable Trade Term.

5. INSTALLATION AND ACCEPTANCE

- a) For Products with installation included in the purchase price, acceptance by Customer occurs upon completion of installation by Agilent. Installation is complete when the Product passes Agilent's installation and test procedures. For Products without installation included in the purchase price, acceptance by Customer occurs upon Delivery.
- b) If Customer schedules or delays installation by Agilent more than thirty (30) days after Delivery, Customer acceptance of the Product(s) will occur on the thirty-first (31st) day after Delivery.

6. PAYMENT

- a) Payment terms are subject to Agilent credit approval. Payment is due thirty (30) days from Agilent's invoice date. Invoices for contractual Support will be issued in advance of the Support period. Agilent may change credit or payment terms at any time should Customer's financial condition or previous payment record so warrant.

AGILENT TERMS AND CONDITIONS OF SALE AND SERVICE**Exhibit E16**

- b) Agilent may discontinue performance if Customer fails to pay any sum due, or fails to perform under this or any other Agilent agreement if, after ten (10) days written notice, the failure has not been cured.

7. WARRANTY

- a) Each Product will receive a global warranty. A global warranty includes the standard warranty for the country of purchase. If a Product is moved to another country, the destination country's standard warranty will apply except for on-site warranty where Agilent does not have an applicable Product specific support presence or authorized representative in that country.
- b) Product warranty information is available with Products, on quotations, or upon request. The warranty period begins on acceptance. Customer may receive a different warranty when the Product is purchased as part of a system.
- c) Agilent warrants Agilent hardware Products against defects in materials and workmanship, and further warrants that such Products conform to Specifications.
- d) Agilent warrants that Software will not fail to execute its programming instructions due to defects in materials and workmanship when properly installed and used on the hardware designated by Agilent. Agilent further warrants that Agilent owned standard Software will substantially conform to Specifications. Agilent does not warrant that Software will operate in hardware and software combinations selected by Customer, or meet requirements specified by Customer.
- e) Agilent does not warrant that the operation of Products will be uninterrupted or error free.
- f) If Agilent receives notice of defects or non-conformance as defined in Sections 7(c) and 7(d) during the warranty period, Agilent will, at its option, repair or replace the affected Product(s). Customer will pay expenses for return of such Product(s). Agilent will pay expenses for shipment of repaired or replacement Product(s). If Agilent is unable, within a reasonable time, to repair or replace the affected Product(s), Customer will be entitled to a refund of the purchase price upon prompt return of the Product(s) to Agilent.
- g) Agilent warrants that Agilent Support will be provided in a professional and workmanlike manner. For ninety (90) days from the date of repair, Agilent will replace, at no charge, defective parts used in Agilent's repair of Products.
- h) Some newly manufactured Agilent Products may contain and Agilent Support may use remanufactured parts which are equivalent to new in performance.
- i) Customer's Product warranty is transferable upon Agilent's receipt of written notification. Such notification must include the serial number, model number and the name, address and location of transferee and the transferee must agree in writing to Agilent's warranty terms.
- j) Agilent reserves the right to invalidate Customer's warranty for Products with an on-site warranty, or Products that have been installed by Agilent, in the event Customer relocates such Products. Customer's warranty for such Products may be reinstated provided Agilent verifies, at Customer's expense, that such Products are in good operating condition.
- k) The above warranties do not cover defects resulting from improper or inadequate maintenance, installation, repair or calibration performed by Customer or a third party not authorized by Agilent; Customer or third party supplied hardware or software, interfacing or supplies; unauthorized modification; improper use or operation outside of the Specifications for the Product; abuse, negligence, accident, loss or damage in transit; or improper site preparation.
- l) THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED. AGILENT SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

8. SUPPORT

- a) Customer may order Support from Agilent's current Support offering as available. Orders for Support are also subject to the Product specific Support terms and the terms indicated on the quotation.
- b) To be eligible for a Support agreement, Products must be at current specified revision levels and may require Agilent's certification, at Customer's expense, that Products are in good operating condition.
- c) Product relocation may result in additional Support charges and modified service response times. Support of Products moved to another location is subject to availability.
- d) Customer is responsible for removing any products not eligible for Support to enable Agilent to perform Support services. Additional charges, computed at Agilent's standard rates, may be incurred for any extra work caused by such products.
- e) Support does not cover any damage, defects or failures caused by:
 - 1) use of non-Agilent media, supplies and other products;
 - 2) site conditions that do not conform to Agilent's site specifications; or

AGILENT TERMS AND CONDITIONS OF SALE AND SERVICE**Exhibit E16**

- 3) neglect, improper use, fire or water damage, electrical disturbances, transportation, work, or modification by non-Agilent employees or subcontractors, or other causes beyond Agilent's control.
- f) Customer is responsible for maintaining a procedure external to the Products to reconstruct lost or altered Customer files, data or programs. Customer will have a representative present when Agilent provides Support services at Customer's site. Customer will notify Agilent if Products are being used in an environment which poses a potential health hazard to Agilent employees or subcontractors. Agilent may require Customer to maintain such Products under Agilent supervision.
- g) Additional return to Agilent Support coverage may be purchased at the time of Product purchase and such coverage will be honored by any Agilent authorized repair center. Additional on-site Support coverage may be purchased and such coverage will be limited to the country in which the additional coverage was purchased.
- h) Subject to Section 3(b) above, Customer may delete Products under a Support agreement or may cancel a Support agreement upon sixty (60) days written notice. Upon sixty (60) days written notice, Agilent may delete Products no longer included in Agilent's Support offering or may cancel a Support agreement.

9. LICENSES

- a) Agilent grants Customer a worldwide, non-exclusive license to use the Software for internal purposes in accordance with the documentation provided with the Software. Such documentation may include license terms provided by Agilent and Agilent's third party suppliers, which will apply to the use of the Software and take precedence over these license terms. In the absence of documentation specifying the applicable license, Customer is granted the right to use one copy of the Software on one machine or instrument, or as otherwise indicated on the quotation.
- b) Customer's Software license is transferable upon Agilent's receipt of the name, address and location of transferee and payment of any applicable fees to the extent permissible under local laws. Customer will immediately upon transfer deliver all copies of the Software to the transferee. The transferee must agree in writing to Agilent's Software license terms. In addition, Customer's license terms will be binding on involuntary transferees, notice of which is hereby given. Customer's license will automatically terminate upon transfer.
- c) The Software is owned and copyrighted by Agilent or its third party suppliers. Agilent and its third party suppliers retain all right, title and interest in the Software. Third party suppliers may protect their rights in the Software in the event of any violation of these license terms.
- d) Customer will not disassemble or otherwise modify the Software without written authorization from Agilent, except as permitted by law. Customer may not copy the Software onto any public or distributed network.
- e) Agilent may terminate Customer's license upon notice for breach of these license terms. Customer must destroy all copies of the Software immediately upon notice of termination.
- f) Software and technical data rights granted to the federal government include only those rights customarily provided to end user Customers. Agilent provides this customary commercial license in Software and technical data pursuant to FAR 12.211 (Technical Data) and 12.212 (Computer Software) and, for the Department of Defense, DFARS 252.227-7015 (Technical Data – Commercial Items) and DFARS 227.7202-3 (Rights in Commercial Computer Software or Computer Software Documentation).

10. INTELLECTUAL PROPERTY CLAIMS

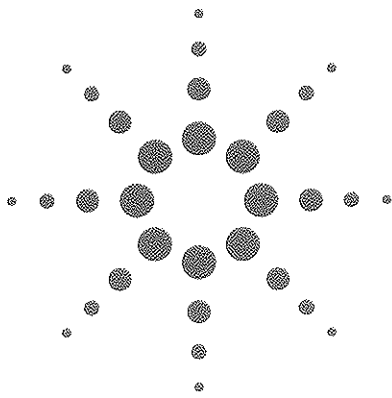
- a) Agilent will defend or settle any claim against Customer that Products (excluding Custom Products) delivered under these Terms infringe an intellectual property right in the country where the Products are used or sold, provided Customer promptly notifies Agilent in writing, and cooperates with and provides control of the defense or settlement to Agilent, to the extent legally permissible.
- b) In the event of an infringement claim under Section 10(a), Agilent will pay infringement claim defense costs, settlement amounts and court-awarded damages. If such a claim appears likely, Agilent may, at its option, modify the Product, procure any necessary license, or replace it. If Agilent determines that none of these alternatives is reasonably available, Agilent will refund Customer's purchase price upon return of the Product.
- c) Agilent has no obligation for any claim of infringement arising from:
 - 1) Agilent's compliance with, or use of, Customer's designs, specifications, instructions or technical information;
 - 2) Product modifications by Customer or a third party;
 - 3) Product use prohibited by Specifications or related application notes; or
 - 4) use of the Product with products not supplied by Agilent.
- d) These terms state Agilent's entire liability for claims of intellectual property infringement.

11. LIMITATION OF LIABILITY AND REMEDIES

- a) In no event will Agilent, its subcontractors or suppliers be liable for special, incidental, indirect or consequential damages (including downtime costs, loss of data, restoration costs, lost profits, or cost of cover) regardless of whether such claims are based on contract, tort, warranty or any other legal theory, even if advised of the possibility of such damages. This exclusion is independent of any remedy set forth in these Terms.
- b) To the extent that limitation of liability is permitted by law, Agilent's liability to Customer is limited to US \$1,000,000, except that Agilent's obligation to make warranty refunds under Section 7 is limited to the Product purchase price.
- c) The limitations set forth in Sections 11(a) and 11(b) above will not apply to infringement claims under Section 10, or to damages for bodily injury or death.
- d) The remedies in these Terms are Customer's sole and exclusive remedies.

12. GENERAL

- a) Agilent will not be liable for performance delays or for non-performance, due to causes beyond its reasonable control.
- b) Customer may not assign or transfer a Support agreement without Agilent's prior written consent. Any attempted assignment or transfer without such consent will be void. As conditions to such consent; (i) the assignee or transferee must agree in writing to the applicable Agilent Support terms; (ii) Agilent may require that all Products included within a Support agreement are in good operating condition; and (iii) Agilent may impose applicable charges in connection with the assignment or transfer. Customer may not assume a Support agreement in connection with any bankruptcy proceedings without Agilent's written consent.
- c) If either party becomes insolvent, is unable to pay its debts when due, files for bankruptcy, is the subject of involuntary bankruptcy, has a receiver appointed, or has its assets assigned, the other party may cancel any unfulfilled obligations.
- d) Agilent will store and use any of the Customer's Personal Data in accordance with Agilent's privacy practices, which are available upon request or from www.agilent.com -- Privacy Statement. Agilent will not sell, rent or lease Customer's Personal Data to others. Customer agrees that Agilent may forward Customer's Personal Data to other Agilent entities or business partners (including agents, resellers and subcontractors) solely to conduct business activities, including communication with third parties (such as the handling of orders, advertising campaigns or market research). Customer agrees that Agilent and its entities may store and use Customer's Personal Data in all countries where Agilent and its entities do business. Customer represents and Agilent acknowledges Customer's representation that consent from individual data subjects has been obtained or is not needed.
- e) Customer who exports, re-exports, transfers or imports Products, technology or technical data purchased hereunder, assumes responsibility for complying with applicable U.S. and other laws and regulations, and for obtaining required export and import authorizations. Customer will comply with U.S. and other laws and regulations prohibiting transfers, exports and re-exports to certain end-users and destinations or for certain end-uses, unless written authorization is obtained from the appropriate government. Agilent may suspend performance if Customer is in violation of applicable laws or regulations.
- f) Disputes arising in connection with these Terms will be governed by the laws of the State of California.
- g) Provisions herein which by their nature extend beyond the termination of any sale or license of Products or Support will remain in effect until fulfilled.
- h) Neither party's failure to exercise any of its rights under these Terms will be deemed a waiver or forfeiture of those rights.
- i) To the extent that any provision of these Terms is determined to be illegal or unenforceable, the remainder of these Terms will remain in full force and effect.
- j) The United Nations Convention on Contracts for the International Sale of Goods will not apply to these Terms.
- k) Products are not specifically designed, manufactured or intended for sale as parts, components or assemblies for the planning, construction, maintenance or direct operation of a nuclear facility. Customer is solely liable if Products or Support purchased by Customer are used for these applications. Customer will indemnify and hold Agilent harmless from all loss, damage, expense or liability in connection with such use.
- l) These Terms constitute the entire agreement between Agilent and Customer, and supersede any previous communications, representations or agreements between the parties, whether oral or written, regarding transactions hereunder. Customer's additional or different terms and conditions will not apply. Customer's purchase or license of Products and Support will constitute Customer's acceptance of these Terms, which may not be changed except by an amendment signed by an authorized representative of each party.



Agilent 1200 Series Rapid Resolution LC System

All the Performance. All the Time.

- Up to 20 times faster than HPLC
- 60% higher resolution than HPLC
- Throughput of 2000 samples per day
- Peak capacity of 500 in 30 minutes
- Full compatibility with HPLC methods
- Agilent intelligent services

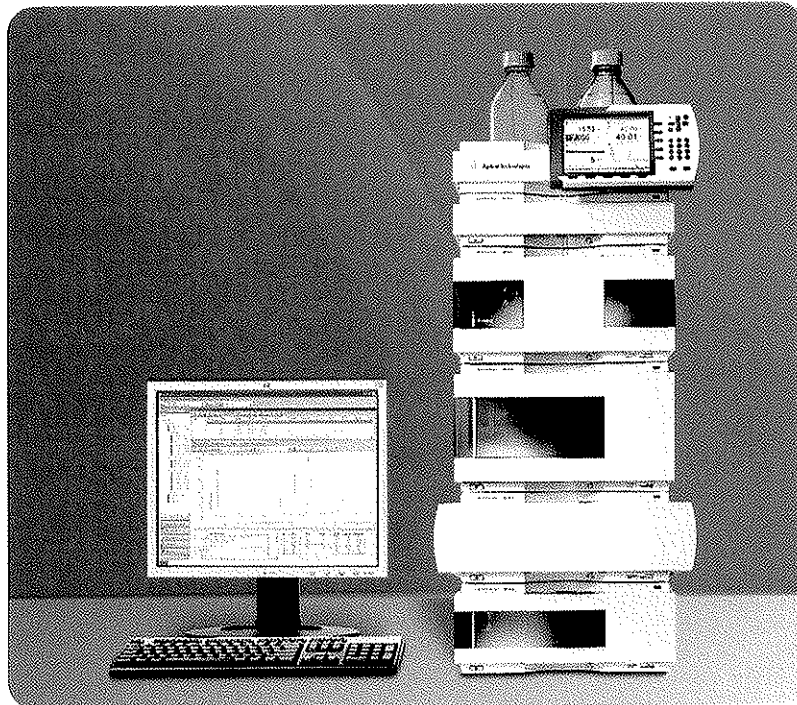
Fastest, most efficient and most flexible LC system in the world

Increasing productivity, confidence in analytical results and cost-effectiveness are key objectives in today's analytical laboratories.

The Agilent 1200 Series Rapid Resolution LC system (1200 Series RRLC system) is designed to meet these challenges with a universal LC system for analytical flow rates ranging from 0.05 to 5 mL/min. The system provides a new world of RRLC and RRLC/MS performance, accompanied by all the capabilities of conventional 1200 Series HPLC instruments. In addition, the Agilent 1200 Series Rapid Resolution LC system offers new levels of serviceability, uptime and compliance.

Speed

The Agilent 1200 Series RRLC system, equipped with new, second generation ZORBAX Rapid Resolution HT 1.8- μm columns, enables analysis that is up to 20 times faster than HPLC, while maintaining the high quality resolution, precision and sensitivity that HPLC is known for.



