



Thermo Scientific

# TriPlus 300 Headspace Sampling System

## Preinstallation Requirements Guide

P/N 317 09672 Revision C December 2015

**Thermo**  
SCIENTIFIC

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Release history:

First edition Revision A, released April 2013 "*Original Instructions*"

Second edition Revision B, released March 2015; Third edition Revision C, released December 2015

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



## TriPlus 300 Headspace Installation Request Form

Once you read the TriPlus 300 Headspace 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 300 Headspace 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 [158 kg (348 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 outlet. 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:   | <input type="checkbox"/> Experienced | <input type="checkbox"/> Moderate | <input type="checkbox"/> Limited |
| Gas Chromatography Theory Knowledge: | <input type="checkbox"/> Experienced | <input type="checkbox"/> Moderate | <input type="checkbox"/> Limited |
| Data System Knowledge:               | <input type="checkbox"/> Experienced | <input type="checkbox"/> Moderate | <input type="checkbox"/> 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 \_\_\_\_\_



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For up-to-date contact information, visit [www.thermoscientific.com](http://www.thermoscientific.com).

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**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.

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## 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.**

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## 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

... and conforms with the following product standards:

### Safety

This device complies with>

- EN 61010-1:2001 2nd Edition
- IEC 61010-1:2001 2nd Edition
- CAN/CSA –c22.2 No. 61010.1–04
- UL Std. No 61010-1 2nd Edition

### Electromagnetic Compatibility

This device complies with:

- EN 61326-1:2006, EN 55011: 2009, Class A Group 1
- IEC 61326-1:2005, CISPR 11:2009, Class A Group 1

## FCC Compliance Statement

Thermo Fisher Scientific hereby declares that our product has been tested and complies with the requirements of Title 47 Telecommunication FCC Part 15 (2007), Class A Digital Device.

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 UNDESIRE 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/rohswcee](http://www.thermoscientific.com/rohswcee) 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/rohswcee](http://www.thermoscientific.com/rohswcee).

## 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:



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## 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](http://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 reciclaje 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](http://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.

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## Contents

## Preface

This guide contains preinstallation requirements that must be in compliance before installing the TriPlus 300 Headspace sampling 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

### Main Unit

- 100-120/200-240 Vac  $\pm 10\%$  max; 60 Hz; 1300 VA.
- 100-115/200-230 Vac  $\pm 10\%$  max; 50 Hz; 1300 VA.

### Autosampler Unit

- 24 Vdc through a portable external power supply
  - Electrical characteristics of the supply
    - input 85-264 Vac; 47/63 Hz
    - output 12 Vdc; 24 VA

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.

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 300 Headspace.

- *TriPlus 300 Headspace Preinstallation Requirements Guide*, PN 31709672
- *TriPlus 300 Headspace User Guide*, PN 31709671

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
	<b>BIOHAZARD:</b> Indicates that a biohazard <i>will, could, or might</i> occur.
	<b>BURN HAZARD:</b> Alerts you to the presence of a hot surface that <i>could or might</i> cause burn injuries.
	<b>ELECTRICAL SHOCK HAZARD:</b> Indicates that an electrical shock <i>could or might</i> occur.
	<b>FIRE HAZARD:</b> Indicates a risk of fire or flammability <i>could or might</i> occur.
	<b>EXPLOSION HAZARD.</b> Indicates an explosion hazard. This symbol indicates this risk <i>could or might</i> cause physical injury.
	<b>FLAMMABLE GAS HAZARD.</b> 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 <i>could or might</i> cause physical injury.
	<b>GLOVES REQUIRED:</b> Indicates that you must wear gloves when performing a task or physical injury <i>could or might</i> occur.
	<b>CLOTHING REQUIRED.</b> Indicates that you should wear a work clothing when performing a task or else physical injury <i>could or might</i> occur.
	<b>BOOTS REQUIRED.</b> Indicates that you must wear boots when performing a task or else physical injury <i>could or might</i> occur.
	<b>MATERIAL AND EYE HAZARD.</b> Indicates you must wear eye protection when performing a task.
	<b>HAND AND CHEMICAL HAZARD:</b> Indicates that chemical damage or physical injury <i>could or might</i> occur.
	<b>HARMFUL.</b> Indicates that the presence of harmful material <i>will, could, or might</i> occur.
	<b>INSTRUMENT DAMAGE:</b> Indicates that damage to the instrument or component <i>might</i> occur. This damage might not be covered under the standard warranty.

