Thermo Scientific

TriPlus 100 Liquid Sampler

Preinstallation Requirements Guide

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Thermo SCIENTIFIC

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Tel: +39 02 95059303; Fax: +39 02 95059388

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For Research Use Only. Not for use in diagnostic procedures.

IMPORTANT PREINSTALLATION INFORMATION... PLEASE READ

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TriPlus 100 Liquid Sampler Installation Request Form

Once you read the TriPlus 100 Liquid Sampler Preinstallation Requirements Guide, print and complete this form. After all the requirements on this form are fulfilled, sign and date the form. Then mail or fax this form to your local Thermo Fisher Scientific sales/service office.

Requirements Checklist

- ❑ All laboratory remodeling has been completed.
- ❑ Your TriPlus 100 Liquid Sampler is on site.
- ❑ Principal operator will be available during the installation / certification period.
- ❑ Doorways, hallways, etc. are a minimum width of 80 cm (32 in.).
- ❑ Available floor area is sufficient and flooring will support the mass of the system.
- ❑ Available workbench is sufficient for all of the equipment. List the bench measurements:
  Width:
  Depth:
  Height:
- ❑ Workbench can support the mass of the system [107 kg (236 lbs)] and is free from vibration.
- ❑ Lighting is adequate.
- ❑ Main power is installed and is in compliance with local electrical codes.
- ❑ Power outlets are of the correct configuration. NEMA type:_____
- ❑ The power outlets are enough for the electrical connections.
- ❑ Voltage of power outlet has been measured.
  Measured voltage: _____
- ❑ Power is free from fluctuations due to slow changes in the average voltage or changes due to surges, sags, or transients.
- ❑ One or more RJ-45 wall outlets. To connect your system to your site's LAN network, you must have an additional shielded twisted pair network cable.
- ❑ Air conditioning is adequate for temperature, humidity, and particulate matter control. The laboratory can be maintained at a constant temperature, between 15 and 27 °C (59 and 81 °F).
- ❑ Relative humidity is between 40% and 80% with no condensation.
- ❑ Air in your laboratory is free of excessive dust, smoke or other particulate matter.
- ❑ Work area is free from magnetic disruption and electrostatic discharge.
- ❑ One voice telephone line is installed near the system.

Principal Operator Level of Experience

GC, Injector and Column Knowledge:	❑ Experienced	❑ Moderate	❑ Limited
Gas Chromatography Theory Knowledge:	❑ Experienced	❑ Moderate	❑ Limited
Data System Knowledge:	❑ Experienced	❑ Moderate	❑ Limited

Additional Information

Have any special acceptance specifications been agreed to in the contract? Yes ❑ No ❑
If Yes, attach full details of specifications.
Is there any additional equipment that needs to be interfaced to the system? Yes ❑ No ❑
If Yes, attach full details of additional equipment.

Note We reserve the right to invoice you for the Field Service Engineer's time if the installation requirements are not met on the date of the installation. To avoid any additional cost, please ensure your site is properly prepared.

Fill in the information below (please print clearly):

Name _____

Company _____ Telephone _____

Address _____

Address _____

City _____ State _____ Country_____

Signature _____ Date _____

Offices for Thermo Scientific CMD Products

For up-to-date contact information, visit www.thermoscientific.com.

North America

United States

1400 North Point Pkwy #10
West Palm Beach, FL 33407
E-mail:
us.customer-support.analyze@thermofisher.com
Phone.....[1] 800 532 4752
Fax.....[1] 877 373 4006

Canada

2845 Argentia Road, Unit 4
Mississauga, Ontario, L5N 8G6
E-mail:
us.customer-support.analyze@thermofisher.com
Phone.....[1] 800 530 8447
Fax.....[1] (905) 890 9161

Europe

Austria

Wehlistrasse 27b
A-1200 Wien
E-mail: service.sid.austria@thermofisher.com
Phone.....[43] (0) 1 333 50 34-0
Fax.....[43] (0) 1 333 50 34-26

Belgium

Clintonpark "Keppekouter"
Ninovesteenweg 198
B-9320 ERMEBODEGEM - AALST
E-mail: service.sid.benelux@thermofisher.com
Phone.....[32] (0) 2 482 3030
Fax.....[32] (0) 2 482 3031

Denmark

Fruebjergvej 3
2100 København Ø
E-mail: service.sid.dk@thermofisher.com
Phone.....[45] (70) 236267
Fax.....[45] (70) 236263

Finland—*see* "Sweden, Norway, and Finland"

France

(Also representing French-speaking North Africa, Algeria, Morocco, and Tunisia)

16 Avenue du Québec
Silic 765
Z.A. de Courtaboeuf
F-91963 Les Ulis Cédex
E-mail: service.sid.lesulis@thermofisher.com
Phone.....[33] (0) 1 60 92 49 50
Fax.....[33] (0) 1 60 92 48 99

Germany

Im Steingrund 4-6
D-63303 Dreieich
E-mail: service.dreieich@thermofisher.com
Phone.....[49] (0) 6103 408 1050
Fax.....[49] (0) 6103 408 1213

Italy

Strada Rivoltana
I-20090 Rodano (Milano)
E-mail: assistenza.tecnica.it@thermofisher.com
Phone.....Numero Verde (800) 823 162
Fax.....[39] (02) 95320 225

Netherlands

Takkebijsters 1
NL-4817 BL Breda
E-mail: service.sid.benelux@thermofisher.com
Phone.....[31] (0) 76 579 55 55
Fax.....[31] (0) 76 581 09 61

Norway—*see* "Sweden, Norway, and Finland"

Spain

C/Valportillo I, n^{o}22 1a Planta
Edificio Caoba
ES-28108 Alcobendas - Madrid
E-mail: service.sid.spain@thermofisher.com
Phone.....[34] (914) 845 965
Fax.....[34](914) 843 598

Notes: The country code is enclosed in square brackets [ ]. The city code or area code is enclosed in parenthesis ( ). For countries other than the U.S.A., when you are dialing from within the specified country, dial the 0 of the city code. For countries other than Italy, when you are dialing from outside the country, do not dial the 0 of the city code.

