Preparing Your Laboratory

QSight Triple Quadrupole MS

Introduction

Congratulations on the purchase of your new QSight Mass Spectrometer. This high performance MS should provide you with many years of use if you prepare your laboratory appropriately and ensure proper maintenance. This document will provide you with the information you will need to prepare your laboratory for the installation of the QSight Mass Spectrometer.

This document is used to verify that the installation site is properly configured for the PerkinElmer QSight Mass Spectrometer system. The site conditions must meet the minimum specifications before the PerkinElmer Service Engineer can proceed with the QSight Mass Spectrometer installation.

Storage Conditions

It is the Customer's responsibility to store the containers until installation. The environment in the storage area should be between 5 °C and 25 °C (41 °F and 77 °F), 20% to 80% relative humidity, non-condensing and non-corrosive.

Instrument Identification

Each PerkinElmer QSight MS Instrument is identified by a unique serial number. This serial number is located on a label on the rear panel lower left hand side of the instrument looking from the rear. When corresponding with PerkinElmer about this instrument, you must include the model number and the full serial number.

Receiving the System

When your QSight MS system is delivered, it is your responsibility to provide for removal of the shipping containers from the truck and their storage until installation. Contact your PerkinElmer service representative as soon as your shipment arrives to arrange an installation date.

Customer Responsibilities

The Customer should ensure that necessary operating supplies, consumables, and usage dependent items such as vials, syringes, pipettes, and solvents are available. You are responsible for the preparation of laboratory before the arrival of your instrument. Failure to have the site prepared properly may result in additional charges by the service team.

Before the QSight MS system can be installed, the site must be properly prepared. Site preparation includes, but is not limited to, the following:

- Adequate space is available for the QSight MS system.
- A suitable supporting bench is available for the Computer and LC System.
- Adequate electrical power is available at the correct voltages and frequencies.
- Environmental control systems are adequate to maintain a correct, stable operating environment.
- An adequate source of clean, dry nitrogen gas for up to 80 psi of continuous flow.
- An adequate source of Zero Air for up to 110 psi of continuous flow.
- Adequate exhaust venting.
- Exhaust venting foreline pump.
- Supplies necessary for instrument operation are available.

Laboratory Supplies

The following lab supplies are required and should be available at the instrument location:

- Solvents
    - LCMS grade Methanol
    - LCMS grade Acetonitrile
    - LCMS grade water
- Isopropanol and methanol in a squeeze bottle for surface cleaning
- General lab equipment – Gloves, pipettes, glassware, lint-free wipes, etc.

PerkinElmer Service Responsibilities

Once it has been confirmed that the laboratory is ready, and the system has arrived, the PerkinElmer Service Engineer shall perform the follow:

- Unpacking the QSight MS system and verifying that all components are present and undamaged.
- Connecting the carrier gas line to the instrument from the tank, regulators, and lines installed by the customer.
- Installing, connecting, and turning on QSight MS system components.
- Verifying that the system meets PerkinElmer published performance specifications.
- Basic user familiarization for system hardware and software.

Space Requirements

The QSight MS has been designed in such a way that it can be placed directly against a wall or can be positioned closely to the roughing pump. Care should be taken to ensure that the instrument is a minimum distance from the roughing pump or other sources of vibration, which could affect performance.

Care should also be taken to ensure that the air flow in front of the instrument, as well as behind the instrument, is unimpeded.