	<b>LIFTING HAZARD.</b> Indicates that a physical injury <i>could</i> or <i>might</i> occur if two or more people do not lift an object.
	<b>MATERIAL AND EYE HAZARD:</b> Indicates that eye damage <i>could</i> or <i>might</i> occur.
	<b>READ MANUAL:</b> 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 <i>could</i> or <i>might</i> put you at risk for a physical injury.
	<b>TOXIC SUBSTANCES HAZARD:</b> Indicates that exposure to a toxic substance could occur and that exposure <i>could</i> or <i>might</i> cause personal injury or death.
	<b>LASER HAZARD.</b> Indicates that exposure to a laser beam <i>will</i> , <i>could</i> , or <i>might</i> cause personal injury.
	<b>RADIOACTIVE HAZARD.</b> Indicates that the presence of radioactive material <i>could</i> or <i>might</i> occur.
	For the prevention of personal injury, this general warning symbol precedes the <b>WARNING</b> 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 <i>could cause personal injury</i> .

## 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 300 Headspace sampling 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
3 	Three-phase alternating current
	Earth (ground) terminal
	Protective conductor terminal
	Frame or chassis terminal



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

Symbol	Description
	Equipotentiality
* 	On (Supply)
* 	Off (Supply)
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION (Equivalent to Class II of IEC 536)
	Fuse
* 	Jack socket
* 	Instruction manual symbol affixed to product. Indicates that you must refer to the manual for specific <b>WARNING</b> or <b>CAUTION</b> 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

The purpose of this safety guide is to make users aware of potential safety issues and general concerns for Thermo Fisher Scientific representatives during installation, and repair of the TriPlus 300 Headspace sampling system, or parts of it (following the life-cycle principle), as well as for the end user TriPlus 300 Headspace sampling system in the lab during the learning phase and in routine work.



**IMPORTANT** Read this section first before operating the TriPlus 300 Headspace sampling system.

## General Considerations

- Before using your system, consult the *TriPlus 300 Headspace 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 others) contact 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 300 Headspace sampling system. The installation over-voltage category is Level II. The Level II category pertains to equipment receiving its electrical power locally, such as from an electrical wall outlet.

Connect the TriPlus 300 Headspace sampling system only to instruments complying with IEC 61010 safety regulations.

The power line and the connections between the TriPlus 300 Headspace sampling system and other instruments, used in the configuration setup of the total analytical system, must maintain good electrical grounding.

Poor grounding represents a danger to the operator, and might seriously affect the performance of the instrument.

Do not connect the TriPlus 300 Headspace sampling 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, ensure 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 must be purchased locally, ensure 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 cables connecting the TriPlus 300 Headspace sampling 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 300 Headspace sampling system. The instrument is properly grounded in accordance with these regulations when shipped. To ensure safe operation, do not 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 300 Headspace sampling 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 if the instrument is turned off.

To avoid damaging electrical parts, do not disconnect an electrical assembly while power is supplied to the TriPlus 300 Headspace sampling 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 TriPlus 300 Headspace sampling system. If a instrument is not functioning, contact a Thermo Fisher Scientific representative.



The power supplies for the TriPlus 300 Headspace sampling system have the symbols **I/O** to indicate ON/OFF. It is important that 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.

## Other Hazards



There is 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 300 Headspace sampling 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 300 Headspace sampling 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 300 Headspace sampling system, follow the generally accepted procedures for quality control and method development.

When using the TriPlus 300 Headspace sampling system in the field of chromatographic analysis, if a change is observed in the retention time 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 300 Headspace sampling system when it is in motion.



Do not use vials without a sealing cap. 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 temperatures above 100°C and especially at the maximum temperature of 300 °C. Be aware that solid materials can also contain volatile compounds such as water (humidity) that may cause build-up of excess vapor pressure.

Do not reuse headspace 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.

The TriPlus 300 Headspace sampling 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 Hazard Warning Note

In laboratories where samples with potential biological hazards are handled, the user must label any equipment or parts which might become contaminated with biohazardous material.



The appropriate warning labels are included with the shipment of the instrument. It is the user's responsibility to label the relevant parts of the equipment.

When working with biohazardous materials, you are responsible for fulfilling the following mandatory requirements:

- Providing instructions on how to safely handle biohazardous material.
- Training operators to be aware of potential hazards.
- Providing personal protective equipment.
- Providing instructions for what to do if 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.
- Providing instructions for decontamination and safe disposal of relevant parts.