Resolution

150-mm long ZORBAX Rapid Resolution HT columns provide 60% higher resolution than HPLC columns with the same dimensions, making it possible to resolve more trace level impurities than ever before and to achieve peak capacities of more than 600.

Flexibility

The 1200 Series RRLC system provides full support for narrow and standard bore columns 10 – 300 mm in length, with internal diameters from 1 to 4.6 mm and particle sizes ranging from 1.5 to 10 μm . This enables RRLC methods using columns with particle size < 2 μm , as well as HPLC methods with particle size > 2 μm , to be run without limitations. This unique flexibility gives users confidence that they have made a secure investment

in an instrument which fulfills today's requirements and is prepared to meet the requirements of the future.

Reliability and compatibility

With more than 60,000 installed systems throughout the world, the Agilent 1100 Series LC system technology has a well-earned reputation for excellence. The new Agilent 1200 Series RRLC system builds on the design of the highly successful Agilent 1100 Series to provide highest analysis speed and resolution, while keeping system pressure at a minimum. Consequently, the system maintains the robustness, performance and operating principles of conventional HPLC instruments and methods. Users familiar with running an HPLC instrument will immediately feel at home with the 1200 Series RRLC system, with no need to retrain.



Agilent Technologies

A New Level of Analysis Speed – for a New World of Lab Productivity and Cost Effectiveness

Speed

Short rapid resolution HT columns with 1.8- μm particles offer a unique opportunity to dramatically reduce analysis time by increasing flow rate and temperature, without loss of separation performance. The Agilent 1200 Series Rapid Resolution LC system has been optimized for lowest pressure at high flow rates in order to achieve highest analysis speed. Combined with increased temperatures of up to 100 °C, linear flow rates of more than 15 mm/s can be achieved on 50-mm RRHT columns. This represents gains in analysis speed of up to 20 times that of conventional HPLC methods.

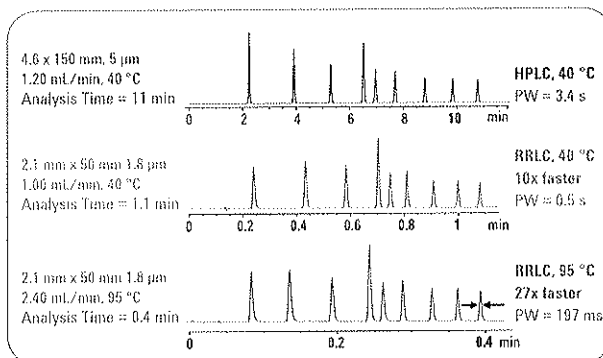
Shorter time-to-result increases lab productivity and reduces the overall cost-per-analysis significantly, typically by more than 70%.

Throughput of 2000 Samples per Day

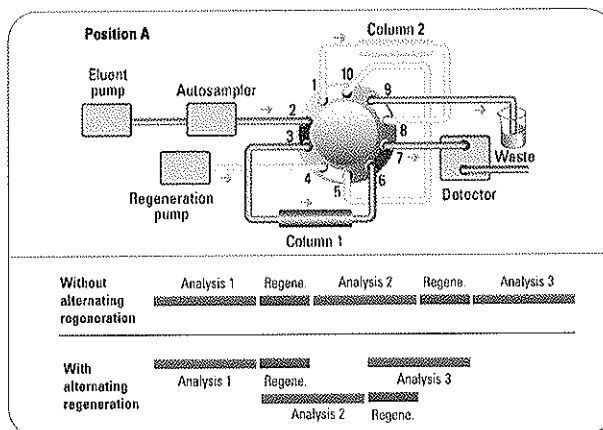
A special high-throughput (HT) configuration of the 1200 Series RRLC system enables maximized productivity for laboratories with high sample loads. While one column is used for the analysis the second column is washed and regenerated by a second regeneration pump. After the last peak has eluted the 2-position/10-port valve is switched and the next run can be started immediately. With this HT configuration cycle times can be reduced by up to 50%.

Maintaining resolution in ultra-fast RRLC separations

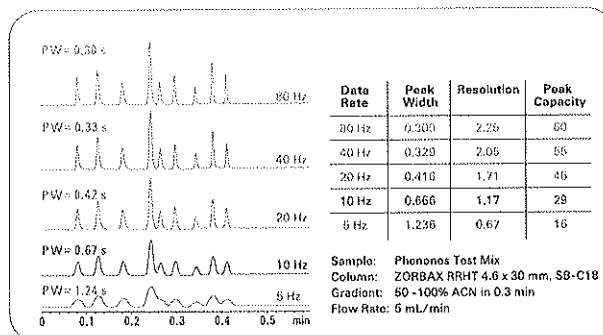
Ultra-fast RRLC applications can generate peak widths as narrow as 0.2 seconds. To keep up with the separation speed delivered by RRLC, the 1200 Series Rapid Resolution LC system is equipped with high-speed UV-visible and MS detectors to provide uncompromised resolution in ultra-fast RRLC separations.



RRLC provides speed gains of 10x at unchanged temperature and 27x at increased temperature versus HPLC. Sample: phenone mix



Throughput of more than 2000 samples/day can be achieved by alternating column regeneration (ACR).

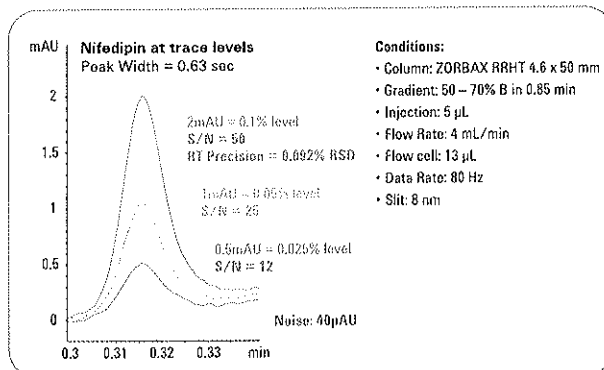


80-Hz sampling rate of the Agilent 1200 Series DAD SL provides resolution and peak capacity gains of 90% (30%) relative to 10-Hz (20-Hz) sampling rates.

Maintaining sensitivity in ultra-fast RRLC separations

The 1200 Series DAD SL and MWD SL have new low-noise flow cell design, new low-noise diode-array electronics, and new electronic temperature control (ETC), which minimizes baseline noise and drift, even under harsh and fluctuating ambient temperature and humidity conditions.

Combining these innovations enables accurate quantification, peak purity analysis and spectral identification, even at trace level, working with data rates of up to 80 Hz. This exceptional capability of the new 1200 Series DAD SL means that your ultra-fast RRLC methods achieve the same limit of detection as HPLC methods, complying with the strictest regulatory performance requirements.

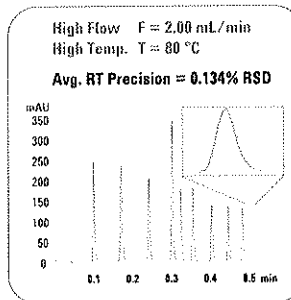
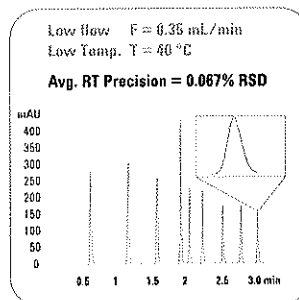


Lowest detector noise, even under demanding ultra-fast RRLC conditions, allows accurate simultaneous quantitation of main compounds and trace level impurities at levels smaller than 0.05% of the main compound – all from a single run.

Maintaining retention precision in ultra-fast RRLC separations

The new electronic damping control (EDC) of the 1200 Series binary pump SL, combined with improved Peltier temperature control of mobile phase and column, provides highest RT precision and baseline stability under the most demanding ultra-fast RRLC conditions.

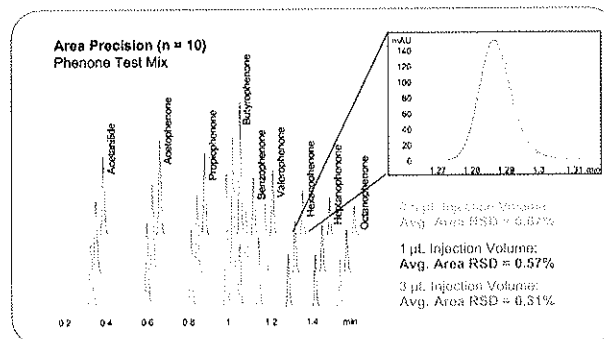
Even at the highest linear flow rates of more than 14 mm/s and temperatures up to 100 °C, the reproducibility of the 1200 Series Rapid Resolution system fulfills the most demanding requirements.



Highest retention time precision is achieved under both low speed and highest speed RRLC conditions.

Maintaining area precision in ultra-fast RRLC separations

The new injection valve technology of the 1200 Series high-performance autosampler SL enables precise and robust high-speed injections at pressures up to 600 bar. The flow-through design, together with overlapped injections, delivers cycle times of less than 30 s, while keeping carryover below the limit of detection. Variable loop technology ensures highest injection volume linearity from 0.1 to 100 µL, without loop change, making the autosampler compatible even with smallest sample amounts.



Precise high-speed injections using the Agilent 1200 Series Rapid Resolution LC system ensure highest area precision in RRLC applications, even at very small injection volumes of 3 µL and less.

A New Level of Efficiency – for a New World of Information and Confidence

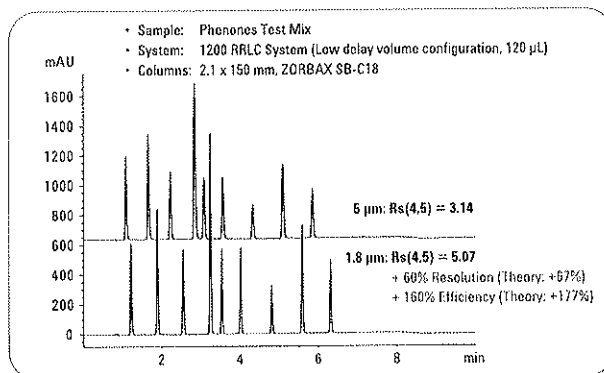
Resolution

Long Rapid Resolution HT columns with 1.8- μm particle size offer the unique opportunity to increase the chromatographic efficiency and resolution, thereby increasing knowledge of the analyzed sample and, ultimately, the confidence in analytical results.

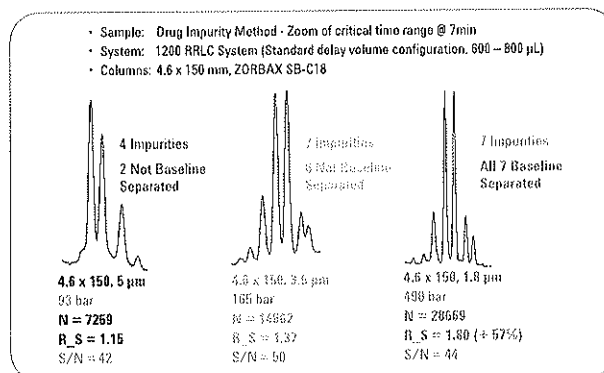
Pressure and delay volume optimization of the 1200 Series Rapid Resolution LC system allows usage of both narrow and standard bore rapid resolution HT columns 150 mm in length. This provides efficiencies of close to 30,000 plates, enabling a gain of up to 60% in chromatographic resolution compared to conventional HPLC, in the same analysis time and with the same or improved precision and sensitivity.

Peak capacity

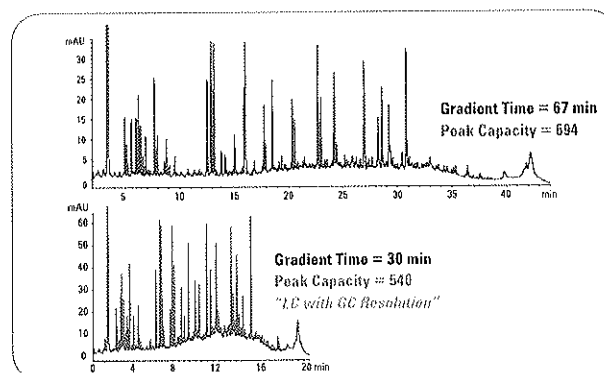
150-mm RRHT columns are also the first choice for the analysis of complex samples. Depending on gradient time, peak capacities of 700 and more can be achieved, providing a new dimension of information in both LC and LC/MS applications. The increased temperature range of up to 100 °C even allows coupling of several RRHT columns to achieve efficiencies of more than 50,000 plates on 1.8 μm RRHT columns and more than 80,000 plates on 3.5 μm and 5 μm columns.



Using a narrow bore 2.1 x 150 mm, 1.8- μm Rapid Resolution HT column on the Agilent 1200 Series RRLC system in a low delay volume configuration provides a 60% gain in resolution compared to a 5- μm particle size column of same dimension.



Using a standard bore 4.6 x 150 mm, Agilent 1200 Series RRLC HT column on the Agilent 1200 Series RRLC system in standard delay volume configuration gives 57% gain in resolution compared to a 5- μm particle column of same dimension, with the same sensitivity or S/N.



Peak capacities of more than 700 can be achieved using a ZORBAX 1.8 μm RRHT SB-C18, 2.1 x 150 mm column to analyze a peptide map of tryptic digest of BSA.

A New Level of Flexibility – for Maximum Method Freedom and Minimized Investment Costs

Two tasks – one system

The 1200 Series Rapid Resolution LC system not only complies with new RRLC applications but also with traditional HPLC methods giving users the confidence of a secure investment that fulfills the requirements of today and the future. It supports narrow and standard bore columns with internal diameters from 1 to 4.6 mm, 10 – 300 mm in length and particle sizes ranging from 1.5 to 10 μm . This unique flexibility and scalability is enabled by the configurable delay volume of the 1200 Series binary pump and the ability to optimize the hydraulic path of the instrument and flow cell volume of the UV detector for any analytical condition.

The standard delay volume configuration makes it possible to run both standard bore RRLC and HPLC methods on a single instrument configuration – without compromising performance or needing to revalidate methods.

The low delay volume configuration with 120 μL provides optimum support for high-speed, narrow bore LC and LC/MS applications.

Method development flexibility

More than 80 ZORBAX 1.8- μm RRHT columns are available in various bonded phases, from 20 to 150 mm in length, with internal diameters from 1 to 4.6 mm. They provide a wide range of selectivity and efficiency choices for maximized method flexibility.

RRHT columns use the same chemistry as ZORBAX 3.5 and 5- μm particle columns. As a result, all bonded phases with 5, 3.5 and 1.8- μm particle size provide identical selectivity, which allows for easy, fast and secure method transfer from HPLC to RRLC and vice versa.

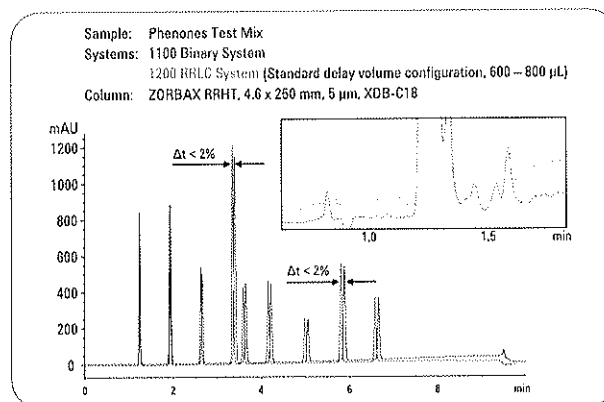
The standard delay volume configuration of the 1200 Series Rapid Resolution LC system allows HPLC methods to be run with minimum RT-shifts of less than 2%. This enables unambiguous peak tracking and ID and eliminates the need to revalidate HPLC methods.