Offices for Thermo Scientific CMD Products—Continued

Europe—continued

Sweden, Norway, and Finland

Pyramidbacken 3
S-141 75 Kungens Kurva (Stockholm)
Sweden
E-mail: service.sid.nordic@thermofisher.com
Phone.....[46] (0) 8 556 468 20
Fax.....[46] (0) 8 556 468 08

Switzerland

Neuhofstrasse 11
4153 Reinach
E-mail: service.sid.ch@thermofisher.com
Phone.....[41] (617) 16 77 40
Fax.....[41] (617) 16 77 20

United Kingdom

Stafford House
1 Boundary Park
Boundary Way
Hemel Hempstead
Hertfordshire HP2 7GE
E-mail: service.sid.hemel@thermofisher.com
Phone.....[44] (0) 870 241 1034
Fax.....[44] (0) 1442 233 667

Australasia and Asia

Australia

P.O. Box 9092
5 Caribbean Drive
Scoresby, VIC 3179
E-mail: analyze.au@thermofisher.com
Phone.....[61] 39757 4300
Fax.....[61] 9763 1169

Japan

C-2F
3-9 Moriya-cho, Kanagawa-ku
Yokohama 221-0022
E-mail: analyze.jp@thermofisher.com
Phone.....[81] (45) 453 9100
Fax.....[81] (45) 453 9110

P.R. China

7th Floor, 7F Tower West, Younghe Plaza
No. 28, Andingmen East Street
Dong Cheng District
Beijing 100007
E-mail: analyze.cn@thermofisher.com
Phone (free lines).....800 810 5118
.....400 650 5118
Fax.....[86] (010) 8419 3589

Building 6
No.27 Xin Jinqiao Road
Pudong District
Shanghai 201206
Phone.....[86] (21) 6865 4588
Fax.....[86] (21) 6445 7830

Declaration

Manufacturer: **Thermo Fisher Scientific**

Thermo Fisher Scientific is the manufacturer of the instrument described in this manual and, as such, is responsible for the instrument safety, reliability and performance only if:

- installation
- re-calibration
- changes and repairs

have been carried out by authorized personnel and if:

- the local installation complies with local law regulations
- the instrument is used according to the instructions provided and if its operation is only entrusted to qualified trained personnel

Thermo Fisher Scientific is not liable for any damages derived from the non-compliance with the aforementioned recommendations.

Thermo Fisher Scientific S.p.A.
Strada Rivoltana, 20090 Rodano - Milan - Italy — Tel: +39 02 950591 - Fax: +39 02 9505276

Regulatory Compliance

Thermo Fisher Scientific performs complete testing and evaluation of its products to ensure full compliance with applicable domestic and international regulations.

Thermo Fisher Scientific declares, under sole responsibility, that the product as originally delivered complies with the requirements of the following applicable European Directives and carries the CE marking accordingly:

- Low Voltage Directive:2006/95/EC
- EMC Directive:2004/108/EC
- Machinery Directive: 2006/42/EC

… and conforms with the following product standards:

Safety

This device complies with>

- ANSI/UL 61010-1:2004 2nd Edition, CAN/CSA C22.2 No. 61010-1:2004 2nd Edition.
- EN 61010-2-010:2003 | EN 61010-2-051:2003 | EN 61010-2-081:2001+A1:2003

Electromagnetic Compatibility

This device complies with:

- EN 61326-1:2006 / IEC 61326-1:2005
- EN 61000-6-2:2005 / IEC 61000-6-2:2005 | EN 61000-6-3:2007 / IEC 61000-6-3:2006

Laser Class 1

The selected Class 1 Laser for the Barcode Reader module of the TriPlus 100 Liquid Sampler system complies with the following regulations:

- 21 CFR1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001

- EN60825-1:1994 + A1:2002 + A2:2001
- IEC60825-1:1993 + A1:1997 + A2:2001

FCC Compliance Statement

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

CAUTION Read and understand the various precautionary notes, signs, and symbols contained inside this manual pertaining to the safe use and operation of this product before using the device.

Notice on Lifting and Handling of Thermo Scientific Instruments

For your safety, and in compliance with international regulations, the physical handling of this Thermo Fisher Scientific instrument ***requires a team effort*** to lift and/or move the instrument. This instrument is too heavy and/or bulky for one person alone to handle safely.

Notice on the Proper Use of Thermo Scientific Instruments

In compliance with international regulations: Use of this instrument in a manner not specified by Thermo Fisher Scientific could impair any protection provided by the instrument.

Notice on the Susceptibility to Electromagnetic Transmissions

Do not use radio frequency transmitters, such as mobile phones, in close proximity to the instrument.

WEEE Compliance

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EU. It is marked with the following symbol:

Thermo Fisher Scientific has contracted with one or more recycling or disposal companies in each European Union (EU) Member State, and these companies should dispose of or recycle this product. See www.thermoscientific.com/rohsweee for further information on Thermo Fisher Scientific's compliance with these Directives and the recyclers in your country.

WEEE Konformität

Dieses Produkt muss die EU Waste Electrical & Electronic Equipment (WEEE) Richtlinie 2012/19/EU erfüllen. Das Produkt ist durch folgendes Symbol gekennzeichnet:

Thermo Fisher Scientific hat Vereinbarungen mit Verwertungs-/Entsorgungsfirmen in allen EU-Mitgliedsstaaten getroffen, damit dieses Produkt durch diese Firmen wiederverwertet oder entsorgt werden kann. Mehr Information über die Einhaltung dieser Anweisungen durch Thermo Fisher Scientific, über die Verwerter, und weitere Hinweise, die nützlich sind, um die Produkte zu identifizieren, die unter diese RoHS Anweisung fallen, finden sie unter www.thermoscientific.com/rohsweee.

Conformité DEEE

Ce produit doit être conforme à la directive européenne (2012/19/EU) des Déchets d'Equipements Electriques et Electroniques (DEEE). Il est marqué par le symbole suivant:

Thermo Fisher Scientific s'est associé avec une ou plusieurs compagnies de recyclage dans chaque état membre de l'union européenne et ce produit devrait être collecté ou recyclé par celles-ci. Davantage d'informations sur la conformité de Thermo Fisher Scientific à ces directives, les recycleurs dans votre pays et les informations sur les produits Thermo Fisher Scientific qui peuvent aider la détection des substances sujettes à la directive RoHS sont disponibles sur www.thermoscientific.com/rohsweee.

Conformità RAEE

Questo prodotto è marcato con il seguente simbolo in conformità alla direttiva europea 2012/19/EU (RAEE) sui rifiuti di apparecchiature elettriche ed elettroniche:

Thermo Fisher Scientific si è accordata con una o più società di riciclaggio in ciascun Stato Membro della Unione Europea (EU), e queste società dovranno smaltire o riciclare questo prodotto. Per maggiori informazioni vedere il sito www.thermoscientific.com/rohsweee.

