Site Planning Guide

MPX™-High Throughput System

MPX™ 2.0 Driver Software

RUO-IDV-01-5495-A

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Contents

Customer and FSE Responsibilities 1

This guide is for the site planner, the individual responsible for preparing the facility for the installation of the MPX™-2 High Throughput System, the MPX™ driver software, and a SCIEX LC-MS/MS system.

Customer Site Planner Responsibilities

- Complete the Site Planning Checklist on page 6, in consultation with Facilities and Services Personnel (gas, electrical, ventilation, and information technology [IT]), to make sure that the following requirements are met and then return the completed form to the Field Service Employee (FSE) before the scheduled installation date:
  - The mass spectrometer is supported by the MPX™-2 High Throughput System. Refer to Supported Mass Spectrometers on page 11.
  - The site planning for the mass spectrometer is complete. Refer to Site Planning for the Mass Spectrometer on page 18.
  - The LC system is supported by the MPX™-2 High Throughput System. Refer to Supported LC Systems on page 12.
  - The electrical requirements for the LC system are met. Refer to Electrical Requirements for the LC System on page 19.
  - The physical layout requirements for the LC system are met. Refer to Physical Layout Requirements for the LC System on page 19.
  - If necessary, the installation of the LC modules is scheduled with the LC system vendor.
  - Provide all of the other equipment required for installation. Refer to Other Equipment Requirements on page 20.
  - Provide all of the required software. Refer to Software Installation Requirements on page 21.
  - The acquisition computer is supported by the MPX™-2 High Throughput System. Refer to Supported Computer Models on page 18.
  - The acquisition computer is configured correctly. Refer to Configuration Requirements on page 22.
  - Provide all of the required solutions and laboratory equipment. Refer to General Lab Requirements on page 23.
  - Recommended training has been reviewed. Refer to Recommended Training on page 24.
  - The Notes for Network Administrators on page 25 have been read and understood.
- Return the completed Site Planning Checklist to the FSE.

Note: The FSE will follow up if the checklist is not received prior to the scheduled installation date.

Note: The FSE cannot perform an installation unless all of the requirements outlined in this document are in place.

FSE Responsibilities

- Set up a mass spectrometer delivered direct from SCIEX.
- Validate communication with supported peripheral devices.
- Qualify the system to the specifications in the system suitability test report.
- Discuss available customer training and learning materials. Refer to Recommended Training on page 24.
- Provide system and software familiarization to administrators and technicians, where appropriate.

Technical Support

SCIEX and its representatives maintain a staff of fully-trained service and technical specialists located throughout the world. They can answer questions about the system or any technical issues that might arise. For more information, visit the website at sciex.com.

Site Planning Checklist 2

Customer Information

Organization			
Address			
City			
Country			
Telephone		Zip/Postal code	
Site planner contact name			
E-mail address			

Requirements

Note: If the site preparation tasks are not complete when the SCIEX Field Service Employee (FSE) arrives, then the scheduled installation will be postponed.

Note: All installations must adhere to local regulations, ordinances, and health and safety standards.

Equipment Requirements

Requirement	Complete	N/A
The mass spectrometer is supported by the MPX™-2 High Throughput System. Refer to Supported Mass Spectrometers on page 11.		
The site planning for the mass spectrometer has been completed. Refer to Site Planning for the Mass Spectrometer on page 18.		
The LC equipment is supported by the MPX™-2 High Throughput System. Refer to Supported LC Systems on page 12.		
The acquisition computer is supported by the MPX™-2 High Throughput System. Refer to Supported Computer Models on page 18.		
The acquisition computer is configured correctly. Refer to Configuration Requirements on page 22.		
• The FSE has been assigned Administrator privileges on the acquisition computer.		
• (Optional) The network computer name and password are available.	○	○
All other equipment required for installation is available. Refer to Other Equipment Requirements on page 20.		
• SCIEX MPX™-2 High Throughput System Installation Kit is available.		
• An ethernet hub with a minimum of 4 ports is available for Shimadzu configurations and an ethernet hub with a minimum of 5 ports is available for configurations including CTC PAL3 RSI autosamplers.		
• Five black-and-white 2-wire cables are available.		
• An AUX I/O cable is available.		
• One pump sync cable is available (for CTC or PAL3 RSI configurations only).		
• (Optional) If upgrading to an MPX-2 SPE system, the MPX™-2 SPE Upgrade Kit is available.	○	○

Electrical Requirements

Requirement	Complete
The electrical requirements for the LC system are met. Refer to Electrical Requirements for the LC System on page 19.	