		1200 RRLC	Standard HPLC
RRLC	Narrow bore	Ultra-fast	
		High-resolution	
HPLC	Standard bore	Ultra-fast	
		High-resolution	
HPLC – Narrow bore			
HPLC – Standard bore			
Narrow bore: 1–4.6 mm ID		Full Compatibility	
Standard bore: 3–4.6 mm ID			
Ultra-fast: 15–60 mm length			
High-resolution: 100–150 mm length			

The Agilent 1200 Series RRLC system offers uncompromised support of RRLC and HPLC methods on both standard and narrow bore columns.

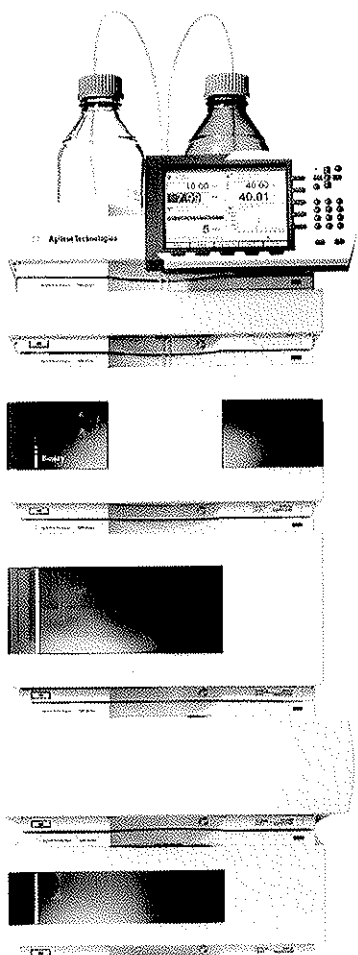
	Narrow Bore		Standard Bore		
	1 mm ID	2.1 mm ID	3.0 mm ID	4.6 mm ID	
High-Resolution	150	150	150	150	1200 RRLC
	100	100	100	100	
Ultra-Fast	50	50	50	50	1100 Binary
		30	30	30	
		20	20	20	

Supported sub-two micron column dimensions on different systems. The Agilent 1200 Series RRLC system offers full support of standard and narrow bore 1.8- μm ZORBAX RRHT columns from 20 to 150 mm in length.



The standard delay volume configuration allows to run not only RRLC but also traditional HPLC methods without compromising performance or changing chromatographic pattern.

The 1200 RRLC System – New Modules for a New World of Performance and Flexibility



ZORBAX Rapid Resolution HT 1.8-µm Columns

- Choice of more than 80 columns covering a broad range of phases and dimensions for greatest flexibility
 - Internal diameter: 1 – 4.6 mm
 - Length: 20 – 150 mm
- Engineered particle size distribution reduces pressure and enables higher analysis speed and resolution
- SB-C18 columns allow stable operation at temperatures of up to 100 °C for even more speed and resolution
- RRHT columns have the same chemistry and, consequently, same selectivity as ZORBAX 3.5 and 5 µm columns, which facilitates easy, fast and secure method transfer from HPLC to RRLC and vice versa

Agilent 1200 Series Binary Pump SL

- Configurable delay volume from 600-800 µL down to 120 µL, flow rates up to 5 mL/min and 600 bar pressure provide universal applicability in narrow and standard bore HPLC and RRLC with column IDs from 1 to 4.6 mm
- New Electronic Damping Control (EDC) provides highest RT precision and baseline stability
- Optimum support of analytical LC/MS applications with 120-µL delay volume

Agilent 1200 Series High-Performance Autosampler SL

- High-speed 600-bar injector with new µ-valve design for highest instrument and column robustness at high pressures
- Cycle times < 30 s with overlapped injections
- Highest precision and linearity from 0.1 to 100 µL without loop change

Agilent 1200 Series Thermostatted Column Compartment SL

- Up to 100 °C for higher speed and resolution in RRLC
- Two independently controllable heat exchangers with configurable volumes allow optimized pre-column heating and post-column cooling for lowest detection limits in ultra-fast, high-temperature applications for both narrow and standard bore columns
- Improved Peltier control provides temperature stability of ± 0.05 °C for minimized baseline noise in high-flow, high-temperature ultra-fast RRLC applications
- 600-bar 2-position/10-port valve enables minimized cycle times by alternating column regeneration to allow for highest throughput of more than 2000 samples/day

Agilent 1200 Series Diode Array Detector SL

- 80-Hz data acquisition of full spectra and up to 8 signals provide maximum resolution and sample information in ultra-fast RRLC applications
- New flow cell design, low-noise electronics and electronic temperature control for highest sensitivity in ultra-fast RRLC applications
- Data recovery card provides “data-never-lost insurance”
- RFID-tags of flow cells and lamp provide new level of data traceability

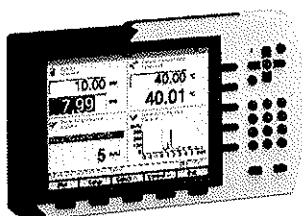
Agilent 1200 Series Variable Wavelength Detector SL

Cost-effective, 55-Hz high-speed detector for highest resolution and sensitivity in ultra-fast RRLC applications

New Instrument Control, Data Analysis and Services – for a New Level of Usability, Uptime and Robustness

Agilent 1200 Series instant pilot

- Cost-effective, standalone solution for single instrument control
- Provides full instrument, method and sequence control and display of online signals



New ChemStation for faster data analysis and review

A new user interface enables you to analyze and review large amounts of data in a much shorter time.

- Level 5 instrument control for your Agilent instruments
- Control of LC/MS, GC/MS, CE, CE/MS and generic A/D converters
- Built-in macro language enables easy customization and software supports numerous add-ons
- Seamless integration of 3rd party detectors (ESA CAD and CCIII)

EZChrom Elite for maximum flexibility and compliance

An easy to use software solution for labs with instruments from multiple vendors.

- Full compliance features
- Powerful and flexible reporting capabilities with automated spreadsheet calculations
- SMART sequencing for flexible automation tasks
- Easy scale-up from workstation to client-server system

Agilent OL ECM reaches beyond the single laboratory

The Enterprise Content Management system (ECM) enables you to acquire and organize your data across laboratories and departments.

- Saves all documentation and data in a single repository
- Organize and retrieve data using advanced search engines
- Enables several people to rapidly and easily review a complete result set for a sample, including graphical results

Agilent intelligent services

Agilent intelligence services provide a new generation of services with on-demand remote connectivity for a new level of productivity.

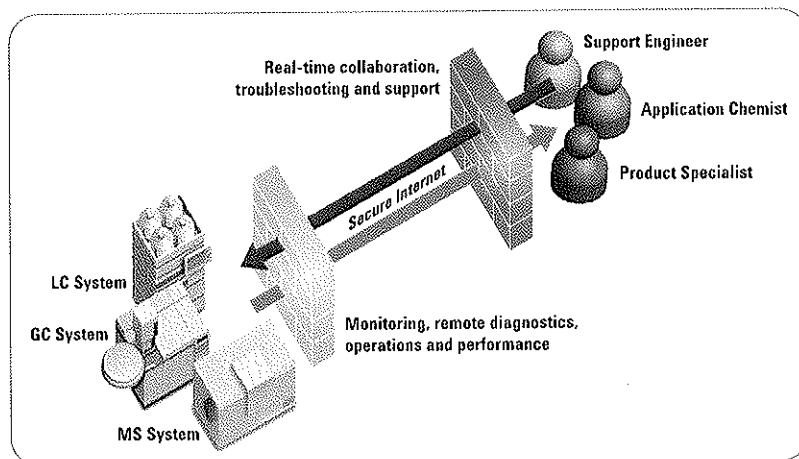
- Push for Help: Agilent LC diagnostics instrument status report includes all important information, e.g. error log book, system configuration, EMF and guidance report
- Secure, streamlined communication between your lab and the Agilent support organization
- Proactive monitoring of instrument performance and utilization

Agilent system intelligence

- Early Maintenance Feedback (EMF) tracks system usage and alerts you for timely replacement of parts
- Column identification module records column parameters (such as number of injections, particle size), maximizes pressure and provides a unique column signature
- Patented RFID tracking technology in the DAD SL saves all relevant meta data from the flow cells and UV lamp
- Control Area Network (CAN) provides inter-modular, real-time communication for reliable operation, regardless of PC failures or network interruptions
- Software independent LC diagnostic tool assists users and the support experts interpreting the instrument status

Compliance Enterprise Edition

Agilent can now streamline compliance procedures across your entire company and save you time and money with Enterprise Edition, a new qualification service built on a new software – the patent-pending *Agilent Compliance Engine (ACE)*. With ACE you can configure every step in your protocol from tests, limits and set points to the size and detail of your reports.



Agilent 1200 Series Rapid Resolution LC System Specifications

Selected System Specifications

Pump delay volume:	Configurable <ul style="list-style-type: none">• Low delay volume configuration: 120 μL• Standard delay volume configuration: 600 – 800 μL
Flow rate range:	0.05 – 5 mL/min
Maximum pressure:	600 bar
Injection volumes:	0.1 – 100 μ L without loop change or hardware modification, no overflow (drawn = injected volume), up to 1500 μ L with multiple draw kit
Column dimensions:	Length: 10 – 300 mm, ID: 0.05 – 8 mm
Maximum Column Capacity:	Three 300 mm columns
Temperature range:	10 °C below ambient – 100 °C
Temperature stability:	< \pm 0.05 °C

Performance Specifications

Maximum linear velocity:	> 15 mm/s on 50-mm ZORBAX 1.8- μ m RRHT column (water/ACN gradient)
Flow precision:	< 0.07 % RSD, or \leq 0.02 min SD whatever is greater, based on retention time at constant room temperature
Flow accuracy:	\pm 1% or 10 μ L/min whatever is greater
Composition precision:	\leq 0.15% RSD at 1 mL/min
Composition accuracy:	\pm 0.35% absolute
Injection volume precision:	typically < 0.25 % from 5 – 100 μ L, < 1 % from 1 – 5 μ L
Injection cycle time:	< 30 sec using 5 μ L injection volume
Carry over:	< 0.01%
UV baseline noise:	< \pm 0.8 \times 10 – 5 AU, at 254 nm and 750 nm (1200 DAD SL and MWD SL)
UV baseline drift:	< \pm 0.9 mAU/h at 254 nm (1200 DAD SL and MWD SL)
Linearity:	> 2 AU upper limit
Maintenance and system test:	Front access to all maintenance parts Maintenance instructions on multimedia CD-ROM Time for full system test (OQ/PV) < 4 hours
Standard GLP features:	Early Maintenance Feedback—EMF (tracks lamp burn time, usage, number of injections, with limits and feedback messages)
Extended GLP features: (for systems incl. MWD SL or DAD SL)	Data Recovery Card (DRC) for data security (prevents data losses due to communication breakdowns) Radio Frequency Identification (RFID) for data traceability (RFID tags for flow cells and UV lamp allow unambiguous traceability of measurement conditions)
System control:	Through local workstation software, client/server network data system and/or local handheld control module (1200 Series instant pilot). Default control: LAN/CAN

www.agilent.com/chem/1200RR

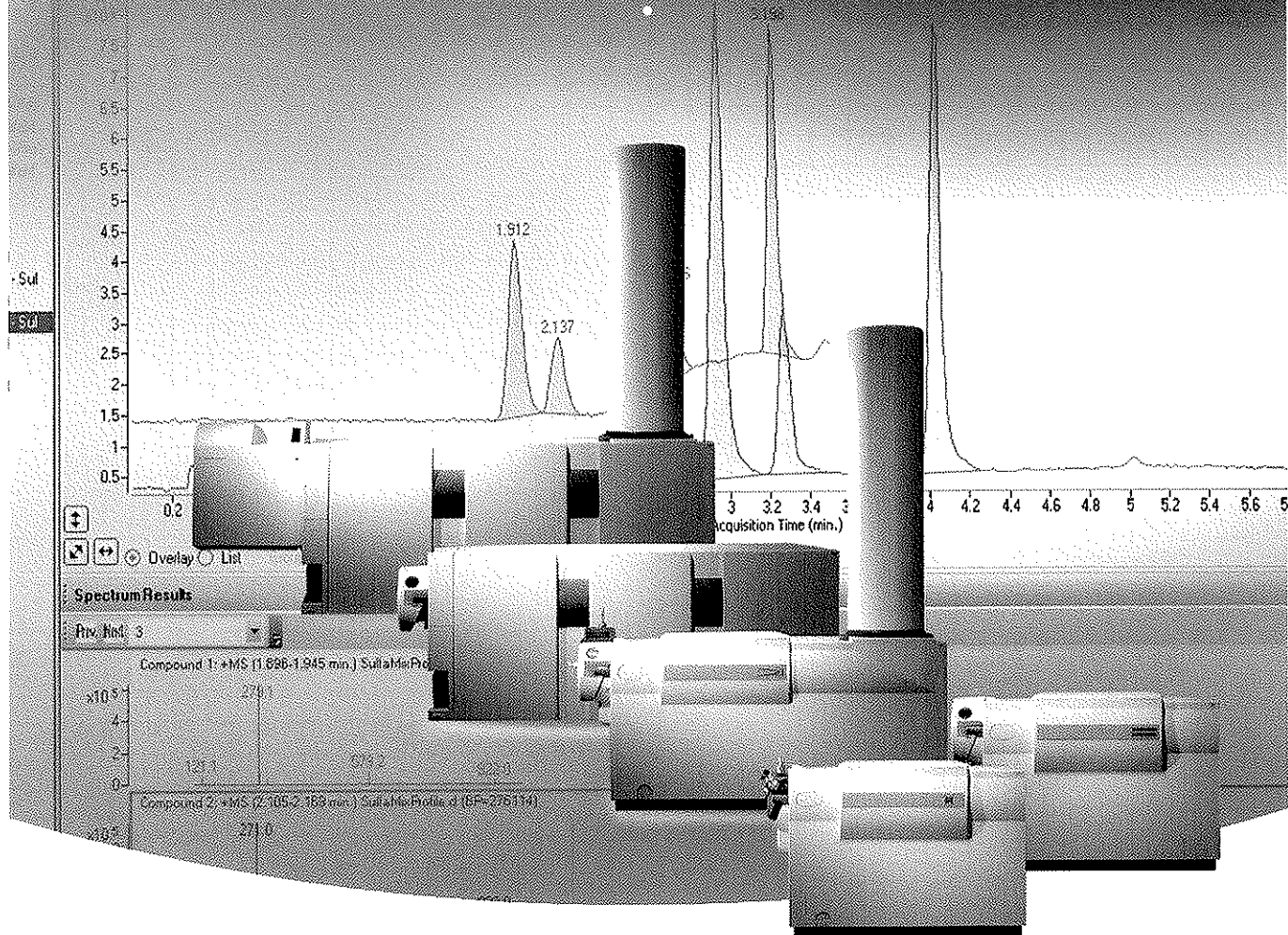
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Publication Number 5989-4340EN



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**Introducing the New
Agilent MassHunter Workstation Software
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All the performance. All the time.



Control. Acquire. Analyze. Agilent MassHunter Workstation Software.

The all new Agilent MassHunter Workstation software provides intuitive, yet powerful, instrument control, data acquisition, and qualitative and quantitative data analysis for your Agilent 6410 Triple Quadrupole and 6510 Q-TOF LC/MS systems. It can be complemented by new application-specific MassHunter software packages that provide even more power and streamlined operation for specialized analytical tasks.