Conformidad RAEE

Este producto es marcado con el siguiente símbolo en conformidad a la Directiva 2012/19/EU de la Unión Europea sobre los residuos de aparatos eléctricos y electrónicos:

Thermo Fisher Scientific ha contratado una o más empresas de reciclo para tratar residuos en cada Estado Miembro de la Unión Europea, y estas empresas deberían reciclar o eliminar este producto. Referirse a www.thermoscientific.com/rohsweee para una mayor información sobre la conformidad de Thermo Fisher Scientific con estas Directivas y para las empresas de reciclaje en su país.

IMPORTANT

The symbol indicates the product must not be disposed of with the normal household wastes. Correct disposal of this product prevents any potentially negative impact on the environmental and human health that could arise from any inappropriate handling of the product itself.

WEEE and RoHS rules, while laid down at European level, are put into national law at national level. When exporting to Europe, it is essential to comply with national law in each relevant country. The EU law simply serves as a template for national laws, which may differ considerably.

Each EU Member State has own regulations regarding the application of these directives. Please refer to the regulations in force in your country.

Contents

Preface

This guide contains preinstallation requirements that must be in compliance before installing the Thermo Scientific™ TriPlus 100™ Liquid Sampler system.

About Your System

Thermo Fisher Scientific systems operate safely and reliably under carefully controlled environmental conditions. If the equipment is used in a manner not specified by the manufacturer, the protections provided by the equipment might be impaired. If you maintain a system outside the specifications listed in this guide, failures of many types, including personal injury or death, might occur. The repair of instrument failures caused by operation in a manner not specified by the manufacturer is specifically excluded from the Standard Warranty and service contract coverage.

Power Rating

TriPlus 100 Liquid Sampler system:

100/240 Vac +/-10%; 50/60 Hz; 4 A max; 200 VA (400 VA when two Power Modules are required).

Detailed instrument specifications are in the Product Specification or Product Brochure.

Contacting Us

Thermo Fisher Scientific provides comprehensive technical assistance worldwide and is dedicated to the quality of our customer relationships and services.

Use http://www.thermoscientific.com address for products information.address for products information.

Use http://www.gc-gcms-customersupport.com/WebPage/Share/Default.aspx address to contact your local Thermo Fisher Scientific office, or affiliate GC-GC/MS Customer Support.

Related Documentation

In addition to this guide, Thermo Scientific provides the following documents for the TriPlus 100 Liquid Sampler system.

- *TriPlus 100 Liquid Sampler User Guide*, PN 31709702
- *TriPlus 100 Liquid Sampler Hardware Manual*, PN 31709703
- *TriPlus 100 Liquid Sampler Spare Parts Guide*, PN 31709704

To suggest ways we can improve the documentation, follow this link to complete our documentation survey.

Safety Alerts and Important Information

Make sure you follow the precautionary notices presented in this manual. The safety and other special notices appear in boxes.

Special Notices

Notices includes the following:

IMPORTANT Highlights information necessary to prevent damage to software, loss of data, or invalid test results; or might contain information that is critical for optimal performance of the system.

Note Emphasizes important information about a task.

Tip Helpful information that can make a task easier.

Safety Symbols and Signal Words

All safety symbols are followed by **WARNING** or **CAUTION**, which indicates the degree of risk for personal injury, instrument damage, or both. Cautions and warnings are following by a descriptor, such as **BURN HAZARD**. A **WARNING** is intended to prevent improper actions that could cause personal injury. Whereas, a **CAUTION** is intended to prevent improper actions that might cause personal injury, instrument damage, or both. You can find the following safety symbols on your instrument, or in this guide:

Symbol	Descriptor
	**BIOHAZARD:** Indicates that a biohazard *will*, *could*, or *might* occur.

	**BURN HAZARD:** Alerts you to the presence of a hot surface that *could* or *might* cause burn injuries.
	**ELECTRICAL SHOCK HAZARD:** Indicates that an electrical shock *could* or *might* occur.
	**FIRE HAZARD:** Indicates a risk of fire or flammability *could* or *might* occur.
	**EXPLOSION HAZARD.** Indicates an explosion hazard. This symbol indicates this risk *could* or *might* cause physical injury.
	**FLAMMABLE GAS HAZARD.** Alerts you to gases that are compressed, liquefied or dissolved under pressure and can ignite on contact with an ignition source. This symbol indicates this risk *could* or *might* cause physical injury.
	**GLOVES REQUIRED:** Indicates that you must wear gloves when performing a task or physical injury *could* or *might* occur.
	**CLOTHING REQUIRED.** Indicates that you should wear a work clothing when performing a task or else physical injury *could* or *might* occur.
	**BOOTS REQUIRED.** Indicates that you must wear boots when performing a task or else physical injury *could* or *might* occur.
	**MATERIAL AND EYE HAZARD.** Indicates you must wear eye protection when performing a task.
	**HAND AND CHEMICAL HAZARD:** Indicates that chemical damage or physical injury *could* or *might* occur.
	**HARMFUL.** Indicates that the presence of harmful material *will, could, or might* occur.
	**INSTRUMENT DAMAGE:** Indicates that damage to the instrument or component *might* occur. This damage might not be covered under the standard warranty.
	**LIFTING HAZARD.** Indicates that a physical injury *could* or *might* occur if two or more people do not lift an object.
	**MATERIAL AND EYE HAZARD:** Indicates that eye damage *could* or *might* occur.
	**READ MANUAL:** Alerts you to carefully read your instrument's documentation to ensure your safety and the instrument's operational ability. Failing to carefully read the documentation *could* or *might* put you at risk for a physical injury.
	**TOXIC SUBSTANCES HAZARD:** Indicates that exposure to a toxic substance could occur and that exposure *could* or *might* cause personal injury or death.

	**LASER HAZARD.** Indicates that exposure to a laser beam *will*, *could*, or *might* cause personal injury.
	**RADIOACTIVE HAZARD.** Indicates that the presence of radioactive material *could or might* occur.
	For the prevention of personal injury, this general warning symbol precedes the **WARNING** safety alert word and meets the ISO 3864-2 standard. In the vocabulary of ANSI Z535 signs, this symbol indicates a possible personal injury hazard exists if the instrument is improperly used or if unsafe actions occur. This symbol and another appropriate safety symbol alerts you to an imminent or potential hazard that *could cause personal injury.*

Instrument Markings and Symbols

Table 1 explains the symbols used on Thermo Fisher Scientific instruments. Only a few of them are used on the TriPlus 100 Liquid Sampler system. See the asterisk.

