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

Request for Quotation

RFQ NUMBER	PAGE
DPS0926	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
JOHN ABBOTT
304-558-2544

VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE
Waters Corporation
34 Maple Street
Milford, MA 01757

SHIP TO
WEST VIRGINIA STATE POLICE

4124 KANAWHA TURNPIKE
SOUTH CHARLESTON, WV
25309 304-746-2141

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
01/21/2009				

BID OPENING DATE: 02/04/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		490-55	$249,715.33	$249,715.33

MASS SPECTROMETERS (LABORATORY)

CONTRACT TO PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO INSTALL A LIQUID CHROMATOGRAPHY TANDEM QUADRUPOLE MASS SPECTROMETER SYSTEM AT THE WV STATE POLICE FORENSIC LAB, SOUTH CHARLESTON, WV, PER THE SPECIFICATIONS.

NOTICE

A SIGNED BID MUST BE SUBMITTED TO:

DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
BUILDING 15
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25305-0130

RECEIVED
2009 FEB -4 AM 11:03
WV PURCHASING DIVISION

THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:

SEALED BID

BUYER: JOHN ABBOTT----------

RFQ. NO.: DPS0926----------

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE Michael Bern TELEPHONE 800-252-4752 DATE 2/3/2009

TITLE Bid Specialist FEIN 04-3234558 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. All quotations are governed by the ***West Virginia Code*** and the ***Legislative Rules*** of the Purchasing Division.

4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required $125 fee.

5. 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.

6. Payment may only be made after the delivery and acceptance of goods or services.

7. Interest may be paid for late payment in accordance with the ***West Virginia Code***.

8. Vendor preference will be granted upon written request in accordance with the ***West Virginia Code***.

9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.

11. The laws of the State of West Virginia and the ***Legislative Rules*** of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.

12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.

13. BANKRUPTCY: In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.

14. HIPAA BUSINESS ASSOCIATE ADDENDUM: The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (**http://www.state.wv.us/admin/purchase/vrc/hipaa.htm**) 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.

15. WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT: If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.

2. SPECIFICATIONS: 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. Complete all sections of the quotation form.

4. Unit prices shall prevail in case of discrepancy.

5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.

6. BID SUBMISSION: 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

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

Request for Quotation

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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
01/21/2009				

BID OPENING DATE: 02/04/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
	BID OPENING DATE:			2/4/2009		
	BID OPENING TIME:			1:30 PM		
	PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:			508-482-8532		
	CONTACT PERSON (PLEASE PRINT CLEARLY):			Michael Brunelle		
	****** THIS IS THE END OF RFQ DPS0926 ****** TOTAL:					$249,715.33

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 800-252-4752 DATE 2/3/2008

TITLE Bid Specialist FEIN 04-3234558 ADDRESS CHANGES TO BE NOTED ABOVE

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

The West Virginia State Police is soliciting bids for a Liquid Chromatography tandem quadrupole mass spectrometer system for the Toxicology Section of the Forensic Laboratory.

All bids must include the following specifications.

- **Furnish and install all components of liquid chromatograph mass spectrometer**
- **Furnish and install corresponding data handling system including computer, cables, connections, software, operating software, hardware, and all components to make it fully operational**
- **All Freight costs**

4

System Specifications and Requirements

Solvent Delivery System Requirements:

1. **Flow Rate:** 0.010-2.0 ml/min, in 0.001 ml increments.
2. **Pressure Stability:** <= 0.5% of system backpressure or 50 p.s.i at 10,000 p.s.i.
3. **Gradient Profiles:** Even pre-configured gradient profile shapes (linear, 2 step, 4 convex, 4 concave)
4. **Delay Volume:** >= 120 µL, independent of system pressure (with standard mixer 50 µL)
5. **Solvent Selection:** Binary solvent delivery system, allowing the user to choose between two mobile phase for each of the two solvent channels for a total of four solvent choices.
6. **Compressibility Compensation:** Automatic and continuous compressibility compensation, requiring no user intervention.
7. **Degassing System:** Built in high efficiency, low volume, 6 chamber vacuum degassing system with a separate channel for each mobile phase solvent and 2 channels for Sample Manager wash solvents.
8. **Flow Precision:** </= 0.075% RSD or +/-0.02 min SD, based on retention time with flow accuracy of +/- 1%.
9. **Compositional accuracy**: <0.5% and compositional precision is <0.15% RSD or +/- 0.04min SD. The solvent delivery system must include an automated software assisted purge function for ease of solvent changing and system purging/priming
10. **UPLC Pressure Requirement:** The solvent delivery system must be able to operate at pressures up to 15000 psi up to 1 ml/min, 9000 psi up to 2 ml/min as required for UPLC analysis.
11. **Seal Wash:** Integral, active and programmable plunger seal wash system.
12. **Flow Characteristics:** The Solvent Delivery System must be able to run, at flow rates above 0.5 ml/min, newer, smaller particle size columns, such as those with sub-2.0um diameter particles. The system must not require any hardware modifications to be able to run these columns. The system must be also able to run HPLC columns with particle sizes of 3.0, 3.5, 5.0, 7.0 um without any modifications to the system hardware.
13. **Inlet Valves:** The Solvent Delivery System must be equipped with controlled Intake Valves to deliver faster system priming and startup times. More robust operation and highly repeatable system performance are achieved even with difficult-to-pump solvents because disturbances to solvent flow in inlet lines are minimized. The valves actuation is precisely controllable, and the algorithms responsible for its operation respond instantly to the fast, pressure-sensing capability of the Solvent Delivery System.

Sample Management System Requirements:

1. **Sample Configurations:** The Sample Management System must be able to accommodate the following sample configurations without the use of an external sample handling device:

2 x 96 well plates
2 x 384 well plates
2 racks of 2 ml vials (48 vials/rack)
2 racks of 4 ml vials (24 vials/rack)
2 racks of 0.65ml microcentrifuge tubes (48 tubes/rack)
2 racks of 1.5 microcentrifuge tubes (24/rack)

2. **Injections:** 1 to 99 injections per sample, dependant on sample volume available and injection volume.
3. **Injection Modes:** The Sample Manager must support up to THREE injections modes : full loop, partial loop and partial loop using needle overfill (PLNO)
4. **Injection Volume:** Injection volume range of 0.5 – 50 ul in 0.1ul increments, partial or full loop mode.
5. **Sample Size:** Minimum sample required is 5ul, using 2ml Maximum Recovery Vials.
6. **Needle Wash:** Needle wash system must wash with up to two solvents to minimize carryover.
7. **Wash Solvent:** Fresh solvent for the needle wash with each injection to prevent possibility of carryover.
8. **Random Access:** Random access to any vial for multi-method operation.
9. **Injection Precision:** Sample delivery precision of 0.3% RSD, with a full injector loop, 5-50 ul.
10. **Injection Linearity:** >0.999 coefficient of deviation from 2-10 ul.
11. **Carryover:** Better than 0.005% or 2.0 nL of the compound assayed, whichever is greater.
12. **Sample Temperature:** Sample compartment controlled from 4 to 40 °C, programmable in 1 °C increments.
13. **Parallel Injection Capability:** The Sample manager must be able to load the injector loop before completion of the last injection.
14. **Injection Loop Isolation:** The injector loop must be removed from the system flow path during injection to minimize carryover and to decrease injection cycle time.

Column Heater Compartment Requirements:

1. **Column Temperature Range:** 5 deg C above ambient to 90 deg C.

Other System Requirements:

1. **Remote Control:** The system must not have a keypad, all instrument control functions are available through MassLynx or Empower build 1154/2154 software, through third part Control Software and through the Standalone Console software application, or equivalent.
2. **System Volume:** Total effective system volume less than 120µL, independent of system pressure. This includes a 10 µL injector loop.
3. **Diagnostics:** The System must have diagnostic capabilities: ability to store up to 16 diagnostic data channels, for a total of 96 hours, including piston pressures, system pressure, sample manager pressures, temperature, including ambient, lamp hours,

lamp ignitions. The diagnostic data must be collected when the instrument is powered up, regardless of the number of runs or run time set.

4. **Diagnostic reporting:** The system must create a standard format .pdf file listing all the diagnostic parameters, including firmware version, usage, such as solvent pumped and number of injections as well as maximum system pressure, error, diagnostic user and informational messages will be documented.
5. **Maintenance Information:** The system must provide full maintenance information such as counters for total lamp hour usage, number of ignitions, solvent usage, number of injections etc.
6. **Export of Diagnostic Data:** The system must export diagnostic data, uni-directionally across the internet if enabled by the Connections INSIGHT Agent installed on the same PC that runs Third Party, Console Software, Empower or MassLynx software that controls the system. If a significant event condition is encountered, system performance parameters are passed to a Server via a secure Internet connection. Information is analyzed where an alert can be generated.
7. **Graphical Diagnostics:** The system must allow the user to access all diagnostic functions through a graphical interface.
8. **UPLC Integration:** The acquisition must apply effective filtering and integration algorithms that are optimized for ultra fast UPLC separations enabled by the detector's fast data rates.
9. **Leak Detection:** The system must be equipped with Leak sensing for unattended operation. The sensors must alert the user from the software and graphically locate the location of a leak. The Leak sensors must be capable of resetting in less than 5 minutes. All or a subset of the leak sensors can be enabled or disabled.

Detector System Requirements:

The Detector must be a compact, benchtop, tandem quadrupole mass spectrometer designed for UPLC/MS/MS when configured. The Detector must provide a simple, robust platform for quantitative LC/MS/MS enabled by hi-speed MRM (Multiple Reaction Monitoring) and ESCi® multimode ionization. The system must also incorporate IntelliStart™ Technology for automated system optimization and status monitoring. This ensures high quality data is routinely available to all levels of operators. The system must be available on either MassLynx™ or Empower™ 2 Software.

IntelliStart Technology

1. **System Parameter Checking and Alerts:** System must be capable of checking all operating parameters and indicating visually and verbally whether or not conditions are acceptable to begin an analysis. Operator is alerted if any system parameter, either UPLC or MS/MS is out of specification.
2. **Integrated sample/calibrant delivery :** System must allow for direct injection of both calibrant and sample, including combining direct injection with UPLC flow for calibration and instrument tuning.
3. **Programmable divert valve:** Divert valve must be programmable to allow flow to be automatically diverted to waste when the system is idle.
4. **Automated Mass Calibration:** Instrument Setup must automate calibration and

resolution optimization for varying scan speeds (up to 10,000 amu/s)

5. **Automated Sample Tuning:** Sample tune must allow the operator to input targeted analyte masses, select the fluidics port and scheme for method development, and set method flow rate.
6. **Automated Methods Development:** System must automatically create an optimized set of MS/MS parameters for selected analytes, including cone voltages, optimum MRM parameters, SIR parameters, and confirmation masses.
7. **Performance Check:** System must run a predetermined sample set and evaluate all parameters, including tune, calibration, and quantitative parameters and indicate a pass/fail status for subsequent analysis.

SYSTEM GENERAL SPECIFICATIONS

1. **ESCI combined source:**
   a. Combined source for simultaneous electrospray/APCI operation
   b. ZSpray™ dual-orthogonal source for robust sampling
   c. Vacuum isolation valve
   d. Tool-free sampling cone removal
   e. Plug and play probes
   f. De-clustering cone gas
   g. Software control of all gas flows

2. **Ionization modes**:
   a. Electrospray – included as standard
   b. ESCi multimode ionization – included as standard
   c. IonSABRE™ APCI – option
   d. Dual APCI/APPI – option

3. **Ion Source Transfer Optics**:
   High efficiency hexapole ion guide

4. **Mass analyzer**:
   Two high resolution quadrupole analyzers (MS1/MS2), plus pre-filters to maximize resolution and transmission while preventing contamination of the main analyzers.

5. **Collision cell:**
   a. T-Wave™ collision cell traveling wave device with beam focusing at ion entry and exit for optimum ion transfer and confinement, allowing fast MS/MS acquisition.
   b. Software programmable gas flow.

6. **Detector**
   a. Low noise, off axis, long life photomultiplier detector
   b. Digital dynamic range up to 4 x 106
7. **Vacuum system**
   a. Single, split flow air-cooled Pfeiffer Vacuum turbomolecular pump evacuating the source and analyzer
   b. One Leybold Sogevac SV40BI rotary backing pump.

8. **Software**
   a. Mass Lynx 4.1
   b. MassLynx includes OpenLynx™ and QuanLynx™ Application Managers as standard.

9. **Dimensions**
   a. Width: 35.6 cm (14.0 in.)
   b. Height: 53.3 cm (21.0 in.)
   c. Depth: 84.8 cm (33.5 in.)

10. **Regulatory approvals**
    IVD, NRTL, and CE

PERFORMANCE SPECIFICATIONS

1. **Acquisition modes**
   a. Full scan MS (MS1 or MS2)
   b. Selected ion recording (SIR)
   c. Product ion scan
   d. Precursor ion scan
   e. Constant neutral loss/gain
   f. Multiple reaction monitoring (MRM)

2. **Mass range**
   2 to 2000 m/z

3. **Scan speed**
   Up to 10,000 Daltons/sec

4. **Mass stability**
   <0.1Daltons over 8 hr

5. **Linearity of response**
   The linearity of response relative to sample concentration, for a specified compound, is five orders of magnitude from the limit of detection.

6. **Polarity switching**
   <=20 ms switching time between positive and negative ion modes without significant degradation in data quality.

7. **MRM acquisition cycle time**
   Minimum dwell time of 5 ms per channel. Minimum inter-channel and inter-scan delays of 5 ms. Functions can be configured in retention windows, including mixed mode and overlapping, to optimize cycle time for each analyte.

8. **Inter-channel cross talk**
   The inter-channel cross talk between two MRM transitions, acquired using an MRM dwell time of 10 ms and an inter-channel delay time of 10 ms, will be fewer than

0.02%.

9. **Mass resolution**
   Tunable manually or automatically (IntelliStart) to desired resolution. The valley between the 2034.63 Da and 2035.63 Da peaks is <12% of the average height of the two peaks.

10. **RM sensitivity (ESI+)**
    For a direct loop injection of reserpine (5 pg) at a flow rate of 200 µL/min the chromatographic signal to noise for the transition 609>195 m/z will be greater than 1000:1.

11. **RM sensitivity (ESI-)**
    For a direct loop injection of chloramphenicol (5 pg) at a flow rate of 200 µL/min, the chromatographic signal-to-noise ratio for the transition 321 > 152 m/z will be greater than 180:1.

12. **RM sensitivity (APCI+)**
    For a direct loop injection of 17-á-hydroxyprogesterone (100 pg) at a flow rate of 1 mL/min, the chromatographic signal-to-noise ratio for the transition 331 > 109 m/z will be greater than 150:1.

13. **MRM Signal to noise definition**
    Signal is defined as the height of the chromatographic peak of interest and noise is defined as the RMS of a continuous section of the mass chromatogram.

UPLC-MS/MS Workstation and Software

1. **General Software Specifications**
   a. Software must accommodate simultaneous positive and negative ion data during a single UPLC/MS/MS chromatographic run
   b. Software must allow for switching of cone voltage and collision energy on a per function basis during a single UPLC/MS/MS chromatographic run
   c. Software must support automatic tuning for automated MS/MS setup
   d. Software must support automated MS/MS tuning for analytical components
   e. Software must suppors automated monitoring of instrument vacuum, gas flows, and voltages to warn the user of out of tolerance parameters

2. **Target Compound Software, or equivalent**
   a. System must include the **Target Lynx** software package, or equivalent for positive identification of targeted compounds, including the following confirmatory checks:

-Analytes above a Maximum Reporting Level (MRM)
-Analyte confirmatory ion ratios are outside specified limits
-One or more analyte signal-to-noise ratios are below a defined value
-An analyte retention time or relative retention time is outside limits
-An analyte concentration is below set LOD and LQD thresholds
-The standard deviation of response for QC standards exceeds a defined value
-The blank response is too high

-The coefficient of determination (r^2) of the calibration curve exceeds a defined Value

b. System must include a library for Toxicology screening, and a project with all files necessary for the acquisition (tune page, UPLC method, MRM method) and processing for target compounds using Target Lynx software
c. Automatic Adjustment of Ion Ratios: the software must be able to compensate for variation in ion ratios, typically due to changes in tuning conditions, for a specified compound. By including a reference standard in the sample sequence the expected ion ratios for the target compounds and succeeding samples must be automatically adjusted to match the ratios for the target compounds in the reference standard, so that manual adjustment of ion ratios is not required upon retuning of the instrument.
d. Cross compound calibration curves: the software must allow calibration curves to be applied to additional compounds in an analysis mixture for which standards or curves do not exist.

3. **Workstation Hardware**
System must have an Intel Core 2 Duo E6400 processor or equivalent operating at 2.13 MHz or faster. Operating system: Windows XP Professional SP2. System Warranty: Three Years Onsite for PC hardware.

System Warranty:

1. **UPLC/MS/MS Warranty Coverage**
All UPLC and MS/MS components and hardware must be covered by a one year on-site repair service.
2. **Workstation Warranty**
Computer workstation and monitor must be covered by a three year on-site warranty service

Additional Requirements:

1. Delivery and installation of hardware and software must be within 90 days of the approved purchase order.
2. Software familiarization must be performed at installation to the West Virginia State Police staff.
3. Vendor must supply all available MS/MS libraries – toxicology, drug, and pesticide.
4. Training of West Virginia State Police personnel must include 2 days of custom on-site training to be provided within 4 weeks after installation of equipment at the expense of the vendor. Training will incorporate West Virginia State Police staff and will take place at the West Virginia State Police Toxicology laboratory located at 725 Jefferson Road, South Charleston, WV 25309.
5. Due to space constraints, LC and MS footprint must not exceed 30 inches.

Cost Sheet

Bidders shall provide a cost for the following:

Waters Product Name	Waters Item #	Quantity	Cost
TQD Tandem Quadrupole MS/MS	176001263	1	$249,715.33
Mass Lynx 4.1, M55 & XP TQD	176001255	1	Included Above
Cord Kit USA	205000414	1	Included Above
Acquity UPLC Column heater solvent manager sample manager	176015000	1	Included Above
Acquity BEH C18 column 3 pack	176000864	1	Included Above
Rotary Roughing Pump	186003887	1	Included Above
TargetLynx V4.1	176001086	1	Included Above
Acquity UPLC PDA Detector	176015026	1	Included Above
20" Flat Panel Monitor	668000273	1	Included Above

TOTAL $ 249,715.33

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

State of West Virginia RFQ NO. DPS0926

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: Waters Corporation **Signed:** [signature]

Date: 2/3/2009 **Title:** Bid Specialist

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

RFQ No. DPS0926

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:
West Virginia Code §5A-3-10a provides that: 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.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:
If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the ***West Virginia Code***. The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the ***West Virginia Code*** and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the ***West Virginia Code*** may take place before their work on the public improvement is begun.

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 materials, 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.

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, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, 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.

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.

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.

Vendor's Name: Waters Corporation

Authorized Signature: _____ Date: 2/3/2009

John Abbott
STATE OF WEST VIRGINIA
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25311

Waters

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Quotation

www.waters.com

DATE: 02/03/2009
WATERS QUOTE #: 20340288
EXPIRATION DATE: 04/04/2009
DELIVERY: 60 Days

FREIGHT TERMS:
FOB DESTINATION
ABSORBED BIDS
PAYMENT TERMS:
NET 30 DAYS

USER TEL: 304 558 2544
FAX: N/A
EMAIL: N/A
RFQ#DPS0926 Due 2/4/2009

PLEASE REFERENCE THIS QUOTATION WHEN PURCHASE ORDER IS ISSUED

PRODUCT #	QTY	DESCRIPTION		UNIT PRICE	EXTENDED PRICE
1. 176850019	1	WATERS TQ DETECTOR		341,228.00	
			Discount	-96,567.52	
			Net Price	244,660.48	244,660.48

Includes the following components

176001263 1 Waters TQ Detector
The Waters TQ Detector is a compact, benchtop tandem quadrupole API mass spectrometer.
The system features new automated set-up technology and fast acquisition capability for simple, rapid LC/MS/MS.
The following items are included as part of the standard system:
Z SPRAYTM API interface.Dual orthogonal interface for robust LC/MS
IntelliStartTM fluidics.Automated tuning,
calibration and method development
Electrospray (ESI) inlet probe.for efficient ionisation of a wide range of compounds
ESCITM ionisation capability.rapid switching source for both ESI and APCI in the same run.
1. ZSpray API INTERFACE
Atmospheric pressure ionisation (API) LC interface including:
One easily dismountable ion source enclosure.
Cone gas facility for chemical noise reduction.
Electronic mass flow meters for drying gas and cone gas.
Tool free cone removal
Source isolation valve
Micrometer probe positioning
The source and spraying elements are visible through a transparent enclosure and are easily accessible via a
quick-release door. The source elements may be wiped clean in situ or removed for cleaning without the need for tools
and without breaking vacuum. The nebulized spray is orientated orthogonally and positioned off axis for maximum
source longevity and analyser protection against 'dirty' samples. The source also includes facilities for declustering
ions formed at atmospheric pressure. Positive and negative capability is included. All source voltages and gases are
under data system control.
IntelliStart fluidics: The system comprises an on-board infusion system capable of delivering solutions from 2 built-in
vial locations to aid tuning, calibration and method development. The solutions are delivered via a switching valve for
direct infusion to the probe or combined into an LC flow. The valve can be programmed from the software to function as a
divert valve. The fluidics can be controlled manually via the system Console or automatically as part of the
IntelliStart system check software.
2. TANDEM QUADRUPOLE ANALYSER
2x High performance quadrupole analysers with inter-element beam focusing and a mass range of 2-2000 amu.
Pre-filters maximise resolution and transmission especially at high mass and also to eliminate main filter cleaning.
All lens and analyser voltages are digitally controlled and recorded.

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PRODUCT #	QTY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
		Analyser parameters may be programmed with respect to mass for optimal performance. 3. T-WAVE COLLISION CELL High efficiency gas cell for collision induced dissociation. Programmable software control of collision energy and gas pressure, including experimental record. The Travelling Wave (T-Wave) device enables rapid cell clearance and refill for fast MRM transition switching while maintaining optimum signal to noise. 4. VACUUM SYSTEM Clean, differentially pumped, automated vacuum system comprising: Air-cooled Pfeiffer splitflow turbomolecular drag pump evacuating both the source & analyser. Vacuum read backs and system vent/pump cycles are digitally monitored and controlled, to provide total software control and ensure fail-safe operation in the event of power failure. And One Leybold rotary pump for backing of the turbo pump, (to be ordered separately 186003887). 5. DETECTOR Dynolite photomultiplier detector. A High Voltage conversion dynode and phosphor are positioned at 90° off-axis to the analyser for the elimination of neutral noise. The photomultiplier is enclosed in its own vacuum envelope for long life. The detector operates in both positive and negative ion modes, and can switch rapidly under software digital control.		
205000414	1	KIT, MAINS CORDS, US		
186003887	1	Assy Vacuum Roughing Leybold rotary pump for backing of the turbo pump		
176001255	1	MassLynx 4.1,M57p XP for Waters TQ MassLynx 4.1 Application Software Multi-tasking suite of analytical applications and instrument management software operating in Microsoft Windows environment. MassLynx includes: Mass Spectrometer Control Software a) Data acquisition formats. Scan data can be acquired to file in the following formats: Centroided data acquisition. Profile data acquisition. Multi Channel Analysis (MCA) data acquisition. b) MS and MS-MS acquisition functions. The following data acquisition functions are available: MS scanning. MS selected ion recording. MS-MS precursor ion scanning (parents). MS-MS product ion scanning (daughters). MS-MS neutral loss/gain scanning. MS-MS multiple reaction monitoring. Data directed switching (automated MS to MS-MS scan function switching). Polarity mode switching. Ionisation mode switching (ESCi) External contact start/stop/events. Analogue channel acquisition via a SATIN module. c) Tuning Utilities. The system features easy-to-use automated and manual tuning and calibration software tools. Tuning parameters include:		

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Ionisation mode and polarity.
MS & MS/MS acquisition.
All ion source parameters.
All lens voltages.
MS1 and MS2 resolution.
MS1 and MS2 ion energy.
Photo-multiplier gain.
d) Inlet Control Software
Integrated control of specific Waters LC, autosampler and detector systems
Third party LC and autosampler systems from specified vendors
e) Data processing and review:
Spectrum Review and Processing
Chromatogram Review and Processing
3-D Contour plotting
Spectral library search facilities (user defined or commercial libraries)
Batch processing of qualitative and quantitative sample sets:
OpenLynx Application Manager
OpenLynx Processing provides summary reports for groups of samples.
OpenLynx methods may be configured to include:
1) Analytes found/not found.
2) Purity,
3) Probable elemental composition (with Exact Mass Measurement Instrumentation),
4) Chromatograms,
5) Spectra. OpenLynx reports are portable and may be viewed (read-only) with optional Browser utility without MassLynx software.
QuanLynx Application Manager
QuanLynx provides quantification of MassLynx data. QuanLynx quickly processes groups of samples, providing automated peak detection, calibration and quantification. The QuanLynx Report provides facile online data review and report printing. QuanLynx operates within the MassLynx security system (where enabled); it includes tools to enable compliance with the FDA.s guidelines on electronic records and electronic signatures (21 CFR Part 11). QuanLynx reports are portable and may be reviewed with optional Browser utility without MassLynx software.
The MassLynx Security Subsystem (where installed) provides a compliant-ready solution for US FDA GxP and 21 CFR 11 and other regulations.
License to operate software on one workstation.
MassLynx Security, when installed, provides a compliant-ready solution for US FDA GxP and 21 CFR 11 and other regulations.
QuanLynx & TargetLynx are compliant-ready and include tools to enable compliance with the FDA's guidelines on electronic records and electronic signatures.
Other MassLynx Application Managers are compatible with MassLynx security but are not compliant-ready.
Lenovo ThinkCentre M57p E6750 with Windows XP Professional
Processor: Intel Core 2 Duo E6750 Processor (2.66 GHz 1333 MHz FSB 4MB L2); Operating system: Windows XP Professional;
Form factor: Tower; Motherboard: Intel Q35 Chipset; Total memory: 2 GB