Easier method set-up and instrument control

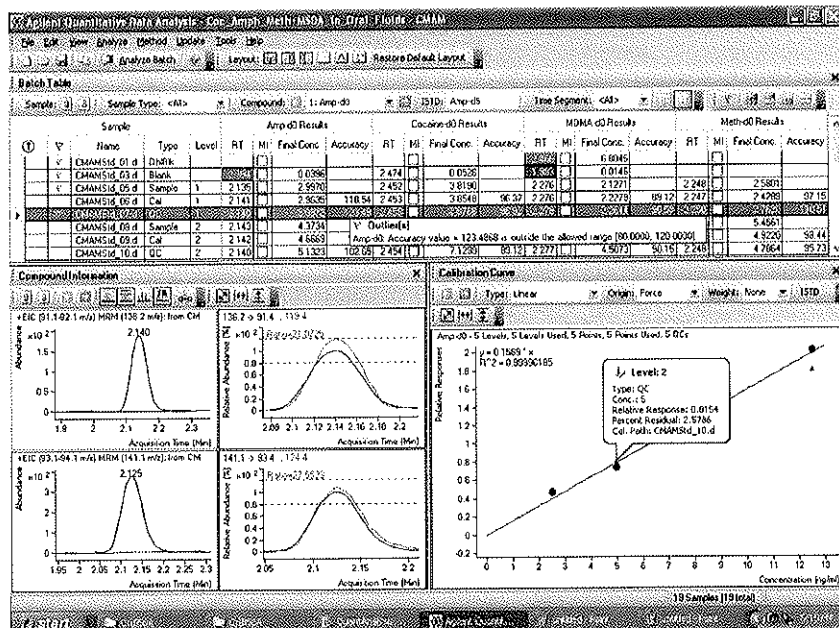
The MassHunter Workstation software makes instrument operation and method development as easy as possible. Fast, reliable automated tuning, a rarity in both triple quadrupoles and Q-TOFs, maximizes instrument performance without complicated manual adjustments. Creation of long worklists can be simplified by importing information from a CSV file. And you can adjust the real-time data monitoring to suit your needs and interests.

Better qualitative analysis

The MassHunter Workstation software's qualitative analysis tools allow you to immediately focus on the important aspects of data when reviewing chromatographic and mass spectral results. Advanced algorithms help you find all compounds, or "molecular features", in a chromatographic run, not just the peaks.

More powerful quantitative analysis

Application-centric quantitation in the MassHunter Workstation software ensures that you spend less time analyzing your data. It includes helpful features such as a curve-fit assistant, dynamically linked results, outlier flagging, batch-at-a-glance data review, and customizable views.



The MassHunter Workstation quantitative analysis software allows batch-at-a-glance data review, and includes effort-saving features like parameterless integration and a curve-fit assistant.

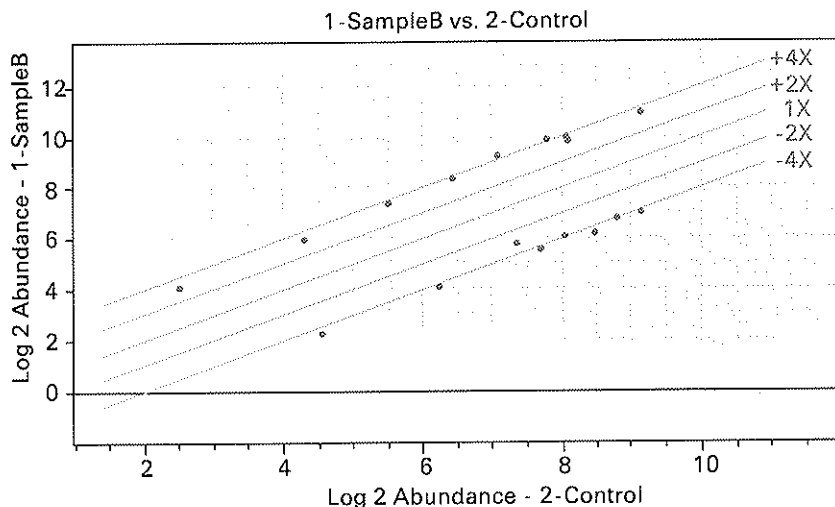
Customizable reports

Presenting critical information from your MS experiments allows you to make important scientific or business decisions. With the flexibility to fully customize reports, the MassHunter Workstation software also offers Microsoft® Excel capability for custom calculations and reporting while providing access to all system parameters through XML data interchange format.

Microsoft is a U.S. registered trademark of Microsoft Corporation.

Discover differentially expressed features with MassHunter Profiling software

For challenging expression profiling and biomarker discovery applications, the MassHunter Workstation software first simplifies a complex data set of accurate mass MS results with intelligent feature identification algorithms. Once relevant molecular features are identified, the MassHunter Profiling software employs a variety of statistical methods and visualization tools to allow the identification of meaningful differences between sample groups (e.g., healthy versus diseased). In addition, the profiling software calculates ratios of abundances of differentially expressed features, and allows flexible selection of the comparison criteria and inspection of any selected feature.



Log2-Log2 abundance plot from MassHunter Profiling software makes it easy to identify features that are differentially expressed (up and down) between samples.

Use Spectrum Mill software for protein identification and quantitation

Spectrum Mill for MassHunter Workstation quickly identifies proteins and peptides via fast database searches, and provides automatic and manual match validation. The Spectrum Mill software also offers *de novo* spectral interpretation for peptides not found in any database. Proteins of interest can be quantified by comparing relative abundances of all component peptides observed for a given protein, revealing twofold or higher changes in relative abundance without the need for labeling. When preferred, Spectrum Mill software supports stable-isotope-based and other labeling strategies.

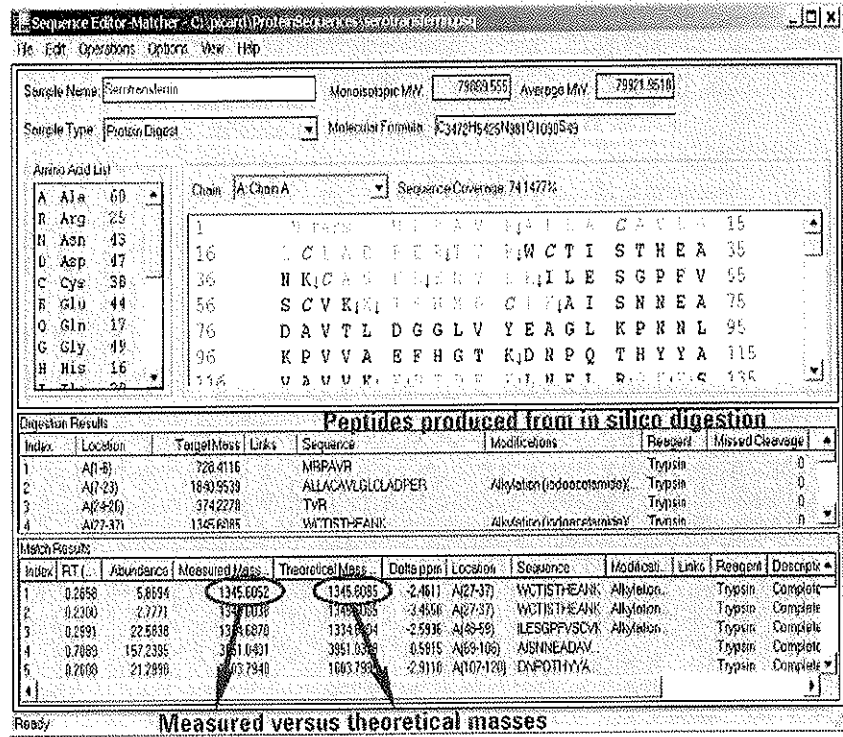
E_51_Br38 # spectra intensity	E_59_Br26 # spectra intensity	E_69_Br95 # spectra intensity	E_67_Br42 # spectra intensity	E_70_Br45 # spectra intensity	N_52_Br29 # spectra intensity	N_54_Br28 # spectra intensity	N_58_Br34 # spectra intensity	N_65_Br36 # spectra intensity	N_66_Br39 # spectra intensity	Protein Name
0	0	0	0	0	0	0	0	0	0	CALGRANULIN A/AGGRATION INHIBIT
0.00e+000	0	0	0	0	0.00e+000	0	0	0.15e+007	0.00e+000	C-REACTIVE PROTEIN PRECURSOR
0	0	0	0	0	0.00e+000	0	0	0.00e+000	0	RHO GDP-DISSOCIATION INHIBITOR 2
0	0	0	0	0	0	0	0	0	0	PROFILIN 1
0	0	0	0	0	0.00e+000	0	0	0	0	HEMOGLOBIN ALPHA CHAIN
0	0	0	0	0	0	0	0	0	0	AMINOGLUCOSYL J CHAIN
0	0	0	0	0	0	0	0	0	0	APOLIPOPROTEIN D PRECURSOR
0	0	0	0	0	0	0	0	0	0	Inter-alpha-trypsin inhibitor family heavy
0	0	0	0	0	0	0	0	0	0	14-3-3 PROTEIN BETA/ALPHA (PROTEIN
0	0	0	0	0	0	0	0	0	0	Ig G1 Hc
0	0	0	0	0	0	0	0	0	0	OSTEOPONTIN PRECURSOR (BONE ST
0	0	0	0	0	0	0	0	0	0	TRIOSEPHOSPHATE ISOMERASE (TIM)

Spectrum Mill for MassHunter Workstation can accurately determine not only protein identities, but relative abundances of a given protein in multiple samples. Color coding makes relative abundances apparent at a glance.

Positively confirm peptide and protein identities with MassHunter Bioconfirmation software

Agilent MassHunter Bioconfirmation software is ideally suited for recombinant protein expression and process development, known-protein characterization, or synthetic peptide confirmation. Our bioconfirmation software will help you confirm identities and identify variants before you start expensive testing.

The bioconfirmation software program employs sophisticated algorithmic tools for truly automated, unattended or interactive confirmation and characterization of recombinant proteins or synthetic peptides. The result is accurate determination of the mass and abundance of each peptide.



When analysis of recombinant proteins indicates that the wrong protein was produced, the interactive Sequence Editor/Matcher in the Bioconfirmation software helps locate the site of the modification.

For more information

Learn more:
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www.agilent.com/chem/store

Find an Agilent customer service center in your country:
www.agilent.com/chem/contactus

u.s. and canada
1-800-227-9770
agilent_inquiries@agilent.com

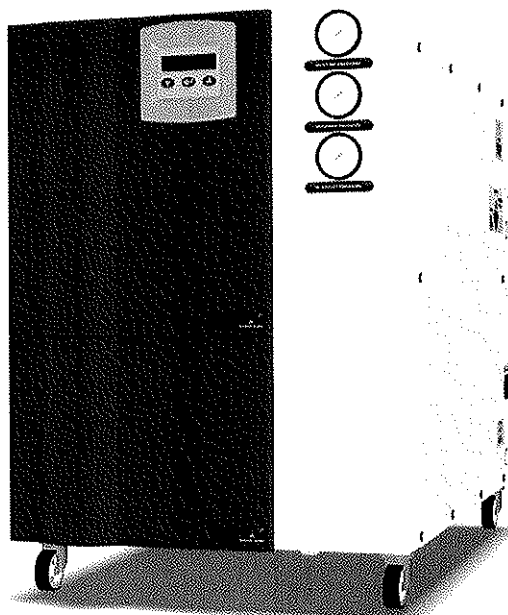
europe
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Printed in the USA March 6, 2006
5989-4895EN



Nitrogen Gas Generator

LCMS15 / LCMS20 / LCMS30 / LCMS40 / LCMS50

User Guide

EN Original Language

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Warranty

This warranty applies to the generator and associated parts (the equipment) manufactured and supplied by Parker Hannifin Ltd., Industrial Division (the company).

Should the equipment be defective as to materials or workmanship, the company warrants that it will remedy such defect. Where the equipment is the generator, the warranty period will be 12 months from date of commissioning or 18 months from date of manufacture, whichever comes first. In the case of equipment other than the generator, the warranty period shall commence from the date of dispatch.

Should any defect occur during the warranty period and be notified in writing to the company or its authorised distributor within the said period, the company will, as its sole option, remedy such defect by repair or provision of a replacement part, provided that the equipment has been used strictly in accordance with the instructions provided with each item of equipment and has been stored, installed, commissioned, operated and maintained in accordance with such instruction and with good practice. The company shall not be under any liability whatsoever under the warranty, if, before giving notification in writing to the company as aforesaid, the Customer or any third party meddles, interferes, tampers with or carries out work whatsoever (apart from normal maintenance as specified in the said instructions) in relation to the equipment or any part thereof.

Any accessories, parts and equipment supplied by the company but not manufactured by the company shall carry whatever warranty the manufacturer has given the company providing it is possible for the company to pass on such warranty to the customer.

To claim under the warranty, the goods must have been installed and continually maintained in the manner specified in the User Guide. Our product support engineers are qualified and equipped to assist you in this respect. They are also available to make repairs that may become necessary in which event they will require an official order before carrying out the work. If such work is to be the subject of a warranty claim, the order should be endorsed for consideration under warranty.

Where equipment is sold outside the UK mainland direct to the end user the warranty will cover parts only. Any substitution of parts not manufactured or approved by the company will expressly invalidate the warranty.

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1 Safety Information

Do not operate this equipment until the safety information and instructions in this user guide have been read and understood by all personnel concerned.

USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorised distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyse all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalogue and in any other materials provided from Parker or its subsidiaries or authorised distributors.

To the extent that Parker or its subsidiaries or authorised distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Only competent personnel trained, qualified, and approved by Parker Hannifin should perform installation, commissioning, service and repair procedures.

This equipment is for indoor use only. Do not operate outdoors.

The pressure envelope of the generator must not be breached under any circumstances. Failure to comply may result in an unplanned release of pressure, and may cause serious personal injury or death. All maintenance procedures that require the pressure envelope to be breached must only be performed by competent personnel trained, qualified, and approved by Parker Hannifin.

Due to the nature of operation there is a possibility of oxygen enrichment surrounding the generator. Ensure that the area is adequately ventilated. Where the risk of oxygen enrichment is high, such as a confined space or poorly ventilated room, the use of oxygen monitoring equipment is advisable.

With the exception of oxygen, any gas can cause asphyxiation in high enough concentrations. Always ensure that the generator is operated in a well ventilated area and all of the vent ports on the rear of the generator are kept clear and free from blockages.

Use of the equipment in a manner not specified within this user guide may result in an unplanned release of pressure, which may cause serious personal injury or damage.

When handling, installing or operating this equipment, personnel must employ safe engineering practices and observe all related regulations, health & safety procedures, and legal requirements for safety.

Ensure that the equipment is depressurised and electrically isolated, prior to carrying out any of the scheduled maintenance instructions specified within this user guide.

Parker Hannifin can not anticipate every possible circumstance which may represent a potential hazard. The warnings in this manual cover the most known potential hazards, but by definition can not be all-inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by Parker Hannifin the user must ensure that the equipment will not be damaged or become hazardous to persons or property.

Most accidents that occur during the operation and maintenance of machinery are the result of failure to observe basic safety rules and procedures. Accidents can be avoided by recognising that any machinery is potentially hazardous.

Note: Any interference with the calibration warning labels will invalidate the gas generator's warranty and may incur costs for the recalibration of the gas generator.