Table 1. Instrument Marking and Symbols (Sheet 1 of 2)

	Symbol	Description
		Direct Current
*		Alternating Current
		Both direct and alternating current
		Three-phase alternating current
		Earth (ground) terminal
		Protective conductor terminal
		Frame or chassis terminal
		Equipotentiality
*		On (Supply)
*		Off (Supply)
		Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION (Equivalent to Class II of IEC 536)
		Fuse

Table 1. Instrument Marking and Symbols (Sheet 2 of 2)

	Symbol	Description
*		Instruction manual symbol affixed to product. Indicates that the you must refer to the manual for specific **WARNING** or **CAUTION** information to avoid personal injury or damage to the product.
		Caution, risk of electric shock
*		Caution, hot surface
*		Caution, biohazard
*		Caution, Laser beam
*		Symbol in compliance to the Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) placed on the European market after August, 13, 2005.

Safety Information and Warnings

This safety guide raises awareness of potential safety issues and general points for consideration for Thermo Fisher Scientific representatives during installation, and repair of the TriPlus 100 Liquid Sampler system, or parts of it (following the life cycle principle), as well as for the end user TriPlus 100 Liquid Sampler system in the lab during the learning phase, and in routine work.

IMPORTANT Read this section first before operating the TriPlus 100 Liquid Sampler system.

General Considerations

- Before a unit is put to use, consult the *TriPlus 100 Liquid Sampler User Guide* and related documents under all circumstances.
- Changes or modifications to this unit not expressly approved by the party responsible for compliance, could void your's authority to operate the equipment.
- Be aware that if the equipment is used in a manner not specified by the manufacturer, the protective and safety features of the equipment might be impaired.
- The repair of instrument failures caused by operation in a manner not specified by the manufacturer is expressly excluded from the standard warranty and service contract coverage.

- When for technical reasons it is necessary to work on instrument parts which might involve a potential hazard (moving parts, components under voltage, and so on.) contact the Thermo Fisher Scientific authorized representative.

  In general, this type of situation arises when access to the parts is only possible using a tool. When you perform a maintenance operation, you must have received proper training to carry out that specific task.

Electrical Hazards

Every analytical instrument has specific hazards. Be sure to read and comply with the following pre-cautions. They ensure the safe and long-term use of your TriPlus 100 Liquid Sampler system.

The installation over-voltage category is Level II. The Level II category pertains to equipment receiving its electrical power from the local level, such as an electrical wall outlet.

Connect the TriPlus 100 Liquid Sampler system only to instruments complying with IEC 61010 safety regulations.

The power line and the connections between the TriPlus 100 Liquid Sampler system and other instruments, used in the configuration setup of the total analytical system, must maintain good electrical grounding. Poor grounding represents a danger for the operator, and might seriously affect the performance of the instrument.

Do not connect the TriPlus 100 Liquid Sampler system to power lines that supply devices of a heavy duty nature, such as motors, refrigerators and other devices that can generate electrical disturbances.

Use only fuses of the type and current rating specified. Do not use repaired fuses, and do not short-circuit the fuse holder. The supplied power cord must be inserted into a power outlet with a protective earth (ground) contact. When using an extension cord, make sure that the cord also has an earth contact.

If the supplied power cord does not fit the local electrical socket and a replacement or adapter has to be purchased locally, make sure that only a certified power cord is used. Any power cord used must be certified by the appropriate local authorities.

Pay attention not to leave any cable connecting the TriPlus 100 Liquid Sampler system and the chromatographic system, or the power cord close to heated zone, such as the injector or detector heating blocks, or the GC hot air vents.

Always replace any cable showing signs of damage with another one provided by the manufacturer. Safety regulations must be respected.

Do not change the external or internal grounding connections. Tampering with or disconnecting these connections could endanger you and damage the TriPlus 100 Liquid Sampler system.
The instrument is properly grounded in accordance with these regulations when shipped. To ensure safe operation, you do not must make any changes to the electrical connections or the instrument's chassis.

Do not turn the instrument on if you suspect that it has incurred any type of electrical damage. Instead, disconnect the power cord and contact a Thermo Fisher Scientific representative for a product evaluation. Do not attempt to use the instrument until it has been evaluated. Electrical damage might have occurred if the TriPlus 100 Liquid Sampler system shows visible signs of damage, exposure to any liquids or has been transported under severe stress.

Damage can also result if the instrument is stored for prolonged periods under unfavorable conditions: for example, subjected to heat, moisture, and so on. Ensure that the power supply/controller unit is always placed in a clean and dry position. Avoid any liquid spills in the vicinity.

Before attempting any type of maintenance work, always disconnect the power cords from the power supply if optional devices are installed. Capacitors inside the instrument might still be charged also if the instrument is turned off.
To avoid damaging electrical parts, do not disconnect an electrical assembly while power is applied to the TriPlus 100 Liquid Sampler system. After the power is turned off, wait approximately 30 seconds before you disconnect an assembly.

The instrument includes a number of integrated circuits. These circuits might be damaged if exposed to excessive line voltage fluctuations, power surges or electrostatic charges, or both.

Never try to repair or replace any components of the instrument without the assistance of a Thermo Fisher Scientific representative. There are no operator-serviceable or replaceable parts inside the power supply or in the TriPlus 100 Liquid Sampler system. If a power supply is not functioning, contact a Thermo Fisher Scientific representative.

The power supplies for the TriPlus 100 Liquid Sampler system, the Temperature Controlled Drawer have the symbols **I/O** on the label for the power switch to indicate ON/OFF. If a Temperature Controlled Drawer is installed in combination with a TriPlus 100 Liquid Sampler system, a second power supply is active in the complete system. Turning OFF the two power supplies, or pulling the two power cords in an emergency, stop the entire TriPlus 100 Liquid Sampler system.
It is important that the power supply is in a location where the power ON/OFF switch is accessible and easy to operate, and where it is possible to unplug the AC power cord from the power supply/wall outlet in case of emergency.

Laser Safety Information

Safety Warning for Laser Class 1 Product.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
APPAREIL À LASER DE CLASSE 1

WARNING The installed Laser device is a Class 1 Laser Product.
Class 1 Laser devices are not considered to be hazardous when used for their intended purpose. The following statement is required to comply with US and international regulations:

CAUTION Use of controls, adjustments or performance of procedures other than those specified herein might result in hazardous laser light exposures.