## Maintenance

Any external cleaning or maintenance must be performed with the TriPlus 300 Headspace sampling system turned off and the power cord disconnected. Avoid using solvents and sprays on electrical parts. For removal of potentially dangerous substances (toxic, harmful, and others) 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 measure have to be taken immediately. Therefore, the chemicals or solvents needed for decontamination must be on hand.

Any parts of the equipment which can potentially be contaminated, such as the sample vial rack, syringe tool, wash module, and others, must be cleaned regularly. The waste solvent from cleaning and any hardware that must be disposed must 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, or 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 300 Headspace sampling system.

## 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 300 Headspace sampling system for complimentary equipment pick-up and recycling.

**WARNING** The customer must ensure that the TriPlus 300 Headspace sampling system 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 the appropriate decontamination procedure prior to shipping for disposal.

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

# TriPlus 300 Headspace Site Preparation

This chapter provides the information you need to prepare your site for the installation of the TriPlus 300 Headspace sampling system.

## Contents

- Entrance Requirements
- Space and Load Requirements
- Lighting Requirements
- Power Requirements
- Environment Requirements
- Gas Equipment Requirements
- LAN Network Requirements
- Receiving Instruments
- What Happens Next?



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

The TriPlus 300 Headspace sampling 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.

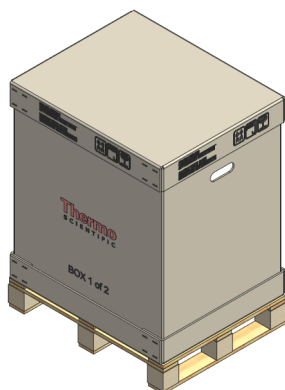
## Entrance Requirements

Use the following guidelines to make sure the entrance to your site will allow delivery of the TriPlus 300 Headspace sampling system.

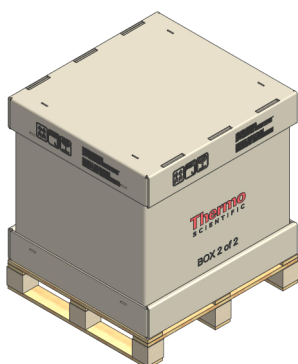
1. Ensure the width of your delivery door opening is at least 80 cm (32 in.).
2. Make sure you have enough room to move boxes around corners, into elevators, or through doorways. The table below contains the dimensions and weight of shipping boxes, so that you can make accommodations:

**Table 1.** Container Dimensions

Container	Depth	Width	Height (*)	Mass (*)
TriPlus 300 Headspace Box 1:2	78.5 cm (31 in.)	63.5 cm (25 in.)	99.6 cm (39 in.)	25 kg (55 lbs)



TriPlus 300 Headspace Box 2:2	76.5 cm (30 in.)	71.5 cm (28 in.)	84 cm (33 in.)	70 kg (154 lbs)
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(\*) Including pallet

## Space and Load Requirements

TriPlus 300 Headspace sampling system must be installed on the left of the GC-GC/MS units. Use the following tables to verify and determine the space and mass requirements for the instrument of your GC-GC/MS 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-GC/MS system should be placed on a workbench that has minimum dimensions of 0.75x2 m (2.5x6 ft.).

**Table 2.** Space and Load Requirements

Instrument	Depth		Width		Height		Mass	
	cm	in.	cm	in.	cm	in.	kg	lbs
TriPlus 300 Headspace Main Unit + Autosampler Unit	55	22	82	32	73	29	63	139
TRACE 1300	60	24	44	17	45	18	35	77
TRACE 1310	67	26	44	17	45	18	35	77
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
Computer <sup>1, 2</sup>	48	19	20	8	43	17	12	27
Monitor <sup>2</sup>	16	7	46	18	32	13	4	8
Keyboard <sup>2</sup>	23	9	46	18	50	2	1	2

<sup>1</sup> This item is placed on the floor under the system, thereby reducing the weight requirements for your workbench.

<sup>2</sup> Dimensions vary per manufacturer, therefore approximations are provided.