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PRODUCT #	QTY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
		PC2-5300 SDRAM (2 DIMMs); Maximum memory: 8GB; Video adapter: Intel GMA 3100 (integrated); Audio adapter: ADI 1882 HD Audio CODEC; First hard drive bay: 250GB HDD, 7200RPM Serial ATA; Second hard drive bay: None; Diskette drive: Floppy Disk Drive; First optical device bay: DVD MultiBurner Plus; Networking: Integrated Intel Gigabit Ethernet; Keyboard: Preferred Pro Full-size Keyboard (Stealth Black) - US Euro; Pointing device: Optical USB wheel mouse; System Warranty: Four Years Onsite International; Warranty with Non-HDD Return; Expansion: 2 * PCI, 1 * PCI Expressx1, 1* PCI Expressx16; Ports: 1 Parallel, 1 * Serial, External microphone, External Display, Headphone, Line in, Line out, 8 USB 2.0 (2 front, 6 back); Additional Software: IBM RecordNow; Additional Network card: PCI Express 1x NetXtreme Gigabit Ethernet; National Instruments GPIB controller card; Monitor: None; Printer: None		
668000273	1	20" Flat Panel Monitor		
		MassLynx Software Options		
176001086	1	TargetLynx The TargetLynx Application Manager is designed for target quantification. It includes all the functionality available in QuanLynx plus comprehensive quality control (QC) features. The identification of target analytes is assured based on user-defined ion ratios. Quality limits are user definable; data failing to meet the defined criteria are automatically flagged. In addition TargetLynx highlights significant results where either the 'surveillance' reporting level or action level is exceeded. QC parameters available include: Up to six ion ratios with automated batch to batch up-date. Retention time tolerance with automated batch to batch up-date. Signal to noise ratio. % recovery calculation. Calculation of variation in response factor. TargetLynx fulfills analyte confirmation requirements in food analysis when analyzing for regulated pesticide or antibiotic residues. Additionally, TargetLynx is well suited to dioxin assays.		
		ACQUITY UPLC System		
176015000	1	ACQUITY UPLC Core System. 1. Waters ACQUITY Ultra Performance LC Systems have been holistically designed to control and optimize all the parameters required to take full advantage of the benefits of UPLC in today's laboratory. The ACQUITY UPLC Core System forms the basis for all UPLC systems. The ACQUITY UPLC System is an integrated solvent and sample management UPLC instrument configured for binary solvent delivery and sample introduction. The system may be configured for a broad range of applications supported by UPLC optical and mass spectrometry detectors,		

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	PRODUCT #	QTY	DESCRIPTION		UNIT PRICE	EXTENDED PRICE
			with a choice of instrument control and data management software. The following items are included as part of the core system: - ACQUITY UPLC Binary Solvent Manager - ACQUITY UPLC Sample Manager w/High Temperature Column Heater Module - ACQUITY UPLC Solvent Tray Module - ACQUITY UPLC System Test Mix - ACQUITY UPLC System Test Column 2. 2. Connections INSIGHT valued at $995, is provided at no charge during the first year. 3. Two hours application consultation with Waters Chemistry Specialist valued at $750 is provided at no charge during the first year.			
	176015026	1	ACQUITY UPLC PDA (Photodiode Array) Detector with Analytical Cell and Leak Sensor.			
			ACQUITY UPLC Columns			
	176000864	1	ACQUITY UPLC BEH C18 1.7μm 2.1x100mm 3pk			
			Installation and Training			
	741000321	1	Waters TQ Detector MS System Installation Includes: -System Set up and Specification Testing -Product Familiarization Training -1 Year Manufacturers Warranty - Insight Remote Intelligent Services			
2.	750000362	1	2 Day on-site Field Apps Ed (2 days)		7,050.00	
				Discount	-1,995.15	
				Net Price	5,054.85	5,054.85
3.	667003661	1	Kit, ACQUITY TQD Toxicology: STA		0.10	
				Discount	-0.10	
				Net Price	0.00	0.00
4.	667003663	1	Kit,ACQUITY TQD Toxicology: Targeted		0.10	
				Discount	-0.10	
				Net Price	0.00	0.00

QUOTE TOTAL USD 249,715.33

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PRODUCT #	QTY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE

To place an order for the products and services on this quotation, please fax your hard copy purchase order to: 508-482-8532 or 508-482-8834.

You may also send your hard copy purchase order to the following email address in the form of a PDF document: waters_quotes@waters.com

To place a telephone order, contact Waters Sales Support at 1-800-252-4752 x8023

Questions regarding this quotation should be directed to your local
Waters Technical Sales Representative: Larry Cadle 1-800-252-4752 Ext. 6272
Larry_Cadle@Waters.com

Sales Support Representative
Waters Corporation
DRU

THIS TRANSACTION IS EXPRESSLY CONDITIONED UPON AND SUBJECT TO ALL OF THE FOLLOWING TERMS AND CONDITIONS:

1. Acceptance - Buyer's acceptance of the offer to purchase the products and/or services set forth on the front page made by Waters Technologies Corporation d/b/a Waters Corporation (Waters) of this quotation shall create a contract subject to and expressly limited by the terms and conditions contained on this form. Acceptance of this quotation may only be made on the exact terms and conditions set forth on this quotation; if additional or different terms are proposed by Buyer, such additional or different terms shall not become a part of the contract formed by Buyer's acceptance of the quotation. Receipt of the products sold hereunder or commencement of the services provided hereunder shall be deemed acceptance of the terms and conditions of this quotation.

2. Taxes and Payment - Any tax, duty, custom or other fee of any nature imposed upon this transaction by any federal, state or local governmental authority shall be paid by Buyer in addition to the price quoted. In the event Waters is required to prepay any such tax or fee, Buyer will reimburse Waters. Payment terms shall be net thirty (30) days after shipment and are subject to credit approval. An interest charge equal to 1 1/2% per month (18% per year) will be added to quotations outstanding beyond 30 days after shipment. In addition, Waters reserves the right, in its sole discretion, to require C.O.D. payment terms from any Buyer. Waters may also refuse to sell to any person until all prior overdue accounts are paid in full.

3. Delivery and Shipment - Delivery terms shall be F.O.B. Waters shipping point; identification of the products shall occur when they leave Waters shipping point at which time title and risk of loss shall pass to Buyer. All shipment costs shall be paid by Buyer and if prepaid by Waters the amount thereof shall be reimbursed to Waters. Waters will make reasonable commercial efforts to ship the products or provide the services hereunder in accordance with the delivery date set forth on the reverse side hereof provided, that Waters accepts no liability for any losses or for general, indirect special or consequential damages arising out of delays in delivery.

4. Warranty - The products and/or services shall be covered by the applicable Waters standard warranty, a copy of which is supplied with the products and/or services or upon request. NO OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, IS MADE WITH RESPECT TO THE PRODUCTS AND/OR SERVICES. WATERS EXPRESSLY EXCLUDES THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. Any model or sample furnished to the Buyer is merely illustrative of the general types and quality of goods and does not represent that the products will conform to the model or sample. Buyer's remedies under Waters warranty shall be limited to repair or replacement of the product or component which failed to conform to Waters applicable standard warranty. WATERS SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL OR ANY OTHER INDIRECT DAMAGES RESULTING FROM ECONOMIC LOSS OR PROPERTY DAMAGE SUSTAINED BY BUYER FROM THE USE OF ITS PRODUCTS OR SERVICES.

5. Returned Goods - Waters may, in its sole discretion, authorizeproduct returns in appropriate circumstances, subject to such conditions as Waters may specify. Any such return shall be subject to the express prior authorization of Waters and payment by Buyer of a restocking charge. No returns will be authorized after one hundred twenty (120) days following shipment to Buyer.

6. Technical Advice - Waters may, at Buyer's request furnish technical assistance, advice and information with respect to the products if and to the extent that such advice, assistance and information is conveniently available. It is expressly agreed that there is no obligation to provide such information, which is provided without charge at the Buyer's risk, and which is PROVIDED WITHOUT WARRANTY OF ANY KIND AND IS SUBJECT TO THE WARRANTY DISCLAIMERS AND LIMITATION OF LIABILITY SET FORTH IN PARAGRAPH 4.

7. Waters Right of Possession, etc. - Buyer hereby grants Waters a purchase money security interest in the goods offered by this quotation to secure the due and punctual payment of the purchase price specified in this quotation. In the event of default by Buyer in any payment due Waters, Waters shall have the right, in addition to any other remedies it may have at law or in equity, to withhold shipment, to recall goods in transit and retake the same, to repossess any goods which may be stored with Waters for Buyer's account without the necessity of Waters initiating any other proceedings. In addition, Waters shall have all of the rights and remedies of a secured party under the Massachusetts Uniform Commercial Code and may exercise all such rights and remedies in accordance therewith. Buyer shall execute such documents as Waters may request to effectuate the foregoing security interest.

8. Agents, etc. - No agent, employee or other representative has the right to modify or expand Waters standard warranty applicable to the products and/or services or to make any representations as to the products other than those set forth in the applicable user or operator's guide delivered with the products, and any such affirmation, representation or warranty, if made, should not be relied upon by Buyer and shall not form a part of contract between Waters and Buyer for the purchase of the products or services.

9. Fair Labor Standards - The products or services provided hereunder were produced and/or performed in compliance with the requirements of all sections of the Fair Labor Standards Act of 1938 as amended.

10. Equal Employment - Waters is an Equal Opportunity Employer. It does not discriminate in any phase of the employment process against any person because of race, color, creed, religion, national origin, sex, age, veteran or handicapped status.

11. Modifications, Waiver, Termination - The contract formed by Buyer's acceptance of this quotation may be modified and any breach thereunder may be waived only by a written and signed document by the party against whom enforcement thereof is sought.

12. Governing Law - The contract formed by Buyer's acceptance of this quotation shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, U.S.A.

13. Compliance with Laws - Buyer shall at all times comply with all applicable federal, state and local laws and regulations, including, without limitation, the provisions of the United States Export Control Laws as may be in effect for any of the products or services, and, if products or services hereunder are used in clinical applications, all applicable rules and regulations of the United States Food andDrug Administration and/or other domestic or international agencies with respect to the application of, as the case may be, Good Clinical Practices ("GCP"), Good Laboratory Practices ("GLP") or good Manufacturing Practices ("GMP").

14. Additional Terms and Conditions - This quotation is also subject to any Waters Special Terms and Conditions applicable to the products or services offered by this quotation, which appear on the front of this quotation. Any variance from the terms and conditions of this quotation in any order or other written notification from Buyer, will be of no effect. Should Buyer order products or services through a Waters office located outside of the United States, the terms and conditions of the quotation issued by the office outside of the United States shall govern such order.

15. Arbitration - Any and all disputes or controversies arising in connection with the contract formed by Buyer's acceptance of this quotation or the sale of products and/or performance of the services shall be resolved by final and binding arbitration in Boston, Massachusetts, under the rules of the American Arbitration Association then obtaining. The arbitrators shall have no power to add to, subtract from or modify any of these terms or conditions of this contract. Any award rendered in such arbitration may be enforced by either party in either the courts of the Commonwealth of Massachusetts or in the United States District Court for the District of Massachusetts, to whose jurisdiction for such purposes Waters and Buyer each hereby irrevocably consents and submits.

16. Software - To the extent there is any software included with the products, the software is being licensed, not sold and all rights, title and interest therein shall remain with Waters. Use of the software shall be in accordance with the applicable software license delivered with the products. U.S. Government Restricted Rights - RESTRICTED RIGHTS LEGEND. Use, duplication or disclosure by the Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 or subparagraphs (c)(1) and (2) of the Commercial Computer Software - Restricted Rights clause at 48 CFR 52.227-19, as applicable.

17. Force Majeure - Waters shall have no liability for failure toperform, or delay in performance, in the delivery of any and all equipment manufactured or sold by Waters including instruments, supplies, components, systems, chemistry, accessories, replacement spare parts, or any and all services provided by Waters, caused by circumstances beyond its reasonable control including, but not limited to, acts of God, acts of nature, floods, fire, explosions, war or military mobilization, United States governmental action or inaction, request of governmental authority, delays of any kind in transportation or inability to obtain material or equipment, acts of other governments, strikes, or labor disturbances.

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TQ DETECTOR

The Waters® TQ detector is a compact, benchtop, tandem quadrupole mass spectrometer designed for UPLC®/MS/MS when configured as an ACQUITY™ TQD system. The TQ detector provides a simple, robust platform for quantitative LC/MS/MS enabled by hi-speed MRM (Multiple Reaction Monitoring) and ESCi® multimode ionization. The system also incorporates IntelliStart™ technology for automated system optimization and status monitoring. This ensures high quality data is routinely available to all levels of operators. The system is available on either MassLynx™ or Empower™ 2 software.

SYSTEM SPECIFICATIONS

IntelliStart technology	System parameter checking and alerts Integrated sample/calibrant delivery system & programmable divert valve Automated mass calibration Automated sample tuning Automated SIR and MRM method development LC/MS System Check – automated on-column performance test
API source	ZSpray™ dual-orthogonal source for robust sampling Vacuum isolation valve Tool-free sampling cone removal Plug and play probes De-clustering cone gas Software control of all gas flows
Ionization modes	Electrospray – included as standard ESCi multimode ionization – included as standard IonSABRE™ APCI – option Dual APCI/APPI – option
Ion source transfer optics	High efficiency hexapole ion guide
Mass analyzer	Two high resolution quadrupole analyzers (MS1/MS2), plus pre-filters to maximize resolution and transmission while preventing contamination of the main analyzers.
Collision cell	T-Wave™ collision cell for optimum ion transfer and confinement, allowing fast MS/MS acquisition. Software programmable gas flow.
Detector	Low noise, off axis, long life photomultiplier detector Digital dynamic range up to 4×10^6
Vacuum system	Single, split flow air-cooled Pfeiffer Vacuum turbomolecular pump evacuating the source and analyzer. One Leybold Sogevac SV40BI rotary backing pump.
Software	Systems are supported on both Empower 2 and MassLynx 4.1 software or later. MassLynx includes OpenLynx™ and QuanLynx™ Application Managers as standard.
Dimensions	Width: 35.6 cm (14.0 in.) Height: 53.3 cm (21.0 in.) Depth: 84.8 cm (33.5 in.)
Regulatory approvals	IVD, NRTL, and CE

[INSTRUMENT SPECIFICATIONS]

PERFORMANCE SPECIFICATIONS

Acquisition modes	Full scan MS (MS1 or MS2) Selected ion recording (SIR) Product ion scan Precursor ion scan Constant neutral loss/gain Multiple reaction monitoring (MRM)
Mass range	2 to 2000 m/z
Scan speed	Up to 10,000 Da/s
Mass stability	<0.1Da over 8 hr
Linearity of response	The linearity of response relative to sample concentration, for a specified compound, is five orders of magnitude from the limit of detection.
Polarity switching	20 ms
MRM acquisition cycle time	Minimum dwell time of 5 ms per channel. Minimum inter-channel and inter-scan delays of 5 ms. Functions can be configured in retention windows, including mixed mode and overlapping, to optimize cycle time for each analyte.
Inter-channel cross talk	The inter-channel cross talk between two MRM transitions, acquired using an MRM dwell time of 10 ms and an inter-channel delay time of 10 ms, will be fewer than 0.02%.
Mass resolution	Tunable manually or automatically (IntelliStart) to desired resolution. The valley between the 2034.63 Da and 2035.63 Da peaks is <12% of the average height of the two peaks.
MRM sensitivity (ESI+)	For a direct loop injection of reserpine (5 pg) at a flow rate of 200 µL/min the chromatographic signal to noise for the transition 609>195 m/z will be greater than 1000:1.
MRM sensitivity (ESI-)	For a direct loop injection of chloramphenicol (5 pg) at a flow rate of 200 µL/min the chromato graphic signal to noise for the transition 609>195 m/z will be greater than 180:1.
MRM sensitivity (APCI+)	For a direct loop injection of 17-α-hydroxyprogesterone (100 pg) at a flow rate of 1 mL/min the chromatographic signal to noise for the transition 609>195 m/z will be greater than 150:1.
MRM Signal to noise definition	Signal is defined as the height of the chromatographic peak of interest and noise is defined as the RMS of a continuous section of the mass chromatogram.

It should be noted that the above are not standard installation specifications. All TQ detector instruments will be installed and tested in accordance with standard performance tests as detailed in Waters document 715001460. Test criteria are routinely reviewed to ensure quality is maintained and are therefore subject to change without notice. See Site Preparation guide and Product Release Notes for additional product and specification information.

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F: 1 508 872 1990
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[ACQUITY TQD WITH THE TQ DETECTOR]
NEXT-GENERATION LC/MS/MS FOR UNPRECEDENTED PRODUCTIVITY AND EASE.
TQ Detector
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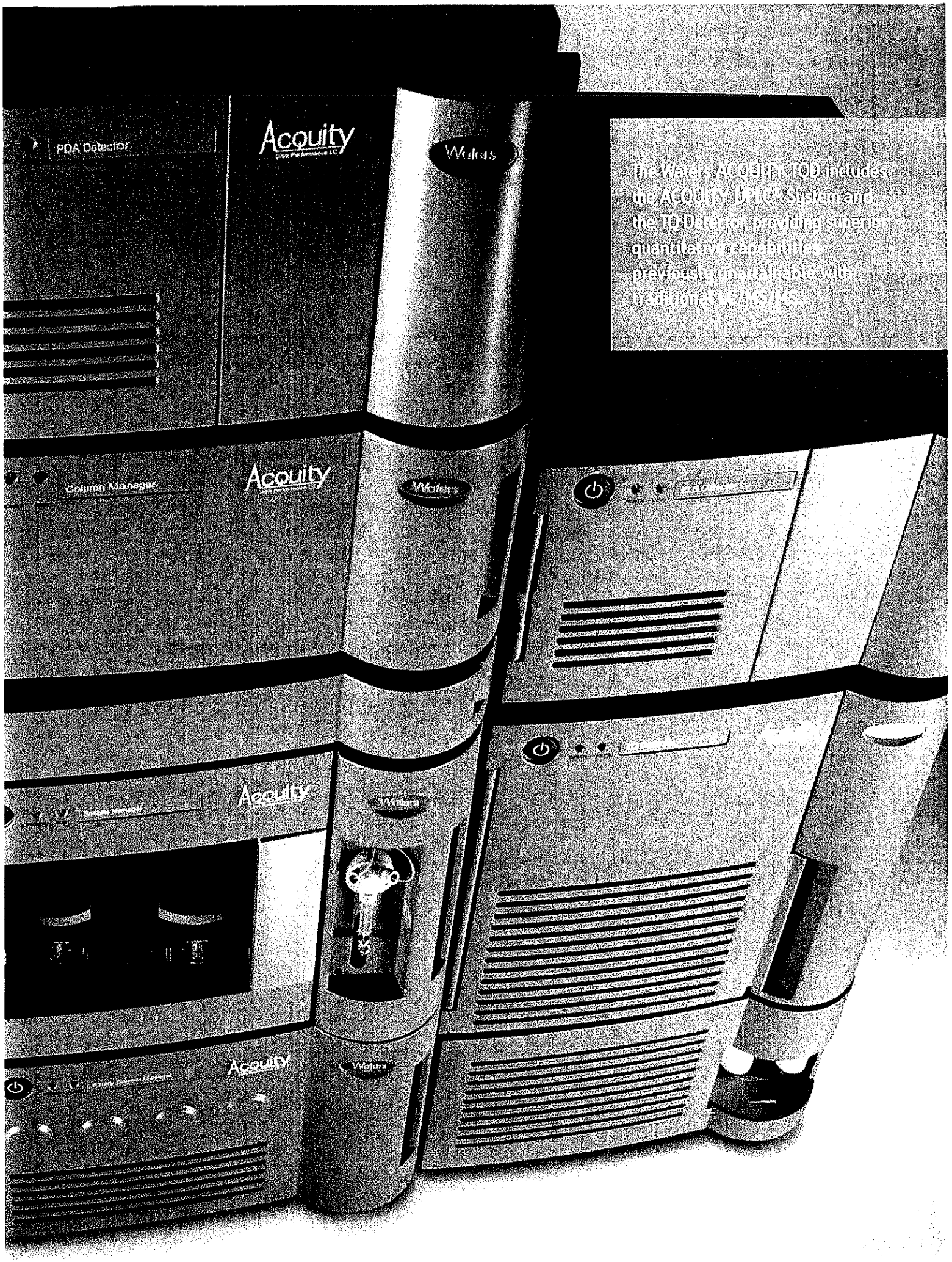
THE SCIENCE OF WHAT'S POSSIBLE.™

RAPID QUANTITATION WITH UPLC/MS/MS.

Maximize throughput and minimize downtime with the ACQUITY TQD.

At Waters, the leader in innovations for chromatography and mass spectrometry, we know you are challenged every day to get more information from your analytical data; to maximize throughput and minimize downtime. ■ Our next generation of ACQUITY® mass spectrometric detection leverages the power of UltraPerformance LC® to give you the high-quality analytical information you need – without complicated operation, time-consuming troubleshooting and upkeep, or bulky instrumentation. ■ The Waters® ACQUITY TQD offers a simple LC/MS/MS system solution for fast-paced, multi-user laboratory environments. ■ You can rely on robust and reliable performance as well as walk-up operation for any level of expertise. ■ You get superior quantitative results, quickly and easily, every time. ■ All from the solutions provider you know and trust.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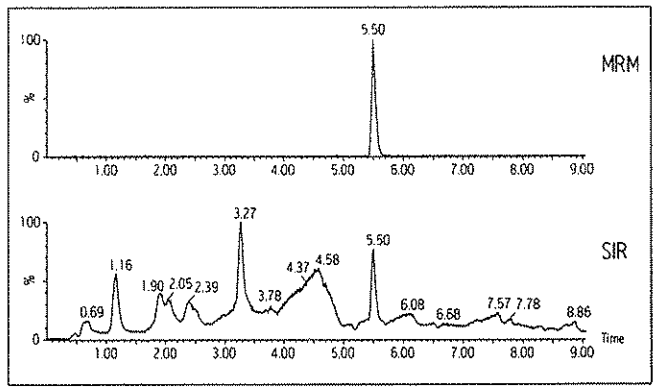
MS/MS FOR THE MASSES

As analyzing pharmaceutical, food, clinical, chemical, and environmental samples becomes more challenging, matrices become more complex. Concentration levels widen and high throughput becomes the norm; LC/MS detection techniques are becoming increasingly inefficient.

Liquid chromatography, when combined with tandem quadrupole mass spectrometry (LC/MS/MS), allows you to obtain accurate quantitative information that increases confidence in your results. With the ACQUITY TQD, you can vastly expand the scope of your analytical capabilities – all with enhanced selectivity, sensitivity, and linearity. With the power of analytical information, you are able to quickly and easily quantify and confirm trace components in complex matrices with speed and accuracy.

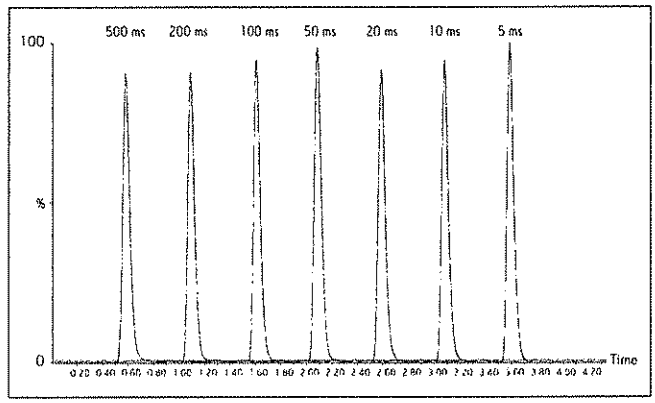


Multiple Reaction Monitoring (MRM) with the ACQUITY TQD adds selectivity to quantitative analyses in complex matrices, lowering LoQs.

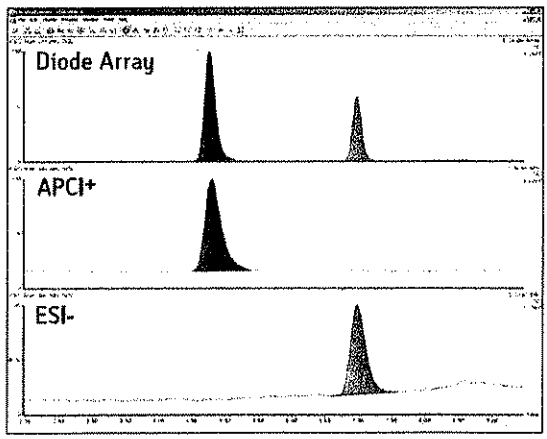
UPLC/MS/MS – MAXIMIZE PRODUCTIVITY

The ACQUITY TQD delivers comprehensive, system-level productivity. The TQ Detector's fast acquisition capabilities are complemented by a full suite of ACQUITY UPLC technologies – hardware, software, columns, and chemistries – designed to work together to give you more than you've ever experienced from traditional LC/MS/MS systems. UPLC® employs novel small column particles, very low system volumes, and greater throughput to detect more peaks in faster runs – adding significant value to the power of the high-speed TQ Detector.

The results are narrow UPLC peaks and superb spectral quality for easy identification of all of the compounds in your sample. The detector is additionally able to cycle through ESCi®-enabled multiple ionization modes (ESI and APCI) and any combination of full scan, MRM, polarity switching, and T-Wave™[1] enabled high-speed MS/MS. With these all occurring within rapid UPLC run-time windows, the ACQUITY TQD is a highly efficient UPLC/MS/MS platform that is adaptable to a variety of applications. Your lab benefits with the ultimate in productivity and flexibility.



High-Speed Quantitation
Accurate quantitation of the narrow peaks widths typical of UPLC (two to three seconds) demands fast acquisition speeds to provide sufficient data points per peak. The use of a T-Wave collision cell provides maximum signal in MRM mode, even at dwell times as short as five milliseconds.