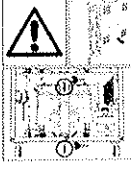
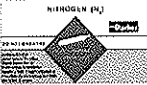
Should you require an extended warranty, tailored service contracts or training on this equipment, or any other equipment within the Parker Hannifin range, please contact your local Parker Hannifin office.

Details of your nearest Parker Hannifin sales office can be found at www.domnickhunter.com

Retain this user guide for future reference.

1.1 Markings and Symbols

The following markings and international symbols are used on the equipment or within this manual:

	Caution, Read the User manual.		Warning	Highlights actions or procedures which, if not performed correctly, could lead to electric shock.
	Risk of electric shock.			When disposing of old parts always follow local waste disposal regulations.
	Warning		CE	Conformité Européenne
	Caution			Waste electrical and electronic equipment should not be disposed of with municipal waste.
	WARNING		DANGER	
	The generator must be shut down and depressurised before performing any maintenance. (REFER TO MANUAL)		DANGER	Live terminals are enclosed. Disconnect the mains supply before removing the cover.
	DANGER			Prior to powering up the generator, remove the rear access panel from the generator and unscrew the M8x20mm packing bolt from each compressor mounting assembly using a 13mm spanner. When complete refit the rear access panel and continue with the installation. Failure to do this will cause irreparable damage to the generator and will invalidate the warranty
	NITROGEN (N2), DO NOT BREATHE Asphyxiant in high concentrations. No odour. Slightly lighter than air. Ensure adequate ventilation. Breathing 100% nitrogen will produce immediate unconsciousness and death due to lack of oxygen.			
	NON-FLAMMABLE COMPRESSED GAS			

2 Description

The LCMS generators provide a continuous stream of high purity nitrogen from a single 'plug & play' unit. Models are available with and without an integral oil free compressor, are extremely quiet in operation and are fully approved for use by major instrumentation manufacturers.

2.1 Technical Specification

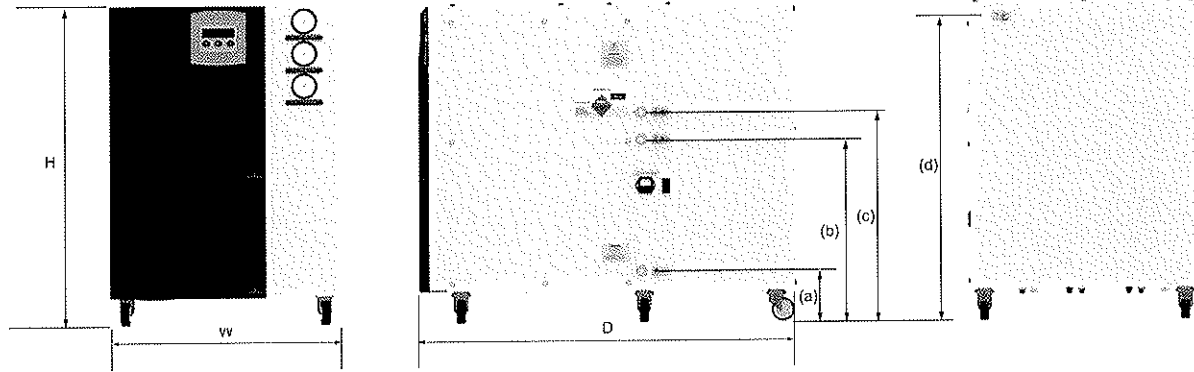
This specification is valid when the equipment is located, installed, operated, and maintained as specified within this user guide.

	Units	LCMS15-0	LCMS15-1	LCMS20-0	LCMS20-1	LCMS30-0	LCMS30-1	LCMS40-0	LCMS50-0
Drying, Sheath and Nebulisation Gas									
Flow	L/min	15		20		30		40	50
Outlet Pressure	bar g (psi g)				7 (101.5)				
Purity (with respect to O ₂)	%				>99				>98
Inlet Parameters									
Integral Compressor	-	N/A	Yes	N/A	Yes	N/A	Yes		N/A
Inlet Air Quality	ISO 8573-1: 2001	2.-1	N/A	2.-1	N/A	2.-1	N/A		2.-1
Inlet Air Pressure	bar g (psi g)	8.5 (123.3)	N/A	8.5 (123.3)	N/A	8.5 (123.3)	N/A		8.5 (123.3)
Maximum Inlet Air Temperature	°C (°F)	35 (95)	N/A	35 (95)	N/A	35 (95)	N/A		35 (95)
Flow (@ 8.5 bar g)	L/min	70	N/A	70	N/A	130	N/A		130
Port Connections									
Air Inlet ¹	-	1/4"	N/A	1/4"	N/A	1/4"	N/A		1/4"
Gas Outlet ¹	-				1/4"-2				
Electrical Data									
Supply Voltage	Vac				230 ± 10% 50Hz				
Connection type	-				IEC320				
Current	A	0.8	5.8	0.8	5.8	0.8	5.8		0.8
Fuse	A	2.0 ³	6.3 ⁴	2.0 ³	6.3 ⁴	2.0 ³	6.3 ⁴		2.0 ³
Supply Voltage	Vac				120 ± 10% 60Hz				
Connection type	-				IEC320				
Current	A	1.6	11.6	1.6	11.6	1.6	11.6		1.6
Fuse	A	2.0 ³	12.5 ⁴	2.0 ³	12.5 ⁴	2.0 ³	12.0 ⁴		2.0 ³
Environmental Data									
Ambient Temperature	°C (°F)				5-40 (41-104)				
Relative Humidity					50% @ 40°C (80% MAX < 31°C)				
IP Rating					IP20, NEMA 1, indoor use only				
Pollution Degree					2				
Installation Over voltage Category					II				
Maximum Altitude	m (ft.)				2000 (6562)				
Noise	dB(A)				< 65				

1. Compression fitting
2. Using the 1/8" - 1/4" adaptor provided.
3. (Anti surge (T), 250V, 5 x 20mm HBC, Breaking Capacity 1500A @250V, IEC 60127, UL R/C)
4. (Anti surge (T), 250V, 6.3 x 32mm HBC, Breaking Capacity 1500A @440V, IEC 60127, UL R/C)

2.2 Weight and Dimensions

The dimensions and weight of the equipment are specified below.



Dimension	Units	LCMS15-0	LCMS15-1	LCMS20-0	LCMS20-1	LCMS30-0	LCMS30-1	LCMS40-0	LCMS50-0
H	mm (in)	705 (27.8)	705 (27.8)	705 (27.8)	705 (27.8)	705 (27.8)	705 (27.8)	705 (27.8)	705 (27.8)
W	mm (in)	510 (20.1)	510 (20.1)	510 (20.1)	510 (20.1)	510 (20.1)	510 (20.1)	510 (20.1)	510 (20.1)
D	mm (in)	559 (22.0)	826 (32.5)	559 (22.0)	826 (32.5)	760 (29.9)	826 (32.5)	760 (29.9)	760 (29.9)
(a)	mm (in)	112 (4.4)	112 (4.4)	112 (4.4)	112 (4.4)	112 (4.4)	112 (4.4)	112 (4.4)	112 (4.4)
(b)	mm (in)	402 (15.8)	402 (15.8)	402 (15.8)	402 (15.8)	402 (15.8)	402 (15.8)	402 (15.8)	402 (15.8)
(c)	mm (in)	462 (18.2)	462 (18.2)	462 (18.2)	462 (18.2)	462 (18.2)	462 (18.2)	462 (18.2)	462 (18.2)
(d)	mm (in)	670 (26.4)	N/A	670 (26.4)	N/A	670 (26.4)	N/A	670 (26.4)	670 (26.4)
Weight	Kg (lb)	89 (196)	129 (284)	89 (196)	129 (284)	135 (298)	129 (284)	135 (298)	135 (298)

Table 2.2 Weight and Dimensions

2.3 Receiving and Inspecting the Equipment

On receipt of the equipment carefully inspect the packaging for damage. If the packaging is damaged inform the delivery company immediately and contact your local Parker Hannifin office.

2.3.1 Storage

If the equipment is to be stored prior to installation, do not remove it from the packaging. Ensure that it is stored in an upright position as indicated by the arrows on the packaging.



Warning Do not attempt to lift the generator by yourself. It is recommended that the generator be carried by a minimum of two persons or transported on a pallet truck.

Note. The storage area should be secure and the environmental conditions should fall within those specified in the technical specification. If the generator is stored in an area where the environmental conditions fall outside of those specified, it is essential that it be moved to its final location (installation site) and left to stabilise prior to unpacking. Failure to do this could cause condensing humidity and potential failure of the generator.

2.3.2 Unpacking

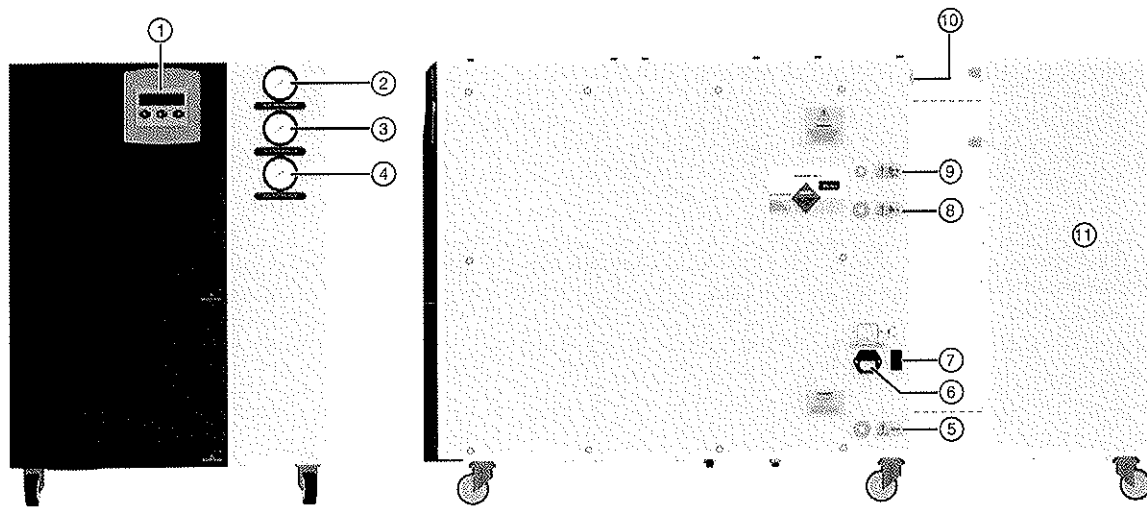
Once ready to install, remove the equipment from the packaging and check for signs of damage. Verify that the following items have been included with the shipment:

Ref	Description	Qty
1	Nitrogen generator	1
2	Mist-x spares kit	1
3	UK electrical supply cable ¹	1
4	European electrical supply cable ¹	1
5	US electrical supply cable ²	1
6	1/8" BSP male x 1/4" O/D adaptor	1

1. Supplied with 230 Vac generators
2. Supplied with 120 Vac generator

If any items are missing or damaged please contact your local Parker Hannifin office.

2.3.3 Overview of the equipment



Key:

1	Control panel	7	ON/OFF switch
2	inlet air pressure gauge	8	N2 outlet port
3	Receiver pressure gauge	9	N2 outlet port (MFC)
4	N2 outlet pressure gauge	10	Air inlet port (Option 0)
5	Drain port	11	Compressor box (Option 1)
6	Fused IEC320 inlet socket		

2.4 Locating the Equipment

2.4.1 Environment

The equipment should be located indoors in an environment that protects it from direct sunlight, moisture, and dust. Changes in temperature, humidity, and airborne pollution will affect the environment in which the equipment is operating and consequently may impair the safety and operation.

It is the customers' responsibility to ensure that the environmental conditions specified in table 2.1 are maintained.

2.4.2 Space Requirements

The equipment should be mounted on a flat surface, capable of withstanding the weight of the equipment and all ancillary parts. A minimum clearance of 150mm (5.9in) should be provided on all sides of the generator for air flow. Additional space should be provided so that the generator can be moved to allow unrestricted access to the generator during servicing and maintenance.

Do Not block the side vents or the fans located on the rear panel of the generator.

Do Not position the equipment so that it is difficult to operate or disconnect from the electrical supply.

2.4.3 Ventilation Requirements



Warning

Due to the nature of operation there is a possibility of oxygen enrichment surrounding the generator. Ensure that the area is adequately ventilated. Where the risk of oxygen enrichment is high, such as a confined space or poorly ventilated room, the use of oxygen monitoring equipment is advisable.

The generator is capable of delivering nitrogen at a flow rate up to 50L/min. We consider these levels to be of no concern. Nitrogen is not a poisonous gas but, in a concentrated form, there is a risk of asphyxiation. If the generator is operated within a confined space ensure that adequate ventilation and oxygen monitoring equipment is fitted.

2.4.4 Electrical Supply Requirements

The equipment should be connected directly from the fused IEC 320 inlet socket to the electrical supply using the power cord supplied. The equipment should be positioned so that it can be connected to the electrical supply without the use of an extension cord.

It is the customers responsibility to provide a fused electrical supply to the equipment (Refer to table 2.1 for the electrical specification). It is recommended that this supply have surge protection.



Warning

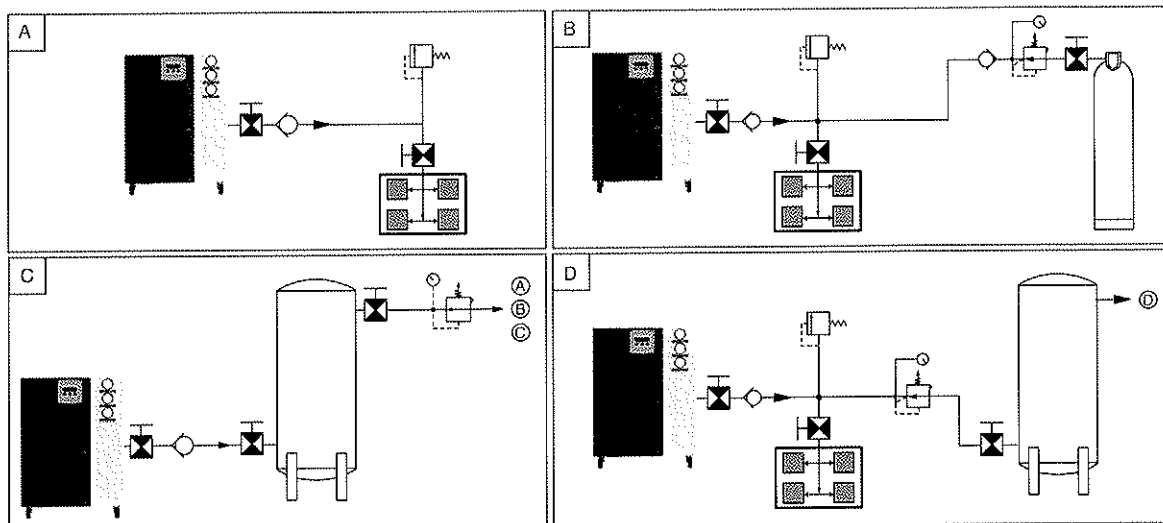
The equipment is connected to protective earth (ground) through the power cord. It is essential that electrical supply is equipped with a protective earth (ground) terminal. If an alternative power cord is used to connect the equipment to the electrical supply, ensure that it is suitably rated for the application and contains a protective earth (Ground) conductor.

3 Installation & Commissioning



Only competent personnel trained, qualified, and approved by Parker Hannifin should perform commissioning and service procedures.