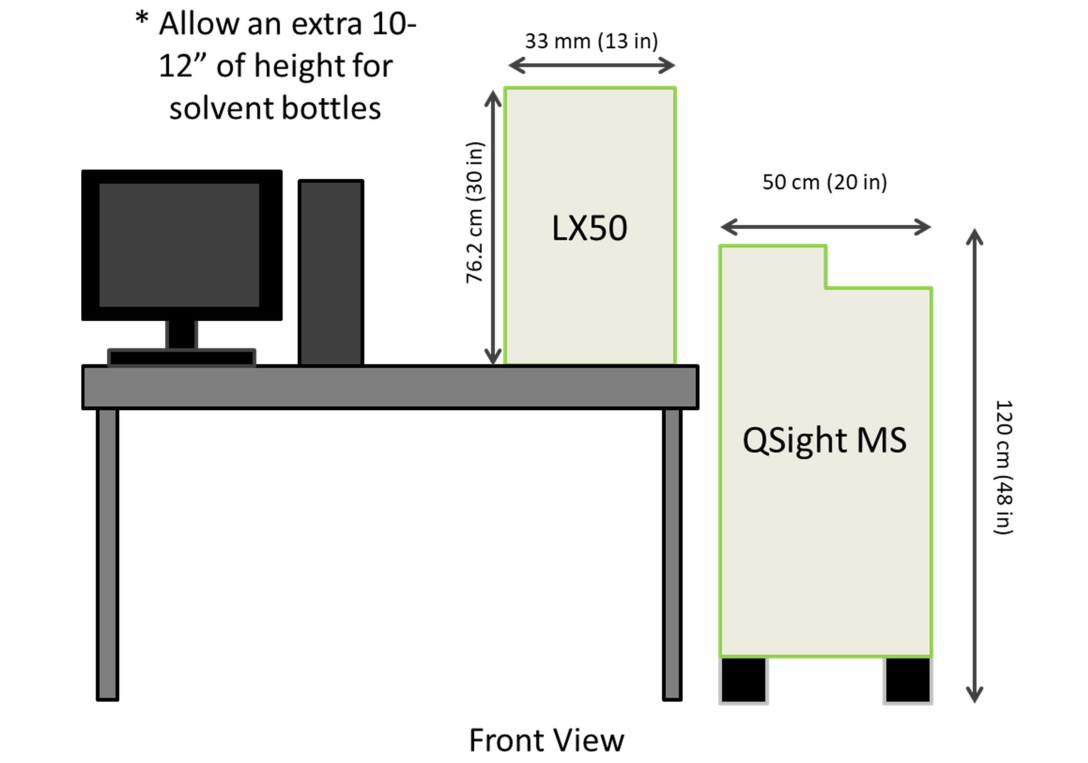
The roughing pump can be placed behind or beside the instrument, or can even be in a separate room from the instrument with the following provision: The hose length can be no longer than 3 m.

Physical Specifications

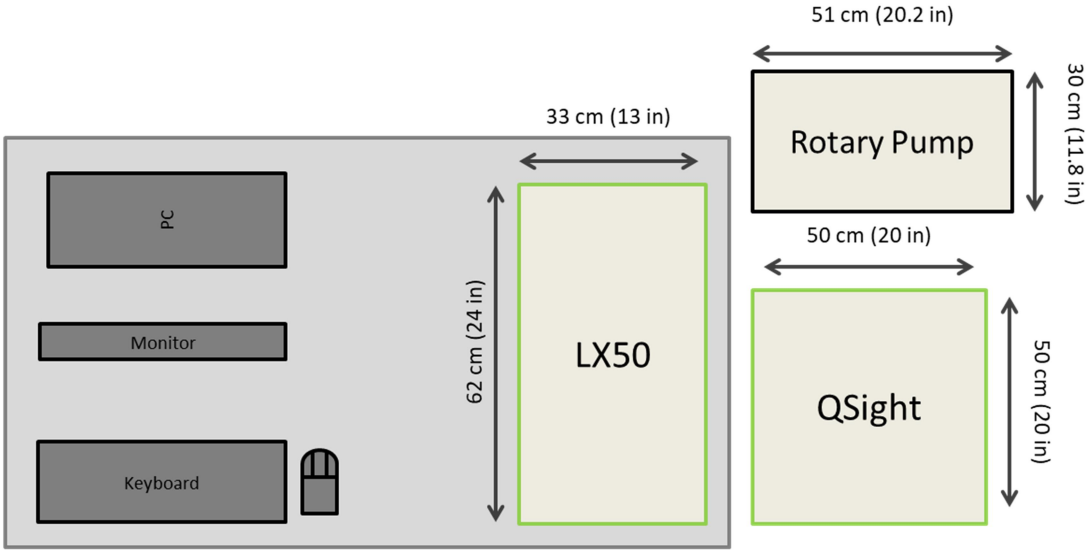
Component	Height	Width	Depth	Weight
QSight MS(on Wheels)	120 cm (48 in)	50 cm (20 in)	50 cm (20 in)	273 kg (600 lbs.)
Rotary Pump	34 cm (13.4 in)	30 cm (11.8 in)	51 cm (20.2 in)	45 kg (100 lbs.)
UPS/Conditioner	72.9 cm (28.7 in)	29.9 cm (11.8 in)	82.9 cm (32.6 in)	157 kg (348 lbs.)
TriFlow Nitrogen/Z-Air Generator	85 cm (33.5 in)	115 cm (45.25 in)	53 cm (20.75 in)	194 kg (427 lbs.)
LX50 System (Sampling & Solvent Modules)	30 in (76.2 cm)	13 in (33 cm)	24.4.0 in (62 cm)	103 lb. (47 kg)
Column Temperature Module	24 in (60 cm)	7 in (17 cm)	13.5 in (34.5 cm)	35 lb. (16 kg)

Configurations

The following configurations demonstrate possible layouts for your laboratory:



Front View



Top View – The rotary pump can be placed behind or on the side of the MS

Environmental Conditions

Environmental conditions should be conducive to the operation of the instrument, the rotary vane pump, and the computer, which will be used to operate the system. The following conditions outline the additional heat load that will be produced, as well as the environmental conditions required when the system is fully running.