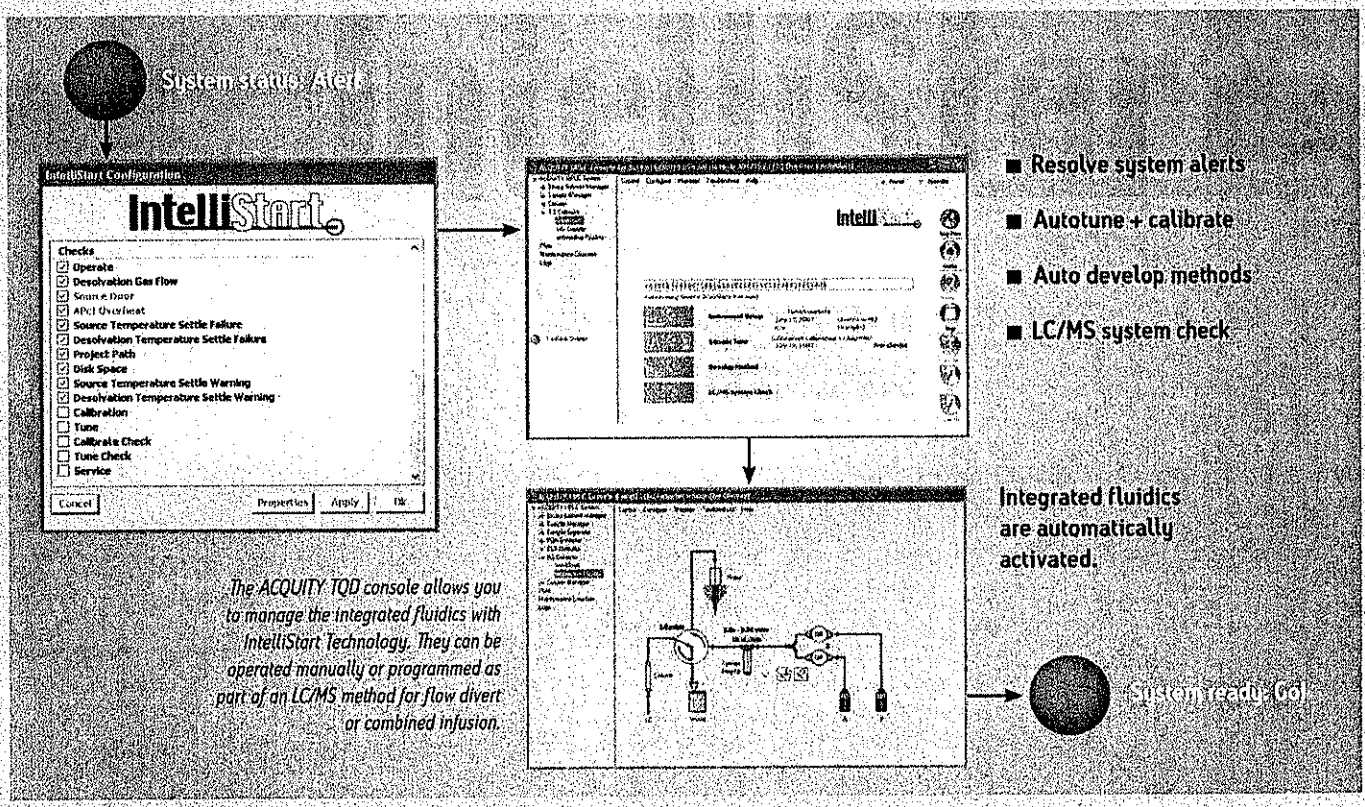


Multi-Mode Ionization
Collect APCI and ESI data in the same run using the ESCi multi-mode ionization source. Rapid polarity switching further enhances your system's versatility. Discrete data channels are recorded for each mode, enabling optimized method development and screening of multiple compound classes.

EASE-OF-USE: INTELLISTART

First-of-its-kind IntelliStart™ Technology automates system set-up. It enables users, who do not have extensive expertise with operating MS instruments, to acquire data with confidence that the system is operating with optimum performance.

An integrated system of fluidics, electronics, and software continually monitors system performance. Through a series of diagnostic checks, the system can report when it is ready for use. Any failures will result in a red-light warning that action may be required before analysis can proceed. IntelliStart enables system alerts to be flagged and automates routine tasks, including Autotune, Autocalibration, MRM Method Development, and LC/MS system performance check. These are driven by integrated system fluidics.



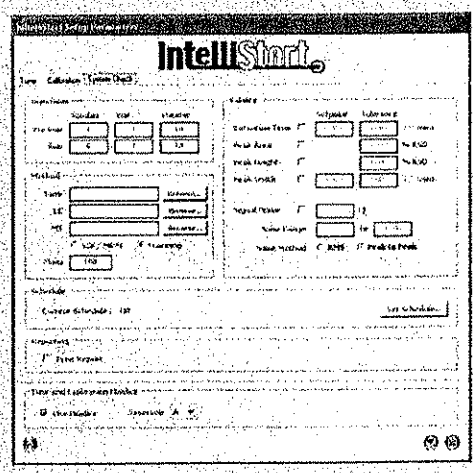
The ACQUITY TQD console allows you to manage the integrated fluidics with IntelliStart Technology. They can be operated manually or programmed as part of an LC/MS method for flow divert or combined infusion.

System performance confidence

IntelliStart Technology enables automated, routine reporting of total LC/MS/MS system performance.

Customizable LC/MS/MS methods allow the system to inject a diagnostic sample on-column. This helps the user identify any issues with the configured system by providing an automated report that indicates:

- Sensitivity (S/N)
- Response (peak area, peak height)
- Chromatographic performance (peak width, retention time)

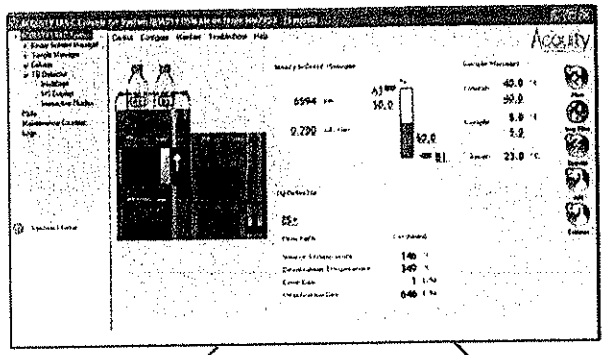


System Check can be easily customized for scheduled reporting on any specified compound and method.

ROBUST PRODUCTIVITY

- **IntelliStart Technology** – automated system set-up with integrated fluidics device gives the user the green light
- **ZSpray™ Interface** – industry leading, dual orthogonal LC/MS interface
- **T-Wave collision cell** – for UPLC compatibility
- **High-Speed MS/MS** – fastest MRM capability for rapid, accurate quantitation
- **ESCi Multi-Mode Ionization Source** – ESI and APCI in the same run
- **IonSABRE™ APCI source and APPI probe** – high performance probe options for chemical and photo ionization
- **Rapid polarity switch** – double productivity by acquiring both modes in the same run
- **Empower™ or MassLynx™ Software** – flexible software solutions to suit your environment
- **System integration** – fully designed as an integral component of the ACQUITY UPLC System solution
- **Connections INSIGHT® Intelligent Service** – proactive online service support

FLEXIBILITY: YOUR LABORATORY, YOUR CHOICE



ACQUITY TQD system console

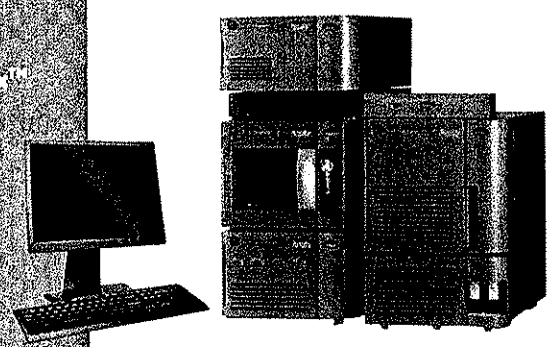
- Simple plug-in to Empower or MassLynx Software
- IntelliStart system set-up
- MRM method developer
- Connections INSIGHT
- System diagnostics
- System service history

MassLynx Software

- Flexible and sophisticated instrument control and data acquisition
- Batch quantification, QC checking, and rapid results review with dedicated Application Managers
- Automated system performance check and reporting
- Automated batch method development and analysis with QuanOptimize™ Application Manager
- Walk-up quantitation with the open access Application Manager for UPLC/MS/MS

Empower 2 Software

- Quick and easy storage and retrieval of UPLC/MS/MS data using an embedded relational database
- Scalable, modular architecture easily converts from a single workstation environment to an enterprise-wide system
- Built-in support for a data-secured regulatory laboratory environment
- Full system suitability reporting
- Method Validation Manager (MVM) for automation of the entire chromatographic method validation process, from planning experiments to generating final reports



WALK-UP MS/MS

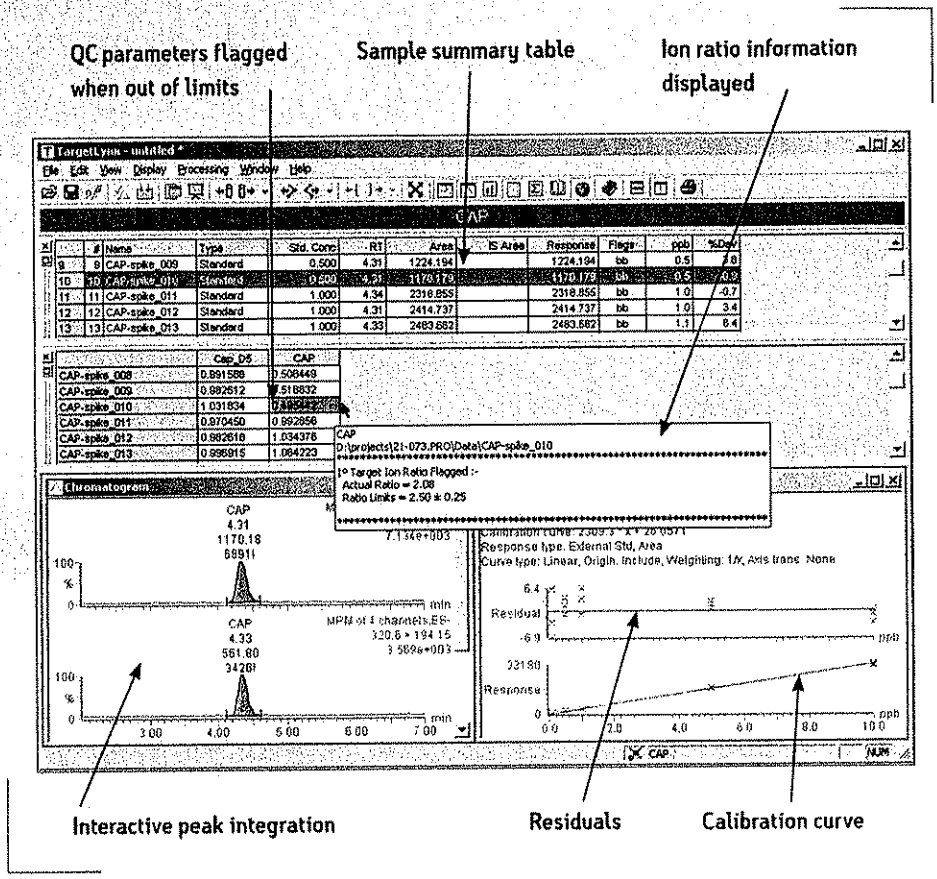
IntelliStart Technology makes it easy to acquire UPLC/MS/MS data with confidence. For those wanting to go a step further, complete open access MS and MS/MS quantitation are available. Develop methods for new compounds using the simple MRM method developer, or select a method for a known compound from the method library.

Open access quantitation uses the OpenLynx™ Application Manager sample login feature to enable chemists to simply walk up to the system and submit their compounds for analysis. Results are processed in QuanLynx™ Application Manager and can be emailed directly to the chemist, exported to LIMS, or presented as a printed report.

MassLynx Software

The ability to accurately and rapidly reduce raw data to useful information is as important as the analytical technology employed. MassLynx Software is available with a range of application-specific data processing tools to simplify raw data analysis.

- **QuanLynx Application Manager** provides accurate quantitative results from LC/MS/MS data and is a standard feature of MassLynx Software
- **TargetLynx™ Application Manager** offers advanced quantitation of target compounds, featuring automated QC checks and confirmatory ion measurements
- **QuanOptimize Application Manager** is a software plug-in that enables high-throughput LC/MS/MS method development and quantitation



In TargetLynx, automated QC checks flag results that are outside defined tolerances.

Laboratory informatics

Waters is committed to providing powerful software solutions for scientific data management, network integration, compliance management, and laboratory productivity.

- **NuGenesis® SDMS** – information management that stores and manages all scientific information
- **Analytical Workflow Manager software** – tracks all analytical lab tasks while providing fast and secure data handling

connections insight®

Connections INSIGHT is revolutionizing the way laboratory instruments are serviced, by using Intelligent Device Management technology to provide diagnostic information for the ACQUITY TQD. Through a secure internet connection, Connections INSIGHT creates a virtual and proactive support presence in your lab. It monitors your ACQUITY TQD's key performance parameters, enabling predictive system maintenance and helping you achieve greater productivity.

Connections INSIGHT is available at no additional cost for all UPLC systems covered under a Waters Total Assurance Warranty or Support Plan.

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Sweden 46 8 555 115 00

Switzerland 41 62 889 2030

Taiwan 886 2 2543 1898

UK 44 208 238 6100

US 1 800 252 4752

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References

1. The traveling wave device described here is similar to that described by Kirchner in US Patent 5,206,506 (1993).

Waters

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July 2007 720001767EN LB-CP

Waters® SQ Detector
Waters® TQ Detector

Site Preparation Guide

Notice

The information in this document is subject to change without notice and must not be construed as a commitment by Waters Corporation. Waters Corporation assumes no responsibility for any errors that may appear in this document. This guide is believed to be complete and accurate at the time of publication. In no event shall Waters Corporation be liable for incidental or consequential damages in connection with or arising from the use of this guide.

Table of Contents

Introduction

This document describes the recommended environmental conditions, power supplies and gas supplies that are required for the operation of the SQ and TQ Detectors. Operating the instrument in conformance with these conditions will enable the instrument to achieve its optimum performance. A list of samples and solvents required for installation is also included.

Responsibilities

A Waters engineer will be responsible for installing and commissioning the system to ensure that the instrument is correctly installed and is fully operational. The laboratory must be prepared in advance to allow the engineer to carry out the installation efficiently. A checklist is included at the end of this document for you to complete and return to Waters when the laboratory is ready for installation.

Important: The installation of the system cannot begin until the checklist has been completed and returned to the mass spectrometer sales support representative at your local Waters office.

The duration of the installation may vary, depending on the number of instrument options being installed. The site preparation checklist must be completed as accurately as possible to help minimize the installation time.

A major part of the system installation is a series of performance tests, which are used to evaluate the instrument under specific operating conditions. The actual test result obtained is recorded in the Installation Checklist, or Instrument Qualification Workbook, whichever is appropriate.

Important: To help train an intended operator in basic system operation, it is important that you schedule the installation so that the intended operator is present to assist with the installation performance tests.

If you have any questions regarding the information in this document, or experience any particular site problems, contact your local Waters sales representative. If necessary, we will arrange to perform a site survey

Storage

The following stowage conditions are required during shipping and prior to installation:

- unopened shipping crates
- crates stored away from heavy machinery such as compressors or generators, which generate excessive floor vibration
- storage area temperature -30 to 60 °C (-22 to 140 °F) and humidity 10% to 90%, non-condensing

Contact your local Waters representative if you need further advice regarding storage conditions.

Unpacking and Moving

The shipping crates containing the detector and any ancillary equipment must only be unpacked when a Waters engineer is present.

It is essential that the instrument is not bumped or jolted.

If the instrument needs to be transported across an uneven surface, the instrument must be carried on a forklift truck or trolley.

Doorways must be at least 0.6 m (24 in.) wide. Elevators and corridors (including corners) must be sufficiently wide for maneuvering of the instrument. Special handling arrangements may be necessary if access to the laboratory is via a staircase.

It is recommended that the system come to room temperature before powering on.

Lifting Equipment

The SQ Detector weighs approximately 58 kg (127 lbs). The TQ Detector weighs approximately 85.5 kg (189 lbs). A forklift truck or A-frame hoist is recommended for lifting and transporting the instrument.

The rotary pump weighs in excess of 40 kg (88 lbs). Two people are required for lifting this item.

The Waters engineer will require assistance lifting and positioning the equipment.

Space Requirements

Instrument

The detector may be installed upon any flat bench, preferably one that is movable.

Allow 150 mm (6 in.) minimum clearance behind the instrument for service access and ventilation. See (Figures 1 and 2).

No side clearances are required for instrument operation.

If the bench is used for other equipment, it is recommended that the detector be positioned to the right side (viewed when facing the front of the instrument), to facilitate access for servicing.

The detector is shipped with a 2.5 m (8 ft) power cable that must be plugged into the rear of the chassis. The power ON/OFF switch is located on the front panel.

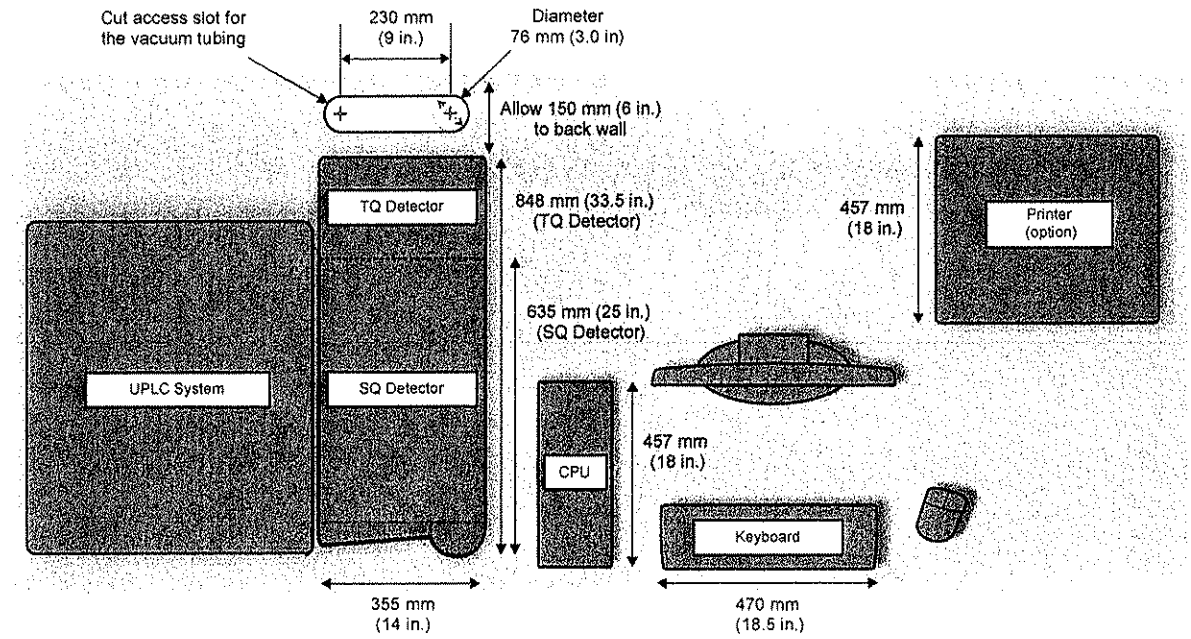


Figure 1 - Plan View, Showing Space Requirements

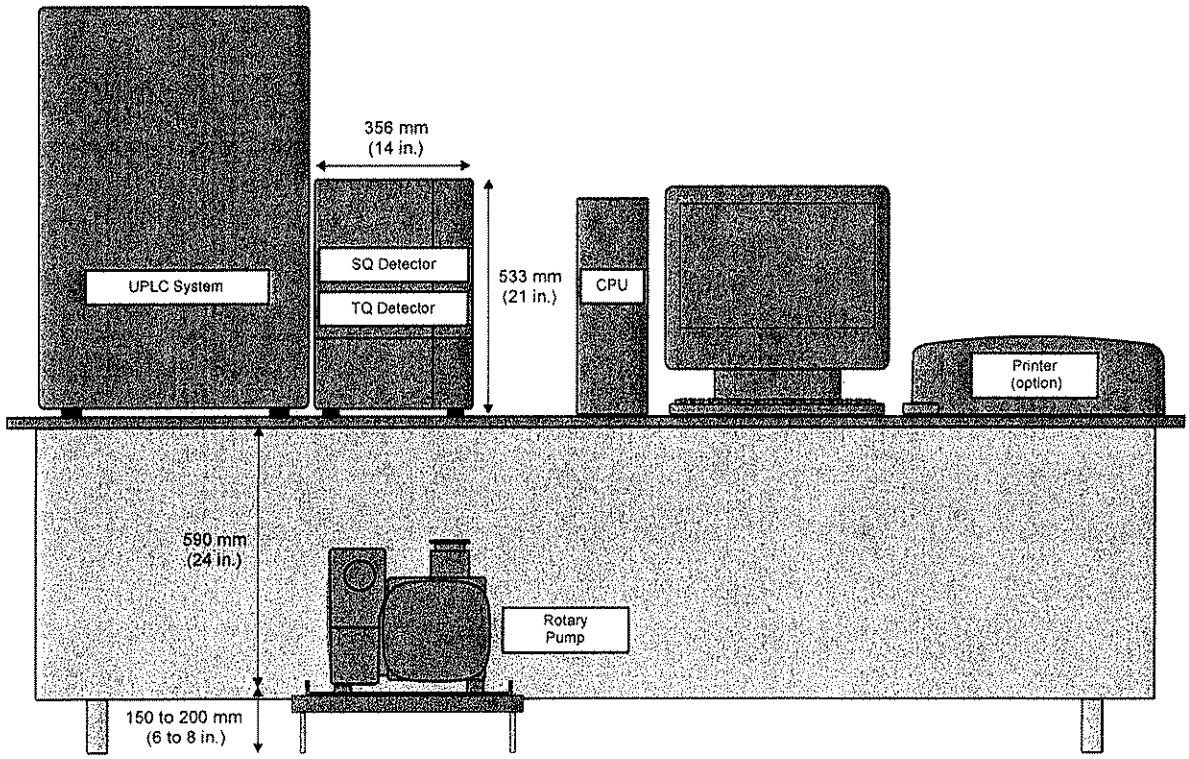


Figure 2 - Front View, Showing Space Requirements

Rotary Pump

The rotary pump must be installed underneath or behind the detector and within 1.5 m (5 ft) of the rear of the instrument chassis. To prevent over heating it is not recommended that the rotary pump be installed behind closed doors. The rotary pump is fitted with a 2 m (6.5 ft) power cable, which connects directly to a power outlet. It is recommended that the rotary pump be elevated 150 to 200 mm (6 to 8 in.) above the floor to provide easy access during routine maintenance (e.g. changing the pump oil).

If the rotary pump is positioned under the instrument bench, it may be necessary to cut an access slot in the bench top to allow the tubing to be passed through to the instrument (Figure 1). The access slot may be positioned outside the footprint. The access slot must allow the vacuum tubes to follow a smooth radial bend when connected to the rear of the instrument; the diameter of the vacuum tubes must not be pinched or kinked in any way. There must be no less than 150 mm (5 in.) space behind the instrument.

UPLC System

Ensure that there is sufficient space to the left of the detector for the UPLC system. Refer to the UPLC system site preparation guide for the relevant space requirements.

Data System

The data system must be located within 5 m (16 ft) of the mass spectrometer to enable the communication cables to be fitted. The data system power cables are approximately 2 m (6.5 ft) in length. See Figure 1 for the dimensions of the data system.

Weights

The bench must be able to support the combined weight of the detector, data system and UPLC system. Nominal weights for the instrument and data system are shown in Table 1. Refer to the UPLC system site preparation guide for specific weight information.

Table 1: Instrument Weights

SQ Detector	58 kg (127 lbs)
TQ Detector	85.5 kg (189 lbs)
Data system (computer, monitor and printer*)	<40 kg (88 lbs)
Total weight	108 kg (237 lbs)

**option*

Electrical Safety

The detector complies with the European Directive on electrical safety as defined by the International Standard EN 61010-1:2001 Electrical Equipment for Laboratory Use. The instrument is suitable for use in environments categorized as Pollution Degree 2 and Over Voltage Category 2. The instrument also carries the ETL label.

For installations in Australia and New Zealand, this equipment has been designed in compliance with the International Safety Standard IEC 1010-1. To be fully effective, the building installation must comply with AS 3000: Electrical Installations for Australia and New Zealand.

Power Requirements

The instrument requires two earthed (grounded) power socket. The power requirements are defined in Table 2.

Table 2: Summary of Power Requirements

	Nominal Rated Voltage and Frequency	Supply Fuse / Breaker Rating	Power Consumption	Power Connection
Detector	200 to 240 V 50 to 60 Hz	13 to 16 A	2.0 kW	IEC 320 style connector
Rotary Pump	200 to 240V, 50 Hz	8.4 A	1.5 kW	IEC 320 style connector
	200 to 240V, 60 Hz	10.0 A	1.8 kW	
Data System (CPU, monitor, printer, etc.)	110 / 230 V, 50 / 60 Hz	10.0 A	1.0 kW	IEC receptacles

The power supply socket must be located within 2 m (6.5 ft) of the instrument.

The supplies must be fused or fitted with circuit breakers of the specified ratings, in accordance with local regulations.

The mains supply must not have brown-outs / surges greater than ±10%, and must not exceed the specified maximum operating range, for more than 0.3 sec. Transient voltage drops to half nominal voltage or less must have a duration of less than 20 m/sec.

If there is a possibility that the supply voltages will not meet the specified maximum operating range under all conditions, a transformer must be used to change the primary supply voltage to the specified range. Mains conditioners/stabilizers are also available as an optional accessory. Contact Waters in advance if power supply problems are likely to be experienced, or for additional advice.

On pump start-up, current surges may be drawn for up to a second, due to the initial pump loading. It is recommended that time delay fuses and circuit-breakers are used to prevent nuisance tripping.

The rotary pump is normally in continuous operation; it is recommended that the system be installed such that the supply cannot be inadvertently switched off.

It is recommended that additional protection is provided for the instrument by means of residual current devices (RCDs) or ground fault circuit interrupters (GFCIs).

If the instruments are connected to a transformer, the RCD/GFCI must be fitted on the primary (supply) side of the transformer.

The types of plugs that are supplied with the instrument are shown in Figure 3. The user must provide appropriate sockets for the type of plug shown. If a different type of plug is required, it must be supplied by the user and must be compliant with local regulations.