- The selected Class 1 Laser for the module Barcode Reader of the TriPlus 100 Liquid Sampler system complies with the following regulations:
- 21 CFR1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001
- EN60825-1:1994 + A1:2002 + A2:2001
- IEC60825-1:1993 + A1:1997 + A2:2001

The software contains a built-in safety time limit such that the laser scanning mechanism cannot be operated in AIM mode for more than 5 continuous seconds.

Other Hazards

To avoid injury and possible infection through contamination during TriPlus 100 Liquid Sampler system operation, keep your hands away from the syringe.

Do not operate the TriPlus 100 Liquid Sampler system without the safety guard. The safety guard must be installed for safe operation. Do not place any objects inside the area of the safety guard. Keep away from the area around the safety guard during operation of the TriPlus 100 Liquid Sampler system.

Danger of crushing to fingers and hands. To avoid injury keep your hands away from moving parts during operation. Turn off the power to the TriPlus 100 Liquid Sampler system if you must reach inside a mechanically powered system with moving parts.

To avoid injury, observe safe laboratory practice when handling solvents, changing tubing, or operating the TriPlus 100 Liquid Sampler system. Know the physical and chemical properties of the solvents you use. See the MSDS (Material Safety Data Sheets) from the manufacturer of the solvents being used.

When using the TriPlus 100 Liquid Sampler system, follow the generally accepted procedures for quality control and method development.

When using the TriPlus 100 Liquid Sampler system in the field of chromatographic analysis, if a change is observed in the retention of a particular compound, in the resolution between two compounds, or in the peak shape, immediately determine the reasons for the changes. Do not rely on the separation results until you determine the cause of a change.

Do not operate on the instrument components that form part of the work area of the TriPlus 100 Liquid Sampler system when it is in motion.

Use caution when working with any polymer tubing under pressure:

- Always wear eye protection when near pressurized polymer tubing.
- Do not use polymer tubing that has been severely stressed or kinked.
- Do not use polymer tubing, in particular no PEEK or Tefzel tubing when using tetrahydrofuran (THF), dimethylsulfoxide (DMSO), chlorinated organic solvents, concentrated mineral acids such as nitric, phosphoric or sulfuric acids, or any related compounds.

Do not use vials without a sealing cap, or microtiter or deepwell plates without a plate seal. Vapor phase from organic solvents can be hazardous and flammable. Acidic vapor phase can cause corrosion to critical mechanical parts.

When sample vials have to undergo heating and agitation, it is important to consider the glass quality. Use high quality glass only. Remember that depending on the application conditions, high pressure can build up in the vial. Whenever a temperature greater than 60 °C is applied, consider the vapor pressure of the solvent used to ensure that no excessive pressure builds up. This is important when using a temperature above 100 °C and especially at the maximum temperature of 200 °C. Be aware that solid materials can also contain volatile compounds such as water (humidity) which could cause build-up of excess vapor pressure.

Do not reuse the vials. During the process of washing the vial, micro-cracks can form which will weaken the glass wall and increase the chances of the vial breaking.

Working with Toxic or other Harmful Compounds

WARNING Before using hazardous substances (toxic, harmful, and so on), please read the hazard indications and information reported in the applicable Material Safety Data Sheet (MSDS). Use personal protective equipment according to the safety requirements.

Before using dangerous substances (toxic, harmful, and so on) read the hazard indications and information reported in the Material Safety Data Sheet (MSDS) supplied by the manufacturer, referring to the relevant CAS (Chemical Abstract Service) number. The TriPlus 100 Liquid Sampler system requires the use of several chemical products with different hazard

characteristics, which are present in vials and syringes. Before using these substances or replacing the syringe, please read the hazard indications and information reported in the MSDS supplied by the manufacturer referring to the relevant CAS number.

When preparing the samples, please refer to local regulations for the ventilation conditions of the work room.

All waste materials must be collected and eliminated in compliance with the local regulations and directives in the country where the instrument is used.

Biological Hazards

In laboratories where samples with potential biological hazards are handled, you must label any equipment or parts thereof which might become contaminated with biohazardous material. The appropriate warning labels are included with the shipment of the instrument. It is your responsibility to label the relevant parts of the instrument.

When working with biohazardous materials, it is your responsibility to fulfill the following mandatory requirements:

- Instructions on how to safely handle biohazardous material must be provided.
- Operators must be trained and made aware of the potential dangers.
- Personal protective equipment must be provided.
- Instructions must be provided on what to do in case operators are exposed to aerosols or vapors during normal operation (within the intended use of the equipment) or in case of single fault situations such as a broken vial.
  The protective measures must consider potential contact with the skin, mouth, nose (respiratory organs), and eyes.
- Instructions for decontamination and safe disposal of the relevant parts must be provided.

It is your responsibility to handle hazardous chemicals or biological compounds (including, but not limited to, bacterial or viral samples and the associated waste), safely and in accordance with international and local regulations.

Maintenance

Any external cleaning or maintenance must be performed with the TriPlus 100 Liquid Sampler system turned off and the power cord disconnected. Avoid using solvents and spraying on electrical parts. For the removal of potentially dangerous substances (toxic, harmful, and so on) read the hazard indications and information reported in the MSDS (Material Safety Data Sheet) supplied by the manufacturer referring to the relevant CAS (Chemical Abstract Service) number. Use proper protective gloves.

When working with hazardous materials such as radioactive, biologically hazardous material, and so on, it is important to train all operators how to respond in case of spills or contamination.

Depending on the class of hazardous material, the appropriate measures have to be taken immediately. Therefore, the chemicals or solvents needed for decontamination have to be on hand.

Any parts of the equipment which can potentially be contaminated, such as the sample vial rack, syringe tool, wash module, and so on, must be cleaned regularly. The waste solvent from cleaning and any hardware which requires to be disposed of has to be properly eliminated with all the necessary precautions, abiding by national and international regulations.

When preparing for decontamination, ensure that the solvent or chemical to be used will not damage or react with the surface, dye (color) of the instrument, table or other nearby objects. If in doubt, please contact your Thermo Fisher Scientific representative to verify the compatibility of the type or composition of solvents with the TriPlus 100 Liquid Sampler system.

It is your responsibility to handle hazardous chemicals or biological compounds, including (but not limited to) bacterial or viral samples and the associated wastes, safely and in accordance with international and local regulations.

Disposal

Do not dispose of this equipment or parts thereof unsorted in municipal waste. Follow local municipal waste regulations for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE).