Site Layout Requirements

Requirement	Complete
The allocated space meets the physical layout requirements for the LC system. Refer to Physical Layout Requirements for the LC System on page 19.	

Software Requirements

Requirement	Complete
All required software is available to be installed or is installed on the acquisition computer. Refer to Software Installation Requirements on page 21.	
• A supported version of the Microsoft Windows 7 or Windows 10 operating system is available to be installed or is installed on the acquisition computer.	
• A supported version of the Analyst® software is available for installation.	
• The MPX™ driver software is available for installation.	

General Laboratory Requirements

Requirement	Complete
All required laboratory supplies are available. Refer to General Lab Requirements on page 23.	
• Powder-free gloves (neoprene or nitrile recommended)	
• Safety glasses	
• Laboratory coat	
• Pipetting accessories (such as pipettors and tips)	
• Bench-top centrifuge or microcentrifuge	
• Vortexer	
• Standard Eppendorf Tubes, polypropylene, 0.5 mL and 1.5 mL	
• PEEK tubing, 0.005-in. i.d., 1/16-in. o.d. (red); 4 meters or more, and cutter	
• Measuring cylinders, 100 mL, 1000 mL	

Requirement	Complete
• HPLC bottles, 1000 mL	
• Glass autosampler vials and inserts, conical, 220 µL and 1000 µL	
• Caps for all autosampler vials	
• Ammonium formate (minimum 10 g)	
• LCMS-grade methanol	
• LCMS-grade water	
• Two Phenomenex 00B-4424-B0, Synergi 4 µm Fusion-RP 80A 50 × 2 mm columns	
• Triazine Standard Mixture	

Training Requirements

Requirement	Complete
Review the recommended training. Refer to Recommended Training on page 24.	

Network Configuration Requirements

Requirement	Complete
The Notes for Network Administrators have been reviewed and understood. Refer to Notes for Network Administrators on page 25.	

Comments

Exceptions

Signoff

Complete the checklist and return it to the FSE e-mail address specified below on or before the Return date.

Note: The customer assumes the risk for instrument installations that do not conform to the guidelines provided in this document.

Site planner contact name		Completion date (yyyy-mm-dd)	
I acknowledge that all of the installation requirements, as specified in this document, have been met.			
FSE name		Return date (yyyy-mm-dd)	
FSE e-mail			

Site Requirements A

Supported Mass Spectrometers

Return to Return to checklist.

Mass Spectrometers
Note: All mass spectrometers supported by the Analyst® 1.7 software are supported.
• QTRAP® 6500+ system • SCIEX Triple Quad™ 6500+ system • QTRAP® 6500 system • SCIEX Triple Quad™ 6500 system • QTRAP® 5500 system • SCIEX Triple Quad™ 5500 system • API 5000™ system • QTRAP® 4500 system • SCIEX Triple Quad™ 4500 system • 4000 QTRAP® system • API 4000™ system • SCIEX Triple Quad™ 3500 system • 3200 QTRAP® system • API 3200™ system

Supported LC Systems

Return to Return to checklist.

Table A-1 Shimadzu Prominence Configuration

Component	Quantity Required
Refer to Figure A-1 on page 13.	
Shimadzu Prominence LC-20AD or LC-20ADXR isocratic pump	4
Shimadzu Prominence LC-20AD or LC-20ADXR isocratic pump with low pressure gradient unit	1
Shimadzu Prominence 100 µL semi micro mixer	2
Shimadzu Prominence CBM-20A Lite system controller	3
Shimadzu Prominence DGU-20A5 5-channel vacuum degasser	2
Shimadzu Prominence SIL-20AC or SIL-20ACXR autosampler with cooling	2
Shimadzu Prominence CTO-20AC column oven	1
Rheodyne MXP7900-000 2-position/6-port external valve (included with the MPX-2 High Throughput System Install Kit)	1
Rheodyne MX Series II MXT715-000 high-pressure valve (included with the MPX-2 High Throughput System Install Kit)	2
(Optional) Additional Rheodyne MX Series II MXT715-000 high-pressure valve for use with the integrated online SPE option	(2)
(Optional) Shimadzu Prominence rack changer with cooling	(2)

Note: The system must include five LC-20AD or LC-20ADXR pumps. One of these will contain, or can be upgraded to contain, a low-pressure gradient unit. For the Shimadzu Prominence XR configuration, all five pumps must be model LC-20ADXR and both autosamplers must be SIL-20ACXR. For the standard configuration, all pumps must be model LC-20AD and both autosamplers must be SIL-20AC.