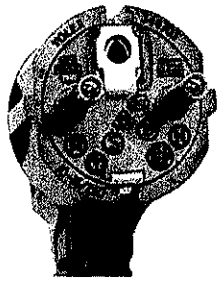
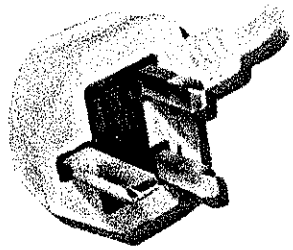
Plugs Supplied		
		
USA / CANADA NEMA L6-15P, 15 A	**EUROPE** 2-pin plug conforming to CEE7 standards	**UK** 3-pin plug, fused at 13 A, BS 1363

Figure 3 - Types of Plug Supplied with the Instrument

Additional power outlets are required for the computer equipment. Typically, two outlets are required adjacent to the detector for the MassLynx PC and monitor. Further outlets may be required for optional equipment, such as a printer.

Computer equipment is typically rated at 100 to 120 V / 220 to 240 V, 50 to 60 Hz. In some cases, it may be necessary to set the appropriate voltage using a voltage selector switch before connecting the equipment to the power supply. For full details, refer to the instructions provided with the equipment.

Uninterruptible Power Supply

To avoid data loss, system hang-ups and system shutdowns where local mains power may be problematic, Waters recommends the use of an uninterruptible power supply (UPS). UPS systems have been configured and evaluated specifically for use with Waters MS systems. These units are available through Waters to provide power conditioning and protection for the mass spectrometer. Contact your local Waters field sales representative to request further details.

The UPS system plugs into a standard wall socket and utilizes a transformer to increase mains voltage to a stable 230 V AC. The power supply cords for all other system components (with the exception of nitrogen generators, water chillers and gas chromatographs) can be connected directly to the UPS without the need for additional wall sockets.

For North America the UPS system requires one L6-30 (30 amp) wall socket. For the rest of the world, the UPS system will connect to your laboratory mains power using the standard MS instrument power cord and wall socket as indicated in Figure 3.

The dimensions of the UPS system are shown in Figure 4.

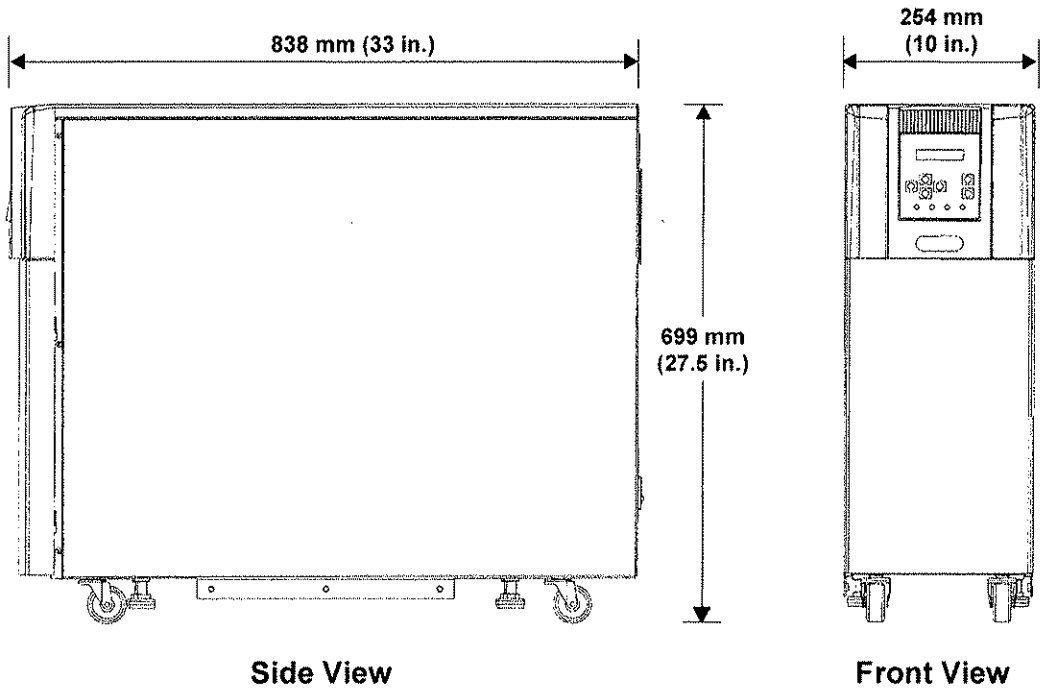


Figure 4 - Dimensions of the Uninterruptible Power Supply

Environmental Requirements

Safety Recommendations

Due to the operation of atmospheric pressure sources, the user must be aware of potential chemical hazards. In particular, the user must assess the risks associated with nitrogen gas (oxygen deficiency) and solvents vented into the laboratory. Note that due to the fluidic nature of the sample inlet, ionization and exhaust system leaks may potentially occur. The user must give due consideration to the laboratory environment (including volume and air changes) before installation and during operation of the system.

Warning: The active exhaust vent must provide a minimum vacuum of 2 millibar below atmospheric pressure (negative pressure). It must be capable of supporting a maximum instrument exhaust gas load of 1800 L/hour.

Warning: Exhaust venting must comply with all local safety and environmental regulations. The ANSI/AIHA Z9.2-2001 standard for "Fundamentals governing the design and operation of local exhaust ventilation systems" provides guidance on compliant exhaust systems.

Ventilation

It is recommended that the instrument be installed in an air-conditioned laboratory, in a draft-free position, away from excessive amounts of dust and away from direct sunlight. Air-conditioning units must not be positioned directly above the detector.

The maximum overall heat dissipation into the room is 4.3 kW. This figure does not take into account ancillary equipment such as LC systems. Air conditioning systems may have to be installed or upgraded to accommodate additional heat load into the room when these systems are installed.

Temperature

The ambient laboratory temperature range for normal operation for the detector is 10 to 28 °C (50 to 82 °F).

The optimum temperature range is 19 to 22 °C (66 to 72 °F).

Short-term (1.5 hr) variations must be no more than ±2 °C (3.5 °F).

Humidity

The relative humidity in which the instrument and rotary pump are to operate must be in the range 20 to 80%, non-condensing.

Vibration

The instrument must not be placed close to heavy machinery such as compressors or generators, which generate excessive floor vibration.

Magnetic Fields

The instrument must be positioned away from strong magnetic fields such as those generated by NMR systems and magnetic sector mass spectrometers.

Radio Emissions

The instrument must not be placed within a radio frequency (RF) field of greater than 1 V/m.

Possible sources of RF emission include RF-linked alarm systems, local area networks (LANs), mobile telephones and hand-held transmitters.

Gases and Regulators

Nitrogen Gas

The detector requires a supply of dry, oil-free nitrogen with a purity of at least 95%. The nitrogen must be regulated at 6 to 7 bar (90 to 100 psi).

Note: The use of nitrogen cylinders is not recommended. Due to high consumption, a cylinder is likely to empty during long sample runs.

Caution: If copper tubing is used for the nitrogen line, the copper must be cleaned using methanol. If stainless steel tubing is used, the stainless steel must be medical grade. Ensure that there are no soldered or brazed joints in the line, as these may result in contamination of the instrument with tin or lead oxide. Any joints in the nitrogen line must be compression fittings.

The nitrogen must be connected using the 16 ft of 6 mm ($^1/_4$ in.) o.d. PTFE tubing supplied. The nitrogen line must be checked for leaks under pressure.

During API operation, typical nitrogen usage varies from 600 to 1200 L/h (at atmospheric pressure). This equates approximately to the consumption of a large cylinder of compressed nitrogen each day. A liquid nitrogen Dewar may be preferred, which can provide a supply of nitrogen for several weeks, consult your local gas supplier for an ideal gas supply configuration.

Collision Gas (TQ Detector only)

Argon is required for the collision cell and must be dry and high purity (99.997%).

Caution: Ensure that there are no soldered or brazed joints in the argon line, as these may result in contamination of the instrument with tin or lead oxide. Any joints in the collision gas line must be compression fittings.

The gas supply must be connected using clean $^1/_8$ inch, medical-grade stainless steel tubing (not supplied) and checked for leaks under pressure.

It is recommended that a two-stage pressure regulator be used to regulate the argon at 0.5 bar (7 psi).

Exhaust Outlets

Rotary Pump Exhaust

The rotary pump exhaust gases must be vented to the atmosphere outside the laboratory via a user-supplied fume hood or industrial vent. The exhaust may be connected to an existing laboratory vent carrying other gases.

Five meters (16 ft) of 12.7 mm ($^1/_2$ in.) PVC tubing is supplied. If this length is insufficient, the user must supply an adapter and tubing with an internal diameter of at least 51 mm (2 in.) for the extra distance to the vent point.

Source Exhaust (Nitrogen)

Warning: The active exhaust vent must provide a minimum vacuum of 2 millibar below atmospheric pressure (negative pressure). It must be capable of supporting a maximum instrument exhaust gas load of 1800 L/hour.

The source exhaust line must be connected either to a laboratory fume hood, or to an active exhaust system using an open connection type as shown in Figure 5. Where a shared exhaust system is used, the source exhaust must be connected via its own exhaust spur.

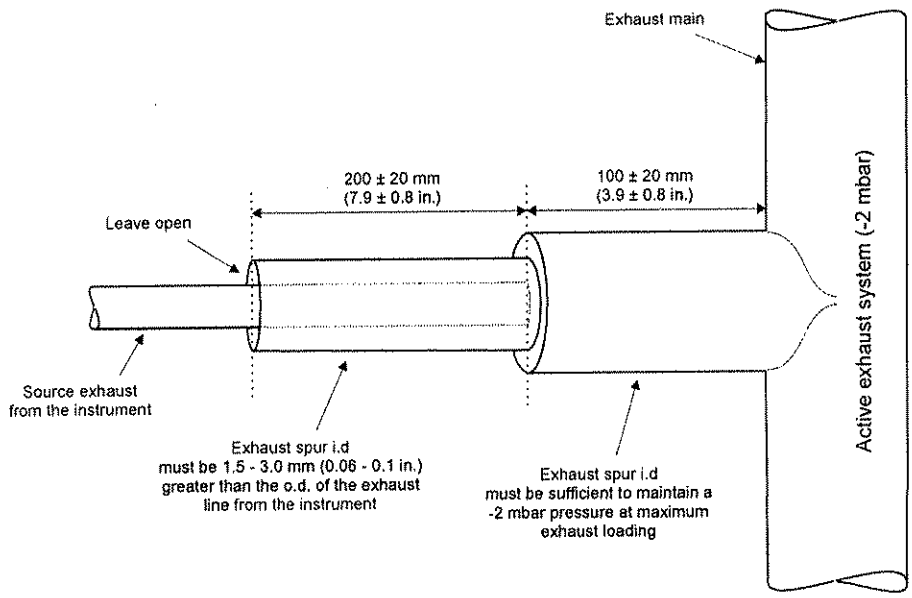


Figure 5 - Source Exhaust Connection

Caution: Severe contamination of the instrument may result if the source exhaust line is connected to the rotary pump exhaust line. The damage will occur when the nitrogen supply is turned off, or when the nitrogen runs out, as any rotary pump oil vapor will migrate via the source exhaust to the ion source and then through the sample cone into the analyzer.

Five meters (16 ft) of 10 mm ($^3/_8$ in.) o.d. hose is supplied for the source exhaust. If this length is insufficient, the user must supply an adapter and tubing with an internal diameter of at least 12.7 mm ($^1/_2$ in.) for the extra distance to the vent port.

The instrument software can be configured to switch off the LC system if it detects that the nitrogen gas supply has failed. In the event that the nitrogen gas is switched off (or runs out) and the LC system continues to operate, excess solvent is drained from the source via the source exhaust line.

Solvent Delivery System

The instrument includes an ACQUITY ever-flow valve and syringe drive for infusion. A gas-tight, 250-µL syringe, with a flow rate range of 5 to 200 µL/min, is included.

For ESI / ESCi, a UPLC / HPLC pump giving a stable, pulse-free flow of 50 to 1000 µL/min is required. For APcI using the ion sabre probe, the pump must provide a stable, pulse-free flow of 50 to 2000 µL/min.

Before returning the checklist at the end of this document, ensure that any locally supplied solvent delivery system has either already been commissioned or that a commissioning date has been scheduled.

Test Samples

Warning: Hazardous samples must be handled with care and in a manner that conforms to the manufacturers' guidelines.

Test samples are required to verify the performance of instruments during installation, and can be used for routine operations such as tuning and mass calibration. The required chemical kits and compounds are listed in Tables 3 and 4.

Note: The test samples are supplied with the instrument for the installation set-up. It is the customer's responsibility, in conjunction with the local Waters sales representative, to ensure that any additional samples required for customer-specific tests and post-installation testing are available.

Note: The Waters engineer will not carry test samples to the installation. If the Waters engineer is unable to complete the installation due to a lack of facilities, a rescheduling fee and travel costs will be charged. The installation will be rescheduled when the chemicals are available.

Table 3: SQ Detector Chemical Kit (700003093)

Description	Analyte(s)	Concentration	Matrix
Set-up solution QP	PPG 1000 Triacetyl-B-cyclodextrin Verapamil Ammonium acetate Leucine enkaphalin	2.5 ng/µL 5.0 ng/µL 100 pg/µL 0.31 mg/mL 1 ng/µL	Acetonitrile/water (1:1 v/v)
Stock solution	Reserpine Chloramphenicol	1 ng/µL 2 ng/µL	Acetonitrile/water (1:1 v/v)
Tuning solution	Reserpine Chloramphenicol	100 pg/µL 200 pg/µL	Acetonitrile/water (1:1 v/v)
Working solution	Reserpine Chloramphenicol	10 pg/µL 20 pg/µL	Acetonitrile/water (1:1 v/v)
API Calibration solution	Sodium iodide Cesium iodide	2 µg/µL +1% -0% 50 ng/µL +1% -0%	IPA/water (1:1 v/v)

Table 4: TQ Detector Chemical Kit (700002646)

Description	Analyte(s)	Concentration	Matrix
Set-up solution QP	PPG 1000 Triacetyl-B-cyclodextrin Verapamil Ammonium acetate Leucine enkaphalin	2.5 ng/µL 5.0 ng/µL 100 pg/µL 0.31 mg/mL 1 ng/µL	Acetonitrile/water (1:1 v/v)
ESI Resolution solution	PPG 2000 solution Ammonium acetate	1 µg/µL 10.2 mg/mL	Acetonitrile/water (1:1 v/v)
ESI Mass Measurement Accuracy solution	PEG 1000 solution Ammonium acetate	100 ng/µL 0.17 mg/mL	Acetonitrile/water (1:1 v/v)
ESI Sensitivity Reserpine	Reserpine solid	5 mg (+10%, -0%)	None
ESI Sensitivity Raffinose	Raffinose solid	10 mg (+10%, -0%)	None
IonSabre APCI Sensitivity	17-α-hydroxyprogesterone	10 mg (+10%, -0%)	None
ESI Sensitivity Chloramphenicol	Chloramphenicol solid	50 mg (+0.1 mg, -0%)	None
API Calibration solution	Sodium iodide Cesium iodide	2 µg/µL +1% -0% 50 ng/µL +1% -0%	IPA/water (1:1 v/v)
API Setup solution	Reserpine PPG 1000 Triacetyl-B-cyclodextrin	2 ng/µL 25 ng/µL 50 ng/µL	Acetonitrile/water 50/50 (4 mM Ammonium acetate)

Solvents and Reagents

High-purity solvents (Fisher Optima grade or similar) are also required, as shown in the following list. These are used for making up standard solutions for performance tests and for cleaning instrument components.

- H_2O HPLC / MS Grade
- Acetonitrile
- Methanol
- Formic acid

Facilities for making up test samples must be available.

Cleaning Equipment

An ultrasonic bath is required for the routine cleaning of instrument parts. The bath must be at least 300 mm × 150 mm × 100 mm deep (12 in. × 6 in. × 4 in.).

Caution: Surfactants must not be used for cleaning glassware or other components.

Surfactant-free glass vessels are required in which to place instrument components for cleaning These must be made available for use at the time of installation. The vessels must have a diameter of at least 120 mm (5 in.) and be approximately 120 mm (5 in.) high. A 500-mL measuring cylinder is required for cleaning the hexapole.

Summary of Fittings

Table 5 lists the fittings that are required for the installation of the detector.

Table 5: Summary of Fittings Required for the Installation

	Fittings on the system	Items supplied with the instrument	Items to be supplied by the customer
Rotary Pump Exhaust	12.7 mm ($^1/_2$ in.) tail pipe	5 m (16 ft) of 12.7 mm ($^1/_2$ in.) i.d. × 19.2 mm ($^3/_4$ in.) o.d. PVC exhaust tubing	Fume hood or industrial vent
Source Exhaust (Nitrogen)	One-touch fitting	Bottle trap assembly with 3 m of 12 × 10 mm Teflon tube and 3 m of 10 × 8 mm Teflon tube	Industrial vent
Liquid Waste	0.375 x 0.25 i.d. one-touch fitting	2 m (6.5 ft), Tygon tubing	Waste bottle
API Gas Supply	6 mm ($^1/_4$ in.) push-in fitting ("Legris" type)	6 m (16 ft) of 4 mm ($^5/_{32}$ in.) i.d. × 6 mm ($^1/_4$ in.) o.d. hose	N_2 supply regulated to 90 to 100 psi (6 to 7 bar) via a 6 mm ($^1/_4$ in.) connector
Collision Gas Supply (TQ Detector only)	$^1/_8$ inch Swagelok	-	$^1/_8$ inch o.d. stainless steel tubing to a regulated argon gas supply. Regulator adapter must be $^1/_8$ inch
ACQUITY Ever-Flow Valve	Rheodyne nuts and ferrules	Tubing and Rheodyne nuts and ferrules	Tubing and Rheodyne nuts and ferrules

SQ Detector / TQ Detector Site Preparation Checklist

This checklist must be completed and returned to Waters when all the amenities are available.

Note: It is the customer's responsibility to ensure that ALL the laboratory supplies are correct. Please attach any additional information to this document where necessary.

Lifting Equipment
Suitable equipment is available to lift the instrument out of the crate and onto the laboratory bench. Assistance is available for lifting and maneuvering heavy items ..... ❑

Space Requirements
Adequate bench space is available for the system ..... ❑

Power Requirements
The site meets the specified power requirements ..... ❑

Ventilation
There is no air conditioning air flow onto the instrument ..... ❑

Temperature
The room temperature is as specified ..... ❑

Humidity
The humidity is as specified ..... ❑

Vibration
The site is free from known vibration ..... ❑

Magnetic Fields
The site is free from strong magnetic fields ..... ❑

Radio Emissions
RF field strength is ≤1 V/m ..... ❑

Nitrogen Gas
Dry, oil-free nitrogen ≥95% purity at 6 to 7 bar (90 to 100 psi) with a 6 mm ($^1/_4$ in.) fitting is available ..... ❑

Collision Gas (TQ Detector Only)
High purity ≥99.9% argon gas regulated at 0.5 bar (7 psi) is available ..... ❑

Rotary Pump
The pump positioning, vacuum tubing, and exhaust lines meet the criteria specified in this document ..... ❑

Source Exhaust
A separate exhaust, 2 mbar below atmospheric pressure, is available ..... ❑

Solvent Delivery System

Make and model of system to be used:

Make _____

Model _____

UPLC system is already on site and commissioned ..... ❑

or

UPLC system is scheduled to be commissioned on: _____

Test Samples

All samples required for the installation are available ..... ❑

Solvents and Reagents

Solvents, reagents and sample preparation facilities are available ..... ❑

Cleaning Equipment

An ultrasonic bath and suitable glassware are available ..... ❑

Ancillary Equipment

If you plan to use any other equipment with the system, provide details below:

Make / Type	Model	Already commissioned	To be commissioned on

I confirm that all supplies are now available and that all specified environmental conditions have been met*.

During the installation, the operator intends to be available for demonstration and training by the Waters engineer:

At all times ..... ❑

Approximately _____% of the time ..... ❑

Not at all ..... ❑

During the likely period of installation, the following dates are NOT convenient:

_____

Signed: _____

Important: If an authorized Waters service engineer arrives on site to begin installation work and can not complete the installation due to lack of facilities (lifting equipment, power, water, test samples, laboratory readiness etc.), costs incurred will be charged to the customer.

Please complete the following sections in block letters:

Position _____

Name _____

Organization _____

Street _____

City _____

ZIP/Postcode _____

Country _____

Telephone _____

Fax _____

E Mail _____

Important: The installation of your system cannot begin until pages 18 through 22 of this document have been fully completed and returned to the mass spectrometer sales support representative at your local Waters office.

Applications Survey

As part of our commitment to provide greater customer service, we have found it necessary to obtain a little more information concerning our user base.

We would be grateful if you could take the time to complete the following questions to provide us with some information about how the instrument will be used.

This information will enable us to inform you of relevant current application notes and seminars and allows us to identify common interest groups so that we can promote cross transfer of information between customers.

What is your scientific field?
(e.g. pharmaceutical, environmental, general, etc.)

_____

_____

Which classes of compounds will be analyzed?
(e.g. carbohydrate, peptides, pesticides, etc.)

_____

_____

What is your application area?
(e.g. quantitation, purity analysis, structural determination, etc.)

_____

_____

Our sales team often requires reference sites for specific applications.
Would you consider acting as a contact reference site for prospective customers?

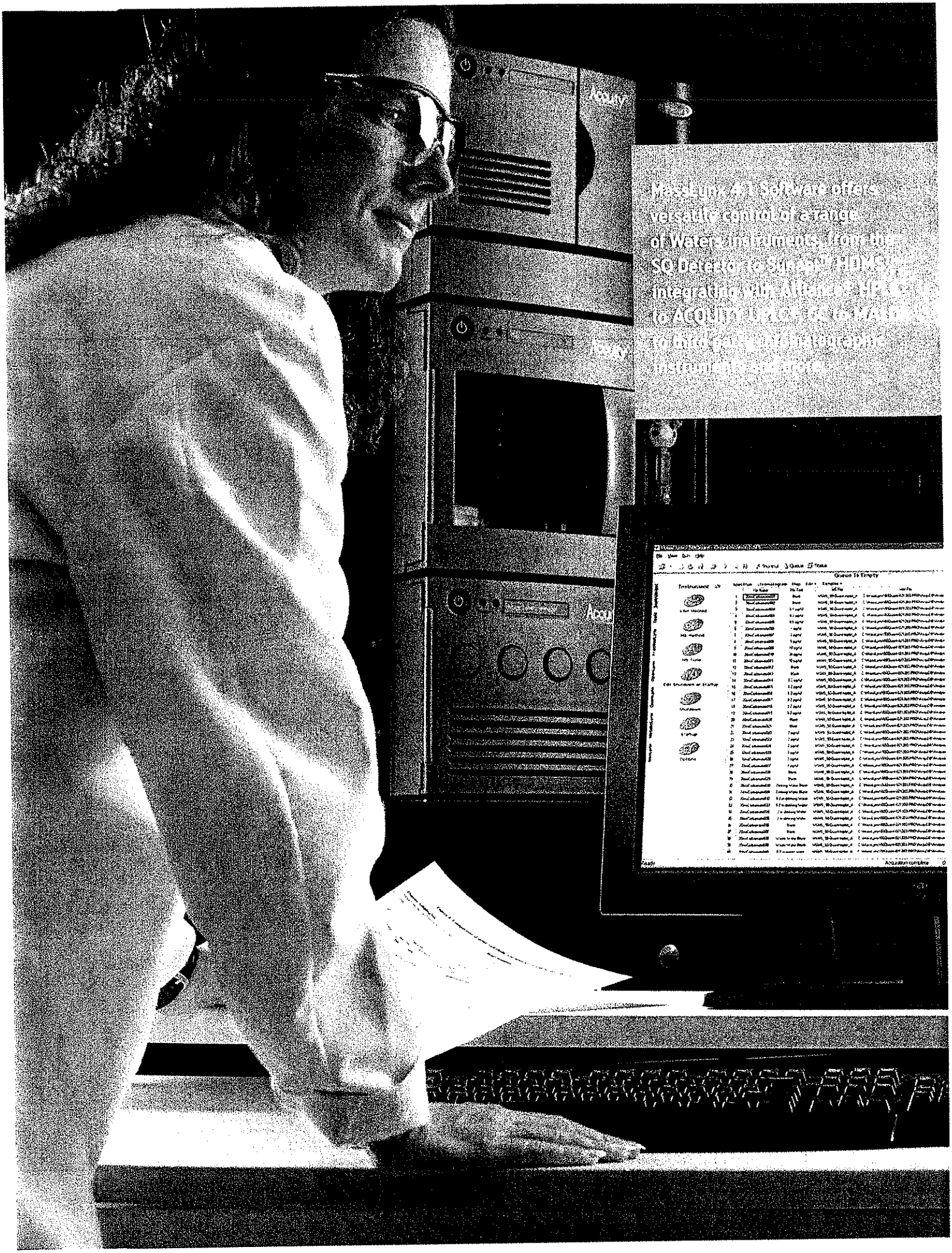
_____

_____

MASS SPECTROMETRY LABS ARE DRIVEN BY ANSWERS.

MASSLYNX 4.1 SOFTWARE PUTS YOUR ANSWERS AHEAD.

Sample analysis is all about questions. ■ Waters® MassLynx™ 4.1 Software is mass spectrometry software that answers those questions, helping your entire laboratory advance further. ■ Productivity increases and training costs are lower with our easy-to-use software that runs on all our mass spectrometers. ■ Run more samples faster with intelligent instrument control. ■ Enhance confidence in your results with dedicated Application Managers that quantitate, identify, and confirm. ■ Maintain compliance with integrated security features.



INSTRUMENT CONTROL WITH THE SAMPLE LIST

- Launch inlet and MS method editors.
- Run step-by-step wizards to configure and optimize your instrument system.
- Specify instrument methods for individual samples or sets of samples.
- Start, stop, and monitor the progress of your experiments.
- View the status of system components, such as the inlet and mass spectrometer.