3.1 Recommended system layout



- | | | | | | |
|---|----------------------------------|---|--|--|-----------------------|
| A | Basic Layout | C | Cyclical demand
(e.g. glove box, fume cupboard) | | Non return valve |
| B | Basic Layout with back up supply | D | Steady and cyclical demand | | Flow Controller |
| | Isolation Valve | | Pressure regulator | | Pressure relief valve |

3.1.1 Installation Parts

Description	Part Number (1/8")	Part Number (1/4")
1 Isolation valve	284971556	284971578
2 3 way ball valve with silencer	284971878	284971879
3 Flow controller (0-300 ml/min)	284971558	
4 Flow controller (0-600 ml/min)	-	284971580
5 Flow controller (0-1200 ml/min)	-	284971604
6 Non-return valve	284971560	284971582
7 1/8" T-piece	284971564	284971586
8 1/4" Pressure relief valve	-	284971588
9 1/4" NPT Pressure regulator 250 psi g	-	284971570
10 Bottle regulator		284971574
11 Bottle connection		284971576
12 15.24 m (50 ft) Copper Tube Grade (B-280)	284971867	284971868

3.2 Connecting the generator

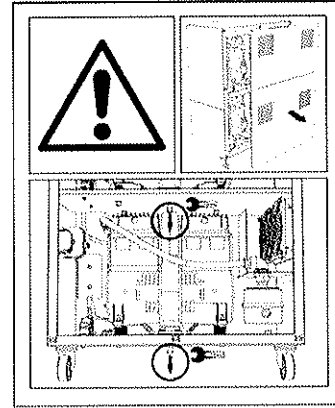


Caution

Prior to powering up the generator, remove the rear access panel from the generator and unscrew the M8x20mm packing bolt from each compressor mounting assembly using a 13mm spanner.

When complete refit the rear access panel and continue with the installation.

Failure to do this will cause irreparable damage to the generator and will invalidate the warranty



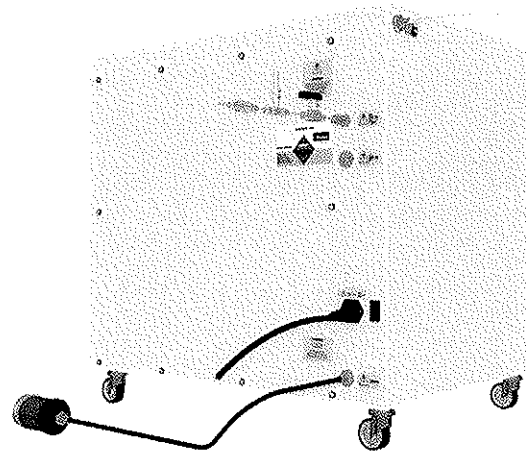
Refer to "Recommended system layout" on page 7 for the desired system configuration.

The generator should be connected to the application instrument using either high quality stainless steel tube or grade (B-280) copper tube. Remove the blanking plug from the N2 (MFC) outlet port and connect the 1/8" to 1/4" tube adaptor supplied. Insert the tube into the outlet port fitting and rotate the tube nut until finger tight. Using a spanner (wrench) tighten the nut one and one-quarter (1 1/4) turns. If the generator does not have an integrated compressor, remove the blanking plug from the air inlet port and connect the 1/4" compression fitting. Connect the air supply to the air inlet port fitting as described above.

When cutting the tubes always use the correct tools to allow a clean perpendicular cut. Cutting tubes will cause debris that, if not removed, may damage the downstream instrumentation. It is recommended that all pipes are purged to remove any debris that may exist. When routing the tubes ensure that they are adequately supported to prevent damage and leaks in the system.

Connect the Mist-X exhaust to the drain port of the generator. The silencer should be placed within a container to safely contain the mist.

All components used within the system must be rated to at least the maximum operating pressure of the equipment. Always protect the system by installing suitably rated pressure relief valves.



Warning

To avoid damaging the application instrument, the system piping will require purging for at least one hour for every 10 metres of piping. The application instrument must not be connected to the system piping at this stage. Refer to "Commissioning the Generator" on page 9 for details on purging.

3.2.1 Electrical supply

Check the rating plate for the correct supply voltage and frequency. Select the required power cord and connect it to the switched IEC 320 socket on the generator. Connect the plug to directly to the electrical supply. Do not use an extension cord.

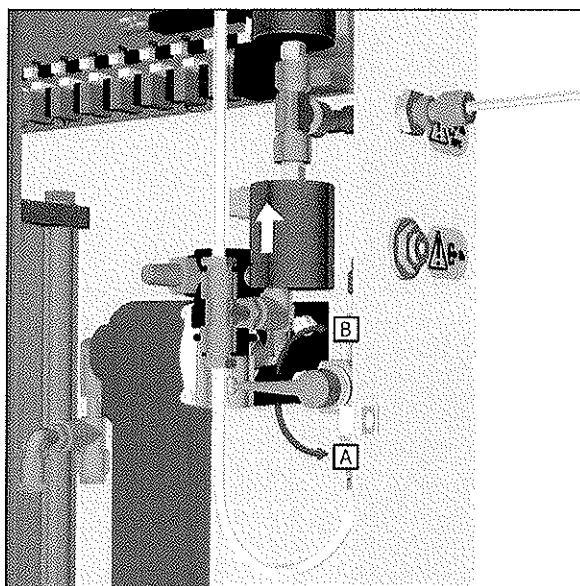
3.3 Commissioning the Generator



Ensure that the area is suitably ventilated during the commissioning stage as nitrogen will flow from the unterminated system piping.

It is assumed that the system is configured with isolation valves on the outlet of the generator and the inlet of the application instrument as shown in "Recommended system layout" on page 7.

- 1 Ensure that the system piping is connected to the N₂ MFC outlet port of the generator and the isolation valve is closed.
- 2 Remove the side panel from the generator and locate the MFC bypass valve. Move valve handle to position [A] to direct the gas to the N₂ MFC outlet. Refit the side panel to prevent access to the electrical equipment when the generator is powered up.
- 3 Disconnect the application instrument from the isolation valve and close the valve.
- 4 Turn the generator on at the power switch and wait until it goes into standby mode.
- 5 Press the [] key on the control panel to start the generator.
- 6 Check the pressure gauges on the front of the generator and verify that the generator is pressurising.
- 7 Check the Mist-X exhaust to verify that the drain valve is discharging on a regular basis. If the drain valve is blocked the generator will not reach purity.
- 8 Once satisfied that the generator is cycling correctly, slowly open the isolation valve on the outlet of the generator to pressurise the system piping. Check for leaks and repair as required.
- 9 Open the isolation valve, normally connected to the application instrument, and allow the gas to flow to atmosphere.



It takes approximately 6 hours for the generator to reach the purity stated in "Technical Specification" on page 3. In addition the system piping will need flushing for approximately 1 hour for every 10 metres of piping. Failure to do so could damage the application instrument.

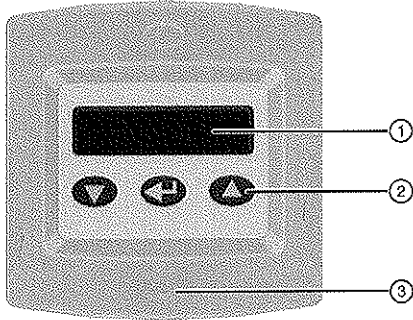
- 10 Once the generator has reached its specified purity, and the system has been purged, the application instrument may be connected to the system. Close the isolation valve on the outlet of the system and connect the application instrument.
- 11 If the application instrument uses its own MFC the system piping will need to be connected to the N₂ Out port not the N₂ MFC outlet port. Close the isolation valve on the N₂ MFC outlet port and press [] to put the generator into stand-by mode.

The generator will continue to run for up to 10 minutes in order to allow the cycle to complete and to ensure that the inlet piping and CMS columns are fully de-pressurised. Once complete the generator will revert to stand-by mode.

- 12 Turn the generator off at the power switch and disconnect it from the electrical supply.
- 13 Disconnect the isolation valve from the N₂ MFC outlet port at connect it to the N₂ outlet. Fit the blanking plug into the N₂ MFC outlet port.
- 14 Reconfigure the MFC bypass valve so that the gas is delivered to the N₂. Remove the side panel from the generator and locate the MFC bypass valve. Move valve handle to position [B] to direct the gas to the N₂ outlet, and refit the side panel.
- 15 Reconnect the generator to the electrical supply and wait. When the generator reaches standby mode press [].

4 Operating the equipment

4.1 Overview of controls



- 1 16x2 line menu display.
- 2 Control key pad used for menu navigation and generator operation.
- 3 Tri coloured System Check Indicator.
Green / Red Generator Cycle
Amber Standby Mode

4.2 Starting the generator



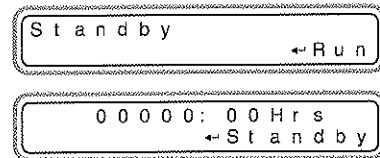
If the operation of the generator is interrupted and the receiver pressure falls below 5 bar, disconnect the generator from the system and follow the procedure specified in "Commissioning the Generator" on page 9. If the receiver pressure does not fall below 5 bar it is recommended that the generator be run for 1 hour off line to allow the specified purity to be achieved.

When the generator is connected to the mains supply it will run through an initialisation routine prior to going in to stand-by mode. This routine takes approximately 60 seconds to complete.

Press to start the generator. The menu will change as shown and the system check LED will cycle between green and red.

Check the Mist-X exhaust to ensure that the drain valve is discharging on a regular basis. If the drain valve is blocked the generator will not reach purity.

This generator is designed to run continuously without any user intervention.



4.3 Rapid Cycle

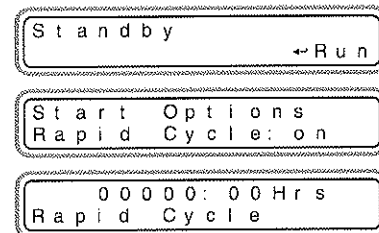
Rapid cycle is the function of flushing the system of impurities in order to allow the generator to reach desired purity faster. When enabled the rapid cycle will activate every time the generator comes out of standby or economy mode. There is no gas delivered to the outlet port when running in rapid cycle mode.

If the Rapid Cycle option has been fitted it can be enabled as follows:

From the "Standby menu" press and together.

Use the and keys to enable the rapid cycle and press to return to the standby menu.


The menu will change as shown.



Important: The purity of the gas will deteriorate when the generator is in standby or economy mode. The following table gives an indication of the length of time required for the generator to return to the specified purity following economy operation.

Time in Standby / Economy	Time To Deliver High Purity Gas (Minutes)
4	20
12	20
24	20
48	30
48+	60

4.4 Generator Shutdown Procedure

Close the external isolation valves and press [] to put the generator into standby.

The generator will continue to run for up to 10 minutes to complete the cycle and to ensure that the inlet piping and CMS columns are fully depressurised.

Once complete the menu will default to "Standby".

0 0 0 0 0 : 0 0 H r s
← Standby

Standby → Run




The internal storage receivers of the generator will still be pressurised. These **MUST** be depressurised if the generator is to be serviced, shipped or placed into storage.

4.4.1 Depressurisation

If the generator is not fitted with the economy option:

- 1 With the generator in "Standby" disconnect the generator from the application piping.
- 2 When all of the pressure gauges on the front panel read 0 bar the generator is depressurised.

If the generator is fitted with the economy option:

- 3 Disconnect the generator from the system piping. Turn the generator off at the power switch and disconnect it from the electrical supply.
- 4 Whilst pressing [] reconnect the generator to the electrical power supply.
- 5 The generator will begin to depressurise as indicated by the on screen pressure reading "Po *.*".
- 6 When the generator is completely depressurised it will revert to standby mode.
- 7 Verify that all of the pressure gauges read 0 bar.
- 8 Disconnect the generator from the electrical power supply.
- 9 Where applicable disconnect the generator from the compressed air supply.

P o 0 . 0 0
Depressurising

Standby → Run

5 Servicing

The recommended service procedures identified below, along with all other repair and calibration work, should be undertaken by a Parker Hannifin approved engineer.

5.1 Cleaning

Clean the equipment with a damp cloth only and avoid excessive moisture around any electrical sockets. If required you may use a mild detergent, however do not use abrasives or solvents as they may damage the warning labels on the equipment.

5.1.1 Service Intervals

Component	Operation	Daily	Weekly	12Months (8000Hrs.)	36Months (24000Hrs.)
Generator	Check that the Power On indicator is illuminated and cycles from red to green.				
Generator	Check the drain valve is discharging on a regular basis.				
Generator	Check for leaks				
Generator	Check the pressure gauges during operation				
Generator	Check that there is ventilation clearance around the generator.				
Generator	Check the condition of electrical supply cables and conduits.				
Generator	Recommended Service A Replace the filters				
Generator	Recommended Service B Replace the compressor (Option 1 only)				
Generator	Recommended Service C Replace the valves				

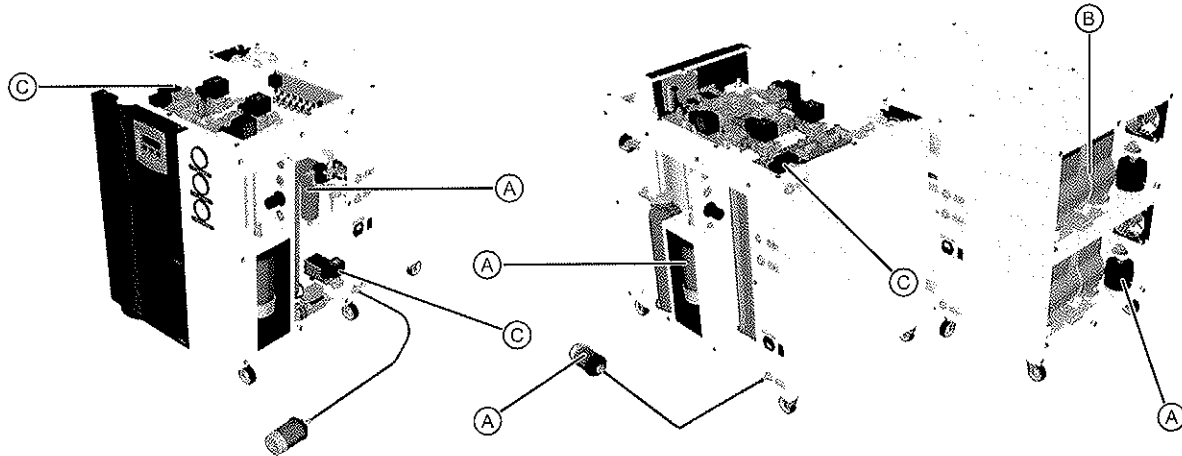
Service	12 Months (8000 Hrs.)	24 Months (16000 Hrs.)	36 Months (24000 Hrs.)	48 Months (32000 Hrs.)	60 Months (40000 Hrs.)	72 Months (48000 Hrs.)	84 Months (56000 Hrs.)	96 Months (64000 Hrs.)	108 Months (72000 Hrs.)	120 Months (80000 Hrs.)
A										
B										
C										

Key:

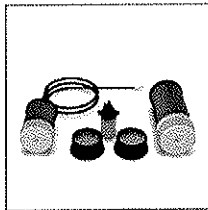
Check

Essential Procedure

5.2 Service Kits

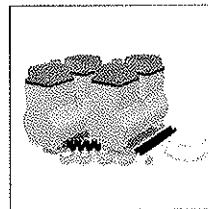


5.2.1 Recommended Service A - Required every 8000Hrs (12 months)



Description	Kit No.	Contents
Filter Service Kit	606272251	(1) MIST-X spares kit (2) Compressor air intake filter (x2) (3) AO grade filter element (4) MIST-X element