3. Allow at least 30 cm (12 in.) of clearance behind the system.
4. Make sure you have at least 90 cm (3 ft.) of clearance above the system.
5. Make sure your workbench can support a TriPlus 300 Headspace system. Remember, 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-GC/MS System + TriPlus 300 Headspace Configuration Space and Mass Requirements

TriPlus 300 Headspace sampling system must be installed on the left of the GC-GC/MS system. The maximum distance from the GC-GC/MS system must consider the length of the transfer line that connects the TriPlus 300 Headspace sampling system to the GC injector. Use [Table 3](#) to determine the space and mass requirements according to your GC-GC/MS system + TriPlus 300 Headspace sampling system configuration.

**IMPORTANT** The dimensions reported in [Table 3](#) are rounding-up for excess.

The dimensions are calculated considering the distances that must be left between the units of the GC-GC/MS system:



- **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

A distance of about **3/5 cm** between the GC-GC/MS system and the TriPlus 300 is left for opening the top cover of the Main through the two lateral push-buttons.

The dimensions reported in [Table 3](#) consider a distance of **5 cm**.

**Table 3.** Overall Dimensions of the GC-GC/MS System + TriPlus 300 Headspace Configuration

Configuration	Depth		Width		Height		Mass	
	cm	in.	cm	in.	cm	in.	kg	lbs
TriPlus 300 Headspace + TRACE 1300	60	24	131	52	73	29	98	216
TriPlus 300 Headspace + TRACE 1310	67	26	131	52	73	29	98	198
TriPlus 300 Headspace + TSQ 8000 Series + TRACE 1300/1310	89	35	172	68	73	29	158	348
TriPlus 300 Headspace + ISQ Series + TRACE 1300/1310	69	27	168	66	73	29	143	315
TriPlus 300 Headspace + DSQ II + TRACE 1300/1310	68	27	174	69	73	29	143	315
TriPlus 300 Headspace + ITQ + TRACE 1300/1310	68	27	174	69	73	28	143	315

## Lighting Requirements

Use the following guidelines to check the lighting of your site:

1. Ensure that your work area is properly lit. You may need an overhead lamp to light your work area.
2. You may need a small, high-intensity lamp when you clean the TriPlus 300 Headspace.

## Power Requirements

This section provides details about 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 300 Headspace sampling system 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 the GC-GC/MS 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.

## Electrical Specifications

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

**Table 4.** System Power Requirements

Equipment	Maximum Power (W)
TriPlus 300 Headspace	1300
TRACE 1300/1310	2000
TSQ 8000 Series MS including foreline pump	1080
ISQ Series MS, including foreline pump	1200
DSQ II MS	700
ITQ MS	700
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 300 Headspace sampling system. Attention to the operating environment will ensure continued high performance of your TriPlus 300 Headspace sampling system.

### Environmental Conditions

- Internal use
- Up to 3000 meters altitude over sea level
- Temperature 5 to 40 °C (41 to 104 °F)
- Relative humidity from 5 to 95%, non-condensing
- Voltage variations must not exceed the nominal voltage by  $\pm 10\%$
- 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:

The TriPlus 300 Headspace sampling system operates in an environment where normally only non-conductive pollution occurs, but in which temporary conductivity due to condensation must be expected. This is a Pollution Degree 2 environment, as specified in International Standard EN 61010-1: 1993 and subsequent amendments.

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.

**Table 5.** Maximum Heat Generated by Each Instrument (Sheet 1 of 2)

Equipment	Heat Output (BTU per Hr.)	Heat Output (in W)
TriPlus 300 Headspace	4440	1300
TRACE 1300/1310	6830	2000
TSQ 8000 Series MS, including foreline pump	3685	1080
ISQ MS, including foreline pump	4095	1200
DSQ II MS	2390	700
ITQ MS	2390	700

**Table 5.** Maximum Heat Generated by Each Instrument (Sheet 2 of 2)

Equipment	Heat Output (BTU per Hr.)	Heat Output (in W)
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. However, the instrument perform best at 20-25 °C room temperature and relative humidity of 40 to 50%. 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 precaution 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

Use the following guidelines to make sure you have the gas supplies for your system ready far in advance of installation. You will need a supply of ultra-high purity GC gases.

The TriPlus 300 Headspace sampling system requires auxiliary gases for all the operating processes, and receives the carrier gas from the GC unit used to transfer the sample to the injector.

- The **auxiliary gases** used with the instrument are helium and nitrogen.
- The **carrier gas** used with the GC are helium, nitrogen, hydrogen, air, argon, argon/methane. Other gases are rarely used.