TAKE CONTROL OF MASS SPECTROMETRY ANALYSES

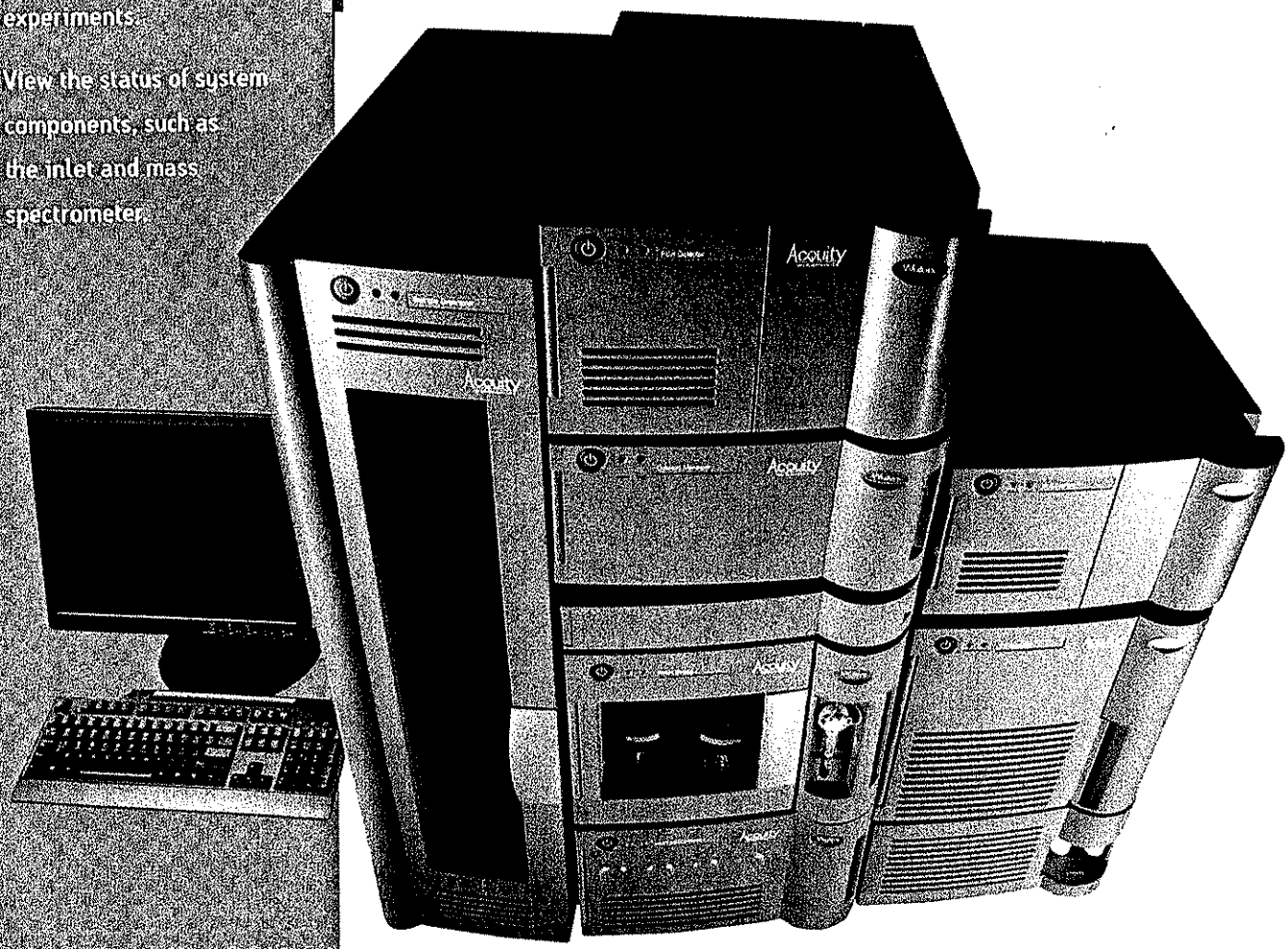
With today's complex instrumentation configurations, sophisticated data acquisition capabilities, and detailed data processing requirements for mass spectrometry (MS) analysis, it is easy to be overwhelmed when adding or upgrading MS instrumentation.

In the laboratory, the challenges of MS and MS/MS analyses are often compounded by the use of several types of analytical instruments and high personnel turnover.

To maintain – and even increase – laboratory productivity, you can turn to Waters software to simplify interaction with your MS system and retain the ability to perform advanced experiments.

Waters MassLynx 4.1 Software improves your MS system with its intuitive interface, intelligent instrument control, and software features built around the focus of your analysis: the sample. With much of its development driven by input from our extensive user base, MassLynx has evolved into a powerful software package that reflects the versatility and flexibility you require.

Balancing simplicity and sophistication, MassLynx Software makes MS and MS/MS techniques available to users of any skill level, from technicians to experienced mass spectrometrists.



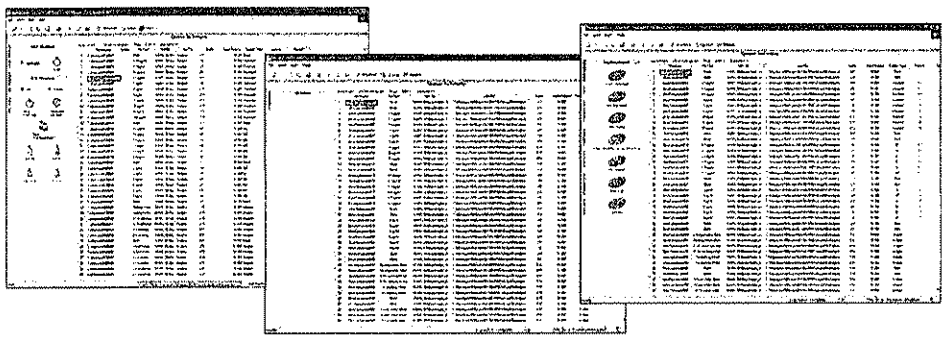
SAMPLE CENTRIC SIMPLICITY

Everything about your sample in one place

The challenge facing many laboratory analysts is not the speed of data acquisition, but the rate at which samples are converted into useful information.

MassLynx Software starts by giving you complete control of your analytical system within one interface: you will acquire, process data, and review results more productively than ever before. By using the individually designed and optimized data processing tools of MassLynx Software's Application Managers, such as OpenLynx™ for processing batches of qualitative analyses and QuanLynx™ for quantification, samples are seamlessly converted into chemically meaningful information – without manual data review. OpenLynx and QuanLynx are bundled with MassLynx 4.1 Software.

At the core of MassLynx Software is the Sample List: the single location for initiating all activities related to your sample. By presenting all the relevant sample information in one window, MassLynx's Sample Centric™ approach simplifies your interaction with your mass spectrometry system and increases the speed at which you convert samples into valuable knowledge.



The sample centric approach of MassLynx Software's Sample List allows users to easily access instrument control, queue information, and system status, while viewing detailed sample information. In this example, parameters in the Sample List are set for a quantitative analysis using the TargetLynx Application Manager with ACQUITY UPLC and ACQUITY TQD.

DATA MANAGEMENT WITH THE SAMPLE LIST:

- Enter or import sample information in a versatile spreadsheet-style format.
- Directly access spectra and chromatograms.
- Initiate automated data processing and review with OpenLynx or QuanLynx.
- Access advanced application-specific tools.

USABILITY

Work intuitively with mass spectrometry

MassLynx Software's user interface ensures direct, intuitive access to the functionality that you use most. The result is a user-friendly and fully comprehensive solution that will increase your lab's productivity.

MassLynx Software's toolbar, displayed alongside the Sample List, provides access at the click of a mouse to instrument status, sample queue information and Application Managers. You can easily switch from viewing the queue to viewing instrument status, or use the tabs to move between general and application-specific tools.

The ability to access basic sample information and system functionality through the MassLynx toolbar allows a novice user to successfully operate the system with a minimal learning curve. This straightforward interface also gives the experienced user fast access to the advanced features MassLynx offers for sophisticated experiments.

GET THE MOST FROM YOUR HARDWARE, WITH SEAMLESS SOLUTIONS FOR ADVANCED APPLICATIONS

- Collect nominal or exact mass MS and MS/MS data.
- Streamline data acquisition and processing.
- Acquire both low- and elevated-energy mass spectra with MS^E.
- Real-time Data Directed Analysis (DDA™) allows you to automatically switch from MS to MS/MS acquisition when a compound of interest is detected.
- On-the-fly, automated exact mass measurement using the internal reference standards from the LockSpray™ Source for TOF-MS systems.
- i-FIT™ algorithm for the Elemental Composition Calculator enables you to shorten predicted formulae lists for structural prediction in exact mass measurements.
- Control ionization sources including ESI, APCI, IonSABRE™ APCI, ESCi® Multi-Mode Ionization, APPI/APCI Dual Ionization, LockSpray, NanoLockSpray™, MUX-technology™, EI/CI, direct probes, and MALDI.
- Supports Waters and third-party inlets, autosamplers, and detectors.

VERSATILITY

Complete system solutions for sophisticated MS analysis

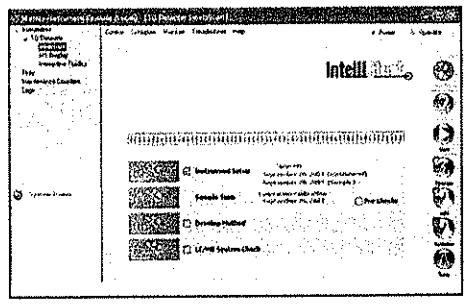
Waters creates end-to-end solutions for sophisticated mass spectrometry analysis. We combine the ground-breaking chromatographic advances of Waters ACQUITY Ultra Performance LC® (UPLC®) System with our MS technologies, market-leading software, chemistries, and comprehensive services and support.

Together, our instruments and software bring you a truly integrated system that yields high resolution, high sensitivity, maximized instrument uptime, and versatility for rapid analysis of a wide range of compound classes.

Improved system interaction

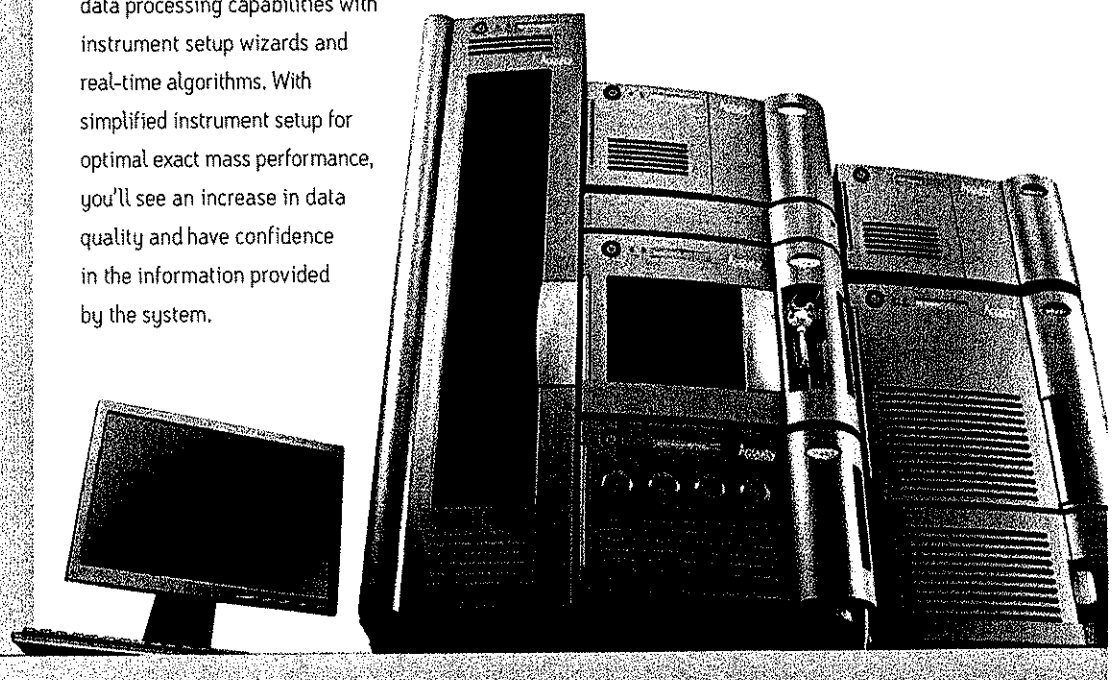
The real power of MassLynx Software lies in its ability to intelligently control an entire Waters mass spectrometry system – from the sample and solvent management components to the mass spectrometer and auxiliary detectors. With an embedded PC acquisition system (EPCAS™), MassLynx puts intelligence and real-time functionality inside every mass spectrometer.

MassLynx 4.1 Software features IntelliStart™ for Waters ACQUITY® SQ and TQ Detectors. IntelliStart integrates internal calibration fluidics and advanced diagnostics software, allowing the system to automatically tune, calibrate, and conduct full UPLC/MS/MS performance checks.



MassLynx Software's IntelliStart user interface integrates fluidics management with diagnostics software, allowing the system to automatically tune, calibrate, and conduct full UPLC/MS/MS performance checks. All you need to do is run your sample.

MassLynx Software also eliminates the need for complex, time-consuming manual data review. For high-performance time-of-flight (TOF) MS with the LCT Premier™ XE and Q-Tof Premier™ Mass Spectrometers, MassLynx enhances your data processing capabilities with instrument setup wizards and real-time algorithms. With simplified instrument setup for optimal exact mass performance, you'll see an increase in data quality and have confidence in the information provided by the system.



INTEGRATION WITH INFORMATICS SOLUTIONS

MassLynx 4.1 Software is part of the Waters Laboratory Informatics suite, which offers complete solutions that can improve your laboratory's ability to capture data, secure information, and share knowledge. MassLynx 4.1 offers tight, automated integration with our Laboratory Informatics solutions, including Waters NuGenesis® Scientific Data Management System (SDMS) – products that can enhance your ability work with large data sets and to make better decisions in any analytical laboratory process.

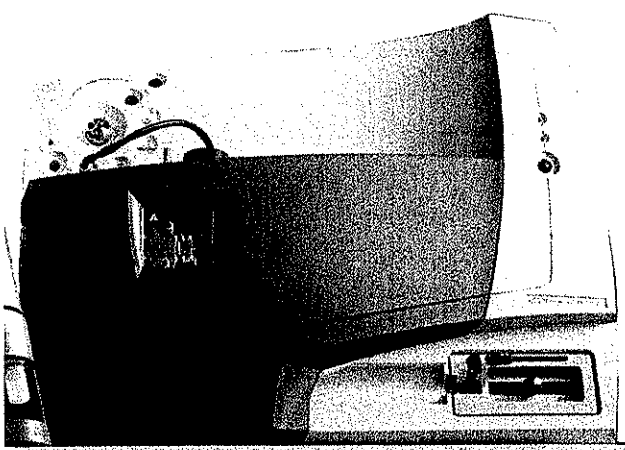
COMPLIANCE

Maintaining security in a regulated environment

Strictly regulated laboratory environments place significant demands on LC/MS, LC/MS/MS, and GC/MS systems to maximize performance while also maintaining the security of data.

MassLynx 4.1 Software's security system provides compliance-ready tools to meet GxP and 21 CFR Part 11 regulations. It is built on the latest file encryption, audit log, and secure archival/retrieval technology, and has been optimized for convenience and ease-of-use. The flexibility of the security system allows you to tailor and deploy security policies that meet the requirements of your laboratory.

- **MassLynx Security Manager**
  Allows you to configure access privileges for each user, enabling you to easily deploy operator, administrator, and maintenance policies to meet your existing security protocols. Multiple user groups with access to alternative project areas are permitted fully-secured operation when required, and operation in less restrictive projects with less restrictive privileges when appropriate.
- **Secure file encryption**
  Employs the latest encryption and checksum technologies to prevent accidental or deliberate tampering with files. An optional component of the secure file system is the addition of electronic signatures.
- **Audit log**
  Provides an un-editable, hidden, encrypted file that automatically records all log-on and log-off events, security policy changes, MassLynx program module activity, and all events which relate to file generation or manipulation. This log file can be viewed and searched using LogLynx™. In addition to the audit log provided by the MassLynx security system, the QuanLynx Application Manager has a detailed audit log that records the specifics of quantitative data processing.
- **Secure archival and retrieval**
  Provides the ability to archive and then restore secure data without compromising date and file integrity.



MassLynx Software is the pivotal piece for integrating a complete Waters system, such as this benchtop system that pairs the LCT Premier XE Mass Spectrometer with LockSpray and the ACQUITY UPLC System for exact mass LC/MS. Through MassLynx, you have complete control of the system itself, as well as the data processing tools you need to efficiently work with results.

ADVANCED DATA MANAGEMENT

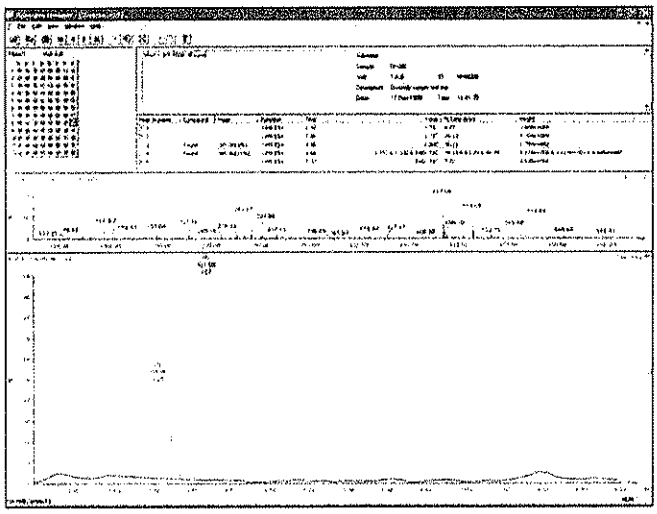
OpenLynx and QuanLynx Application Managers

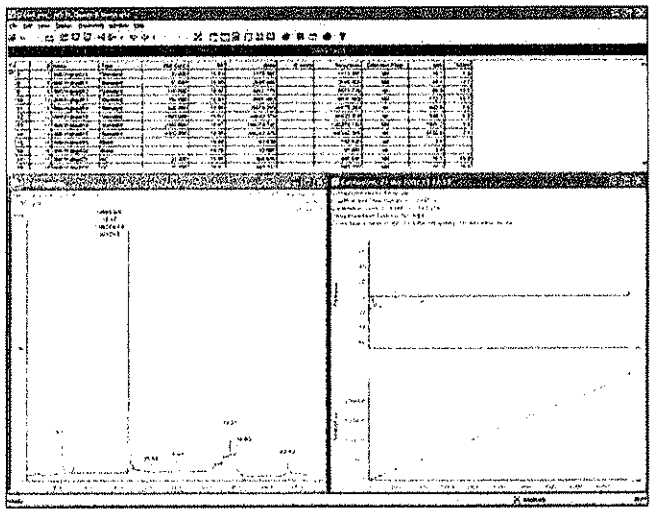
OpenLynx and QuanLynx Application Managers are included with MassLynx 4.1 Software. The OpenLynx Application Manager allows for customizable batch processing of qualitative MS information. OpenLynx includes quality control capabilities to ensure satisfactory system operation. The OpenLynx browser window facilitates review of large quantities of data; with its convenient plate viewer you can see at a glance whether individual wells contain the target analyte.

The QuanLynx Application Manager enables you to perform batch quantification, relying on our ApexTrack™ peak detection algorithm for optimized peak detection and integration. The QuanLynx browser contains all information required to review integration, calibration, and quantitation results. You may manually modify integration, enable and disable calibration points as needed, and recalculate the results following review. The internal audit log with configurable reasons for change and electronic signatures supports compliance with applicable regulations.

The comprehensive compliance tools allow for file generation, processing, reporting, archival, retrieval, and audit trails, with the ability to handle electronic signatures.

Data portability





*OpenLynx and QuanLynx reports are self-contained and may be automatically e-mailed when created using OpenLynx Open Access Software. The convenient browser software enables reports to be reviewed on any PC. QuanLynx reports permit interactive review, reintegration, and recalculation of results without MassLynx and access to the original raw data files. Multiple export formats, including *.txt, *.csv and *.xml, enable convenient data transfer to other software applications.*

MassLynx Software offers Application Managers with specialized data processing functions that allow you to eliminate complex, time consuming manual data review.

FOR TARGETED ANALYSES

TargetLynx

Quantifying and confirming, TargetLynx™ delivers the information necessary for regulatory compliance. With a full range of automatic quality control checks for flagging out-of-range data, TargetLynx lets you identify at a glance samples that fall outside user-specified or regulatory thresholds.

QuanOptimize

Automating MS and MS/MS method development, QuanOptimize™ delivers high performance, high throughput quantification. Automated instrument optimization doesn't stop at cone voltage, collision energy and MRM transition selection – QuanOptimize also identifies the best ionization method for each compound (ESI or APCI, positive or negative) and automatically quantitates and reports your batch.

OpenLynx Open Access (OA) Login

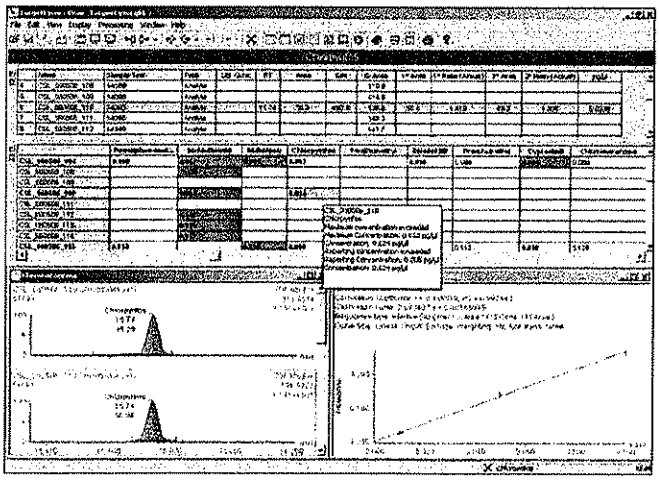
For walk-up analysis, OpenLynx Open Access (OA) Login offers multi-user and unsupervised sample login, backed by centralized system management. For LC/UV, LC/MS, LC/MS/MS, and GC/MS sample runs, from data acquisition to batch processing for qualitative and quantitative analysis, use OpenLynx to fully automate all stages in LC/MS quantification.

ProfileLynx

For physicochemical property analyses for lead optimization, ProfileLynx™ automates data calculations and streamlines data review.

FractionLynx

Automating compound isolation and purification, FractionLynx™ controls fraction collection while tracking sample, fractions, and associated data. All possible through integrating versatile control of purification systems with an extensive and flexible set of compound detection, fraction triggering, and collection capabilities.



Example of TargetLynx browser showing processed data.

FOCUS THE POWER OF MS ON YOUR APPLICATION

The rate-determining step in many analyses is not data acquisition, but the speed your data can be converted into useful information.

To assist with both application-specific data acquisition and the transformation of data into usable results, MassLynx Software offers Application Managers with specialized data processing functionalities that allow you to eliminate complex, time-consuming manual data review. Focus the power of MS on your laboratory tasks and increase your productivity.

The functionality of MassLynx Application Managers was guided by recommendations from our customers. We worked closely with labs like yours to better understand unique MS data processing challenges. We developed these software extensions to improve your ability to control, collect, and process MS data for specific laboratory needs. The OpenLynx and QuanLynx Application Managers are included with each MassLynx 4.1 Software installation.

FOR IDENTIFICATION

ChromaLynx

Simplifying complex mixture analysis, ChromaLynx™ excels at semi-quantitative detection, identification and determination of components. Detecting and locating the maximum number of real components in a mixture, ChromaLynx also provides comparisons between a real sample and a blank to help determine common and unique components.

MetaboLynx

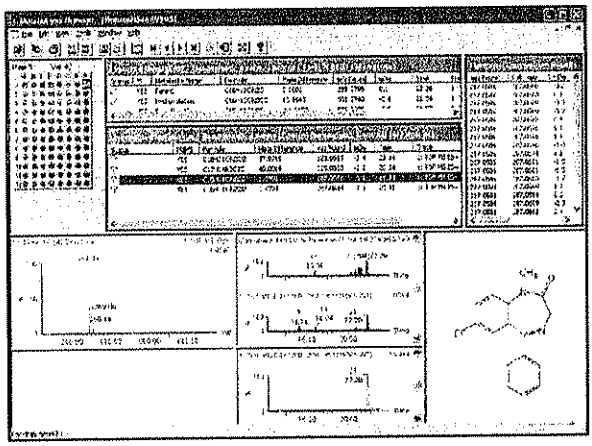
Automating metabolite identification, MetaboLynx™ leverages advanced comparison with control samples. You'll miss fewer metabolites and accelerate your data interpretation. Advanced mass defect filters (MDF) let you concentrate on unexpected metabolites while the structural elucidation capabilities of MassFragment™ delivers the information you need to resolve metabolic pathways.

MassFragment

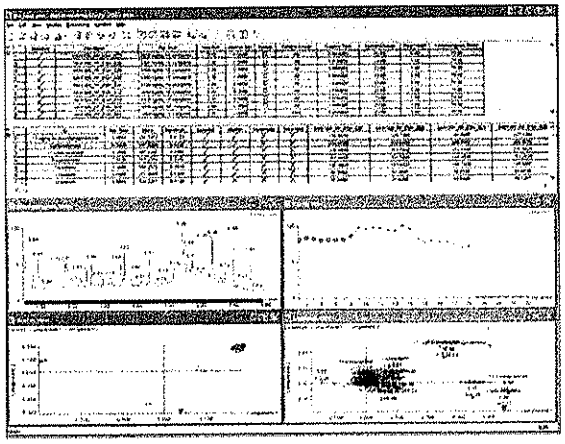
Automatically assigning collisionally activated dissociation mass spectra, MassFragment employs a novel systematic bond dissociation approach, rather than the traditional rule-based and rule-limited approach, delivering confident structural elucidation of your compounds.

MarkerLynx db

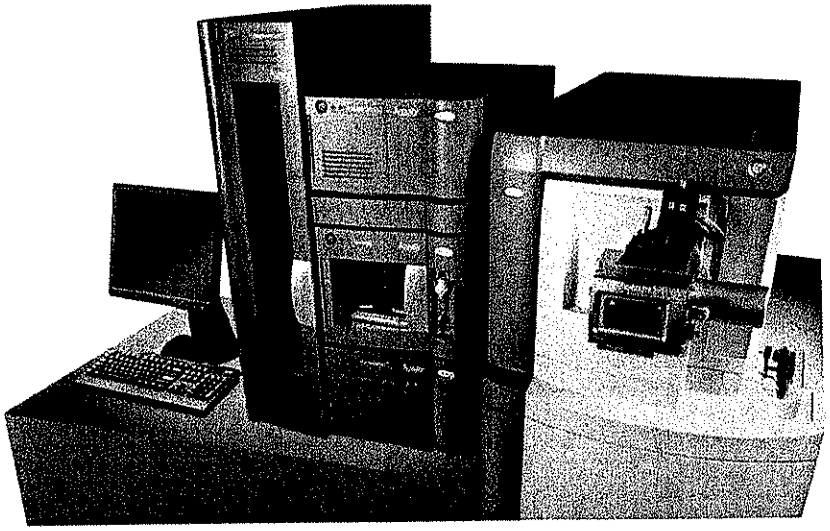
Extracting relevant biomarker information, MarkerLynx™ db processes complex multivariate data from LC/MS or GC/MS analyses for your metabonomic or metabolomic experiments. Via an interactive browser, you can perform data reduction and statistical analyses and even query the internet for potential biomarker identification using the dynamic database search function.