Figure A-1 Shimadzu Prominence Configuration

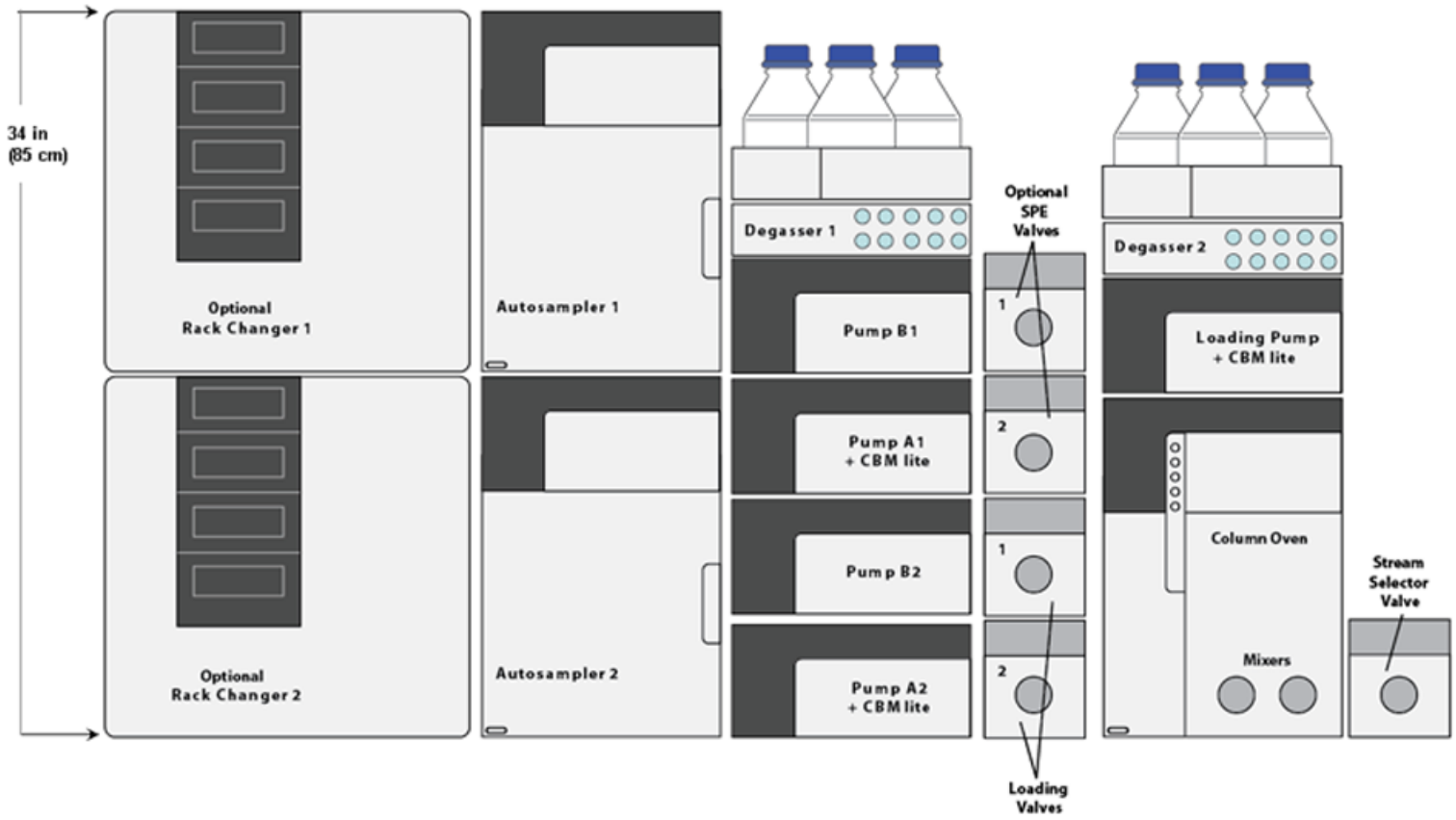


Table A-2 Shimadzu Prominence with CTC PAL Configuration

Component	Quantity Required
Refer to Figure A-2 on page 16 or Figure A-3 on page 17.	
CTC PAL3 RSI 850 with LCMS-P Module and LCMS Wash Module and 2 injector valves OR CTC HTS-xt PAL autosampler with DLW and 2 injection valves	1
Shimadzu Prominence LC-20AD or LC-20ADXR isocratic pump	4
Shimadzu Prominence LC-20AD or LC-20ADXR isocratic pump with low pressure gradient unit	1
Shimadzu Prominence 100 µL semi micro mixer	2
Shimadzu Prominence CBM-20A Lite system controller	3
Shimadzu Prominence DGU-20A5 5-channel vacuum degasser	2
Shimadzu Prominence CTO-20AC column oven	1
Rheodyne MXP7900-000 2-position/6-port external valve (included with the MPX-2 High Throughput System Install Kit)	1
Rheodyne MX Series II MXT715-000 high-pressure valve (included with the MPX-2 High Throughput System Install Kit)	2
Custom contact closure cable for CTC interface	1
CTC Drawers/Trays • 3-drawer stack (holds six trays in DW96, MT96, MT384, or VT54 format) • 3-drawer stack cooler (holds six trays in DW96, MT96, MT384, or VT54 format) • 6-drawer stack (holds 12 trays in MT96 or MT384 format) • 6-drawer stack cooler (holds 12 trays in MT96 or MT384 format) **Note:** Other CTC drawers or trays might be compatible. However, they have not been tested.	2
(Optional) Additional Rheodyne MX Series II MXT715-000 high-pressure switching valve for use with the integrated online SPE option **Note:** The integrated online SPE option is not supported in CTC PAL3 RSI configurations.	(2)
(Optional) CTC PAL Automated Barcode Reader LS-1220 **Note:** The automated barcode reader is not supported in CTC PAL3 RSI configurations.	(1)

Note: The system must include five LC-20AD or LC-20ADXR pumps. One of these will contain, or can be upgraded to contain, a low-pressure gradient unit. For the Shimadzu Prominence XR with CTC PAL configuration, all five pumps must be model LC-20ADXR. For the standard configuration, all pumps must be model LC-20AD.