European Union customers: Call your local customer service representative responsible for the TriPlus 100 Liquid Sampler system for complimentary equipment pick-up and recycling.

WARNING The customer has to ensure that the TriPlus 100 Liquid Sampler has not been contaminated by any hazardous chemical or biological compounds including (but not limited to) bacteria or viruses.

Any part which had direct contact with the analytical sample must be identified and must undergo an appropriate decontamination procedure prior to shipping for disposal.

Potentially dangerous components are: Syringes, Vials and Well Plates. Any critical parts sent for disposal must be handled according to national laws for hazardous compounds.

The customer and the service engineer are fully responsible for enforcing these requirements. Thermo Fisher Scientific will hold the representative, customer responsible, or both, if these regulations are not observed.

1

TriPlus 100 Liquid Sampler Site Preparation

This chapter gives you the information you need to prepare your site for the installation of the Thermo Scientific™ TriPlus 100™ Liquid Sampler system.

Contents

CAUTION This guide does not includes the information to prepare your lab for the installation of your gas chromatographic system. You can find all the instruction in the ***Preinstallation Requirements Guide*** of your GC system.

TriPlus 100 Liquid Sampler system operates reliably under controlled environment conditions. Operating or maintaining a system outside the specifications outlined in this guide might cause many different types of system failures. The repair of such failures is specifically excluded from the standard warranty and service contract coverage.

Note In addition to the information in this guide, you must also obey the building and safety rules and regulations for construction that apply in your area.

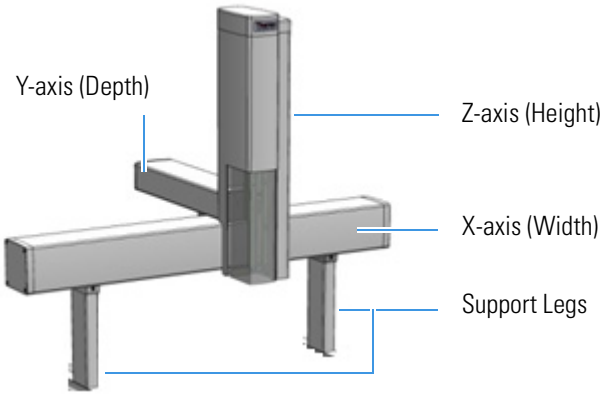
Writing Conventions for TriPlus 100 Liquid Sampler

As **X-axis** (Width) the longitudinal crossrail is intended.

As **Y-axis** (Depth) the orthogonal crossrail is intended.

As **Z-axis** (Height) the head is intended.

Figure 1. TriPlus 100 Liquid Sampler System Axes and Support Legs



Entrance Requirements

Use the following guidelines to make sure the entrance to your site will allow delivery of the TriPlus 100 Liquid Sampler system.

1. Ensure the width of your delivery door opening is at least 80 cm (32 in.).
2. Make sure you have enough room to move boxes around corners, into elevators, or through doorways. The table below contains the dimensions and weight of shipping boxes, so that you can make accommodations:

Table 1. Container Dimensions

Container	Depth	Width	Height	Mass
TriPlus 100 Liquid Sampler system	65 cm (26 in.)	100 cm (39 in.)	32 cm (13 in.)	45-55 kg (99-122 lbs)
Pallet for TriPlus 100 Liquid Sampler system	70 cm (28 in.)	105 cm (41 in.)	13 cm (5 in.)	

Space and Load Requirements

The TriPlus 100 Liquid Sampler system must be installed on the top of the GC. Use the following tables to verify and determine the space and mass requirements for the instrument of your GC system.

IMPORTANT The measure reported in the tables are rounding-up for excess. The tables do not include optional instruments e.g. computers, printers, etc. The GC system should be placed on a workbench that has minimum dimensions of 0.75 X 2 m (2.5 X 6 ft.).

Table 2. Space and Load Requirements

Instrument	Depth (Y-axis)		Width (X-axis)		Height (Z-axis)		Mass	
	cm	in.	cm	in.	cm	in.	kg	lbs
TriPlus 100 Liquid Sampler system	50.3[1]	19.8[1]	85	33.5	54	21.3	15.3[4]	33.7[4]
TRACE 1300	60	24	44	17	45	18	55	121
TRACE 1310	67	26	44	17	45	18	55	121
TRACE GC Ultra	69	27	61	24	51	20	48	105
FOCUS GC	56	22	36	14	48	19	30	66
TSQ 8000 Series MS	89	35	40	16	45	18	61	135
ISQ Series MS	69	27	36	14	46	18	45	99
DSQ II MS	68	27	38	15	44	17	45	98
ITQ MS	68	27	38	15	44	17	45	98
TSQ MS	69	27	56	22	76	30	118	258
Computer[5, 6]	48	19	20	8	43	17	12	27
Monitor[6]	16	7	46	18	32	13	4	8
Keyboard[6]	23	9	46	18	50	2	1	2

[1] About 20 cm (about 8-in.) of the orthogonal crossrail (Y-axis) protrude behind the GC.
[2] Dimension of the entire working range including Handheld bracket
[3] Dimension including the support legs [about 22 cm (8.7 in.) height]
[4] Mass without accessories.
[5] This item is placed on the floor under the system, thereby reducing the weight requirements for your workbench.
[6] Dimensions vary per manufacturer, therefore approximations are provided.

3. Allow at least 30 cm (12 in.) of clearance behind the GC. Before switching on the TriPlus 100 Liquid Sampler system, move the crossrails to verify the absence of obstacles.
4. Make sure you have at least 92 cm (3 ft.) of clearance above the system.
5. Make sure your workbench can support a TriPlus 100 Liquid Sampler system. Keep in mind, additional instruments add to the total weight.

6. Ensure that your work area is stable and free of vibration from nearby equipment. The system is a sensitive instrument.