MetaboLynx automates data processing for rapid metabolite identification. The unique structural elucidation capabilities of MassFragment for MetaboLynx interpret the enhanced fragment information from the Synapt HDMS for the most advanced characterization capabilities in small molecule profiling.



The MarkerLynx db Application Manager browser.



ACQUITY UPLC System with the Synapt HDMS.

FOR PROTEIN IDENTIFICATION AND CHARACTERIZATION

ProteinLynx Global Server

A key enabling technology of Waters Identity^{E} High Definition Proteomics™ System, delivering more peptides, more proteins, more coverage, and more rigor. ProteinLynx Global Server™ (PLGS) provides integrated tools for proteomics project management as well as relative protein quantification, identification, and characterization.

BiopharmaLynx

Developed with biopharmaceutical thought leaders for confident characterization and optimized workflow, BiopharmaLynx™ leverages Waters' leading protein informatics expertise. Determine the identity, purity, and stability of biopharmaceuticals, working with either peptide maps or intact proteins.

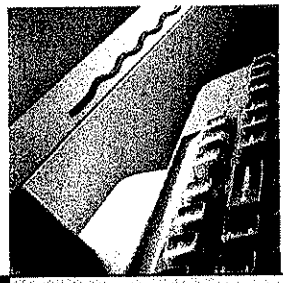
WATERS GLOBAL SERVICES

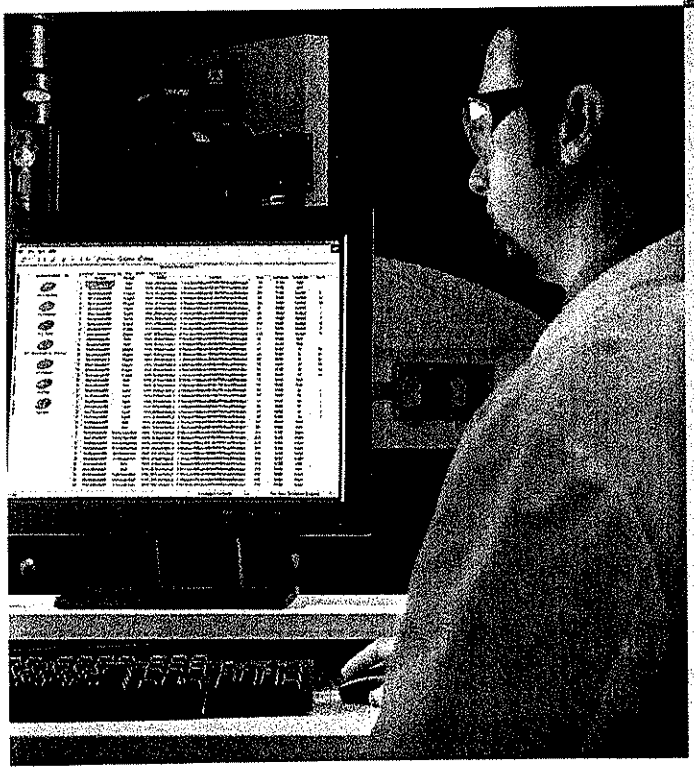
Be assured. Choose Waters Global Services.

For 50 years, Waters Global Services has focused on optimizing Waters products with superior service, support, training, and Waters Quality Parts®.

Only the Waters service team has the most in-depth and up-to-date knowledge of the advanced science and technologies that provide the foundation for Waters systems. This enables Waters to help you maximize system uptime, increase laboratory productivity, and meet compliance requirements.

With more than 94 offices in 50 countries, Waters maintains a strong global presence. Whether your company is a single-location lab or a large multinational organization, Waters offers support whenever and wherever you need it.





Waters Global Services creates programs that will optimize your entire laboratory and information management processes.

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India 91 80 2837 1900

Ireland 353 1 448 1500

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Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

September 2007 720001408EN LB-AP

Waters® ACQUITY UPLC™ System

The Waters ACQUITY UPLC™ System provides an integrated configuration for solvent and XYZZ' sample management designed for use with Waters ACQUITY UPLC™ chemistries. The core ACQUITY UPLC™ System comprises a Binary Solvent Manager, a Sample Manager with integral Column Heater and a Solvents Tray. Optional items include the Sample Organizer for expanded sample capacity, and the choice of 2 optical detectors: Tunable UV-Visible or Photodiode Array. The full line of Waters Micromass® MS Technologies mass spectrometry products, from single quadrupole to hybrid quadrupole time-of-flight (Q-Tof™) are also available.

ACQUITY UPLC™ Binary Solvent Manager

Number of Solvents	Up to four (4): A1, A2, B1, and B2. User must choose A1 or A2 and B1 or B2 before the start of the gradient
Solvent Storage	Solvent tray accommodates up to 4 chromatographic solvents, 2 Sample Manager wash solvents and 1 Binary Solvent Manager wash solvent
Solvent Conditioning	Vacuum degassing (six-channel): 1 channel per solvent and 2 channels for Sample Manager wash solvents
Operating Flow Rate Range	0.010 to 2.000 mL/min, in 0.001 mL increments
Compressibility Compensation	Automatic and continuous
Effective System Delay Volume	< 140 µL, independent of system backpressure (with standard mixer)
Plunger Seal Wash	Integral, active, programmable
Gradient Profiles	Eleven (11) gradient curves [including linear, step (2), concave (4), and convex (4)]
Wet Prime	Automatic
Maximum Operating Pressure	15,000 psi up to 1 mL/min, 9,000 psi up to 2 mL/min
Composition Accuracy	±0.5% absolute (full scale) from 5 to 95% from 0.50 to 2.00 mL/min methanol: methanol/propylparabens, 254 nm
Composition Precision	0.15% RSD or ± 0.04 min SD, whichever is greater, based on retention time (degassed acetonitrile: water, 60:40 dial-a-mix, 6 replicates, alkylphenone test mix, 254 nm), ACQUITY UPLC™ 2.1 x 50 column, 35 °C ± 0.1 °C
Flow Precision	0.075% RSD or ±0.02 min SD, 6 replicates, based on retention time (0.500 – 2.000 mL/min), (degassed acetonitrile: water, 60:40 dial-a-mix, 6 replicates, alkylphenone test mix, 254 nm), ACQUITY UPLC™ 2.1 x 50 column, 35 °C ± 0.1 °C
Flow Accuracy	±1.0% (0.500 – 2.00 mL/min), (Degassed methanol at 1,000 psi)
Primary Wetted Materials	316 Stainless Steel, UHMWPE, Sapphire, Ruby, Teflon® (FEP, PTFE), ETFE, Diamond-like coating, PEEK and PEEK alloys, Titanium alloys, alumina ceramic

Waters

ACQUITY UPLC™ Sample Manager

Number of Sample Plates	Total of two (2) plates: 96- and 384-well plates; vial plate 2-mL vials, (48); tube plates 0.65 mL micro-centrifuge tube, (48) or 1.5 mL micro-centrifuge tube, (24)
SBS-Compliant Plates	Expandable to up to 22 plates with optional Sample Organizer (see below)
Maximum Sample Capacity	768 in two (2) 384-well plates Expandable to up to 8,448 samples with optional Sample Organizer (see below)
Number of Sample Injections	1 - 99 injections per sample
Injection Volume Range	0.5 - 50 µL, in 0.1 µL increments, partial or full loop mode, 20 µL loop is standard; 2, 5, 10 and 50 µL loops also available
Sample Delivery Precision	< 0.3% RSD, full loop, 3x overfill, 5 - 50 µL (default wash/purge conditions, degassed methanol: water, 60:40 pre-mix, 1 mL/min, 6 replicates, propylparaben mix, 254 nm)
Injector Linearity	> 0.999 coefficient of deviation (from 2 - 10 µL, partial loop mode using 20 µL loop w/air gaps)
Sample Temperature Control	4 to 40 °C, programmable in 1 °C increments (with ambient temperature of 20 °C)
Injection Cycle Time	45 sec (with single 200 µL leak wash), 60 sec with default dual wash (100 µL strong; 500 µL weak) wash
Sample Probe	XYZZ' based needle-in-needle design
Minimum Sample Required	5 µL, using maximum recovery 2-mL vials
Wash Solvents	Two (2) degassed: strong solvent and sample compatible solvent, programmable to suit application, made available from the Binary Solvent Manager
Sample Carryover	< 0.005% or < 2.0 nL, whichever is greater (with dual wash)

ACQUITY UPLC™ Sample Organizer (optional)

Number of Sample Plates SBS-Compliant Plates	Total of up to: 21 standard microtiter plates, or 11 intermediate height plates, or 7 deep-well (or 2-mL vial) plates, and combinations thereof
Maximum Sample Capacity	Total of up to 8,064 samples: in twenty one (21) 384-well plates, or 336 2-mL vials
Temperature Control	4 °C to 40 °C (with ambient temperature of 20 °C)

ACQUITY UPLC™ Column Management

Column Heater	Accommodates one column, up to 150 mm length x 4.6 mm ID, pivots out for use with optional mass spectrometer
Column Temperature Control	5 °C above ambient to 65 °C, 0.1 °C increments
Column Tracking	Usage information tracked via eCord™ Data Storage Device

ACQUITY UPLC™ Tunable UV-Visible Optical Detector (optional)

Wavelength Range	190-700 nm
Light Source	Deuterium arc lamp, 2000-hour warranty
Bandwidth	5 nm
Wavelength Accuracy	±1 nm
Wavelength Repeatability	±0.25 nm
*Linearity	5% at 1.5 AU propylparaben, 257 nm
*Baseline Noise, Single Wavelength	<± 1.0 x 10^{-5} AU, 230 nm, 1s TC, shunt in place of flow cell
*Baseline Noise, Dual Wavelength	<± 5 x 10^{-5} AU, 230 nm and 280 nm, 1s TC, shunt in place of flow cell
Drift	<± 5 x 10^{-4} AU/hour/°C, at 230 nm, shunt in place of flow cell
Measurement Range	0.0001 - 4.0000 AU
Filter Setting, Single Wavelength Mode	0.025-5 seconds (Hamming)
Power-up Diagnostics	Optics and electronic diagnostic routine
Lamp On/Off Timer	Remote event input, time programmable
Flow Cell Design	Light-guided UPLC™ flow cell
Path Length	10 mm (both high and low flow rate flow cells)
Illuminated Cell Volume	500 nL (both high and low flow rate flow cells)
Wetted Materials	316 stainless steel, fused silica, Teflon® AF
Pressure Limit	1,000 psi

*Per ASTM E1657-94

ACQUITY UPLC™ Photodiode Array Optical Detector (optional)

Wavelength Range	190 to 800 nm
Wavelength Accuracy	±1 nm
Linearity Range**	5% at 1.5 AU, propylparaben, at 257 nm
Optical (or spectral) Resolution	1.8 nm
Digital Resolution	1.2 to 600 nm
Baseline Noise	$<\pm 5.0 \times 10^{-5}$ AU, 254 nm, 3.6 nm digital resolution, 1 s TC with shunt in place of flow cell
Drift	$\pm 5 \times 10^{-4}$ AU/hour (ΔT ±2 °C/hour, shunt in place of flow cell) after 60-minute warmup
Flow Cell Design	Light-guided UPLC™ flow cell
Path Length	10 mm (Both high and low flow rate flow cells)
Cell Volume	500 nL (Both high and low flow rate flow cells)
Wetted Materials	316 stainless steel, fused silica, Teflon AF
Pressure Limit	1,000 psi

**Per ASTM 685-79

ACQUITY UPLC™ Instrument Control

External Communications	Ethernet interfacing via RJ45 connection to host PC
Event Inputs/Outputs	Rear panel contact closure and/or TTL inputs/outputs
External Control	Empower™ or MassLynx™ Software
User Diagnostics	Available through software on host PC via the Instrument Console software

Environmental

Acoustic Noise	< 65 dBA
Operating Temperature Range	4 °C to 40 °C (39.2 to 104 °F)
Operating Humidity Range	20% to 80%, noncondensing

Power Requirements

Voltage Range	90 to 264 Vac
Frequency	47 - 63 Hz

Physical Dimensions

Core ACQUITY UPLC™ System, comprising: Binary Solvent Manager, Sample Manager with Column Heater and Solvents Tray:

Width: 13.5 inches (34.3 cm)

Height: 25 inches (63.5 cm)

Depth: 28 inches (71.1 cm)

Core ACQUITY UPLC™ System, comprising: Binary Solvent Manager, Sample Manager with Column Heater, Solvents Tray and TUV or PDA Detector:

Width: 13.5 inches (34.3 cm)

Height: 36.3 inches (92.2 cm)

Depth: 28 inches (71.1 cm)

High Capacity ACQUITY UPLC™ System, comprising: Binary Solvent Manager, Sample Manager with Column Heater, Solvents Tray, Sample Organizer and TUV or PDA Detector:

Width: 24.25 inches (61.6 cm)

Height: 36.5 inches (92.7 cm)

Depth: 28 inches (71.1 cm)

Ordering Information	Part Number
ACQUITY UPLC™ Core System	176015000
ACQUITY UPLC™ Sample Organizer	186015020
ACQUITY UPLC™ FlexCart	205015015
ACQUITY UPLC™ Tunable UV Detector	186015022
Cell UPLC™ TUV, High Flow	205015000
Cell UPLC™ TUV, Low Flow	205015001
ACQUITY UPLC™ PDA Detector	186015025
Cell UPLC™ PDA, High Flow	205015002
Cell UPLC™ PDA, Low Flow	205015003
IEEE to Ethernet Converter	668000287

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FRANCE 33 1 3048 7200

GERMANY 49 6196 400600

HONG KONG 852 29 64 1800

HUNGARY 36 1 350 5086

INDIA 91 80 2837 1900

IRELAND 353 1 448 1500

ITALY 39 02 27 4211

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PEOPLE'S REPUBLIC OF CHINA
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POLAND 48 22 833 4400

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RUSSIA/CIS 7 095 931 9193

SINGAPORE 65 6278 7997

SPAIN 34 93 600 9300

SWEDEN 46 8 555 11 500

SWITZERLAND 41 62 889 2030

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Milford, Massachusetts
01757-3696 USA
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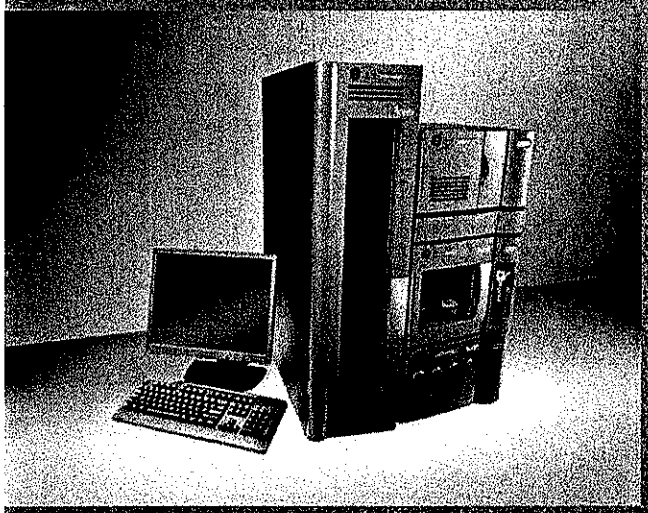
For Complete Confidence

[ACQUITY UPLC SYSTEM]

OVERCOME THE CHALLENGES OF ANALYTICAL LABORATORIES



Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

ACHIEVE MORE WITH PROVEN TECHNOLOGY

The proven design of the Waters® ACQUITY UPLC® system, used in laboratories for business-critical applications worldwide, ensures that you will simultaneously gain higher quality information from your samples and optimize laboratory productivity. ■ ACQUITY UPLC systems are holistically designed to match the performance needs of extremely small and efficient particles of UPLC® column chemistries with robust instrumentation and easy-to-use software. ■ And we continue to extend our products and services — to provide your lab with more ways to capture the full advantage of UPLC's dramatic improvements in resolution, sensitivity, and speed of analysis.


Acquity
Acquity
Acquity

MEASURABLE BENEFITS THROUGHOUT YOUR ORGANIZATION

Companies like yours seek opportunities in every corner of their organization to create competitive advantages that can increase revenues. UPLC is one such strategic technology that can simultaneously increase your laboratory productivity, decrease operational costs, and facilitate faster product development.

Not only does UPLC make good scientific sense – it also makes good financial sense. Whether you work in the laboratory, manage laboratory activities and resources, manage finances, or are responsible for overall strategic direction, the tangible benefits of UPLC are clear.

- Improved chromatographic performance
- More accurate results that are available to customers earlier
- Reduced costs and increased productivity for each individual in your decision process
- Faster time to market

WORK SMARTER

We're proud to see the benefits of UPLC paying off for our customers. The award-winning ACQUITY UPLC system has revolutionized LC and LC/MS analyses in laboratories around the world – proof positive that today's leading scientists have made the switch to UPLC and aren't looking back.

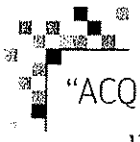
They need to get the job done quickly and efficiently, just like you. And now with UPLC, they're able to realize unprecedented levels of analytical performance in resolution, sensitivity, and speed.

Consider the amount of work that you need to accomplish today. How can you afford not to use the ACQUITY UPLC system?

How do chromatographic technologies compare?

TECHNOLOGY	RESOLUTION	SENSITIVITY	SPEED	SCALABILITY PREP-SCALE HPLC	COMPATIBILITY WITH MS
Waters ACQUITY UPLC	☆	☆	☆	☆	☆
Conventional HPLC	△	△	▽	☆	△
"Ultra-fast high-flow" HPLC	▽	▽	▣	△	●
"High-temperature high-flow" HPLC	▣	△	☆	△	●
Monolith HPLC	△	▽	☆	▽	●

☆EXCELLENT ▣VERY GOOD △GOOD ▽FAIR ●POOR



"ACQUITY UPLC concentrates all the analytes into a smaller volume so that the peaks are narrower and taller. Now chemists can try things they never could before due to time constraints and the cost of compounds. With ACQUITY UPLC, you get all sorts of good things."

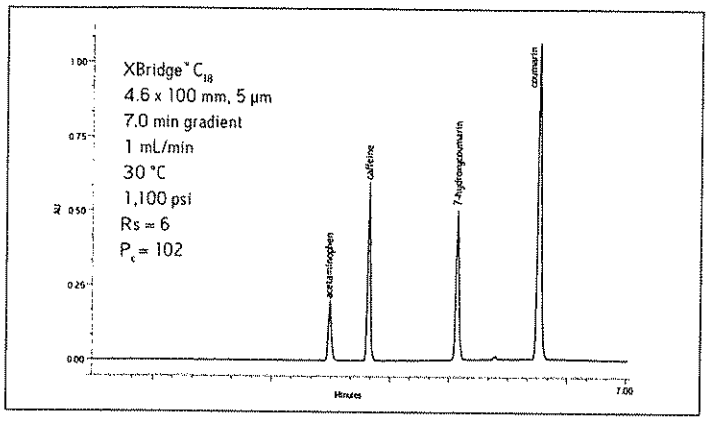
Art Coddington, Ph.D.
Research Fellow (retired)
Merck Research Laboratories

HPLC DOESN'T COME CLOSE

Waters was the first to challenge the established paradigm of liquid chromatography performance by designing a system with next-generation performance that drives separation science capabilities far beyond traditional benchmarks.

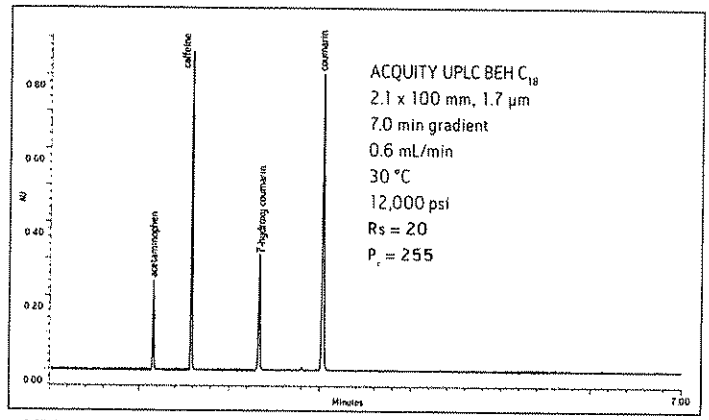
At Waters, we understand that you cannot simply modify an LC column or instrument to push its capacity to the next level. Our cutting-edge UltraPerformance LC® technology, based on known chromatographic principles, simply outperforms HPLC in every aspect.

UPLC is so much more than just fast HPLC. With the ACQUITY UPLC system, we enable you to choose the separation that is ideal for your analytical task. By taking advantage of sub-2 µm BEH (bridged ethylsiloxane/silica hybrid) and HSS (high strength silica) particles in combination with a wide range of chemistries and geometries, precise temperature control, and versatile solvent management, we have created the most flexible platform for superior performance under any conditions. No other LC system on the market today can come close.



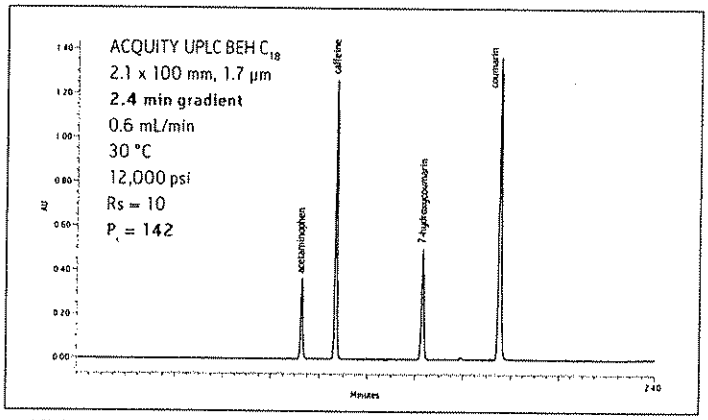
HPLC

Optimized HPLC separation of acetaminophen, caffeine, 7-hydroxycoumarin and coumarin. USP resolution determined from acetaminophen and caffeine peaks.



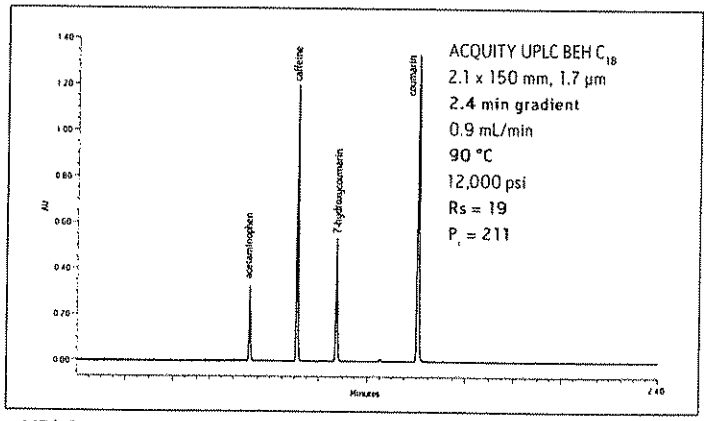
UPLC resolution

ACQUITY UPLC provides more resolution, while maintaining throughput.



UPLC speed and sensitivity

ACQUITY UPLC provides increased throughput and sensitivity, while maintaining resolution.

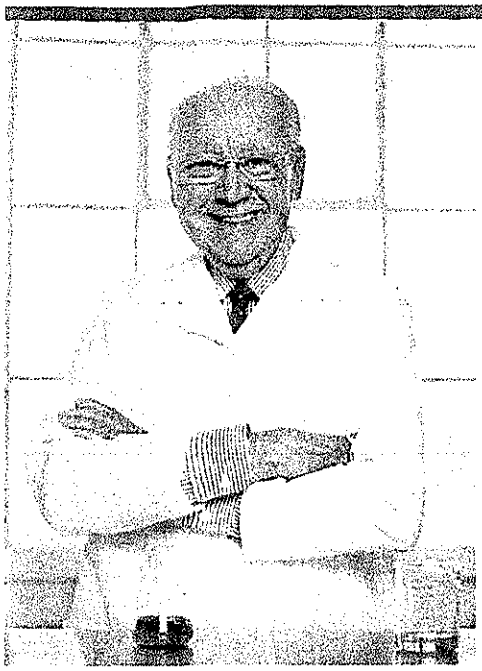


UPLC resolution, speed, and sensitivity

ACQUITY UPLC provides more resolution and sensitivity, while increasing throughput with optional elevated temperatures.

Take the ACQUITY UPLC challenge!

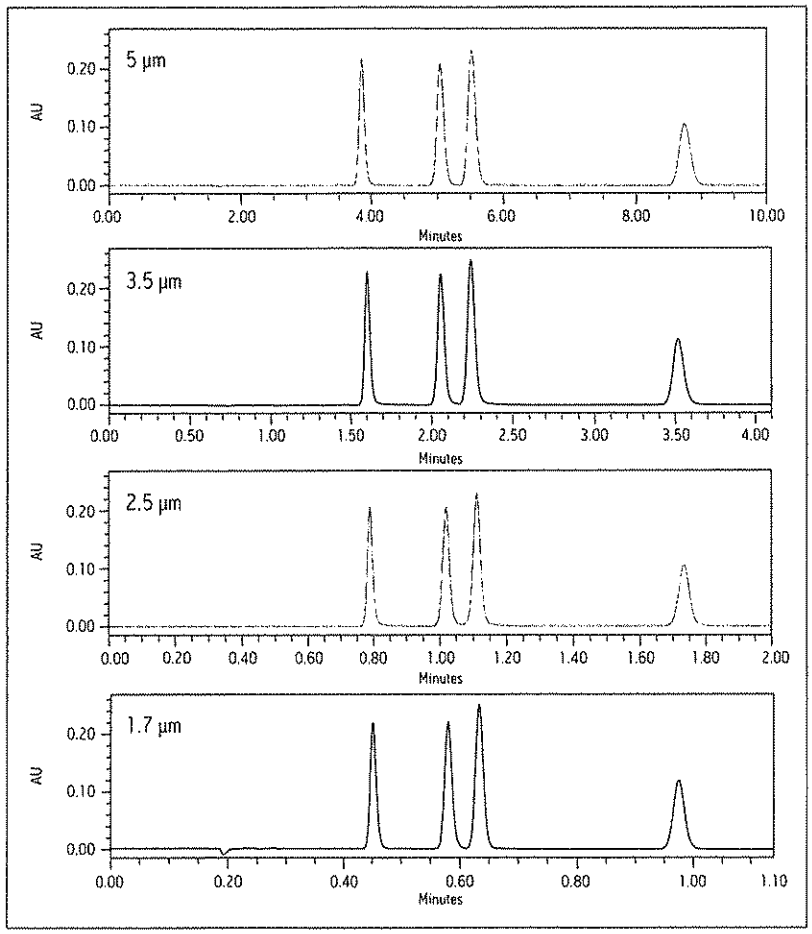
See for yourself the measurable performance improvements possible with UPLC at **www.waters.com/calc**



One laboratory has realized an estimated 74 percent cost reduction per sample by migrating from HPLC to UPLC.