Figure A-2 Shimadzu Prominence with CTC Configuration

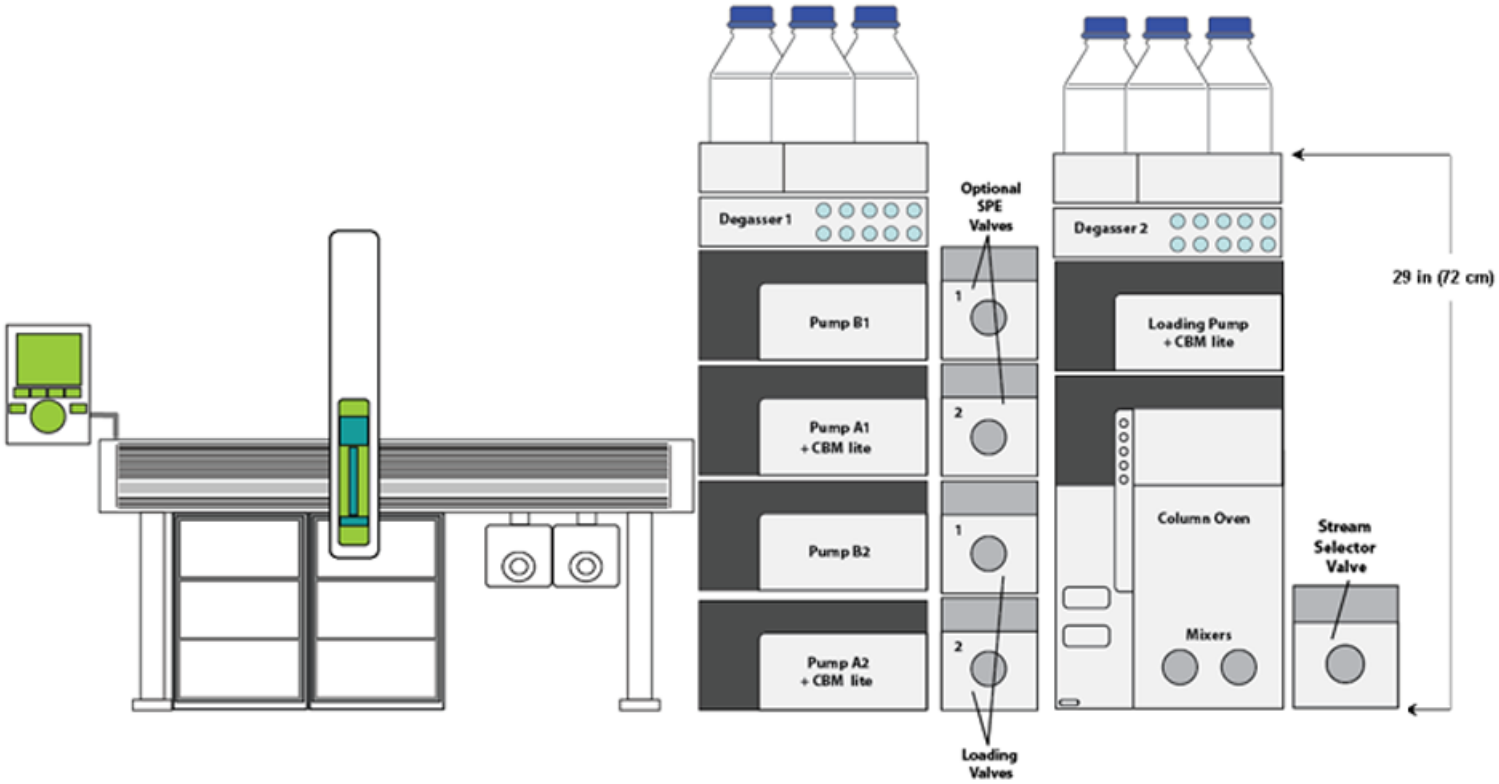
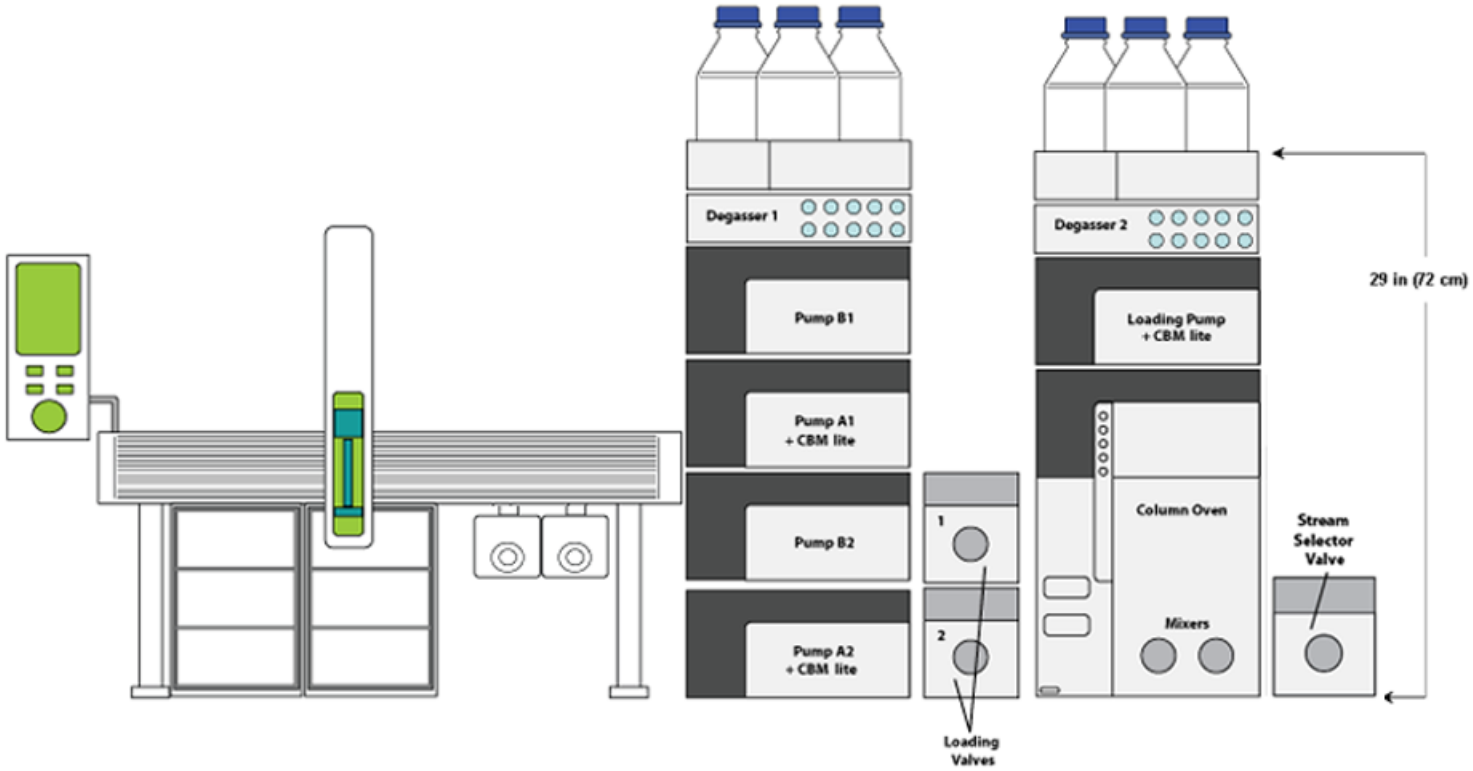