GC System + TriPlus 100 Liquid Sampler Configuration

The main GC System or GC/MS systems +TriPlus 100 Liquid Sampler system configurations are reported in Table 3:

Table 3. GC or GC/MS System +TriPlus 100 Liquid Sampler System Configurations (Sheet 1 of 2)

Configuration
TRACE 1300/1310 GC + TriPlus 100 Liquid Sampler system
TRACE GC Ultra + TriPlus 100 Liquid Sampler system
TRACE GC Ultra + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
FOCUS GC + TriPlus 100 Liquid Sampler system
FOCUS GC + FOCUS GC + TriPlus 100 Liquid Sampler system
FOCUS GC + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system
TSQ 8000 Series MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system
ISQ Series MS+ TRACE 1300/1310 + TriPlus 100 Liquid Sampler system
DSQ II MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system
ITQ MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system
TSQ MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system
TSQ 8000 MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
ISQ Series MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
DSQ II MS + TRACE GC Ultra+ TriPlus 100 Liquid Sampler
ITQ MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
TSQ MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
TSQ 8000 Series MS + FOCUS GC + TriPlus 100 Liquid Sampler system
ISQ Series MS + FOCUS GC + TriPlus 100 Liquid Sampler system
DSQ II MS + FOCUS GC + TriPlus 100 Liquid Sampler system
ITQ MS + FOCUS GC + TriPlus 100 Liquid Sampler system

Table 3. GC or GC/MS System +TriPlus 100 Liquid Sampler System Configurations (Sheet 2 of 2)

Configuration
TRACE GC Ultra + TSQ 8000 Series MS + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system
TRACE GC Ultra + ISQ Series MS + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system
TRACE GC Ultra + DSQ II MS + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system
TRACE GC Ultra + ITQ MS + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system
TRACE GC Ultra + TRACE GC Ultra +TSQ MS + TriPlus 100 Liquid Sampler system
FOCUS GC + TSQ 8000 Series MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
FOCUS GC + ISQ Series MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
FOCUS GC + DSQ II MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
FOCUS GC + ITQ MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system
FOCUS GC + TRACE GC Ultra + TSQ MS + TriPlus 100 Liquid Sampler system

GC System + TriPlus 100 Liquid Sampler System Configuration Space and Mass Requirements

The TriPlus 100 Liquid Sampler system must be installed on the top of the GC. Use the following tables to determine the space and mass requirements according to your GC system + TriPlus 100 Liquid Sampler configuration.

IMPORTANT The dimensions reported in the tables are rounding-up for excess.

The dimensions are calculated considering the distances that must be leaved between the units of the GC system:

- About **9 cm** between a TRACE GC Ultra and a second TRACE GC Ultra.
- About **6 cm** between a FOCUS and a TRACE GC Ultra.
- About **13 cm** between a FOCUS and another FOCUS GC.
- **1 cm** between a GC and a TSQ 8000 Series mass spectrometer
- **1 cm** between a GC and a ISQ Series mass spectrometer
- **5 cm** between a GC and a ITQ mass spectrometer
- **5 cm** between a GC and a DSQ II mass spectrometer
- **10 cm** between a GC and a TSQ mass spectrometer

Table 4. Overall Dimensions of the GC or GC/MS System + TriPlus 100 Liquid Sampler (Sheet 1 of 2)

Configuration	Depth		Width		Height		Mass	
	cm	in.	cm	in.	cm	in.	kg	lbs
TRACE 1300/1310 + TriPlus 100 Liquid Sampler system	80	31.5	99	39	119	47	80	176
TSQ 8000 Series MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system	89	35	99	39	119	47	129	285
ISQ Series MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system	80	31.5	130	51	119	47	125	276
DSQ II MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system	80	31.5	132	52	119	47	125	276
ITQ MS + TRACE 1300/1310 + TriPlus 100 Liquid Sampler system	80	31.5	132	52	119	47	125	276
TRACE 1300/1310 + TSQ MS + TriPlus 100 Liquid Sampler system	80	31.5	158	62	119	47	198	437
TRACE GC + TriPlus 100 Liquid Sampler system	89	35	99	39	127	50	73	160
TRACE GC + TRACE GC Ultra+ TriPlus 100 Liquid Sampler system	89	35	131	52	127	50	121	272
FOCUS GC + TriPlus 100 Liquid Sampler system	76	30	99	39	127	50	55	121
FOCUS GC + FOCUS GC + TriPlus 100 Liquid Sampler system	76	30	99	39	127	50	85	187
FOCUS GC + TRACE GC Ultra + TriPlus 100 Liquid Sampler system	89	35	103	40.5	127	50	103	227
TSQ 8000 Series MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system	89	35	103	40.5	127	50	134	295
ISQ Series MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system	89	35	104	40.9	127	50	118	260
DSQ II MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system	89	35	104	40.9	127	50	118	260
ITQ MS + TRACE GC Ultra + TriPlus 100 Liquid Sampler system	89	35	104	40.9	127	50	118	260
TRACE GC Ultra + TSQ MS + TriPlus 100 Liquid Sampler system	89	35	190	74.8	127	50	191	421
TSQ 8000 Series MS + FOCUS GC + TriPlus 100 Liquid Sampler system	89	35	99	39	127	50	116	256
ISQ Series MS + FOCUS GC + TriPlus 100 Liquid Sampler system	89	35	73	28.7	127	50	100	220

Table 4. Overall Dimensions of the GC or GC/MS System + TriPlus 100 Liquid Sampler (Sheet 2 of 2)

Configuration	Depth		Width		Height		Mass	
DSQ II MS + FOCUS GC + TriPlus 100 Liquid Sampler system	89	35	77	30.3	127	50	100	220
ITQ MS + FOCUS GC + TriPlus 100 Liquid Sampler system	89	35	77	30.3	127	50	100	220

Power Requirements

This paragraph gives details on the power requirements.

Power Line

CAUTION The power line and the connections between the instruments must maintain good electrical grounding. Poor grounding represents a danger for the operator and might seriously affect the instrument performance.
Do not connect the TriPlus 100 Liquid Sampler to lines feeding devices of a heavy-duty nature, such as motors, UV lamps, refrigerators, air compressors and other devices that can generate disturbances.
Pay attention not to leave any cable connecting the sampling unit and the chromatographic system or the power cord close to the GC hot air vents.
Occasionally, unacceptable quality in line power sources might adversely affect the operation of a GC system. It is the user's responsibility to correct line voltage problems. Specifying power conditioning equipment is a complex task that is best handled by a company or consultant specializing in that field. Contact your Thermo Fisher Scientific Field Service Engineer (FSE) for assistance in locating a power consultant.

Power Module

The TriPlus 100 Liquid Sampler system must be electrically supplied by using a dedicated power supply module. A second Power module is required in case a Temperature Controlled Drawer is installed. Do not use the same Power module as used for the TriPlus 100 Liquid Sampler.

CAUTION The Power Module should be placed on a sturdy, level bench with adequate access to the main power switch.