ENGINEERED FOR DEMANDING LABORATORIES

At Waters, we're serious about our customers' success. Once we unveiled the true potential of UPLC chemistries, we built a system that would stand up to the demands of your rigorous day-to-day requirements.



BEH particle technology allows you to maintain chromatographic selectivity and resolution, regardless of the scale of your separation.

System hallmarks

The ACQUITY UPLC system's hallmark innovations include tightly integrated high-pressure fluidics, new techniques for sample handling, versatile sample capacity, minimal system volumes, intuitive integrated software and diagnostics, and an array of fast-response detectors.

The system's unique, pressure-tolerant sub-2 µm ACQUITY UPLC columns have a state-of-the-art particle design and quality control standards to provide unparalleled performance and reproducibility. The columns are stable across a wide pH and temperature range and are available in a variety of chemistries, making the ACQUITY UPLC system flexible enough to meet any lab's requirements for high efficiency separations with reduced cycle times and improved resolution and sensitivity.

For mass spectrometry, the superior separations provided by the ACQUITY UPLC system produce spectra of the highest quality and sensitivity, making the Waters system the best inlet available – without flow splitting – for MS and MS/MS analyses.

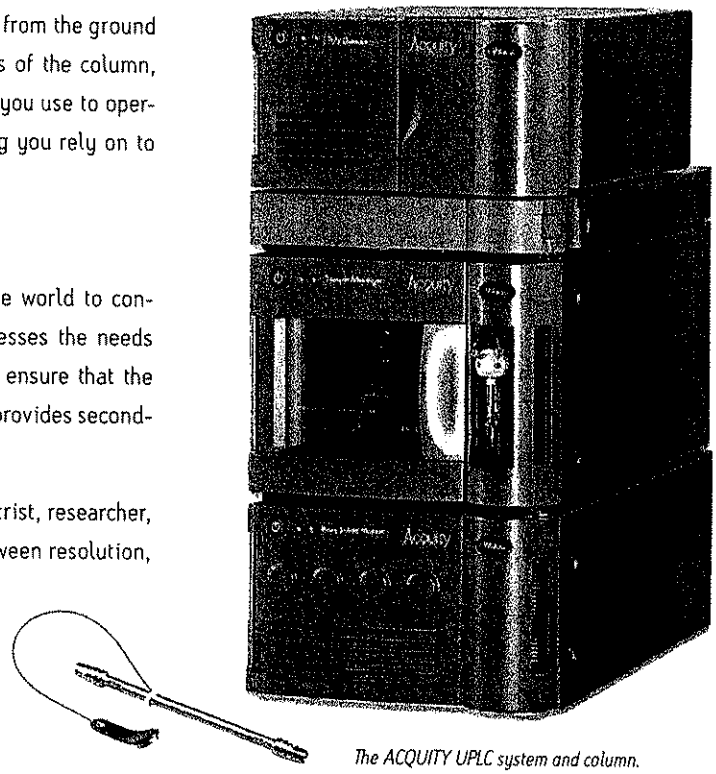
Performance

Our engineers designed the ACQUITY UPLC system from the ground up. We addressed in concert the interdependencies of the column, the instrumentation, the software and console that you use to operate the system, as well as the services and training you rely on to maintain a productive and efficient lab.

Ultimate laboratory productivity

Waters has partnered with collaborators around the world to confirm that our revolutionary UPLC technology addresses the needs of diverse laboratory environments. We did this to ensure that the ACQUITY UPLC system is rugged, easy-to-use, and provides second-to-none chromatographic performance.

Whether you're a chromatographer, mass spectrometrist, researcher, or methods developer, you don't have to choose between resolution, sensitivity, or speed.



The ACQUITY UPLC system and column.

With UPLC, you get it all – ultimate performance, without compromise.

SPECIALIZED APPLICATIONS FOR UPLC

The ACQUITY UPLC system is also offered in unique end-to-end solutions for peptide mapping and amino acid analysis. These configurations include the chemistry, instrumentation, methodology, documentation, and application support needed for high-quality analyses. An array of specialized system solutions are also available for ADME screening, food safety, bioanalysis, clinical, metabolite identification, metabonomics, method development, and open access applications.

Specifically designed for the extreme demands of peptide mapping applications, the UPLC Peptide Analysis Solution, with new Peptide Separation Technology Columns, combines ease of use with unmatched performance in separating complex protein digests, superior glycopeptide resolution, and peak shape for analytical confidence.

The UPLC Amino Acid Analysis Solution, based on Waters AccQ•Tag™ Ultra Chemistry, is optimized for accurate, reliable, and reproducible analyses of amino acids in a fraction of the time needed for typical HPLC separations.

"Lab managers find that method development is much more rapid with UPLC than with traditional HPLC."

"The ACQUITY UPLC and Quattro micro™ are absolutely magnificent for what we do. Now we can separate, identify, and quantify 38 estrogen derivatives at femtomolar amounts in less than 12 minutes."

Prof. Ercole Cavalieri
Center for Environmental Toxicology
University of Nebraska

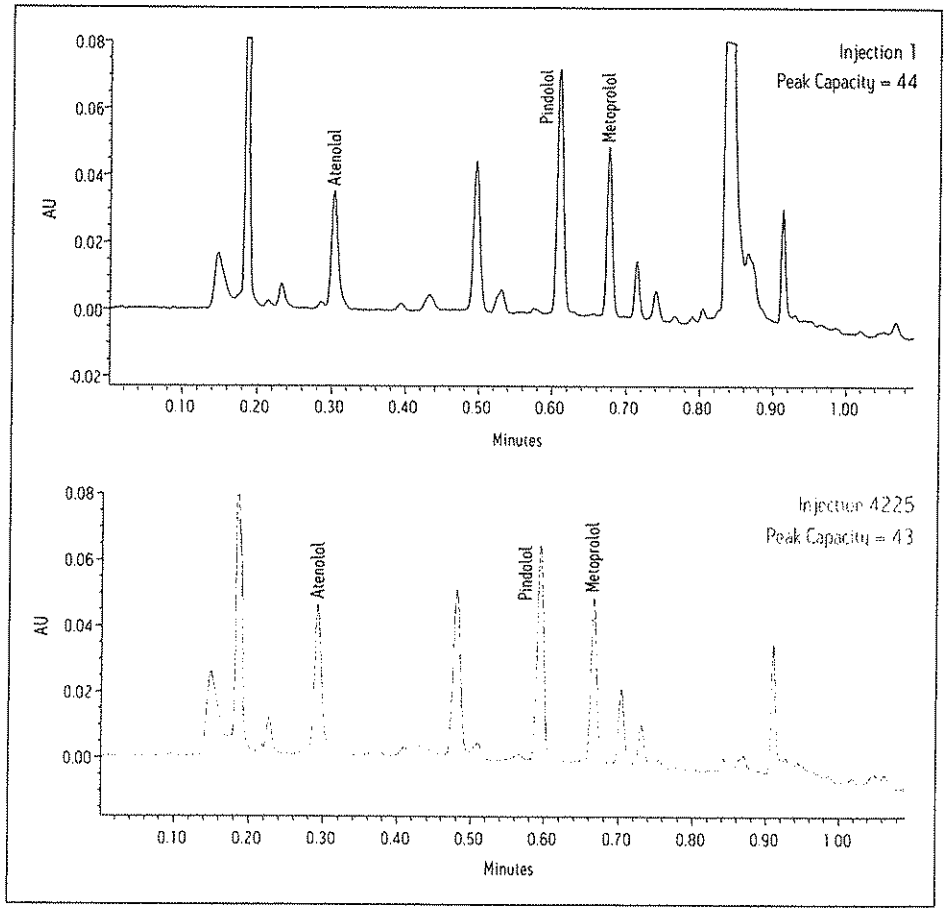
FROM HPLC TO UPLC TO PREP: THE POWER OF BEH AND HSS TECHNOLOGY

Columns built for high efficiency

Using unique 1.7 µm BEH and 1.8 µm HSS material, we created scalable, pure particle columns with superior mechanical strength over wide temperature and pH ranges specifically for the high-efficiency separations of UPLC. With BEH and HSS particle technology, ACQUITY UPLC columns exhibit improved efficiency, strength, temperature, and pH range – the hallmarks of UPLC separations.

Stability and robustness

Waters sets the standard for column-to-column and batch-to-batch reproducibility for guaranteed performance over the life of the column, every time.



Thousands of protein-precipitated plasma injections illustrate the long, reproducible ACQUITY UPLC BEH column lifetimes.

Transferability

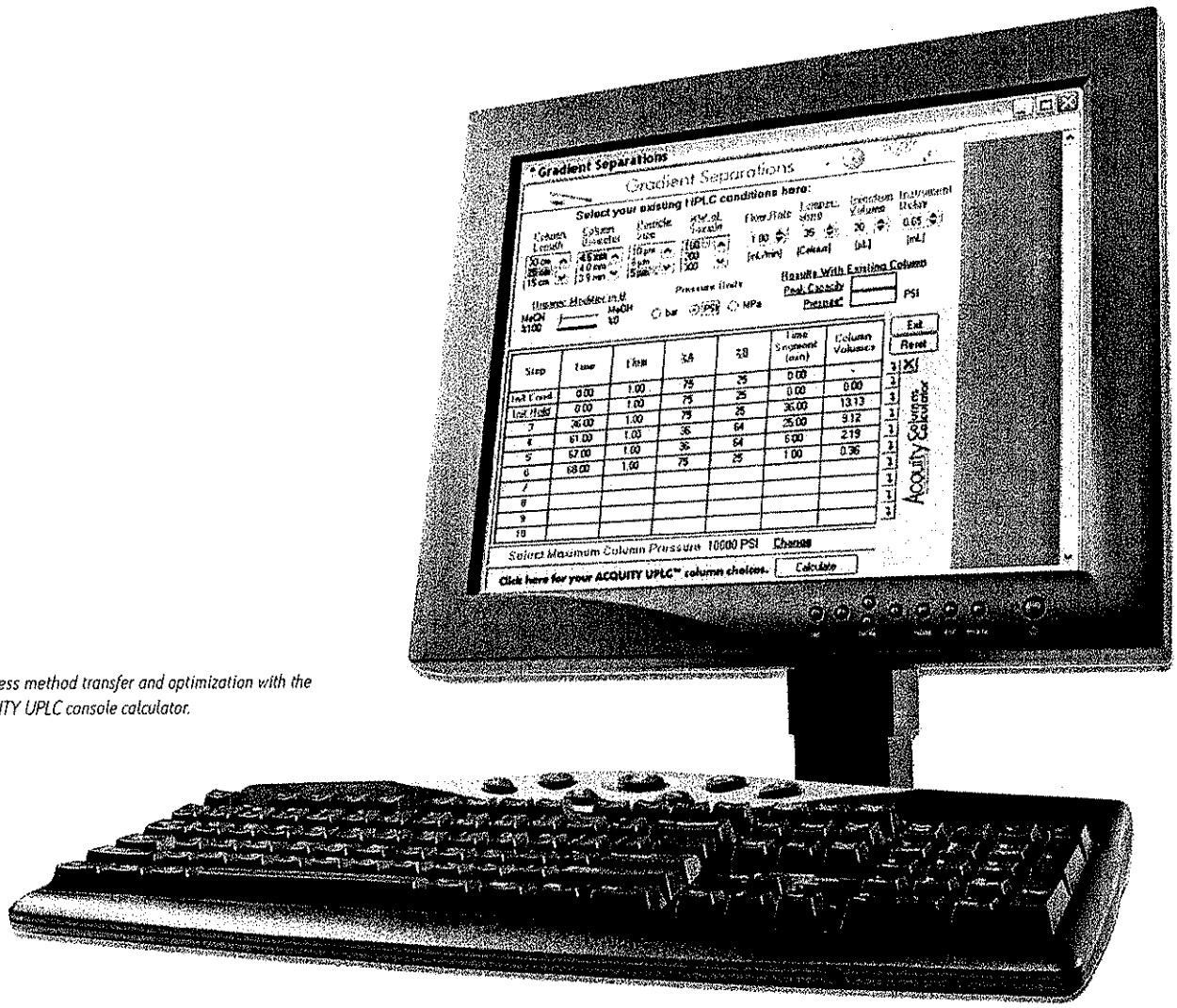
ACQUITY UPLC BEH columns offer a wide range of complementary chemistries, including C_{18}, C_8, Shield RP_{18}, Phenyl, and HILIC. With ACQUITY UPLC BEH and ACQUITY UPLC HSS T3 columns, method development and transfer from HPLC to UPLC couldn't be easier. Using the ACQUITY UPLC console calculator, simply input your current HPLC conditions for full transfer parameters.

Direct scalability

Waters XBridge and Atlantis® T3 HPLC columns extend the power of BEH and HSS technology to larger particle sizes for superior HPLC separations and hassle-free scale-up and optimization.

Traceability

The ACQUITY UPLC columns also feature eCord™ technology that electronically stores all of the information you need to track your experiments: the certificate of analysis, dates of installation and usage, number of injections, number of sample sets, maximum temperature and pressure.



Effortless method transfer and optimization with the ACQUITY UPLC console calculator.

THE PERFORMANCE YOU WANT, IN THE CONFIGURATION YOU NEED

The ACQUITY UPLC system provides our customers with a comprehensive set of system components that address a range of analytical challenges, from the simplest to the most complex. We configured the system for flexibility, to enable laboratories to select the most appropriate components that meet your application needs. With this modular design, you can add-on features as necessary to build a system that addresses your evolving goals for analytical productivity and efficiency.

Our ACQUITY UPLC systems come complete with the instrumentation, chemistry, documentation, methodology, application support, accessories, support services, and training you need to perform trouble-free UPLC analyses.

Versatility

Column and sample format options enable you to meet your lab's throughput needs.

- Sample Organizer
- ACQUITY UPLC BEH column chemistries: C_{18}, C_8, Shield RP_{18}, Phenyl, HILIC, and ACQUITY UPLC HSS T3
- ACQUITY UPLC VanGuard pre-columns
- Handles multiple sample formats: plates, vials, tubes
- Quick Connect fittings

Performance

Sensitivity to meet multiple detection requirements.

- Binary Solvent Manager
- Sample Manger
- Evaporative Light Scattering detector
- Fluorescence detector
- Photodiode Array detector
- Tunable UV detector
- SQ detector
- TQ detector

Flexibility

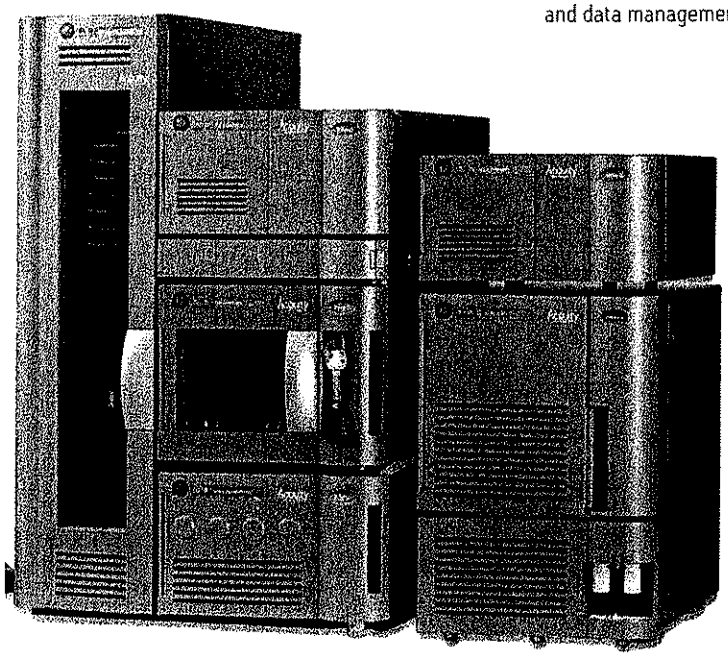
System configurations can be easily modified to match your methodology.

- Column Manager with heating/cooling for low dispersion control and precise temperature management
- Optional automated column switching among multiple columns and a bypass channel
- Optional Sample Organizer for high capacity processing
- Adjustable FlexCart for convenient installation and easy movement between workstations
- Third-party vendor mass spectrometer adaptability

Intelligence

Software, services, and tools to help you optimize system performance.

- ACQUITY UPLC console with calculator for method conversion
- Connections INSIGHT® remote intelligent services for predictive system support
- IVDD Certification
- Empower™ or MassLynx™ software for control and data management



The ACQUITY® SQD for UPLC/MS.

DO MORE WITH YOUR RESULTS

Waters software solutions enable you to capitalize on the results generated by the ACQUITY UPLC system. The Waters Laboratory Informatics Suite includes proven information management solutions that integrate all your lab resources in a consistent, scalable, and seamless application environment.

Empower software provides control of the ACQUITY UPLC system, including data acquisition, management, processing, and reporting, all in the market-leading chromatography data software (CDS) platform. Empower is scalable from a single workstation to an enterprise-wide CDS solution, and offers advanced features for method development, reporting, and custom calculations, as well as Enterprise Options for advanced data management and automated method validation management.

MassLynx software, for advanced mass spectrometry applications, enables researchers to acquire, analyze, manage, and distribute information. MassLynx offers flexible control over complex instrument configurations, and Application Managers that are tailored for specific MS analyses.

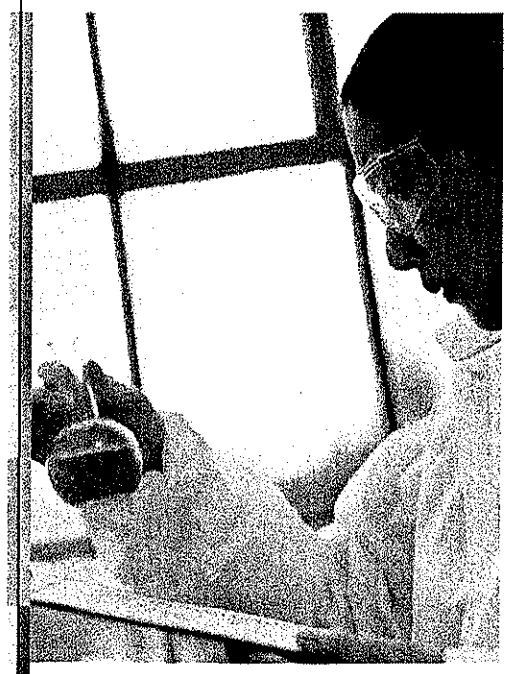
NuGenesis® SDMS is a customizable scientific information management platform that automatically captures and stores data in a centralized data warehouse. SDMS makes information easier to save, secure, process, report, search, and access; facilitates regulatory compliance; and aids in the administration of intellectual property. SDMS converts scientific results into accessible and valuable corporate knowledge.

MAXIMIZE SYSTEM UPTIME WITH INTELLIGENT SERVICES

Connections INSIGHT remote intelligent services provide secure, web-based system monitoring, instant alert notification, and a direct link to Waters technical experts. These services help you maximize ACQUITY UPLC system uptime, increase laboratory productivity, and allow Waters to continually monitor your system's performance to anticipate potential performance issues.

In the event system issues occur, the service automatically alerts Waters and provides information for analysis. This can be accomplished by granting Waters temporary system access for real-time problem resolution.

Connections INSIGHT remote intelligent services also provide monthly performance status reports that summarize overall system operation and use of consumables, enabling you to better manage your laboratory resources.



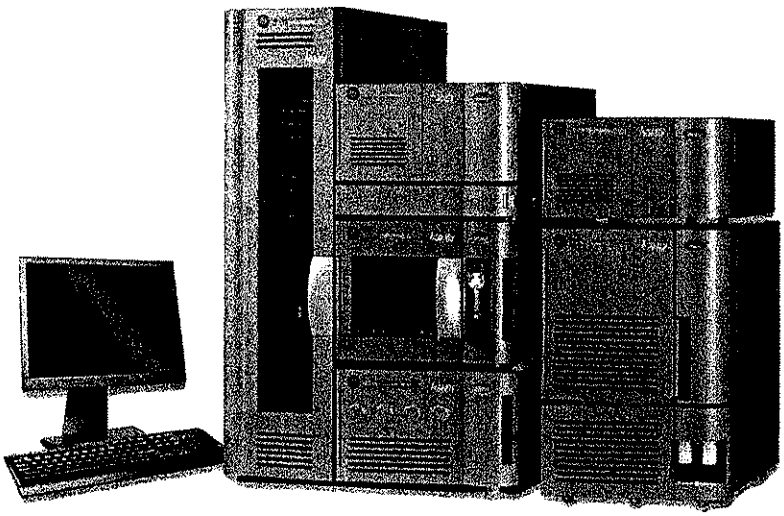
One scientist has been amazed by their ability to separate a set of nutrients in nine minutes, when, not long ago, it took several hours.

MAXIMIZE LC/MS PERFORMANCE AND PRODUCTIVITY

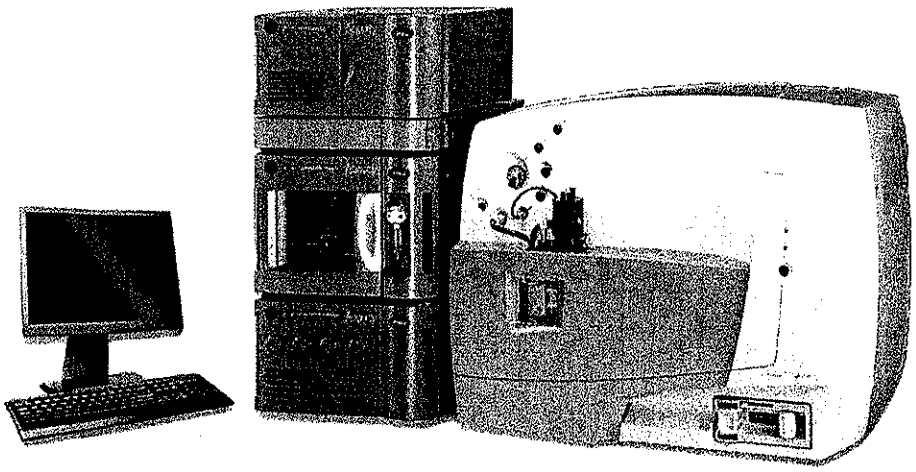
From Waters' easy-to-use, high-performance single quad mass detectors, to advanced tandem and time-of-flight mass spectrometers (TOF MS), the ACQUITY UPLC system is the only inlet you'll need for MS and MS/MS analyses, regardless of your analytical goal.

UPLC's dramatic peak resolution results in greatly enhanced detection sensitivity, allowing you to see more quality information in less time.

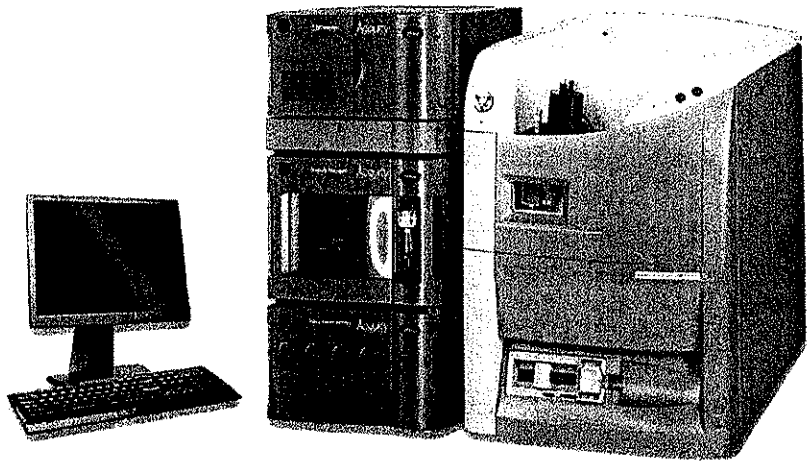
By matching our compliant-ready UPLC/MS and UPLC/MS/MS system solutions with MassLynx software and its Application Managers for specialized data processing, you will complete your analysis accurately and quickly, with complete confidence in your answers.