Figure A-3 Shimadzu Prominence with CTC PAL3 RSI Configuration



Supported Computer Models

Return to Return to checklist.

Only acquisition computers from SCIEX are supported. These configured computers meet all requirements and the selected models undergo testing and verification with the software. The configured computers can be ordered through SCIEX. For more information, contact the local sales representative.

Requirements
• Dell OptiPlex XE2
Note: Newer systems might become available. For more information, contact the local sales representative. Older computer models might be compatible. However, they have not been tested and might result in degraded performance.

Site Planning for the Mass Spectrometer

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Refer to the site planning guide for the mass spectrometer to verify that all physical layout requirements are met. If required, request a copy from the local sales representative.

Site Planning Guides
Mass Spectrometer Site Preparation For more information about site preparation for a specific instrument, refer to these documents: • 6500 and 6500^{+} Series of Instruments Site Planning Guide • 5500 Series of Instruments Site Planning Guide • API 5000™ System Site Planning Guide • 4500 Series of Instruments Site Planning Guide • 4000 Series of Instruments Site Planning Guide • 3500 Series of Instruments Site Planning Guide • 3200 Series of Instruments Site Planning Guide

Electrical Requirements for the LC System

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Requirements
• For the Shimadzu configuration, including PC and monitor, properly grounded power sources with surge protection and a minimum of 16 outlets that will allow operation of a maximum output of 2950 VA. **Note:** Make sure that the rack changers are on different circuits. • For the Shimadzu with CTC PAL or PAL3 RSI configuration, including PC and monitor, properly grounded power sources with surge protection and a minimum of 14 outlets that will allow operation of a maximum output of 2050 VA (with cooling) or 1950 VA (without cooling). **Note:** Two additional outlets are required for SPE configurations.
AC line voltage 100-120V/220-240V, 50-60Hz

Physical Layout Requirements for the LC System

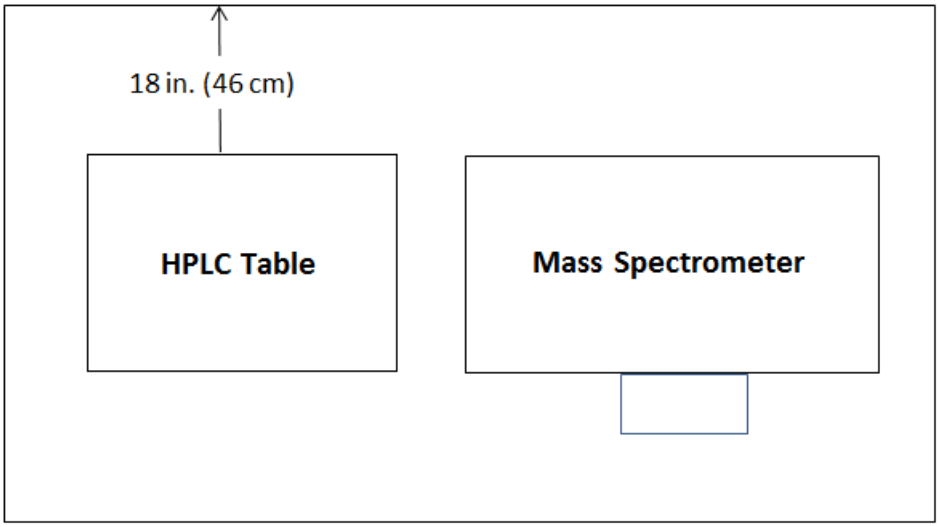
Return to Return to checklist.