**WARNING** Before using gases, carefully read the hazard indications and information reported in the Safety Sheet supplied by the manufacturer referring to the CAS (Chemical Abstract Service) number. It is the user's responsibility to see that all local safety regulations for the use of gases are obeyed.

**CAUTION** Secure gas cylinders to an immovable structure or wall. Handle all gases according to local safety regulations.



**WARNING - EXPLOSION HAZARD** The use of hydrogen as a carrier gas is dangerous. Hydrogen is potentially explosive and must be used with extreme care. Any use of hydrogen gas must be reviewed by appropriate health and safety staff, and all installations of hydrogen systems must be performed to applicable codes and standards. Thermo Fisher Scientific assumes no liability for the improper use of hydrogen as a carrier gas.

All Thermo Fisher Scientific gas chromatographs normally uses an inert gas as carrier gas. If you wish to use hydrogen as a carrier gas, the hydrogen sensor must be installed into the oven of your GC. Contact a Thermo Fisher Scientific sales representative if you plan to use hydrogen as the carrier gas in your GC. If you don't have the hydrogen sensor, you **must** use an inert carrier gas.

5. You must provide the gas supplies for your GC-GC/MS system. Be sure to order your gases and regulators far enough ahead of time to have them ready for the installation process.
6. You will need a supply of ultra-high purity GC gas. Typical cylinders are about 23 cm (9 in.) wide by 140 cm (55 in.) tall and output >15,000 kPa (>2200 psig). A single full-size tank contains 8000 L of helium or 6000 L of hydrogen and each will last about three months with a typical usage rate of 50 mL/min.

**Table 6.** Auxiliary Gas Specifications

Gas Type	Purity <sup>1</sup>	Outlet Pressure	Regulator	Connector <sup>2</sup>
Helium	99.999%	400-700 kPa (58-100 psig)	Dual stage brass regulator with stainless steel diaphragm.	CGA-580
Nitrogen	99.999%	400-700 kPa (58-100 psig)	The regulator output pressure should be adjustable from 300 to 1000 kPa (45–145 psig)	CGA-580

<sup>1</sup> Ultra-high purity with less than 1.0 ppm each of water, oxygen, and total hydrocarbons and contained in one tank. Impurities below 1.0 ppm generally do not require purification. Gases with higher impurity levels may require the use of appropriate water, oxygen and hydrocarbon traps.

<sup>2</sup> Connectors will vary with cylinder size. Confirm that your regulator will work with your gas tank. All connections to the TriPlus 300 are 1/8 in. Swagelok fittings.

Oxygen and moisture cannot be prevented from entering the system during cylinder changes. To minimize the impact of these contaminants on the GC-GC/MS system, high purity gas handling equipment should be used. To further protect the system from oxygen and moisture, point-of-use purifiers should be installed in the carrier gas lines just before they reach the GC to remove any residual contaminants. See [Table 7](#).

**Table 7.** Trap Specifications

Traps	Use
Moisture trap	Water in the gas lines may damage the analytical column and contaminate the system. Water content should be less than 1 ppm in all cases. If you are using multiple traps, install the moisture trap closest to the gas supply, before the hydrocarbon and the oxygen trap.
Hydrocarbon trap	Hydrocarbon traps remove organic materials from gases. If you are using multiple traps, install the hydrocarbon trap after the moisture trap, but before the oxygen trap.
Oxygen trap	Oxygen content in the gas lines should be less than 1 ppm. To achieve a level of oxygen of less than 1 ppm, install an oxygen-removing trap in the gas lines between the gas tank and the TriPlus 300 Headspace instrument. If you are using multiple traps, the oxygen trap should be the last trap in the series.

7. Gas lines should be:
  - As short as possible, run to the back or side of the GC-GC/MS system.
  - Made of pre-cleaned copper or stainless steel when using helium and hydrogen.
  - Free of oil and moisture.
8. Obtain the proper gas line filters, which help prevent impurities and contaminants from entering your system. Water, oxygen, and total hydrocarbons should be less than 1 ppm to avoid high background noise and prevent contamination. The GC-GC/MS system is equipped with intake filters that trap moisture, oxygen, and hydrocarbons.
9. Store gas tanks and bottles properly so they will not damage cables or gas lines. Ensure they are secured in accordance with standard safety practices.

## LAN Network Requirements

The connection between the TriPlus 300 Headspace instrument 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 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 300 Headspace instrument:

1. Inspect the boxes for damage on arrival. 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 are finished inspecting 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.