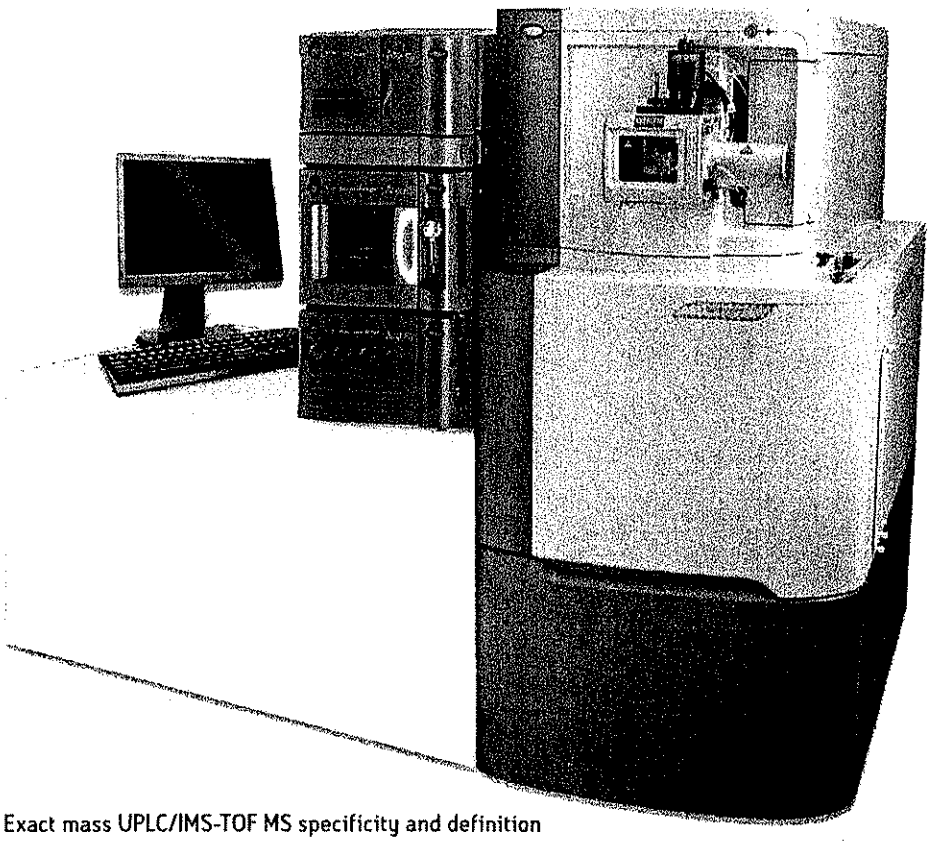
High throughput UPLC/MS and UPLC/MS/MS robustness
ACQUITY® SQD and ACQUITY TQD with Empower or MassLynx software.



Exact mass UPLC/MS certainty
ACQUITY UPLC system with the LCT Premier™ XE mass spectrometer and MassLynx software.



Quantitative UPLC/MS/MS sensitivity
ACQUITY UPLC system with the Quattro Premier™ XE mass spectrometer and MassLynx software.



Exact mass UPLC/IMS-TOF MS specificity and definition
ACQUITY UPLC system with the Synapt™ HDMS™ system and MassLynx software.

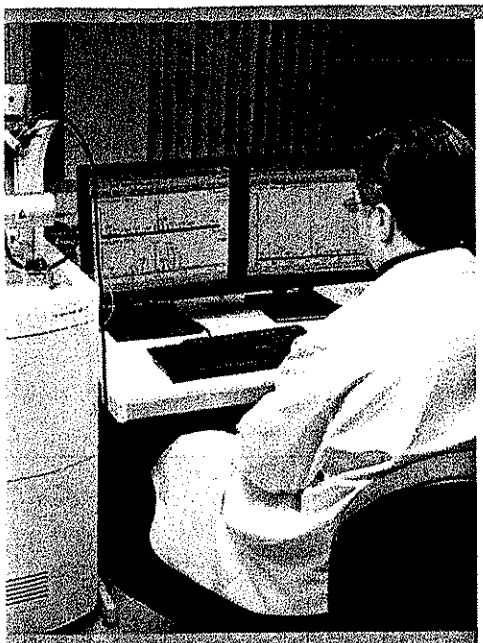
ENHANCE YOUR EXISTING INVESTMENT: UPLC AND THIRD-PARTY MASS SPECTROMETERS

Waters recognizes that a majority of labs have already made significant capital commitments to mass spectrometry equipment that may be manufactured by third-party providers. You can still take advantage of the significant advantages that the ACQUITY UPLC system offers as a front end to a variety of MS instruments.

The ACQUITY UPLC system is now easily compatible with third-party MS solutions via expanded software control options, allowing you to get the most efficiency and performance from your existing technologies.

"The Waters ACQUITY UPLC system has revolutionized the way we do metabolic profiling in my lab – the combination of this system with statistically-linked NMR spectroscopy is nearly unbeatable for metabolic biomarker discovery."

Prof. Jeremy Nicholson
Div. of Biological Sciences
Imperial College



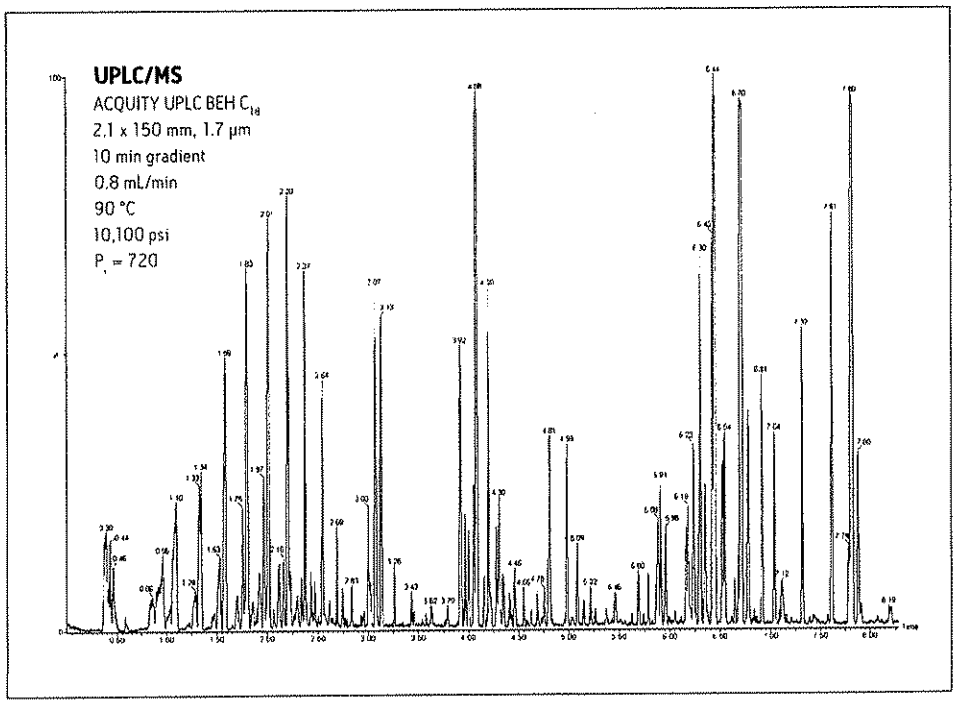
As a result of employing the Waters UPLC/MS approach for metabonomics, a large pharmaceutical safety assessment group is discovering earlier the derived biomarkers of toxicity that will be monitored as part of the group's clinical trial program.

THE PROOF IS IN THE DATA

Ultimate resolution

At a time when scientists have reached a chromatographic performance barrier and are pushing the limits of conventional HPLC, UltraPerformance LC technology brings an unprecedented level of separating power.

As the requirement to better characterize your sample becomes commonplace in research, regulatory, and chemical analysis environments, HPLC capabilities often fall short of the task at hand. The best way to ensure that you get maximum information is to achieve better chromatographic resolution and increased peak capacity – which are both delivered by UPLC.



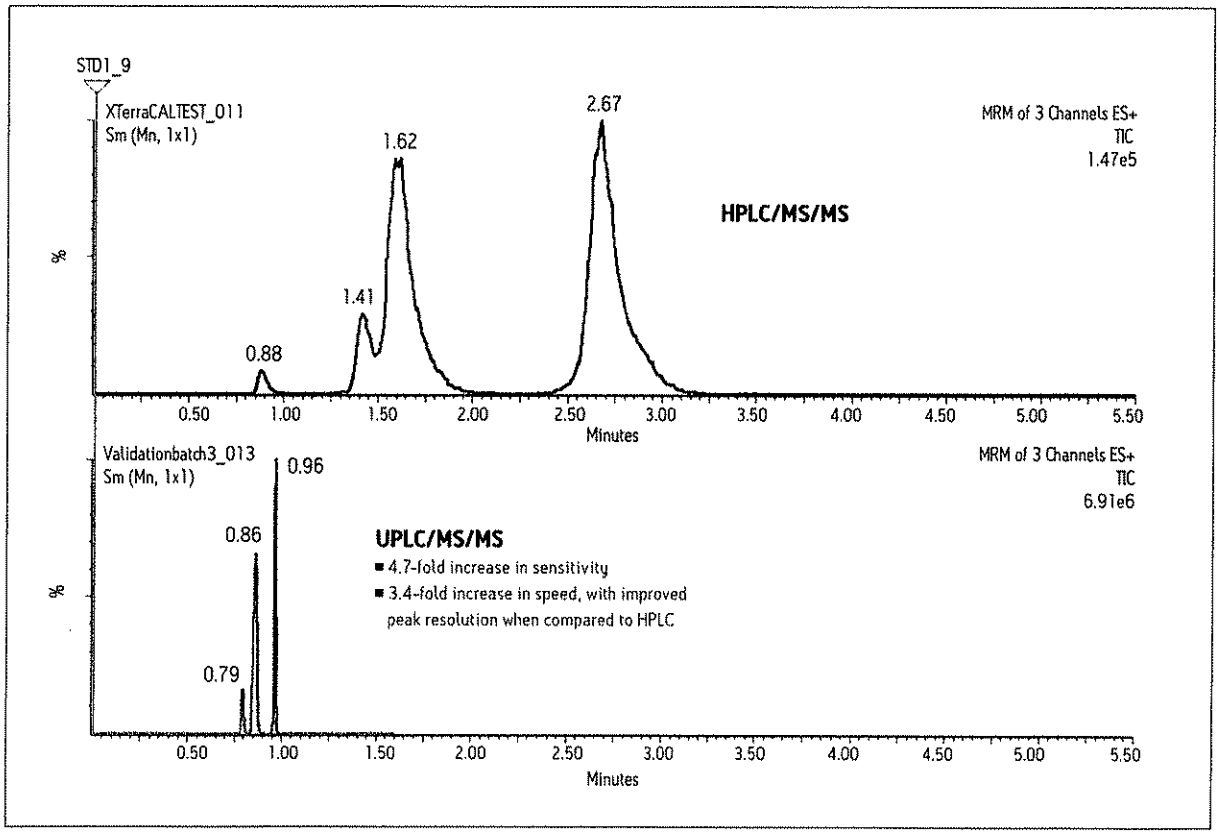
This example shows the natural products analysis of ginseng extract using UPLC oa-TOF MS with the ACQUITY UPLC system and the LCT Premier XE mass spectrometer.

An open access lab's turnaround time was cut in half - while it also reduced solvent consumption by 85 percent.

Ultimate speed and sensitivity

In every analysis, there is a constant drive to generate better quality data in shorter timeframes with lower levels of analyte detection to speed up research, development, and product release. The ACQUITY UPLC system enables you to easily develop methods as well as to transfer your existing HPLC methods, allowing you to realize significant improvements in productivity, while enhancing chromatographic performance, detection limits, and data quality.

And when you couple the ACQUITY UPLC system with Waters' advanced optical and mass detection technologies, your lab will have the definitive platform for high throughput, high sensitivity qualitative and quantitative analysis.



Beta blockers calibration standard mix from plasma extract: Comparing HPLC/MS/MS with UPLC/MS/MS with the ACQUITY UPLC system and the Quattro Premier XE tandem quadrupole mass spectrometer.

With the ACQUITY UPLC system, your laboratories with achieve more than ever before.

SALES OFFICES:

Austria 43 1 877 18 07

Australia 61 2 9933 1777

Belgium and Luxembourg 32 2 726 1000

Brazil 55 11 4134 3788

Canada 1 800 252 4752

China 86 10 8586 8899

Czech Republic 420 2 617 11384

Denmark 45 46 59 8080

Finland 358 9 5659 6288

France 33 1 30 48 72 00

Germany 49 6196 400 600

Hong Kong 852 2964 1800

Hungary 36 1 350 5086

India 91 80 2837 1900

Ireland 353 1 448 1500

Italy 39 02 265 0983

Japan 81 3 3471 7191

Korea 82 2 820 2700

Mexico 52 55 52 00 1860

The Netherlands 31 76 508 7200

Norway 47 6 384 6050

Poland 48 22 833 4400

Puerto Rico 787 747 8445

Russia/CIS 495 727 4490 / 290 9737

Singapore 65 6273 1221

Spain 34 93 600 9300

Sweden 46 8 555 115 00

Switzerland 41 21 983 1818

Taiwan 886 2 2543 1898

UK 44 208 238 6100

US 1 800 252 4752

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Waters

THE SCIENCE OF WHAT'S POSSIBLE.™

May 2007 720001507EN JH-CP

Waters Licenses, Warranties, and Support

Waters

34 Maple Street
Milford, MA 01757

71500029510, Revision B

NOTICE

English

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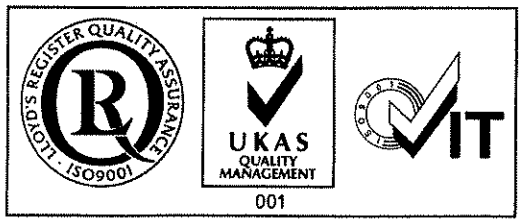

English

1 Software License and Instrumentation Warranty

All use of Waters® Software shall be governed by the following terms and conditions.

The term "Software" includes the object code version of the Millennium®^{32} Software, MassLynx™ Software, Breeze™ Software, and Empower™ Software licensed to you (the Customer) by Waters Corporation. The Software is comprised of the computer programs, magnetic media containing the computer programs, user documentation, and any updates that Waters may provide to you.

1.1 Software License

Upon the payment of the applicable license fees, Waters grants you a nonexclusive, nontransferable license to use the Software to perform internal information and data processing in connection with Waters and other non-Waters instrumentation products. You may install, copy or transmit the Software in whole or in part: (i) for single-seat licenses, only as necessary to use the Software either on a single personal computer or workstation and (ii) for client/server licenses, in a reasonable manner in order to ensure that the number of users does not exceed the number of users for which you have paid license fees. The Software is protected by the copyright laws of the United States and international treaties. In conjunction with the license rights granted hereunder, you may make a reasonable number of backup copies of the Installed Software for disaster recovery and archival purposes and may make such copies of the user documentation for the Software such that there are no more than one per licensed user. You must reproduce and include Waters' and any third-party manufacturer's copyright notices on any backup, disaster recovery or archival copies of the Software and on any copies of the user documentation. You may not assign, timeshare, rent, sublicense or transfer the Software. You may not publish the results of any benchmark tests run on the Software. Any use of the Software other than as expressly permitted by the license grant is prohibited.

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The Software is not specifically developed, or licensed for use in any nuclear, aviation, mass transit, and medical application or in any inherently dangerous applications. Waters shall not be liable for any claims or damages arising from such use and you hereby agree to indemnify and hold Waters and any third-party manufacturers harmless from any claims for losses, costs, damages, or liability arising out of or in connection with any such inherently dangerous use of the Software.

You agree to comply fully with all relevant export laws and regulations of the United States ("Export Laws") to ensure that the Software is (a) not exported directly or indirectly in violation of Export Laws and (b) not intended to be used for any purposes prohibited by the Export Laws. If you are a branch of the United States government, you shall have "restricted rights" to use, duplicate, or disclose the Software as set forth in subdivision (c)(1)(ii) of Rights in Technical Data and Computer Software Federal Acquisition Regulations Supplement (DFARS) 252.227-7013 or subparagraphs (c)(1) and (2) of the Commercial Computer Software-Restricted Rights at 48 CFR 52.227-19.

1.2 Instrumentation Limited Warranty

Waters Technologies Corporation, d/b/a Waters Corporation ("Waters"), warrants from the date of shipment for the applicable Warranty Period that its instrumentation products shall be free from defects in design, material and workmanship and shall conform to and perform materially in accordance with the specifications set forth in the applicable operator or user manual when used in the proper operating environment under normal use and service. This warranty covers all new instrumentation products manufactured by Waters. Any warranty that may be applicable to third-party instrumentation products and accessories shall be provided by the respective manufacturers or suppliers of such Third-Party Components. This instrumentation limited warranty is subject to the conditions set forth below.

Instrumentation Limited Warranty Exclusions

The foregoing limited warranty does not apply to any material deviation from the specifications by any instrumentation product that results from (a) use of the instrumentation for any purpose other than general-purpose use and specifically excluding use of the instrumentation products in clinical diagnostic procedures, or use of the instrumentation products for investigational use with or without confirmation of diagnosis by another, medically established diagnostic product or procedure, (b) errors or defects in any Third-Party Component, (c) modification of the instrumentation products by anyone other than Waters, (d) failure by Customer to install any standard enhancement or update in accordance with an update procedure, release of firmware or any operating system release, (e) any willful or negligent action or omission of Customer, (f) any misuse or incorrect use of the instrumentation product, (g) any malfunction of any information system or instrument with which the instrumentation product may be connected, or (h) failure to establish or maintain the operating environment for the instrumentation product in accordance with the applicable operator or user manual.

Instrumentation Exclusive Remedy

In the event of any failure of the instrumentation product to perform in accordance with the foregoing warranty, Waters' sole liability and Customer's sole and exclusive remedy, shall at Waters' sole discretion, is to repair or replace the instrumentation product or refund amounts paid by the Customer for the instrumentation product that does not meet the limited warranty.

Instrumentation Warranty Service

Warranty service is performed at no charge and at Waters' option and in Waters' sole discretion in one of four ways:

- A service representative is dispatched to the Customer facility.
- The instrumentation product is returned for repair at a Waters facility.

English

- Replacement parts with appropriate installation instructions are sent to the Customer.
- Product is replaced with refurbished or "like-new" equivalents.

Warranty service is performed only if the Customer notifies Waters during the applicable warranty period.

Unless otherwise agreed in writing at the time of sale, if the instrumentation product for which warranty service is sought has been removed from the initial installation geographic site, no warranty service will be provided.

Warranty service is provided during normal business hours (8 AM to 5 PM, Monday through Friday). Service is not available when Waters offices are closed in observance of legal holidays.

Instrumentation Warranty Service Exceptions

Warranty service is not performed on:

- Any instrumentation product or part that has been repaired by others, improperly installed, altered, or damaged in any way.
- Any instrumentation product or parts not manufactured by Waters.
- Any instrumentation product that malfunctions because the Customer has failed to perform maintenance, calibration checks, or observe good operating procedures.
- Any instrumentation product that malfunctions due to the use of unapproved maintenance or repair parts or operating supplies and computers not meeting minimum hardware requirements or as a result of network related problems.

Repair or replacement is not made:

- For expendable items such as sample vials, filters, fittings, and other operating supplies, if such items were operable at the time of initial use.
- Because of decomposition due to chemical action.
- Because of poor facilities, operating conditions, or utilities.

Software Limited Warranty

Waters Technologies Corporation, d/b/a Waters Corporation ("Waters"), warrants for a period of ninety (90) days from the date of shipment that the software products ("Software") will, when used in the designated operating environment, perform substantially in accordance with the operating specifications set forth in the user manual as amended by any release notes issued during the Warranty Period and that the media upon which Software is recorded will be free of defects in materials and workmanship. The foregoing warranty shall apply only to the most current version of the Software that was supplied to the Customer by Waters. The limited warranty is subject to the conditions set forth below:

1. The Customer must give written notice to Waters during the Warranty Period with an explanation of the circumstances of any claim that the Software fails to conform to this limited warranty.
2. The Customer's sole and exclusive remedy in the event of any such failure is expressly limited to the correction or replacement of the defective Software or the refund of the fees paid for the defective Software.
3. Waters does not warrant that the operation of the Software will be uninterrupted or error free.
4. This limited warranty is for the benefit of and applies only to the Customer.

5. The limited warranty shall not apply to any Software delivered to the Customer that has been improperly installed or modified or which has been the subject of neglect, misuse, abuse, misapplication or alteration.
6. No representative of Waters is authorized to commit Waters to any warranty other than the warranty contained herein.

Instrumentation and Software Limited Warranty Disclaimers

THE LIMITED WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER REPRESENTATIONS, WARRANTIES AND GUARANTEES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS OF THE PRODUCTS FOR A PARTICULAR PURPOSE, INCLUDING FITNESS FOR USE IN CLINICAL DIAGNOSTIC PROCEDURES OR FOR INVESTIGATIONAL USE WITH OR WITHOUT CONFIRMATION OF DIAGNOSIS BY ANOTHER MEDICALLY ESTABLISHED DIAGNOSTIC PRODUCT OR PROCEDURE, OR NONINFRINGEMENT, AND ANY WARRANTIES ARISING OUT OF COURSE OF DEALING OR COURSE OF PERFORMANCE. CUSTOMER EXPRESSLY ACKNOWLEDGES THAT BECAUSE OF THE COMPLEX NATURE OF THE PRODUCTS AND THEIR MANUFACTURE, WATERS CORPORATION CANNOT AND DOES NOT WARRANT THAT THE OPERATION OF THE PRODUCTS WILL BE WITHOUT INTERRUPTION OR ERROR FREE OR WITHOUT DEFECT. CUSTOMER EXPRESSLY ACKNOWLEDGES THAT CUSTOMER IS SOLELY RESPONSIBLE FOR USE OF THE PRODUCTS IN CLINICAL DIAGNOSTIC PROCEDURES OR FOR INVESTIGATIONAL USE WITH OR WITHOUT CONFIRMATION OF DIAGNOSIS BY ANOTHER MEDICALLY ESTABLISHED DIAGNOSTIC PRODUCT OR PROCEDURE.

IN NO EVENT SHALL WATERS OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS INFORMATION OR ANY PECUNIARY LOSS ARISING OUT OF THE USE OR INABILITY TO USE THIS SOFTWARE OR INSTRUMENTATION, EVEN IF WATERS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN THE EVENT WATERS' DISCLAIMER IS NOT EFFECTIVE, WATERS' TOTAL LIABILITY IN ANY EVENT SHALL NOT EXCEED THE PURCHASE PRICE OF THE GOODS AND SERVICES TO WHICH THE DAMAGES RELATE AND, THE PARTIES AGREE THAT SUCH LIMITED LIABILITY IS A REASONABLE ALLOCATION OF THE RISKS INVOLVING THE PRODUCT.

English

Warranty Periods

The warranty periods begin when products are shipped.

Product Warranty Periods

Instrumentation Item(s)	Instrumentation Component(s)	Warranty Period
Electronic and Mechanical Assemblies	Total instrument except for maintenance parts, operating supplies and expendable components	1 year (12 months) from date of shipment, unless otherwise stated in the user documentation (e.g., 2695s have a 2-year warranty for the sample manager and solvent manager drive mechanisms)
Normal Wear and Maintenance Parts	As defined in the instrument Performance Maintenance Kit (if available) Or for individual maintenance parts as listed in the user documentation	90 days from date of shipment
Operating Supplies and Expendables	Autosampler vials, solvent and sample filters, and fuses	Warranted to function properly when delivered
Software Item(s)	**Software Component(s)**	**Warranty Period**
Software (Media only)	CDs and diskettes	90 days from date of shipment
Software Performance		90 days from date of shipment

Warranty Returns

No returns may be made without prior notification of, and authorization from, Waters. If for any reason it is necessary to return material to Waters, please contact Waters Customer Service or your nearest Waters subsidiary or representative for a return merchandise authorization (RMA) number and forwarding address.

Extended and enhanced warranty coverage is available for Instrumentation Products and Software under the applicable service and support plan. Please contact your local Waters office for more information.

1.3 Non-Waters Hardware Warranties

English

The warranty for hardware not manufactured by Waters Corporation follows the warranty, if any, of the original equipment manufacturer.

Waters provides service and support as outlined below. You can contact Waters Technical Service at 800 252-4752, *U.S and Canadian Customers only.* Other Customers, call your local Waters subsidiary or your local Waters Technical Service Representative, or call Waters corporate headquarters in Milford, Massachusetts (U.S.) for assistance.

Note: *Waters Corporation does not include the assembly, configuration, or software installation on any computer or computer peripheral that has not been purchased from Waters.*

Optional installation services are available to purchasers of Workstation Add-on Kit software products. This service consists of up to one day of software installation, system configuration, and primary operator training. During this day of system installation service, a certified Waters Field Service Representative will configure the Customer's computer, load software, and interface the computer to the system.

Note: *Waters Corporation cannot accept the responsibility for ensuring the compatibility of Customer-purchased computers with Waters software and systems. During this day of installation service, every effort will be made to successfully adapt the Customer's computer with the software.*

English

2 Training and Extended Support

This section provides information on:

- Instrument startup and basic training
- Extended training

2.1 Instrument Startup and Basic Training

Waters offers optional instrument startup and basic training for a single, designated primary operator who purchases a configured system. Instrument startup consists of the following:

1. Assemble hardware (computer) and connect printer.
2. Connect hardware to other system instrumentation.
3. Configure and test Waters system for proper instrument function and data collection.

2.2 Extended Training

Connections[SM] University provides software training beyond that provided at startup. Courses are available at the World Wide Training Center at Milford, Massachusetts, regionally, or on-site. On-site courses allow you to tailor the content and length of training to your needs.

Updates and support are available through a Total Assurance Warranty or Total Assurance Plan. A Total Assurance Plan is renewable annually and provides scheduled performance maintenance visit(s), valuable software upgrades and instrument updates, telephone support, and other value-added options to ensure that your system is always up-to-date and operating at optimum performance.

For more information regarding the training and extended support programs, call Waters Customer Service at 800 252-4752, *U.S. and Canadian Customers only.* Other Customers, call your local Waters subsidiary or your local Waters Technical Service Representative or call Waters corporate headquarters in Milford, Massachusetts (U.S.) for assistance.

3
Shipments, Damages, Claims, and Returns

English

3.1 Shipments

As all shipments are made Free On Board (FOB) shipping point, we suggest insurance be authorized on all shipments. Instruments and major components are packed and shipped via surface, unless otherwise required. Supplies and/or replacement parts are packed and shipped via Ground Courier, air parcel post, or parcel post unless otherwise requested.

3.2 Damages

The Interstate Commerce Commission has held that carriers are as responsible for concealed damage as for visible damage in transit. Unpack shipment promptly after receipt as there may be concealed damage even though no evidence of it is apparent. When concealed damage is discovered, cease further unpacking of the unit involved and request immediate inspection by the local agent or carrier and secure a written report of his findings to support the claim. This request must be made within 15 days of receipt. Otherwise, the claim will not be honored by the carrier. Do not return damaged goods to the factory without first securing an inspection report and contacting Waters for a return merchandise authorization (RMA) number.

3.3 Claims

After a damage inspection report is secured, Waters cooperates fully in supplying replacements and handling of a claim which may be initiated by either party.

3.4 Returns

No returns may be made without prior notification and authorization. If for any reason it is necessary to return material to Waters, please contact Waters Customer Service or your nearest Waters subsidiary or representative for a return merchandise authorization (RMA) number and forwarding address.

English