Consult the site planning guide for the LC system to verify that all physical layout requirements are met. If required, request a copy from the local sales representative. Special requirements for the MPX™-2 High Throughput System are:

Requirements			
Stable and level table to hold stacked components (wheels recommended). Dimensions and load-bearing capacity required vary depending on the configuration.			
Configuration	**Minimum Dimensions (D × W)**	**Recommended Dimensions (D × W)**	**Load-Bearing Capacity**
Shimadzu Prominence	24 in. × 43 in. (61 cm × 110 cm)	24 in. × 55 in. (61 cm × 140 cm)	342 lbs. (155 kg)
Shimadzu Prominence with rack changers	24 in. × 60 in. (61 cm × 153 cm)	24 in. × 72 in. (61 cm × 183 cm)	486 lbs. (220 kg)
Shimadzu Prominence with CTC PAL or PAL3 RSI	24 in. × 65 in. (61 cm × 166 cm)	24 in. × 77 in. (61 cm × 196 cm)	265 lbs. (120 kg)
Chemicals must be stored in a secondary containment system at a convenient height for handling, below eye level, if possible.			

Requirements
Physical space beside the mass spectrometer: sufficient to accommodate the HPLC table and to allow access to the rear of the components.
18 in. (46 cm) of space behind the table for access to the rear of the components

Figure A-4 Required Access Space Behind the HPLC Table



Other Equipment Requirements

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MPX-2 High Throughput System Install Kit (PN 5061043)

This kit contains all of the components required for the installation of the MPX™-2 High Throughput System, including switching valves, tubing and fittings, an Ethernet cable, a USB cable, and a digital I/O device.

Table A-3 Other Components

Requirements
Ethernet hub with a minimum of 4 ports for Shimadzu configurations or an ethernet hub with a minimum of 5 ports for CTC PAL3 RSI configurations (must be ordered separately)
Ethernet cable (three provided with the Shimadzu CBM Lite hardware)
Black-and-white 2-wire cables (quantity five); shipped with the Shimadzu Prominence modules

Table A-3 Other Components (continued)

Requirements
AUX I/O cable (shipped with mass spectrometer)
One pump sync cable (to be purchased separately, for use with a CTC autosampler) (PN 1037630)

Table A-4 (Optional) MPX™-2 SPE Upgrade Kit (PN 5005976)

Requirements
Rheodyne High-Pressure Switching Valves (PN 1037223) (quantity two)
SPE upgrade tubing kit (PN 5005966)
Phenomenex Mercury 20 mm cartridge holders (PN 5007246) (quantity two)
Phenomenex–Strata C18-E 20 µm On-Line Extraction Cartridges 20 × 2.0 mm (PN 5007862; Phenomenex PN 00M-S039-B0-CB) (quantity two)

Software Installation Requirements

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Requirements
Microsoft Windows Operating System (English only) • Windows 7 (64-bit), with SP1 • Windows 10 (64-bit)
Analyst® Software • Analyst® 1.7 software • Other compatible version of the Analyst® software

Note: The MPX™-2 High Throughput System uses the Analyst® software to drive the acquisition and assist in the processing. All supported versions of the Analyst® software are compatible with the 64-bit version of both the Microsoft Windows 7 and the Windows 10 operating systems.

Requirements
MultiQuant™ Software • MultiQuant™ software, version 3.0.2 or later **Note:** Version 3.0.2 of the MultiQuant™ software is only compatible with the 64-bit version of the Microsoft Windows 7 operating system. Version 3.0.3 of the MultiQuant™ software is compatible with the 64-bit version of both the Microsoft Windows 7 and the Windows 10 operating systems. **Note:** The Carryover Detection functionality of the MPX™driver software uses quantitation methods from the MultiQuant™ software (qmethod).
MPX™ Driver Software **Note:** The MPX™ driver software can be downloaded from the SCIEXwebsite at https://sciex.com/software-support/software-downloads, or a MPX™ driver software installation DVD can be purchased through SCIEX. Contact the local sales representative to purchase the software DVD, if required.