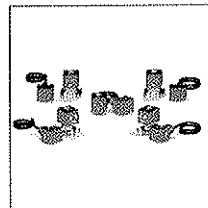
5.2.2 Recommended Service B - Required every 8000Hrs (12 months)



Description	Kit No.	Contents
230 V Compressor Service Kit	606272253	(1) Compressor (x2) (2) Vibration mounts with fixings (x8) (3) Anti-vibration compression spring (x8) (4) 3/8" to 12mm elbow with fittings (x2) (5) 3/8" to 8mm elbow
120 V Compressor Service Kit	606272261	(6) 12mm black nylon tube (2 x 0.35m) (7) 8mm white PTFE tube (1.1m) (8) 3 way connector

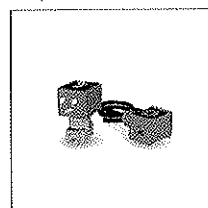
5.2.3 Recommended Service C - Required every 24000Hrs (36 months)

All Models



Description	Kit No.	Contents
230 V Solenoid Valve Service kit	606272255	(1) 1/2" BSP solenoid valve (x4) (2) 1/4" BSP solenoid valve
120 V Solenoid Valve Service Kit	606272263	(3) Coil with 4m cable (x5) (5) M6 fixing bolts (x18)

Option 0 models only



Description	Kit No.	Contents
230 V Solenoid Valve Service kit	606272257	(1) 1/4" BSP solenoid valve
120 V Solenoid Valve Service Kit	606272265	(2) Coil with 2m cable

5.3 Service Record

Generator Details

Model Number:

Serial Number

Supply Voltage

Commissioned By:

Company Name

Address:

Telephone:

Fax:

Contact Name:

Date of Commission:

Service Interval Months (Hours)	Date	Serviced By		Comments
		Print	Sign	
6 (4,000)				
12 (8,000)				
18 (12,000)				
24 (16,000)				
30 (20,000)				
36 (24,000)				
42 (28,000)				
48 (32,000)				
54 (36,000)				
60 (40,000)				
66 (44,000)				
72 (48,000)				
78 (52,000)				
84 (56,000)				
90 (60,000)				
96 (64,000)				
102 (68,000)				
108 (72,000)				

6 Troubleshooting

Problem	Indication	Possible Cause	Action Required
No power to unit	Power On indicator not illuminated	Isolated at supply	Check isolator & switch on
		Power on switch in 'OFF' position	Check power on switch & switch on
		Fuse blown	Check fuse & replace
		26 way connector disconnected	Check and rectify
		Power lead not connected	Check lead connected & connect
		Loose connection inside generator	Contact Parker Hannifin for advice.
		Connected incorrect voltage supply	Check rating plate voltage for suitability
Reduced delivery pressure	Outlet pressure gauges	Compressor failure (option 1 units only)	Check compressor is running. Contact Parker Hannifin for advice.
		Compressor over-heating due to insufficient ventilation	Check ventilation clearance & rectify
		Leaking outlet pipe-work	Check pipe-work & rectifier
		Pressure regulator set low	Check pressure regulator setting & reset
		Service interval exceeded	Check service timers and service
		Internal Leak	Contact Parker Hannifin for advice.
		Leaking inlet pipe-work (option 0 units only)	Check pipe-work & rectify
		Inlet pressure set low	Check inlet pressure & increase
		Inlet (option 0 units only) or outlet pipe-work diameter too small	Check pipe-work diameter & replace
		Demand greater than supply capability	Check requirements against original sizing data
Reduced purity	Downstream monitoring	Leaking outlet pipe-work	Check pipe-work & rectify
		Unsuitable pipe-work used on outlet	Check pipe-work and replace
		Generator recently brought online	Check & allow at least 6-hours for purity to be achieved
		Inlet air supply ISO8573.1 2001 air quality class 2.-.1 (option 0 units only)	Check inlet air quality & rectify

7 Declaration of Conformity

Declaration of Conformity

EN

Parker Hannifin Ltd, Industrial division
Dukesway, TVTE, Gateshead, Tyne & Wear, NE11 0PZ. UK

Nitrogen Gas Generator
LCMS15, LCMS20, LCMS30, LCMS40 and LCMS50

Directives

97/23/EC
2006/95/EC
2004/108/EC

Standards used

EN 61010-1 : 2001
EN 61000-6-1 : 2005
EN 61000-6-3 : 2001
EN 61000-3-3 : 1995
Generally in accordance with ASMEVIII Div 1 : 2004.

PED Assessment Route :
EC Type-examination Certificate:
Notified body for PED:

B & D
COV 0712618 O-14621/PS
Lloyds Register Verification
71 Fenchurch St. London
EC3M 4BS

Authorised Representative

Derek Bankier
Divisional Quality Manager
Parker Hannifin Ltd, Industrial division

Declaration

I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the standards and other related documents following the provisions of the above Directives.

Signature:



Date: 05/10/2010

Declaration Number: 0071/50110

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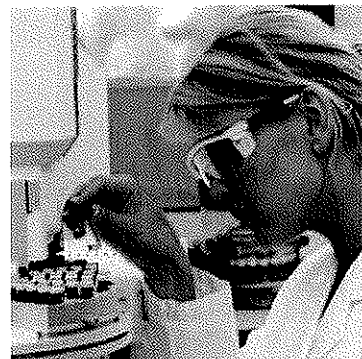
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Nitrogen Generators

for LC/MS applications



The Parker domnick hunter LCMS nitrogen gas generators employ robust, field proven technology to meet the drying, sheath and nebulization gas requirements of today's latest LC/MS instrumentation. Five models operate at flow rates from 15 L/min to 50 L/min.

The LCMS generators provide a continuous stream of high purity nitrogen from a single 'plug & play' unit. Models are available with and without an integral oil free compressor, are extremely quiet in operation and are fully approved for use by major instrumentation manufacturers.

Innovative design and technology facilitate maximum instrument uptime, attractive return on investment and proven analytical performance, eliminating the need for other modes of supply.

A range of tailored service contracts, extended warranties and global manufacturing capabilities provide comprehensive aftermarket support.



Contact Information:

Parker Hannifin Corporation
Purification, Dehydration and
Filtration Division
New York, USA
T 704 921 9303 F 704 921 1960
Toll Free 1-800-345-8462

www.domnickhunter.com/scientific

Features:

- Phthalate-free componentry
- Integral oil free compressor option
- Continuous automatic operation, 24/7
- Noise reduction technology
- Compact and robust design
- Simple installation and operation
- Global manufacturing support
- CE, UL & CRN approved

Benefits:

- **Proven instrument performance**
Robust technology, tested, and fully approved for use
- **Low life cycle costs, excellent return on investment**
Payback typically less than 24 months
- **Safe and sustainable**
Eliminates the need to use and handle high pressure cylinders
- **Increased instrument uptime and productivity**
Gas at the push of a button, 24/7, without interruptions
- **Convenient**
Compact, low maintenance design allows easy installation next to instrument
- **Optimum analysis**
Improved stability and greater reproducibility with guaranteed purity
- **Reliable**
Field proven Pressure Swing Adsorption (PSA) technology



ENGINEERING YOUR SUCCESS.

Product Selection

Model	Flow Rate	Purity	Air Inlet @ 123.3 psi g	Delivery Pressure	Height (H)	Width (W)	Depth (D)	Weight
	L/min	%	L/min	psi g	ins	ins	ins	lbs
Without compressor								
LCMS-15-0	15	>99	70	101.5	27.8	20.1	22.0	196
G4-600	18	>99	70	101.5	34.4	20.1	22.0	170
LCMS-20-0	20	>99	70	101.5	27.8	20.1	22.0	196
LCMS-30-0	30	>99	130	101.5	27.8	20.1	22.9	298
LCMS-40-0	40	>99	130	101.5	27.8	20.1	22.9	298
LCMS-50-0	50	>98	130	101.5	27.8	20.1	22.9	298
With integrated compressor								
G4-510	12	>99	na/	101.5	34.4	13.6	26.1	199
LCMS-15-1	15	>99	n/a	101.5	27.8	20.1	32.5	284
LCMS-20-1	20	>99	n/a	101.5	27.8	20.1	32.5	284
LCMS-30-1	30	>99	n/a	101.5	27.8	20.1	32.5	284

Technical Data

Ambient Temperature Range	41 - 104°F
Inlet Air Quality*	Clean dry compressed air ISO8573-1:2001 Class 2.-1
Supply Voltage Range	120 / 230V ± 10% (60 / 50Hz)
Port Connections	1/4" Compression Fitting
Nitrogen Outlet Air Inlet	1/4" Compression Fitting

*Non compressor models only

To ensure optimum performance and longevity of your LC/MS nitrogen generator, Parker domnick hunter recommends the following service kits be used as part of a preventative maintenance program:

Model	4000 hours	8000 hours	24000 hours	Also required at 24000 hours if no compressor fitted
120 Vac Models				
G4-510	60 627 2354	60 627 2335	60 627 2349	-
G4-600	60 627 2353	-	60 627 2347	-
LCMS-15-0, 20-0, 30-0, 40-0	60 627 2251	-	60 627 2263	1 off 60 627 2265
LCMS-15-1*, 20-1*, 30-1*	60 627 2251	60 627 2261	60 627 2263	-
220 Vac Models				
G4-510	60 627 2354	60 627 2334	60 627 2344	-
G4-600	60 627 2353	-	60 627 2342	-
LCMS-15-0, 20-0, 30-0, 40-0	60 627 2251	-	60 627 2255	1 off 60 627 2257
LCMS-15-1*, 20-1*, 30-1*	60 627 2251	60 627 2253	60 627 2255	-

For information on extended warranty and preventative maintenance contract availability, please contact your local sales office or visit www.domnickhunter.com/scientific.

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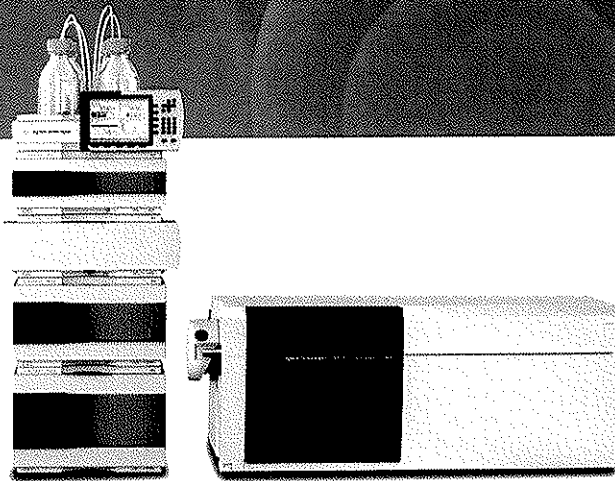
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ENGINEERING YOUR SUCCESS.

Agilent 6430 Triple Quadrupole LC/MS System

Ideal Quantitative LC/MS for UHPLC with Dynamic MRM and Fast Polarity Switching, plus Unsurpassed Sensitivity with Chip LC



Summary

The Agilent 6430 Triple Quadrupole LC/MS System has been specifically designed and engineered to be fully compatible with ultra high pressure liquid chromatography (UHPLC) separations and as an ideal interface for Agilent's proprietary HPLC Chip technology. The 6430 Triple Quad is a feature-packed new addition to the Agilent triple quadrupole product family, with:

- Reliable MassHunter software
- MassHunter Optimizer for automated compound optimization
- 1 ms dwell times with no collision cell cross talk
- Dynamic MRM methods for up to 4,000 transitions
- 30 ms polarity switching for fast analyses
- Low attomole sensitivity in peptide quantitation with Agilent's advanced HPLC-Chip Nano LC system

Controlled by proven MassHunter software, the new 6430 Triple Quad joins the Agilent 6410 Triple Quadrupole LC/MS System, an entry-level system for routine quantitative analysis, and the flagship Agilent 6460 Triple Quadrupole LC/MS System with unrivalled sensitivity powered by Agilent Jet Stream technology, to create a powerful suite of products to meet the quantitation demands of any application or budget. The 6430 Triple Quad offers the same combination of superior performance, exceptional reliability, and excellent overall cost-of-ownership for which Agilent is famous.

Our measure is your success.



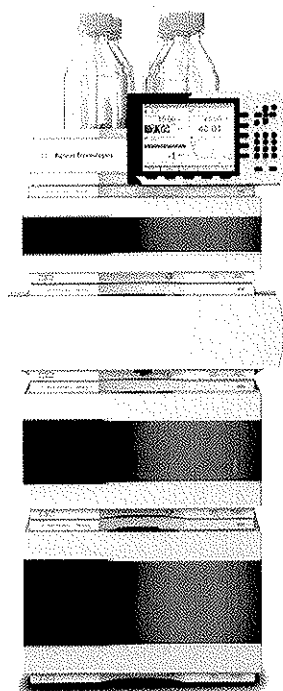
Fast MRM Analysis and Polarity Switching (Plus Sensitivity) — Perfect for UHPLC

The 1290 Infinity LC System for UHPLC offers tremendous productivity gains versus conventional HPLC. UHPLC with sub-2-micron columns can dramatically reduce separation times and maximize chromatographic resolution. This frequently results in very narrow peaks which may be less than a second wide. The new 6430 Triple Quad has been engineered to achieve optimal quantitation of narrow UHPLC peaks.

Reliable peak integration requires at least ten data points across a peak, mandating MS cycle times as low as 100 ms for a second-wide peak. Complex, multi-analyte assays require very short dwell times. The 6430 Triple Quad can keep up! It features extremely fast ion monitoring and polarity switching. The enhanced electronics in the 6430 Triple Quad enable 1 ms dwell times with no collision cell cross talk. Further, the introduction of dynamic MRM methods allows dynamic selection of MRM transitions during a method, based on retention time windows, to optimize instrument cycle time and maximize collection of high quality quantitative data.¹ This allows hundreds of compounds to

be analyzed in a single LC/MS run. Samples containing compounds with both positive and negative ion transitions require fast polarity switching — the 6430 Triple Quad can change polarity and begin acquiring data in just 30 ms. The improvement in polarity switching times is derived from a new, resistively coated capillary that reacts very quickly to voltage changes.

In addition to fast analysis capabilities, the 6430 Triple Quad is more sensitive than its predecessor — it has a standard second turbo pump in the Q3 region to enhance ion transmission by reducing chemical noise.



Designed as an IDEAL SYSTEM for UHPLC/MS Analyses

- 1200 bar pressure (up to 2 mL/min) for the fastest separations
- 30 ms polarity switching for fast peaks
- 1 ms dwell times for analyzing hundreds of compounds
- Dynamic MRM methods for analyzing thousands of ion transitions
- Improved sensitivity

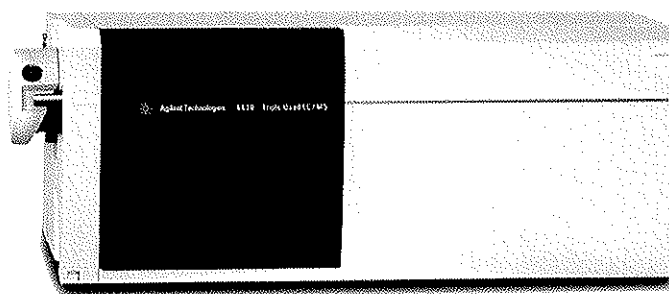


Figure 1: The Agilent 1290 Infinity LC System and the Agilent 6430 Triple Quadrupole LC/MS System. The 6430 Triple Quad is an ideal MS system for UHPLC separations.