Heat Load Generated

Component	Heat Load (200 Series)	Heat Load (300 Series)
QSight Mass Spectrometer and PC	3.4 kW	3.4 kW
SV40 Rotary Vane Pump	1.9 kW	--
SV120 Rotary Vane Pump	--	2.2 kW
Exhaust Blower	0.16 kW	0.16 kW
Syringe Pump	--	--
PC & Monitor	0.6 kW	0.6 kW
NitroflowTG2NA Parker Gas Generator	3.5 kW	3.5 kW
PowerVar 5.2kVA On-Line Conditioned UPS	5.2 kW	5.2 kW

Conditions While System is Running

Considerations	Specification
Ambient Temperature	18-25 °C
Humidity	20-80%, Non-Condensing
Vibration	The instrument should not be placed in an area prone to excessive vibration.
Heating and Cooling Vents	The instrument should not be placed directly in front of/below heating or cooling vents.

Electrical Needs

Following are the electrical requirements for all the accessories that can come with the QSight instrument. Please review the items you are receiving or have ordered and arrange for the electrical requirements accordingly. If you are ordering the UPS, all accessories will be plugged into UPS except the Gas Generator. When getting a UPS only arrange for the electrical needs of UPS and Gas generator.

		Power Requirements			Power Consumption		Frequency specifications	
	Input Voltage (AC)	**Number of Outlets Required**	**Phase**	**Power**	**Maximum kVA**	**Maximum Continuous Current**	**Operating Frequency**	**Allowable Frequency Variance**
QSight Instrument	200-240 Volts	1	Single	2.9 kW	2.9 kVA	12 A	50/60 Hz	±1 Hz
Rotary Vane Pump - Leybold (SV40/SV120)	200-240 Volts	1	Single	2.2 kW	2.2 kVA	8.5 A	50/60 Hz	±1 Hz
Exhaust Blower Pump	110/220 Volts	1		0.16 kW	0.16 kVA	1 A	50/60 Hz	±1 Hz
Syringe Pump	110/220 Volts	1					50/60 Hz	±1 Hz
PC & Monitor	110/220 Volts	2	Single	0.6 kW	0.6 kVA	--	50/60 Hz	±1 Hz
NitroflowTG2 NA Parker Gas Generator	208-230 Volts	1	Single	3.4 kW	3.4 kVA	16 A	60 Hz	±1 Hz
	230 Volts		Single	2.9 kW	2.9 kVA	13 A	50 Hz	±1 Hz
UPS PowerVar 5.2kVA **	220 Volts	1		5.2 kW	5.2 kVA	24 A	50/60 Hz	±1 Hz
Ion Bench BCH120-NE78	110/220 Volts	1					50/60 Hz	±1 Hz

Power Considerations & UPS Requirements

Prior to any installation, a qualified, locally licensed electrician must ensure proper power requirements are available or installed to local codes and standards. PerkinElmer will work with this electrician to ensure that all requirements have been met.

If you intend to power the system from an uninterruptible power supply (UPS), the UPS must be capable of delivering 5.2 kVA (50 or 60 Hz).

The UPS must meet the following specifications.

UPS Type	True On-Line (Double Conversion)
Output Voltage	100-120/200-240 V
Frequency	50/60 Hz
Waveform	Pure Sine Wave
Minimum Peak Current	3X nominal Current
Output Voltage Distortion	<3%
Output Protection	Circuit Breaker
Minimum Power Requirement	6 kVA (unless otherwise tested)

Gas Requirements

The QSight Series instruments (With Mechanical Blower Source Exhaust) make use of two gas inputs. The configurations for both single and dual source instruments are listed below:

Single Source

Gas	Type	Quality	Connection to Instrument	Supply Pressure	Flow Capability
Drying Gas (DG)	Nitrogen	>99.0% purity Moisture Free <5ppm Hydrocarbon	6.4mm (1/4”) OD tubing pushfit	520-590 kPa (75-85 psi)	15 SLPM
Source Gas (NG/HG)	Z-Air*	Water and Oil Free (<0.003ppm) Phthalate Free <5ppm Particles <0.01 micron	6.4mm (1/4”) OD tubing pushfit	690-760 kPa (100-110 psi)	34 SLPM

Dual Source

Gas	Type	Quality	Connection to Instrument	Supply Pressure	Flow Capability
Drying Gas (DG)	Nitrogen	>99.0% purity Moisture Free <5ppm Hydrocarbon	6.4mm (1/4”) OD tubing pushfit	520-590 kPa (75-85 psi)	15 SLPM
Source Gas (NG/HG)	Z-Air*	Water and Oil Free (<0.003ppm) Phthalate Free <5ppm Particles <0.01 micron	6.4mm (1/4”) OD tubing pushfit	690-760 kPa (100-110 psi)	67 SLPM

***Nitrogen may be used as a substitute, however optimization will be different.**

Laboratory Exhaust System

The QSight lines of mass spectrometers exhaust waste from the plenum chamber of the source, as well as from the rotary vane pumps.