Configuration Requirements

Return to Return to checklist.

Requirements
The FSE must be assigned administrator privileges on the acquisition computer to install the software and configure the required settings.
If working on a network, then the network computer name and domain password must be available.

General Lab Requirements

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The laboratory is responsible for providing general laboratory equipment and consumables, as listed in Table A-5.

Table A-5 Laboratory Supplied Items

Requirements
General Equipment and Consumables
Powder-free gloves (neoprene or nitrile recommended)
Safety glasses
Laboratory coat
Pipetting accessories (such as pipettors and tips)
Bench-top centrifuge or microcentrifuge
Vortex mixer
Standard Eppendorf Tubes, polypropylene, 0.5 mL and 1.5 mL
PEEK tubing, 0.005-in. ID, 1/16-in. OD (red); 4 meters (13.1232 ft.) or more, and cutter
Glassware
Measuring cylinders, 100 mL, 1000 mL
HPLC bottles, 1000 mL
Glass autosampler vials and inserts, conical, 220 µL and 1000 µL
Caps for all autosampler vials
Consumables and Reagents for System Suitability Test
Ammonium formate (minimum 10 g)
LCMS-grade methanol
LCMS-grade water

Table A-6 SCIEX or LC Vendor-Supplied Items

Requirements
Consumables for System Suitability Test
Phenomenex 00B-4424-B0, Synergi 4 µm Fusion-RP 80A 50 × 2 mm columns (quantity 2); one is included with the MPX™ driver software kit; order one additional column separately (PN 4376878).
Triazine Standard Mixture (AB SCIEX PN 4376887 or Supelco PN 48392)

Recommended Training

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For users new to our systems, we offer free, Web-based courses on a variety of subjects including software, instrumentation, and application-specific topics. Prior to installation of the LC-MS/MS system, we recommend that the primary user or administrator complete the applicable Analyst® software and MultiQuant™ software self-paced eLearning courses to prepare for installation and familiarization with the system.

The FSE or local sales representative can provide a list of recommended courses. To view the available free courses, go to SCIEX**University**.

Users should plan to register and attend an instructor-led LC-MS/MS operator training course at one of our Technical Training Centers approximately one to three months after installation. The session and registration information can be found at SCIEX**University**.

Notes for Network Administrators B

Software Notes

Required Software

Windows Operating System

If an acquisition computer is purchased from SCIEX, the operating system is pre-installed on the computer.

Analyst® Software

The MPX™ driver software requires the Analyst® software to drive the mass spectrometer acquisition and assist in the processing and reporting.

MultiQuant™ Software

The Carryover Detection functionality of the MPX™ driver software uses quantitation methods from the MultiQuant™ software (qmethod).

Installed Software

.NET Runtime

The .NET v4.5.2 runtime is required. The runtime software on its own does not pose security risks.

LabVIEW Runtime Engine 2016

This is a set of passive device drivers that is dynamically loaded by the MPX™ driver software. It does not pose a security risk.

DAQmx Device Driver 16.0

This is a set of passive device drivers that is dynamically loaded by the MPX™ driver software. It does not pose a security risk.

VC90 Runtime

VC90 Runtime contains the Visual C++ Run Time Library 2008. It is supplied by Microsoft and is required for the MPX™ driver software to run properly. It does not pose any security risks.

Configuration Notes

Windows Services and Internal Firewalls

The MPX™ driver software installs and uses MPX.Service to control multiplex data acquisition. The application communicates with the Windows services through .NET remoting on TCP/IP ports 8085 and 8089. Any internal firewalls should be configured to permit TCP traffic on these ports. The service only accepts connections coming from the same machine. The MPX™ driver software setup program also adds a program entry to the Windows Firewall.

Corporate Network Connection

The MPX™ driver software is a Windows application, typically run in a lab environment on a desktop computer connected to a mass spectrometer. If the computer is connected to a corporate network, NTLM or Active Directory can be used as authentication mechanisms for the software.