As part of a metabolic stability assay² (Figure 2), several pharmaceutical compounds and their metabolites were separated using a 1.5 min method with the Agilent 1290 Infinity LC System, using a sub-2-micron column and pressure of 1060 bar. The diclofenac ion transition was monitored along with four other positive ion transitions and one negative ion transition. The cycle time for six ion transitions and positive/negative polarity switching was **less than 115 ms**. This narrow peak was sampled 9 times, creating an excellent basis for peak area determination - the area RSD value for diclofenac was less than 5%.

Dynamic MRM Methods Enable Complex Multi-Residue Analyses

Dynamic MRM methods dramatically reduce MS cycle times for complex multi-analyte assays. MRM transition lists are built dynamically during the LC separation based on a retention time window for each analyte. Using the dynamic MRM method capabilities of the 6430 Triple Quad, 224 pesticides were analyzed in only 7 min as shown in Figure 3. The average peak widths were about 1 sec wide, requiring an MS cycle time of about 100 ms for precise and accurate quantitation of all compounds. The minimum dwell time was a very fast 2.5 ms. The excellent retention time precision of the 1290 Infinity LC allowed very narrow retention time windows and reduced the number of required ion transitions at any point during the chromatogram to fewer than 20. The precision of this very fast pesticide assay was excellent, with an average peak area RSD of less than 5%.

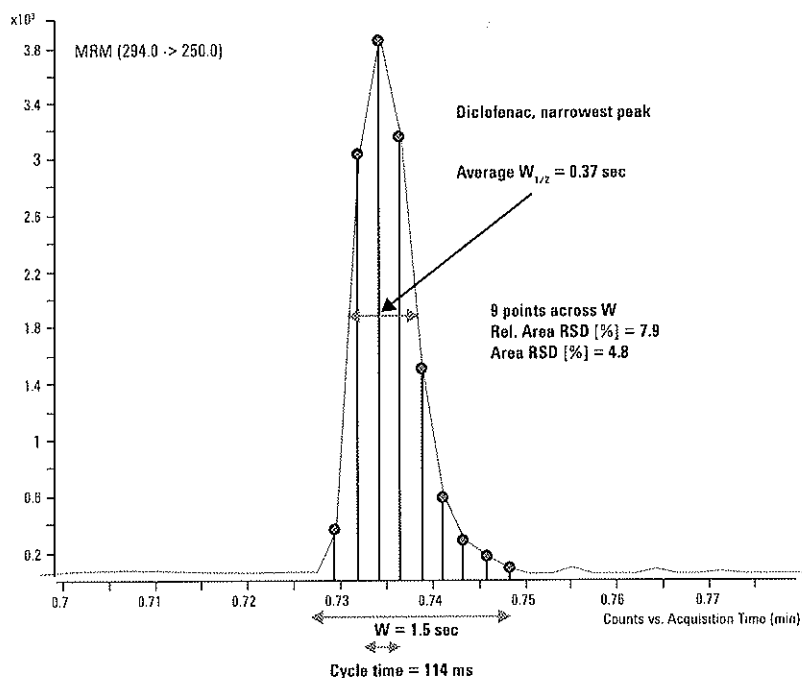


Fig. 2: MRM chromatogram of diclofenac obtained using a flow rate of 1.5 mL/min. The graphic shows the peak width at half height (0.37 sec) and the number of data points collected across the peak (9 data points).

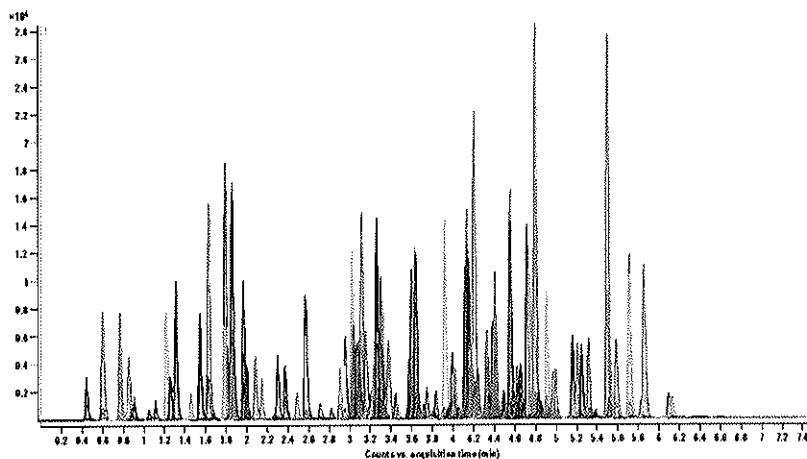


Figure 3. Fast analysis of 224-pesticides at the 500 ppt level in less than 7 min using the new Agilent 1290 Infinity LC and 6430 Triple Quad with dynamic MRM. Average peak area RSD was less than 5%.

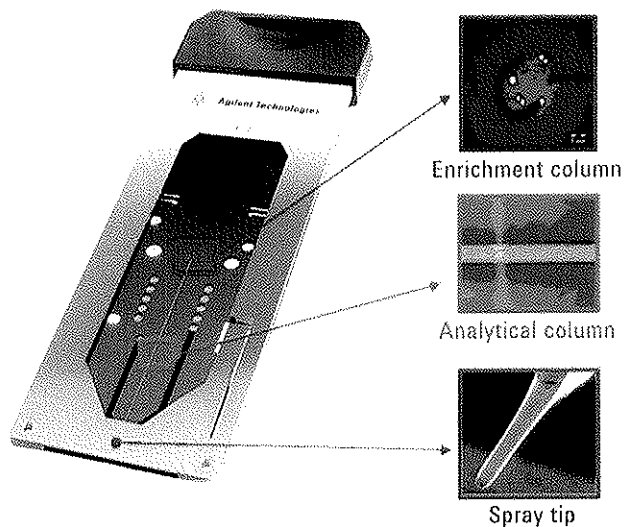


Figure 4. ChipCube with integrated valves, columns and spray tip.

Robust, Reliable, Sensitive Nanospray with HPLC-Chip

The highest possible sensitivity in LC/MS is achieved with the smallest column diameters. Nano LC columns with an i.d. of 75 microns offer an obvious route to high sensitivity but have historically suffered from a lack of robustness and precision. Agilent's revolutionary HPLC-Chip/MS technology provides nanoscale LC on a plug-and-play microfluidic chip, minimizing leaks and dead volumes. The chip contains a fully integrated electrospray emitter for unprecedented spray stability.

The 6430 Triple Quad with an HPLC-Chip/MS interface is ideal for targeted protein quantitation using dynamic MRM methods. This system can achieve low attomolar sensitivity (see **Figure 5**) in plasma protein digests.

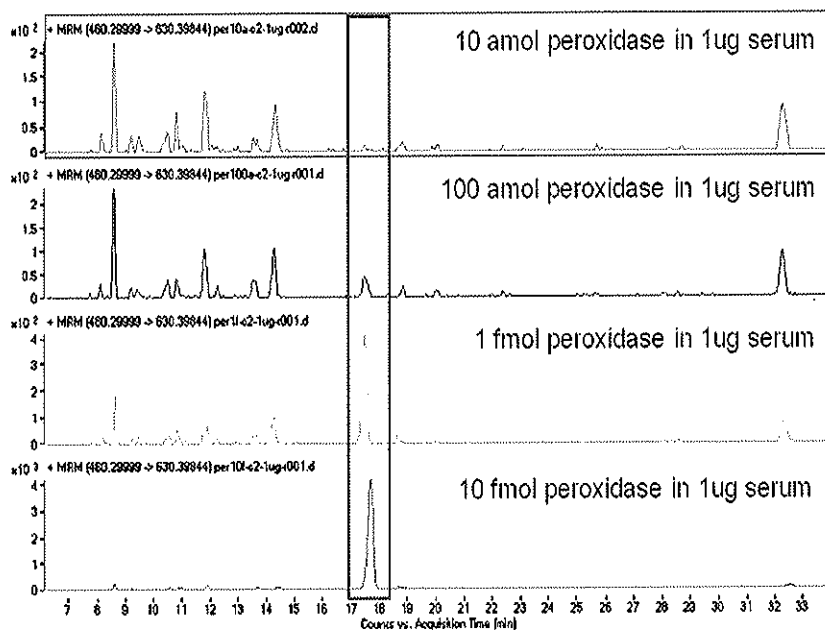


Figure 5. Attomolar detection limits for exogenous peroxidase protein spiked into immunodepleted human plasma, analyzed with the HPLC-Chip coupled with a 6430 Triple Quad.

Dynamic MRM methods on the HPLC-Chip/6430 Triple Quad system can be used to quantitate hundreds or thousands of peptides, as shown in the analysis of the complex peptide digest shown in **Figure 6**. More than 2,000 ion transitions were monitored during this LC/MS analysis.

Conclusions

The new Agilent 6430 Triple Quad LC/MS features seamless integration with the Agilent 1290 infinity LC System and the proprietary Agilent HPLC-Chip/MS nanospray interface. This new system features:

- Extensive sampling capabilities for narrow UHPLC peaks
- Fast 1 ms MRM dwell times
- Dynamic MRM methods for complex, multi-analyte assays
- Fast 30 ms polarity switching times
- Attomole sensitivity for biomarker validation studies using the HPLC-Chip and 6430 Triple Quad
- Rugged, reliable MassHunter software control
- Automated method optimization using MassHunter Optimizer and Peptide Optimizer software
- 21 CFR Part 11 support for validated methods

With legendary Agilent robustness and reliability, and a commitment to highest quality service and support, the 6430 Triple Quad is a productive new addition to the Agilent 6400 Series Triple Quadrupole LC/MS product family.

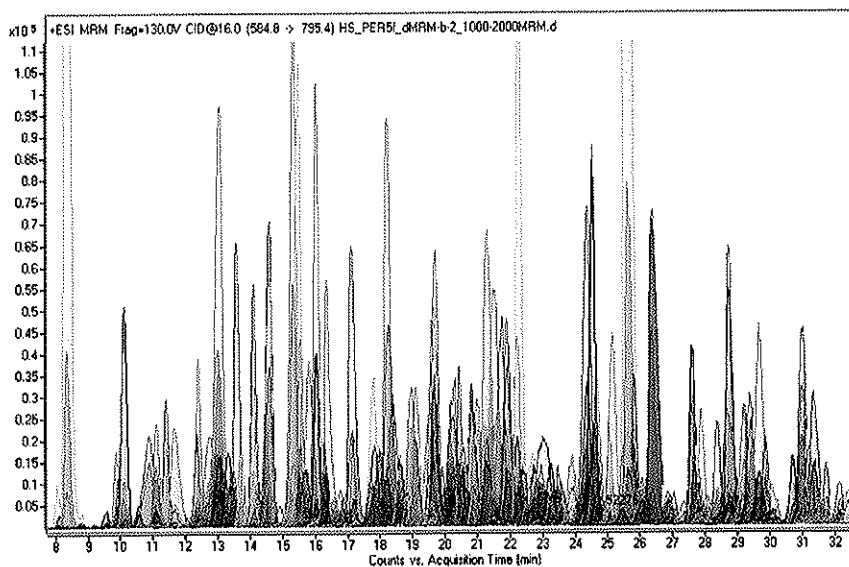


Figure 6. 2,000 Dynamic MRM transitions from the tryptic digest of immunodepleted human plasma using the HPLC-Chip/6430 Triple Quad system.

References

1. Peter Stone, Thomas Glauner, Frank Kuhlmann, Tim Schlabach and Ken Miller, "New Dynamic MRM Mode Improves Data Quality and Triple Quad Quantification in Complex Analyses," Agilent publication number 5990-3595EN, **2009**.
2. Anabel S. Fandiño, Edgar Naegele, "Metabolic Stability Study Using Cassette Analysis and Polarity Switching in a UHPLC Triple Quad LC/MS System," Agilent publication number 5990-4469EN, **2009**.

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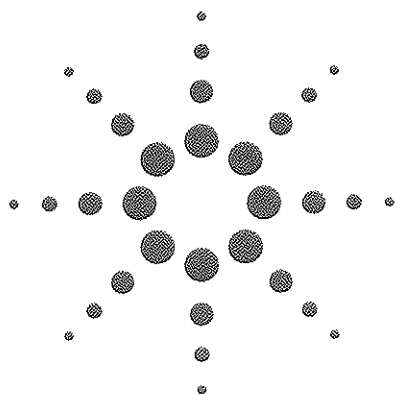
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Printed in the U.S.A. December 22, 2009
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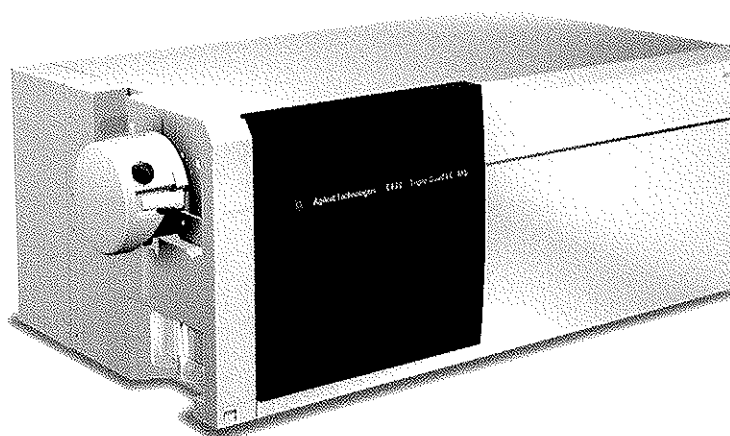


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Agilent 6430 Triple Quadrupole LC/MS with Dynamic MRM

Data Sheet



The 6430 Triple Quadrupole LC/MS achieves sensitivity and resolution specifications after autotune without manual user intervention.

Parameter	Measure	Specification
MS/MS sensitivity	1 µg of reserpine injected on column	Signal-to-noise ratio > 300:1
Mass range		m/z 5 – 2,250
Polarity switching		Switch from positive to negative polarity in 30 ms
Mass resolution (autotune)	Full width at half maximum	0.7 Da
Mass resolution (manual tune)	Full width at half maximum	0.5 Da
Mass accuracy		0.1 Da from 5 – 1,000 m/z 0.01% from 1,000 – 2,000 m/z 0.02% from 2,000 – 2,250 m/z
Mass stability		< 0.1 Da in 24 h
Dynamic range		> 6.0×10^9
Scan rate		5,200 Da/s
Minimum MRM dwell time		1 ms
MRM transitions		500 per time segment, > 40,000 ion transitions per method
Dynamic MRM transitions		4,000 ion transitions per method
Collision cell ion clearance		< 1 ms



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General system specifications

Parameter	Measure
Single point of control	Single-point data system method capability with full control of Agilent 1200 Series HPLC systems and the 6430A Triple Quadrupole LC/MS System
Time programming	<ul style="list-style-type: none">• Polarity change in time segment• Continuous polarity change during entire method• Scan and SIM or MRM (plus other modes of data collection)• Dynamic MRM aligns MRMs with compound retention time
Wide range of ionization sources	<ul style="list-style-type: none">• Electrospray (ESI)• Multimode source (simultaneous ESI and APCI)• ChipCube for integrated nanoLC• APPI (Photoionization)
Detector	High-energy conversion dynode and high-gain electron multiplier horn
Vacuum system	Two turbomolecular pumps with one mechanical pump

Ordering information

G6430AA: 6430 Triple Quadrupole LC/MS System

Includes the 6430 Triple Quadrupole Mass Spectrometer, MassHunter Workstation Software with both compliance and method optimization software, a PC, monitor and printer, and service installation of the system.

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Printed in the U.S.A. May 7, 2009
5990-3965EN



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