Electrical Specifications

The electrical specifications and the various protection classes are provided below:

Table 5. Electrical Specifications (Sheet 1 of 2)

Parameter	Requirements
Protection Class	Class I
Over voltage category	Category II
Pollution degree	2
Moisture protection	Normal (IPX0)
Voltage	36 VDC
Fuse	T6.3 A/250 V

Power Supply; Handheld Controller	Requirements
Input line voltage	Grounded AC, 100 to 240 V
Input line frequency	50/60 Hz
Input power	4 A
Output Voltage	36 VDC
Output current	5.55 A (total for two Outlets)

Use the following guidelines to ensure your site is equipped with enough power to support the system.

Table 6. System Power Requirements

Equipment	Maximum Power (W)
TriPlus 100 Liquid Sampler	200 W with a single power module 400 W with two power modules
TRACE GC Ultra	1920
FOCUS GC	1600
TSQ 8000 MS, including foreline pump	1080
ISQ Series MS, including foreline pump	1200
DSQ II MS	700
ITQ MS	700
TSQ-Quantum XLS MS	2310
Computer *	400
Monitor *	25

* Power requirements vary by manufacturer.

Environment Requirements

The operating environment in your laboratory is affected by such factors as temperature, humidity, particulate matter, and electrostatic discharge.
It is your responsibility to provide an acceptable operating environment for your TriPlus 100 Liquid Sampler system. Attention to the operating environment will ensure continued high performance of your TriPlus 100 Liquid Sampler system.

Environmental Conditions

- Internal use
- Up to 3000 meters altitude over sea level
- Temperature 5 to 40 °C (41 to 104 °F)
- Maximum relative humidity 80%, non-condensing
- Voltage variations must not exceed the nominal voltage by ± 10%
- Transient overloads in compliance with installation categories II
- Pollution degree according to IEC 664 (3.7.3) 2
- Protection degree IP00

Use the following guidelines to ensure your site has the proper environmental conditions for the system:

1. Ensure that your room temperature is 5–40 °C (41–104 °F). The analytical performance is only confirmed for temperatures between 15–35 °C (59–95 °F).
   For best performance, the operating temperature should be constant. Use the table below to calculate the amount of heat your system will generate and ensure your air-conditioning system can handle that amount of heat.

CAUTION Do not directly expose the GC system to any cooling duct outlets.

Table 7. Maximum Heat Generated by Each Instrument (Sheet 1 of 2)

Equipment	Heat Output (BTU per Hr.)	Heat Output (in W)
TriPlus 100 Liquid Sampler system	683** or 1366***	200** or 400***
TRACE GC Ultra	6550	1920
FOCUS GC	5460	1600
TSQ 8000 MS, including foreline pump	3685	1080
ISQ Series MS, including foreline pump	4095	1200
DSQ II MS	2390	700

Table 7. Maximum Heat Generated by Each Instrument (Sheet 2 of 2)

Equipment	Heat Output (BTU per Hr.)	Heat Output (in W)
ITQ MS	2390	700
TSQ-Quantum XLS MS	7851	2301
Computer *	1365	400
Monitor *	85	25

* Power requirements vary by manufacturer. ** Single power module *** Two power modules

2. Ensure that the relative humidity in your laboratory is between 40 and 75%, with no condensation. A temperature and humidity monitor in your laboratory helps ensure that the climate is within these specifications.

3. Ensure that the air in your site is free of excess **particulate matter**.

   For reference, the air should contain fewer than 100,000 particles (larger than 5 µm) per cubic meter. If the concentration is larger than this amount, dust can accumulate on electronic components. This accumulation reduces their ability to cool off properly and could cause them to overheat. If your environment is particularly dusty, we recommend that you purchase the optional dust filter for your system.

4. Ensure that your site is free of electrostatic discharge (ESD), which might damage the electronic components of your system. Ensure your static has been discharged before touching internal components of the instrument. ESD can damage sensitive components, resulting in premature failures.

   Take the following precautions to prevent electrostatic discharge:

   - Use a static-dissipating floor covering (such as tile or conductive linoleum) in the room housing your instrument.
   - Use laboratory chairs covered with natural fibers or other static-dissipating material.
   - Wear laboratory coats and clothing made from natural fibers or other static-dissipating material.
   - Do not place polystyrene (foam) cups or packing materials on the instrument.

Gas Equipment Requirements

An inert gas, such as helium or nitrogen is required as purge gas to for cleaning the headspace syringe or to supply the station for the fiber conditioning.

You will need a supply of ultra-high purity GC gases. It is your responsibility to ensure that two-stage safety pressure regulating device is installed the gas supply and the **Temperature Control Drawer**.

LAN Network Requirements

The connection between the TriPlus 100 Liquid Sampler system and a Thermo Scientific Chromatography Data System (Chromeleon, Xcalibur, Chrom-Card, ChromQuest) must be carried out via Local Area Network (LAN).
Your lab must be provided with one or more RJ-45 wall outlet. To connect your system to your site's LAN network, you must have an additional shielded twisted pair network cable (cross cable).

Note We are not responsible for connecting to or establishing communication with your site's LAN network. The FSE will test the system's ability to communicate on a mini-hub or LAN switch only (preferable).
The IP addresses assigned to the instrument must be fixed (permanently assigned) addresses. If you intend to connect your system to your site's network, each piece of equipment must have a unique, fixed (static) IP address assigned to it.

Receiving Instruments

When you receive the TriPlus 100 Liquid Sampler system:

1. Inspect the boxes for damage when the instrument arrives. Our instruments are shipped by electronic equipment carriers who specialize in the handling of delicate equipment. Occasionally, however, equipment is inadvertently damaged in transit. If you notice evidence of external damage, do not refuse shipment. Instead, call Customer Service.
2. Once you have inspected your shipment, move the cartons to a protected location, preferably the installation site. Leave the boxes as complete as possible and do not unpack or open the boxes without our Field Service Engineer (FSE) present. Doing otherwise might void your warranty or order.
3. Complete the Installation Request Form located at the front of this guide and forwards it to Customer Support.

What Happens Next?

After the Installation Request Form is received, Customer Support will contact you to schedule the installation of your system. It is important to confirm that all the requirements on the form are met BEFORE the Field Service Engineer arrives.

The Field Service Engineer will install the system and confirm that all performance tests pass.

a. If equipment is damaged, keep boxes and their equipment in their existing condition and immediately notify the carrier.

b. Submit a damage claim directly to the carrier, and send a copy (including any shortage claims) to your authorized Thermo Fisher Scientific sales representative.

c. Do not return any equipment to the dealer or the factory without prior factory authorization.