The exhaust system must be capable of eliminating all of the waste exhaust from the source and rotary pump(s). If working with a distance beyond 300 cm (10 feet), the system should be comprised of tubing/piping with an inside diameter of no less than 2.54 cm (1 Inch). Typically, 1.5" plumbing pipe is recommended.

This system can be vented through a fume hood, or to the outdoors, according to local standards. A pump may be required if the system presents any further restrictions (many turns/bends). This system should have connections to connect the source exhaust tubing (2.54cm (1") ID hosing).

Optional Customer Accessories

UPS/Line Conditioner

It is highly recommended to use an Uninterruptable Power Supply, especially if the laboratory does not have stable power.

Model	Frequency	Part Number
PowerVar 5.2 kVA On-Line Conditioned UPS	50/60	BC022052-07R

Gas Generator

Model	Output	Part Number
TriGas Generator	LCMS grade nitrogen @ 80 psig	BC004852 – North America
	LCMS grade Zero Air @ 110 psig	BC004874 - World
	LCMS grade Dry Air @ 80 psig	BC004875 – Japan

Final Considerations

Person(s) in Charge of Assisting Installation

Please provide PerkinElmer with the contact information of the person who will be responsible to assist during the install. Please indicate the usual hours of operation in which the PerkinElmer CSE(s) can be on site to perform the installation. Please indicate whether or not (if necessary) the PerkinElmer CSE(s) can work beyond these hours, as well as any contact information of the person(s) they would make these arrangements with.

IT Support

The PC accompanying the instrument will have to be networked as part of your company's computer network for the purposes of transmitting data. An internet connection will also be required for remote troubleshooting purposes.

The computer may not be networked, until the instrument has been installed and signed for. Once the installation is deemed complete (both parties sign the acceptance document), you or a member of your IT staff may network the computer. If you would like to have the PerkinElmer CSE present for this, please book your IT staff to perform this at the end of the installation period. In all instances, please ensure that the following is observed:

1. **All users must have read/write access to the 'C:/Users/Public/' root folder and its subdirectories.**
2. **Windows security settings must be modified in order to avoid unspecified incompatibilities due to automatic software updates.**
    - Automatic Updates must be turned off and set to 'Check for updates but let me choose whether to download and install them'. Please contact IONICS if an update is required for your domain.
    - Java Update settings must be disabled. Disable the 'Check for Updates Automatically' option in the Java Control Panel. Please contact IONICS if an update is required for your domain.
3. **Windows user settings must be modified to ensure connectivity to the mass spectrometer at all times.**
    - Do not put the computer to sleep. This can be modified in the Power Options of the Control Panel.
    - The user may 'Lock' the computer, if necessary.

Site Preparation Sign-Off

This sheet must be completed, signed, dated and provided to the service engineer (via email or fax) prior to his/her arrival for the installation. If the service engineer arrives and finds that the site has not be prepared in accordance with the requirements listed below, the customer may be held liable for all service expenses, at normal billing rates, related to his/her visit.

The following requirements must be completed prior to the arrival of the installation engineer:

☐	Space requirements for instrument, computer and LC components meet the requirements listed in this document.
☐	Laboratory environmental conditions meet the requirements listed in this document.
☐	Ventilation requirements for rough pump and ion source exhaust are present and meet requirements listed in this document.
☐	Zero Air and/or nitrogen sources are in place and meet requirements listed in this document.
☐	Line Voltage for Mass Spectrometer verified to be within 208-240 VAC.
☐	LCMS grade solvents and chemicals specified in the Laboratory Supplies section are on hand.
☐	General laboratory equipment including pipettes, gloves, and clean glassware on hand.

The undersigned hereby confirms that the list of requirements specified above and described in this manual (Preparing Your Laboratory for the QSight Mass Spectrometer) has been completed, and the site is ready for the installation of the QSight MS. He/she understands that they may be responsible for all service expenses, at normal billing rates, associated with an installation that cannot be performed due to any of the requirements on this sheet not being completed.

Please sign and date below.

Signature of Responsible Party **Date**